UIC - I - __8-0__

WDW-3 PERMITS, RENEWALS, & MODS

2012 - Present

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division

FEBRUARY 19, 2014

CERTIFIED MAIL
RETURN RECEIPT NO: 0919 5938

Mr. Mike Holder
Environmental Manager
Navajo Refining Company, L.L.C.
501 E Main Street
Artesia, NM 88210

RE: OCD RESPONSE TO COMMENTS ON DRAFT DISCHARGE PERMITS AND APPROVAL OF FINAL DISCHARGE PERMITS FOR THE THREE NAVAJO ARTESIA REFINERY UIC CLASS 1 INJECTION WELLS UICI-008-1 (WDW-1), UNIT LETTER O, SECTION 31, TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO UICI-008-2 (WDW-2), UNIT LETTER E, SECTION 12, TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM, EDDY COUNTY, NEW MEXICO AND UICI-008-3 (WDW-3), UNIT LETTER N, SECTION 1, TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM, EDDY COUNTY, NEW MEXICO

Dear Mr. Holder:

The Oil Conservation Division (OCD) has reviewed Navajo's comments of January 2, 2014 on its draft revised discharge permits of December 26, 2013. OCD evaluated Navajo's comments and accepted most of them.

The Discharge Permit renewals for the three Navajo Refining Company, LLC UIC Non-Hazardous Injection Wells specified above are **hereby approved** under the terms and conditions specified in the enclosed Discharge Permits.

Navajo's original discharge permits were issued in 1998 through 2008 and have been subsequently renewed. Navajo's discharge permit renewal applications were submitted pursuant to 20.6.2.3106 NMAC. OCD approves these discharge permit renewals pursuant to 20.6.2.3109A NMAC. Please note 20.6.2.3109G NMAC, which provides for possible future amendment of the permit. Please be advised that approval of this discharge permit does not relieve Navajo of liability of operations result in pollution of surface water, ground water, or the environment.

Please note that 20.6.2.3104 NMAC specifies "*When a permit has been issued, discharges must be consistent with the terms and conditions of the permit.*" Pursuant to 20.6.2.3107C NMAC, Navajo is required to notify the Director of any facility expansion, production increase, or process modification that would result in any change in the water quality or volume of the discharge.

All three discharge permits will expire on **June 1, 2017**, and Navajo should submit discharge permit renewal applications in ample time before this date. Note that under 20.6.2.3106F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved discharge permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit renewal applications for the Navajo Artesia Refinery are subject to 20.6.2.3114 NMAC. Every billable facility submitting a discharge permit renewal application is assessed a non-refundable filing fee of $100.00. OCD has already received filing fees for the two renewals. OCD revised WDW-3, which was renewed in 2012, by adding additional quarterly monitoring constituents so that Navajo could demonstrate that it does not inject characteristic hazardous waste. The permit fee for UIC Class I non-hazardous waste injection wells is $4,500.00 per well. The Permittee shall submit $9,000.00 amount within 30 days of its receipt of the discharge permits. Checks must be payable to the **"New Mexico Water Quality Management Fund"**, and **not** the Oil Conservation Division.

Please make all checks payable to:

WATER QUALITY MANAGEMENT FUND
C/O: OIL CONSERVATION DIVISION
1220 NORTH ST. FRANCIS DRIVE
SANTA FE, NEW MEXICO 87505

If you have any questions regarding this matter, please contact Glenn von Gonten at 505-476-3488. On behalf of the staff of OCD, I wish to thank you and your staff for your cooperation during this discharge permit renewal process.

Thank you for your cooperation.

Jami Bailey
Director

JB/gvg

DISCHARGE PERMIT UICI-008-3 (WDW-3)

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department issues Discharge Permit UICI-008-3 (Discharge Permit) to Navajo Refining Company (Permittee) to operate its Underground Injection Control (UIC) Class I non-hazardous waste injection well (Waste Disposal Well No. 3 - API No. 30-015-26575, WDW-3) located 790 FSL and 2250 FWL, Unit Letter N, Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico at its Disposal Well Facility (Facility). The Facility is located approximately 10.5 miles southeast of the intersection of U.S. 285 and U.S. 82 in Artesia, New Mexico.

The Permittee is permitted to dispose of only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluids into its Class I non-hazardous waste injection well (WDW-3). The Permittee may dispose of a maximum of 500 gallons per minute (gpm) of oil field waste fluids. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 50 – 100 feet below ground surface and has a total dissolved solids (TDS) concentration of approximately 1,000 – 2,200 mg/l.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class I non-hazardous waste injection wells (see Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (see 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class I non-hazardous waste injection well (WDW-3) is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil field waste, other than non-hazardous oil field waste fluids into its Class I non-hazardous waste injection well (WDW-3), including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, and washdown water. The Permittee may not dispose of any industrial waste fluid that is not oil field waste that is generated at its refinery. The Ground Water Quality Bureau of the New Mexico Environment Department permits the management of all industrial fluids that are not generated in the oil field.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.

2. The injection of fluids into a large capacity cesspool is prohibited.

3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.

4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.

5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified in 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class I non-hazardous waste injection wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified in 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous waste fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (see Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required $100.00 filing fee. The Permittee shall submit the final $4,500.00 permit fee for a Class I non-hazardous waste injection well to OCD with a check made payable to "Water Quality Management Fund" thirty days after the date that this permit is issued.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **June 1, 2017.** The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (see Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and the OCD's Environmental Bureau of any Facility expansion, any injection increase above the approved pressure limit or volume limit specified in Permit Condition 3.B.2, or process modification that would result in any significant modification in the discharge of water contaminants (see 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class I non-hazardous waste injection well (WDW-3) that was approved pursuant to the requirements of this 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

a. Noncompliance by Permittee with any condition of this Discharge Permit; or,

b. The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,

c. A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge

permit modification or termination (see Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and, 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

a. Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

b. Violation of any applicable state or federal effluent regulations or limitations; or

c. Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (see Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS I NON-HAZARDOUS WASTE INJECTION WELL (WDW-3) DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class I non-hazardous waste injection well (WDW-3) discharge permit if:

a. The OCD Director receives written notice 30 days prior to the transfer date; and,

b. The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2.a shall:

a. Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgment that the succeeding Permittee shall be responsible for compliance with the Class I non-hazardous waste injection well discharge permit upon taking possession of the facility;

b. Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

c. Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance

immediately or within a specified time period, or assess a civil penalty, or both (see Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (see Section 74-6-10A.2 NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (see Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL (WDW-3): Pursuant to 20.6.2.5207B NMAC, the Permittee shall provide analysis of the injected fluids at least quarterly to yield data representative of their characteristics and to demonstrate pursuant to 20.6.2.5204A(3) NMAC that the injected fluids are not characteristically hazardous as determined by EPA SW-846 Method 1311 and the analytical methods specified in the Quarterly Monitoring List.

The Permittee shall analyze the injected fluids quarterly for the following characteristics:

- pH (Method 9040);
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature;
- General ground water quality parameters (general chemistry/cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, total dissolved solids, cation/anion balance, pH, and bromide using the methods specified in 40 CFR 136.3); and,
- EPA RCRA Characteristics for Ignitability (Methods 1010/1020 and ASTM standards), Corrosivity (Method 1110), and Reactivity (process knowledge);

The Permittee shall analyze the injected fluids quarterly for the constituents identified in the Quarterly Monitoring List (below) to demonstrate that the injected fluids do not exhibit the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure, EPA SW-846 Test Method 1311 (see Table 1, 40 CFR 261.24(c)).:

QUARTERLY MONITORING LIST			
EPA HW No.	**Contaminant**	**SW-846 Methods**	**Regulatory Level (mg/L)**
D004	Arsenic	6010C	5.0
D005	Barium	6010C	100.0
D018	Benzene	8021B	0.5
D006	Cadmium	6020A	1.0
D019	Carbon tetrachloride	8021B 8260B	0.5
D020	Chlordane	8081A	0.03
D021	Chlorobenzene	8021B 8260B	100.0
D022	Chloroform	8021B 8260B	6.0
D007	Chromium	6020A	5.0
D023	o-Cresol	8270D	200.0
D024	m-Cresol	8270D	200.0
D025	p-Cresol	8270D	200.0
D026	Cresol	8270D	200.0
D016	2,4-D	8151A	10.0
D027	1,4-Dichlorobenzene	8021B 8121 8260B 8270D	7.5
D028	1,2-Dichloroethane	8021B 8260B	0.5
D029	1,1-Dichloroethylene	8021B 8260B	0.7
D030	2,4-Dinitrotoluene	8091 8270D	0.13
D012	Endrin	8081A	0.02
D031	Heptachlor (and its epoxide).	8081A	0.008
D032	Hexachlorobenzene	8121	0.13
D033	Hexachlorobutadiene	8021B 8121 8260B	0.5
D034	Hexachloroethane	8121	3.0
D008	Lead	6020A 7421	5.0
D013	Lindane	8081A	0.4
D009	Mercury	7470A 7471B	0.2
D014	Methoxychlor	8081A 8270D	10.0

D035	Methyl ethyl ketone	8015B 8260B	200.0
D036	Nitrobenzene	8091 8270D	2.0
D037	Pentrachlorophenol	8041	100.0
D038	Pyridine	8260B 8270D	5.0
D010	Selenium	7741A	1.0
D011	Silver	6010C	5.0
D039	Tetrachloroethylene	8260B	0.7
D015	Toxaphene	8081A	0.5
D040	Trichloroethylene	8021B 8260B	0.5
D041	2,4,5-Trichlorophenol	8270D	400.0
D042	2,4,6-Trichlorophenol	8041A 8270D	2.0
D017	2,4,5-TP (Silvex)	8151A	1.0
D043	Vinyl chloride	8021B 8260B	0.2

If o-, m-, and p-cresol concentrations cannot be differentiated, then the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/L.
If the quantitation limit is greater than the regulatory level, then the quantitation limit becomes the regulatory level.

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the Class I non-hazardous waste injection well (WDW-3). The Permittee shall plug and abandon its Class I non-hazardous waste injection well (WDW-3) pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. Pre-Closure Notification: Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class I non-hazardous waste injection well (WDW-3). Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. Required Information: The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee (and owner or operator, if appropriate);

- Address of Permittee (and owner or operator, if appropriate);
- Contact person;
- Phone number;
- Number and type of well(s);
- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.*, sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation, *etc.*);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.D. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class I non-hazardous waste injection well (WDW-3), it shall submit to OCD a plugging and abandonment plan that meets the requirements of 20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.E. RECORD KEEPING: The Permittee shall maintain records of all inspections required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.F. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified in 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;

- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,
- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

2.G. OTHER REQUIREMENTS:

1. Inspection and Entry: Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any effluent before or after discharge; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. Advance Notice: The Permittee shall provide OCD's Environmental Bureau and Artesia District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class I non-hazardous waste injection well (WDW-3).

3. Environmental Monitoring: The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, and laboratory Quality Assurance/Quality Control (QA/QC).

2.H. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class I non-hazardous waste injection well (WDW-3),

surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required herein above.

2.I. REPORTING:

1. Quarterly Reports: The Permittee shall submit quarterly reports pursuant to 20.6.2.5208A NMAC to OCD's Environmental Bureau no later than 45 days following the end of each calendar quarter. The quarterly reports shall include the following:

a. The physical, chemical and other relevant characteristics of injection fluids;

b. Monthly average, maximum and minimum values for injection pressure, flow rate and volume, and annular pressure; and

c. The results of monitoring prescribed under Section 20.6.2.5207B NMAC.

d. Weekly expansion tank volume fluid readings and the fluid volume additions or removals from the expansion tank.

2. Annual Report: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1**st of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well (WDW-3), Name of Permittee, Discharge Permit Number, API number of well, date of report, and person submitting report;
- Summary of Class I non-hazardous waste injection well (WDW-3) operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103(s);
- Monthly injection/disposal volume, including the cumulative total should be carried over to each year;

- Maximum and average injection pressures;
- A copy of the quarterly chemical analyses shall be included with data summary and all QA/QC information;
- Copy of any mechanical integrity test chart(s), including the type of test, *i.e.*, duration, gauge pressure, *etc.;*
- Copy of fall-of test charts;
- Summary tables listing environmental analytical laboratory data for quarterly waste fluid samples. Any 20.6.2.3103 NMAC constituent(s) found to exceed a water quality standard shall be highlighted and noted in the annual report. The Permittee shall include copies of the most recent year's environmental analytical laboratory data sheets with QA/QC summary sheet information in conformance with the National Environmental Laboratory Accreditation Conference (NELAC) and EPA Standards;
- Brief explanation describing deviations from the normal injection operations;
- Results of any leaks and spill reports (include any C-141 reports);
- An Area of Review (AOR) annual update summary;
- A summary with interpretation of MITs, Fall-Off Tests, *etc.*, with conclusion(s) and recommendation(s);
- Records of the expansion tank monitoring pressure, fluid removals and/or additions indicating the well MIT condition;
- A summary of all major Facility activities or events, which occurred during the year with any conclusions and recommendations;
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and,
- The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS I NON-HAZARDOUS WASTE INJECTION WELL (WDW-3) OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206B NMAC to ensure that:

1. The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC and during well stimulation.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class I non-hazardous waste injection well (WDW-3) is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall cease operations until proper repairs are made, notify the OCD's Environmental Bureau and Artesia District office within 24 hours, and shall not resume injection until the permittee has received approval from the OCD.

3. The annulus between the tubing and the long string of casing shall be filled with a fluid approved by the OCD Director and a pressure, also approved by the OCD Director shall be maintained on the annulus.

3.B. INJECTION OPERATIONS:

1. Injection Formation, Interval, and Waste Fluids: The Permittee shall inject only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil field waste fluid into the Lower Wolfcamp, Cisco, and Canyon Formations from 7,660 feet to 8,620 feet in its Class I non-hazardous waste injection well (WDW-3). The surface casing is set at 400 feet; the first intermediate casing is set at 2,604 feet; the second intermediate casing or production casing is set at 9,450 feet; the injection tubing is set at approximately 7,568 feet; and the packer is set at 7,575 feet. A cement plug is set at 9,022 feet within the production casing, which isolates the Class I non-hazardous injection well (WDW-3) from a deeper, completed production liner set at 10,119 feet. The Permittee shall ensure that the injected waste fluid enters perforations only within the above specified injection interval and is not permitted to escape to other formations or onto the surface.

2. Well Injection Pressure Limits and Injection Flow Rate: The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class I non-hazardous waste injection well (WDW-3) shall not exceed 1,530 psig and that the injection flow rate shall not exceed 500 gpm.

3. Pressure Limiting Device: The Permittee shall equip and operate its Class I non-hazardous waste injection well (WDW-3) or system with a pressure limiting device, or equivalent (*i.e.*, Murphy switch), in working condition which shall at all times limit surface injection pressure to the maximum allowable pressure for its Class I non-hazardous waste injection well (WDW-3).

The Permittee shall inspect and monitor the pressure-limiting device daily and shall report any pressure exceedances within 24 hours of detection to OCD's Environmental Bureau and Artesia District Office. The Permittee shall take all steps necessary to ensure that the injected waste fluids enter only the proposed injection interval and are not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

OCD may authorize an increase in surface injection pressure if the Permittee performs a valid Step-Rate Test (SRT), which demonstrates that the proposed maximum surface injection pressure is less than the injection zone fracture pressure with an acceptable safety factor. If approvable, the Permittee must apply for a modification to this Discharge Permit pursuant to 20.6.2.3109 NMAC.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

3.D. MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall conduct a mechanical integrity test (MIT) for its Class I non-hazardous waste injection well (WDW-3) at least once every five years or more frequently as the OCD Director may require for good cause during the life of the well. The Permittee shall also demonstrate mechanical integrity for its Class I non-hazardous waste injection well (WDW-3) by running a MIT every time it performs a well workover, including when it pulls the tubing or reseats the packer. The Permittee shall request MIT approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office. The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

The Permittee shall conduct a casing-tubing annulus MIT from the surface to the approved injection depth to assess casing and tubing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface. The Permittee shall follow OCD's 2004 *New Mexico Oil Conservation Division Underground Injection Control Program Manual* guidance when conducting a MIT. The Permittee shall submit the results of its MIT to OCD's Environmental Bureau and Artesia District Office within 30 days of completion. If any remedial work or any other workover operations are necessary, the Permittee shall comply with Permit Condition 3.F.

2. A Class I non-hazardous waste injection well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which OCD considers to be significant at maximum operating temperature and pressure, and no detectable conduit for fluid movement out of the injection zone through the well bore, or vertical channels adjacent to the well bore which the OCD considers to be significant. The following criteria will determine if the Class I non-hazardous waste injection well (WDW-3) has passed the MIT:

a. The MIT passes if there is zero bleed-off during the test;

b. The MIT passes if there is a less than a ± 10% change in the final test pressure compared to the starting pressure, if approved by OCD;

c. The MIT fails if there is more than 10% reduction in the final test pressure compared to the starting pressure or that the pressure does not stabilize within 10% of the starting pressure before the end of the MIT. The Permittee shall shut-in the well and investigate for leaks in accordance with Permit Condition 3.F. The Permittee shall not resume injection operations until approved by OCD.

d. When the MIT is not witnessed by OCD and fails, the Permittee shall shut-in the well and notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

5. The Permittee shall conduct a Bradenhead test at least annually and each time that it conducts a MIT.

3.E. FALL-OFF TEST: The Permittee shall conduct a Fall-Off Test (FOT) to monitor the injection zone formation characteristics and pressure buildup over time in the injection zone at least every three years. The Permittee shall request FOT approval using form C-103 (Sundry Notices and Reports on Wells) sent to OCD's Environmental Bureau and Artesia District Office.

The Permittee shall follow OCD's 2007 *New Mexico Oil Conservation Division UIC Class I Well Fall-Off Test Guidance* or other OCD-approved FOT when conducting a FOT and shall shut down the well for a time sufficient to conduct a valid observation of the pressure fall-off curve. The Permittee shall submit the results of its FOT to OCD's Environmental Bureau and Artesia District Office within 30 days of completion, including color copies of the original charts.

3.F. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's Environmental Bureau prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office. After completing remedial work, pressure tests, or any other workover operations, the Permittee shall run a MIT in accordance with Permit Condition 3.D to verify that the remedial work has successfully repaired any problems.

3. G. EXTERNAL EXPANSION TANK: The Permittee shall equip its Class I non-hazardous waste injection well (WDW-3) with an external expansion tank system under constant 100 psig pressure connected to the casing-annulus. The Permittee shall fill the external expansion tank half-full with an OCD-approved liquid to establish an equilibrium volume and liquid level. The Permittee shall monitor the liquid levels in the external expansion tank at least weekly and shall record all additions or removals of liquids into or out of the external expansion tank. The Permittee shall record any loss or gain of fluids in the external expansion tank, and shall verbally notify OCD's Environmental Bureau within 5 days of any loss or gain of fluid greater than 5 barrels per month and shall comply with Permit Condition 3.F.

The Permittee shall provide the weekly expansion tank volume fluid volumes readings and the fluid volume additions or removals from the expansion tank on a quarterly basis and in the annual report.

3.H. INJECTION RECORD VOLUMES AND PRESSURES: The Permittee shall submit quarterly reports of its injection operations and well workovers. The Permittee shall record the minimum, maximum, and average flow waste injection volumes (including total volumes) and annular pressures of the injected waste fluids on a monthly basis, and shall submit the data to OCD on a quarterly basis and in the annual report. The Permittee shall fill the casing-tubing annulus with an OCD-approved liquid and install a Murphy pressure switch or equivalent, as described in the Permittee's permit renewal application, in order to detect leakage in the casing, tubing, or packer.

3.I. AREA OF REVIEW (AOR): The Permittee shall orally report to OCD's Environmental Bureau within 72 hours of discovery of any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class I non-hazardous waste injection well (WDW-3).

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc*.) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. QUARTERLY AND ANNUAL REPORTS: The Permittee shall submit its quarterly and annual reports to OCD as specified in Permit Condition 2.I.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class I non-hazardous waste injection well (WDW-3), conduct ground water restoration if applicable, and any post-operational monitoring as may be needed (see 20.6.2.5210B(17) NMAC) within 90 days of permit issuance (see 20.6.2.5210B(17) NMAC). The Permittee's cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, November 06, 2012 7:12 AM
To: Schultz, Michele (Michele.Schultz@hollyfrontier.com)
Cc: VonGonten, Glenn, EMNRD
Subject: Afidavit of Publication for WDW-3 Permit Renewal (UICI-008-0)

Micki:

The New Mexico Oil Conservation Division is in receipt of the above subject Affidavit.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

HOLLYFRONTIER
THE HOLLYFRONTIER COMPANIES

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October 31, 2012

Mr. Carl J. Chavez
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Certified Mail/Return Receipt
7011 3500 0001 4786 3422

RE: Affidavit of Publication for WDW-3 Permit renewal
Navajo Refining Co. LLC

Dear Mr. Chavez:

In accordance with Section D of 20.6.2.3108 NMAC Public Notice and Participation, Navajo Refining Company is submitting the Affidavit of Publication for the public notice requirements indicated in Section C for our Class 1 Injection Well Discharge Permit WDW-3. The Notice was published on October 5, 2012.

If you have questions regarding this submittal, please contact me by email at micki.schultz@hollyfrontier.com, or by phone at 575-746-5281.

Cordially,

Micki Schultz

Micki Schultz, P.E., CHMM
Environmental Specialist

Attachments

Env. File: WDW-3 UIC Permit Renewal (REF.ART.12-4.A.02.D)

Affidavit of Publication

NO.

STATE OF NEW MEXICO

County of Eddy:

Danny Scott Danny Scott

being duly sworn, says that he is the **Publisher**

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

Display Ad

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/days on the same day as follows:

First Publication October 5, 2102

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Subscribed and sworn to before me this

29th day of October 2012

OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 5/12/2015

Latisha Romine

Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

PUBLIC NOTICE
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to renew the New Mexico Oil Conservation Division (OCD) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant into a Class I (nonhazardous) injection well WDW-3 (API# 30-015-26575). The WDW-3 is located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The WDW-3 is located approximately 14 miles E-SE of the intersection of I-285 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225. The Artesia Refinery is located at 501 E. Main Street, Artesia, New Mexico.

Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery.

Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations within the injection interval from 7,660 to 8,620 feet (log depth). The injection rate into WDW-3 will not exceed 500 gpm and the maximum allowable surface injection pressure of 1530 psig. The injected refinery waste water quality is approximately 3,400 mg/L total dissolved solids (TDS). Formation fluids within the permitted injection interval exceed 10,000 mg/L TDS. Groundwater is first encountered in the area of WDW-3 at a depth range of approximately 50 to 150 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the New Mexico Oil Conservation Division. Comments and inquiries on regulations should be directed to:

Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Telephone: (505) 476-3440

When corresponding, please reference the name of the applicant and the well name.

Affidavit of Publication

NO.

STATE OF NEW MEXICO

County of Eddy:

Danny Scott Danny Scott

being duly sworn, says that he is the **Publisher**

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

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First Publication October 5, 2102

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Subscribed and sworn to before me this

29th day of October 2012

OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 5/12/2015

Latisha Romine

Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

AVISO PUBLICO
ESTADO DE NUEVO MEXICO
DEPARTMENTO DE ENERGIA, MINERALES Y RECURSOS NATURALES
DIVISION DE CONSERVACION DE PETROLEO

Por medio de la presente, Navajo Company anuncia que de conformidad con los requisitos de las regulaciones de la Comisión de Control de Calidad del Agua de Nuevo México 20.6.2.3108.F NMAC, a la División de Conservación del Petróleo de Nuevo México (NMOCD). Departamento del Medio Ambiente, un permiso de descarga para la inyección aguas residuales de la planta Artesia de Navajo Refining Company, en el pozo de inyección de denominación WDW-3 (API#30-015-26575). El pozo WDW-3 esta localizado en SE/4, SW/4 de Sección 1, Municipio 18 sur, Condado Eddy , Nuevo México. El WDW-3 está localizado aproximadamente a 14 millas E-SE de la intersección de I-285 y Hwy 82 (Refinería Artesia), o aproximadamente 2.75 millas S de Hwy. 82 y CR-225. La Refinería Artesia se encuentra ubicada en 501 E. Main Street, Artesia, Nuevo México.

La generación de aguas residuals de la Refinería Artesia es el resultado del agua que se encuentran en al abastecimiento de crudo, el agua que se usa para el enfriamiento y calentamiento, el agua que se usa para retirar las sales del abastecimiento de crudo, y para purgar la caldera.

Las aguas residuals de WDW-3 se injectarán hacia las formaciones de Lower Wolfcamp, Cisco Y Canyon, ubicadas entre 7,660 y 8,620 pies (produndidad de registro). La tasa de inyección de WDW-3 no excederá los 500 gpm a una presión de inyección que no excederá los 1530 psig. Estas aguas residuals tendrán un contendido de total de sólidos disueltos (TDS) de 3,400 partes por millón. En el área en donde se encuentra el pozo (WDW-3), el agua subterránea se encuentra a una profundidad de 50 a 150 pies con un TDS de 1,500 a 2,200 partes por millón.

Personas interesadas en obtener mayores informes, presentar sus comentarios o solicitar que se les incluya en las listas de direcciones de una planta en especial para futuros avisos pueden ponerse en contacto con el Jefe del Departamento del Medio Ambiente de la División de Conservación de Petróleo de Nuevo México.

Por favor enviar comentarios y preguntas a:
Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Teléfono: (505) 476-3440

Por favor incluir como referencia el nombre del applicante y denominación del pozo.

RECEIVED OCD
2012 OCT 19 P 12:39

THE SANTA FE
NEW MEXICAN
Founded 1849

NM EMNRD OIL CONSERV
1220 S ST FRANCIS DR
Leonard Lowe
SANTA FE NM 87505

ALTERNATE ACCOUNT: 56689
AD NUMBER: 00380430 ACCOUNT: 00002212
LEGAL NO: P.O. #:

193 LINES 1 TIME(S)	199.00
AFFIDAVIT:	0.00
TAX:	16.29
TOTAL:	215.29

AFFIDAVIT OF PUBLICATION

10/19/2012

STATE OF NEW MEXICO
COUNTY OF SANTA FE

I, V. Wright, being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily newspaper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication # a copy of which is hereto attached was published in said newspaper 1 day(s) between 10/17/2012 and 10/17/2012 and that the notice was published in the newspaper proper and not in any supplement; the first date of publication being on the 17th day of October, 2012 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

/S/ V Wright
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 17th day of October, 2012

Notary Mary Margaret Vigil-Weideman

Commission Expires: 11-13-2012

OFFICIAL SEAL
Mary Margaret Vigil-Weideman
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 11-13-12

NOTICE OF PUBLICATION

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES

DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to Water Quality Control Commission Regulations (20.6.2.3106 NMAC) the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division (OCD), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, and Telephone (505) 476-3440:

(UICI-008-0) Navajo Refining Company, L.L.C. Michael G. McKee, Vice President and Refinery Manager, 501 East Main Street, P.O. Box Drawer 159, Artesia New Mexico 88211-0159, has submitted an application for a Class I (non-hazardous) Injection Well Discharge Permit for injection well WDW-3 (API# 30-015-26575) located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The injection well is located approximately 10.5 miles S-SE of the intersection of I-285 and Hwy 82 or approximately 2.75 miles S of Hwy 82 and CR-225. Oil field exempt and non-exempt non-hazardous industrial waste, will be transported about 12 miles underground from the Navajo-Artesia Refinery located at 501 E. Main Street, Artesia, NM via a 6 inch dia. pipeline to WDW-3 for disposal into the Lower Wolfcamp, Cisco, and Canyon Formations in the injection interval from 7660 to 8620 feet (log depth). The injection rate will not exceed 500 gpm at a maximum surface injection pressure of 1530 psig. The injected waste fluid contains approximately 3,400 mg/L total dissolved solids (TDS). Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth range of between 50 to 150 feet below the ground surface, with a concentration range of between 1500 to 2200 mg/L TDS. The discharge permit addresses well construction, operation, monitoring of the well, associated surface facilities, and provides a contingency plan in the event of accidental spills, leaks, and other accidental discharges in order to protect fresh water.

Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on available information, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the application along with information submitted at the hearing.

Para obtener más información sobre esta solicitud en espan_ol, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio´n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461).

DONE at Santa Fe, New Mexico, on this 11th day of October 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

PUB: 10-17-12
LEGAL: 94073

Affidavit of Publication

NO. 22336

STATE OF NEW MEXICO

County of Eddy:

Danny Scott

being duly sworn, says that he is the Publisher

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

Legal Notice

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/days on the same day as follows:

First Publication October 12, 2102

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Subscribed and sworn to before me this

12th day of October 2012

OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 5/12/2015

Latisha Romine

Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

LEGAL NOTICE

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

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Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on available information, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the application along with information submitted at the hearing.

Para obtener más información sobre esta solicitud en espan ol, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto:: Dorothy Phillips, 505-476-3461).

DONE at Santa Fe, New Mexico, on this 11th day of October 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

Published in the Artesia Daily Press, Artesia, N.M., Oct. 12, 2012. Legal No 22336.

10/18/12

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, October 18, 2012 7:56 AM
To: 'Schultz, Michele'
Subject: RE: WDW-3 Public Notice 10/5

Micki:

Good morning. Let me know if you receive any public comments before COB 11/5.

OCD will issue a final approval within 15 days of 11/5 or by 11/20.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Schultz, Michele [mailto:Michele.Schultz@hollyfrontier.com]
Sent: Wednesday, October 17, 2012 7:30 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD
Subject: RE: WDW-3 Public Notice 10/5

Carl – I already sent you a certified letter with the affidavit of mailing, the list of a single property owner (BLM), and a proof sheet from the newspaper. Under Section C as agreed in the application, we are not required to post. It is my understanding that this completes our requirements for public and OCD notification.

Micki Schultz, P.E., CHMM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)
micki.schultz@hollyfrontier.com

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, October 16, 2012 4:32 PM
To: Schultz, Michele
Cc: VonGonten, Glenn, EMNRD
Subject: WDW-3 Public Notice 10/5

Micki:

Good afternoon. OCD has received the public notice from the Artesia Newspaper today.

Since it posted 10/5, Navajo Refining Company LLC's (NRC) 30-day public comment period ends around COB on Monday 11/5. OCD's public notice posted on its website on 10/1 and Artesia Newspaper on 10/12. The 30-day public comment period will end around COB Monday 11/12.

Within 15-days of the end of NRC's public comment period, it must submit proof of notice (affidavit of mailings and list of property owners, proof of publication, an affidavit of posting) to the OCD for final approval.

If there are no public comments or requests for hearing, the OCD may issue a final discharge permit.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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October 10, 2012

Mr. Carl J. Chavez
New Mexico Energy, Minerals and Natural Resources Department
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Certified Mail/Return Receipt
7011 3500 0001 4786 3378

RE: Notice of completion of Public Notice requirements for WDW-3 Permit renewal
Navajo Refining Co. LLC

Dear Mr. Chavez:

In accordance with Section D of 20.6.2.3108 NMAC Public Notice and Participation, Navajo Refining Company is submitting proof of notice for the public notice requirements indicated in Section C for our Class 1 Injection Well Discharge Permit WDW-3. Enclosed are copies of the Certified Mail returned receipt for the notice mailed to the Bureau of Land Management, and the notices in English and Spanish on page 10 of the Artesia Daily Press of October 5, 2012. The Bureau of Land Management is the owner of the property that well WDW-3 is located on, as well as landowner of the surrounding property.

If you have questions regarding this submittal, please contact me by email at micki.schultz@hollyfrontier.com, or by phone at 575-746-5281.

Cordially,

Micki Schultz

Micki Schultz, P.E., CHMM
Environmental Specialist

Attachments

Env. File: WDW-3 UIC Permit Renewal (REF.ART.12-4.A.02.D)

Obituary

Janene Beard

A memorial service is scheduled for 2 p.m. Monday, Oct. 8, at South Plains Church of Christ in Lubbock, Texas, for Janene Beard of Lubbock.

Beard, 69, passed away Sunday, Sept. 30, 2012.

A visitation for family and friends will be held from 4-6 p.m. Sunday, Oct. 7, at South Plains Church of Christ.

Beard was born on Christmas Day, 1942, to Walter Byron and Charlene Haynie in Post, Texas. She married Bobby Lee Beard on Jan. 6, 1964.

She worked in the medical field for 45-plus years for Dr. Carl Page and, later, Covenant Hospital prior to her retirement.

Survivors include her daughter, Shani Thomas, of Artesia; son Kennon Beard of Lubbock; mother Charlene Haynie of Lubbock; two grandsons that knew her as Grammy, Jerad Thomas of Lubbock and Jordan Thomas of Houston, Texas; sister Lana Young of Los Angeles, Calif.; two nephews, Wade Donon Young of Los Angeles and Brandon Young and wife Elizabeth of Levelland, Texas; and five special friends, John, Sarah, Mekhidey, Marley and Maddux Bigalow, all of Lubbock.

She was preceded in death by the love of her life for 45 years, Bob, and her father.

Arrangements are under the direction of Resthaven Funeral Home of Lubbock. Condolences may be expressed online at www.resthavenfuneralhome.com.

Convicted killer from 2008 escape is arrested in Mexico

CLOVIS (AP) — Federal authorities say a convicted killer who escaped from a New Mexico prison in 2008 has been arrested in Mexico. The U.S. Marshals Service says Edward Salas was taken into custody Thursday in Chihuahua City, Chihuahua. They are now seeking his extradition to New Mexico.

Salas was been on the list of the Marshals Service's 15 most wanted fugitives since last December.

Authorities say he escaped from the Curry County Detention Center in Clovis in August 2008. He was later spotted in Texas, but had been on the run ever since.

At the time of his escape, Salas was serving a life sentence plus 56 years for his role in the murder of Carlos Perez on Sept. 5, 2005.

Public Record

ARTESIA POLICE DEPARTMENT

Oct. 5

ALARM

3:16 a.m. – Officer dispatched to 201 E. Hermosa Drive in reference to a burglar alarm.

PUBLIC ASSIST

4:59 a.m. – Officer dispatched to the 700 block of North 13th Street in reference to a public assist.

DOMESTIC

5:19 a.m. – Officer dispatched to the 500 block of South 20th Street in reference to a domestic dispute

Oct. 4

ARREST

11:00 a.m. – Larry Troublefield Jr., 44, of Lakewood, arrested on a district warrant.

ALARM

7:22 a.m. – Officer dispatched to 1102 W. Quay Ave. in reference to an audible alarm.

VANDALISM

8:08 a.m. – Officer dispatched to 1010 W. Missouri Ave. in reference to vandalism. A report was taken

VANDALISM

8:11 a.m. – Officer dispatched to 1016 W. Chisum Ave. in reference to vandalism. A report was taken.

LARCENY

8:21 a.m. – Officer dispatched to 117 N. Osborn Ave. in reference to larceny. A report was taken.

VANDALISM

8:34 a.m. – Officer dispatched to 1301 S. Eighth St. in reference to vandalism. A report was taken.

ALARM

8:37 a.m. – Officer dispatched to 510 E. Richey Ave. in reference to a panic alarm. No report was taken.

RECKLESS DRIVING

8:34 a.m. – Officer dispatched to Seven Rivers Highway in reference to reckless careless driving, racing.

WANTED SUBJECT

10:51 a.m. – Officer dispatched to 3300 W. Main St. in reference to a wanted subject. An arrest was made.

VANDALISM

10:58 a.m. – Officer dispatched to 801 W. Washington Ave. in reference to vandalism. A report was taken.

LARCENY

11:01 a.m. – Officer dispatched to 1001 N. 15th St. in reference to larceny. A report was taken.

VANDALISM

11:26 a.m. – Officer dispatched to 806 W. Camper Drive in reference to vandalism. A report was taken.

ALARM

2:47 p.m. – Officer dispatched to 1311 W. Main St. in reference to a burglar alarm. No report was taken.

WANTED SUBJECT

4:59 p.m. – Officer dispatched to 3300 W. Main St. in reference to a wanted subject.

RECKLESS DRIVING

7:33 p.m. – Officer dispatched to South 28th Street and West Missouri Avenue in reference to reckless/careless driving, racing. No report was taken.

LOST ITEM

7:55 p.m. – Officer dispatched to The Wellhead Restaurant and Brewpub in reference to a lost item.

LARCENY

10:11 p.m. – Officer dispatched to 2601 W. Main St. in reference to larceny.

Service Notice

Mary Louise Grbac

Services are scheduled for 9:30 a.m. Tuesday, Oct. 9, at St. Anthony's Catholic Church for Mary Louise Grbac of 1104 Sears Ave., Artesia.

Grbac, 87, passed away Wednesday, Oct. 3, 2012, at her home.

Fr. Brian Guerrini, SS.CC., will officiate at the services, with interment to follow at Woodbine Cemetery.

Visitation will begin at 5 p.m. Monday at St. Anthony's. A rosary will be recited at 6:30 p.m. Monday at the church.

Arrangements are under the direction of Terpenning & Son Mortuary. A full obituary will be published in Sunday's edition of the Daily Press.

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PUBLIC NOTICE
STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to renew the New Mexico Oil Conservation Division (OCD) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant into a Class I (nonhazardous) injection well WDW-3 (API# 30-015-25575). The WDW-3 is located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The WDW-3 is located approximately 14 miles E-SE of the intersection of I-285 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225. The Artesia Refinery is located at 501 E. Main Street, Artesia, New Mexico.

Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery.

Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations within the injection interval from 7,880 to 8,920 feet (log depth). The injection rate into WDW-3 will not exceed 500 gpm and the maximum allowable surface injection pressure of 1530 psig. The injected refinery waste water quality is approximately 3,400 mg/l, total dissolved solids (TDS). Formation fluids within the permitted injection interval exceed 10,000 mg/L TDS. Groundwater is first encountered in the area of WDW-3 at a depth range of approximately 50 to 150 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the New Mexico Oil Conservation Division. Comments and inquiries on regulations should be directed to:

Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Telephone: (505) 476-3440

When corresponding, please reference the name of the applicant and the well name.

AVISO PUBLICO
ESTADO DE NUEVO MEXICO
DEPARTMENTO DE ENERGIA, MINERALES Y RECURSOS NATURALES
DIVISION DE CONSERVACION DE PETROLEO

Por medio de la presente, Navajo Company anuncia que de conformidad con los requisitos de los regulaciones de la Comisión de Control de Calidad del Agua de Nuevo México 20.6.2.3108.F NMAC, a la Division de Conservación del Petróleo de Nuevo México (NMOCD) , Departamento del Medio Ambiente, un permiso de descargo para la inyección aguas residuales de la planta Artesia de Navajo Refining Company, en el pozo de inyección de denominación WDW-3 (API#30-015-25575). El pozo WDW-3 esta localizado en SE/4, SW/4 de Sección 1, Municipio 18 sur, Condado Eddy , Nuevo México. El WDW-3 está localizado aproximadamente a 14 millas E-SE de la intersección de I-285 y Hwy 82 (Refinería Artesia), o aproximadamente 2.75 millas S de Hwy. 82 y CR-225. La Refinería Artesia se encuentra ubicada en 501 E. Main Street, Artesia, Nuevo México.

La generación de aguas residuals de la Refinería Artesia es el resultado del agua que se encuentran en el abastecimiento de crudo, el agua que se usa para el entrenamiento y calentamiento, el agua que se usa para retirar las sales del abastecimiento de crudo, y para purgar la caldera.

Las aguas residuals de WDW-3 se inyectarán hacia las formaciones de Lower Wolfcamp, Cisco Y Canyon, ubicadas entre 7,880 y 8,920 pies (profundidad de registro). La tasa de inyección de WDW-3 no excederá los 500 gpm e una presión de inyección que no excederá los 1530 psig. Estas aguas residuals tendrán un contenido de total de sólidos disueltos (TDS) de 3,400 partes por millón. En el área en donde se encuentra el pozo (WDW-3), el agua subterránea se encuentra a una profundidad de 50 a 150 pies con un TDS de 1,500 a 2,200 partes por millon.

Personas interesadas en obtener mayores informes, presentar sus comentarios o solicitar que se les incluya en las listas de direcciones de una planta en especial para futuros avisos pueden ponerse en contacto con el Jefe del Departamento del Medio Ambiente de la División de Conservación de Petróleo de Nuevo México.

Por favor enviar comentarios y preguntas a:
Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Teléfono: (505) 476-3440

Por favor incluir como referencia el nombre del applicante y denominación del pozo.

Third

(Continued from Page 5)

A Baptist with a Southern drawl who held Virginia political office for more than three decades, Goode presents himself as "a real difference between Romney and Obama."

Elsewhere, Johnson is the one to watch, though he could pose difficulties for both major party contenders.

The handyman-turned-politician proudly brags of setting veto records to block spending during two terms as governor. Occasionally donning a peace-sign shirt under his blazer, Johnson has blitzed college campuses with a message aimed at the anti-war, pro-drug legalization crowd that Texas Rep. Ron Paul cultivated in his GOP presidential run. Paul took a respectable share of the vote in Colorado, Iowa, New Hampshire and Nevada.

Paul has yet to endorse anyone in the race, and may not. Meanwhile, Romney has tried to heal fractures between Paul loyalists and the Republican old guard by deploying his former rival's son, Sen. Rand Paul of Kentucky, to campaign events.

New Hampshire state Sen. Andy Sanborn, an adviser to the elder Paul, said Johnson could score with voters at Romney's expense.

"That type of a libertarian candidate will always do well here. I'm hoping frankly that the race isn't close enough that Mr. Johnson will have a material impact in it," said Sanborn, who said he planned to vote for Romney.

Johnson considers himself a headache for both Obama and Romney.

"I'm more conservative than Romney on dollars and cents. I'm more liberal than Obama when it comes to social issues," he said in an interview with The Associated Press.

Johnson's support for gay marriage, eased immigration and a scaling back of government search powers authorized after the Sept. 11 terror attacks make him a wild card in some key states.

One is North Carolina, where Obama prevailed in 2008 by a slim 14,000 votes. Some 40,000 votes were cast for minor party candidates or write-ins, with Libertarian Party nominee Bob Barr getting most of them. Michael Munger, the party's nominee for North Carolina governor the same year, doubted Johnson would have as much of a one-sided effect as the conservative hardliner Barr.

"I actually think there's sort of a gentleman's agreement about Gary Johnson that neither party brings him up because it takes votes from both sides. In 2008, the Democrats mentioned Bob Barr," Munger said. "They worked to remind people of the fact Bob Barr was in it and real conservatives might want to consider him."

In Colorado, Johnson has aligned himself with a ballot measure to legalize marijuana for recreational use.

Democratic strategist Rick Ridder, a Denver-based veteran of presidential campaigns, said some Democratic activists are supporting Johnson because of his stance on the referendum. But he thinks most voters passionate about making the drug legal to possess will send a message through the proposition itself and make other calculations on the presidential race.

Goode is also on Colorado's ballot. That's notable because two years ago former Colorado Rep. Tom Tancredo finished second in the race for governor under the American Constitution Party's banner.

Johnson, at least, has no problems being labeled a possible spoiler.

"A wasted vote is voting for someone you don't believe in," he said. "Vote for someone you believe in because that's how you change politics."

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Bottom Round Steak Family Pack $2.79 lb

Boneless New York Strips $6.99

Bone-In Ribeye Steaks $6.99 lb

Bud & Bud light Select 18 pk Btls or Cans $14.49

Natural Light 18 pk Cans $12.49

Coors, Coors Light, Miller Lite 12 pk cans $10.99

Corona, Corona Light 12 pk btls $13.99

Jim Beam 1.75 Lt $23.99

Lord Calvert 1.75 Lt $15.99

Black Velvet 1.75 LT $15.99

Jose Cuervo 750 ml $19.99

Canadian Mist 1.75 Lt $24.99

Jagermeister 750 ml $24.99

Shursaving Flour 25 lb bag $7.99

Shursaving Towels 6 rol pkg 2 for $5

Shursaving Tomato Sauce 8 oz can 3 for $1

Shurfine Ketchup 24 oz btl 89¢

Kraft Barbecue 18 oz jar 99¢

Large Gala Apples 2 lbs $3

Sweet Potatoes 2 lbs $1

Limes 10 for $1

Green Pears $1.19 lb

Lettuce 89¢ each

Potatoes 10 lb bag 2 for $5

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Street, or PO Box: 620 E. Greene St.

City, St: Carlsbad, NM 88220

ENV

PS Form 3800, August 2006 — See Reverse for Instructions

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, October 11, 2012 8:58 AM
To: 'tod.stevenson@state.nm.us'; Wunder, Matthew, DGF; Allison, Arthur, DIA; Gonzales, Miley; Linda_Rundell@nm.blm.gov; 'psisneros@nmag.gov'; 'r@rthicksconsult.com'; 'sric.chris@earthlink.net'; 'nmparks@state.nm.us'; 'john.dantonio@state.nm.us'; 'peggy@gis.nmt.ed'; 'marieg@nmoga.org'; Fetner, William, NMENV; 'lazarus@glorietageo.com'; Winchester, Jim, NMENV; 'ron.dutton@xcelenergy.com'; 'cgarcia@fs.fed.us'; Kieling, John, NMENV; 'bsg@garbhall.com'; Schoeppner, Jerry, NMENV; 'claudette.horn@pnm.com'; 'ekendrick@montand.com'; 'staff@ipanm.org'; Gonzales, Elidio L, EMNRD; Leking, Geoffrey R, EMNRD; Dade, Randy, EMNRD; Bratcher, Mike, EMNRD; Perrin, Charlie, EMNRD; Kelly, Jonathan, EMNRD; Powell, Brandon, EMNRD; Martin, Ed, EMNRD; 'Seligman@nmoga.org'
Subject: Navajo Refining Company- Underground Injection Control (UIC) Class I (Non-Hazardous) Injection Well (UICI-8-0) Discharge Permit (UICI-8-0) Renewal (Eddy County)

Ladies and Gentlemen:

The New Mexico Oil Conservation Division (OCD) recently posted a draft discharge permit, public notice and administrative completeness letter on its website (click here) for the above subject facility.

For more information about this facility, please click here.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division

SEPTEMBER 25, 2012

Mr. Michael G. McKee
Vice President and Refinery Manager
Navajo Refining Company, L.L.C.
501 East Main
Artesia, New Mexico 88210

Re: Discharge Permit Renewal Application for Class I non-hazardous waste injection well (Waste Disposal Well No. 3 (WDW-3) - API No. 30-015-26575) located 790 FSL and 2250 FWL UL: N Section 1, T 18 S, R 27 E, Eddy County, New Mexico

Dear Mr. McKee:

The Oil Conservation Division (OCD) is in receipt of Navajo Refining Company, L.L.C.'s (NRC) discharge permit renewal application for its UIC Class I non-hazardous waste injection well. After review, OCD has determined that your application is "*administratively complete*" pursuant to New Mexico Water Quality Control Commission regulations (20.6.2.3108 NMAC).

NRC must now provide public notice and demonstrate that it has done so to OCD in a timely manner. OCD will also provide notice to various governmental groups. Depending upon the level of public interest, a hearing may be scheduled on this matter. Regardless, OCD will continue our review of the application and may request additional information.

If you have any questions, please do not hesitate to contact me by phone at (505) 476-3490, mail at the address below, or email at CarlJ.Chavez@state.nm.us. On behalf of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review process.

Sincerely,

Carl J. Chávez
Environmental Engineer

CJC/cjc

cc: OCD Artesia Office

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to Water Quality Control Commission Regulations (20.6.2.3106 NMAC) the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division (OCD), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, and Telephone (505) 476-3440:

(UICI-008-0) Navajo Refining Company, L.L.C. Michael G. McKee, Vice President and Refinery Manager, 501 East Main Street, P.O. Box Drawer 159, Artesia New Mexico 88211-0159, has submitted an application for a Class I (non-hazardous) Injection Well Discharge Permit for injection well WDW-3 (API# 30-015-26575) located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The injection well is located approximately 10.5 miles S-SE of the intersection of I-285 and Hwy 82 or approximately 2.75 miles S of Hwy 82 and CR-225. Oil field exempt and non-exempt non-hazardous industrial waste, will be transported about 12 miles underground from the Navajo-Artesia Refinery located at 501 E. Main Street, Artesia, NM via a 6 inch dia. pipeline to WDW-3 for disposal into the Lower Wolfcamp, Cisco, and Canyon Formations in the injection interval from 7660 to 8620 feet (log depth). The injection rate will not exceed 500 gpm at a maximum surface injection pressure of 1530 psig. The injected waste fluid contains approximately 3,400 mg/L total dissolved solids (TDS). Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth range of between 50 to 150 feet below the ground surface, with a concentration range of between 1500 to 2200 mg/L TDS. The discharge permit addresses well construction, operation, monitoring of the well, associated surface facilities, and provides a contingency plan in the event of accidental spills, leaks, and other accidental discharges in order to protect fresh water.

Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on available information, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the application along with information submitted at the hearing.

Para obtener más información sobre esta solicitud en espan□ol, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio´n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461).

DONE at Santa Fe, New Mexico, on this 25th day of September 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

DISCHARGE PERMIT UICI-008-0 (WDW-3)

1. GENERAL PROVISIONS:

1.A. PERMITTEE AND PERMITTED FACILITY: The Director of the Oil Conservation Division (OCD) of the Energy, Minerals and Natural Resources Department issues Discharge Permit UICI-008-0 (Discharge Permit) to Navajo Refining Company (Permittee) to operate its Underground Injection Control (UIC) Class I non-hazardous waste injection well (Waste Disposal Well NO. 3 - API No. 30-015-26575) located 790 FSL and 2250 FWL UL: N Section 1, T 18 S, R 27 E, Eddy County, New Mexico at its Disposal Well Facility (Facility). The Facility is located approximately 10.5 miles S-SE o the intersection of I - 285 and Hwy. – 82 or approximately 2.75 miles S of the intersection of Hwy. – 82 and CR-225.

The Permittee is permitted to dispose of only non-hazardous (CRA exempt and RCRA non-hazardous, non-exempt) oil-field waste fluids into its Class I non-hazardous waste injection well. The Permittee may dispose of a maximum of 500 gpm of oil-field waste fluids. Ground water that may be affected by a spill, leak, or accidental discharge occurs at a depth of approximately 50 – 10 feet below ground surface and has a total dissolved solids (TDS) concentration of approximately 1,00 – 2,200 mg/L.

1.B. SCOPE OF PERMIT: OCD has been granted the authority by statute and by delegation from the Water Quality Control Commission (WQCC) to administer the Water Quality Act (Chapter 74, Article 6 NMSA 1978) as it applies to Class I non-hazardous waste injection wells (See Section 74-6-4, 74-6-5 NMSA 1978).

The Water Quality Act and the rules promulgated pursuant to the Act protect ground water and surface water of the State of New Mexico by providing that, unless otherwise allowed by 20.6.2 NMAC, no person shall cause or allow effluent or leachate to discharge so that it may move directly or indirectly into ground water unless such discharge is pursuant to an approved discharge plan (See 20.6.2.3104 NMAC, 20.6.2.3106 NMAC, and 20.6.2.5000 through 20.6.2.5299 NMAC).

This Discharge Permit for a Class I non-hazardous waste injection well is issued pursuant to the Water Quality Act and WQCC rules, 20.6.2 NMAC. This Discharge Permit does not authorize any treatment of, or on-site disposal of, any materials, product, by-product, or oil-field waste, other than non-hazardous oil-field waste fluids into its Class I non-hazardous waste injection well, including, but not limited to, the on-site disposal of lube oil, glycol, antifreeze, washdown water, and cooling tower blowdown water. The Permittee may not dispose of any industrial waste fluid that is not generated in the oil-field. The Ground Water Quality Bureau of the New Mexico Environment Department permits the management of all field industrial fluids that are not generated in the oil-field.

Pursuant to 20.6.2.5004A NMAC, the following underground injection activities are prohibited:

1. The injection of fluids into a motor vehicle waste disposal well is prohibited.

2. The injection of fluids into a large capacity cesspool is prohibited.

3. The injection of any hazardous or radioactive waste into a well is prohibited except as provided by 20.6.2.5004A(3) NMAC.

4. Class IV wells are prohibited, except for wells re-injecting treated ground water into the same formation from which it was drawn as part of a removal or remedial action.

5. Barrier wells, drainage wells, recharge wells, return flow wells, and motor vehicle waste disposal wells are prohibited.

This Discharge Permit does not convey any property rights of any sort nor any exclusive privilege, and does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state, federal, or local laws, rules or regulations.

The Permittee shall operate in accordance with the terms and conditions specified in this Discharge Permit to comply with the Water Quality Act and the rules issued pursuant to that Act, so that neither a hazard to public health nor undue risk to property will result (see 20.6.2.3109C NMAC); so that no discharge will cause or may cause any stream standard to be violated (see 20.6.2.3109H(2) NMAC); so that no discharge of any water contaminant will result in a hazard to public health (see 20.6.2.3109H(3) NMAC); so that the numerical standards specified in 20.6.2.3103 NMAC are not exceeded; and, so that the technical criteria and performance standards (see 20.6.2.5000 through 20.6.2.5299 NMAC) for Class I non-hazardous waste injection wells are met. Pursuant to 20.6.2.5003B NMAC, the Permittee shall comply with 20.6.2.1 through 20.6.2.5299 NMAC.

The Permittee shall not allow or cause water pollution, discharge, or release of any water contaminant that exceeds the Water Quality Control Commission (WQCC) standards specified at 20.6.2.3101 NMAC and 20.6.2.3103 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams). Pursuant to 20.6.2.5101A NMAC, the Permittee shall not inject non-hazardous waste fluids into ground water having 10,000 mg/l or less total dissolved solids (TDS).

The issuance of this permit does not relieve the Permittee from the responsibility of complying with the provisions of the Water Quality Act, any applicable regulations or water quality standards of the WQCC, or any applicable federal laws, regulations or standards (See Section 74-6-5 NMSA 1978).

1.C. DISCHARGE PERMIT RENEWAL: This Discharge Permit is a permit renewal that replaces the permit being renewed. Replacement of a prior permit does not relieve the Permittee of its responsibility to comply with the terms of that prior permit while that permit was in effect.

1.D. DEFINITIONS: Terms not specifically defined in this Discharge Permit shall have the same meanings as those in the Water Quality Act or the rules adopted pursuant to the Act, as the context requires.

1.E. FILING FEES AND PERMIT FEES: Pursuant to 20.6.2.3114 NMAC, every facility that submits a Discharge Permit application for initial approval or renewal shall pay the permit fees specified in Table 1 and the filing fee specified in Table 2 of 20.6.2.3114 NMAC. OCD has already received the required $100.00 filing fee. The final $4,500.00 Class I non-hazardous waste injection well signed permit with check made payable to the "Water Quality Management Fund" shall be submitted to the OC on or before the stipulated time period.

1.F. EFFECTIVE DATE, EXPIRATION, RENEWAL CONDITIONS, AND PENALTIES FOR OPERATING WITHOUT A DISCHARGE PERMIT: This Discharge Permit becomes effective 30 days from the date that the Permittee receives this discharge permit or until the permit is terminated or expires. This Discharge Permit will expire on **August 3, 2017.** The Permittee shall submit an application for renewal no later than 120 days before that expiration date, pursuant to 20.6.2.5101F NMAC. If a Permittee submits a renewal application at least 120 days before the Discharge Permit expires and is in compliance with the approved Discharge Permit, then the existing Discharge Permit will not expire until OCD has approved or disapproved the renewal application. A discharge permit continued under this provision remains fully effective and enforceable. Operating with an expired Discharge Permit may subject the Permittee to civil and/or criminal penalties (See Section 74-6-10.1 NMSA 1978 and Section 74-6-10.2 NMSA 1978).

1.G. MODIFICATIONS AND TERMINATIONS: The Permittee shall notify the OCD Director and the OCD's Environmental Bureau of any Facility expansion, any injection increase above the approved pressure limit or volume limit specified in Permit Condition 3.B.2 , or process modification that would result in any significant modification in the discharge of water contaminants (See 20.6.2.3107C NMAC). The OCD Director may require the Permittee to submit a Discharge Permit modification application pursuant to 20.6.2.3109E NMAC and may modify or terminate a Discharge Permit pursuant to Sections 74-6-5(M) through (N) NMSA 1978.

1. If data submitted pursuant to any monitoring requirements specified in this Discharge Permit or other information available to the OCD Director indicate that 20.6.2 NMAC is being or may be violated, then the OCD Director may require modification or, if it is determined by the OCD Director that the modification may not be adequate, may terminate this Discharge Permit for a Class I non-hazardous waste injection well that was approved pursuant to the requirements of this 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:

(a) Noncompliance by Permittee with any condition of this Discharge Permit; or,

(b) The Permittee's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or Permittee's misrepresentation of any relevant facts at any time; or,

(c) A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge

permit modification or termination (See Section 75-6-6 NMSA 1978; 20.6.2.5101I NMAC; and 20.6.2.3109E NMAC).

2. This Discharge Permit may also be modified or terminated for any of the following causes:

(a) Violation of any provisions of the Water Quality Act or any applicable regulations, standard of performance or water quality standards;

(b) Violation of any applicable state or federal effluent regulations or limitations; or

(c) Change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge (See Section 75-6-5M NMSA 1978).

1.H. TRANSFER OF CLASS I NON-HAZARDOUS WASTE INJECTION WELL DISCHARGE PERMIT:

1. The transfer provisions of 20.6.2.3111 NMAC do not apply to a discharge permit for a Class I non-hazardous waste injection well.

2. Pursuant to 20.6.2.5101H NMAC, the Permittee may request to transfer its Class I non-hazardous waste injection well discharge permit if:

(a) The OCD Director receives written notice 30 days prior to the transfer date; and,

(b) The OCD Director does not object prior to the proposed transfer date. OCD may require modifications to the discharge permit as a condition of transfer, and may require demonstration of adequate financial responsibility.

3. The written notice required in accordance with Permit Condition 1.H.2a shall:

(a) Have been signed by the Permittee and the succeeding Permittee, and shall include an acknowledgement that the succeeding Permittee shall be responsible for compliance with the Class I non-hazardous waste injection well discharge permit upon taking possession of the facility; and

(b) Set a specific date for transfer of the discharge permit responsibility, coverage and liability; and

(c) Include information relating to the succeeding Permittee's financial responsibility required by 20.6.2.5210B(17) NMAC.

1.I. COMPLIANCE AND ENFORCEMENT: If the Permittee violates or is violating a condition of this Discharge Permit, OCD may issue a compliance order that requires compliance

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immediately or within a specified time period, or assess a civil penalty, or both (See Section 74-6-10 NMSA 1978). The compliance order may also include a suspension or termination of this Discharge Permit. OCD may also commence a civil action in district court for appropriate relief, including injunctive relief (See Section 74-6-10(A)(2) NMSA 1978). The Permittee may be subject to criminal penalties for discharging a water contaminant without a discharge permit or in violation of a condition of a discharge permit; making any false material statement, representation, certification or omission of material fact in a renewal application, record, report, plan or other document filed, submitted or required to be maintained under the Water Quality Act; falsifying, tampering with or rendering inaccurate any monitoring device, method or record required to be maintained under the Water Quality Act; or failing to monitor, sample or report as required by a Discharge Permit issued pursuant to a state or federal law or regulation (See Section 74-6-10.2 NMSA 1978).

2. GENERAL FACILITY OPERATIONS:

2.A. QUARTERLY MONITORING REQUIREMENTS FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELL: Pursuant to 20.6.2.5207B, the Permittee shall provide analysis of the injected fluids in the annual report to yield data representative of fluid characteristics.

That permit authorizes the Permittee to accept only oil-field wastes that are exempt from RCRA Subtitle C regulations and that do not contain Naturally Occurring Radioactive Material regulated pursuant to 20.3.1.1403 (NORM) and non-hazardous, non-exempt oil-field wastes that do not contain NORM. The Permittee is authorized to accept non-hazardous, non-exempt oil-field wastes on a case-by-case basis only after a hazardous waste determination is made by the generator. The Permittee is authorized to accept non-hazardous, non-exempt oil-field wastes only if those wastes are accompanied by an approved form C-138 (Request for Approval to Accept Solid Waste) and a "Generator Certificate of Waste Status," signed by the generator. The OCD Permit requires the Permittee to determine by analyzing the non-hazardous, non-exempt fluids that the waste fluids are non-hazardous before disposal or injection of the waste fluid into its Class I non-hazardous waste injection well.

The Permittee shall analyze the injected fluids quarterly for the following characteristics:

- pH;
- Eh;
- Specific conductance;
- Specific gravity;
- Temperature; and,
- General ground water quality parameters (general chemistry/cations and anions, including: fluoride, calcium, potassium, magnesium, sodium bicarbonate, carbonate, chloride, sulfate, total dissolved solids, cation/anion balance, pH, and bromide using the methods specified in 40 CFR 136.3.
- Aromatic and halogenated volatile hydrocarbon scan by EPA Method 8260C GC/MS. Semi-volatile Organics GC/MS EPA Method 8270B including 1 and 2-methylnaphthalene.

- Heavy metals using the ICP scan (EPA Method 6010) and Arsenic and Mercury using atomic absorption (EPA Methods 7060 and 7470).
- EPA RCRA Characteristics for Ignitability, Corrosivity and Reactivity (40 CFR part 261 Subpart C Sections 261.21 – 261.23, July 1, 1992).

2.B. CONTINGENCY PLANS: The Permittee shall implement its proposed contingency plan(s) included in its Permit Renewal Application to cope with failure of a system(s) in the Discharge Permit.

2.C. CLOSURE: Prior to closure of the facility, the Permittee shall submit for OCD's approval, a closure plan including a completed form C-103 for plugging and abandonment of the disposal well. The Permittee shall plug and abandon its Class I non-hazardous waste injection well pursuant to 20.6.2.5209 NMAC and as specified in Permit Condition 2.D.

1. **Pre-Closure Notification:** Pursuant to 20.6.2.5005A NMAC, the Permittee shall submit a pre-closure notification to OCD's Environmental Bureau at least 30 days prior to the date that it proposes to close or to discontinue operation of its Class I non-hazardous waste injection well. Pursuant to 20.6.2.5005B NMAC, OCD's Environmental Bureau must approve all proposed well closure activities before the Permittee may implement its proposed closure plan.

2. **Required Information:** The Permittee shall provide OCD's Environmental Bureau with the following information:

- Name of facility;
- Address of facility;
- Name of Permittee;
- Address of Permittee;
- Contact person;
- Phone number;
- Number and type of well(s);
- Year of well construction;
- Well construction details;
- Type of discharge;
- Average flow (gallons per day);
- Proposed well closure activities (*e.g.,* sample fluids/sediment, appropriate disposal of remaining fluids/sediments, remove well and any contaminated soil, clean out well, install permanent plug, conversion to other type of well, ground water and vadose zone investigation; other);
- Proposed date of well closure;
- Name of Preparer; and,
- Date.

2.D. PLUGGING AND ABANDONMENT PLAN: Pursuant to 20.6.2.5209A NMAC, when the Permittee proposes to plug and abandon its Class I non-hazardous waste injection well, it shall submit to OCD a plugging and abandonment plan that meets the requirements of

20.6.2.3109C NMAC, 20.6.2.5101C NMAC, and 20.6.2.5005 NMAC for protection of ground water. If requested by OCD, Permittee shall submit for approval prior to closure, a revised or updated plugging and abandonment plan. The obligation to implement the plugging and abandonment plan as well as the requirements of the plan survives the termination or expiration of this Discharge Permit. The Permittee shall comply with 20.6.2.5209 NMAC.

2.E. RECORD KEEPING: The Permittee shall maintain records of all inspections required by this Discharge Permit at its Facility office for a minimum of five years and shall make those records available for inspection by OCD.

2.F. RELEASE REPORTING: The Permittee shall comply with the following permit conditions, pursuant to 20.6.2.1203 NMAC, if it determines that a release of oil or other water contaminant, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or the use of property, has occurred. The Permittee shall report unauthorized releases of water contaminants in accordance with any additional commitments made in its approved Contingency Plan. If the Permittee determines that any constituent exceeds the standards specified at 20.6.2.3103 NMAC, then it shall report a release to OCD's Environmental Bureau.

1. Oral Notification: As soon as possible after learning of such a discharge, but in no event more than twenty-four (24) hours thereafter, the Permittee shall notify OCD's Environmental Bureau. The Permittee shall provide the following:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility;
- The name and location of the facility;
- The date, time, location, and duration of the discharge;
- The source and cause of discharge;
- A description of the discharge, including its chemical composition;
- The estimated volume of the discharge; and,
- Any corrective or abatement actions taken to mitigate immediate damage from the discharge.

2. Written Notification: Within one week after the Permittee has discovered a discharge, the Permittee shall send written notification (may use a form C-141 with attachments) to OCD's Environmental Bureau verifying the prior oral notification as to each of the foregoing items and providing any appropriate additions or corrections to the information contained in the prior oral notification.

The Permittee shall provide subsequent written reports as required by OCD's Environmental Bureau.

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2.G. OTHER REQUIREMENTS:

1. **Inspection and Entry:** Pursuant to Section 74-6-9 NMSA 1978 and 20.6.2.3107A NMAC, the Permittee shall allow any authorized representative of the OCD Director, to:

- Upon the presentation of proper credentials, enter the premises at reasonable times;
- Inspect and copy records required by this Discharge Permit;
- Inspect any treatment works, monitoring, and analytical equipment;
- Sample any effluent before or after discharge; and,
- Use the Permittee's monitoring systems and wells in order to collect samples.

2. **Advance Notice:** The Permittee shall provide OCD's Environmental Bureau and Artesia District Office with at least five (5) working days advance notice of any environmental sampling to be performed pursuant to this Discharge Permit, or any well plugging, abandonment or decommissioning of any equipment associated with its Class I non-hazardous waste injection well.

3. **Environmental Monitoring:** The Permittee shall ensure that any environmental sampling and analytical laboratory data collected meets the standards specified in 20.6.2.3107B NMAC. The Permittee shall ensure that all environmental samples are analyzed by an accredited "National Environmental Laboratory Accreditation Conference" (NELAC) Laboratory. The Permittee shall submit data summary tables, all raw analytical data, laboratory Quality Assurance/Quality Control (QA/QC), and Data Quality Objectives (DQOs).

2.H. BONDING OR FINANCIAL ASSURANCE: Pursuant to 20.6.2.5210B(17) NMAC, the Permittee shall maintain at a minimum, a single well plugging bond in the amount that it shall determine, in accordance with Permit Condition 5.B, to cover potential costs associated with plugging and abandonment of the Class I non-hazardous waste injection well, surface restoration, and post-operational monitoring, as may be needed. OCD may require additional financial assurance to ensure adequate funding is available to plug and abandon the well and/or for any required corrective actions.

Methods by which the Permittee shall demonstrate the ability to undertake these measures shall include submission of a surety bond or other adequate assurances, such as financial statements or other materials acceptable to the OCD Director, such as: (1) a surety bond; (2) a trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary; (3) a non-renewable letter of credit made out to the State of New Mexico; (4) liability insurance specifically covering the contingencies listed in this paragraph; or (5) a performance bond, generally in conjunction with another type of financial assurance. If an adequate bond is posted by the Permittee to a federal or another state agency, and this bond covers all of the measures specified above, the OCD Director shall consider this bond as satisfying the bonding requirements of Sections 20.6.2.5000 through 20.6.2.5299 NMAC wholly or in part, depending upon the extent to which such bond is adequate to ensure that the Permittee will fully perform the measures required herein above.

2.I. ANNUAL REPORT: The Permittee shall submit its annual report pursuant to 20.6.2.3107 NMAC to OCD's Environmental Bureau by **June 1st** of the following year. The annual report shall include the following:

- Cover sheet marked as "Annual Class I Non-Hazardous Waste Injection Well , Name of Permittee, Discharge Permit Number, API number of well, date of report, and person submitting report;
- Summary of Class I non-hazardous waste injection well operations for the year including a description and reason for any remedial or major work on the well with a copy of form C-103(s);
- Monthly injection/disposal volume, including the cumulative total should be carried over to each year;
- Maximum and average injection pressures;
- A copy of the quarterly chemical analyses shall be included with data summary with all QA/QC and DQO information;
- Copy of any mechanical integrity test chart(s), including the type of test, *i.e.,* duration, gauge pressure, *etc.;*
- Copy falloff test charts;
- Summary tables listing environmental analytical laboratory data for quarterly waste fluid samples. Any 20.6.2.3103 NMAC constituent(s) found to exceed a water quality standard shall be highlighted and noted in the annual report. The Permittee shall include copies of the most recent year's environmental analytical laboratory data sheets with QA/QC summary sheet information in conformance with the National Environmental Laboratory Accreditation Conference (NELAC) and EPA Standards;
- Brief explanation describing deviations from the normal injection operations;
- Results of any leaks and spill reports (include any C-141 reports);
- An Area of Review (AOR) annual update summary;
- A summary with interpretation of MITs, Falloff Tests, *etc.*, with conclusion(s) and recommendation(s);
- Records of the expansion tank monitoring pressure, fluid removals and/or additions indicating the well MIT condition.
- A summary of all major facility activities or events, which occurred during the year with any conclusions and recommendations;
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken;
- A summary of any new discoveries of ground water contamination with all leaks, spills and releases and corrective actions taken; and
- The Permittee shall file its Annual Report in an electronic format with a hard copy submittal to OCD's Environmental Bureau.

3. CLASS I NON-HAZARDOUS WASTE INJECTION WELL OPERATIONS:

3.A. OPERATING REQUIREMENTS: The Permittee shall comply with the operating requirements specified in 20.6.2.5206A NMAC and 20.6.2.5206B NMAC to ensure that:

1. The maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone, or cause the movement of injection or formation fluids into ground water containing 10,000 mg/l or less TDS except for fluid movement approved pursuant to 20.6.2.5103 NMAC.

2. Injection between the outermost casing and the well bore is prohibited in a zone other than the authorized injection zone. If the Permittee determines that its Class I non-hazardous waste injection well is discharging or suspects that it is discharging fluids into a zone or zones other than the permitted injection zone specified in Permit Condition 3.B.1., then the Permittee shall within 24 hours notify OCD's Environmental Bureau and Artesia District Office of the circumstances and action(s) taken. The Permittee shall cease operations until proper repairs are made and it has received approval from OCD to re-start injection operations.

3. Except during well stimulation, the maximum injection pressure shall not initiate new fractures or propagate existing fractures in the injection zone;

4. The annulus between the tubing and the long string of casing shall be filled with a fluid approved by the OCD Director and a pressure, also approved by the OCD Director shall be maintained on the annulus.

3.B. INJECTION OPERATIONS:

1. **Injection Formation, Interval, and Wastewater:** The Permittee shall inject only non-hazardous (RCRA exempt and RCRA non-hazardous, non-exempt) oil-field waste fluid into the Lower Wolfcamp, Cisco and Canyon Formations from 7,660 feet to 8,620 feet in its Class I non-hazardous waste injection well. The surface casing is set at 400 feet; first intermediate casing is set at 2,604 feet; second intermediate casing or production casing is set at 9,450 feet; tubing is set at approximately 7,568 feet; and packer is set at 7,575 feet. A cement plug is set at 9,022 feet within the production casing, which isolates the injection well from a previous deeper completed production liner set at 10,119 feet. The Permittee shall ensure that the injected waste fluid enters perorations only within the above specified injection interval and is no permitted to escape through the cement plug and/or to other formations or onto the surface.

2. **Well Injection Pressure Limits and Injection Flow Rate:** The Permittee shall ensure that the maximum wellhead or surface injection pressure on its Class I non-hazardous waste injection well shall not exceed 1,530 psig and that the injection flow rate shall not exceed 500 gpm.

3. **Pressure Limiting Device:** The Permittee shall equip and operate its Class I non-hazardous waste injection well or system with a pressure limiting device, or equivalent (i.e., Murphy switch), in working condition, which shall, at all times, limit surface injection pressure to the maximum allowable pressure for its Class I non-hazardous waste injection well.

The Permittee shall monitor the pressure-limiting device daily and shall report all pressure exceedances within 24 hours of detecting an exceedance to OCD's Environmental Bureau. The Permittee shall take all steps necessary to ensure that the injected waste fluids enter only the

proposed injection interval and is not permitted to escape to other formations or onto the ground surface. The Permittee shall report to OCD's Environmental Bureau within 24 hours of discovery any indication that new fractures or existing fractures have been propagated, or that damage to the well, the injection zone, or formation has occurred.

OCD may authorize a proposed increase in surface injection pressure if the Permittee performs a valid Step-Rate Test (SRT), which demonstrates that the proposed injection pressure is below the injection zone fracture pressure with an acceptable factor of safety. If approvable, the Permittee must obtain a modification to this Discharge Permit pursuant to 20.6.2.3109 NMAC.

3.C. CONTINUOUS MONITORING DEVICES: The Permittee shall use continuous monitoring devices to provide a record of injection pressure, flow rate, flow volume, and pressure on the annulus between the tubing and the long string of casing.

3.D. MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS:

1. Pursuant to 20.6.2.5204 NMAC, the Permittee shall conduct a mechanical integrity test (MIT) for its Class I non-hazardous waste injection well at least once every five years or more frequently as the OCD Director may require for good cause during the life of the well. The Permittee shall submit an OCD C-103 form for signature approval of specified MIT by the OCD Environmental Bureau with copy to the OCD Artesia Office; and after any well repairs are made, submit 30-days of corrective action(s) follow-up sundry form documentation of corrective action(s). The Permittee may seek MIT guidance from the OCD in advance of Sundry form submittals to facilitate approval of MIT field method(s). The Permittee shall notify OCD's Environmental Bureau 5 days prior to conducting any MIT to allow OCD the opportunity to witness the MIT.

An MIT shall also be conducted after well workovers, i.e., when tubing is pulled and/or after packer reseating. The Permittee shall conduct a casing-tubing annulus MIT from the surface to the approved injection depth to assess casing and tubing integrity. The MIT shall consist of a 30-minute test at a minimum pressure of 300 psig measured at the surface.

A Class I non-hazardous waste injection well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which exceeds OCD Underground Injection Control Program Mechanical Integrity Test (MIT) "Pass/Fail" criteria.

2. The following criteria will determine if the Class I non-hazardous waste injection well has passed the MIT:

a. **Passes** if zero bleed-off during the test;

b. **Passes** if recorded well pressure fall-off curve shows end point stabilization or equilibrium within ± 10% of the start pressure before end of test, when approved by an OCD inspector;

c. **Fails** if any final test pressure is greater than ± 10% of starting pressure fall-off curve does not stabilize or equilibrate within ± 10% of start pressure before the end of test. The

Permittee shall investigate for leaks and demonstrate the mechanical integrity of the well by ensuring that there are no leaks in the tubing, casing or packer, and injected or produced fluids are confined within the well piping and injection zone(s). The Permittee shall not resume injection operations until approved by OCD.

d. When the MIT is not witnessed by OCD and fails, the Permittee shall notify OCD within 24 hours of the failure of the MIT.

3. Pursuant to 20.6.2.5204C NMAC, the OCD Director may consider the use by the Permittee of equivalent alternative test methods to determine mechanical integrity. The Permittee shall submit information on the proposed test and all technical data supporting its use. The OCD Director may approve the Permittee's request if it will reliably demonstrate the mechanical integrity of the well for which its use is proposed.

4. Pursuant to 20.6.2.5204D NMAC, when conducting and evaluating the MIT(s), the Permittee shall apply methods and standards generally accepted in the oil and gas industry. When the Permittee reports the results of all MIT(s) to the OCD Director, it shall include a description of the test(s), the method(s) used, and the test results.

5. The Permittee shall conduct a Bradenhead test at least annually and each time that it conducts a MIT.

3.E. FALLOFF TEST: The Permittee shall conduct a Falloff Test (FOT) to monitor the injection zone formation characteristics and pressure buildup over time in the injection zone at least every three years. The Permittee shall request FOT approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office.

The Permittee shall run a FOT to determine what changes have occurred in the injection zone over time. The Permittee shall submit the results of its Fall-Off Test to OCD's Environmental Bureau and Artesia District Office within 30 days of completion. The Permittee shall implement its OCD approved FOT Plan when conducting a FOT.

3.F. WELL WORKOVER OPERATIONS: Pursuant to 20.6.2.5205A(5) NMAC, the Permittee shall provide notice to and shall obtain approval from OCD's Environmental Bureau prior to commencement of any remedial work or any other workover operations to allow OCD the opportunity to witness the operation. The Permittee shall request approval using form C-103 (Sundry Notices and Reports on Wells) with copies sent to OCD's Environmental Bureau and Artesia District Office.

3.G. EXTERNAL EXPANSION TANK: The Permittee shall equip its Class I non-hazardous waste injection well with an external expansion tank (tank) system under constant 100 psig pressure connected to the casing-annulus. The Permittee shall fill the external expansion tank half-full (250 gallon expansion tank) with an OCD-approved liquid to establish an equilibrium volume and liquid level. The Permittee shall monitor the liquid levels in the external expansion tank at least weekly and shall record all additions or removals of liquids into or out of the external expansion tank. The Permittee shall record any loss or gain of fluids in the external

expansion tank, and if significant, report the loss or gain to OCD's Environmental Bureau. The Permittee shall record the weekly expansion tank volume fluid volumes readings and the fluid volume additions or removals from the expansion tank on a quarterly basis or in the annual report. Any natural loss of fluid above 5 bbl. per month requires notification to the OCD within 5 days after having knowledge of loss. Any gain of packer fluid requires notification similar to previous sentence above. Any notifications with agency verbal approvals must be followed by submittal of OCD C-103 form with notice of intent for signature approval of specified corrective action(s) by the OCD; and after any well repairs are made, submit 30-days of corrective action(s) follow-up Sundry Form documentation of corrective action(s) to the OCD Environmental Bureau.

3.H. INJECTION RECORD VOLUMES AND PRESSURES: The Permittee shall submit quarterly reports of its injection operations and well workovers. The Permittee shall record the minimum, maximum, average flow waste injection volumes (including total volumes) and annular pressures of the injected waste fluids on a monthly basis, and shall submit the data to OCD on a quarterly basis or in the annual report. The Permittee shall fill the casing-tubing annulus with an OCD-approved liquid and install a Murphy pressure switch or equivalent, as described in the Permittee's permit renewal application, in order to detect leakage in the casing, tubing, or packer.

3.I. AREA OF REVIEW (AOR): The Permittee shall report within 72 hours of discovery any new wells, conduits, or any other device that penetrates or may penetrate the injection zone within a 1-mile radius from its Class I non-hazardous waste injection well.

4. CLASS V WELLS: Pursuant to 20.6.2.5002B NMAC, leach fields and other waste fluids disposal systems that inject non-hazardous fluid into or above an underground source of drinking water are UIC Class V injection wells. This Discharge Permit does not authorize the use of a Class V injection well for the disposal of industrial waste. Pursuant to 20.6.2.5005 NMAC, the Permittee shall close any Class V industrial waste injection well that injects non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes (*e.g.*, septic systems, leach fields, dry wells, *etc.*) within 90 calendar days of the issuance of this Discharge Permit. The Permittee shall document the closure of any Class V wells used for the disposal of non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes other than contaminated ground water in its Annual Report. Other Class V wells, including wells used only for the injection of domestic wastes, shall be permitted by the New Mexico Environment Department.

5. SCHEDULE OF COMPLIANCE:

5.A. ANNUAL REPORT: The Permittee shall submit its annual report to OCD by June 1st of each year.

5.B. BONDING OR FINANCIAL ASSURANCE: The Permittee shall submit an estimate of the minimum cost to properly close, plug and abandon its Class I non-hazardous waste injection well, conduct ground water restoration if applicable, and any post-operational monitoring as may be needed within 90 days of permit issuance (See 20.6.2.5210B(17) NMAC).

The Permittee's cost estimate shall be based on third person estimates. After review, OCD will require the Permittee to submit a single well plugging bond based on the third person cost estimate.

DRAFT

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Wednesday, August 08, 2012 8:05 AM
To: 'Schultz, Michele'; Holder, Mike
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Micki:

The documents in English and Spanish look good.

Yes, when OCD deems your application to be "administratively complete", this marks the start of the public notice process for Navajo Refining Company and the OCD.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Schultz, Michele [mailto:Michele.Schultz@hollyfrontier.com]
Sent: Wednesday, August 08, 2012 7:56 AM
To: Holder, Mike; Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – I have attached the final version of the Public Notice as agreed upon previously, plus its Spanish translation, to complete our application submittal. I understand that I should wait for a written notice from your department that our application is administratively complete before beginning the actual public notice process. I will begin once I receive your notice.

Thanks!

Micki Schultz, P.E., CHMM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)
micki.schultz@hollyfrontier.com

From: Holder, Mike
Sent: Tuesday, August 07, 2012 7:03 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Holder, Mike; Schultz, Michele
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Thanks Carl – we have the flow chart and I have Subsurface preparing the translation so we can get everything to you.

Thanks!
Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, August 07, 2012 7:00 AM
To: Holder, Mike
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Good morning. I have submitted the draft permit to Glenn von Gonten (Acting Bureau Chief) who is coordinating with Sonny Swazo (Asst. to Gen. Counsel) who are responsible for the recent major changes to the Discharge Permits for the OCD.

Once they have completed their review and modifications to my draft permit, they will direct me to initiate the "Administrative Complete" process. Let me know if you need the flow-charts for the public notice process (20.6.2.3108 NMAC), once the OCD officially deems your application to be administratively complete.

Please contact me if you have questions. Thank you for your cooperation.

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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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From: Holder, Mike [mailto:Mike.Holder@hollyfrontier.com]
Sent: Monday, August 06, 2012 7:12 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – we've accepted all the changes and are having the translation done. Once complete we'll resubmit. Thanks for all your help.

Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, August 02, 2012 9:03 AM
To: Holder, Mike
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Please find my final comments for your consideration.

Let me know if you accept, and submit the final draft (English and Spanish) to me for the OCD "Admin. Complete" review records.

This may mark the start of the start of the "Admin. Complete" review process. I have submitted a draft permit and associated documents to Glenn in preparation of the "Admin. Complete" process.

Please contact me if you have questions. Thank you.

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From: Holder, Mike [mailto:Mike.Holder@hollyfrontier.com]
Sent: Wednesday, July 25, 2012 5:05 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – see attached for revisions. I added a single sentence paragraph to provide additional detail on wastewater treatment plant influents and revised the attached figure to show that both process water & storm water flow to the WWTP. I double checked and the storm water (rain) that falls on the process units is captured in the process sewers and routed to the WWTP for treatment. We do have the 2nd RO unit installed and it is parallel to the first unit. They use the same discharge point (i.e., no new discharge point). Thanks for your help and look forward to hearing form you Tuesday.

Thanks,
Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, July 25, 2012 2:09 PM
To: Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

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Please find attached suggested language in Navajo Refining Company's (NRC) Public Notice.

I am also attaching NRC's 2007 Public Notice because it reads well; however, NRC's most current draft does not conform very much to it. So, I have added some language. I struggled with inserting the 20.6.2.3108(F)(3) NMAC provision into the text.

Please contact me to discuss. Thank you.

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From: Holder, Mike [mailto:Mike.Holder@hollyfrontier.com]
Sent: Wednesday, July 25, 2012 12:51 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – let me know if this clears it up. I revised to make consistent w/OCD's and previous PNs.

Thanks,
Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Wednesday, July 25, 2012 9:50 AM
To: Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Please find attached my final draft public notice.

Navajo's draft is a little confusing on the depth interval of injection. Consequently, I have attached Navajo's 2007 public notice to see if Navajo would like to stick with this type of format, text, language and the interval depth, etc. that is consistent with the OCD and the application well construction diagram?

Please contact me if you have questions.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505

Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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From: Holder, Mike [mailto:Mike.Holder@hollyfrontier.com]
Sent: Wednesday, July 25, 2012 6:51 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike; Jerry Taylor; Schultz, Michele
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – please see attached revised public notice per our discussion and let us know if you have any additional thoughts. Once we have your concurrence we'll provide the Spanish version. I've also attached the backup for the TDS levels presented in the notice (from the 2003 application).

Thanks for your help,
Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, July 24, 2012 8:18 AM
To: Schultz, Michele
Cc: Holder, Mike; Lackey, Johnny; VonGonten, Glenn, EMNRD
Subject: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Micki:

Good morning.

The OCD completed its preliminary review for "Administrative Completeness" of the above subject application last week.

The OCD is focused on the Appendix "O" Public Notice (PN) in the application. The public notice does not appear to satisfy all of the applicable conditions of 20.6.2.3108 NMAC (see attachments) and new information changes appear to be needed from past PNs based on more comprehensive information submitted in the application.

Please find attached the OCD flow charts for PN Renewal Applications and the OCD's draft PN with information on water quality, depth to the ground water, etc. that appears to be missing and/or not reflected in the public notice. Also, the Spanish version is absent. New information has changed (i.e., the injection interval, depth to GW, water quality updated info., etc.) as reflected in the OCD's draft PN.

Please contact me to discuss on or before 5 working days and resubmit your draft public notice to the OCD for approval or comment to ensure the information is accurate when disseminated to the public. This will need to be satisfied before OCD may deem the application to be administratively complete.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490

E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you
received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

PUBLIC NOTICE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to renew the New Mexico Oil Conservation Division (OCD) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant into a Class I (nonhazardous) injection well WDW-3 (API# 30-015-26575). The WDW-3 is located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The WDW-3 is located approximately 14 miles E-SE of the intersection of I-285 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225. The Artesia Refinery is located at 501 E. Main Street, Artesia, New Mexico.

Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery.

Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations within the injection interval from 7,660 to 8,620 feet (log depth). The injection rate into WDW-3 will not exceed 500 gpm and the maximum allowable surface injection pressure of 1530 psig. The injected refinery waste water quality is approximately 3,400 mg/L total dissolved solids (TDS). Formation fluids within the permitted injection interval exceed 10,000 mg/L TDS. Groundwater is first encountered in the area of WDW-3 at a depth range of approximately 50 to 150 feet below land surface. The groundwater quality ranges from about 1,500 to 2,200 mg/L TDS.

Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the New Mexico Oil Conservation Division.

Comments and inquiries on regulations should be directed to:

Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Telephone: (505) 476-3440

When corresponding, please reference the name of the applicant and the well name.

AVISO PUBLICO
ESTADO DE NUEVO MEXICO
DEPARTMENTO DE ENERGIA, MINERALES Y RECURSOS NATURALES
DIVISION DE CONSERVACION DE PETROLEO

Por medio de la presente, Navajo Company anuncia que de conformidad con los requisitos de las regulaciones de la Comisión de Control de Calidad del Agua de Nuevo México 20.6.2.3108.F NMAC, a la División de Conservación del Petróleo de Nuevo México (NMOCD) . Departamento del Medio Ambiente, un permiso de descarga para la inyección aguas residuales de la planta Artesia de Navajo Refining Company, en el pozo de inyección de denominación WDW-3 (API#30-015-26575). El pozo WDW-3 esta localizado en SE/4, SW/4 de Sección 1, Municipio 18 sur, Condado Eddy , Nuevo México. El WDW-3 está localizado aproximadamente a 14 millas E-SE de la intersección de I-285 y Hwy 82 (Refinería Artesia), o aproximadamente 2.75 millas S de Hwy. 82 y CR-225. La Refinería Artesia se encuentra ubicada en 501 E. Main Street, Artesia, Nuevo México.

La generación de aguas residuals de la Refinería Artesia es el resultado del agua que se encuentran en al abastecimiento de crudo, el agua que se usa para el enfriamiento y calentamiento, el agua que se usa para retirar las sales del abastecimiento de crudo, y para purgar la caldera.

Las aguas residuals de WDW-3 se injectarán hacia las formaciones de Lower Wolfcamp, Cisco Y Canyon, ubicadas entre 7,660 y 8,620 pies (produndidad de registro). La tasa de inyección de WDW-3 no excederá los 500 gpm a una presión de inyección que no excederá los 1530 psig. Estas aguas residuals tendrán un contendido de total de sólidos disueltos (TDS) de 3,400 partes por millón. En el área en donde se encuentra el pozo (WDW-3), el agua subterránea se encuentra a una profundidad de 50 a 150 pies con un TDS de 1,500 a 2,200 partes por millón.

Personas interesadas en obtener mayores informes, presentar sus comentarios o solicitar que se les incluya en las listas de direcciones de una planta en especial para futuros avisos pueden ponerse en contacto con el Jefe del Departamento del Medio Ambiente de la División de Conservación de Petróleo de Nuevo México.

Por favor enviar comentarios y preguntas a:
Director
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
Teléfono: (505) 476-3440

Por favor incluir como referencia el nombre del applicante y denominación del pozo.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 07, 2012 7:00 AM
To: 'Holder, Mike'
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Mike:

Good morning. I have submitted the draft permit to Glenn von Gonten (Acting Bureau Chief) who is coordinating with Sonny Swazo (Asst. to Gen. Counsel) who are responsible for the recent major changes to the Discharge Permits for the OCD.

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Carl J. Chavez, CHMM
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Oil Conservation Division, Environmental Bureau
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E-mail: CarlJ.Chavez@State.NM.US
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Sent: Monday, August 06, 2012 7:12 AM
To: Chavez, Carl J, EMNRD
Cc: VonGonten, Glenn, EMNRD; Holder, Mike
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Carl – we've accepted all the changes and are having the translation done. Once complete we'll resubmit. Thanks for all your help.

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Sent: Thursday, August 02, 2012 9:03 AM
To: Holder, Mike
Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

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From: Holder, Mike [mailto:Mike.Holder@hollyfrontier.com]
Sent: Wednesday, July 25, 2012 5:05 PM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – see attached for revisions. I added a single sentence paragraph to provide additional detail on wastewater treatment plant influents and revised the attached figure to show that both process water & storm water flow to the WWTP. I double checked and the storm water (rain) that falls on the process units is captured in the process sewers and routed to the WWTP for treatment. We do have the 2nd RO unit installed and it is parallel to the first unit. They use the same discharge point (i.e., no new discharge point). Thanks for your help and look forward to hearing form you Tuesday.

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Cc: VonGonten, Glenn, EMNRD
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)
Attachments: UICI-8-0 Navajo PN CJC 8-2-2012.doc

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1220 South St. Francis Drive, Santa Fe, New Mexico 87505
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Mike:

Please find attached my final draft public notice.

Navajo's draft is a little confusing on the depth interval of injection. Consequently, I have attached Navajo's 2007 public notice to see if Navajo would like to stick with this type of format, text, language and the interval depth, etc. that is consistent with the OCD and the application well construction diagram?

Please contact me if you have questions.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
"Why Not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward With the Rest of the Nation?" To see how, please go to: "Pollution Prevention & Waste Minimization" at http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

---

From: Holder, Mike [mailto:Mike.Holder@hollyfrontier.com]
Sent: Wednesday, July 25, 2012 6:51 AM
To: Chavez, Carl J, EMNRD
Cc: Holder, Mike; Jerry Taylor; Schultz, Michele
Subject: RE: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Carl – please see attached revised public notice per our discussion and let us know if you have any additional thoughts. Once we have your concurrence we'll provide the Spanish version. I've also attached the backup for the TDS levels presented in the notice (from the 2003 application).

Thanks for your help,
Mike

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, July 24, 2012 8:18 AM
To: Schultz, Michele
Cc: Holder, Mike; Lackey, Johnny; VonGonten, Glenn, EMNRD
Subject: Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)

Micki:

Good morning.

The OCD completed its preliminary review for "Administrative Completeness" of the above subject application last week.

The OCD is focused on the Appendix "O" Public Notice (PN) in the application. The public notice does not appear to satisfy all of the applicable conditions of 20.6.2.3108 NMAC (see attachments) and new information changes appear to be needed from past PNs based on more comprehensive information submitted in the application.

Please find attached the OCD flow charts for PN Renewal Applications and the OCD's draft PN with information on water quality, depth to the ground water, etc. that appears to be missing and/or not reflected in the public notice. Also, the Spanish version is absent. New information has changed (i.e., the injection interval, depth to GW, water quality updated info., etc.) as reflected in the OCD's draft PN.

Please contact me to discuss on or before 5 working days and resubmit your draft public notice to the OCD for approval or comment to ensure the information is accurate when disseminated to the public. This will need to be satisfied before OCD may deem the application to be administratively complete.

Thank you.

Carl J. Chavez, CHMM

New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

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CONFIDENTIALITY NOTICE: This e-mail, and any attachments, may contain information that is privileged, proprietary and/or confidential. If you
received this message in error, please advise the sender immediately by reply e-mail and do not retain any paper or electronic copies of this message or any
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PUBLIC NOTICE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

In accordance with 20.6.2.3108.F NMAC, Navajo Refining Company, L.L.C. hereby gives public notice of its application to renew ~~a~~ the New Mexico Oil Conservation Division (OCD) discharge permit to inject treated non-hazardous waste water effluent from the refinery's on-site wastewater treatment plant ~~refinery oilfield waste water from the Artesia Refinery reverse osmosis unit, boiler feed, and process units (Per 20.6.2.3108(F)(3)) ground water discharge permit for~~ into a Class I (nonhazardous) injection well WDW-3 (API# 30-015-26575). The ~~well~~ WDW-3 is located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The ~~well~~ WDW-3 ~~location~~ is located approximately ~~10.5~~14 miles ~~S~~E-SE of the intersection of I-285 and Hwy 82 (Artesia Refinery) or approximately 2.75 miles S of Hwy 82 and CR-225 ~~or approximately 14 miles southeast of the Navajo Refining Company, LLC petroleum refining facility~~. The ~~discharge results from the operation of Navajo's~~ Artesia Refinery is located at 501 E. Main Street, Artesia, New Mexico.

Waste water from the refinery is generated from the treatment of waters from the processing of crude oil, including the removal of water entrained in crude oil, the washing of crude oil to remove salts and sediment, water used for heating and cooling during refining, boiler blowdown, and stormwater collected from process portions of the refinery.

Underground injection at WDW-3 occurs within the Lower Wolfcamp, Cisco and Canyon Formations ~~at an~~within the injection interval from~~of~~ 7,660 to 8,620 feet (log depth). The injection rate into WDW-3 will not exceed 500 gpm ~~at~~ and ~~a~~ the maximum allowable surface injection pressure of 1530 psig.

The injected ~~fluid~~ refinery ~~oil field~~ waste water quality is ~~contains~~ approximately 3,400 mg/L total dissolved solids (TDS). ~~The TDS concentration of the naturally occurring formation~~ Formation fluids within the permitted injection interval exceeds 10,000 ~~milligrams per liter~~mg/L TDS. Groundwater is first encountered in the area of WDW-3 at a depth range of approximately ~~75~~ 50 to 150 feet below land surface. The groundwater quality ~~exhibits a TDS concentration~~ ranges ~~of~~ from about 1,500 to 2,200 mg/L TDS.

~~The Oil Conservation Division will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices. Interested parties may obtain information, submit comments, and request to be placed on a facility-specific mailing list by contacting the OCD at the following address:~~

Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the New Mexico Oil Conservation Division.

Comments and inquiries on regulations should be directed to:

~~State of New Mexico~~Director
~~Energy, Minerals and Natural Resources Department~~
~~Oil Conservation Division~~New Mexico Oil Conservation Division
~~Environmental Bureau~~
1220 South St. Francis Drive
Santa Fe, New~~M~~ Mexico 87505
Telephone: (505) 476-3440

When corresponding, please reference the name of the applicant and the well name.

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Tuesday, July 24, 2012 8:19 AM
To:	Schultz, Michele (Michele.Schultz@hollyfrontier.com)
Cc:	Holder, Mike (Mike.Holder@hollyfrontier.com); Lackey, Johnny (Johnny.Lackey@hollyfrontier.com); VonGonten, Glenn, EMNRD
Subject:	Navajo Refining Company DP Application WDW-3 Class I (NH) Injection Well Public Notice Communique (20.6.2.3108 NMAC)
Attachments:	UICI-8-0 WDW-3 DRAFT PN 8-3-2012.doc; Renewal WQCC Notice Regs.pdf; PN Flow Chart.20.6.2renewal.pdf

Micki:

Good morning.

The OCD completed its preliminary review for "Administrative Completeness" of the above subject application last week.

The OCD is focused on the Appendix "O" Public Notice (PN) in the application. The public notice does not appear to satisfy all of the applicable conditions of 20.6.2.3108 NMAC (see attachments) and new information changes appear to be needed from past PNs based on more comprehensive information submitted in the application.

Please find attached the OCD flow charts for PN Renewal Applications and the OCD's draft PN with information on water quality, depth to the ground water, etc. that appears to be missing and/or not reflected in the public notice. Also, the Spanish version is absent. New information has changed (i.e., the injection interval, depth to GW, water quality updated info., etc.) as reflected in the OCD's draft PN.

Please contact me to discuss on or before 5 working days and resubmit your draft public notice to the OCD for approval or comment to ensure the information is accurate when disseminated to the public. This will need to be satisfied before OCD may deem the application to be administratively complete.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to Water Quality Control Commission Regulations (20.6.2.3106 NMAC) the following discharge permit application(s) has been submitted to the Director of the New Mexico Oil Conservation Division (OCD), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, and Telephone (505) 476-3440:

(UICI-008-0) Navajo Refining Company, L.L.C. Michael G. McKee, Vice President and Refinery Manager, 501 East Main Street, P.O. Box Drawer 159, Artesia New Mexico 88211-0159, has submitted an application for a Class I Injection Well Discharge Permit for injection well WDW-3 (API# 30-015-26575) located in the SE/4, SW/4 of Section 1, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico. The Facility is located approximately 10.5 miles S-SE of the intersection of I-285 and Hwy. - 82 or approximately 2.75 miles S of Hwy.-82 and CR-225. Oil field exempt and non-exempt, non-hazardous industrial waste, will be transported about 12 miles underground from the Navajo-Artesia Refinery located at 501 E. Main Street, Artesia, NM via a 6 inch dia. pipeline to WDW-3 for disposal into the Lower Wolfcamp, Cisco, and Canyon Formations in the injection interval from 7660 to 8620 feet (log depth). The injection rate will not exceed 500 gpm at a maximum injection pressure of 1530 psig. The injection fluid contains approximately 3,400 ppm TDS. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 50 to 150 feet below the ground surface, with a total dissolved solids concentration of about 1500 to 2200 mg/L. The discharge plan addresses well construction, operation, monitoring of the well, associated surface facilities, and provides a contingency plan in the event of accidental spills, leaks, and other accidental discharges in order to protect fresh water.

Any interested person may obtain further information from the OCD and may submit written comments to the Division Director at the address given above. The application and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the OCD's web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact OCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that OCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on available information, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the application along with information submitted at the hearing.

Para obtener más información sobre esta solicitud en espan□ol, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio´n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461).

DONE at Santa Fe, New Mexico, on this 3rd day of August 2012.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
Jami Bailey, Director

Notice Requirements For Discharge Permit Renewals

20.6.2.3108 PUBLIC NOTICE AND PARTICIPATION:

A. Within 15 days of receipt of an application for a discharge permit, modification or renewal, the department shall review the application for administrative completeness. To be deemed administratively complete, an application shall provide all of the information required by Paragraphs (1) through (5) of Subsection F of 20.6.2.3108 NMAC and shall indicate, for department approval, the proposed locations and newspaper for providing notice required by Paragraphs (1) and (4) of Subsection B or Paragraph (2) of Subsection C of 20.6.2.3108 NMAC. The department shall notify the applicant in writing when the application is deemed administratively complete. If the department determines that the application is not administratively complete, the department shall notify the applicant of the deficiencies in writing within 15 days of receipt of the application and state what additional information is necessary.

B. Within 30 days of the department deeming an application for discharge permit or discharge permit modification administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) for each 640 contiguous acres or less of a discharge site, prominently posting a synopsis of the public notice at least 2 feet by 3 feet in size, in English and in Spanish, at a place conspicuous to the public, approved by the department, at or near the proposed facility for 30 days; one additional notice, in a form approved by and may be provided by the department, shall be posted at a place located off the discharge site, at a place conspicuous to the public and approved by the department; the department may require a second posting location for more than 640 contiguous acres or when the discharge site is not located on contiguous properties;

(2) providing written notice of the discharge by mail, to owners of record of all properties within a 1/3 mile distance from the boundary of the property where the discharge site is located; if there are no properties other than properties owned by the discharger within a 1/3 mile distance from the boundary of property where the discharge site is located, the applicant shall provide notice to owners of record of the next nearest adjacent properties not owned by the discharger;

(3) providing notice by certified mail, return receipt requested, to the owner of the discharge site if the applicant is not the owner; and

(4) publishing a synopsis of the notice in English and in Spanish, in a display ad at least three inches by four inches not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the proposed discharge.

C. Within 30 days of the department deeming an application for discharge permit renewal administratively complete, the applicant shall provide notice, in accordance with the requirements of Subsection F of 20.6.2.3108 NMAC, to the general public in the locale of the proposed discharge in a form provided by the department by each of the methods listed below:

(1) providing notice by certified mail to the owner of the discharge site if the applicant is not the owner; and

(2) publishing a synopsis of the notice, in English and in Spanish, in a display ad at least two inches by three inches, not in the classified or legal advertisements section, in a newspaper of general circulation in the location of the discharge.

D. Within 15 days of completion of the public notice requirements in Subsections B or C of 20.6.2.3108 NMAC, the applicant shall submit to the department proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.

E. Within 30 days of determining an application for a discharge permit, modification or renewal is administratively complete, the department shall post a notice on its website and shall mail notice to any affected local, state, federal, tribal or pueblo governmental agency, political subdivisions, ditch associations and land grants, as identified by the department. The department shall also mail or e-mail notice to those persons on a general and facility-specific list maintained by the department who have requested notice of discharge permit applications. The notice shall include the information listed in Subsection F of 20.6.2.3108 NMAC.

F. The notice provided under Subsection B, C and E of 20.6.2.3108 NMAC shall include:

(1) the name and address of the proposed discharger;

(2) the location of the discharge, including a street address, if available, and sufficient information to locate the facility with respect to surrounding landmarks;

(3) a brief description of the activities that produce the discharge described in the application;

(4) a brief description of the expected quality and volume of the discharge;

(5) the depth to and total dissolved solids concentration of the ground water most likely to be affected by the discharge;

(6) the address and phone number within the department by which interested persons may obtain information, submit comments, and request to be placed on a facility-specific mailing list for future notices; and

(7) a statement that the department will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices.

G. All persons who submit comments or statements of interest to the department or previously participated in a public hearing and who provide a mail or e-mail address shall be placed on a facility-specific mailing list and the department shall send those persons the public notice issued pursuant to Subsection H of 20.6.2.3108 NMAC, and notice of any public meeting or hearing scheduled on the application. All persons who contact the department to inquire about a specific facility shall be informed of the opportunity to be placed on the facility-specific mailing list.

H. Within 60 days after the department makes its administrative completeness determination and all required technical information is available, the department shall make available a proposed approval or disapproval of the application for a discharge permit, modification or renewal, including conditions for approval proposed by the department or the reasons for disapproval. The department shall mail by certified mail a copy of the proposed approval or disapproval to the applicant, and shall provide notice of the proposed approval or disapproval of the application for a discharge permit, modification or renewal by:

(1) posting on the department's website;

(2) publishing notice in a newspaper of general circulation in this state and a newspaper of general circulation in the location of the facility;

(3) mailing or e-mailing to those persons on a facility-specific mailing list;

(4) mailing to any affected local, state, or federal governmental agency, ditch associations and land grants, as identified by the department; and

(5) mailing to the governor, chairperson, or president of each Indian tribe, pueblo or nation within the state of New Mexico, as identified by the department.

I. The public notice issued under Subsection H shall include the information in Subsection F of 20.6.2.3108 NMAC and the following information:

(1) a brief description of the procedures to be followed by the secretary in making a final determination;

(2) a statement of the comment period and description of the procedures for a person to request a hearing on the application; and

(3) the address and telephone number at which interested persons may obtain a copy of the proposed approval or disapproval of an application for a discharge permit, modification or renewal.

J. In the event that the proposed approval or disapproval of an application for a discharge permit, modification or renewal is available for review within 30 days of deeming the application administratively complete, the department may combine the public notice procedures of Subsections E and H of 20.6.2.3108 NMAC.

K. Following the public notice of the proposed approval or disapproval of an application for a discharge permit, modification or renewal, and prior to a final decision by the secretary, there shall be a period of at least 30 days during which written comments may be submitted to the department and/or a public hearing may be requested in writing. The 30-day comment period shall begin on the date of publication of notice in the newspaper. All comments will be considered by the department. Requests for a hearing shall be in writing and shall set forth the reasons why a hearing should be held. A public hearing shall be held if the secretary determines there is substantial public interest. The department shall notify the applicant and any person requesting a hearing of the decision whether to hold a hearing and the reasons therefore in writing.

L. If a hearing is held, pursuant to Subsection K of 20.6.2.3108 NMAC, notice of the hearing shall be given by the department at least 30 days prior to the hearing in accordance with Subsection H of 20.6.2.3108 NMAC. The notice shall include the information identified in Subsection F of 20.6.2.3108 NMAC in addition to the time and place of the hearing and a brief description of the hearing procedures. The hearing shall be held pursuant to 20.6.2.3110 NMAC.

20.6.2 NMAC 17

[2-18-77, 12-24-87, 12-1-95, 11-15-96; 20.6.2.3108 NMAC - Rn, 20 NMAC 6.2.III.3108, 1-15-01; A, 12-1-01; A, 9-15-02; A, 7-16-06]

WQCC PUBLIC NOTICE AND PERMITTING FLOWCHART:
20.6.2.3108 – Applications for discharge permits renewals

Applicant flow path

OCD flow path

Process Begins

Applicant submits application, proposal for notice, and filing fee to OCD

Within 15 days of submittal

Admin. Compl. Review completed

OCD notifies applicant of admin compl determination

Administratively incomplete

Returned to applicant

Administratively complete

Within 30 Days of deeming an application complete

Applicant shall provide notice in accordance of Subsection F of 20.6.2.3108 NMAC

Applicant provides notice by certified mail to the owner of the discharge site, if not the owner

Applicant must publish a synopsis of notice in English and Spanish display ad at least 2 x 3 inches not in the classified or legal section, in a newspaper of general circulation in the location of the proposed discharge

Within 15 days after completion of notice requirements

Applicant submits proof of notice (affidavit of mailings and list of property owners, proof of publication, an affidavit of posting) to OCD

Inadequate notice

OCD will require additional notice

Adequate notice

OCD Notice Process

30 days

Public Notice/ Technical Review (OCD may combine this process)

OCD posts notice on web site and mail notice to any affected local, state, federal, tribal or pueblo governmental agency, political subdivisions, ditch associations, and land grants, as identified by the department

OCD mail or email notice to those persons of record who have requested notice

60 days

Provide notice in accordance with Subsection F of 20.6.2.3108 NMAC

OCD shall make available a proposed approval or disapproval of the application, with conditions or reasons, on OCD's web site. Publish notice in a newspaper of general circulation in the state and location of the facility. Provide notice by certified mail to the owner of the discharge site. Mail or email notice to those persons of record who have requested notice, and mails notice to any affected governmental agency, ditch associations, and land grants. Mail notice to the governor, chairperson, or president of each Indian tribe, pueblo, or nation within the State of New Mexico.

Hold open 30 days for public comment. The 30 day period shall begin on the date of publication of the notice in the newspaper.

Request for Hearing?

Yes

No

Provide notice of hearing 30 days prior to hearing in accordance with Subsections F and H of 20.6.2.3108

Hearing shall be held pursuant to 20.6.2.3110 NMAC

Approval

30 days

OCD provides copy of approved permit to permittee and interested parties

Applicant required to sign-off on permit and submit Fees

Not an official OCD document-for guidance only

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, July 20, 2012 9:37 AM
To: Chavez, Carl J, EMNRD
Subject: UICI-008-0 WDW-3 Navajo Refining Company, L.L.C., Discharge Permit Credits Note to File

This note is written to document the credits for the overall changes to the newly issued discharge permit and associated documents. The changes were made by Glenn von Gonten (Acting Environmental Bureau Chief) and Sonny Swazo (Assistant to the General Counsel).

********** END **********

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Department
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Drive, Santa Fe, New Mexico 87505
Office: (505) 476-3490
E-mail: CarlJ.Chavez@State.NM.US
Website: http://www.emnrd.state.nm.us/ocd/
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental

HOLLYFRONTIER
The HollyFrontier Companies

June 29, 2012

Mr. Carl Chavez
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Discharge Permit Renewal Application for WDW-3, Class I Non-Hazardous Injection Well

Dear Mr. Chavez:

Navajo Refining Co. is submitting the attached discharge permit renewal application for its WDW-3, a Class 1 Non-Hazardous Wastewater Injection Well. The well, located approximately 14 miles east of the Navajo Refinery in Artesia, NM, is currently in service.

If you have questions regarding this renewal application, please contact Micki Schultz at (575) 746-5281, or by email at micki.schultz@hollyfrontier.com.

Cordially,

Micki Schultz

Micki Schultz, P.E., CHMM, REM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)

Attachments

ACKNOWLEDGEMENT OF RECEIPT
OF CHECK/CASH

I hereby acknowledge receipt of check No. 1000180601 dated 6/25/12

or cash received on _____ in the amount of $ 100.00

from Navajo Refining Co

for UIC 8-0

Submitted by: Laurajane Romero Date: 7/18/12

Submitted to ASD by: [signature] Date: 7/18/12

Received in ASD by: _____ Date: _____

Filing Fee _____ New Facility _____ Renewal ✓

Modification _____ Other _____

Organization Code 521.07 Applicable FY _____

To be deposited in the Water Quality Management Fund.

Full Payment _____ or Annual Increment _____

HOLLYFRONTIER
The HollyFrontier Companies

June 29, 2012

Mr. Carl Chavez
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: Discharge Permit Renewal Application for WDW-3, Class I Non-Hazardous Injection Well

Dear Mr. Chavez:

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Cordially,

Micki Schultz

Micki Schultz, P.E., CHMM, REM
Environmental Specialist, Water and Waste Programs
Navajo Refining Company
575-746-5281 (office)
575-308-2141 (cell)

Attachments

TABLE OF CONTENTS

INTRODUCTION

DISCHARGE PERMIT APPLICATION FORM

1.0 Underground Well Control Well Class 1
2.0 Operator 1
3.0 Location 1
4.0 Landowner(s) 1
5.0 Facility Description 2
6.0 Proposed Discharge Plan (see 20.6.2.3106C NMAC) 2
7.0 Information for Class I Nonhazardous Waste Injection Well and Class III Brine Wells (20.6.2.5210 NMAC) 3
7 (a) Area of Review 3
7 (b) Data Tabulation 4
7 (c) Corrective Action 4
7 (d) Maps and Cross-Sections 4
7 (e) Geology 5
7 (f) Proposed Operating Parameters 8
7 (g) Formation Testing Program 9
7 (h) Fluids and Pressure 9
7 (i) Stimulation Program 16
7 (j) Injection Procedure 16
7 (k) Drawings 17
7 (l) Construction 17
7 (m) Contingency Plans 25
7 (n) MIT Monitoring Plans (20.6.2.5207 NMAC) 26
7 (o) Additional Monitoring Plans for Class I Non-Hazardous Waste Injection Wells (20.6.2.5207B NMAC) 26
7 (p) Additional Monitoring Plans for Class III Wells (20.6.2.5207C NMAC) 27
7 (q) Financial Assurance 27
7 (r) Logging and Testing Data 27

TABLE OF CONTENTS (CONT'D)

7 (s) Mechanical Integrity Data (20.6.2.5204 NMAC) 28
7 (t) Maximum Pressure and Flow Rate 28
7 (u) Formation Testing Program Data 28
7 (v) Compatibility 28
7 (w) Area of Review Corrective Actions 28
8.0 Modification(s) 29
9.0 Inspection/Maintenance and Reporting 29
10.0 Contingency Plans 29
11.0 Other Information 30
12.0 Filing Fee 30
13.0 Draft Public Notice 30
14.0 Certification 31

TABLES

TABLE 1A: NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW
TABLE 1B: NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW PENETRATING TOP OF INJECTION ZONE
TABLE 2: INJECTION FLUID CHARACTERIZATION DATA

FIGURES

FIGURE 1: SITE LOCATION MAP
FIGURE 2: SITE MAP
FIGURE 3: GENERALIZED HYDROGEOLOGIC CROSS-SECTION
FIGURE 4: GENERALIZED DIRECTION OF MOVEMENT OF GROUNDWATER IN EDDY COUNTY, NEW MEXICO
FIGURE 5: PERMIAN BASIN MAP
FIGURE 6: STRATIGRAPHIC COLUMN
FIGURE 7: REGIONAL GEOLOGIC FEATURES
FIGURE 8: PUBLISHED STRUCTURE MAP (TOP OF SAN ANDRES FORMATION)
FIGURE 9: SEISMIC RISK MAP
FIGURE 10: SURFACE GEOLOGIC MAP

TABLE OF CONTENTS (CONT'D)

FIGURES (CONT'D)

FIGURE 11: PRE-INJECTION SURFACE FACILITIES
FIGURE 12: BELOW GROUND WELL SCHEMATIC
FIGURE 13: WELLHEAD SCHEMATIC

DRAWINGS

DRAWING 1: FACILITY MAP
DRAWING 2: AREA OF REVIEW MAP
DRAWING 3: FRESHWATER WELLS IN AREA OF REVIEW
DRAWING 4: GEOLOGIC CROSS-SECTION INDEX MAP
DRAWING 5: NW-SE DIP GEOLOGIC CROSS-SECTION A-A'
DRAWING 6: SW-NE STRIKE GEOLOGIC CROSS-SECTION B-B'
DRAWING 7: NW-SE DIP GEOLOGIC CROSS-SECTION C-C'
DRAWING 8: STRUCTURE CONTOUR MAP, TOP OF INJECTION ZONE
DRAWING 9: ISOPACH MAP OF INJECTION ZONE
DRAWING 10: STRUCTURE CONTOUR MAP, TOP OF UPPER CONFINING ZONE
DRAWING 11: ISOPACH MAP OF UPPER CONFINING ZONE
DRAWING 12: CURRENT PRESSURE INCREASE IN INJECTION ZONE
DRAWING 13: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTION INTO WDW-1 AND WDW-2 ONLY)
DRAWING 14: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTION INTO WDW-1 AND WDW-3 ONLY)
DRAWING 15: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTION INTO WDW-2 AND WDW-3 ONLY)
DRAWING 16: PREDICTED FUTURE PRESSURE INCREASE IN INJECTION ZONE (INJECTIION INTO WDW-1, WDW-2 AND WDW-3)

TABLE OF CONTENTS (CONT'D)

APPENDICES

APPENDIX A: SURROUNDING LAND OWNERSHIP INFORMATION
APPENDIX B: AREA OF REVIEW WELL FILES AND SCHEMATICS
APPENDIX C: USGS EARTHQUAKE DATA
APPENDIX D: INJECTION FLUID ANALYTICAL DATA
APPENDIX E: FLUIDS AND PRESSURE CALCULATIONS
APPENDIX F: FORMATION FLUID ANALYTICAL DATA
APPENDIX G: PRESSURE FALL-OFF TEST RESULTS
APPENDIX H: WDW-3 CONSTRUCTION INFORMATION
APPENDIX I: INJECTION ZONE PERMEABILITY DATA
APPENDIX J: INJECTED FLUID MONITORING PLAN
APPENDIX K: INJECTION WELL CLOSURE PLAN
APPENDIX L: FINANCIAL ASSURANCE DOCUMENTATION
APPENDIX M: WDW-3 OPEN-HOLE LOG
APPENDIX N: WDW-3 CASED-HOLE LOGS
APPENDIX O: DRAFT PUBLIC NOTICE

INTRODUCTION

Navajo Refining Company, L.L.C. (Navajo), located in Artesia, New Mexico, is applying to repermit Class I Nonhazardous Waste Disposal Well No. 3 (WDW-3) which is located approximately 14 miles to the east of the facility. WDW-3 was initially permitted by the New Mexico Oil Conservation Division (OCD) in 2003 and has been operating under OCD issued Permit UIC-CLI-008-1.

The Navajo refinery is located at 501 East Main Street in Artesia, Eddy County, New Mexico. WDW-3 is one of three Class I nonhazardous waste injection wells operated by the Navajo refinery. The three injection wells are designated WDW-1, WDW-2 and WDW-3. All three wells are permitted to inject nonhazardous waste water into a subsurface Injection Zone consisting of the lower portion of the Wolfcamp Formation and the underlying Cisco and Canyon Formations. The depth and thickness of the Injection Zone at the three Navajo refinery injection wells are as follows:

- WDW-1: 7,450 to 9,016 ft KB
- WDW-2: 7,270 to 8,894 ft KB
- WDW-3: 7,303 to 8,894 ft KB

Please note that the three Navajo injection wells are permitted separately coinciding with the 10-year permit limit for each well. This permit renewal application is for WDW-3 only. Permit renewal applications for WDW-1 and WDW-2 are to be submitted in July 2013 and October 2014, respectively. Given the fact that all three Navajo wells are injecting into the same Injection Zone, modeling projections of pressure front and plume movement account for injection into the same zone by all three wells. This same modeling approach will be utilized when the permit application renewal documents are submitted for WDW-2 and WDW-3.

Information concerning the locations of oil and gas wells and freshwater wells within the regulatory 1-mile radius area of review (AOR) surrounding WDW-3 were obtained from New Mexico Oil Conservation Division (OCD) and New Mexico Water Rights Reporting System, respectively. No corrective action is needed for any of the artificial penetrations within the 1-mile radius AOR.

The regional and local geology have been evaluated, and no problems have been identified that will cause adverse effects as a result of the ongoing injection operations.

Reservoir characteristics of the Injection Zone indicate the reservoir has sufficient properties to accommodate the historical and planned future injection rate, volume and pressure from the three Navajo injection wells. Based on information gathered from the Navajo refinery injection well system, there are no adverse reactions identified with the waste stream and the well components of construction and the Injection Zone matrix and formation fluid.

WDW-3 meets the construction and operating standards set forth in 20.6.2.2505 NMAC. A procedure to permanently plug and abandon the well has been included per the requirements of 20.6.2.5209 NMAC.

District I
1625 N. French Dr., Hobbs, NM 88240
(575) 393-6161
District II
811 S. 1st St., Artesia, NM 88210
(575) 748-1283
District III
1000 Rio Brazos Road, Aztec, NM 87410
(505) 334-6178
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
(505) 476-3470

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
Environmental Bureau
1220 South St. Francis Dr.
Santa Fe, NM 87505
(505) 476-3440

Revised January 10, 2012

Submit Original
Plus 1 Copy
to Environmental
Bureau
1 Copy to Appropriate
District Office

DISCHARGE PERMIT APPLICATION FOR UNDERGROUND INJECTION CONTROL (UIC) CLASS I (NON-HAZARDOUS), CLASS III SOLUTION MINING, AND CLASS V WELLS

(Refer to WQCC Regulations (20.6.2.5000 through 20.6.2.5299 NMAC) for assistance in completing this application)

☐ New ☒ Renewal ☐ Modification

The information in items 1 through 6 and items 8 through 14 is required for all Class I, Class III, and Class V Underground Injection Control Wells. The additional information in item 9 is required for Class I and Class III Underground Injection Control Wells (see 20.6.2.5006 and 20.6.2.5101 NMAC).

1. **Underground Injection Control Well Class:**
☒ Class I (NH) ☐ Class III - Brine Well
☐ Class V - Geothermal ☐ Class V - Ground Water Management ☐ Class V - Other

2. **Operator:** Navajo Refining Company, L.L.C.
Address: 501 East Main
Artesia, NM 88210
Contact Person: Micki Schultz Phone: 575-746-5281 E-mail: Micki.Schultz@hollyfrontier.com

3. **Location:** SE /4 SW /4 Section 1 Township 18S Range 27E
Latitude: 32.7716 Longitude: -104.23327 NAD: ☒ 1927 ☐ 1983
Submit 7.5 Minute U.S.G.S. Quadrangle Topographic Map showing exact location of the facility.

4. **Landowner(s):** Attach the name, address, and telephone number of the landowner of the facility site.
Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

5. **Facility Description:** Attach a description of the facility with a diagram depicting pertinent features, *i.e.*, facility/property boundaries, buildings, roads, fences, process areas, areas of discharge, aboveground piping, underground piping, wells (all types), pits, ponds, dikes, sumps, above and below-grade tanks, landfarms, landfills, surface and/or ground water contamination abatement devices, *etc.*

6. **Proposed discharge plan (see 20.6.2.3106C NMAC):** Specify the methods or techniques that the owner/operator will use to ensure compliance with the regulations. At a minimum include the following information::
(a) Quantity, quality and flow characteristics of the discharge;
(b) Location of the discharge and of any bodies of water, watercourses and ground water discharge sites within one mile of the outside perimeter of the discharge site, and existing or proposed wells to be used for monitoring;
(c) Depth to and TDS concentration of the ground water most likely to be affected by the discharge;
(d) Flooding potential of the site;
(e) Location and design of site(s) and method(s) to be available for sampling, and for measurement or calculation of flow;
(f) Depth to and lithological description of rock at base of alluvium below the discharge site if such information is available; and,
(g) Any additional information that may be necessary to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at

any place of withdrawal of water for present or reasonably foreseeable future use. OCD may require additional detailed information on site geologic and hydrologic conditions.

7. **INFORMATION FOR CLASS I NONHAZARDOUS WASTE INJECTION WELLS AND CLASS III BRINE WELLS (20.6.2.5210 NMAC):** For Class I and III injection wells, attach the information required in Subsection B of Section 20.6.2.5210 NMAC. Include sources and an appropriate analysis of injection fluid and compatibility with the receiving formation produced water and if injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, *etc.*).

(a) Area of Review: A map showing the Class I non-hazardous waste injection well, or Class III well or well fields and the applicable area of review. Within the AOR, the map must show the number, name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features, including residences and roads;

(b) Data Tabulation: A tabulation of data on all wells within the AOR which may penetrate into the proposed injection zone. Such data shall include a description of each well's type, the distance and direction to the injection well or well field, construction, date drilled, location, depth, record of plugging and/or completion information;

(c) Corrective Action: For wells within the area of review which penetrate the injection zone, but are not properly completed or plugged, the corrective action proposed to be taken under Section 20.6.2.5203 NMAC;

(d) Maps and Cross-Sections: Maps and cross-sections indicating the general vertical and lateral limits of all ground water having 10,000 mg/l or less TDS within the AOR, the position of such ground water within the AOR relative to the injection formation, and the direction of water movement in each zone of ground water which may be affected by the proposed injection;

(e) **Geology:** Maps and cross-sections detailing the geology and geologic structure of the local area, including faults and the regional geologic setting;

(f) Proposed Operating Data: including;

- Average and maximum daily flow rate and volume of the fluid to be injected;
- Average and maximum injection pressure;
- Source of injection fluids and an analysis or description of their chemical, physical, radiological and biological characteristics;

(g) Formation Testing Program: Results of the formation testing program to obtain an analysis or description of the chemical, physical, and radiological characteristics of the receiving formation;

(h) Fluids and Pressure: Expected pressure changes, native fluid displacement, and direction of movement of the injected fluid;

(i) Stimulation Program: Proposed stimulation program;

(j) Injection Procedure: Proposed or actual injection procedure;

(k) Drawings: Schematic or other appropriate drawings of the surface and subsurface construction details of the well;

(l) Construction: Pursuant to 20.6.2.5205 NMAC, the owner/operator must demonstrate that the construction and operation of Class I non-hazardous waste injection wells and Class III brine wells will not cause or allow movement of fluids into ground water having 10,000 mg/l or less TDS except for fluid movement approved pursuant to Section 20.6.2.5103NMAC. The owner/operator must provide the following information:

- Depth to the injection zone;
- Injection pressure, external pressure, annular pressure, axial loading, and other stresses that may cause well failure;
- Hole size;
- Size and grade of all casing strings, including wall thickness, diameter, nominal weight, length, joint specification, and construction material;
- Type and grade of cement;
- Rate, temperature, and volume of injected fluid;
- Chemical and physical characteristics of the injected fluid, including corrosiveness, density, and temperature;
- Chemical and physical characteristics of the formation fluids including pressure and temperature;
- Chemical and physical characteristics of the receiving formation and confining zones including lithology and stratigraphy, and fracture pressure; and
- Depth, thickness and chemical characteristics of penetrated formations which may contain ground water.

Include a cementing and casing program (provide details on liners, tubing, packers, size, setting depth, sacks of cement used, hole size, top of cement, and how top was determined, etc.), logging procedures, deviation checks, and a drilling, testing, and coring program for new wells.

Include the name of the injection formation and, if applicable, the field or pool name; the injection interval and whether it is perforated or open-hole; state if the well was drilled for injection or, if not, the original purpose of the well; give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations; and give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

(m) Contingency plans: Contingency plans to cope with all shut-ins or well failures so as to prevent movement of fluids into ground water having 10,000 mg/l or less TDS;
(n) MIT Monitoring Plans: MIT Monitoring Plans, including maps, for meeting the monitoring requirements of Section 20.6.2.5207 NMAC; and
(o) Additional Fluid Monitoring Plans For Class I Non-Hazardous Waste Injection Wells: Provide a fluid monitoring plan for the analysis of the injected fluids for Class I Wells at least quarterly to determine their characteristics. (See 20.6.2.5207B NMAC).
(p) Additional Fluid Monitoring Plans For Class III Wells: Provide a quarterly fluid monitoring plan for Class III wells that meets 20.6.2.5207C NMAC.
(q) Financial Assurance: Provide an instrument that documents the ability of the owner/operator to undertake measures necessary to prevent contamination of ground water after the cessation of operation, including the proper closing, plugging and abandonment of a well, ground water restoration if applicable, and any post-operational monitoring as may be needed. The Owner/Operator shall submit one of the following:

- A surety bond;
- A trust fund with a New Mexico bank in the name of the State of New Mexico, with the State as Beneficiary;
- A non-renewable letter of credit made out to the State of New Mexico;
- Liability insurance specifically covering the contingencies listed in this paragraph; or
- A performance bond, generally in conjunction with another type of financial assurance.

(r) Logging and testing data: Provide all available logging and testing program data on the well (if well logs have been filed with the Division, they need not be resubmitted).;
(s) Mechanical Integrity Data: Provide mechanical integrity data (see 20.6.2.5204 NMAC);
(t) Maximum Pressure and Flow Rate: Specify the anticipated maximum pressure and flow rates;
(u) Formation Testing Program Data: Provide the results of the formation testing program;
(v) Compatibility: Discuss the physical, chemical, and biological interactions between the injected fluids and fluids in the injection zone, and minerals in both the injection zone and the confining zone; and
(w) Area of review corrective actions: Discuss the status of corrective action(s) on defective wells in the area of review.

8. **Modification(s):** Attach a description of proposed modifications to existing discharge processes.

9. **Inspection/Maintenance and Reporting:** Attach a routine inspection, operation, and maintenance plan to ensure permit compliance.

10. **Contingency plans:** Attach a contingency plan for reporting and taking corrective action(s) to address any spills and/or releases.

11. **Other information:** Attach any additional information that may be necessary to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use.

12. **Filing Fee:** Attach application filing fee of $100.00. The check or money order must be made payable to Water Quality Management Fund. The permit fee will be required prior to permit issuance.

13. **Draft Public Notice:** Attach a draft of your public notice as specified in Subsection F of 20.6.2.3108 NMAC. All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the

owner of the surface of the land on which the injection well is to be located and to each leasehold operator within one-third mile of the well location. Proof of public notice must be submitted in accordance with 20.6.2.3108 NMAC for new and renewal applications for discharge permits.

CERTIFICATION:

I hereby certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Name: Michael G. McKee

Title: VP + Ref. Manager

Signature: Michael G. McKee

Date: 26 June 2012

E-mail Address: Michael.McKee@Hollyfrontier.com

Disclaimer: Note that some of the above information may include non-WQCC or OCD Regulated items, i.e., pits, ponds, below-grade tanks, sumps, etc. that may require a separate application and/or permit process than WQCC regulated items through the OCD.

1.0 Underground Well Control Well Class

The Navajo refinery Waste Disposal Well No. 3 (WDW-3) is classified as a Class I Nonhazardous Waste Injection Well.

2.0 Operator

The operator information for WDW-3 is provided below:

Facility Address
Navajo Refining Company, L.L.C.
501 East Main
Artesia, New Mexico 88210
(575) 748-3310

Contact Person
Micki Schultz, Environmental Specialist
(575) 746-5281
Micki.Schultz@hollyfrontier.com

3.0 Location

WDW-3 is located in the SE/4, SW/4, Section 1, Township 18 South, Range 27 East (790 feet from the south line and 2,250 feet from the west line of Section 1).

A topographic map showing the location of the Navajo refinery and WDW-3 is provided as Figure 1. An enlarged version of the topographic map showing the location of WDW-3 is provided as Figure 2.

4.0 Landowner(s)

The parcel of land where WDW-3 is located is owned by the following:

U.S. Department of the Interior
Bureau of Land Management
620 Greene Street
Carlsbad, New Mexico 88220
(575) 887-6544

The parcel of land where WDW-3 is located is surrounded by additional land owned by the Bureau of Land Management as shown in Appendix A.

5.0 Facility Description

The Class I non-hazardous UIC #3 is located approximately 14 miles east of the Navajo refinery, the largest refinery in New Mexico. Drawing 1 presents an aerial photograph of the refinery's location with respect to the wellhead facility, identifying pertinent features between the two sites. The wellhead facility is located within a fenced area that encloses the well, injection pumps, filters and piping, wellhead annulus measurement system (WAMS) on a contained concrete pad, and a power panel. The pumps and filters are located on a separate, contained concrete pad. There are no buildings or tanks, other than the 250 gallon glycol tank, associated with the WAMS unit.

6.0 Proposed Discharge Plan (see 20.6.2.3106C NMAC)

This permit renewal application is for an existing Class I nonhazardous waste injection well. Those portions of 20.6.2.3106C that are relevant to underground injection, especially 20.6.2.3103C (8), are addressed within Section 7.0 of this document.

6(a) is addressed in 7(f)
6(b) is addressed in 7(a)
6(c) is addressed in 7(d)
6(d) is addressed in 7(e)
6(e) measurement of flow is a flow meter at the wellhead with information transmitted electronically to the refinery control room.
6(f) is addressed in 7(e)
6(g) is addressed in 7(e)

7.0 Information for Class I Nonhazardous Waste Injection Well and Class III Brine Wells (20.6.2.5210 NMAC)

The following sections present the information required in Subsection B of Section 20.6.2.5210 NMAC.

7 (a) Area of Review

The WDW-3 Area of Review (AOR) consists of the area within a 1-mile radius surrounding the well as shown on Drawing 2. All potential sources of information relevant to the location of non-freshwater and freshwater wells within the AOR were reviewed.

Non-Freshwater Wells in Area of Review

The locations of non-freshwater artificial penetrations (oil and gas wells, exploratory tests, disposal wells, etc.) within the 1-mile radius AOR are identified in Drawing 2. A total of 123 non-freshwater artificial penetrations are present in the 1-mile radius AOR as shown on the map. Each artificial penetration is identified by a Map ID number. Table 1A presents a tabulation of the 125 non-freshwater artificial penetrations in the AOR.

Of the 125 non-freshwater artificial penetrations identified within the AOR, a total of 8 were advanced to a depth to penetrate the top of the Injection Zone.

Table 1B lists these wells. Appendix B contains records and schematics for these 125 non-freshwater artificial penetrations.

Freshwater Wells in Area of Review

Based upon information obtained from records maintained by the New Mexico Water Rights Reporting System, there are no freshwater wells within the 1-mile radius AOR.

Drawing 3 presents a topographic map depicting the 1-mile radius AOR. The map contains all surface bodies of water, mines (surface and subsurface), quarries, springs, and other surface features, including roads and residences.

There are no subsurface faults in the AOR known to have surface expression; therefore, no surface fault traces have been included on this map.

7 (b) Data Tabulation

Tables 1A and 1B present tabulations of the 123 non-freshwater artificial penetrations in the 1-mile radius AOR. Appendix B contains records for the 8 non-freshwater artificial penetrations that penetrate into the Injection Zone.

7 (c) Corrective Action

The available records for each artificial penetration that penetrates the top of the Injection Zone within the 1-mile radius AOR were evaluated to determine if corrective action would be required to prevent movement of fluids into or between USDWs which could be caused by pressures in the Injection Zone. These records are contained in Appendix B.

No corrective actions are warranted because all artificial penetrations have been properly constructed, plugged and/or abandoned, or are still operating.

7 (d) Maps and Cross-Sections

The base of the Underground Source of Drinking Water (USDW), groundwater with total dissolved solids concentration with less than 10,000 milligrams per liter (mg/L), occurs at a depth of approximately 3,150 feet above mean sea level. Figure 3 presents a generalized hydrogeologic cross-section for the local area. Figure 4 presents a published map indicating the direction of shallow groundwater movement in the local area.

The top of the WDW-3 Injection Zone is separated from the base of the USDW by several thousand feet of low permeability carbonates, siltstones and shale as depicted on the geologic cross-sections presented on Drawings 5, 6 and 7. Drawing 4 is a cross-section index map.

7 (e) Geology

The Navajo refinery is located in Eddy County, New Mexico on the Northwestern Shelf of the larger Permian Basin as shown on Figure 5. Figure 6 is stratigraphic column presenting the geologic formations relevant to the underground injection operations at WDW-3. The refinery is located on the southern flank of the Artesia-Vacuum anticline (also referred to as the Vacuum Arch), which trends east to west across the study area as shown Figure 7. Figure 8 is a published regional structural map of the San Andres Formation.

As depicted on the three geologic cross-sections presented on Drawings 5, 6, and 7, the subsurface geology in the area of the Navajo refinery is rather simplistic. Structural dip of all geologic formations is about 100 feet/mile to the southeast away from the Vacuum Arch depicted on Figure 7.

Injection Zone

The Injection Zone into which all three injection wells at the Navajo refinery are injecting is composed of the lower portion of the Wolfcamp Formation and the underlying Cisco and Canyon Formations. These formations occur in WDW-1, WDW-2 and WDW-3 at the depths shown in the table below.

Injection Zone Formations	WDW-1 (KB = 3,693 ft MSL)		WDW-2 (KB = 3,623 ft MSL)		WDW-3 (KB = 3,625 ft MSL)	
	MD below KB (ft)	Subsea Depth (ft)	MD below KB (ft)	Subsea Depth (ft)	MD below KB (ft)	Subsea Depth (ft)
Lower Wolfcamp	7,450	-3,757	7,270	-3,647	7,303	-3,678
Cisco	7,816	-4,123	7,645	-4,022	7,650	-4,025
Canyon	8,475	-4,782	8,390	-4,767	8,390	-4,765
Base of Injection Zone (base of Canyon)	9,016	-5,323	8,894	-5,271	8,894	-5,269

The following are brief descriptions of the three geologic formations that form the Injection Zone.

Lower Portion of Wolfcamp Formation (Permian Age)
The lower portion of the Wolfcamp Formation is a light brown to tan, fine to medium grained, fossiliferous limestone with shale interbeds.

Cisco Formation (Pennsylvanian Age)
The Cisco Formation is a uniform, light-colored, chalky, fossiliferous limestone with shale interbeds.

Canyon Formation (Pennsylvanian Age)
The Canyon Formation is a white to tan to light brown fine grained, chalky, fossiliferous limestone with shale interbeds.

Drawing 8 presents a structure contour map of the Injection Zone and Drawing 9 presents an isopach map of the Injection Zone.

Confining Zone
The Confining Zone overlying the Injection Zone, in descending order, is composed of the Yeso Formation, Abo formation, and the upper portion of the Wolfcamp Formation. The following are brief descriptions of the three geologic formations that form the Confining Zone.

Yeso Formation (Permian Age)
The Yeso Formation consists of orange shale, light gray to while dolostone and bedded anhydrite.

Abo Formation (Permian Age)
The Abo Formation is a non-marine to marginal marine red shale and fine-grained sandstone interbedded sequence.

Upper Portion of Wolfcamp Formation (Permian Age)

The upper portion of the Wolfcamp Formation is a light brown to tan, fine to medium grained, fossiliferous limestone with shale interbeds.

Drawing 10 presents a structure contour map of the Confining Zone and Drawing 11 presents an isopach map of the Confining Zone.

Faulting

No evidence has been found of any subsurface faulting within and immediately surrounding the 1-mile radius AOR that would provide hydraulic connection between the Injection Zone and the shallow USDW. The nearest documented subsurface fault is the "K-M" fault located approximately 17 miles to the northwest, well outside the geologic study area for the Navajo refinery.

Seismicity

The southeastern portion of New Mexico is historically an area of low seismicity with naturally occurring earthquakes being rare and of low magnitude. The Navajo refinery is located in one of the areas recognized as having the lowest level of seismic risk in the continental United States (Figure 9).

The potential for earthquakes to occur in the vicinity of the Navajo site are minimal. Appendix C presents a listing of all recorded seismic events within 200 miles of the Navajo refinery for the period from 1973 to late 2011.

The injection operations at the Navajo refinery do not have the potential to cause any seismic activity which could alter the confining capability of the subsurface Injection Zone and overlying Confining Zone.

Surface Geology and Flooding Potential

The surface geology of the local area is shown on Figure 10. The Pecos River, located about three miles east of Artesia is the only surface water body in the area of the Navajo refinery. Local annual rainfall is approximately 13.5 inches. As indicated on the topographic map on Figure 1, the land surface elevation at the refinery is higher than that near the river, therefore the potential for flooding at the Navajo refinery is minimal.

7 (f) Proposed Operating Parameters

Source and Description of Injection Fluid

The fluid injected into the Navajo injection wells is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers, boilers, streams from water purification units, desalting units, recovered and treated ground water, and general waste waters will be blended to form the fluid to be injected into the injection wells. Table 2 and Appendix D present data characterizing the injection fluid.

Average and Maximum Daily Flow Rate and Volume

The maximum permitted composite injection rate into all three Navajo injection wells is 800 gpm. This rate of injection is equal to 1,152,000 gallons per day or 420,480,000 gallons per year or 4,204,800,000 gallons into the Injection Zone over the 10-year permit life of WDW-3.

However, the actual average composite injection rate for the three injection wells, based on historical data summarized in Appendix E, is approximately 400 gpm.

Average and Maximum Surface Injection Pressure

The average wellhead injection pressure is 752 psig and an estimated bottom-hole pressure of 3,858 psia. Appendix E includes a tabulation of historical injection rates and associated surface injection pressure and bottom-hole pressure calculations.

The maximum operating injection wellhead pressure will not exceed 1,530 psi or 0.2 psi per foot of depth to the top of the Injection Zone at 7,650 feet, as required by the OCD Proposed Rule 21.B(7), dated October 6, 1997. The predicted pressures were determined using a program called PredictW and the equations used in the program can be found in Appendix E. The PredictW model was calibrated with historical injection volumes and measured bottom-hole pressures.

Maximum Allowable Surface Injection Pressure (MASIP) Calculation

Depth to top of Injection Zone in WDW-3 = 7,303 feet

7,303 feet x 0.2 psi/ft = 1,460 psi

7 (g) Formation Testing Program

Formation testing was conducted during the initial construction of the Navajo refinery injection wells to obtain site-specific data relating to the chemical, physical and radiological characteristics of the Injection Zone. Table 4 summarizes the results of the testing program.

The analysis of formation fluids can be found in Appendix F. All of the wells were converted oil and gas wells and no coring was completed in any of the wells. Correlations were done from offset wells.

7 (h) Fluids and Pressure

The following are descriptions of the changes in reservoir conditions that have been observed to-date and the predicted changes over the 10-year permit time frame for WDW-3. This information is based on the known historical rates and volumes that have been injected into the wells and future 10-year emplacement of a conservative rate and volume of injected fluids.

The interface between injected waste and the formation brine (the waste front) expands radially from the WDW-3 wellbore. As fluid is injected, the Injection Zone will continue to pressurize due to the resistance of fluid movement and the compression of the fluid and rock matrix.

Current Cone of Influence and Waste Plume Front

The maximum lateral spread of the waste front and pressurization during the operational life of WDW-3 to-date were initially calculated.

Calculated Cone of Influence (Current)

The current pressure cone of influence within the Injection Zone is presented on Drawing 12. This Cone of Influence is based on injection operations to-date.

Calculated Plume Front Migration (Current)

The radius of the current dispersed plume for the wells is as follows:

WDW-3: 1,494 feet

WDW-1: 2,898 feet (WDW-1 is approximately 7,900 feet from WDW-3)

WDW-2: 2,266 feet (WDW-2 is approximately 3,100 feet from WDW-3)

Future Cone of Influence and Waste Plume Front

The maximum lateral spread of the waste front and pressurization during the 10-year permit time frame for WDW-3 were calculated.

Calculated Cone of Influence (10 Years)

The predicted pressures were determined using a program called PredictW and the equations used in the program can be found in Appendix E. The predicted pressure cone of influence can be found on Drawings 13 through 16. The following four analyses were performed for the cone of influence calculations:

1. Injection into WDW-1 and WDW-2 with no injection into WDW- 3
2. Injection into WDW-1 and WDW-3 with no injection into WDW-2
3. Injection into WDW-2 and WDW-3 with no injection into WDW-1
4. Injection into all three wells; WDW-1, WDW-2 and WDW-3

The cone of influence is defined here as the area within which increased Injection Zone pressures caused by injection of wastes would be sufficient to cause vertical fluid movement through any well or other conduit into a USDW. This demonstration shows that the extremely conservative worst-case cone of influence of the injection operations is smaller than the regulatory 1-mile radius AOR in which artificial penetrations were investigated.

In the worst case, an undocumented abandoned well is imagined to be open to both the Injection Zone and the base of the USDW. In addition, the well is imagined to be filled to within 100 feet of the ground surface with formation brine from the Injection Zone and fresh water from the base of the USDW. The cone of influence can be calculated by comparing the hydraulic heads of the Injection Zone and the lowermost USDW. It is only where the Injection Zone head is above the USDW head that fluid movement from the Injection Zone into the USDW could occur. This worst-case model of the potential effect of injection upon the USDW is extremely conservative, because no wells within the 1-mile radius AOR surrounding WDW-3 are open to both the Injection Zone and the USDW and are filled with brine.

The Injection Zone has a native pressure such that the resulting hydraulic head is lower than the head of the lowermost USDW. The pre-injection pressure of the injection interval was measured on July 30, 1998, in WDW-1 to be 2,928 psia at 7,911 feet below ground level (feet).

A sample of formation fluid was retrieved from formation fluid swabbed on July 25, 1998 from the perforations of the deeper Cisco interval, from 8,220 feet to 8,476 feet in WDW-1. The total dissolved solids (TDS) concentration of the sample was 33,000 mg/l, and the specific gravity of the sample at room temperature was 1.034. Formation fluid was swabbed on July 29, 1998, from the perforations of the shallower Cisco interval from 7,924 feet to 8,188 feet in WDW-1. The analysis of a sample of this fluid indicated that the TDS concentration of the sample was 18,000 mg/l, and the specific gravity at room temperature was 1.018. The chemical analysis of the formation fluid samples is included as Appendix F. These values compare favorably with information from the analysis of fluid retrieved during drill-stem test (DST) No. 5, which was conducted on August 26, 1993 in WDW-1 (Appendix F). The salinity of the formation fluid retrieved during DST No. 5 was reported as a chlorides concentration of 25,000 mg/L. The formation fluid is therefore assumed to have a sodium chloride concentration of 25,000 mg/L. The specific gravity of such a fluid is approximately 1.02.

The pre-injection pressure, P_i, at the top of the Injection Zone in WDW-3 at 7,660 feet RKB is 2,817 psia, as calculated below, based on a formation fluid specific gravity of 1.018. Using the lightest specific gravity in this calculation yields a high P_i, which is conservative.

$$\begin{aligned} P_i(7{,}660 \text{ feet}) &= P_i(7{,}911 \text{ feet}) - (7{,}911 \text{ feet} - 7{,}660 \text{ feet})\ (0.433 \text{ psi/ft})\ (1.018) \\ &= 2{,}928 \text{ psia} - 111 \text{ psi} \\ &= 2{,}817 \text{ psia} \end{aligned}$$

The hydraulic head of the lowermost USDW is estimated to be 100 feet BGL. This estimate is reasonably conservative, as it is based on a static water level measurement of 81 feet.

The critical pressure, P_c, at 7,660 feet BGL that would be necessary to raise the hydrostatic head of the injection interval to the head of the lowermost USDW at 100 feet BGL is 3,329 psia, as calculated below:

$$\begin{aligned} P_c &= (\text{Top of Injection Zone} - \text{Base of USDW})\ (0.433 \text{ psi/ft})(1.018) \\ &\quad + (\text{Base of USDW} - \text{Head of USDW})\ (0.433 \text{ psi/ft}) \\ &= (7{,}660 \text{ feet} - 473 \text{ feet})\ (0.433 \text{ psi/ft})\ (1.018) \\ &\quad + (473 \text{ feet} - 100 \text{ feet})\ (0.433 \text{ psi/ft}) \\ &= 3{,}329 \text{ psia} \end{aligned}$$

The critical increase in reservoir pressure, ΔP_c, above the native pressure that is necessary to raise the hydrostatic head of the Injection Zone to the head of the lowermost USDW is, therefore, 512 psi, as calculated below:

$$\begin{aligned} \Delta P_c &= P_c - P_i \\ &= 3{,}329 \text{ psia} - 2{,}817 \text{ psia} \\ &= 512 \text{ psi} \end{aligned}$$

An increase in reservoir pressure greater than 512 psi would be sufficient to raise the head of the Injection Zone above the head of the lowermost USDW. The cone of influence is the area around the injection wells within which the increase in reservoir pressure caused by injection is greater than 512 psi.

PredictW was used to calculate the pressure increase throughout the Injection Zone at the end of the upcoming 10 years of injection into the three wells. Contour plots of the predicted pressure increase in the injection zone (Drawings 13 through 16) were generated using historical injection rates and volumes and the maximum injection rates permitted for WDW-1, WDW-2 and WDW-3. The gridded pressure increases created by PredictW are contoured using Surfer, a commercial contouring software package.

Conservative values for reservoir thickness and permeability were used to overestimate the predicted increase in reservoir pressure. The reservoir was assumed to have a thickness of 85 feet. The permeability of the reservoir was assumed to be 251 md based on previous falloff testing. The modeled kh, 21,335 md-ft (= 251 md x 85 feet), is 20 percent of the kh, 104,477 md-ft, that was determined from the pressure falloff test conducted in WDW-3 on January 27, 2012 (Appendix G). Using a low kh will yield a predicted pressure increase that is much greater than expected and a cone of influence that is much larger than expected. The porosity was assumed to be 10 percent.

The viscosity of the formation fluid with TDS concentration of 25,000 ppm at 130°F is 0.53 cp (Appendix D). The compressibility of the pore volume of the formation is c_r, is 5.5×10^{-6} psi^{-1}. The compressibility of the formation fluid is c_w, is 2.9×10^{-6} psi^{-1}. The total compressibility ($c_t = c_r + c_w$) is 8.4×10^{-6} psi^{-1}.

Historical injection data for WDW-1, WDW-2 and WDW-3 were used for the injection period from September 23, 1999 (initial injection at the site) through February 29, 2012. WDW-1, WDW-2 and WDW-3 are then modeled as injecting from February 29, 2012 through February 28, 2022, at a continuous rate of 800 gallons per minute (gpm) distributed among the three wells. The maximum modeled per-well injection rate for any one well is 400 gpm.

The 512-psi pressure-increase contour, which defines the outline of the worst-case cone of influence, is located less than one mile from WDW-1, WDW-2, and WDW-3, as shown on Drawing 16. An improperly abandoned wellbore or other conduit filled with formation fluid that is located farther than one mile from the proposed

wells would not transmit sufficient pressure from the Injection Zone to move fluids into the USDW. Navajo researched public and private sources of information about wells within the 1-mile radius AOR. Information was presented in Section 7 (b) that demonstrates that each of the injection zone penetrations is properly constructed to prevent migration of fluids into the USDW.

Modeled Plume Front Migration (10 Years in Future)

The lithologic character of the Injection Zone, with the resulting hydrodynamic characteristics, is expected to be horizontally uniform. Given the anticipated homogeneity of the Injection Zone, plume geometry during the active injection phase is expected to be cylindrical.

More than 175 feet of formation is anticipated to exist in the Injection Zone at the locations of the three Navajo injection wells. Each well is completed in the same interval with 100 to 200 feet of perforations per well. For a conservative estimate of the injection plume size, the plume radius is calculated on the basis of all flow emplaced in an 85-foot thick interval. Assuming a continuous injection rate of 400 gpm into WDW-3 and an injection period of 10 years, the radius of the concentrated plume from WDW-3 will be 2,788 feet. This is determined by:

$$r_c = \left[\frac{(0.1337 v t)}{(0.8 \pi \phi h}\right]^{1/2}$$

where:

0.1337	=	factor to convert gallons to cubic feet
r_c	=	radius of the concentrated plume
v	=	annual injected volume in gallons
0.8	=	factor to compensate for immovable connate water
ϕ	=	formation porosity
h	=	thickness of the injection reservoir
t	=	years of injection = 10 years

$$r_c = \left[\frac{(0.1337 \times 88{,}668{,}260 \times 10)}{(0.8 \times 3.1416 \times 0.1 \times 85)}\right]^{1/2}$$

$$= 2788 \text{ feet}$$

The radius of the dispersed plume from WDW-3 after 10 years of continuous injection at 400 gpm is calculated to be 2,792 feet, as determined by:

$$r_d = 2.3 (C_d r_c)^{1/2} + r_c$$

where:

2.3 = constant
r_d = radius of the dispersed plume
c_d = coefficient of dispersion; for sandstone = 3, for limestone = 65
r_c = concentrated plume radius
r_d = $2.3 (65 \times 2{,}788)^{1/2} + 2788$
= 2,792 feet

WDW-3

The radius of the current dispersed plume versus 10 years of continuous injection at 400 gpm in the future for WDW-3 is as follows:

- Current plume radius: 1,494 feet
- Projected 10-year plume radius: 2,792 feet

By similar calculations, the radius of the current dispersed plume versus 10 years of continuous injection at 400 gpm in the future for WDW-1 and WDW-2 are as follows:

WDW-1

- Current plume radius: 2,898 feet
- Projected 10-year plume radius: 4,058 feet
-

WDW-1 is approximately 7,900 feet from WDW-3.

WDW-2

- Current plume radius: 2,266 feet
- Projected 10-year plume radius: 3,086 feet

WDW-2 is approximately 3,100 feet from the WDW-3.

7 (i) Stimulation Program

Historical Information

The only stimulation performed on the well has consisted of acid treatments of which the majority was performed through coil tubing pumped across the existing perforation. No fracturing of the injection interval has been performed.

Future Stimulation Programs and Procedures

Currently no changes are planned in the way the well is stimulated. Navajo reserves the right to fracture the injection interval with approval from OCD. Approximately once every two years an acid stimulation is performed on the wells. The stimulation procedure will consist of pumping 4,000 gallons to 8,000 gallons of 15 percent NEFE Hydrochloric acid through coil tubing at 1 bpm to 2 bpm across the perforations. The acid will be displaced into the formation down the tubing at highest possible rate.

7 (j) Injection Procedure

Injection into all three Navajo injection wells is on a continuous basis. The injection fluid is routed from the refinery process areas via pipeline to each injection well. Figure 11 presents the pre-injection facilities for WDW-3.

Historical Injection Rates and Volumes

The historical rates and volumes can be found in Appendix E.

Predicted Injection Rates and Volumes

The maximum permitted composite injection rate into all three Navajo injection wells is 800 gpm. This rate of injection is equal to 1,152,000 gallons per day or

420,480,000 gallons per year or 4,204,800,000 gallons into the Injection Zone over the upcoming 10 year permit life of WDW-3.

However, the actual average composite injection rate for the three injection wells, based on historical data summarized in Appendix E, is approximately 400 gpm.

7 (k) Drawings

Figure 11 presents a schematic of the pre-injection surface facilities. Figure 12 presents an as-built diagram of the below-grade portions of WDW-3. Figure 13 presents an as-built diagram of the WDW-3 wellhead.

7 (l) Construction

WDW-3 was converted from the following oil and gas well originally drilled to a depth of 9,450 feet in 1991:

Mewbourne Oil Company
Navajo Chalk Bluff Federal No. 1
Section 1, Township 18 South, Range 27 East
(API No. 30-015-26575)

The oil and gas well was converted to an injection well (WDW-3) in 2006. Appendix H includes excerpts from a report documenting the well conversion that provides relevant information about how the well was originally constructed and how it was converted to an injection well. Figure 12 presents an as-built diagram of the below-grade portions of WDW-3. Figure 13 presents an as-built diagram of the WDW-3 wellhead.

General Description of the Well

Size, Type, and Depth of Injection Tubing: The information for the tubing string was obtained from OCD records on file with the state and geophysical logs.

- **Tubing**: 4-1/2-inch, 11.6 pound per foot, steel construction, API grade J-55, with long thread connections (LTC).

- **Packer**: Arrow X-1, 7-inch by 2-7/8-inch set in tension (37,000 pounds) at 7,575 feet.

- **Tubing Length**: 7,568 feet with a 0.54-foot, 4-1/2-inch by 2-7/8-inch crossover in the top of the packer. There are no profile nipples in the tubing or the packer as this was not a requirement of the permit.

Size, Type, and Depth of Casing: There are four casing strings in the well and one below the injection interval. The information for these casing strings was obtained from OCD records on file with the state and geophysical logs.

- **13-3/8-inch**, 54.5 pound per foot, steel construction, API grade J-55, with short thread connections (STC), set at a depth of 400 feet. The casing was cemented to the surface with 425 sacks of cement. The casing was set in an open hole with a diameter of 17.5 inches. This information was obtained from OCD records.

- **9-5/8-inch**, 36 pound per foot, steel construction, API grade J-55, STC, set at a depth of 2,604 feet. The casing was cemented to the surface with 1,025 sacks of cement. The casing was set in an open hole with a diameter of 12.25 inches. This information was obtained from OCD records.

- **7-inch**, 26 pound per foot steel construction, API grade N-80 and P-110, STC, set at a depth of 9,450 feet. The casing was cemented with 1,350 sacks of cement to 900 feet from the surface. The casing was set in an open hole with a diameter of 8.75 inches. The top of cement and weight of the pipe was verified with a CBL and caliper log run on October 13, 2006. The remainder of the information was obtained from OCD records.

Below the cement plug at 9,022 feet is the top of a 4-1/2-inch liner. The liner is a string of 4-1/2-inch casing installed to a depth of 10,119 feet. There is a cast iron bridge plug set in the liner at 9,800 feet, which is above the original perforations between 9,861 feet and 9,967 feet. The current injection interval is above the

plug at 9,022 feet. The cement plug also isolates the lower section of the original wellbore. This information was obtained from OCD records.

The top of cement was determined from a CBL that was run in the 7-inch casing string on October 13, 2006. The top of cement in the 7-inch casing was found at 900 feet below the surface. The top of cement in the 9-5/8-inch and 13-3/8-inch casing strings was verified through OCD records and volume calculations.

The 7-inch casing was perforated on October 14 and 15, 2006. The casing was perforated with a 0.5-inch diameter hole at 2 shots per foot on a 60° phasing. The perforations are located between 7,660 feet and 8,450 feet and from 8,540 feet to 8,620 feet.

The total depth of the well is 10,119 feet with the plug back depth at 9,022 feet. On August 30, 2009, fill was tagged at 8,986 feet.

Current Loading on Pipe and Pipe Specifications

Pipe Size	Type	Weight	Depth Ref. to Ground Level (ft)		Hole Size	Cement Volume	Collapse	Yield
(in)		(lb/ft)	Top	Bottom	(in)	(sks)	(psi)	(psi)
13-3/8	Conductor Casing, J-55	54-1/2	Surface	400	17.5	425	1130	2730
9-5/8	Surface Casing	36	Surface	2604	12.25	1025	2020	3520
7	Protection, J-55 Casing, N-80, P-110	26 & 29	Surface	9450	8.75	1350	5410	7240
4-1/2	Injection Tubing, J-55	11.6	Surface	7561	6.184	N/A	4960	5350
7x 2-7/8	Arrow X-1 Packer	N/A	7561	7569	2.5	N/A	N/A	N/A
4-1/2	Liner, N-80	11.6	9051	10119	6.5	175	6350	7780

Depth to Injection Zone

The WDW-3 Injection Zone is 7,303 to 8,894 ft bls.

Pressures and Other Stresses That May Cause Well Failure

There are no known pressures or stresses that may cause failure of WDW-3.

Hole Size

The borehole advanced for the original oil and gas well that was later converted to WDW-3 was 12.25 inches in diameter.

Well Casing Information

Figure 12 and Appendix H include information about the WDW-3 well casing. The preceding table provides an overview of the casing information.

Cement Information

Figure 12 and Appendix H include information about the WDW-3 cement.

Rate, Temperature and Volume of Injected Fluid

Average and Maximum Daily Flow Rate and Volume

The average injection rate for all three Navajo injection wells is approximately 400 gpm and the maximum permitted injection rate between the three wells is 800 gpm.

Temperature

The temperature of the injected fluid is within average ambient temperature ranges.

Volume of Injected Fluid

The maximum annual volume of injected fluid, based on a maximum injection rate of 800 gpm is 420,480,000 gallons.

Chemical and Physical Characteristics of Injected Fluid

The fluid injected into WDW-3 is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated groundwater, and general wash waters are blended to form the fluid injected into WDW-3. Table 2 and Appendix D present data characterizing the injection fluid.

Chemical and Physical Characteristics of Formation Fluid

Formation testing was conducted during the initial construction of the Navajo refinery injection wells to obtain site-specific data relating to the chemical, physical and radiological characteristics of the Injection Zone. The formation fluid contained in the Injection Zone is compatible with the well construction components and the injected fluid. Formation fluid information pertinent to the reservoir calculations is included in Appendix E.

Chemical and Physical Characteristics of the Receiving Formation

The Injection Zone is porous carbonates of the lower portion of the Wolfcamp Formation, the Cisco Formation, and the Canyon Formation.

The lower portion of the Wolfcamp Formation (Lower Wolfcamp) is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation (Permian-Wolf campaign age) consists of light brown to tan, fine to medium-grained, fossiliferous limestones with variegated shale interbeds (Meyer, 1966, page 69). The top of the Wolfcamp Formation was correlated for this study to be below the base of the massive, dense dolomites of the overlying Abo Formation. The base of the Wolfcamp coincides with the top of the Cisco Formation. The thickness of log porosity greater than 5 percent in the entire Wolfcamp Formation ranges from 0 feet to 295 feet in a band three miles wide that trends northeast-southwest across the study area.

The Cisco Formation (Pennsylvanian-Virgilian age) of the Northwest Shelf is described by Meyer (1966, page 59) as consisting of uniform, light colored, chalky, fossiliferous limestones interbedded with variegated shales. Meyer (1966, page 59) also describes the Cisco at the edge of the Permian basin as consisting of biothermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 659 feet thick in WDW-1, 745 feet in WDW-2, and 720 feet in WDW-3. The total thickness of intervals with log porosity greater than 5 percent is approximately 310 feet in WDW-1, 580 feet in WDW-2, and 572 feet in WDW-3. The total thickness with log porosity greater than 10 percent is approximately 100 feet in WDW-1, 32 feet in WDW-2, and 65 feet in WDW-3. The thickness of the porous intervals in the Cisco ranges from 0 feet in

the northwestern part of the study area to nearly 700 feet in a band three miles wide that trends northeast-southwest.

The Canyon Formation (Pennsylvanian-Missourian age) consists of white to tan to light brown fine grained, chalky, fossiliferous limestone with gray and red shale interbeds (Meyer, 1966, page 53). Locally, the Canyon occurs between the base of the Cisco dolomites and the top of the Strawn Formation (Pennsylvanian-Desmoinesian age). The total thickness of intervals with log porosity greater than 5 percent is 34 feet in WDW-1, 30 feet in WDW-2, and 10 feet in WDW-3. No intervals appear to have log porosity greater than 10 percent in any of the three injection wells.

Permeability measurements that range from less than 100 md to 2,733 md are available for the Lower Wolfcamp-Cisco-Canyon injection zone. Permeability measurements from hydrocarbon-producing intervals in the Wolfcamp, Cisco, and Canyon from Meyer (1966, Table) are summarized in Appendix I. Meyer reported permeabilities in the Cisco of up to 114 millidarcies (md), up to 38 md in the Canyon, and up to 200 md in the Wolfcamp.

Permeability was estimated to be 597 md from DST No. 5 conducted in WDW-1 on August 26, 1993. DST No. 5 was conducted near the top of the Cisco Formation from 7,817 feet to 7,851 feet (Appendix I).

Historical falloff data obtained during the life of the wells shows that the permeability ranges from 500 md to 1,000 md throughout the injection interval.

Chemical and Physical Characteristics of the Confining Zone

The Confining Zone extends from 4,000 feet to 7,450 feet in WDW-1, from 4,120 feet to 7,270 feet in WDW-2, and from 4,030 feet to 7,303 feet in WDW-3. The Confining Zone includes massive low-porosity carbonate beds and layers of shale in the Upper Wolfcamp, Abo, and Yeso Formations that will confine the injected fluids to the permitted Injection Zone (Lower Wolfcamp, Cisco, and Canyon Formations). The formations that comprise the Confining Zone are described below.

The Injection Zone is directly overlain by the confining layers of the upper portion of the Wolfcamp Formation. Three (3) DSTs were conducted in the upper portion of the Wolfcamp in WDW-1, in the interval from 7,016 feet to 7,413 feet, that indicate that the interval has low permeability and can confine injected fluids to the injection zone. An average permeability of 0.36 md was calculated from the data from DST No. 3, as follows:

$$k = 162.6 \frac{q\ B\ \mu}{mh}$$

$$= 162.6 \frac{(20\ \text{bbl/ 89 min x 1440 min/day})(1\ )(0.53\ \text{cp})}{(570.883\ \text{psi/cycle})\ (7382\ \text{feet} - 7230\ \text{feet})}$$

$$= 162.6 \frac{(323.6\ \text{bpd})(1)(0.\ 53\ \text{cp})}{(570.883\ \text{psi/cycle})\ (152\ \text{feet})}$$

$$= 0.36\ \text{md}$$

A permeability on the order of 0.1 md is at the low end of the permeability range for carbonates, and is at the high end of the permeability range for shales, according to Freeze and Cherry (1979, p. 29). Therefore, the low-permeability carbonates of the upper Wolfcamp will provide the first level of confinement for the Injection Zone.

The Abo Formation overlies the Wolfcamp and extends from 5,400 feet to 6,890 feet in WDW-1, from 5,506 feet to 6,728 feet in WDW-2, and from 5,380 feet to 6,745 feet in WDW-3. Although the Abo is well known as a major oil producer in the AOR, the producing intervals lie in the upper Abo, whose equivalents are above 6,100 feet in WDW-1 and above 6,200 feet in proposed Gaines Well No. 2. The deepest Abo test well in the AOR, Map ID No. 126, located 6,000 feet east (downdip) of WDW-3, was drilled to 6,412 feet. No Abo production in the AOR has been established below 6,298 feet, the producing interval in Map ID No. 112, located 3,800 feet southeast (downdip) of WDW-1. The base of the producing interval within the Abo Formation in the AOR, therefore, is over 900 feet above the top of the proposed injection zone. The lower 600 feet of the Abo Formation (below the deepest producing interval in the AOR), consisting primarily of dolomite with an average porosity less than 5 percent and interbedded shale, will serve as the secondary confining layer above the proposed injection zone.

The Yeso Formation, which will provide additional confining capabilities, directly overlies the Abo Formation. The top of the Yeso is not consistently identified in the AOR, according to well records submitted to the OCD and available scout tickets. However, the top of the Confining Zone can be considered to extend to the top of the low-porosity limestone interval below the higher-porosity dolomites below the Glorieta Member of the San Andres Formation (at 4,000 feet in WDW-1, 4,120 feet in WDW-2, and 4,030 feet in WDW-3). The Yeso consists of low-porosity carbonates and clastic beds. The Tubb shale, a shale interval that is up to 150 feet thick in some wells in the study area, also occurs in this interval. Although no faults are known to exist in the confining zone within the AOR, the Tubb shale will serve to prevent movement of fluids through a hypothetical unknown fault.

Depth, Thickness and Chemical Characteristics of Penetrated Formations Containing Ground Water

The base of the USDW, groundwater with total dissolved solids concentration with less than 10,000 milligrams per liter (mg/L), occurs at the base of the Tansill Formation. Figure 3 presents a hydrostratigraphic cross-section for the local area. Figure 4 presents a potentiometric surface map indicating the direction of groundwater movement in the freshwater aquifers.

The base of the USDW occurs at the following approximate depths in Navajo's three injection wells:

- WDW-1: approximately 493 feet KM (3,200 feet above mean sea level)
- WDW-2: approximately 473 feet KB (3,150 feet above mean sea level)
- WDW-3: approximately 420 feet KB (3,150 feet above mean sea level)

In the eastern part of the study area, at depth, the Tansill Formation is overlain by the Salado Formation (Permian - Ochoan age). The Salado consists of halite, polyhalite, anhydrite, and potassium salts, which are soluble. The Salado is overlain by the Rustler Formation (Permian - Ochoan age). In the AOR, which straddles the outcrop area of the Salado, and to the east, the Salado has been removed by solution by ground water flowing through the Rustler.

To the east, where the Rustler is present, the Rustler is the USDW. To the west, where the Rustler has been removed by erosion and the Salado has been removed by solution, the Tansill is the USDW. The Tansill Formation and the underlying Yates Formation comprise the Three Twins Member of the Chalk Bluff Formation known in outcrops in the region (Hendrickson and Jones, 1952, page 20), and listed as a freshwater-producing interval.

The top of the Injection Zone (Lower Wolfcamp, Cisco, and Canyon Formations) is separated from the base of the USDW by several thousand feet of lower permeability carbonates, siltstones and shales as follows:

- WDW-1: 6957 feet (7,450 feet - 493 feet)
- WDW-2: 6,797 feet (7,270 feet - 473 feet).
- WDW-3: 6,883 feet (7,303 feet - 420 feet).

7 (m) Contingency Plans

WDW-3 is equipped with a high-level shutoff switch to prevent operation of the injection pump at pressures greater than the designated MASIP. The well is equipped with a low pressure shutoff switch that will deactivate the injection pump in the event of a surface leak. In addition, the well is equipped with a high/low pressure shutdown switch with a pressure sensor on the tubing/casing annulus. This pressure switch is intended to stop the injection pump in the event of 1) a tubing leak, or 2) a casing, packer, or wellhead leak.

If an alarm or shutdown is triggered, the cause of the alarm or shutdown will be immediately investigated.

- Immediately cease injection operations;
- Take all necessary steps to determine the presence or absence of a leak; and
- Provide verbal notification to OCD within 24 hours.

If the alarm or shutdown is not related to mechanical integrity and the cause of the alarm or shutdown is corrected, injection operations will be resumed. If the mechanical integrity of the well is in question, the well will remain out of service

until the mechanical integrity of the well is restored to the satisfaction of OCD and the agency approves resumption of injection operations.

7 (n) MIT Monitoring Plans (20.6.2.5207 NMAC)

Navajo has an ongoing monitoring program that satisfies all applicable requirements of Section 20.6.2.5207.NMAC.

- The mechanical integrity of WDW-3 is demonstrated on an annual basis.
- Continuous monitoring devices are used to provide a record of injection pressure, flow rate, flow volume, and annular pressure.

The results of these monitoring activities are reported to NMED as required by regulation.

7 (o) Additional Monitoring Plans for Class I Non-Hazardous Waste Injection Wells (20.6.2.5207B NMAC)

Appendix J includes an Injected Fluids Monitoring Plan that describes the procedures to be carried out on a quarterly basis to obtain a detailed chemical and physical analysis of a representative sample of the injected fluid, including the quality assurance procedures. The plan will be updated as necessary.

The plan includes the following elements:

- The parameters for which the injected fluid will be analyzed and the rationale for the selection of these parameters;
- The test methods that will be used to test for these parameters;
- The sampling method that will be used to obtain a representative sample of the injected fluid being analyzed;
- Field sampling documentation methodologies;
- The commercial laboratory who performs the analysis; and
- Method of reporting analytical results to OCD.

7 (p) Additional Monitoring Plans for Class III Wells (20.6.2.5207C NMAC)

This section is Not Applicable; WDW-3 is not a Class III well.

7 (q) Financial Assurance

Appendix K includes a well closure plan for WDW-3. The estimated cost to plug and abandon WDW-3 is presented in the table below. This cost estimate has been prepared to reflect the estimated costs that would be incurred by Navajo to abandon the well in accordance with the procedures in Appendix K.

Description of Service	Estimated Cost
Wireline (BHP, RTS, PFOT, Perforate)	20,000
Rental Tools	5,000
Pumping Service	10,000
Cementing Service	20,000
Excavating and Welding	2,500
Mud/Brine	5,000
Frac Tanks	2,500
Vacuum Trucks	2,500
Miscellaneous	2,500
SUBTOTAL	**70,000**
Field Supervision, Project Management, Procurement	25,000
Total Estimated Cost	**$95,000**

Appendix L includes a copy of the financial assurance instrument that Navajo has established to provide the appropriate monies for plugging and abandoning WDW-3, any groundwater restoration that may be necessary, and any post-operational monitoring that may be required.

7 (r) Logging and Testing Data

Appendix M includes a copy of an open-hole log run on the original oil and gas well that was drilled in 1991 and later converted to WDW-3. Appendix N includes

copies of cased-hole logs that were run in WDW-3 as the well was being converted to disposal services.

7 (s) Mechanical Integrity Data (20.6.2.5204 NMAC)

Mechanical Integrity Testing (MIT) is conducted on WDW-3 on an annual basis in accordance with OCD regulations. Copies of each annual MIT report are submitted to OCD. Appendix G includes copies of the report documenting the most recent annual MIT work at WDW-3.

7 (t) Maximum Pressure and Flow Rate

As described in Section 7(f), the maximum composite injection rate into the three Navajo injection wells and maximum surface injection pressure are as follows:

- Maximum Injection Rate: 800 gpm
- Maximum Surface Injection Pressure: 1,460 psi

7 (u) Formation Testing Program Data

Appendix E includes the results of formation testing that was performed on the well when it was originally drilled as an oil and gas exploratory well.

7 (v) Compatibility

All components of WDW-3 that are in direct contact with the non-corrosive waste stream and formation fluids in the Injection Interval (e.g., wetted surfaces) are constructed of materials that are compatible with these fluids.

7 (w) Area of Review Corrective Actions

No corrective action plan is required for any of the artificial penetrations identified in the 1-mile radius AOR because all artificial penetrations have been properly constructed, plugged and/or abandoned in order to prevent movement of fluids

into or between USDWs which could be caused by pressures in the Injection Zone.

8.0 Modification(s)

There are no proposed modifications to existing discharge processes.

9.0 Inspection/Maintenance and Reporting

Navajo performs daily visual inspections of their three injection wells and the pipeline and performs required maintenance (PM) activities as scheduled to ensure safe operation of the wells.

Navajo performs routine reporting in accordance with the requirements of 20.6.2.5208.A NMAC for Class I nonhazardous waste injection wells.

10.0 Contingency Plans

Navajo has an Integrated Contingency Plan detailing responses to spills of all types, reporting spills/releases, mitigation and corrective actions, clean up and disposal as applicable. The remote WDW-3 is equipped with a high-pressure shutoff switch to prevent operation of the injection pump at pressures greater than the designated MASIP. The well is equipped with a low pressure shutoff switch that will deactivate the injection pump in the event of a surface leak. In addition, the well is equipped with a high/low pressure shutdown switch with a pressure sensor on the tubing/casing annulus. This pressure switch is intended to stop the injection pump in the event of 1) a tubing leak, or 2) a casing, packer, or wellhead leak.

If an alarm or shutdown is triggered at the wellhead, electronic signals are sent to the Control Room at the refinery notifying of the shutdown and the cause of the alarm or shutdown will be immediately investigated.

Operators will immediately cease injection operations at the wellhead and divert flow to another well; and notify Maintenance and Environmental to take all

necessary steps to determine the presence or absence of a leak; and Environmental will provide verbal notification to OCD within 24 hours.

If the alarm or shutdown is not related to mechanical integrity and the cause of the alarm or shutdown is corrected, injection operations will be resumed. If the mechanical integrity of the well is in question, the well will remain out of service until the mechanical integrity of the well is restored to the satisfaction of OCD and the agency approves resumption of injection operations.

11.0 Other Information

No additional information is required to demonstrate that the discharge permit will not result in concentrations in excess of the standards of Section 20.6.2.3103 NMAC or the presence of any toxic pollutant at any place of withdrawal of water for present or reasonably foreseeable future use.

12.0 Filing Fee

A check in the amount of $100, made payable to Water Quality Management Fund, accompanies this permit renewal application document.

13.0 Draft Public Notice

20.6.2.3108.C requires that Navajo provide notice in accordance with 20.6.2.3108.F within thirty (30) days of OCD deeming the permit renewal application to be administratively complete. Appendix O includes a DRAFT copy of the public notice that will be published following receipt of written notification from OCD that this discharge permit renewal application has been deemed administratively complete.

Navajo understands the requirement to submit to OCD within 15 days of completion of public notice requirements stipulated Subsection C of 20.6.2.3108 NMAC proof of notice, including an affidavit of mailing(s) and the list of property owner(s), proof of publication, and an affidavit of posting, as appropriate.

14.0 Certification

The required certification language is included at the end of the completed OCD Discharge Permit Application Form in the front of this permit renewal application document. The appropriate Navajo refinery authority has signed the form.

TABLE IA

NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

ID NO	API	Sect	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILLL DATE	DEPTH (ft)
1	30-015-00662	36	17S	27E	330S	330W	STATE NO. 2	ACREY, B L & F D	O	10/15/1942	P&A	10/15/1942	600
2	30-015-00676	36	17S	27E	330N	990W	EMPIRE ABO UNIT #017	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	?	5797
3	30-015-00677	36	17S	27E	330S	990E	EMPIRE ABO UNIT #020	BP AMERICA PRODUCTION COMPANY	O	4/13/2009	P&A	3/17/1960	6013
4	30-015-00696	1	18S	27E	1980S	1980E	EMPIRE ABO UNIT #019Q	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	8/20/1959	6180
5	30-015-00697	1	18S	27E	1980S	660E	EMPIRE ABO UNIT #020K	BP AMERICA PRODUCTION COMPANY	O	1/5/2003	P&A	1/5/2003	6185
6	30-015-00698	1	18S	27E	660S	1980E	EMPIRE ABO UNIT #191	BP AMERICA PRODUCTION COMPANY	S	N/A	ACTIVE	11/8/1959	6365
7	30-015-00699	1	18S	27E	940S	330E	EMPIRE ABO UNIT #020B	APACHE CORPORATION	O	N/A	ACTIVE	12/2/1961	6250
8	30-015-00703	1	18S	27E	1980S	660W	EMPIRE ABO UNIT #017A	BP AMERICA PRODUCTION COMPANY	O	3/27/2009	P&A	5/22/1995	6137
9	30-015-00704	1	18S	27E	1980N	660W	EMPIRE ABO UNIT J NO. 17	ARCO OIL & GAS	O	3/26/1959	P&A	3/26/1959	5960
10	30-015-00705	1	18S	27E	990S	660W	EMPIRE ABO UNIT #017B	BP AMERICA PRODUCTION COMPANY	O	7/21/2004	P&A	6/25/1959	6150
11	30-015-00706	1	18S	27E	2310N	1980W	EMPIRE ABO UNIT #018A	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	5/31/1959	6087
12	30-015-00707	1	18S	27E	1980S	1980W	EMPIRE ABO UNIT #018B	APACHE CORPORATION	O	N/A	ACTIVE	5/22/1959	6163
13	30-015-00708	1	18S	27E	660N	1980E	EMPIRE ABO UNIT #019B	LIME ROCK RESOURCES II-A, L.P.	O	N/A	ACTIVE	7/7/1959	6078
14	30-015-00709	1	18S	27E	1980N	1980E	EMPIRE ABO UNIT #019C	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	8/2/1959	6205
15	30-015-00710	1	18S	27E	660N	1980W	AAO FEDERAL No. 013	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	7/21/2004	6200
16	30-015-00711	1	18S	27E	1980N	660E	EMPIRE ABO UNIT #020C	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	10/13/1959	6218
17	30-015-00712	1	18S	27E	647N	667W	EMPIRE ABO UNIT I NO. 17	ARCO OIL & GAS	O	1/24/1987	P&A	1/24/1987	5902
18	30-015-00713	1	18S	27E	995S	1644W	EMPIRE ABO UNIT #018D	BP AMERICA PRODUCTION COMPANY	O	9/27/2003	P&A	9/27/2003	6150
19	30-015-00715	1	18S	27E	330N	330W	SOUTH RED LAKE GRAYBURG UNIT #037	LEGACY RESERVES OPERATING LP	I	N/A	ACTIVE	?	1820
20	30-015-00716	2	18S	27E	1980S	1830E	EMPIRE ABO UNIT #015	APACHE CORPORATION	O	N/A	ACTIVE	3/23/1959	6100
21	30-015-00718	2	18S	27E	330S	610W	PRE-ONGARD WELL #2	PRE-ONGARD WELL OPERATOR	O	N/A	P&A	?	512
22	30-015-00720	2	18S	27E	990N	1650E	RIVERWOLF UNIT #004	BP AMERICA PRODUCTION COMPANY	O	12/12/2008	P&A	10/21/1959	5881
23	30-015-00721	2	18S	27E	330N	990E	SOUTH RED LAKE GRAYBURG UNIT #036	FAIRWAY RESOURCES OPERATING LLC	O	N/A	P&A	11/6/1947	1705
24	30-015-00722	2	18S	27E	660S	660E	EMPIRE ABO UNIT #016A	APACHE CORPORATION	O	2/24/2009	P&A	1/20/1959	6114
25	30-015-00724	2	18S	27E	990N	330E	EMPIRE ABO UNIT #016B	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	?	5920
26	30-015-00731	2	18S	27E	660S	1980E	EMPIRE ABO UNIT #015A	BP AMERICA PRODUCTION COMPANY	O	2/11/2009	P&A	11/19/1958	6135
27	30-015-00737	2	18S	27E	905N	1601E	SOUTH RED LAKE GRAYBURG UNIT #038	FAIRWAY RESOURCES OPERATING LLC	O	N/A	ACTIVE	5/23/1948	1685
28	30-015-00740	2	18S	27E	1650N	2197E	SOUTH RED LAKE GRAYBURG UNIT #040	MCQUADRANGLE, LC	I	7/10/2002	P&A	7/10/2002	5884
29	30-015-00741	2	18S	27E	2310N	1980E	EMPIRE ABO UNIT #015B	APACHE CORPORATION	O	N/A	ACTIVE	6/6/1959	5884
30	30-015-00742	2	18S	27E	1650N	990E	SOUTH RED LAKE GRAYBURG UNIT 39 WIW	S&J OPERATING COMPANY	O	2/8/1991	P&A	2/8/1991	1741
31	30-015-00744	2	18S	27E	2310S	1640E	STATE 1	COMPTON-SMITH	O	N/A	P&A	?	5962
32	30-015-00745	2	18S	27E	1980N	660E	STATE H #001	MACK ENERGY CORPORATION	O	3/7/2008	P&A	3/7/2008	6140
33	30-015-00868	11	18S	27E	660N	1980E	EMPIRE ABO UNIT #015C	BP AMERICA PRODUCTION COMPANY	O	7/16/2004	P&A	7/16/2004	6263
34	30-015-00869	11	18S	27E	330N	653E	EMPIRE ABO UNIT #016C	BP AMERICA PRODUCTION COMPANY	O	10/25/2004	P&A	10/25/2004	6211
35	30-015-00871	12	18S	27E	330N	330W	FEDERAL EA #001	RHONDA OPERATING CO	O	4/12/1994	P&A	4/12/1994	6219
36	30-015-00872	12	18S	27E	310S	990W	MAGRUDER NO. 1	MCKEE-JONES	O	2/18/1943	P&A	2/18/1943	2000
37	30-015-00874	12	18S	27E	2310S	2355E	COMSTOCK FEDERAL #007	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	6/29/1948	1604
38	30-015-01215	1	18S	27E	667N	666E	EMPIRE ABO UNIT #020D	APACHE CORPORATION	O	N/A	ACTIVE	11/5/1959	6118
39	30-015-01218	36	17S	27E	330S	2310W	EMPIRE ABO UNIT #018	BP AMERICA PRODUCTION COMPANY	O	3/11/2009	P&A	3/11/2009	6849
40	30-015-01251	36	17S	27E	660S	1980E	EMPIRE ABO UNIT #019	BP AMERICA PRODUCTION COMPANY	O	4/27/2009	P&A	9/8/1959	6200
41	30-015-02610	6	18S	28E	955S	1750W	EMPIRE ABO UNIT #022C	APACHE CORPORATION	O	N/A	ACTIVE	8/5/1960	6243
42	30-015-02613	6	18S	28E	990N	660W	EMPIRE ABO UNIT #021B	APACHE CORPORATION	O	N/A	ACTIVE	12/30/1959	6119
43	30-015-02619	6	18S	28E	1990N	660W	EMPIRE ABO UNIT #021C	APACHE CORPORATION	O	N/A	ACTIVE	10/30/1959	6202

Map ID No. - Refer to Drawing 2
Well Type - O=Oil, I=Injction, G=Gas
(ft) - Feet
N/A - Not Applicable
Well Status - PTABLE II Wells_in_1_Mile_Sorted= Plug Abandoned, TTABLE II Wells_in_1_Mile_Sorted=Temporarily Abandoned
? - Data Not Available

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NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

ID NO	API	Sect	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILLL DATE	DEPTH (ft)
44	30-015-02622	6	18S	28E	2219S	660W	EMPIRE ABO UNIT #021D	APACHE CORPORATION	O	N/A	ACTIVE	1/23/1960	6194
45	30-015-02623	6	18S	28E	2248S	2075W	EMPIRE ABO UNIT #022F	APACHE CORPORATION	O	N/A	ACTIVE	2/22/1960	6210
46	30-015-02627	6	18S	28E	949S	990W	STATE M-AI #002	RUTH OIL CO, LLC	O	N/A	ACTIVE	10/21/1960	6225
47	30-015-10184	36	17S	27E	330S	920W	STATE #006	ASPEN OIL INC	O	N/A	ACTIVE	?	1343
48	30-015-20394	1	18S	27E	953S	2197E	EMPIRE ABO FEDERAL NO. 5	HUMBLE OIL & REFINING CO	O	4/9/1971	P&A	4/9/1971	3301
49	30-015-20535	12	18S	27E	330N	455W	FEDERAL EA 2	ROBERT G COX	O	8/7/1973	P&A	8/7/1973	6248
50	30-015-20894	12	18S	27E	1980N	660W	WDW #002	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	7/18/1973	10372
51	30-015-21395	6	18S	28E	2630N	1300W	EMPIRE ABO UNIT #211	APACHE CORPORATION	O	N/A	ACTIVE	2/11/1975	6200
52	30-015-21544	2	18S	27E	1110S	1322E	EMPIRE ABO UNIT #151	APACHE CORPORATION	O	N/A	T&A	11/4/1975	6285
53	30-015-21552	1	18S	27E	2500N	2500E	EMPIRE ABO UNIT #191	CFM OIL, LLC	O	N/A	ACTIVE	9/7/1975	6259
54	30-015-21553	1	18S	27E	2501N	20E	EMPIRE ABO UNIT #201	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	7/19/1975	6225
55	30-015-21554	1	18S	27E	1367S	1440W	EMPIRE ABO UNIT #181	BP AMERICA PRODUCTION COMPANY	O	4/17/2003	P&A	4/17/2003	6203
56	30-015-21623	36	17S	27E	360S	455W	STATE #007	GEORGE A CHASE JR & C SERVICE	O	N/A	ACTIVE	?	1366
57	30-015-21783	1	18S	27E	2490N	1299E	EMPIRE ABO UNIT #202	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	5/13/1976	6296
58	30-015-21792	1	18S	27E	1533S	2370W	EMPIRE ABO UNIT #182	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	6/1/1976	6369
59	30-015-21825	2	18S	27E	320S	2602E	EMPIRE ABO UNIT #152	APACHE CORPORATION	O	N/A	T&A	6/17/1976	6335
60	30-015-21873	1	18S	27E	1526S	1470E	EMPIRE ABO UNIT #191A	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	9/23/1976	6350
61	30-015-22013	2	18S	27E	90S	1456E	EMPIRE ABO UNIT #153	BP AMERICA PRODUCTION COMPANY	O	10/30/2008	P&A	4/20/1977	6303
62	30-015-22051	2	18S	27E	1370S	2445W	EMPIRE ABO UNIT #141A	APACHE CORPORATION	O	N/A	ACTIVE	5/17/1977	3203
63	30-015-22096	1	18S	27E	2370S	1510W	EMPIRE ABO UNIT #183	APACHE CORPORATION	O	N/A	ACTIVE	7/24/1977	6210
64	30-015-22527	6	18S	28E	2630N	1930W	EMPIRE ABO UNIT #223	APACHE CORPORATION	O	N/A	ACTIVE	5/19/1978	6250
65	30-015-22559	1	18S	27E	2290S	2445W	EMPIRE ABO UNIT #184	APACHE CORPORATION	O	N/A	SHUT IN	7/25/1978	6200
66	30-015-22560	1	18S	27E	220S	1390E	EMPIRE ABO UNIT #192	BP AMERICA PRODUCTION COMPANY	O	N/A	ACTIVE	6/25/1978	6250
67	30-015-22568	11	18S	27E	400N	1450E	EMPIRE ABO UNIT #151B	BP AMERICA PRODUCTION COMPANY	O	8/16/2006	P&A	8/16/2006	6310
68	30-015-22569	11	18S	27E	560N	2588E	EMPIRE ABO UNIT #152B	BP AMERICA PRODUCTION COMPANY	O	9/24/2008	P&A	8/23/1978	6300
69	30-015-22608	2	18S	27E	100S	1950W	EMPIRE ABO UNIT #142	BP AMERICA PRODUCTION COMPANY	O	N/A	P&A	?	6200
70	30-015-22637	6	18S	28E	2450N	400W	EMPIRE ABO UNIT #212	APACHE CORPORATION	O	N/A	ACTIVE	12/28/1978	6267
71	30-015-22656	1	18S	27E	2400N	700E	EMPIRE ABO UNIT #203	APACHE CORPORATION	O	N/A	ACTIVE	10/10/1978	6225
72	30-015-22657	1	18S	27E	2490S	2200E	EMPIRE ABO UNIT #193	ALAMO PERMIAN RESOURCES, LLC	O	N/A	ACTIVE	10/26/1978	6225
73	30-015-22658	1	18S	27E	1500S	2130E	EMPIRE ABO UNIT #194	APACHE CORPORATION	O	N/A	ACTIVE	11/14/1978	6325
74	30-015-22669	2	18S	27E	800S	2500E	EMPIRE ABO UNIT #154	BP AMERICA PRODUCTION COMPANY	O	1/27/2009	P&A	12/4/1978	6200
75	30-015-22808	2	18S	27E	600S	1330E	EMPIRE ABO UNIT #156	BP AMERICA PRODUCTION COMPANY	O	2/5/2009	P&A	4/12/1979	6225
76	30-015-22815	1	18S	27E	670S	330W	EMPIRE ABO UNIT #171	LIME ROCK RESOURCES A, L.P.	O	N/A	ACTIVE	5/22/1979	6300
77	30-015-22816	1	18S	27E	1120S	1440E	EMPIRE ABO UNIT L #192	ARCO OIL & GAS	O	6/23/1980	ABANDONED	6/28/1980	6350
78	30-015-22834	11	18S	27E	225N	2280W	EMPIRE ABO UNIT #141B	APACHE CORPORATION	O	N/A	ACTIVE	5/21/1979	6225
79	30-015-22838	11	18S	27E	200N	1925E	EMPIRE ABO UNIT #153B	BP AMERICA PRODUCTION COMPANY	O	1/4/2009	P&A	5/6/1979	6225
80	30-015-22885	2	18S	27E	1040S	2025E	EMPIRE ABO UNIT #155	APACHE CORPORATION	O	N/A	T&A	5/1/1979	6202
81	30-015-22896	2	18S	27E	1820S	2550W	EMPIRE ABO UNIT #143A	WALTER SOLT, LLC	O	N/A	ACTIVE	5/13/1979	6108
82	30-015-22914	2	18S	27E	1310S	590E	EMPIRE ABO UNIT #161	COG OPERATING, LLC	O	N/A	ACTIVE	9/13/1979	6225
83	30-015-23115	12	18S	27E	330N	380W	FEDERAL EA NO. 3	RHONDA OPERATING CO	O	3/16/1980	P&A	3/16/1980	6300
84	30-015-23116	6	18S	28E	2050N	100W	EMPIRE ABO UNIT #213	APACHE CORPORATION	O	N/A	ACTIVE	6/2/1980	6242
85	30-015-23548	6	18S	28E	1950S	1000W	EMPIRE ABO UNIT #211A	APACHE CORPORATION	O	N/A	ACTIVE	7/17/1980	6311
86	30-015-25099	12	18S	27E	1809N	990E	COMSTOCK FEDERAL #006	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	9/11/1985	1652

Map ID No. - Refer to Drawing 2
Well Type - O=Oil, I=Injction, G=Gas
(ft) - Feet
N/A - Not Applicable
Well Status - PTABLE II Wells_in_1_Mile_Sorted= Plug Abandoned, TTABLE II Wells_in_1_Mile_Sorted=Temporarily Abandoned
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ID NO	API	Sect	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILLL DATE	DEPTH (ft)
87	30-015-25201	12	18S	27E	1650S	1770W	COMSTOCK FEDERAL #002	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	3/16/1985	1600
88	30-015-25270	12	18S	27E	2310N	2310W	CHUKKA FEDERAL #001	BILL MILLER	O	N/A	ACTIVE	4/23/1985	1600
89	30-015-25545	12	18S	27E	990S	990W	COMSTOCK FEDERAL #003	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	5/19/1986	1530
90	30-015-25649	12	18S	27E	1650S	990W	COMSTOCK FEDERAL NO. 8	FRED POOL DRILLING CO	O	10/10/1986	P&A	?	2000
91	30-015-25675	7	18S	28E	940N	1757W	LAUREL STATE #002	EASTLAND OIL CO	O	N/A	ACTIVE	11/10/1988	1690
92	30-015-25738	12	18S	27E	2310N	2310E	COMSTOCK FEDERAL #009	HARLOW ENTERPRISES LLC	O	N/A	ACTIVE	4/25/1987	1586
93	30-015-25997	7	18S	28E	940N	1757W	LAUREL STATE #001	EASTLAND OIL CO	O	N/A	ACTIVE	2/23/1987	1690
94	30-015-26017	12	18S	27E	990S	1650W	COMSTOCK FEDERAL #010	EASTLAND OIL CO	O	1/23/2003	P&A	1/23/2003	2040
95	30-015-26404	12	18S	27E	660N	990E	FEDERAL T #001	APACHE CORPORATION	I	N/A	ACTIVE	9/13/1990	10141
96	30-015-26575	6	18S	28E	778N	995W	WDW-3 (ORIGINAL LOC.)	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	?	10119
97	30-015-26741	1	18S	27E	1650N	1350W	CHALK BLUFF FEDERAL COM #002	MEWBOURNE OIL CO	G	N/A	ACTIVE	8/24/1991	10140
98	30-015-26943	6	18S	28E	990S	730W	CHALK BLUFF 6 STATE #001	MEWBOURNE OIL CO	G	N/A	ACTIVE	4/16/1992	10200
99	30-015-27163	1	18S	27E	1980S	990E	CHALK BLUFF FEDERAL COM #003	MEWBOURNE OIL CO	G	N/A	ACTIVE	1/16/1993	10150
100	30-015-27286	36	17S	27E	660S	990W	CHALK BLUFF 36 STATE #001	MEWBOURNE OIL CO	O	N/A	ACTIVE	3/30/1993	10060
101	30-015-31087	6	18S	28E	990S	330W	LP STATE #003	MARBOB ENERGY CORP	O	3/17/2008	P&A	7/15/2000	446
102	30-015-31319	7	18S	28E	2310N	330W	LAUREL STATE #003	EASTLAND OIL CO	O	N/A	ACTIVE	1/31/2001	1630
103	30-015-31592	36	17S	27E	330S	2310E	RAMAPO #007	ROJO GRANDE COMPANY LLC	O	12/21/2001	P&A	12/21/2001	612
104	30-015-32307	1	18S	27E	330N	990W	AAO FEDERAL #001	APACHE CORPORATION	O	N/A	ACTIVE	12/10/2002	3851
105	30-015-32308	1	18S	27E	430N	2310W	AAO FEDERAL #002	APACHE CORPORATION	O	N/A	ACTIVE	9/19/2002	4150
106	30-015-32309	1	18S	27E	330N	1690E	AAO FEDERAL #003	APACHE CORPORATION	O	N/A	ACTIVE	4/10/2003	4125
107	30-015-32310	1	18S	27E	990N	990E	AAO FEDERAL #004	APACHE CORPORATION	O	N/A	ACTIVE	5/4/2004	4100
108	30-015-32946	2	18S	27E	2210S	1650E	SCBP STATE #1	APACHE CORPORATION	O	N/A	ACTIVE	4/26/2005	3880
109	30-015-32959	1	18S	27E	1650N	875W	AAO FEDERAL #005	APACHE CORPORATION	O	N/A	ACTIVE	10/12/2004	3900
110	30-015-33473	1	18S	27E	1750N	1650S	AAO FEDERAL #007	MARBOB ENERGY CORP	O	N/A	ACTIVE	4/4/2005	4100
111	30-015-33784	1	18S	27E	1650N	330W	AAO FEDERAL #008	MARBOB ENERGY CORP	O	N/A	ACTIVE	2/25/2005	4310
112	30-015-34071	1	18S	27E	2169N	1963W	AAO FEDERAL #006	MARBOB ENERGY CORP	O	N/A	ACTIVE	8/5/2005	3977
113	30-015-34387	1	18S	27E	1980S	630W	AAO FEDERAL #009	MARBOB ENERGY CORP	O	N/A	ACTIVE	1/17/2006	3950
114	30-015-34555	1	18S	27E	890S	660W	AAO FEDERAL #011	MARBOB ENERGY CORP	O	N/A	ACTIVE	3/9/2006	4100
115	30-015-34576	1	18S	27E	2060S	2160W	AAO FEDERAL #010	MARBOB ENERGY CORP	O	N/A	ACTIVE	10/26/2006	4000
116	30-015-34998	1	18S	27E	890S	1650W	AAO FEDERAL #012	MARBOB ENERGY CORP	O	N/A	ACTIVE	9/21/2006	4075
117	30-015-35814	2	18S	27E	2063N	441E	STATE H NO 2	MACK ENERGY CORPORATION	O	N/A	ACTIVE	1/11/2008	7545
118	30-015-36281		18S	27E	2193S	1520W	SUN DEVILS FEDERAL NO. 001	MACK ENERGY CORPORATION	O	N/A	PERMIT TO DRILL	?	6000
119	30-015-39324	36	17S	27E	480S	2210E	BIG BOY STATE NO. 6	COG OPERATING, LLC	O	N/A	PERMIT TO DRILL	?	5072
120	30-015-39898	1	18S	27E	1258N	1005E	EMPIRE ABO UNIT #412	APACHE CORPORATION	O	N/A	NEW	?	6300
121	30-015-39899	1	18S	27E	1305N	2535W	EMPIRE ABO UNIT #016	APACHE CORPORATION	O	N/A	NEW	?	6300
122	30-015-39900	1	18S	27E	1120N	1205W	EMPIRE ABO UNIT #016	APACHE CORPORATION	O	N/A	NEW	?	6300
123	30-015-00695	1	18S	27E	1650S	330W	HILL NO. 1	WILLIAM & EDWARD HUDSON	O	6/18/1948	P&A	6/18/1948	?
124	30-015-00717	2	18S	27E	1980S	660E	EMPIRE ABO UNIT #016	APACHE CORPORATION	O	N/A	ACTIVE	2/6/1995	6100
125	30-015-00701	1	18S	27E	330N	330W	SOUTH RED LAKE GRAYBURG UNIT 37 WIW	FAIRWAY RESOURCES OPERATING LLC	O	N/A	ACTIVE	?	?

Map ID No. - Refer to Drawing 2
Well Type - O=Oil, I=Injction, G=Gas
(ft) - Feet
N/A - Not Applicable
Well Status - PTABLE II Wells_in_1_Mile_Sorted= Plug Abandoned, TTABLE II Wells_in_1_Mile_Sorted=Temporarily Abandoned
? - Data Not Available

TABLE 1B

NON-FRESHWATER (OIL AND GAS) WELLS IN WDW-3 AREA OF REVIEW
PENETRATING TOP OF INJECTION ZONE
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

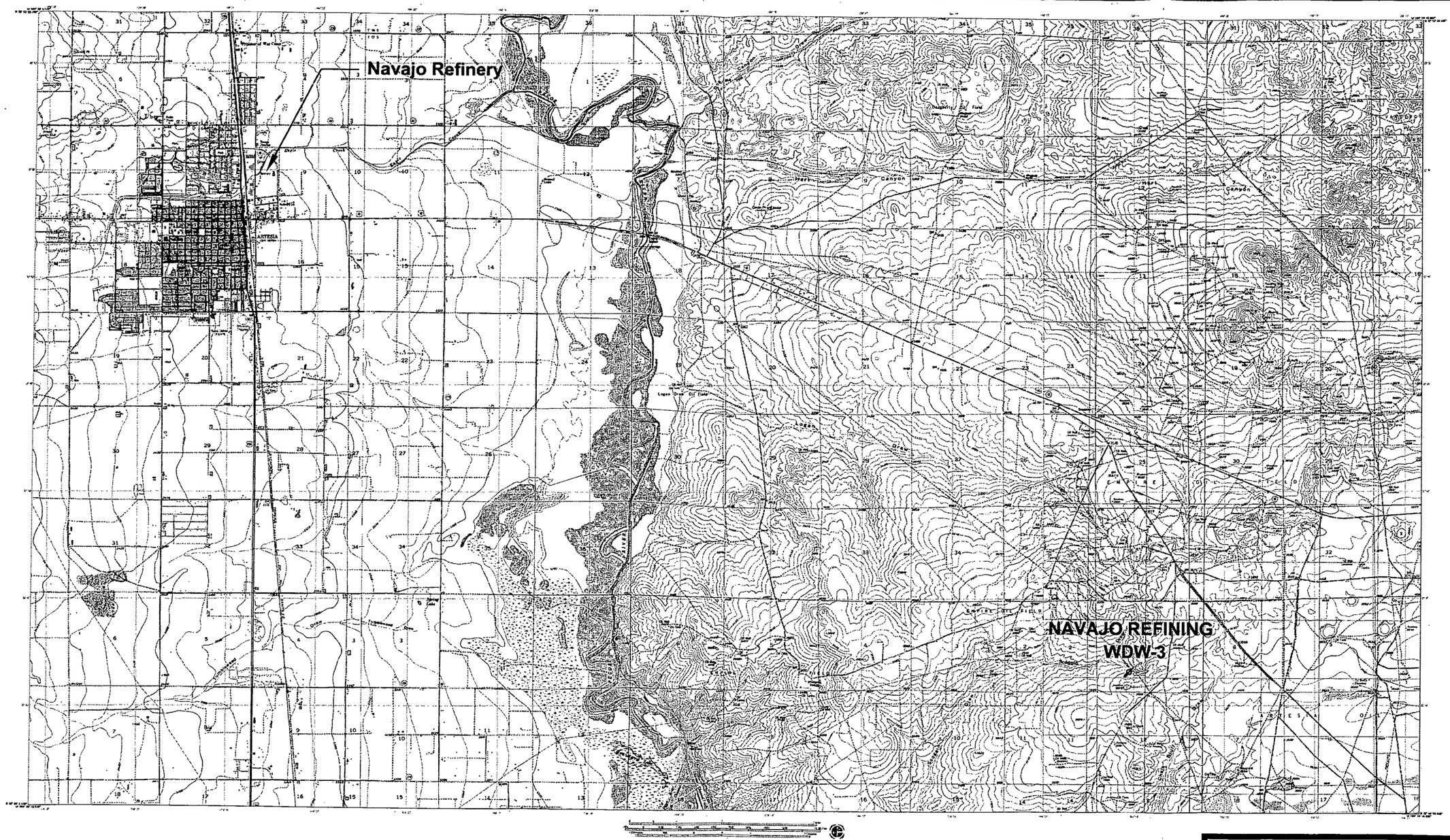
ID NO	API	SECT	TWP	RNG	NS FTG	EW FTG	WELL NAME	OPERATOR	WELL TYPE	PLUG DATE	WELL STATUS	DRILL DATE	DEPTH (ft)
50	30-015-20894	12	18S	27E	1980N	660W	WDW #002	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	7/18/1973	10372
96	30-015-26575	6	18S	28E	778N	995W	WDW-3	NAVAJO REFINING COMPANY	I	N/A	ACTIVE	?	10119
97	30-015-26741	1	18S	27E	1650N	1350W	CHALK BLUFF FEDERAL COM #002	MEWBOURNE OIL CO	G	N/A	ACTIVE	8/24/1991	10140
95	30-015-26404	12	18S	27E	660N	990E	FEDERAL T #001	APACHE CORPORATION	I	N/A	ACTIVE	9/13/1990	10141
99	30-015-27163	1	18S	27E	1980S	990E	CHALK BLUFF FEDERAL COM #003	MEWBOURNE OIL CO	G	N/A	ACTIVE	1/16/1993	10150
98	30-015-26943	6	18S	28E	990S	730W	CHALK BLUFF 6 STATE #001	MEWBOURNE OIL CO	G	N/A	ACTIVE	4/16/1992	10200
100	30-015-27286	36	17S	27E	660S	990W	CHALK BLUFF 36 STATE #001	MEWBOURNE OIL CO	O	N/A	ACTIVE	3/30/1993	10060
117	30-015-35814	2	18S	27E	2063N	441E	STATE H NO 2	MACK ENERGY CORPORATION	O	N/A	ACTIVE	1/11/2008	7545

Map ID No. - Refer to Drawing 2
Well Type - O=Oil, I=Injection, G=Gas
(ft) - Feet
N/A - Not Applicable
? - Data Not Available

TABLE 2
INJECTION FLUID CHARACTERIZATION DATA
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

	February 2011	May 2011	August 2011	November 2011	February 2012
Miscellaneous					
Reactive Cyanide (mg/Kg)	<40.0	<40.0	<40.0	<40.0	<40.0
Reactive Sulfide (mg/Kg)	<40.0	<40.0	<40.0	<40.0	<40.0
Chloride (mg/L)	410	213	404	332	519
Sulfate (mg/L)	1,510	2,240	2,290	2,350	1,870
Alkalinity (Total) (mg/L)	441	243	302	217	466
Sp. Cond. (umhos/cm)	6,270	4,680	7,380	5,430	5,990
Ignitability (oF)	>212	>212	>212	>212	>212
pH (S.U.)	7.40	7.85	8.11	7.52	7.30
TDS (mg/L)	3,310	3,400	4,320	4,840	3,890

mg/Kg	Milligrams per kilogram.
mg/L	Milligrams per liter.
umhos/cm	Micromhos per centimeter.
°F	Degrees Fahrenheit.
S.U.	Standard Units
>	Greater Than.



Maps compiled from USGS Quads: Artesia, NM; Spring Lake, MN; Red Lake, MN; Illinois Camp, NM; Dayton, NM; Lake Mcmillan N, NM

QUADRANGLE LOCATION

SUBSURFACE

HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 1

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

SITE LOCATION MAP

DATE: 06/06/12	CHECKED BY:	JOB NO: 60D6781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

EMPIRE OIL FIELD

PIPELINE

Oil Well 3563

Oil Tank

3574

Oil Tanks

3600

(Inactive) 3610

Draw

3650

Oil Well (Inactive) 3651

3666

3645

3551

2

3550

2

3582

1

3539

3541 Oil Well

Scoggin

3658 (Inactive)

NAVAJO REFINING WDW-3

3504

Oil Tanks

3641

(Inactive) 3629

3621

3625

3631

3534

3575

3605

3635

3570

3600

Draw

3620

A R T E S I

3628

VABM 3641 △ Chalk

3542

11

11

3591

12

Oil Well (Inactive) 3591

7

3607

3622

3523

3550

3569 Oil Wells (Inactive)

3564

3631

Chalk Bluff

PIPELINE

3600

Windmill 3594

Oil Tank

Wells

3604

3521

3552

3587

3599

NEW MEXICO

QUADRANGLE LOCATION

SUBSURFACE

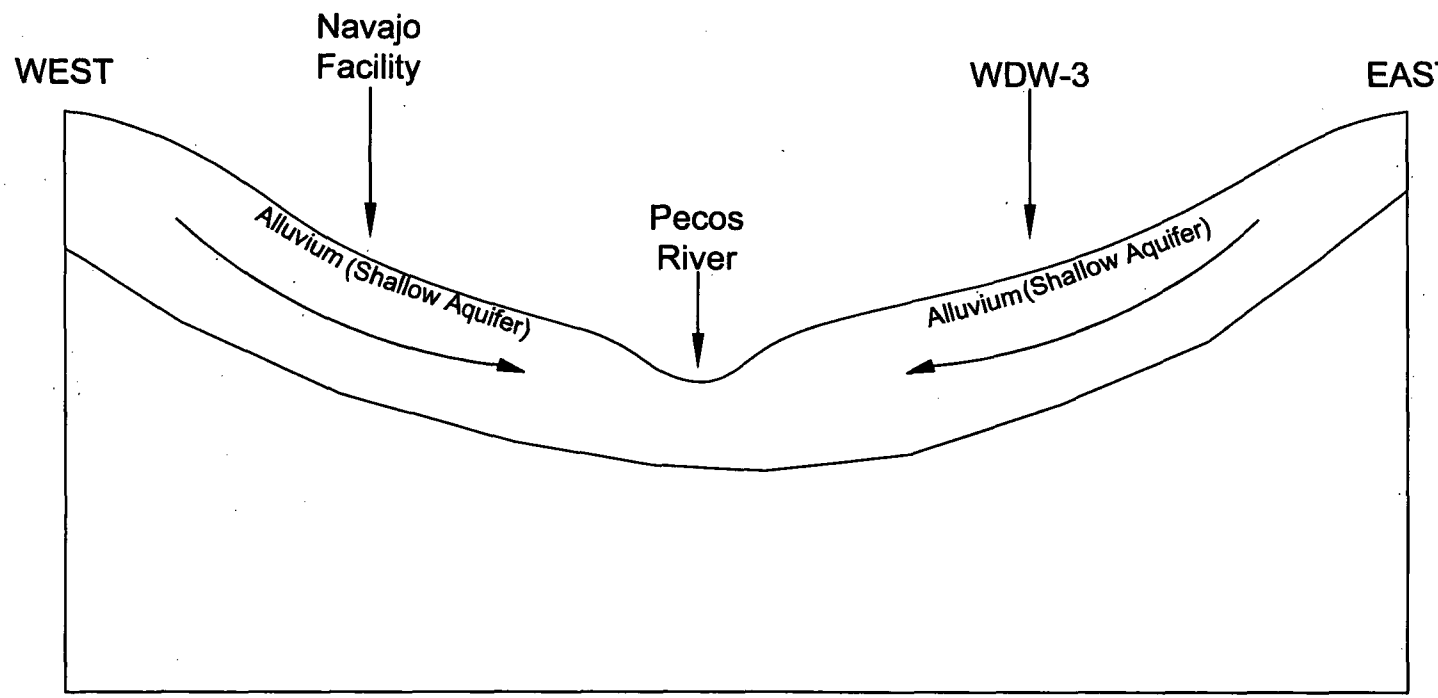
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 2

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

SITE MAP

DATE: 05/30/12	CHECKED BY:	JOB NO: 60D6781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



NOT TO SCALE

EXPLANATION

Direction of Groundwater Movement

SUBSURFACE

HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 3

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

GENERALIZED HYDROGEOLOGIC CROSS-SECTION

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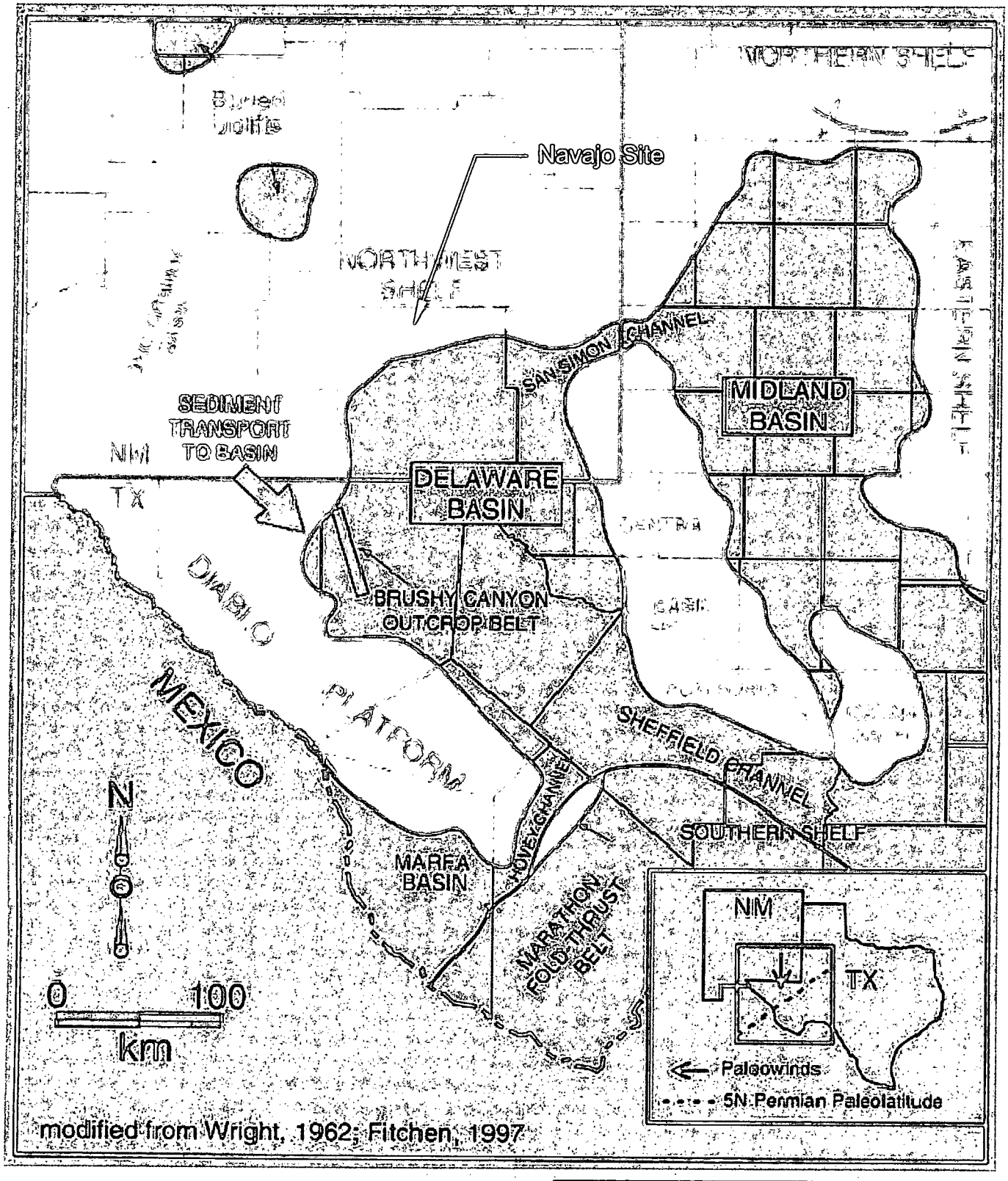
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



SUBSURFACE

HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 5

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

PERMIAN BASIN MAP

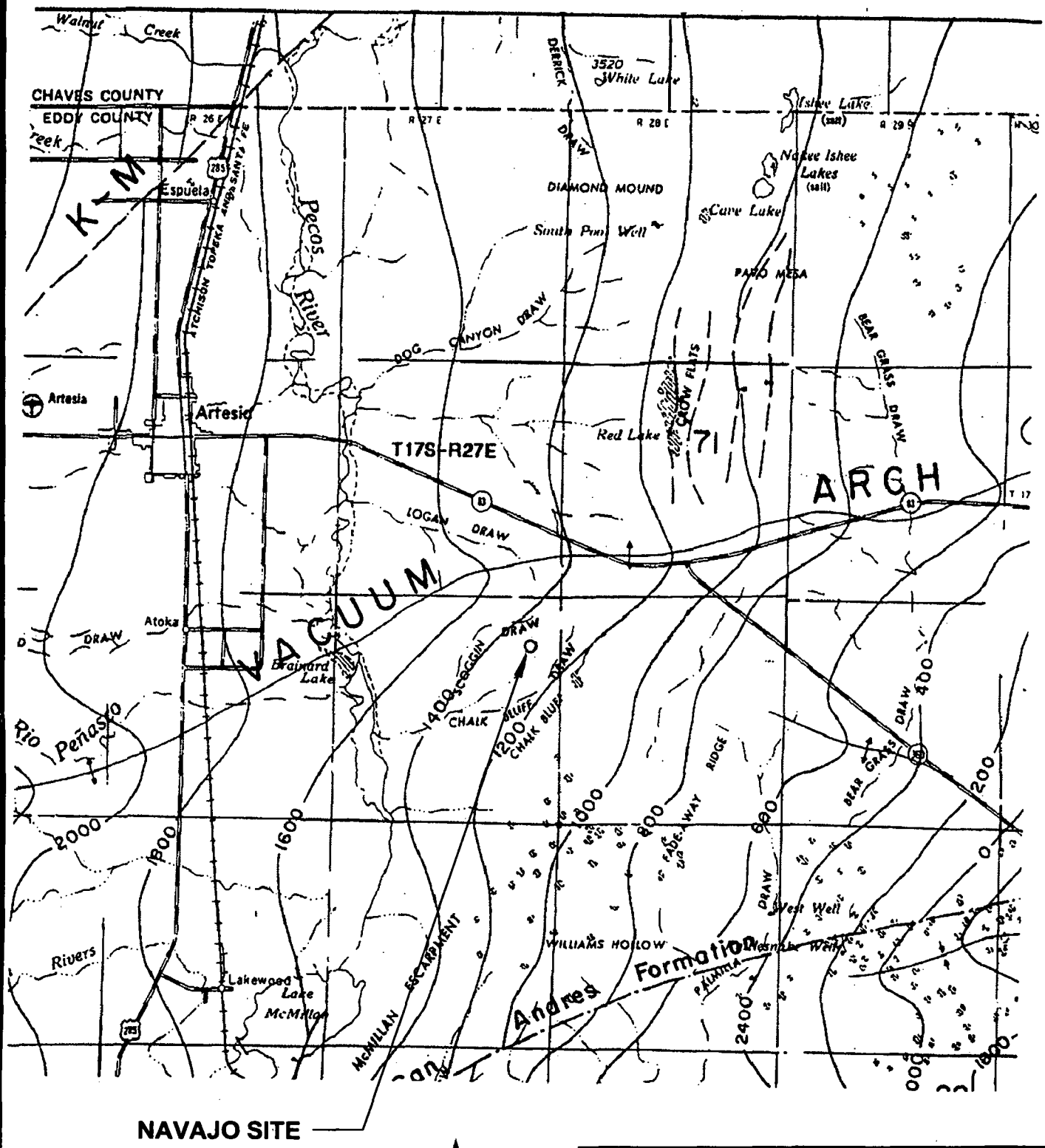
DATE: 05/29/12	CHECKED BY:	JOB NO: 60D6781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

NORTHWEST SHELF, CENTRAL BASIN PLATFORM

Age		Strata		Oil Plays
Triassic		Chinle		
		Santa Rosa		
Permian	Ochoan	Dewey Lake		
		Rustler		
		Salado		
	Guadalupian	Artesia Group	Tansill	Artesia Platform Sandstone
			Yates	
			Seven Rivers	
			Queen	
			Grayburg	Upper San Andres and Grayburg Platform - Artesia Vacuum Trend
		San Andres		Upper San Andres and Grayburg Platform - Central Basin Platform Trend
	Leonardian	Glorieta		Leonardian Restricted Platform Carbonate
		Yeso	Paddock	
			Blinebry	
			Tubb	
			Drinkard	
	Wolfcampian	Abo		Abo Platform Carbonate
		Hueco ("Wolfcamp")		Wolfcamp Platform Carbonate
Pennsylvanian	Virgilian	Bough		Northwest Shelf Upper Pennsylvanian Carbonate
		Cisco		
	Missourian	Canyon		
	Des Moinesian	Strawn		Northwest Shelf Strawn Patch Reef
	Atokan	Atoka		
	Morrowan	Morrow		
Miss.		undivided		
Dev.	Upper	Woodford		
	Middle			
	Lower	Thirtyone		Devonian Thirtyone Deepwater Chert
Sil.	Upper	Wristen		Wristen Buildups and Platform Carbonate
	Middle			
	Lower	Fusselman		Fusselman Shallow Platform Carbonate
Ord.	Upper	Montoya		
	Middle	Simpson		Simpson Cratonic Sandstone
	Lower	Ellenburger		Ellenburger Karst-Modified Restricted Ramp Carbonate
Cambrian		Bliss		
Precambrian		Igneous, metamorphics volcanics		

FIGURE 6

STRATIGRAPHIC COLUMN



SUBSURFACE

HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 7

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

REGIONAL GEOLOGIC FEATURES

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NAVAJO REFINING
WDW #3

LOGAN DRAW, 17
(SAN ANDRES, WOLFCAMP, CISCO, ATOKA, MORROW)

LOGAN DRAW W, 94
(MORROW)

RED LAKE NW, 01
(PADDOCK)

RED LAKE NE, 98
(GLORIETA, YESO)

EMPIRE, 24
(YATES, SEVEN RIVERS, QUEEN, GRAYBURG, PADDOCK, ABO, WOLFCAMP, STRAWN, ATOKA, PENN, BARNETT)

CHALK BLUFF, 82
(WOLFCAMP)

LOGAN DRAW SE, 99
(ATOKA)

GRAYBURG-JACKSON
(SEVEN RIVERS, QUEEN, GRAYBURG, SAN ANDRES)

RED LAKE S, 64
(SEVEN RIVERS)

EMPIRE S, 71
(WOLFCAMP, STRAWN, MORROW)

ILLINOIS CAMP N, 80
(MORROW, ATOKA, CHESTER)

ILLINOIS CAMP, 77

TRAVIS, 78
(YATES, BONE SPRING, WOLFCAMP, UPPER PE

AID, 41
(YATES, SEVEN RIVERS, MORROW)

ARTESIA LAKE

SKOGGIN DRAW, 72
(STRAWN, ATOKA, MORROW)

22N 34W

T18S R28E

Pecos River

SUBSURFACE

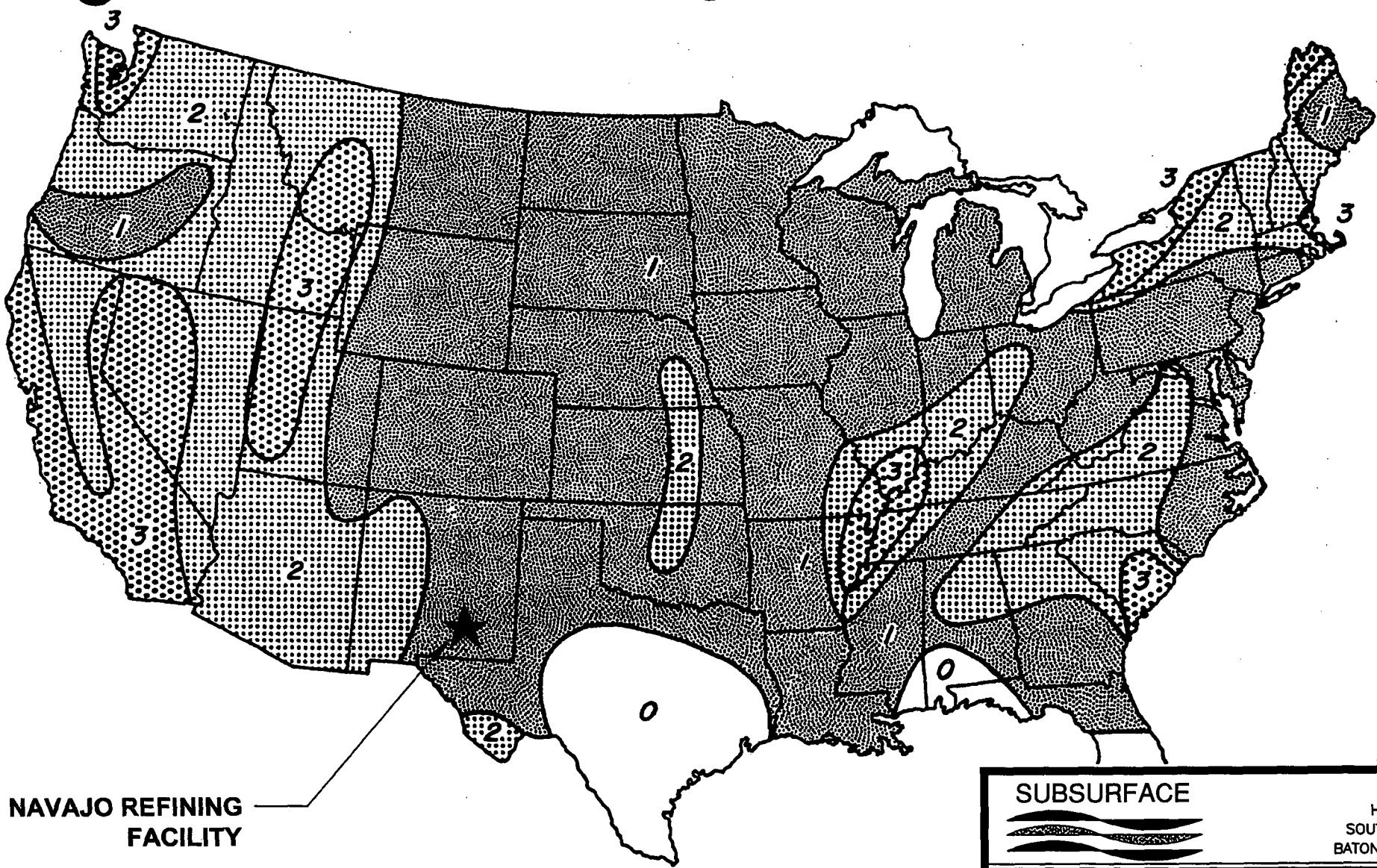
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 8

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

PUBLISHED STRUCTURE MAP
TOP OF SAN ANDRES FORMATION

DATE: 06/04/12	CHECKED BY:	JOB NO: 60D6781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



LEGEND

Zone 0 - no damage.
Zone 1 - minor damage; corresponds to intensities V and VI of the M.M.* Scale.
Zone 2 - moderate damage; corresponds to intensity VII of the M.M.* Scale.
Zone 3 - major damage; corresponds to intensity VIII and higher of the M.M.* Scale.
(* - M.M. Refers to the Modified Mercalli Intensity Scale.)

SUBSURFACE

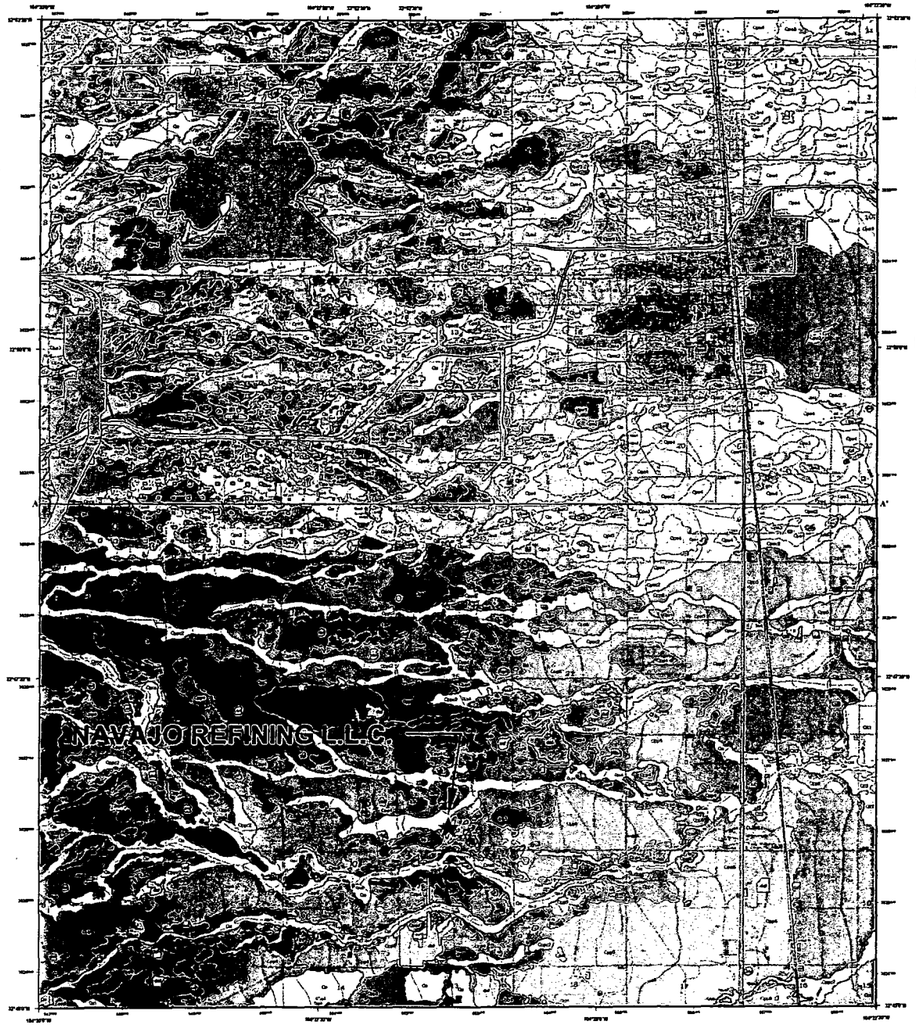
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 9

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

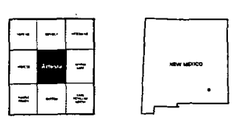
SEISMIC RISK MAP

DATE: 05/29/12	CHECKED BY:	JOB NO: 60D6786
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



Base map from U.S. Geological Survey 1956, 1997 photorevised 1998, 1978. Topography by photogrammetric methods from aerial photographs, 1977. North American Datum 1927 (mean of 27 CONUS). Universal Transverse Mercator grid, Zone 13, shown in red

QUADRANGLE LOCATION



Magnetic declination May 2009 9° 08' East At Map Center

1:24,000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 0.5 0 1 KILOMETER
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Mapping and field compilation by Kelley and Kelley (1975) and Fiedler and Nye (1933). Digital cartography by Ron Broadhead and Jane Love, New Mexico Bureau of Geology and Mineral Resources, a division of New Mexico Institute of Mining and Technology. Digital database compiled using ESRI ArcGIS 9.3 software. Digital base map from U.S. Geological Survey 1:24,000 digital raster graphics (DRG) and 1:100,000 digital line graphs (DLG). Projection: Universal Transverse Mercator, Zone 13, North American Datum of 1927 (mean of 27 CONUS shifts). Geographic coordinates in latitude and longitude, North American Datum of 1927 (mean of 27 CONUS shifts). Digital cartography by Ron Broadhead, Director and State Geologist; Dr. J. Michael Timmons, Cartographic Mapping Program Manager.

New Mexico Bureau of Geology and Mineral Resources
Open-file Geologic Map 169

Geologic map of the Artesia quadrangle, Eddy County, New Mexico.

May 2011

by

David J. McCraw and Shannon Williams

New Mexico Bureau of Geology and Mineral Resources, 801 Leroy Place, Socorro, NM 87801

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New Mexico Tech
801 Leroy Place
Socorro, New Mexico
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[575] 835-5490

This and other STATEMAP quadrangles are available for free download in both PDF and ArcGIS formats at:

http://geoinfo.nmt.edu

EXPLANATION OF MAP SYMBOLS

- A — A' Location of geologic cross section
- Geologic contact. Solid where exposed or known, dashed where approximately known, dotted where concealed or inferred.
- Arrows showing strike direction of paleodune, based upon pebble imbrication, n ≤ 29 each arrow
- Soil pit.
- Oil & gas exploration well used in cross section construction

COMMENTS TO MAP USERS

A geologic map displays information on the distribution, nature, orientation, and age relationships of rock and deposits and the occurrence of structural features. Geologic and field concepts are integral methods that form boundaries between different types or ages of units. Data density on these geologic quadrangle maps may be based on any of the following: reconnaissance field geologic mapping, compilation of published and unpublished work, and photogeologic interpretation. Locations of contacts are not surveyed, but are plotted by interpretation of the position of a given contact onto a topographic base map. Therefore, the accuracy of contact locations depends on the scale of mapping and the interpretation of the geologist(s). Any enlargement of this map could cause misunderstanding in the detail of mapping and may result in erroneous interpretations. Site-specific conditions should be verified by detailed surface mapping or subsurface exploration. Topographic and cultural changes associated with recent development may not be shown.

Cross sections are constructed based upon the interpretations of the author made from geologic mapping, and available subsurface data, and subsurface geophysics. Cross sections should be used as an aid to understanding the general geologic framework of the map area, and not for the sole source of information for use in locating or designing wells, foundations, roads, or other man-made structures.

This map has not been reviewed according to New Mexico Bureau of Geology and Mineral Resources standards. The contents of the report and map should not be considered final and complete until reviewed and published by the New Mexico Bureau of Geology and Mineral Resources. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the State of New Mexico or the U.S. Government.

DESCRIPTION OF MAP UNITS

CENOZOIC

NEOGENE

Alluvium, lacustrine, and eolian deposits

Qaf **Disturbed land and/or artificial fill (Historic)** — Dumped fill and areas affected by human disturbances, mapped where deposits or excavations are locally extensive. Especially notable are the numerous constructed oil and gas well pads. Also includes the U.S. Bureau of Reclamation's Kaiser Channel of the Pecos River, as well as other straightened reaches.

Qa **Quaternary alluvium, undifferentiated (Historic to uppermost Pleistocene)** — Brown (7.5YR4/2) to light brown (7.5YR6/3), unconsolidated, moderately sorted, pebbly sand, silt, and clay. Contains primarily carbonate gravels and pebbles. Varies considerably in thickness from <1 to 3 m in tributaries and up to 10-12 m in the floodplain.

Pecos Valley alluvial terrace complex

Alluvial terraces of the Pecos River and its tributaries were first described in the classic study of Fiedler and Nye (1933). They recognized 3 terraces. (from lowest to highest) the Lakewood, the Orchard Park, and the Blackdora. On the Artesia quad, much of the higher Eagle Creek and Rio Peñasco piedmont alluvial complex is erroneously mapped by Fiedler and Nye (1933) as Blackdom terrace. These materials, however, are all derived from shale westerly tributaries, not the Pecos River.

Lakewood terrace alluvial deposits (upper to middle Pleistocene) — Following McCraw, *et al.* (2007) and McCraw and Land (2008), three distinct, low-lying (upper to uppermost middle?) Pleistocene? "Lakewood terraces" are recognized. Fiedler and Nye's original Lakewood terrace, equivalent here to Q_{ls}, has an elevation of 6 to 9 m above the floodplain and is located on the eastern edge of the quad. The lowest and youngest, Q_{ls}, is <1-2 m above the floodplain and rounds up Tumbleweed Draw. These are comprised of occasional gravels and pebbles, brown (10YR5/3) to dark yellowish brown (10YR3/4), unconsolidated, moderately sorted, coarse- to fine-grained sand, silty sand, silt and sandy clay. Pedogenic carbonate increases from stage I to stage II+ (occasionally III) from Q_{ls} to Q_{ls}. Mostly non-gypsiferous.

Qls **Youngest Lakewood terrace alluvial deposits (upper Pleistocene)** — Thickness <1 to 1 m.

Qlo **Older Lakewood terrace alluvial deposit (upper to middle Pleistocene)** — Thickness ~2 to 9 m.

Qpc **Orchard Park terrace alluvial deposits (upper Pliocene (?) to upper Pleistocene)** — According to Fiedler and Nye (1933), the Orchard Park terrace rises 1.5-3 m above the Lakewood terrace and 10 5-20 m above the Pecos floodplain. It is comprised of gravels and pebbles of dolomite, limestone, sandstone, chert, and quartzite in a very pale brown (10YR7/4) to reddish brown (5YR4/4), unconsolidated, moderately sorted, coarse- to fine-grained sand, silty sand, silt, and sandy clay. Pedogenic carbonate is a strong stage III. Thickness ranges from 3 to 15 m.

Rio Peñasco alluvial piedmont complex

Rio Peñasco alluvial piedmont deposits (Upper Pleistocene to Late Miocene(?)) — The headwaters of the Rio Peñasco are located high in the Sacramento Mountains in predominantly carbonate rocks of the San Andres formation (P_{sa}) and clastic sediments of the Yeso formation (P_{yc}). Where it leaves the Permian highlands, it has built a large piedmont alluvial complex, which coalesces with Eagle Creek to the north and the Seven Rivers to the south. These piedmont deposits grade to and onto the Pecos Valley alluvial terraces on the easternmost edge in the Artesia area. Oldest, highest remnant surfaces (Tpp_1 and $QTpp_1$) are Pliocene or older, and likely graded to a rio or system which forms Gatuña formation deposits today. Middle to upper Pleistocene piedmont deposits (Qpc_2) are inset into these and grade to Qac. The youngest, Qpc_3, grades to Qlt_1. Several channels (e.g., Tumbleweed Draw) on this piedmont surface were likely formed Rio Peñasco channels.

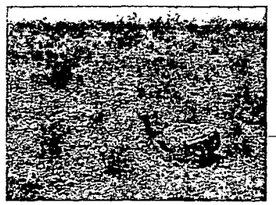
Lithologically, the Rio Peñasco piedmont deposits are distinctly different than those of Eagle Creek to the north and Seven Rivers to the south. While gravels are dominated by limestone clasts, dolomite, chert, yellow-brown sandstone, conglomerate, and quartzite are common. The matrix consists of dark yellowish brown (10YR3/6) to light brown (7.5YR6/3), unconsolidated, moderately sorted, coarse- to fine-grained sand, silty sand, silt, and sandy clay. Stage V-VI pedogenic carbonate can be found in the oldest deposits, while middle to upper Pleistocene deposits range from stage IV to III. Degree of pedogenic carbonate development can be the main distinguishing characteristic between the youngest deposits.

Qpc3 **Youngest Quaternary piedmont alluvium (Holocene to upper Pleistocene)** — Thickness 1 to 3 m.

Qpc2 **Younger Quaternary piedmont alluvium (Upper Pleistocene)** — Thickness 2 to 4 m

Qpc1 **Old Quaternary piedmont alluvium (Upper to middle Pleistocene)** — Most extensive deposit. Thickness 2 to 4 m

QTpc **Older piedmont alluvium (Middle Pleistocene to late Pliocene)** — Thickness 2 to 6 m



Contact between conglomeratic boulder between (Tpp_1 and a (Tpp_2 channel, exposed into the old Rio Peñasco piedmont alluvium. The boulder is not in situ and its matrix is actually stage V pedogenic carbonate.

Rio Peñasco piedmont channel deposits (Historic to upper Pleistocene) — Numerous, thin alluvial channels, swales, and occasional coalescing depression fill deposits drain the piedmont alluvial complex. They usually consist of light brown (7.5YR6/4) to pinkish gray (7.5YR7/2), unconsolidated, poorly sorted, fine-grained sand, silt, and clay sediments. They were often mapped primarily by soil moisture increases in lower areas relative to adjacent piedmont deposits noted on photography. Eolian input often mantles the "v-shaped" contours associated with stream channels and in some areas sand sheets and dunes can fill these channels ($Qswc$) are mapped on Qpp_3 surfaces, similar and stratigraphically equivalent to those on Eagle Creek Qaw_3 deposits.

Qpc3 **Young Quaternary piedmont channels (Holocene to upper Pleistocene)** — Thickness <1 to 2 m.

Qpsc **Young Quaternary piedmont channels filled with eolian sands, occasionally forming dunes (Holocene to upper Pleistocene)** — Thickness ≤ 1 m.

Eagle Creek alluvial piedmont complex

Eagle Creek alluvial piedmont deposits (Upper to middle Pleistocene) — Eagle Creek (or Eagle Draw further west) heads on the easternmost flank of the southern Sacramento Mountains in San Andres Formation (P_{sa}) rocks and flows east to the Pecos River. Where it leaves the Permian highlands, it has built a large piedmont alluvial complex, which coalesces with the Rio Felix, to the north and the Rio Peñasco to the south. This piedmont complex grades to and onto the Pecos Valley alluvial terraces. Oldest, highest remnant surfaces are correlative to Quaternary – Tertiary piedmont deposits of the Rio Peñasco ($QTpp_1$). Collectively, these are comprised of gravels that are almost exclusively limestone derived from P_{sa}, supported in a matrix of light brown (7.5YR6/3), unconsolidated, moderately sorted, coarse- to fine-grained sand, silty sand, silt (largely caliche-rich), and sandy clay. Topographic expression between the youngest deposits are often so subtle as practically non-existent. Distinction is often based upon a stronger developed pedogenic carbonate (Qpc_2 = stage III – II+, Qpc_3 = stage II). (Qpc_3 grades to Qlt_1.

Qpc3 **Youngest Quaternary piedmont alluvium (Holocene to upper Pleistocene)** — Thickness 1 to 3 m.

Qpc2 **Younger Quaternary piedmont alluvium (Upper Pleistocene)** — Thickness 2 to 4 m

Qpc1 **Older Quaternary piedmont alluvium (Upper to middle Pleistocene)** — Most extensive deposit. Thickness 2 to 4 m

QTpc **Oldest piedmont alluvium (Middle Pleistocene to late Pliocene)** — Thickness 2 to 6 m

Eagle Creek piedmont channel deposits (Historic to upper Pleistocene) — Up until the mid 20th Century, prior to channelization through town, Eagle Creek flowed primarily south of the town of Artesia. These abandoned channels (2-3 m thick) are now similar to the numerous, thin alluvial channels, swales, and occasional coalescing depression fill deposits that only drain the local piedmont alluvial complex. These channels usually consist of light brown (7.5YR6/4) to pinkish gray (7.5YR6/2), unconsolidated, poorly sorted, fine-grained sand, silt, and clay sediments. They were often mapped primarily by soil moisture increases in lower areas relative to adjacent piedmont deposits noted on photography. Eolian input often mantles the "v-shaped" contours associated with stream channels and in some areas sand sheets and dunes can fill these channels ($Qswc$) are mapped on Qpc_3 surfaces, shows modern Eagle Creek in the vicinity of the Eagle Creek retaining dam on the northwestern edge of the quad.

Qpc3 **Young Quaternary piedmont channels (Holocene to upper Pleistocene)** — Thickness <1 to 2 m

Qpc1 **Older Quaternary piedmont channels (Upper Pleistocene)** — Thickness <1 to 2 m

Qpsc **Young Quaternary piedmont channels filled with eolian sands, occasionally forming dunes (Holocene to upper Pleistocene)** — Thickness ≤ 1 m

Quaternary depression fill and sinkhole deposits

Qd **Quaternary depression fill, undifferentiated (Holocene to middle Pleistocene)** — Unconsolidated, well-sorted, fine-grained (fine sands to clay) complexes of alluvial, colluvial, eolian, and occasional lacustrine deposits within closed depressions. Colors variable. Depressions are created by either gradual subsidence or sudden collapse followed by gradual subsidence of underlying gypsiferous carbonate terrane. These complexes are often significantly modified by stream erosion and deposition, playa deposition, deflation, and mass wasting. Depression fills have been active since the middle Pleistocene and are usually 1-3 m thick but can reach thicknesses in excess of 30 m.

Qdc **Quaternary sinkhole deposits, primarily caused by collapse (Historic to middle Pleistocene)** — Complexes of unconsolidated, well- to poorly-sorted, coarse- to fine-grained sands to clay, alluvial, colluvial, eolian, and occasional lacustrine deposits within closed depressions. Colors variable. Thickness <1 to 3 m.

PALEOZOIC

Permian Artesia Group

Pzq **Queen and Greyburg formations, undifferentiated (Guadalupian)** — Cross section only

Lower Permian Formations

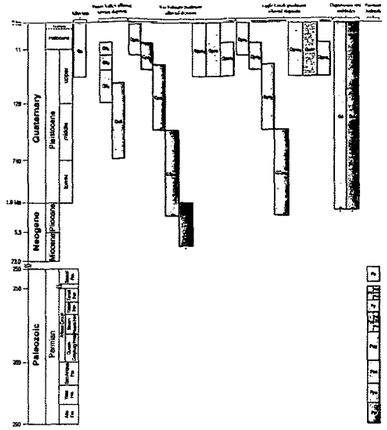
Psa **San Andres formation** — Cross section only

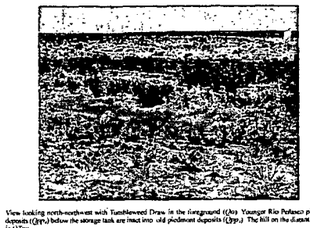
Pg **Glorieta sandstone tongue** — Cross section only

Pyc **Yeso formation, undifferentiated** — Cross section only

Pdp **Abo formation, undifferentiated** — Cross section only

CORRELATION OF MAP UNITS





View looking north-northwest with Tumbleweed Draw in the foreground (Qls). Younger Rio Peñasco piedmont deposits (Qpc_3) below the storage tank are inset into old piedmont deposits (Tpp_1). The hill on the distant skyline is $QTpp_1$.

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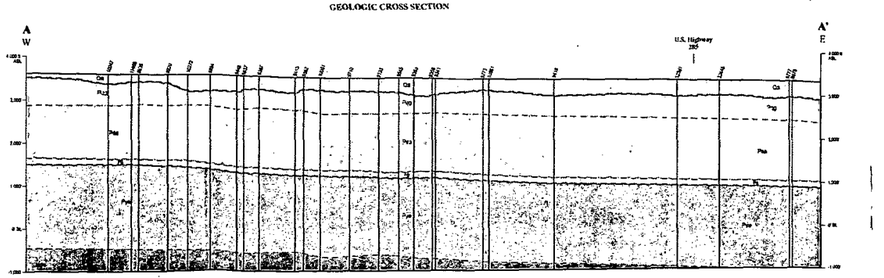
GEOLOGIC CROSS SECTION



NMBGMR Open-file Geologic Map 169
Last Modified: June 2011

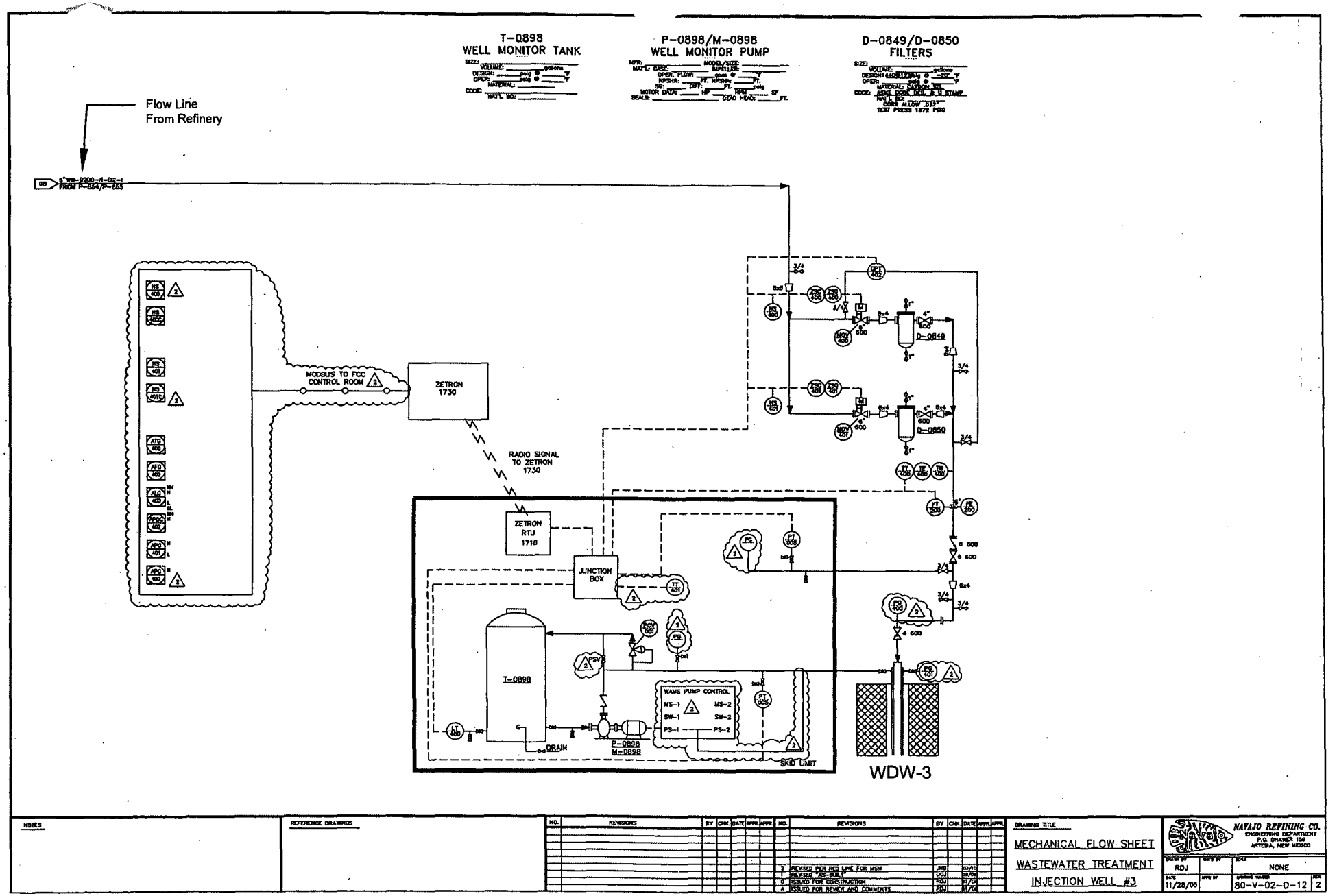
SUBSURFACE
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 10

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

SURFACE GEOLOGIC MAP

DATE: 05/30/12	CHECKED BY:	JOB NO: 60D6781
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



NOTES

REFERENCE DRAWINGS

NO.	REVISIONS	BY	CHK.	DATE	APPR.	APPR.
2	REVISED PER RED LINE FOR MSW	JWS		03/08		
1	REVISED "AS-BUILT"	RDJ		11/06		
0	ISSUED FOR CONSTRUCTION	RDJ		01/04		
A	ISSUED FOR REVIEW AND COMMENTS	RDJ		01/04		

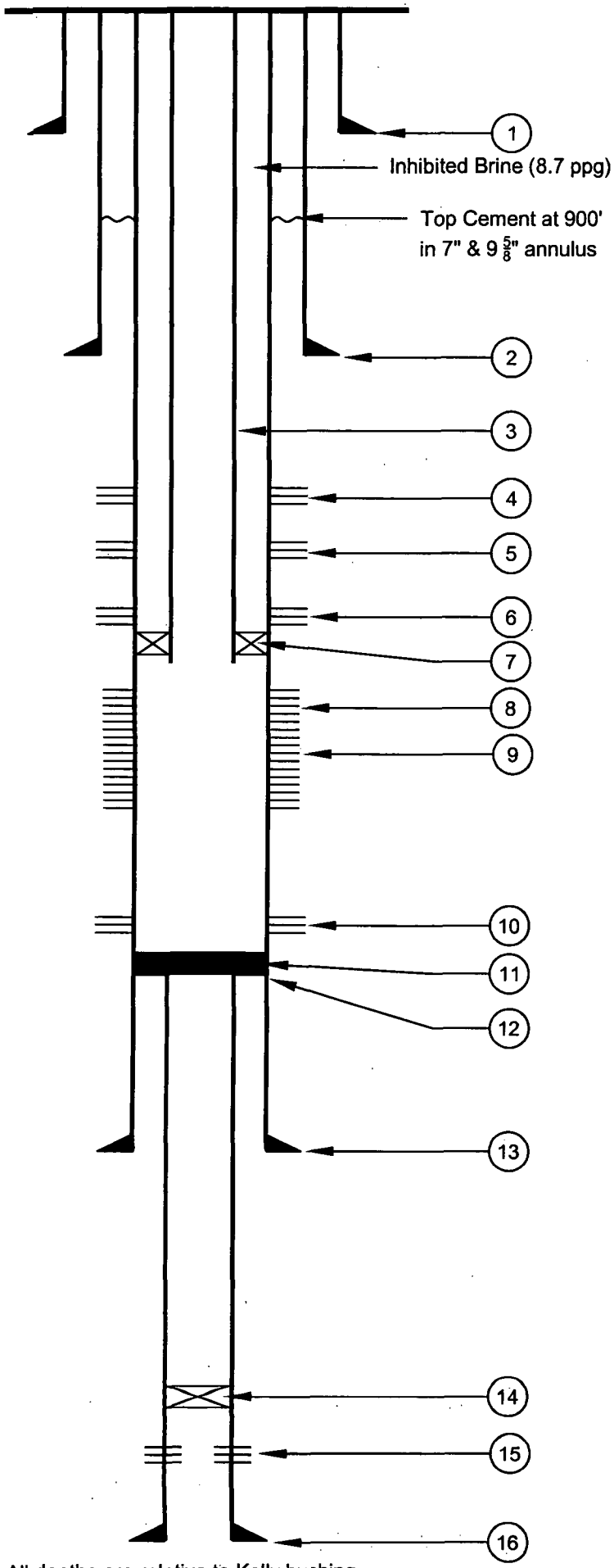
DRAWING TITLE

MECHANICAL FLOW SHEET
WASTEWATER TREATMENT
INJECTION WELL #3

NAVAJO REFINING CO.
ENGINEERING DEPARTMENT
P.O. DRAWER 159
ARTESIA, NEW MEXICO

DRAWN BY	CHKD BY	SCALE
RDJ		NONE
DATE 11/28/06	APPR BY	DRAWING NUMBER 80-V-02-D-12 REV. 2

FIGURE 11
PRE-INJECTION SURFACE FACILITIES
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO



All depths are relative to Kelly bushing

BELOW GROUND DETAILS

1. Surface Casing: 13 3/8", 54 1/2" lb/ft, J-55 set in a 17 1/2" open hole at 400' and cemented to the surface with 425 sacks of Class C cement.
2. First Intermediate Casing: 9 5/8", 36 lb/ft, J-55 set in a 12 1/4" open hole at 2604' and cemented to the surface with 1025 sacks Class C cement.
3. Injection Tubing: 4 1/2", 11.6 lb/ft, J-55 LT&C set at 7568'.
4. Squeeze Perforations: 7050' - 7102' with 80 sacks.
5. Squeeze Perforations: 7262' - 7278' with 100 sacks.
6. Squeeze Perforations: 7304' - 7314' with 80 sacks.
7. Arrow X-1 Packer 7" x 2 7/8" set at 7575', 37K Tension, no nipples.
8. Old Open Perforations: 7676' - 7698'.
9. Perforations: 7660' - 8450', 2 JSPF, 60°, 0.5" 10/14/06.
10. Perforations: 8540' - 8620', 23 SPF, 60°, 0.5" 10/15/16.
11. Cement Plug: top tagged at 9022'.
12. Liner Top: 4 1/2" set at 9051'.
13. Second Intermediate Casing: 7", 29 lb/ft, N-80 and P-110 steel set in an 8 3/4" open hole at 9450' with 1350 sacks of Type H cement from 900' to 9450'.
14. Cast Iron Bridge Plug set at 9800' with 35' cement.
15. Old Perforations: 9861' - 9967'
16. Production Liner: 4 1/2", 17 lb/ft, J-55 set in a 6 1/4" open hole from 9051' to 10119' with 175 sacks Type H cement.

SUBSURFACE

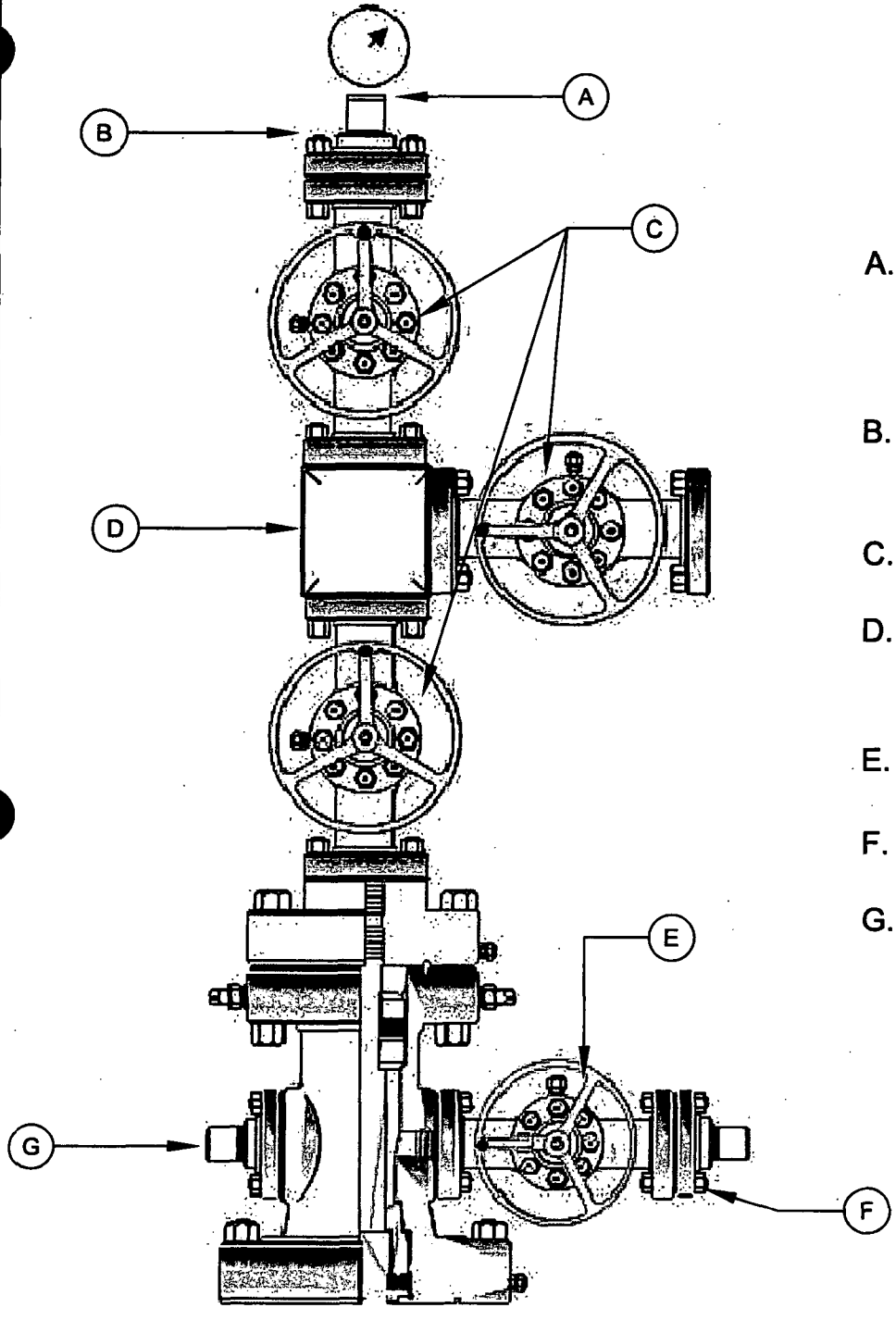
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 12

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

BELOW GROUND WELL SCHEMATIC
WASTE DISPOSAL WELL NO. 3

DATE: 05/24/12	CHECKED BY:	JOB NO: 60Z6642
DRAWN BY: WDD	APPROVED BY:	DWG. NO:



WELLHEAD DETAILS

A. Top Connection: 4 $\frac{1}{2}$" EUE, 2 $\frac{7}{8}$" 8rd, 2 $\frac{7}{8}$" bull plug, $\frac{1}{2}$" NPT 5000 lb gauge.

B. Flange: 4 $\frac{1}{16}$" 3K x 4 $\frac{1}{2}$" UPTBG 3K

C. Tree Gate Valves: 4 $\frac{1}{16}$" 3K

D. Upper Tree Assembly: A5PP, 4 $\frac{1}{2}$", 7 $\frac{1}{16}$" 3K x 4 $\frac{1}{16}$" 3K

E. Annulus Valve: 2 $\frac{1}{16}$" 5K

F. Flange: 2 $\frac{1}{16}$" 5K x 2" LP 5K

G. Annulus Valve: 2" ball valve 3K

SUBSURFACE

HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

FIGURE 13

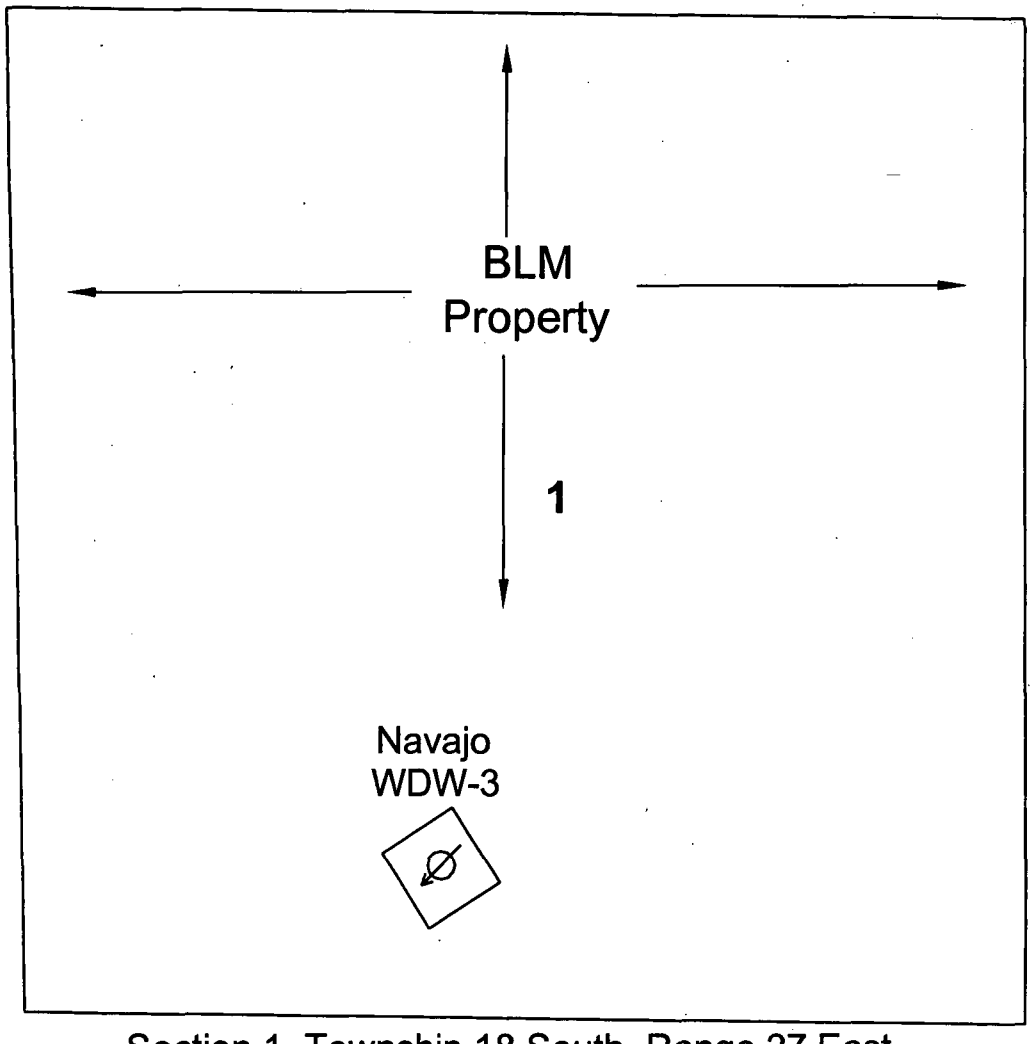
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

WELLHEAD SCHEMATIC
WASTE DISPOSAL WELL NO. 3

DATE: 05/24/12	CHECKED BY:	JOB NO: 60Z6642
DRAWN BY: WDD	APPROVED BY:	DWG. NO:

APPENDIX A

SURROUNDING LAND OWNERSHIP INFORMATION



Section 1, Township 18 South, Range 27 East

NOTE: The U.S. Department of the Interior, Bureau of Land Management owns all land in Section 1, Township 18 South, Range 27 East. Navajo WDW-3 Class I Non-Hazardous Waste Injection well is located on land owned by the BLM.

SUBSURFACE

Houston, TX
South Bend, IN
Baton Rouge, LA

APPENDIX A

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

SURROUNDING LAND OWNERSHIP INFORMATION

DATE: 06/05/12	CHECKED BY:	JOB NO: 60A6781
DRAWN BY: WDD	APPROVED BY:	DWG NO:

APPENDIX B

AREA OF REVIEW WELL FILES AND SCHEMATICS

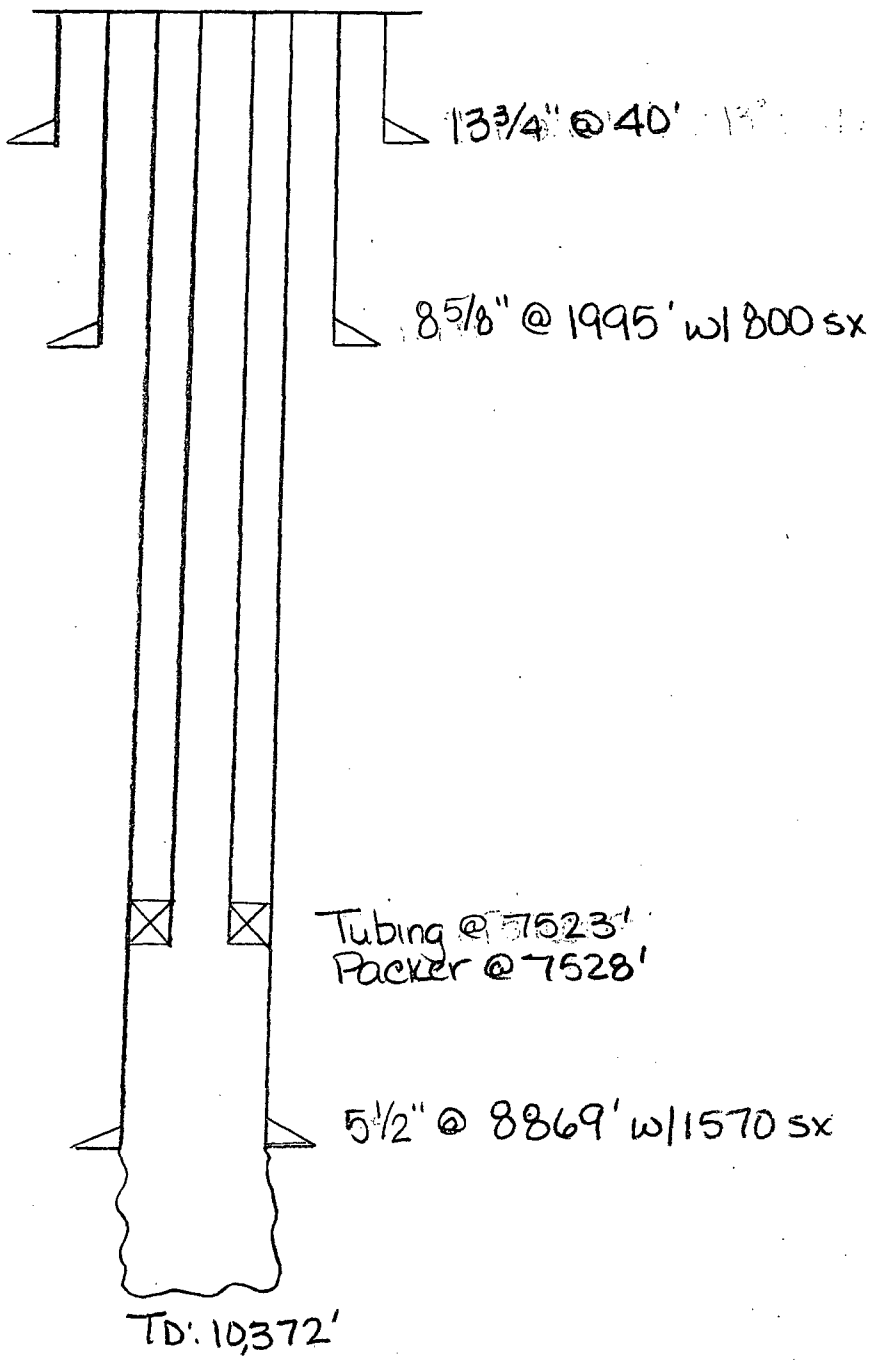
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 50
Artificial Penetration Review

OPERATOR Navajo Refining Co.
LEASE WDW 1
WELL NUMBER #2
DRILLED 7/18/73
PLUGGED NA

STATUS Active
LOCATION Sec. 12 -T 18S-R 27E
MUD FILLED BOREHOLE _____
TOP INJECTION ZONE -3663'
API NO. 30-015- 20894

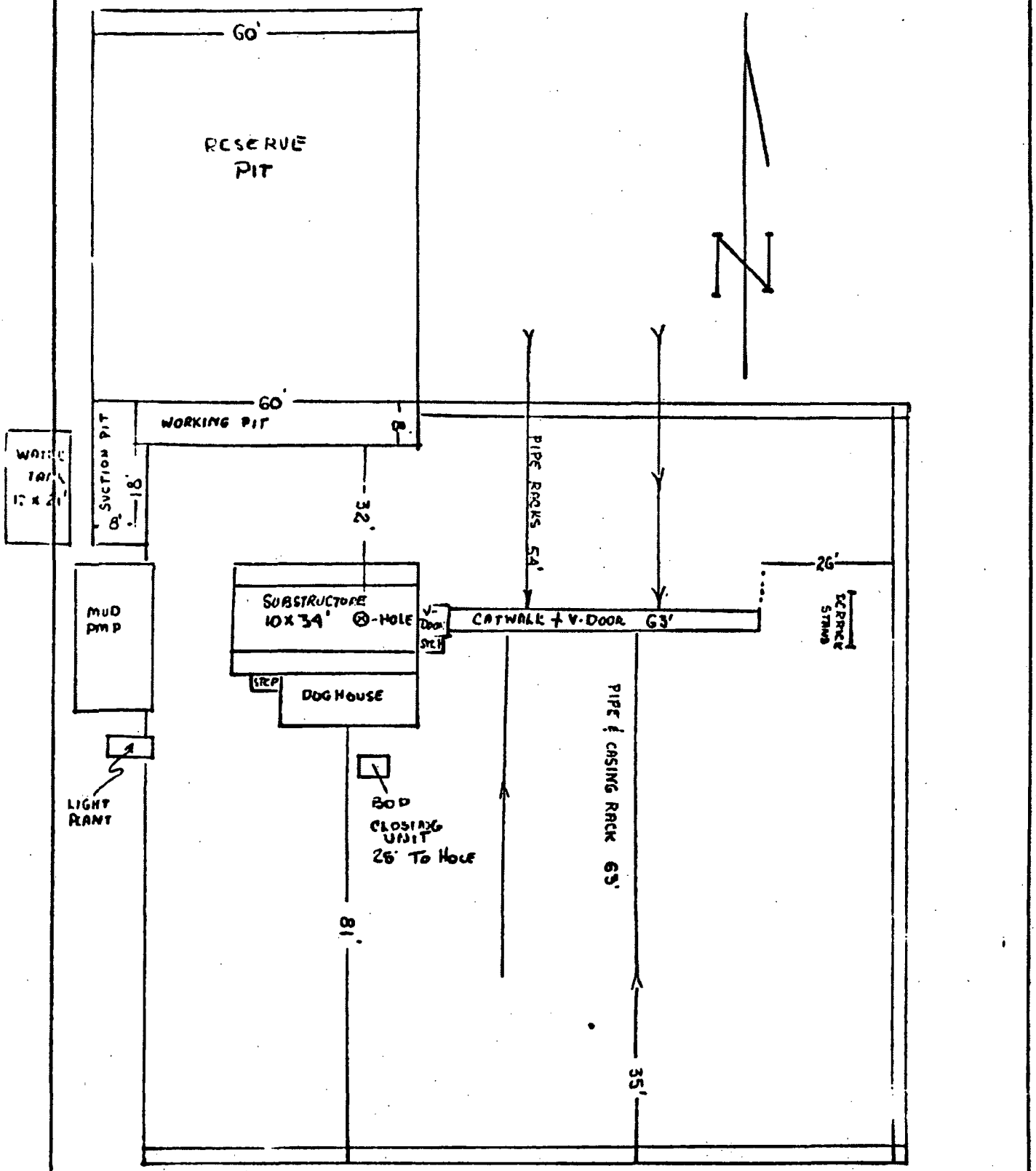
REMARKS:



MAP ID NO. 50

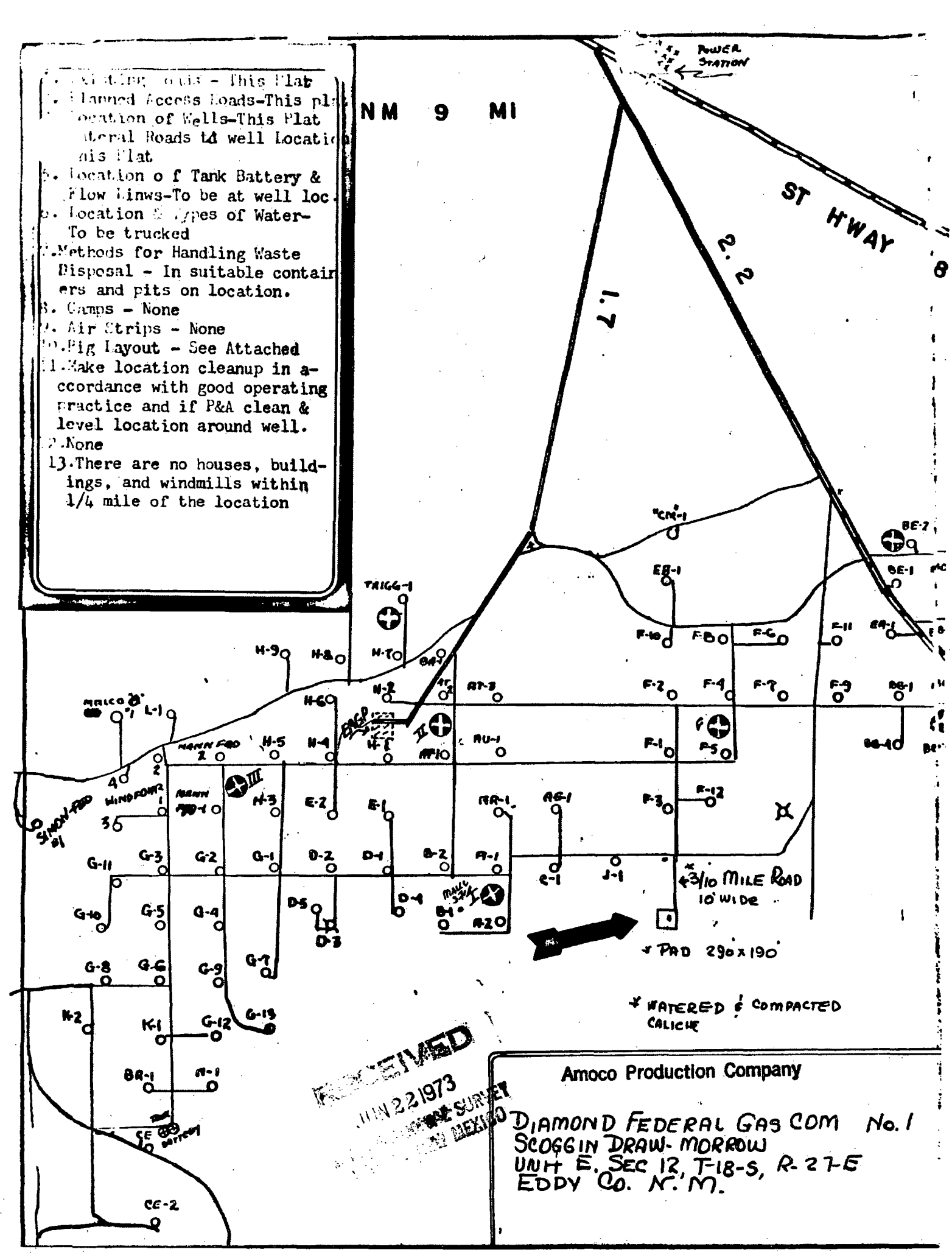
NAVAJOR FEFINING COMPANY
WASTE DISPOSAL WELL NO. 2

API NO. 30-015-20894



Amoco Production Company	SCALE:
GENERAL RIG LAYOUT	DRG. NO.

1. Existing Roads - This Plat
2. Planned Access Roads-This pl
   Location of Wells-This Plat
   Lateral Roads to well Locatio
   this Plat
3. Location of Tank Battery &
   Flow Linws-To be at well loc.
4. Location & Types of Water-
   To be trucked
5. Methods for Handling Waste
   Disposal - In suitable contain
   ers and pits on location.
6. Camps - None
7. Air Strips - None
8. Rig Layout - See Attached
9. Make location cleanup in a-
   ccordance with good operating
   practice and if P&A clean &
   level location around well.
10. None
11. There are no houses, build-
    ings, and windmills within
    1/4 mile of the location



RECEIVED
JUN 22 1973
NEW MEXICO

Amoco Production Company

DIAMOND FEDERAL GAS COM No. 1
SCOGGIN DRAW-MORROW
UNIT E, SEC 12, T-18-S, R-27-E
EDDY CO. N. M.

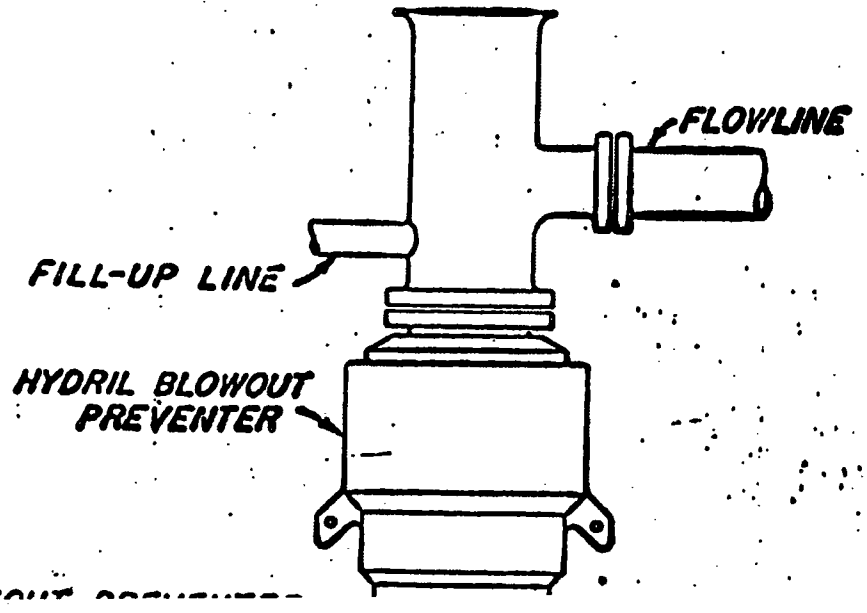
BLOWOUT PREVENTER HOOK-UP FOR DRILLING BELOW INTERMEDIATE CASING

1. BLOWOUT PREVENTERS AND MASTER VALVE TO BE FLUID OPERATED AND ALL FITTINGS MUST BE IN GOOD CONDITION (MINIMUM: WP - 3000 PSI, TEST - 6000 PSI).

2. EQUIPMENT THROUGH WHICH BIT MUST PASS SHALL BE AS LARGE AS THE INSIDE DIAMETER OF CASING THAT IS BEING DRILLED THROUGH.

3. KELLY COCK REQUIRED (MINIMUM: 3000 PSI WP, 6000 PSI TEST)

4. OMSCO OR COMPARABLE SAFETY VALVE MUST BE AVAILABLE ON RIG FLOOR AT ALL TIMES WITH PROPER CONNECTION OR SUB. (MINIMUM: 3000 PSI WP, 6000 PSI TEST)



WELL LOCATION AND ACREAGE DEDICATION PLAT

AMOCO PRODUCTION COMPANY | DIAMOND Federal Gas Com | 1

F | 12 | 18 South | 27 East | Eddy

1980 | North | 660 | West

3646.9' | MORROW | SCOGGIN DRAW MORROW (Gas) | 320

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

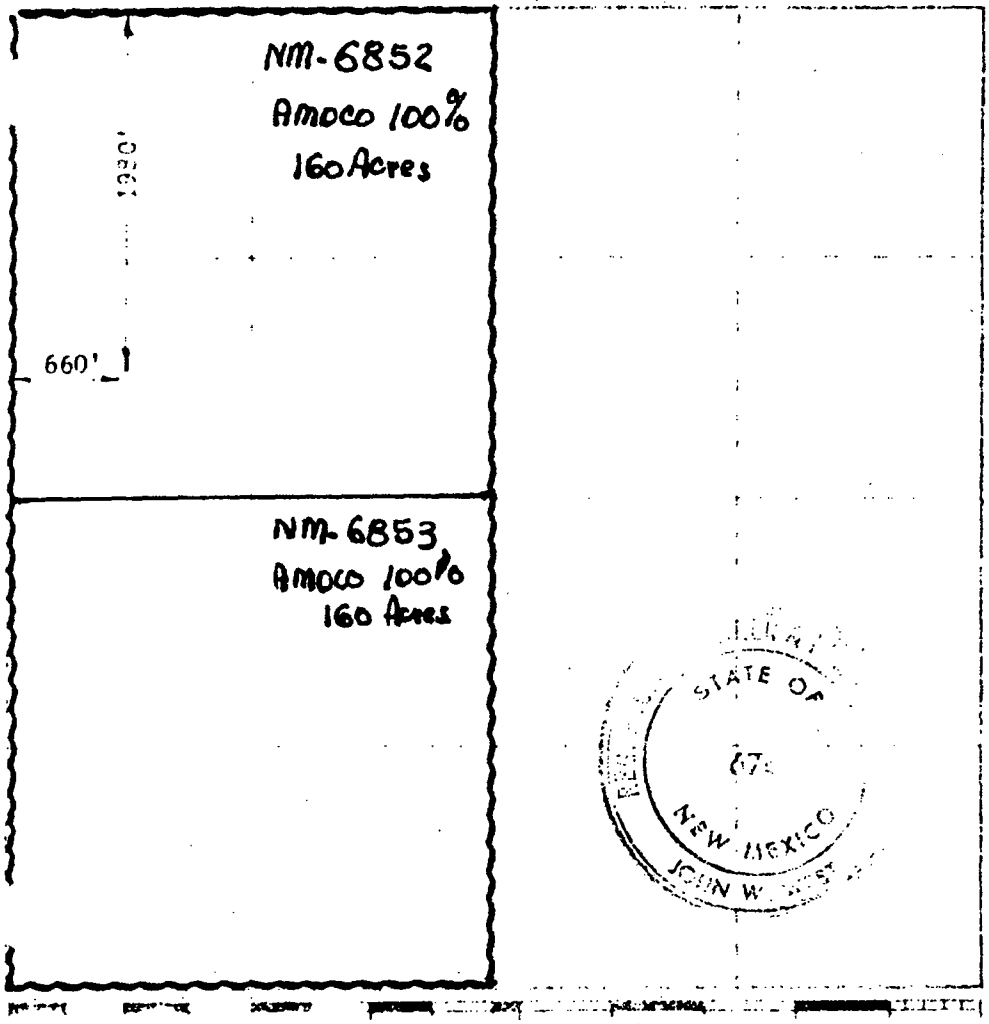
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

Yes No If answer is "yes" type of consolidation

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.)

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

J. E. York
AREA ENGINEER

Amoco Production Company

JUN 21 1973

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

JUNE 20, 1973

John W West

drilling into the Wolfcamp formation and used until production casing is run and cemented. Monitoring equipment shall consist of the following:

(1) A recording pit level indicator to determine pit volume gains and losses.

(2) A mud volume measuring device for accurately determining mud volume necessary to fill the hole on trips.

(3) A flow sensor on the flow-line to warn of any abnormal mud returns from the well.

6. When coming out of the hole with drill pipe, the annulus shall be filled with mud before the mud level drops below 150 feet. The volume of mud required to fill the hole shall be watched, and any time there is an indication of swabbing, or influx of formation fluids, proper blowout prevention precautions must be taken. The mud shall not be circulated and conditioned except on or near bottom, unless well conditions prevent running the pipe to bottom.

7. A copy of these requirements shall be posted on the rig floor or in the dog house during the drilling of the well.

James A. Knauf
District Engineer

Lease No. NM-6852
Well Amoco Production Co. 1-Diamond Federal Gas Com.
Drillsite 1980/N 660/W 12-18S-27E
Depth 10,000' Morrow
Approved July 6, 1973

N. M. O. C. C. COPY

Form 9-331 C
(May 1963)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

30-015-20894

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: NM-6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WORK: DRILL ☒ DEEPEN ☐ PLUG BACK ☐

b. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ OTHER — SINGLE ZONE ☒ MULTIPLE ZONE ☐

7. UNIT AGREEMENT NAME: DIAMOND FEDERAL GAS COM

8. FARM OR LEASE NAME:

2. NAME OF OPERATOR: Amoco Production Company

RECEIVED
JUL 9 1973
O. C. C.
ARTESIA, OFFICE

9. WELL NO.: 1

3. ADDRESS OF OPERATOR: BOX 68, HOBBS, N. M. 88240

10. FIELD AND POOL, OR WILDCAT: SCOGGIN DRAW-MORROW

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1980' FNL x 660' FWL Sec. 12 (Unit E, SE/4 NW/4)
At proposed prod. zone

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 12-18-27 NMPM

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*

12. COUNTY OR PARISH: EDDY | 13. STATE: N.M.

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
		320
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
	10,000	ROTARY

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3607' GL

22. APPROX. DATE WORK WILL START*: 7-1-73

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
11"	8 5/8"	32 ~~24~~#	1000'	Circ.
7 7/8"	4 1/2"	9.5 - 11.6#	10000'	SUFFICIENT TO FILL 500' ABOVE UPPERMOST PAY.

After drilling well logs will be run and evaluations made, perforating and/or stimulating as necessary in attempting commercial production.

BOP program attached.

Mud Program:
0 - 1000' Native mud & water
1000 - 9000 " "
9000 - 10000 Min. quality low solids gel for satisfactory operations & samples.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED J. E. York TITLE AREA ENGINEER DATE JUN 21 1973

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE JUL 6 1973

APPROVED BY _____ TITLE DISTRICT ENGINEER DATE JUL 6 1973

CONDITIONS OF APPROVAL, IF ANY:

USGS-Art
- Div
- SVSP
1- Rpy
1- ARCO

Subject to attached "Notice" dated 6-22-73

See Instructions On Reverse Side

Copy to SF

RECEIVED
JUL 10 1973
O. C. C.
ARTESIA, OFFICE

P. O. Drawer U
Artesia, New Mexico 88210

July 9, 1973

Mr. Jim York
Amoco Production Company
Post Office Box 68
Hobbs, New Mexico 88240

Dear Mr. York:

This is to confirm my telephone conversation with you today whereby we requested that the 8-5/8-inch casing string be set in the top of the San Andres formation (approximately 2,000 feet below the surface) in your No. 1 Diamond Federal Gas Com. well on lease NM-6852 in the SW¼NW¼ sec. 12, T. 18 S., R. 27 E., N.M.P.M., Eddy County, New Mexico.

Sincerely yours,

(SGD) JAMES A. KNAUF

James A. Knauf
District Engineer

cc:
Roswell
N.M.O.C.C. (2) ✓

RECEIVED
JUL 10 1973
O. C. C.
ARTESIA, OFFICE

Copy to S/F

N. M. O. C. C. COPY

UNITED STATES (SUBMIT IN TRIPLICATE* (Other instructions on reverse side)
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Form approved. Budget Bureau No. 42-R1424

5. LEASE DESIGNATION AND SERIAL NO.: NM 6952

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT —" for such proposals.)

1. OIL WELL [ ] GAS WELL [ ] OTHER DRILLING

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JUL 25 1973
O. C. C.
ARTESIA, OFFICE

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Amoco Production Company

8. FARM OR LEASE NAME: DIAMOND FED. GAS COM

3. ADDRESS OF OPERATOR: BOX 68, HOBBS, N. M. 88240

9. WELL NO.: 1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface

10. FIELD AND POOL, OR WILDCAT: Undesignated SCOGGIN DRAW-MORROW

1980' FNL x 660' FWL SEC. 12 (UNIT E, SE/4 NW/4)

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 12-18-27-NMPM

14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY OR PARISH	13. STATE
	3607' GL 3623' RDB	EDDY	N.M.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[X]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[ ]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other) Spudding			[X]
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

Delta Drlg Co. spudded 11" hole 3:PM 7-18-73.
On 7-22-73, 8 5/8" OD 32# 8R K-55 Casing was set
@ 1955 w/ 700Sx Incor 2% Gel + 100 sx neat. Circ. 200 Sx.
After WOC 18 hours, tested casing w/ 500 psi for 30 min.
Test O.K.
Reduced hole to 7 7/8" @ 1955' and resumed drilling.

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JUL 24 1973
U. S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

18. I hereby certify that the foregoing is true and correct

SIGNED: Ray L. Yoakum TITLE: ADMINISTRATIVE ASSISTANT DATE: JUL 23 1973

(This space for Federal or State office use)

APPROVED: TITLE: DATE:

CONDITIONS OF APPROVAL, IF ANY:

APPROVED
JUL 24 1973
H. L. BEEKMAN
ACTING DISTRICT ENGINEER

*See Instructions on Reverse Side

USGS-ABQ
1- DIV
1- SUS P
1- RRY
1- ARCO

N. M. O. C. C. COPY

Copy to SF

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

5. LEASE DESIGNATION AND SERIAL NO.: NM-6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: DIAMOND FED. GAS COM

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: SCOGGIN DRAW-MORROW

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: 12-18-27 NMPM

12. COUNTY OR PARISH: EDDY

13. STATE: N.M.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other

b. TYPE OF COMPLETION: NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

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SEP 24 1973
O. C. C.
ARTESIA, OFFICE

2. NAME OF OPERATOR: Amoco Production Company

3. ADDRESS OF OPERATOR: BOX 68, HOBBS, N. M. 88240

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements.*)
At surface: 1980' FNL x 660' FWL Sec 12. (Unit E, SE/4 NW/4)
At top prod. interval reported below
At total depth

14. PERMIT NO. | DATE ISSUED

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
7-18-73	8-27-73	P&A	3623' RDB	-

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,372	P&A		→	0-TD	-

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: NONE

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: GR-N - DUAL IND LL

27. WAS WELL CORED: No

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8⅝	32#	1955	11"	800 SX	NONE

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

31. PERFORATION RECORD (*Interval, size and number*)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)

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U. S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)
TEST WITNESSED BY

35. LIST OF ATTACHMENTS

pool test 9-13-74

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Ray L Yoakum TITLE ADMINISTRATIVE ASSISTANT DATE 9-10-73

(See Instructions and Spaces for Additional Data on Reverse Side)

ON3- USGS-ART
1-WJ
1-DIV
1-RRY

INSTR ONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: "*Sacks Cement*": Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES:
SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
			NO OIL OR GAS

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
T ABO	5506	
T WOLFCAMP	6728	
T CISCO	7485	
T STRAWN	8820	
T ATOKA	9460	
T MORROW	9725	
T CHESTER	10158	
T MISS LM	10338	

U.S. GOVERNMENT PRINTING OFFICE: 1963—O-683636

N. M. O. C. C. COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: NM-0502

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT-" for such proposals.)

7. UNIT AGREEMENT NAME: DIAMOND FEDERAL COM

1. OIL WELL ☐ GAS WELL ☐ OTHER DRILLING - DRY HOLE

2. NAME OF OPERATOR: Amoco Production Company ✓

RECEIVED
SEP 12 1973
O. C. C.
ARTESIA, OFFICE

8. FARM OR LEASE NAME:

3. ADDRESS OF OPERATOR: BOX 68, HOBBS, N. M. 88240

9. WELL NO.: 1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1980' FNL x 660' FWL Sec. 12 (Unit E, SE/4 NW/4)

10. FIELD AND POOL, OR WILDCAT: SCOGGIN DRAW MORROW

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 12-18-22 NMPM

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 3623 R.D.B.

12. COUNTY OR PARISH: EDDY 13. STATE: N.M.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☒	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled to a TD of 10,372' without encountering oil or Gas. Logs and evaluations confirmed Dry Hole.

* Propose to P+A as follows: Cement Plugs - Class H

INTERVAL	LENGTH	FORMATION	Sx CEMENT
9775-9675'	100'	Morrow	45
7535-7435'	100'	Cisco	50
5556-5456'	100'	Abo	40
3720-3620'	100'	Yeso	50
2045-1945'	100'	8⅝" csa 1995	40
Surface	10-20'	Erect P+A Marker	10 sx

All intervals to be filled w/ Brine mud.
Location to be Cleaned & Levelled.

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U. S. GEOLOGICAL SURVEY
ARTESIA, NEW MEXICO

* Pursuant to Mr. Lion Beekmans verbal approval 8-23-73.

18. I hereby certify that the foregoing is true and correct

SIGNED _____ TITLE AREA ENGINEER DATE AUG 31 1973

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

APPROVED
SEP 11 1973
H. L. BEEKMAN
ACTING DISTRICT ENGINEER

*See Instructions on Reverse Side

4 USGS-Art
1-Div
1-Jos P
1-RRv
1-Arco

N. M. O. C. C. CO

Copy USF

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions verse side)

Form approved.
Budget Bureau No. 42 R1424.

5. LEASE DESIGNATION AND SERIAL NO.
NM-6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED
SEP - 6 1974
O. C. C.

1. OIL WELL ☐ GAS WELL ☐ OTHER DRY HOLE

7. UNIT AGREEMENT NAME

2. NAME OF OPERATOR
Amoco Production Company

8. FARM OR LEASE NAME
DIAMOND FED. GAS COM

3. ADDRESS OF OPERATOR
BOX 68, HOBBS, N. M. 88240

9. WELL NO.
1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface
1980' FNLy 660' FWL Sec. 12 (UNIT E, SE/4 NW/4)

10. FIELD AND POOL, OR WILDCAT
SCOGGIN DRAW-MORROW

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
12-18-27 NMPM

14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY OR PARISH	13. STATE
	3623' R.D.B.	EDDY	NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☒
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

Physical abandonment of well concluded 8-31-73.
Plugged and abandoned as follows:

Sx CEMENT	INTERVAL	LENGTH	FORMATION
45	9775 - 9765	100'	MORROW
50	7535 - 7435	100'	CISCO
40	5556 - 5456	100'	ABO
50	3720 - 3620	100'	YESO
40	2045 - 1945	8⅝" CSA 1995' - circ.	
10	Surface; erected P&A marker.		

all intervals filled w/ mud.
Location to be cleaned & levelled.

RECEIVED
SEP - 6 1973
U.S. GEOLOGICAL SURVEY
ARTESIA, N.M.

18. I hereby certify that the foregoing is true and correct

SIGNED Ley L Yorkum TITLE ADMINISTRATIVE ASSISTANT DATE SEP 5 1973

(This space for Federal or State office use)

APPROVED BY APPROVED TITLE DATE
CONDITIONS OF APPROVAL, IF ANY:

SEP 6 1974
R. L. BEEKMAN
ACTING DISTRICT ENGINEER

*See Instructions on Reverse Side

a USGS Alter
1-Div
1-Susp
1-RRV
1-ARCO

EXHIBIT "D"
SKETCH OF WELL PAD

FRED POOL DRILLING, INC.
Well #2 Chukka Federal
SW¼NW¼, Sec. 12: T-18-S, R-27-E

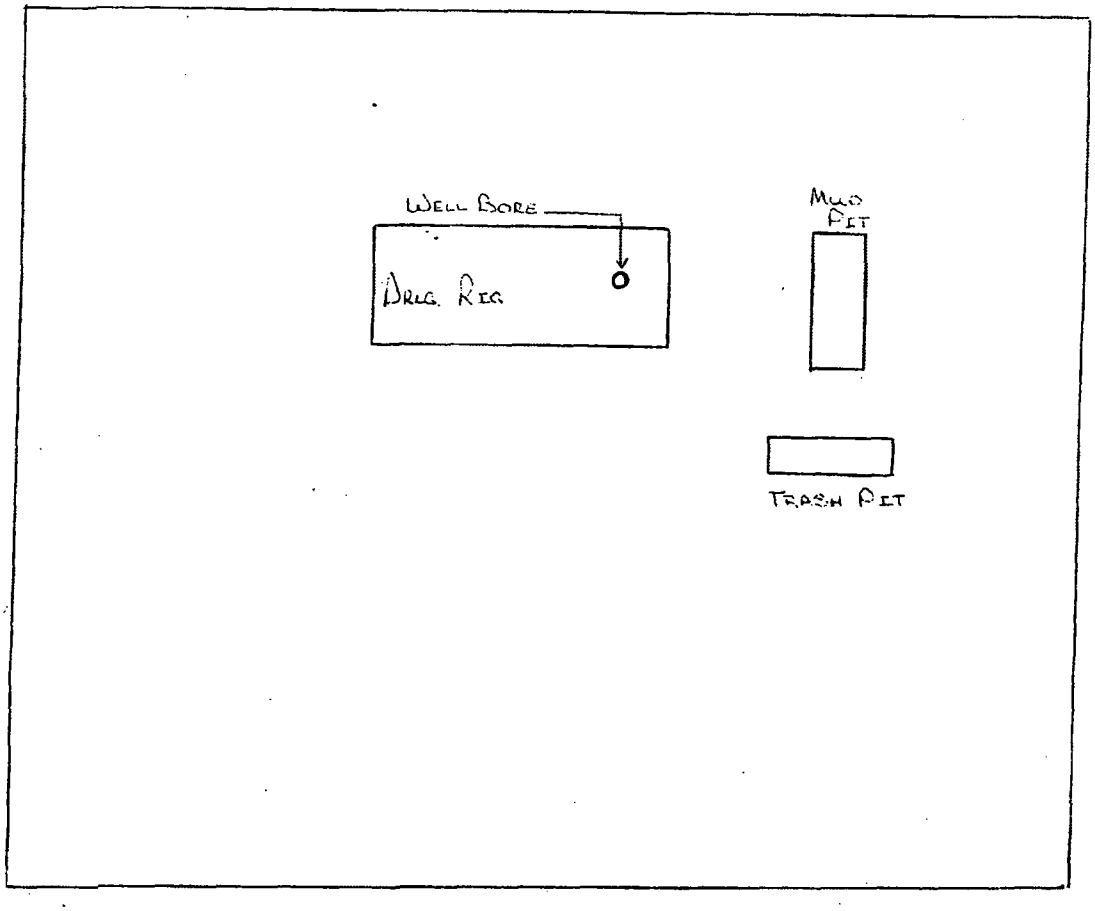
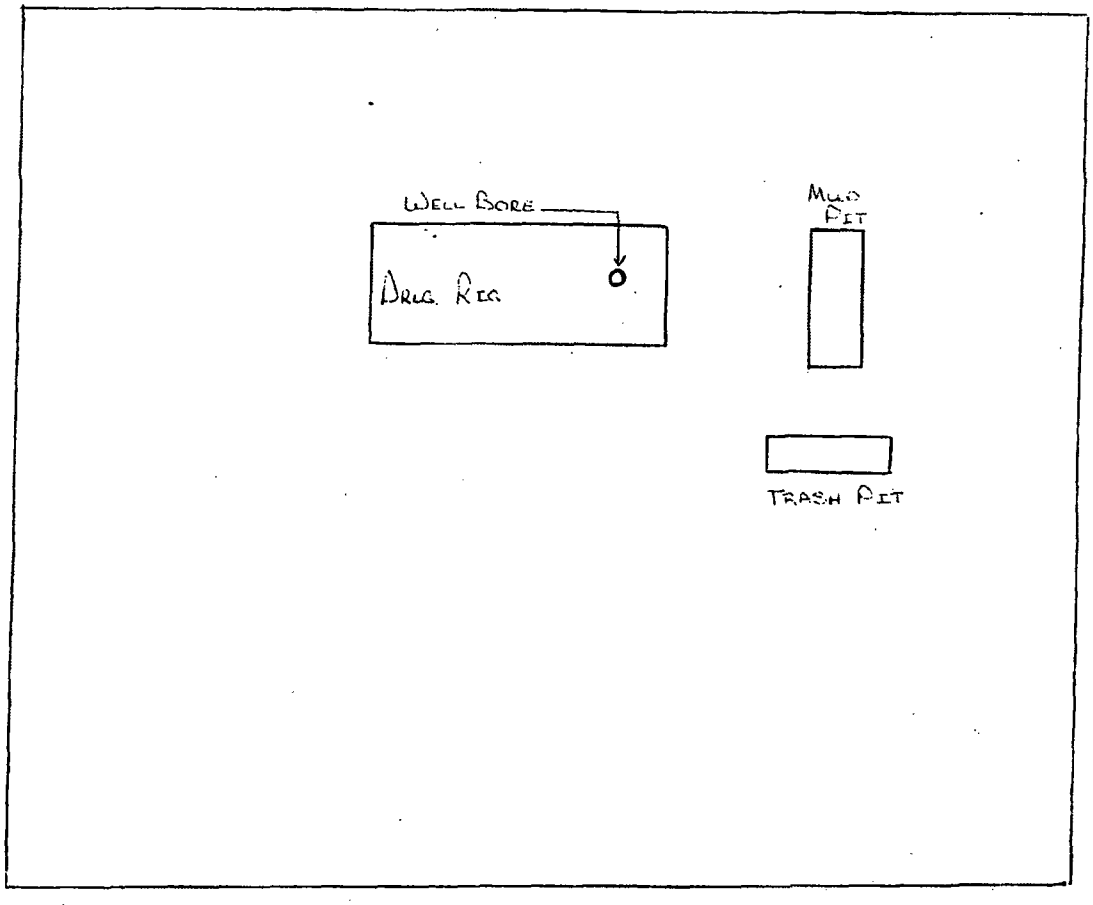


EXHIBIT "D"
SKETCH OF WELL PAD

FRED POOL DRILLING, INC.
Well #2 Chukka Federal
SW¼NW¼, Sec. 12: T-18-S, R-27-E



OIL CONSERVATION DIVISIC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 37501

Form C-102
Revised 10-1-78

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
ed Pool Drilling, Inc.	Chukka Federal	2

Unit Letter	Section	Township	Range	County
E	12	18-S	27-E	Eddy

Actual Footage Location of Well:
1980 feet from the North line and 660 feet from the West line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3607		Artesia	40 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

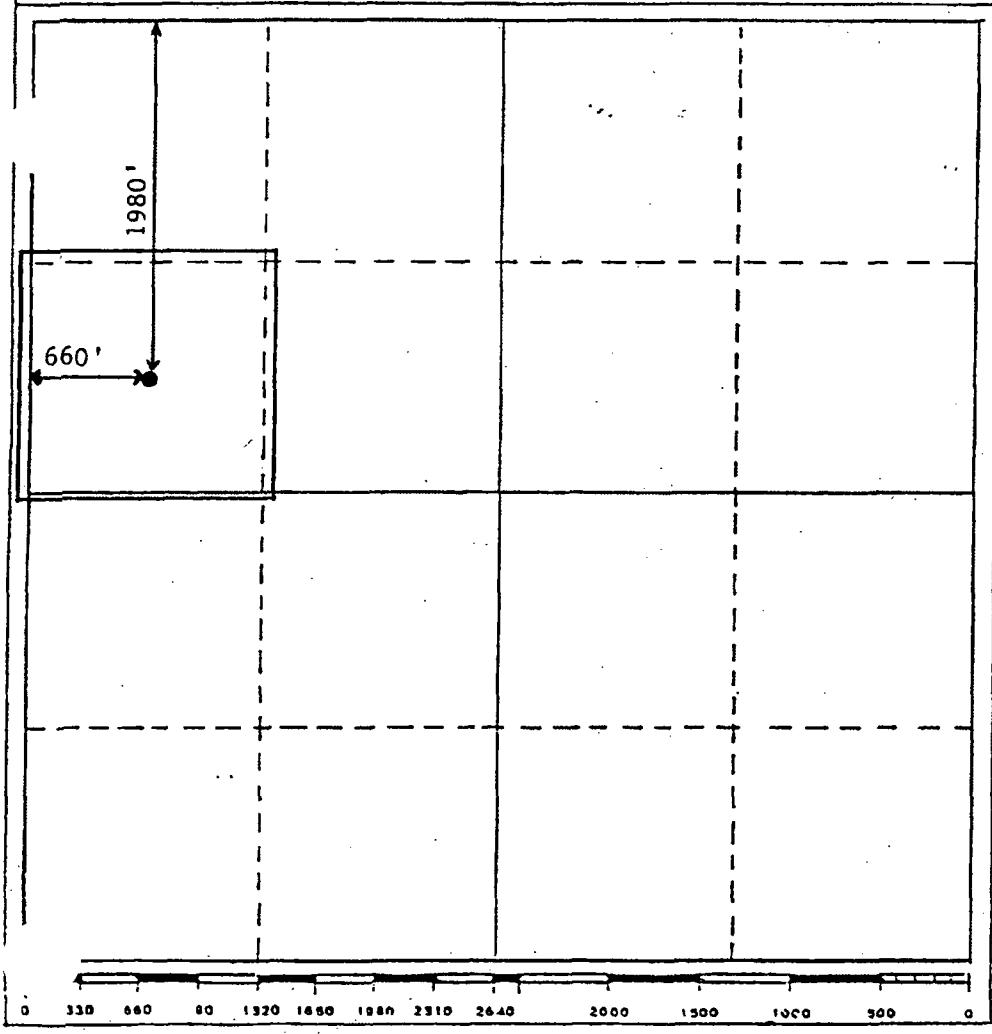
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☐ Yes ☒ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Fred Pool Jr.

Position: President

Company: Fred Pool Drilling, Inc.

Date: 8-16-85

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

Form 9-331 C
(May 1963)

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

RECEIVED BY
AUG 30 1985
O. C. D.
ARTESIA, OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

30-015-20894

5. LEASE DESIGNATION AND SERIAL NO.: NM-6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

7. UNIT AGREEMENT NAME:

b. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] OTHER Reentry SINGLE ZONE [X] MULTIPLE ZONE [ ]

8. FARM OR LEASE NAME: Chukka Federal

2. NAME OF OPERATOR: Fred Pool Drilling, Inc.

9. WELL NO.: 2

3. ADDRESS OF OPERATOR: P. O. Box 1393, Roswell, N.M. 88201

10. FIELD AND POOL, OR WILDCAT: ~~Wildcat~~ Artesia ~~Oil Pool~~

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1980' FNL & 660' FWL
At proposed prod. zone: (Unit E) (SW¼NW¼)

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 12, T-18-S, R-27-E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 11 air miles east-southeast of Artesia, N.M.

12. COUNTY OR PARISH: Eddy | 13. STATE: NM

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
660'	160	40
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
1650'	1945'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3607 GR

22. APPROX. DATE WORK WILL START*: 8-31-85

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
~~11"~~ 12¼" Hole	8 5/8"	32#	2000	Circ.
Csg. in place				

This is a re-entry of Diamond Fed. Gas Com #1 plugged and abandoned 8-31-73.
OTD: 10,372

Attached are:
1) Well location & acreage dedication plat
2) Supplemental drilling data
3) Surface use plan
4) Designation of operator
5) Original approved application by Amoco Production Co. for Diamond Federal Gas Com #1

Posted 101 NL 9-13-85

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED Fred Pool Jr. TITLE President DATE 8-16-85

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY Orig. Sgd. [illegible] TITLE _____ DATE 8-29-85

CONDITIONS OF APPROVAL, IF ANY:

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

*See Instructions On Reverse Side

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED BY
SEP 11 1985
O. C. D.
ARTESIA, OFFICE

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: FRED POOL DRILLING, INC.

8. FARM OR LEASE NAME: Chukka Federal

3. ADDRESS OF OPERATOR: P.O.Box 1393 Roswell, N.M. 88201

9. WELL NO.: 2

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface
1980 FNL 660 FWL
Unit E SW¼ NW¼

10. FIELD AND POOL, OR WILDCAT: ~~Wildcat~~ Artesia ~~Oil Pool~~

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec.12-T 18S- R 27E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 3607 GR

12. COUNTY OR PARISH: Eddy

13. STATE: NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[ ]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			
(Other)	[ ]			(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

9-5-85: Drilled cement out of surface from 0-30 ft.
Stringers of cement to 50 ft.
Tagged No. 2 plug at 1912 ft. Pulled tubing back to 1804 ft.; circulated hole with fresh water.
Preparing to log and perforate well.

SEP 09 1985

18. I hereby certify that the foregoing is true and correct

SIGNED Senta Pool TITLE Clerk DATE 9-6-85

(This space for Federal or State office use)

APPROVED BY ACCEPTED FOR RECORD TITLE DATE

CONDITIONS OF APPROVAL, IF ANY:

SEP 10 1985

CARLSBAD, NEW MEXICO

*See Instructions on Reverse Side

Form 3160-5
(May 1963)

NM OIL CONS. COMM.
Drawer DD
Artesia, NM 88210

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED BY
SEP 18 1985
O. C. D.
ARTESIA, OFFICE

1. OIL WELL [X] GAS WELL [ ] OTHER re-entry

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Fred Pool Drilling, Inc.

8. FARM OR LEASE NAME: Chukka Federal

3. ADDRESS OF OPERATOR: P.O.Box 1393 Roswell, N.M. 88201

9. WELL NO.: 2

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1980 FNL 660 FWL Unit E SW¼ NW¼

10. FIELD AND POOL, OR WILDCAT: Artesia Oil Pool

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec, 12-T18S-R27E

14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY OR PARISH	13. STATE
3001520894	3607 GR	Eddy	NM,

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[X]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			
(Other)	[ ]			(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

September 8,1985

Perforations: 1446-56 ft. and 1459-62
14 shots.
Acidized with 1000 gallons NE 15%; and30,000 gallons Versagel; 30,000# 20/40 sand and 12,000 # 10/20 sand.

Pumping well back to test.

RECEIVED
SEP 13 1985
ROSWELL, NEW MEXICO

18. I hereby certify that the foregoing is true and correct

SIGNED Renata Pool TITLE Vice - president DATE 9-11-85

(This space for Federal or State office use)

APPROVED BY ACCEPTED FOR RECORD TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

SEP 16 1985

*See Instructions on Reverse Side

CARLSBAD, NEW MEXICO

SUPPLEMENTAL DRILLING DATA

FRED POOL DRILLING, INC.
WELL #2 CHUKKA FEDERAL
SW¼NW¼, SEC. 12, T-18-S, R-27-E
EDDY COUNTY, NEW MEXICO

1. SURFACE FORMATION: Artesia Group of Permian Age. (Elev. 3607')

2. ESTIMATED TOPS OF GEOLOGIC MARKERS:

Yates	275'	Grayberg	1650'
Seven Rivers	475'		
Queen	1225'		

3. ANTICIPATED POROSITY ZONES:

Water - Above 300'
Oil - 1500-2500'

4. CASING DESIGN:

Size	Interval	Weight	Grade	Joint
8 5/8"	0 - 2000'	32#		

5. SURFACE CONTROL EQUIPMENT: Control head.

6. CIRCULATING MEDIUM: KCL water.

7. AUXILIARY EQUIPMENT: None considered necessary on this shallow development well.

8. TESTING, LOGGING AND CORING PROGRAM: No coring or DST's are planned. Electric logs will include an cement bond log and a Compensated Neutron Log with Gamma Ray.

9. ABNORMAL PRESSURES, TEMPERATURES OR GASES: None anticipated.

10. ANTICIPATED STARTING DATE: It is planned that operations will commence about August 31, 1985. Duration of drilling, completion and testing operations should be one to five days.

11. RE-ENTRY DETAILS: Drill out cement plug at top of casing. Clean hole to plug at 1945' with tubing. Pressure test casing to be sure it does not leak. Run cement bond log from 1945' to surface. Perforate the Penrose section from 1450' to 1470' acidize and swab test.

Drawer DD
Artesia, NM 88210

75F

Form 9-330
(Rev. 5-63)

RECEIVED BY
SEP 23 1985
ARTESIA, OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [ ] Other RE-entry

b. TYPE OF COMPLETION: NEW WELL [X] WORK OVER [ ] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] Other

5. LEASE DESIGNATION AND SERIAL NO.: NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Chukka Federal

9. WELL NO.: 2

10. FIELD AND POOL, OR WILDCAT: Artesia ~~Oil Pool~~

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 12-T18S-R27E

2. NAME OF OPERATOR: Fred Pool Drilling, Inc. ✓

3. ADDRESS OF OPERATOR: P.O.Box 1393 Roswell, N.M.88201

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface 1980 FNL660 FWL SW¼ NW¼ Unit E
At top prod. interval reported below 1446- ft.
At total depth 1912 ft.

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
3001520894	9-30-85	Eddy	NM

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
8-30-85	9-6-85	9-10-85	3607 GR	3607 GR

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
1912 ft.	1912 ft		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
1446-1462 ft.
Penrose

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: Compensated Neutron

27. WAS WELL CORED: no

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8 5/8	32#	2000	11"	circulated	0

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2 3/8	1804 ft.	

31. PERFORATION RECORD (*Interval, size and number*)
1446-56 ft.
1459-62 ft. 14 holes

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
1446-56	1000 gal. NE 15%, 30,000 gal. Versagel; 30,000 # 20/40 sand; 12,000# 10/20 sand.
1459-62	

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
9-12-85	Pumping	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
9-12-85	24	none		31	TSTM	0	

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
40#	40#		31	TSTM	0	35

ACCEPTED FOR RECORD
SEP 19 1985
CARLSBAD, NEW MEXICO

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*): vented

TEST WITNESSED BY: Fred Pool, Jr.

35. LIST OF ATTACHMENTS: Compensated Neutron log, mailed 9-10-85

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Fred Pool TITLE Vice President DATE 9-13-85

*(See Instructions and Spaces for Additional Data on Reverse Side)

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

37. SUMMARY OF POROUS ZONES:
SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF; CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
	0	65	Caliche and red bed
	65	1100	Salt, red bed and anhydrite.
	1100	1365	Dolomite and anhydrite
Queen & Grayburg	1365	1570	Sand dolomite
TD	1570	1912	dolomite

38. GEOLOGIC MARKERS

NAME	TOP	
	MEAS. DEPTH	TRUE VERT. DEPTH

U.S. GOVERNMENT PRINTING OFFICE: 1963—O-683636

GPO 680-147

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Form C-104
Revised 10-1-78

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RECEIVED BY
SEP 18 1985
O. C. D.
ARTESIA, OFFICE

NO. OF COPIES RECEIVED		
DISTRIBUTION		
SANTA FE	✓	✓
FILE	✓	✓
U.S.G.S.		
LAND OFFICE		
TRANSPORTER OIL	✓	
TRANSPORTER GAS	✓	
OPERATOR	✓	
PRORATION OFFICE		

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator
Fred Pool Drilling, Inc.

Address
P.O. Box 1393 Roswell, N.M. 88201

Reason(s) for filing (Check proper box)
New Well [X] Re-entry
Recompletion [ ]
Change in Ownership [ ]
Change in Transporter of: Oil [ ] Dry Gas [ ] Casinghead Gas [ ] Condensate [ ]

Other (Please explain)
CASINGHEAD GAS MUST NOT BE FLARED AFTER 10-24-85 UNLESS AN EXCEPTION FROM THE B. L. M. IS OBTAINED

If change of ownership give name and address of previous owner

I. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease
Chukka Federal	2	Artesia ~~Oil Pool~~	State, Federal or Fee Federal	6852

Location
Unit Letter E : 1980 Feet From The North Line and 660 Feet From The West
Line of Section 12 Township 18S Range 27E NMPM Eddy County

II. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [X] or Condensate [ ]	Address (Give address to which approved copy of this form is to be sent)
Navajo Crude Oil Purchasing	Box 159 Artesia, N.M. 88210
Name of Authorized Transporter of Casinghead Gas [X] or Dry Gas [ ]	Address (Give address to which approved copy of this form is to be sent)
Phillips Petroleum	Bartlesville, Okla.

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When
	E	12	18S	27E	no	

If this production is commingled with that from any other lease or pool, give commingling order number:

III. COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Resv.	Diff. R
	X			X				X

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
8-30-85	9-10-85	1912 ft.	1912 ft.
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
GR 3607	Penrose	1446 ft.	1804
Perforations 1446-56, 1459-62			**Depth Casing Shoe** –

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
11"	8 5/8	240	200
	4 1/2	1814	

Post ID-2
9-27-85
CMP

IV. TEST DATA AND REQUEST FOR ALLOWABLE (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

OIL WELL

Date First New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
9-12-85	9-12-95	pumping	
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
24 hrs.	40#	40#	none
Actual Prod. During Test	**Oil-Bbls.**	**Water-Bbls.**	**Gas-MCF**
31 bbls	31	0	TSTM

GAS WELL

Actual Prod. Test-MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
TSTM	24hrs.	TSTM	–
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
			none

V. CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Penta Pool
(Signature)
Vice President
(Title)
9-16-85
(Date)

OIL CONSERVATION DIVISION

APPROVED SEP 24 1985, 19

BY Original Signed By
Les A. Clements

TITLE Supervisor District II

This form is to be filed in compliance with RULE 1104.

If this is a request for allowable for a newly drilled or deepened well, this form must be accompanied by a tabulation of the deviation tests taken on the well in accordance with RULE 111.

All sections of this form must be filled out completely for allowable on new and recompleted wells.

Fill out only Sections I, II, III, and VI for changes of operator, well name or number, or transporter, or other such change of condition.

Separate Forms C-104 must be filed for each pool in multiply completed wells.

FRED POOL, JR.

P. O. Box 1393
Roswell, NM 88201

RECEIVED BY
OCT 3 - 1985
O. C. D.
ARTESIA, OFFICE

September 25,1985

New Mexico Energy and Resources Board
P.O.Box 2088
Santa Fe, N.M. 87501

RE: Chukka Federal No. 2
Lease No. 6852
SW/4 NW/4 Sec. 12-18S-27E
Eddy County,N.M.

Gentlemen,

Please be advised that the above well was spudded on 8-3-85 and completed as a producing well on September 10,1985. This well was potentialed at 31 barrels per day of oil and gas was TSTM.

All necessary records and logs have been filed with the appropriate offices.

Sincerely,

Penta Pool

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

Drawer DD Artesia, NM.

DISTRICT OFFICE #2

Sept. thru Dec. 1985

NO. 2058 N

SUPPLEMENT TO THE OIL PRORATION SCHEDULE

DATE September 24, 1985

PURPOSE ALLOWABLE ASSIGNMENT - NEW OIL

Effective September 12, 1985 an allowable of 31 barrels of oil per day is hereby assigned to Fred Pool Drilling, Incorporated, Chukka Federal #2-E-12-18-27 in the Artesia Queen Grayburg San Andres Pool.

L - F

MP - P

Sept. Total - 589 bbls.
Oct. Total - 961 bbls.
Nov. Total - 930 bbls.
Dec. Total - 961 bbls.

Form. - Penrose
Perfs. - 1446' - 1462'
Comp. - 9-10-85
TD - 1912'

LAC:fc

Fred Pool Drlg., Inc.

NMOCC
PP

OIL CONSERVATION DIVISION

Jos W. Clemens

DISTRICT SUPERVISOR

DISTRIBUTION: WHITE-OPERATOR, GREEN-TRANSPORTER, CANARY-OCC SANTA FE, PINK-OFFICE COPY, GOLDENROD-EXTRA COPY

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.: NM 6852

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED
OCT 19 '90
O. C. D.
ARTESIA, OFFICE

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: THE EASTLAND OIL COMPANY

8. FARM OR LEASE NAME: CHUKKA FEDERAL

3. ADDRESS OF OPERATOR: P. O. DRAWER 3488, MIDLAND, TX 79702

9. WELL NO.: 2

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface:
UNIT LETTER E, 1980 FT. FNL AND 660 FWL, SECTION 12, TS 18S, RG. 27E, EDDY CO., NM

10. FIELD AND POOL, OR WILDCAT: ARTESIA Q-G-SA

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SEC. 12, TWP 18S, RGE. 27E

14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY OR PARISH	13. STATE
30-015-20894		EDDY	NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[ ]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other) CHANGE OF OPERATOR			[X]
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

LEASE PURCHASED FROM FRED POOL DRILLING, INC. 09/01/90.

RECEIVED
OCT 17 11 09 AM '90
CARLSBAD, NEW MEXICO

18. I hereby certify that the foregoing is true and correct

SIGNED Travis Reed TITLE PRODUCTION SUPERINTENDENT DATE 10/11/90

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
OCT 18 '90
O. C. D.
ARTESIA, OFFICE

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
THE EASTLAND OIL COMPANY	30-015-20894

Address: P. O. DRAWER 3488, MIDLAND, TEXAS 79702

Reason(s) for Filing (Check proper box)
- New Well [ ]
- Recompletion [ ]
- Change in Operator [X]
- Change in Transporter of: Oil [ ] Dry Gas [ ] Casinghead Gas [ ] Condensate [ ]
- Other (Please explain): EFFECTIVE 09/01/90

If change of operator give name and address of previous operator: FRED POOL DRILLING, INC., P. O. DRAWER 1393, ROSWELL, NM 88201

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
CHUKKA FEDERAL	2	ARTESIA Q-G-SA	~~State~~, Federal ~~or Fee~~	6852

Location: Unit Letter E : 1980 Feet From The North Line and 660 Feet From The West Line

Section 12 Township 18S Range 27E, NMPM, EDDY County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil or Condensate	Address (Give address to which approved copy of this form is to be sent)
NAVAJO CRUDE OIL PURCHASING [XX]	BOX 159, ARTESIA, NM 88210
Name of Authorized Transporter of Casinghead Gas [X] or Dry Gas [ ]	Address (Give address to which approved copy of this form is to be sent)
PHILLIPS PETROLEUM	BARTLESVILLE, OK

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	E	12	18S	27E	NO	

If this production is commingled with that from any other lease or pool, give commingling order number:

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation	Top Oil/Gas Pay	Tubing Depth
Perforations			Depth Casing Shoe

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size posted ID-3 10-26-90
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas- MCF Chg OP

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pitot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Travis Reed
Signature
TRAVIS REED PRODUCTION SUPERINTENDENT
Printed Name Title
10/08/90 915/683-6293
Date Telephone No.

OIL CONSERVATION DIVISION

Date Approved OCT 23 1990

By ~~ORIGINAL SIGNED BY~~ MIKE WILLIAMS

Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-101
Revised March 12, 1999

Submit to Appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

☐ AMENDED REPORT

APR 1999
RECEIVED
OCD - ARTESIA

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1 Operator Name and Address	2 OGRID Number
Navajo Refining Company Post Office Box 159 Artesia, New Mexico 88211	15694
	3 API Number 30 – 015-20894

4 Property Code	5 Property Name	6 Well No.
23592	WDW-~~1~~	2

7 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	18S	27E		1980	North	660	West	Eddy

8 Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

9 Proposed Pool 1	10 Proposed Pool 2
~~Lower Wolfcamp-Cisco-Canyon Injection Zone~~	Navajo Injection; Permo-Penn. 96918

11 Work Type Code	12 Well Type Code	13 Cable/Rotary	14 Lease Type Code	15 Ground Level Elevation
E-Reentry	Class I Injection	R	Federal	3607' GR, 3623' KB
16 Multiple	**17 Proposed Depth**	**18 Formation**	**19 Contractor**	**20 Spud Date**
No	9200'	Strawn		5/15/99

21 Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
11"	8-5/8"	32 lb/ft	1995 feet	800	Surface
7-7/8"	5-1/2"	17 lb/ft	9200 feet	Caliper vol. +20%	Surface

22 Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Proposed Reentry of The Eastland Oil Company (originally Fred Pool Drilling, Inc.) Chukka Federal No. 2 (PBTD 1912 feet, September 10, 1985) formerly Amoco Production Company Diamond Federal Gas Com. No. 1 (OTD 10,372 feet, P&A August 31, 1973). The well currently produces oil and gas from perforations from 1446 feet to 1462 feet (Penrose.)

Navajo will squeeze the perforations from 1446 feet to 1462 feet, drill out cement plugs, and clean out the well to 9200 feet, set 5-1/2 inch casing at 9200 feet and cement to the surface, perforate porous intervals in the Lower Wolfcamp, Cisco, and Canyon Formations between 7270 feet and 9200 feet, and conducted injectivity tests.

Attached are the Well Location Plat and Drilling Program.

23 I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: Darrell Moore
Printed name: Darrell Moore
Title: Env. Mgr. for Water & Waste
Date: 4/21/99 Phone: 605-748-3311

OIL CONSERVATION DIVISION

Approved by: Steve Gt. Brown. BGX
Title: District Supervisor
Approval Date: 5-3-99 Expiration Date: 5-3-00
Conditions of Approval:
Attached ☐

3198\Form C-101.doc

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-102
Revised March 17, 1999

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-20894		Lower Wolfcamp-Cisco-Canyon Injection Zone

[4] Property Code	[5] Property Name	[6] Well Number
	WDW-2	

[7] OGRID No.	[8] Operator Name	[9] Elevation
	Navajo Refining Company	3607' GR

[10] Surface Location

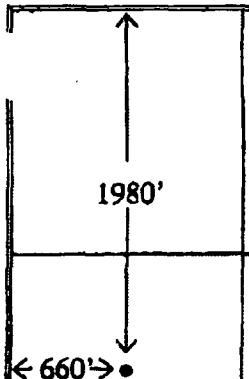
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	18S	27E		1980	North	660	West	Eddy

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief

Signature: Darrell Moore

Printed Name: Darrell Moore

Title: Env. Mgr. for Water & Waste

Date: 4/21/99

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey

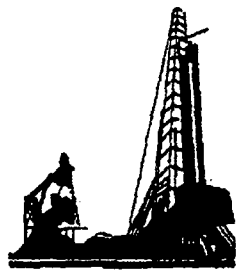
Signature and Seal of Professional Surveyor:

Well is active. Location was not re-surveyed by Navajo.

Certificate Number

OIL CONSERVATION DIVISION

2040 South Pacheco
Santa Fe, NM 87505
(505) 827-7133
Fax: (505) 827-8177



(PLEASE DELIVER THIS FAX)

To: TIM GUMM - ARTESIA OCD FAX 748-9720

From: WAYNE PRICE - OCD SF

Date: 4/30/99

Number of Pages (Includes Cover Sheet) 6

Message: APPROVED BOND FOR NAVAJO WDW #2

CLASS I INJECTION WELL (COPY)

If you have any trouble receiving this, please call:
(505) 827-7133

NEW MEX O ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

April 19, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z 559 573 590

J.S. Ward & Son, Inc.
104 South Fourth Street
Artesia, New Mexico 88210-2195

Attention: Mr. Gary Sims

Re: Navajo Refining Company Discharge Plan UIC-CLI-008-2
Bond No. 58 96 12
$ 95,000.00 One-Well Plugging Bond
to the State of New Mexico for Class I Injection Well WDW#2
1980' FNL and 660' FWL - Sec 12-Ts18s-R27e N.M.P.M.
Eddy, County, New Mexico
J.S. Ward & Son, Inc., Principal

Gulf Insurance Company, Surety
Bond 58 96 12

The New Mexico Oil Conservation Division hereby approves the above-captioned One-Well Plugging Bond.

Sincerely,

RAND CARROLL,
Legal Counsel

RC/wp

cc: OCD Artesia Office
Gulf Insurance Company

PROJECT BILLING INFORMATION SHEET

Proposal No. 71Z5678 Project No. **70D6806** Original Proposal/Project Submittal Date: 4/23/12

CLIENT INFORMATION

Company Name: *	Bio-Lab Inc.	Is this a revision: Yes ☐ No ☒
Attention Line: *	Steve Marr	Revision Date:
"Billing" Address: *	1400 East Michigan Street Adrian, Michigan 49221	
Project Manager: *	Joe Thatcher	
"Main" Telephone No: *	(517) 265-6138 Ext. 253 (Steve Marr)	Fax No.
Project Manager's Tele. No.*	(517) 605-0908 (Joe Thatcher's Cell #)	Fax No.
Physical (Delivery) Address: *		Salesperson (One Only):
Email Address		Taxable ☐ Nontaxable ☐
Client's PO/Contract No.	**P.O. 4500349691**	**PO/Contract Date: 04/23/12**

Description of Work (TO BE PRINTED ON INVOICE): * **Well No. 1 MIT and Falloff Survey**

Subsurface Project Manager: RWS State Work Performed (One Only): MI

BILLING METHOD: (You must complete only one of the following billing methods):

(1) _X_ 2011 Price List Less ____%, ____% Handling Charge, or ____% Procurement Fee
(2) ____ 2004 Price List Less ____%, ____% Handling Charge, or ____% Procurement Fee
(2) ____ Lump-Sum (Project Manager to Notify Accounting When to Bill)
(3) ____ Special Billing (Describe:)
(4) ____ Standard Government Billing:____% Overhead, ____% Fixed Fee (Attach Form OF-60)

APPROVED PROJECT BUDGET:

Amount to be Billed: (A)	$ 11,670
Subsurface Project Cost: (B)	$
Gross Profit: (C=A-B)	$
Gross Profit: (D=C/A)	%

CRITICAL DEADLINES:

Proposal Due Date:	3/20/2012
Project Start-up Date:	
Project Completion Date:	

PROJECT CODES (One Code Per Line): **

Industry Sector Code:
Business Line Code:
Service Type Code:
Project Type Code:

PREPARATION: ***

RFP Received: Yes ☐ No ☐
Written ☐ Verbal ☐
PBI Prepared By: RWS

* Maximum of 30 characters. This description will appear on all client billing information. Be concise.

** See back of Project Billing Information Sheet for Business Line/Service Type/Project Type codes.

*** A completed (i) RFP for a proposal or (ii) manpower summary and cost estimate for a project should be attached.

Revised 7-27-01

J. S. Ward & Son, Inc.

101 South Fourth Street
(505) 746-2796
FAX (505) 746-4244
Artesia, New Mexico
88210-2195

Insurance
Bonds

April 22, 1999

State of New Mexico
Energy, Minerals & Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505-5472

Attention: Mr. Roger Anderson

Re: Navajo Refining Company
Bond No. 58 96 12
$95,000 One-Well Plugging Bond
to the State of New Mexico for
Class I Injection Well
Chukka Federal #2

Dear Mr. Anderson:

Enclosed please find the captioned bond through Gulf Insurance Company which we trust you find in order and acceptable for filing.

Very truly yours,

J. S. WARD & SON, INC.

By S. Gary Sims

SGS:emb

Enclosure

cc: Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211-0159
Attention: Mr. Joe Akins - Copy of Bond & Invoice

Navajo Re...ing Company	Gulf Insurance Company
PRINCIPAL	SURETY
Post Office Box 159	101 South Fourth Street
Artesia, New Mexico 88211-0159	Artesia, New Mexico 88210-2195
Address	Address
By: Signature	Attorney-In-Fact
President	
Title	
(Note: Principal, if corporation, affix corporate seal here.)	(Note: Corporate surety affix corporate seal here.)

ACKNOWLEDGEMENT FORM FOR NATURAL PERSONS

STATE OF _____)
COUNTY OF _____) ss.

On this _____ day of _____, 19___, before me personally appeared _____, to me known to be the person (persons) described in and who executed the foregoing instrument and acknowledged that he (they) executed the same as his (their) free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission Expires

ACKNOWLEDGEMENT FORM FOR CORPORATION

STATE OF New Mexico)
COUNTY OF Eddy) ss.

On this 22nd day of April, 19 99, before me personally appeared Jack P. Reid, to me personally known who, being by me duly sworn, did say that he is President of Navajo Refining Company and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

Rita Bradley
Notary Public

OFFICIAL SEAL
Rita Bradley
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 1-16-2001

1-16-2001
My Commission Expires

ACKNOWLEDGEMENT FORM FOR CORPORATE SURETY

STATE OF New Mexico)
COUNTY OF Eddy) ss.

On this 22nd day of April, 19 99, before me appeared S. Gary Sims, to me personally known, who, being by me duly sworn, did say that he is Attorney-in-Fact of Gulf Insurance Company and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

Edwina M. Bramlett
Notary Public

OFFICIAL SEAL
EDWINA M. BRAMLETT
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 7-10-01

7-10-01
My Commission Expires

(Note: Corporate surety attach power of attorney.)

APPROVED BY:
OIL CONSERVATION DIVISION OF NEW MEXICO
By: _____
Date: 4/30/99

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS:

That GULF INSURANCE COMPANY, a corporation of the State of Missouri, hereinafter called "Company," does hereby appoint

CHARLENE M. WARD or S. GARY SIMS or JOHN C. KNIGHT

ARTESIA, NEW MEXICO

its true and lawful Attorney-in-fact to make, execute, seal and deliver on its behalf, as surety, any and all bonds and undertakings of suretyship. , not to exceed $250,000.00 or any bond where the penalty is not stated in the bond form. No authority is granted where the attorney in fact is a party at interest in the bond.

The execution of such bonds or undertakings in pursuance of these presents shall be as binding upon the Company as if they had been executed and acknowledged by the regularly elected officers of the Company.

This Power of Attorney is issued pursuant to and by authority of the following resolution of the Board of Directors of the Company, adopted effective July 1, 1983, and now in full force and effect:

"Resolved that the President, or any Senior Vice President, or any Vice President, or the Secretary, or any Assistant Secretary may appoint Attorneys-in-fact in any state, territory or federal district to represent this Company and to act on its behalf within the scope of the authority granted to them, in writing, which authority may include the power to make, execute, seal and deliver on behalf of this Company, as surety, and as its act and deed, any and all bonds and undertakings of suretyship and other documents that the ordinary course of surety business may require, including authority to appoint agents for the service of process in any jurisdiction, state or federal, and authority to attest to the signature of the President, or any Senior Vice President, or any Vice President, or the Secretary, or any Assistant Secretary and to verify any affidavit or other statement relating to the foregoing, and to certify to a copy of any of the bylaws of the Company and to any resolutions adopted by its Board of Directors; and any such Attorney-in-fact may be removed and the authority granted him revoked by the President, or any Senior Vice President, or any Vice President, or the Secretary, or any Assistant Secretary, or by the Board of Directors."

This Power of Attorney and Certificate are signed and sealed by facsimile under and by authority of the following resolution of the Board of Directors of the Company, adopted effective July 1, 1983, and now in full force and effect:

"Resolved that the signature of the President, or of any Senior Vice President, or of any Vice President, or of the Secretary, or of any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Attorneys-in-fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, including any such power of attorney and certificate revoking the authority of the foregoing Attorneys-in-fact, as well as for the appointment of agents for the service of process in any jurisdiction, state or federal, including any such power of attorney and certificate revoking the authority of such agents; and any such power of attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power of attorney or certificate so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company at the time of issuance that any such power of attorney and certificate are executed and in the future with respect to any bond or undertaking to which they are attached."

In Witness Whereof, the Company has caused this Power of Attorney to be signed and its corporate seal to be affixed by its authorized officer this 12 day of April, 1991.

By _____
Sr. Vice President

STATE OF TEXAS
COUNTY OF DALLAS

On this 12 day of April, 1991, before me, a Notary Public of the State and County aforesaid, residing therein, duly commissioned and sworn, personally came the above named officer of GULF INSURANCE COMPANY, who being by me first duly sworn according to law, did depose and say that he is that officer of the company described in and which executed the foregoing instrument; that he knows the seal of said company; that the seal affixed to such instrument is the corporate seal of said company; and that the corporate seal and his signature as such officer were affixed and subscribed to the said instrument by the authority and direction of said company.

Clifford R. Beard
Notary Public

(SEAL) OF TEXAS
EXPIRES
6-30-92

My commission expires the 30th day of June, 1992

CERTIFICATE

I, the undersigned, do hereby certify that the original Power of Attorney of which the foregoing is a true and correct copy is in full force and effect, and the foregoing resolutions are true and correct transcripts from the records of GULF INSURANCE COMPANY and that the above named officer was on the date of execution of the foregoing Power of Attorney authorized to execute this Power of Attorney.

In testimony whereof, I have hereunto subscribed my name and affixed the corporate seal of Gulf Insurance Company this 22nd day of April, 1999.

Vice President

Form C & G B-1
Ad 1 6-17-77
Rs 11-01-89

STATE OF NEW MEXICO

ONE-WELL PLUGGING BOND

FOR CHAVES, EDDY, LEA, McKINLEY, RIO ARRIBA, ROOSEVELT, SANDOVAL, AND SAN JUAN COUNTIES ONLY

BOND NO. 58 96 12
AMOUNT OF BOND $95,000.00
COUNTY Eddy

NOTE: For wells less than 5,000 feet deep, the minimum bond is $5,000.00*
For wells 5,000 to 10,000 feet deep, the minimum bond is $7,500.00*
For wells more than 10,000 feet deep, the minimum bond is $10,000.00

*Under certain conditions, a well being drilled under a $5,000.00 or $7,500 bond may be permitted to be drilled as much as 500 feet deeper than the normal maximum depth, i.e., a well being drilled under a $5,000.00 bond may be permitted to go to 5,500 feet, and a well being drilled under a $7,500.00 bond may be permitted to go to 10,500 feet. (See Rule 101)

File with Oil Conservation Division, P. O. Box 2088, Santa Fe 87501

KNOW ALL MEN BY THESE PRESENTS:

That Navajo Refining Company, (a corporation organized in the State of New Mexico, with its principal office in the city of Artesia, State of New Mexico, and authorized to do business in the State of New Mexico), as PRINCIPAL, and Gulf Insurance Company, a corporation organized and existing under the laws of the State of Missouri, and authorized to do business in the State of New Mexico, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Division of New Mexico pursuant to Section 70-2-12, New Mexico Statutes Annotated, 1978 Compilation, as amended, in the sum of Ninety-Five Thousand and no/100ths Dollars lawful money of the United States, for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas lease, or carbon dioxide (CO_2) gas leases, or helium gas leases, or brine mineral leases with the State of New Mexico; and

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases, or brine mineral leases on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals; and

WHEREAS, The above principal, individually, or in association with one or more other parties, has commenced or may commence the drilling of one well not to exceed a depth of 9200 feet, to prospect for and produce oil or gas, or carbon dioxide (CO_2) gas or helium gas, or does own or may acquire, own or operate such well, or such well started by others on land embraced in said State oil and gas leases, or carbon dioxide (CO_2) leases, or helium gas leases, or brine minerals, and on land patented by the United States of America to private individuals, and on land otherwise owned by private individuals, the identification and location of said well being 1980' FNL and 660' FWL, Section 12, Township 18 ~~North~~(South) (Here state exact legal footage description) Range 27 (East) ~~West~~, N.M.P.M., Eddy County, New Mexico.

NOW, THEREFORE, If the above bounden principal and surety or either of them or their successors or assigns, or any of them, shall plug said well when dry or when abandoned in accordance with the rules, regulations, and orders of the Oil Conservation Division of New Mexico in such way as to confine the oil, gas, brine, and water in the strata in which they are found, and to prevent them from escaping into other strata;

THEN, THEREFORE, This obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

Signed and sealed this 22nd day of April, 1999.

ATTACHMENT A

Sunday, May 9, 1999

Pressure testing the 8-5/8 inch Surface Casing from 1922 feet (KB) to 30 feet (KB) using a fresh water fluid. Pressure testing was performed after the perforations between 1446 feet and 1462 feet were squeezed with cement.

Pressure Test No. 1

Time (hrs.)	Cumulative Time (minutes)	Pressure (psig)	Delta Pressure (psi)
1303	0	660	----
1308	5	660	0
1313	10	660	0
1318	15	660	0
1323	20	660	0
1328	25	659	-1
1333	30	659	0

Total =-1 psi per 30 minutes

Pressure Test No. 2

Time (hrs.)	Cumulative Time (minutes)	Pressure (psig)	Delta Pressure (psi)
1333	0	659	----
1338	5	659	0
1343	10	659	0
1348	15	658	-1
1353	20	658	0
1358	25	657	-1
1303	30	657	0

Total =-2 psi per 30 minutes

WF—

TELEPHONE
(505) 748-3311

EASYLINK
62905278

NAVAJO REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

May 10, 1999

Mr. Tim Gumm
State of New Mexico
Energy, Minerals and Natural
Resources Department
Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210

RE: Re-Entry for Navajo Refining Company's Waste Disposal Well No. 2

Dear Mr. Gumm:

Navajo Refining Company (Navajo) has contracted Subsurface Technology, Inc. to re-enter, test and complete Waste Disposal Well No. 2 (WDW-2), formerly the Chukka Federal No. 2 operated by The Eastland Oil Company. The United States Department of the Interior, Bureau of Land Management approved the Application for Permit to Drill or Deepen on April 27, 1999. Subsequent approval from the State of New Mexico Oil Conservation Commission (OCD) was granted on Tuesday, May 4, 1999.

Navajo initiated field operations on Wednesday, May 5, 1999. The existing pumping equipment, rods, and tubing were removed from the wellbore. The perforations from 1446 feet to 1462 feet were squeezed using 100 sacks of Class 'H' cement (approximately 50 sacks of cement were displaced into the perforated interval). The cement was allowed to cure and drilled out to a total depth of 1922 feet (KB)(1911 feet below ground level).

On Sunday, May 9, 1999, the 8-5/8 inch surface casing, set from 1955 feet (KB) to surface, was pressure tested for internal mechanical integrity between 1922 feet (KB) and 30 feet (KB) using a packer set at 30 feet. The 8-5/8 inch surface casing was pressure tested to 660 pounds per square inch and monitored at the surface for one hour (Attachment A). The fluid used for testing was a clean fresh water fluid. A pressure loss of 1 psi (0.15%) was observed during the first 30 minutes of the test. A pressure loss of 2 psi (0.30%) was observed during the last 30 minutes of the test. The results from the pressure test confirmed internal mechanical integrity of the 8-5/8 inch surface casing from 1922 feet (KB) to 30 feet (KB).

The 8-5/8 inch surface casing was originally set in an 11 inch open-hole to a depth of 1955 feet (KB) and cemented to surface using 700 sacks of Class 'H' cement with 2% gel and 100 sacks of Class 'H' neat. A total of 200 sacks of cement was recorded circulated to surface. The calculated volume between an 11 inch hole and 8-5/8 inch casing is (0.2407 cubic feet per foot X 1955 feet) 471 cubic feet. The volume of cement pumped is (1.18 cubic feet per sack X 800 sacks) 944 cubic feet for an excess of 473 cubic feet or 400 sacks circulated to surface. The calculated volume of cement and apparent volume of actual cement pumped indicated excess cement was circulated to surface.

On Sunday, May 9, 1999, Halliburton Logging Services completed a cement bond and microsiesmogram (same as a variable density log) logging survey within the 8-5/8 inch casing from a wireline total depth of 1919 feet (KB) to the surface (Attachment B). The results from the survey indicate a continuous column of cement from 1922 feet to surface with good bonding characteristics. The cement behind the 8-5/8 inch casing will provide an effective hydraulic seal to prevent the movement of groundwater fluids into the underground source of drinking water with a base at 473 feet.

Please review and approve the pressure testing and cement bond log results at your earliest convenience. Navajo will proceed with the mobilization of the drilling rig Wednesday, May 12, 1999 and begin re-entry of the WDW-2 wellbore according to the approved drilling program. Navajo will periodically contact the OCD, Artesia office with a status update of the re-entry operations. The Bureau of Land Management will be notified in sufficient time for a representative to witness the cementing of the 5-1/2 inch protection casing.

Should you have any questions or concerns, please call me at (505) 748-3311.

Sincerely yours,

Darrell Moore

Darrell Moore
Environmental Manager for Water and Waste

c: Mr. David Glass
Bureau of Land Management
Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201

Mr. Brian Rogers
Subsurface Technology, Inc.
7020 Portwest, Suite 100
Houston, Texas 77024

File: Injection Wells

ENVIROCORP

March 30, 1999

Mr. Barry Hunt
Bureau of Land Management
Carlsbad Resource Area
620 East Greene Street
Carlsbad, New Mexico 88220-6292

RE: Navajo Refining Company Proposed WDW-2, Eddy County, New Mexico
Request for On-Site Inspection of Wellsite
Subsurface Project No. 60A4937

Dear Mr. Hunt:

Navajo Refining Company (Navajo) is purchasing an existing well in Eddy County, New Mexico for planned use as a Class I nonhazardous effluent disposal well, and plans to reenter and test the well in the next few months. The well is on federal land. Subsurface Technology, Inc. (Subsurface), formerly Envirocorp Services & Technology, Inc., on behalf of Navajo, requests your participation in an on-site inspection of the wellsite as soon as possible.

Pertinent information about the existing well is provided below:

Lease Number:	NM 6852
Current Operator:	The Eastland Oil Company (September 1990 to present)
Lease:	Chukka Federal No. 2
Former Operator:	Fred Pool Drilling Company (August 1985 to September 1990)
Former Operator:	Amoco Production Company (July 1973 to August 1985)
Former Lease:	Diamond Federal Gas Com. No. 1
Location:	1980' FNL, 660' FWL (SW/4 NW/4, Unit Letter E) 12-T18S-R27E

Topographic Map (Attachment A)

Original Total Depth: 10,372 feet
Plugged-Back Total Depth: 1912 feet
Well Schematic (Attachment B)

Status: The well is producing from the Penrose formation perforations between 1446 feet and 1462 feet. Navajo is currently

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negotiating to purchase the well from Eastland Oil Company. The purchase should be completed by April 1, 1999.

Navajo proposes to reenter the well, squeeze the perforations from 1446 feet to 1462 feet, drill out the plugs and clean out the well to approximately 9200 feet, set 5-1/2 inch casing at 9200 feet and cement it to the surface, and conduct one or more injectivity tests. The proposed injection intervals are porous zones in the lower portion of the Wolfcamp Formation (7270 feet to 7645 feet), the Cisco Formation (7645 feet to 8390 feet), and the Canyon Formation (8390 feet to 8894 feet). Navajo's proposed reentry, testing, and recompletion procedure is included as Attachment C. A schematic of the well after recompletion is included as Attachment D.

Subsurface is currently preparing a discharge plan application for the Class I well for Navajo to submit to the New Mexico Oil Conservation Division and the BLM Roswell office near the end of April 1999. Subsurface is also preparing BLM Form 3160-3 (Application for Permit to Drill) for Navajo to submit to the BLM Roswell office.

Please contact me at (713) 880-4640 to schedule an on-site inspection of the wellsite. Do not hesitate to call me if you need additional information or if you have questions.

Sincerely,

Nancy L. Niemann

Nancy L. Niemann
Senior Geologist

NLN/paf
Attachments

c: Joe Lara – BLM, Carlsbad
David Glass – BLM, Roswell
Wayne Price – OCD, Santa Fe
Tim Gum – OCD, Artesia
Phil Youngblood – Navajo
Darrell Moore – Navajo
George Walbert – Holly Petroleum, Inc.

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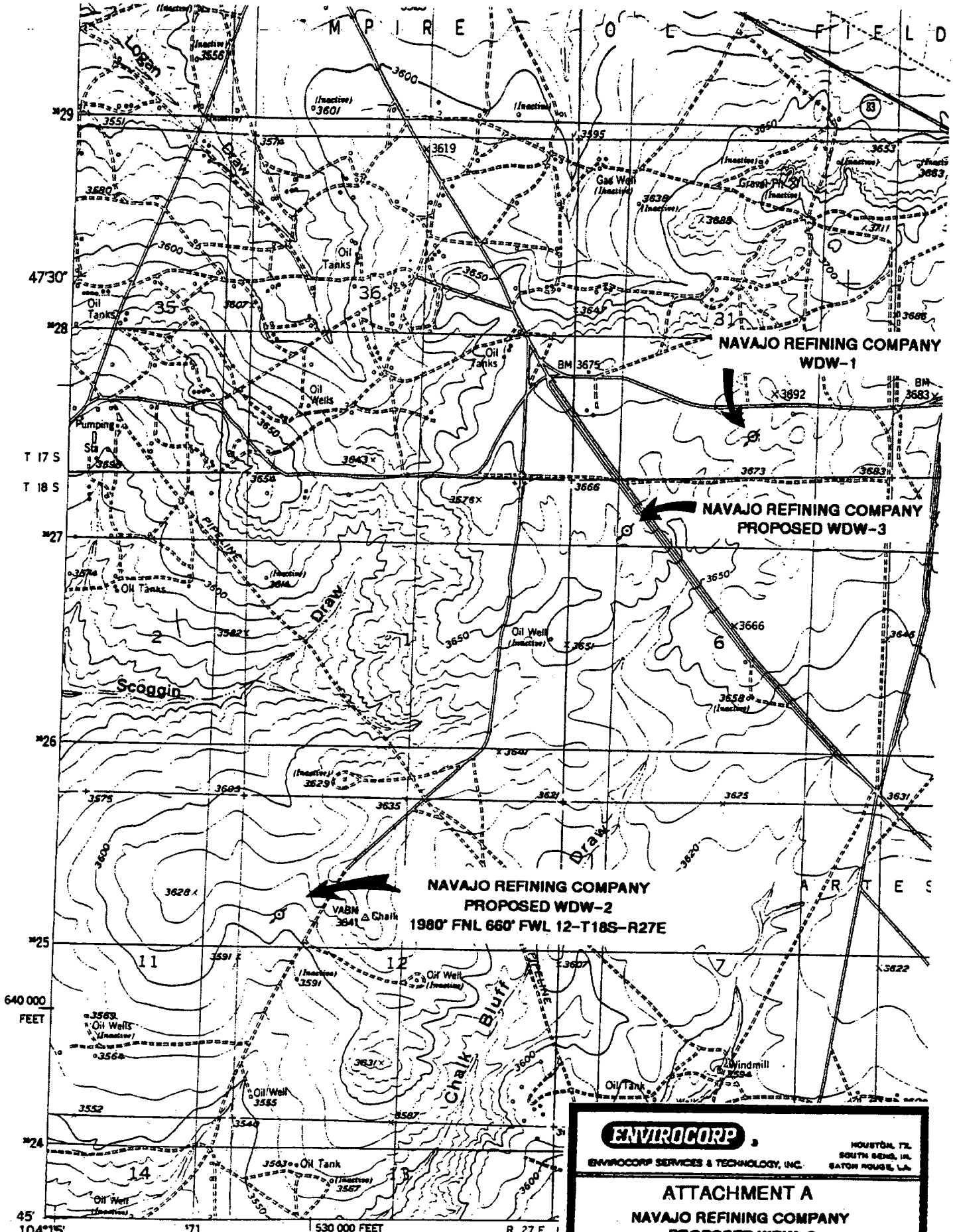

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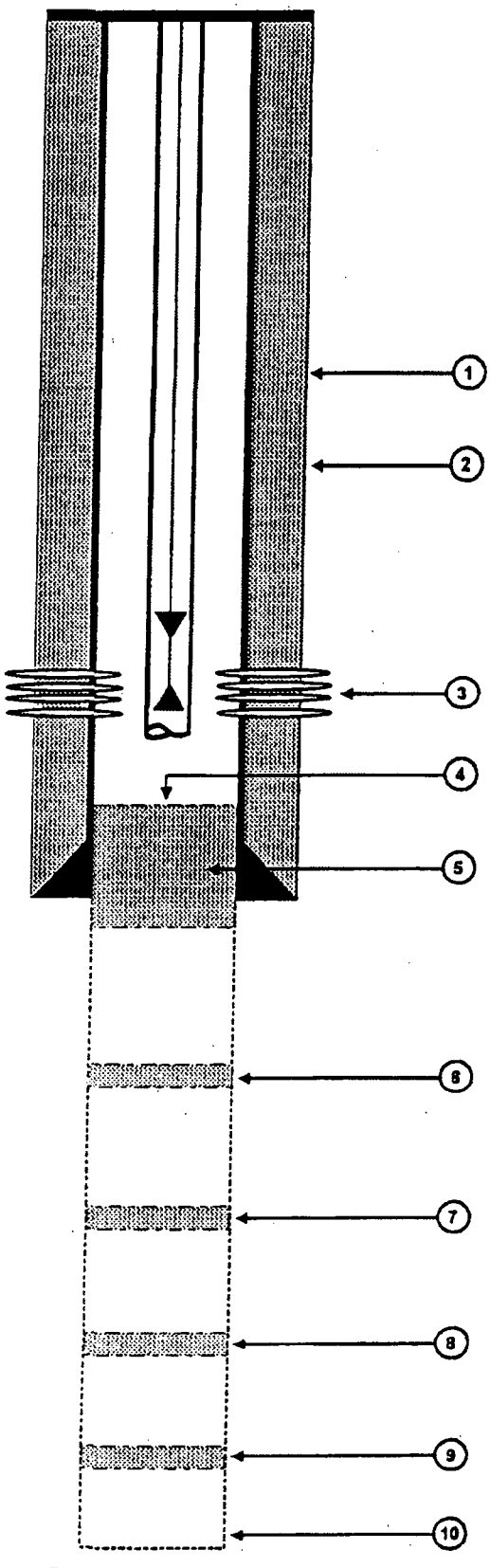
BATON ROUGE, LA.

ATTACHMENT A

NAVAJO REFINING COMPANY
PROPOSED WDW-2
1980' FNL 660' FWL 12-T18S-R27E
EDDY COUNTY, NM

DATE:	CHECKED BY:	JOB NO:
DRAWN BY:	APPROVED BY:	DWG. NO:



Total Depth: 10,372'

BELOW GROUND DETAIL

All depths are referenced to the kelly bushing elevation of 13 feet. The surface elevation is 3610 feet.

1. Base of the USDW at 473'.

2. Casing: 8-5/8", 32 lb/ft, set at 1955' in an 11" hole. Cemented to surface with 700 sacks of cement.

3. Perforations: 1446' - 1462'.

4. PBTD: 1912'.

5. Cement Plug: 40 sacks from 1912' to 2045'.

6. Cement Plug: 50 sacks from 3620' to 3720'.

7. Cement Plug: 40 sacks from 5456' to 5556'.

8. Cement Plug: 50 sacks from 7435' to 7535'.

9. Cement Plug: 45 sacks from 9675' to 9775'.

10. Hole Size: 7-7/8".

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ATTACHMENT III-2
NAVAJO REFINING COMPANY
CURRENT WELL CONFIGURATION
CHUKKA FEDERAL No. 2

Date: 03/10/99	Checked By: NLN	Job No.: 80A4937
Drawn By: LKM	Approved By: NLN	File: WDW2A.DS4

ATTACHMENT C

DRILLING AND RECOMPLETION PROCEDURE FOR NAVAJO REFINING COMPANY'S PROPOSED WDW-2

1. Obtain all permits and approvals for the reentry, testing and completion of a currently existing well.

2. Move in and rig up a workover unit. Remove the pumping equipment and pull the tubing out of the well.

3. Go in the hole with a squeeze packer and squeeze the perforations from 1446 feet to 1462 feet with 100 sacks of Class "H" cement. Allow the cement to cure.

4. Drill out the cement, circulate the well clean and pressure test the squeezed perforations at 500 psig for 30 minutes. Pull the squeeze tools out of the hole.

5. Conduct a CBL/VDL survey from 1912 feet to the surface. Submit the results of the pressure test and CBL/VDL survey to the OCD and the BLM for their review and approval prior to mobilizing the drilling rig.

6. After receiving approval from the OCD and the BLM to continue the reentry, prepare the location for the selected drilling rig. Construct the lined reserve pits, dig out the cellar, and install a mousehole and rathole.

7. Move in and rig up the rotary drilling rig and install the blowout preventers.

8. Drill out the following cement plugs and conduct deviation surveys every 1000 feet or on trips:

   a. 1912 feet to 2045 feet, 40 sacks
   b. 3620 feet to 3720 feet, 50 sacks
   c. 5456 feet to 5556 feet, 40 sacks
   d. 7435 feet to 7535 feet, 50 sacks

9. Clean the well out to a depth of 9200 feet and circulate and condition the hole for logging. Make a wiper trip to the base of the 8-5/8 inch surface casing while strapping the drillpipe.

10. Conduct a formation microimager (FMI) survey with gamma ray from the well's total depth to 4000 feet. Continue the four-arm caliper survey to the 8-5/8 inch

casing shoe. Process the FMI for fracture identification over the lower 200 feet of the confining zone and zones of interest in the injection zone, if warranted.

11. Spot a gelled pill at 9200 feet and lay down the drillpipe.

12. Run the 5-1/2 inch casing with a packoff shoe and float collar to 9200 feet. Install a "DV" tool at 5500 feet. Run centralizers at approximately 120-foot intervals.

13. Cement the 5-1/2 inch casing in place. Use a minimum of 20% excess cement as calculated from the caliper log. Circulate cement to the surface and allow to cure.

14. Clean out the mud pits and release the drilling rig 12 hours after cementing the 5-1/2 inch casing in place.

15. Stabilize the 5-1/2 inch casing at the surface using ready-mix cement.

16. Move in and rig up the completion rig pump, tank, power swivel, and work string. Install the blowout preventer.

17. Run in the well with a 4-3/4 inch bit to the "DV" tool and test the casing to 1500 psig for 30 minutes.

18. Drill out the "DV" tool and clean out the wellbore to the float collar. Test the casing to 1500 psig for 30 minutes. Circulate the wellbore with clean brine, preceded by 15% HCL to clean the casing. Trip the work string out of the well.

19. Conduct the casing inspection, CBL/VDL, and differential temperature surveys.

20. Perforate the selected injection interval as determined from the open hole logs. (Zone 1).

21. Run in the well with a packer and tailpipe. Set the packer above the top perforation and swab test the perforated interval. Recover at minimum two tubing volumes of the reservoir fluid for analysis (Note: Set up H_2S monitoring equipment prior to swabbing operations).

22. Acidize the zone using diverters. Pull the packer out of the well.

23. Perforate the next selected injection interval as determined from the open hole logs (Zone 2).

ATTACHMENT C (Continued)

24. Run a retrievable bridge plug and packer into the well and isolate Zone 2.

25. Acidize Zone 2 using diverters. Pull the retrievable bridge plug and packer out of the well, laying down the work string.

26. Conduct an injection test down the 5-1/2 inch casing at 420 gpm for 12 hours followed by a pressure falloff test.

27. Conduct a differential temperature survey and radioactive tracer survey to determine the injection profile.

28. Run the injection tubing and packer. Fill the annulus with corrosion inhibited brine.

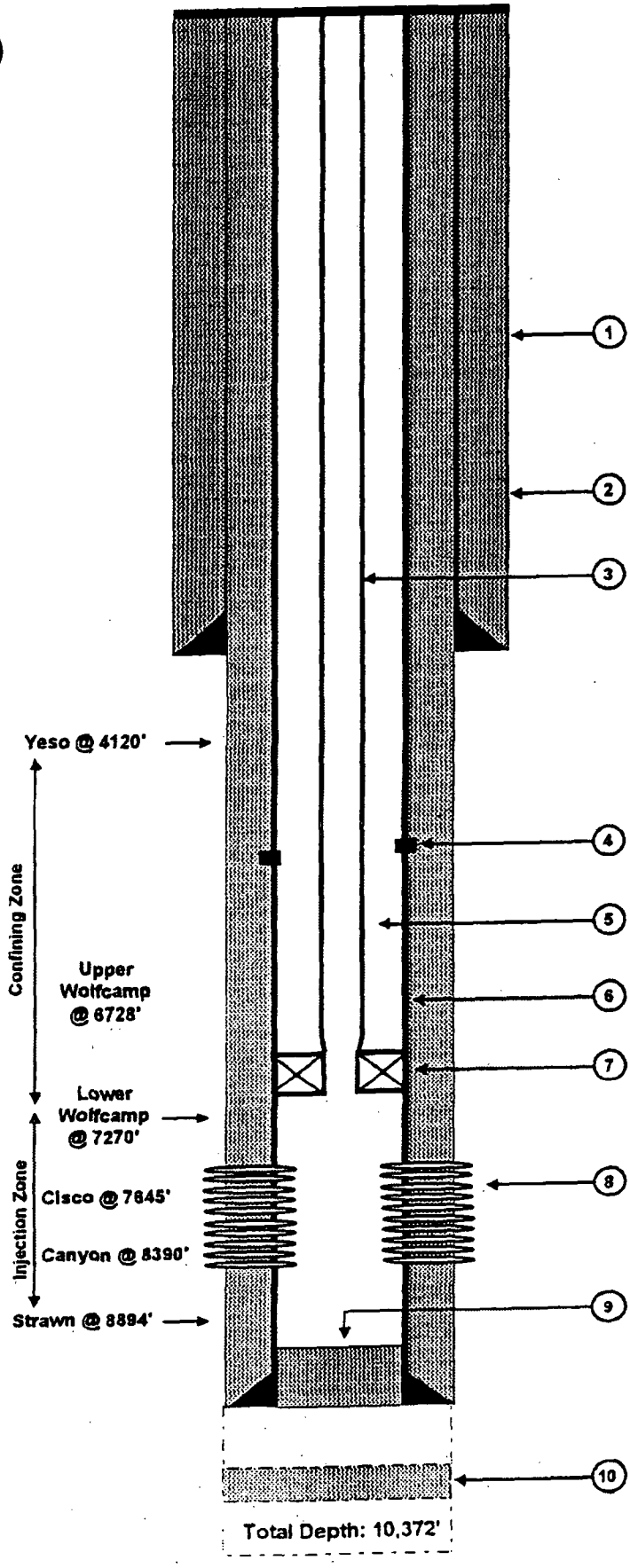
29. Wait for the well system to come to thermal stabilization (approximately 24 hours).

30. Conduct an annulus pressure test witnessed by the OCD.

31. Rig down and move out all equipment and close the reserve pit.

32. Install the annulus monitoring system and return the well to the client.

ATTACHMENT D



BELOW GROUND DETAIL

All depths are referenced to the kelly bushing elevation of 13 feet. Surface elevation is 3610 feet.

1. Base of the USDW at 473'.

2. Casing: 8-5/8", 32 lb/ft, set at 1955' in an 11" hole. Cemented to surface with 700 sacks of cement.

3. Injection Tubing: 3-1/2".

4. DV Tool: at 5500'.

5. Annulus Fluid: Corrosion inhibited brine water.

6. Protection Casing: 5-1/2" set in a 7-7/8" hole. Casing cemented to surface. Calipered hole volume plus 20% excess.

7. Packer: Fullbore retrievable packer set 100' above the top perforated injection interval.

8. Perforations: Perforated in two intervals between 7270' and 8894'.

9. PBTD: 9200'

10. Cement Plug: 45 sacks from 9675' to 9775'.

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ATTACHMENT III-4
NAVAJO REFINING COMPANY
PROPOSED WDW-2
ARTESIA, NEW MEXICO

Date: 03/11/99	Checked By: NLN	Job No.: 60A4937
Drawn By: LKM	Approved By: NLN	File: WDW2B.DS4

CONDITIONS OF APPROVAL - DRILLING

Operator's Name: Navajo Refining Company **Well No.** 2 - WDW
Location: 1980' FNL & 660' FWL **sec.** 12 , **T.** 18 S. , **R.** 27 E.
Lease: NM-6852

I. DRILLING OPERATIONS REQUIREMENTS: [Deepening]

1. The Bureau of Land Management (BLM) is to be notified at (505) 887-6544 in sufficient time for a representative to witness:

A. Cementing casing: 5-1/2 inch

2. Unless the injection casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

II. CASING:

1. Minimum required fill of cement behind the 5-1/2 inch injection casing is **sufficient to circulate to the surface.**

III. PRESSURE CONTROL:

1. Before drilling into the **100 foot 8-5/8 inch surface casing shoe cement plug at approximately 1912 feet ,** the blowout preventer assembly shall consist of a minimum of One Annular Preventer, Two Ram-Type Preventers, and a Kelly Cock/Stabbing Valve

2. Minimum working pressure of the blowout preventer and related equipment (BOPE) shall be 3000 psi.

3. After drilling into the **100 foot 8-5/8 inch surface casing shoe cement plug at approximately 1912 feet** and before drilling into the **100 foot Abo cement plug at approximately 5450 feet ,** the BOPE shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.

A. The results of the test will be reported to the BLM Carlsbad Resource Area office at 620 East Greene Street, Carlsbad, New Mexico 88220-6292.

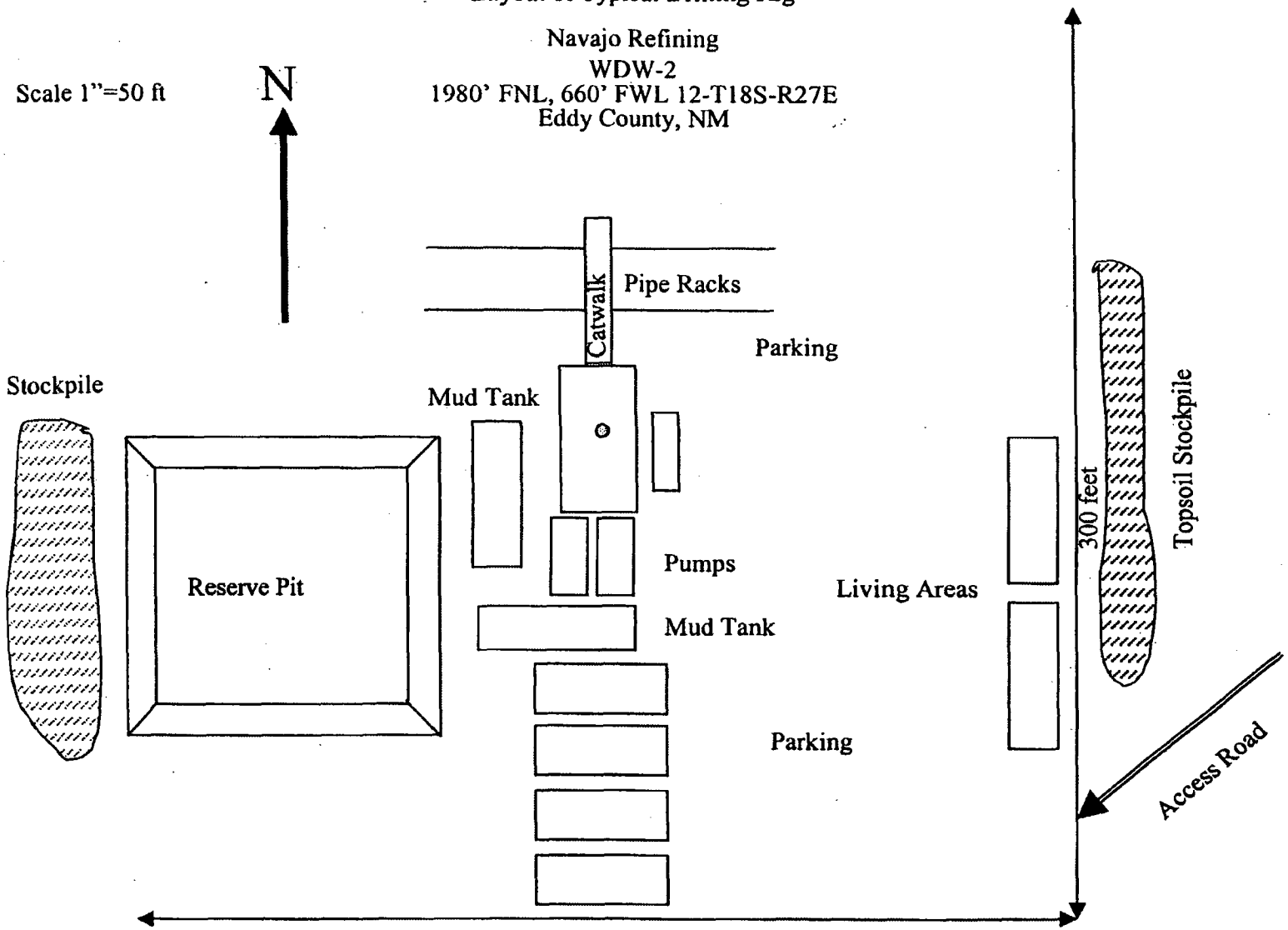
B. Testing fluid must be water or an appropriate clear liquid suitable for sub-freezing temperatures. Use of drilling mud for testing is not permitted since it can mask small leaks.

C. Testing must be done in a safe workman like manner. Hard line connections shall be required.

Layout of Typical Drilling Rig

Navajo Refining
WDW-2
1980' FNL, 660' FWL 12-T18S-R27E
Eddy County, NM

Scale 1"=50 ft



Note: No Cut Nor Fill Will Be Required

Subsurface Technology, Inc.

EXHIBIT C

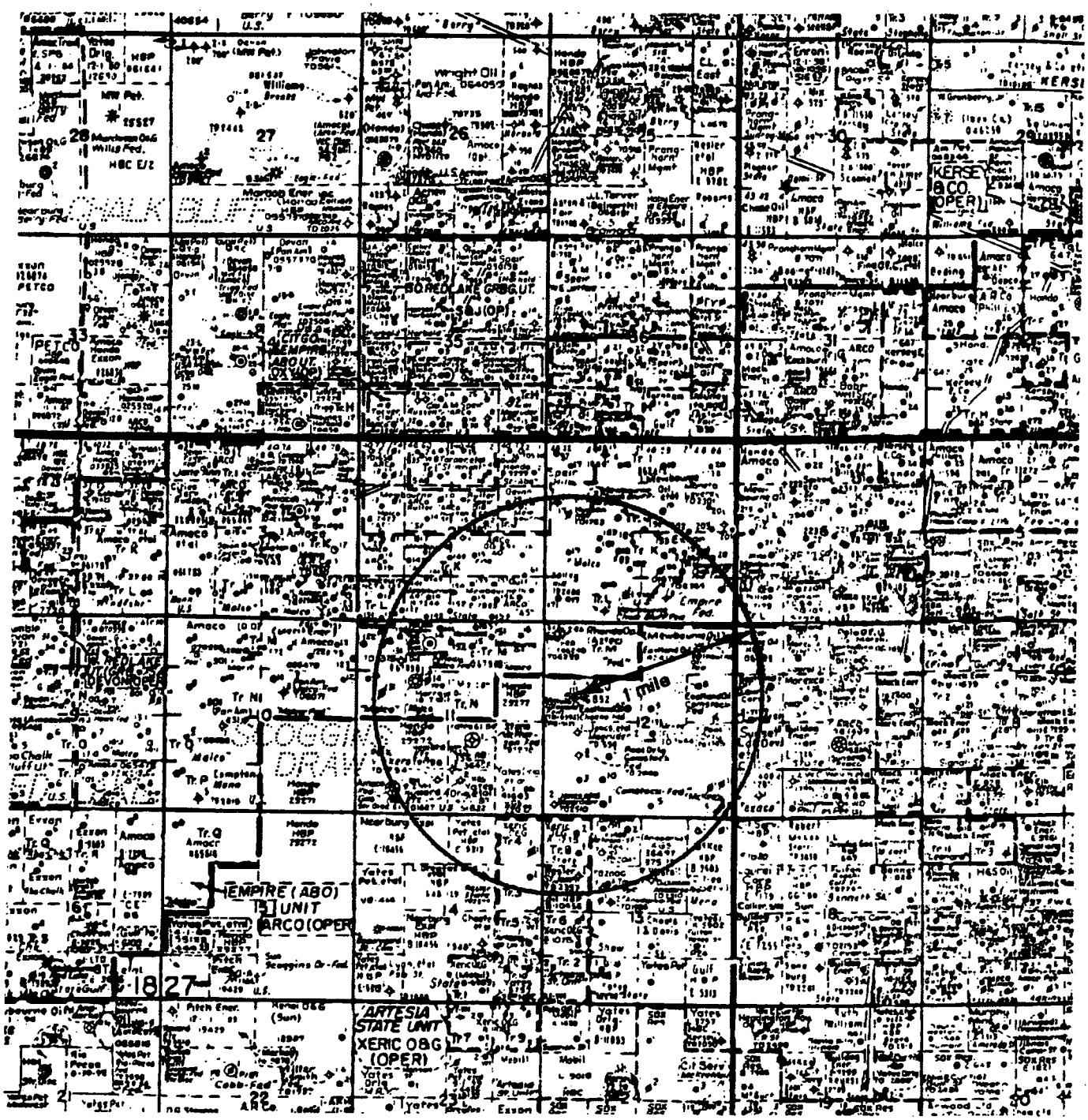


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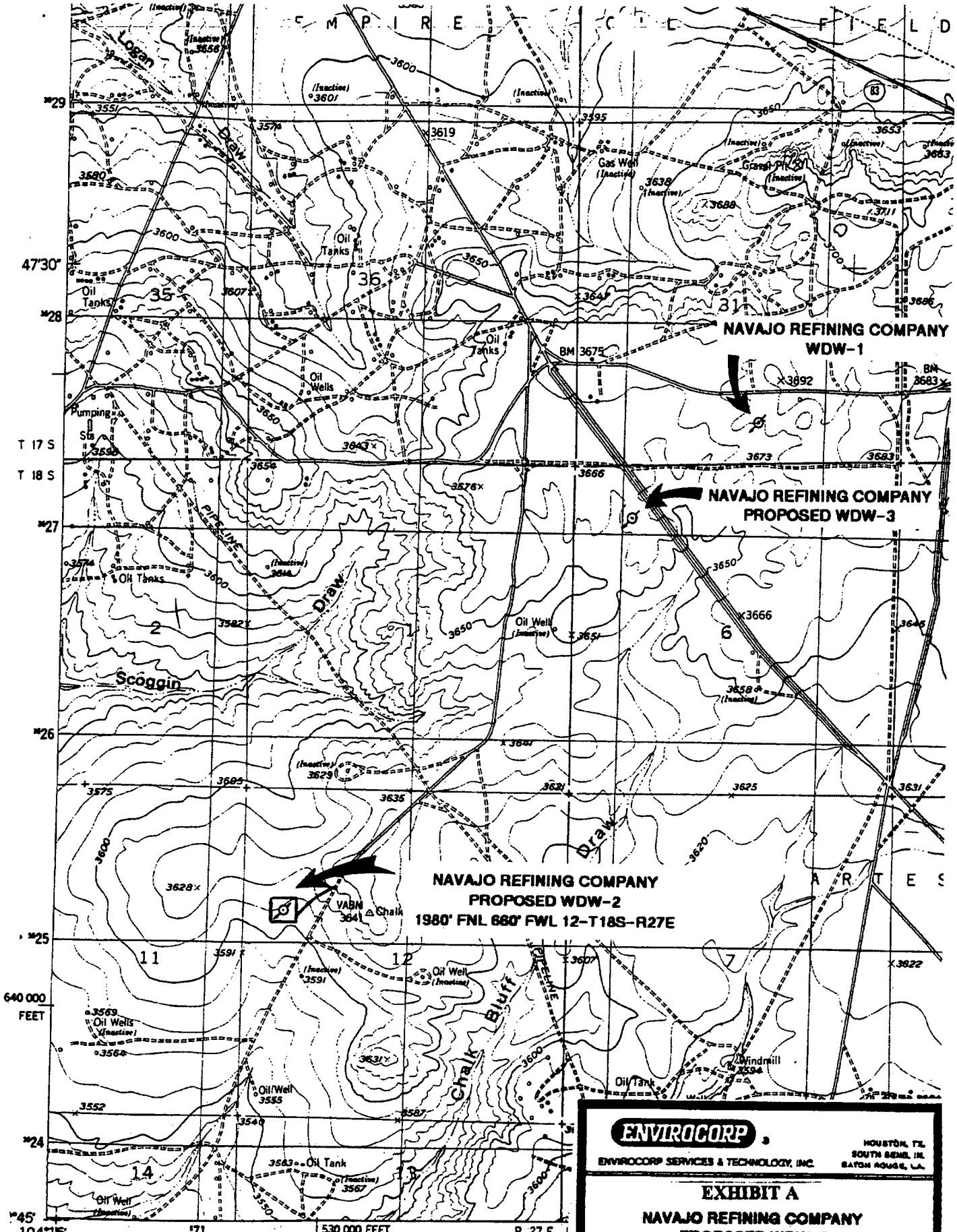
EXHIBIT B
WELLS WITHIN 1 MILE OF
NAVAJO REFINING COMPANY'S
PROPOSED WDW-2
1980' FNL, 660' FWL 12-T18S-R27E

DATE: 4/7/99	CHECKED BY:	JOB NO:
DRAWN BY: NLN	APPROVED BY:	DWG. NO:

Map courtesy of Midland Map Company



RED LAKE QUADRANGLE

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BATON ROUGE, LA.

EXHIBIT A

NAVAJO REFINING COMPANY
PROPOSED WDW-2
1980' FNL 660' FWL 12-T18S-R27E
EDDY COUNTY, NM

DATE:	CHECKED BY:	JOB NO:
DRAWN BY:	APPROVED BY:	DWG. NO:

SURFACE USE PLAN

NAVAJO REFINING COMPANY
PROPOSED WDW-2
1980' FSL, 660' FWL of 12-T18S-R27E
EDDY COUNTY, NEW MEXICO

1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.

2. Access Roads To Be Constructed: No new access road is proposed.

3. Location of Existing Wells: Existing wells within one mile of proposed WDW-2 are shown on Exhibit B.

4. Location of Proposed Facilities If Well Is Completed: The well will be shut in after completion and testing.

5. Location and Type of Water Supply: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.

6. Source of Construction Materials: Materials required for construction of the site will be taken from a state-owned pit.

7. Methods of Handling Waste Disposal:

   A. Drill cuttings will be disposed of in the drilling pits.

   B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.

   C. Water produced during tests will be disposed of in the drilling pits.

   D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind. Location of the trash pit is shown on Exhibit C.

E. All trash and debris will be buried or removed form the wellsite after finishing drilling and/or completion operations.

8. Ancillary Facilities: None anticipated.

9. Wellsite Layout:

A. The wellsite will be surveyed, and a 400' x 400' area will be staked and flagged.

B. The dimensions and relative location of the drill pad, mud pit, and trash pit, with respect to the wellbore, are shown on Exhibit C.

C. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the northeastern (uphill) end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.

D. The well pad will be surfaced with material found in place.

E. The pits for mud and cuttings will be lined with 6-mil plastic.

10. Plans for Restoration of Surface:

A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.

B. Any unguarded pits containing fluids will be fenced until they are filled.

C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.

D. The stockpiled topsoil will be spread over the surface of the location.

11. Surface Ownership: U.S. Department of Interior, Bureau of Land Management.

12. Archaeological Survey: An archaeological survey of the drill pad was submitted to the BLM on July 31, 1985, on behalf of Fred Pool Drilling Company. An archeological survey was conducted by Navajo Refining Company and will be submitted by Navajo under separate cover.

13. Operator's Representatives: Representatives responsible for assuring compliance with the approved Surface Use Plan:

Mr. Darrell Moore
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505/748-3311

Mr. Jim Bundy
Subsurface Technology, Inc.
7020 Portwest Drive, Suite 100
Houston, Texas 77024
713/880-4640

Exhibits

A. Topographic Map
B. Oil and Gas Map
C. Sketch of Well Pad

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

4/15/99
Date

Darrell Moore
Signature

Darrell Moore
Name

Env. Mgr. for Water + Waste
Title

Navajo Refining Company
Company

BOP Minimum Requirements

a. 11-inch, 3000-psi working pressure double-hydraulic BOP.
b. 11-inch, 3000-psi working pressure annular BOP.
c. 3-inch, 3000-psi working pressure manual choke manifold.

A schematic of the BOP stack is included as Exhibit A.

8. Drill out the following cement plugs and conduct deviation surveys every 1000 feet or on trips:

a. 1912 feet to 2045 feet, 40 sacks
b. 3620 feet to 3720 feet, 50 sacks
c. 5456 feet to 5556 feet, 40 sacks
d. 7435 feet to 7535 feet, 50 sacks

Estimated Tops of Geologic Formations

San Andres	2005'	Lower Wolfcamp	7270'
Yeso	4210'	Cisco	7645'
Abo	5506'	Canyon	8390'
Wolfcamp	6728'	Strawn	8894'

No fresh water or hydrocarbons are expected to be encountered.

Expected Bottom-Hole Pressure and Hazards

The expected bottom-hole pressure is 3500 psia at the total depth of 9200 feet. The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-1, or 2928 psia, at 7924 feet. Navajo's WDW-1 is completed in the same interval proposed for WDW-2 and is located 11,000 feet northeast of WDW-2 in 31-T17S-R28E. The average specific gravity of the fluid between 7924 feet and 9200 feet is expected to be 1.034, which is the specific gravity of the fluid swabbed from the interval between 8220 feet and 8476 feet in WDW-1. The expected bottom-hole pressure at 9200 feet in proposed WDW-2 is calculated below:

$$\text{BHP (9200 feet)} = 2928 \text{ psia} + (9200 \text{ feet} - 7924 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.034$$
$$= 3500 \text{ psia}$$

No abnormal pressures or temperatures or other hazards are expected while drilling or testing the well. Hydrogen sulfide monitoring equipment will be set up prior to swabbing operations.

9. Clean the well out to a depth of 9200 feet and circulate and condition the hole for logging. Make a wiper trip to the base of the 8-5/8 inch surface casing while strapping the drillpipe.

10. Conduct a formation microimager (FMI) survey with gamma ray from the well's total depth to 4000 feet. Continue the four-arm caliper survey to the 8-5/8 inch casing shoe. Process the FMI for fracture identification over the lower 200 feet of the confining zone and zones of interest in the injection zone, if warranted.

11. Spot a gelled pill at 9200 feet and lay down the drillpipe.

12. Run the 5-1/2 inch, 17-lb/ft, J-55, LT&C casing with a packoff shoe and float collar to 9200 feet. Install a "DV" tool at approximately 5800 feet. Run centralizers at approximately 120-foot intervals.

13. Cement the 5-1/2 inch casing in place. Use a minimum of 20% excess cement as calculated from the caliper log. Circulate cement to the surface and allow to cure.

    Cement Program

    a. Stage 1 Cement (total depth to 5800 feet): Lightweight Class H with fly ash, gel, friction reducer, and salt mixed with fresh water.

    b. Stage 2 Lead Cement (5200 feet to the surface): Lightweight Class C with gel and bridging agents mixed with fresh water.

    c. Stage 2 Tail Cement (5800 feet to 5200 feet): Class C mixed with fresh water.

14. Clean out the mud pits and release the drilling rig 12 hours after cementing the 5-1/2 inch casing in place.

15. Stabilize the 5-1/2 inch casing at the surface using ready-mix cement.

16. Move in and rig up the completion rig pump, tank, power swivel, and work string. Install the blowout preventer.

17. Run in the well with a 4-3/4 inch bit to the "DV" tool and test the casing to 1500 psig for 30 minutes.

18. Drill out the "DV" tool and clean out the wellbore to the float collar. Test the casing to 1500 psig for 30 minutes. Circulate the wellbore with clean brine, preceded by 15% HCL to clean the casing. Trip the work string out of the well.

19. Conduct the casing inspection, CBL/VDL, and differential temperature surveys.

20. Perforate the selected injection interval as determined from the open hole logs. Depending on the height of the perforated interval, the interval may be perforated in two stages, as Zone Nos. 1 and 2.

21. Run in the well with a packer and tailpipe. Set the packer above the top perforation and swab test the perforated interval. Recover at minimum two tubing volumes of the reservoir fluid for analysis (Note: Set up H_2S monitoring equipment prior to swabbing operations).

22. Acidize the perforated zone (Zone 1) using diverters. Pull the packer out of the well.

23. Perforate the next selected injection interval (Zone 2) as determined from the open hole logs.

24. Run a retrievable bridge plug and packer into the well and isolate Zone 2.

25. Acidize Zone 2 using diverters. Pull the retrievable bridge plug and packer out of the well, laying down the work string.

26. Conduct an injection test down the 5-1/2 inch casing at 420 gpm for 12 hours, followed by a pressure falloff test.

27. Conduct a differential temperature survey and radioactive tracer survey to determine the injection profile.

28. Run the injection tubing and packer. Fill the annulus with corrosion inhibited brine.

29. Wait for the well system to come to thermal stabilization (approximately 24 hours).

30. Conduct an annulus pressure test witnessed by the OCD.

31. Rig down and move out all equipment and close the reserve pit.

32. Install the annulus monitoring system and return the well to the client.

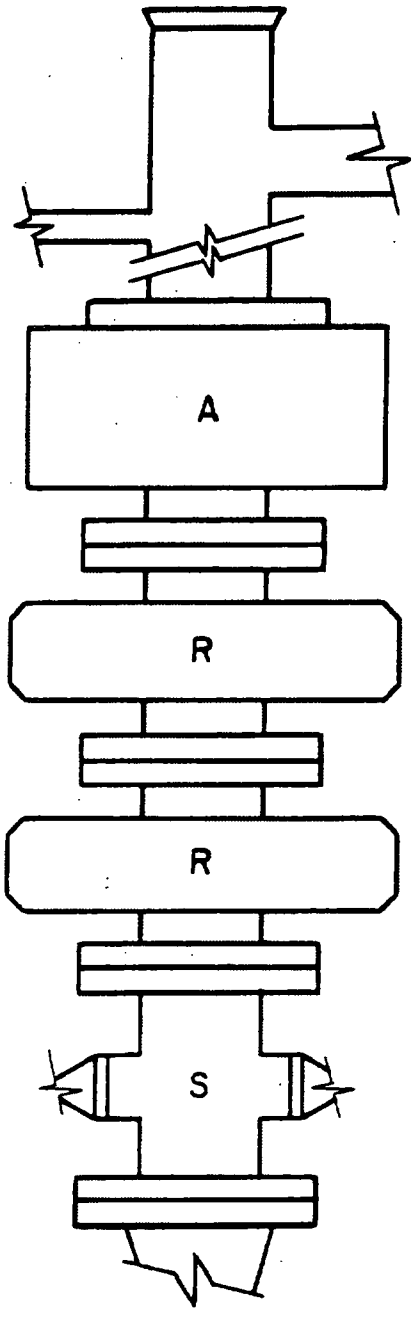
Logging, Testing, And Coring Program

A formation fluid sample will be retrieved from the proposed injection zone in proposed WDW-2. Navajo will conduct injectivity testing in the injection zone of proposed WDW-2.

No coring is planned.

The proposed logging program is described below:

HOLE/CASING	OPEN-HOLE LOGS	CASED-HOLE LOGS
Proposed WDW-2		
11 inch Surface Borehole (8-5/8 inch Casing) 1995 feet		Logs Run in 1973: Gamma Ray Logs Proposed on Reentry: Cement Bond/Variable Density Casing Inspection Log
7-7/8 inch Long-String Borehole (5-1/2 inch Casing) 9200 feet	Logs Run on August 27, 1973: Dual Induction-Laterolog/ Spontaneous Potential Compensated Neutron/ Formation Density Caliper Gamma Ray Logs Proposed on Reentry: Fracture Identification Log 4-Arm Caliper	Logs Proposed on Reentry: Cement Bond/Variable Density Casing Inspection Log Differential Temperature Log Radioactive Tracer Survey



A = ANNULAR-TYPE BLOWOUT PREVENTER
11-inch throughbore, 3000-psi working pressure

R = RAM-TYPE BLOWOUT PREVENTER
11-inch throughbore, 3000-psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLET CONNECTIONS FOR CHOKE AND KILL LINES

MANUAL CHOKE MANIFOLD
3-inch throughbore, 3000-psi working pressure

Source: API RP 53: Recommended Practices for Blowout Prevention Equipment Systems

ENVIROCORP
ENVIROCORP SERVICES & TECHNOLOGY, INC.
HOUSTON, TX.
SOUTH SEMS, IL
BATON ROUGE, LA.

EXHIBIT A

BLOWOUT PREVENTER STACK AND MINIMUM REQUIREMENTS

DATE: 4/7/98	CHECKED BY: JDB	JOB NO:
DRAWN BY: MN	APPROVED BY:	DWG. NO:

Form 3160-3
(July 1992)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0136
Expires: February 28, 1995

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

5. LEASE DESIGNATION AND SERIAL NO.	NM 6852
6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
7. UNIT AGREEMENT NAME	23592
8. FARM OR LEASE NAME, WELL NO.	WDW-2
9. API WELL NO.	30-015-20894
10. FIELD AND POOL, OR WILDCAT	L. Wolfcamp-Cisco-Canyon Injection Zone
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA	12-T18S-R27E
12. COUNTY OR PARISH	Eddy
13. STATE	NM

1a. TYPE OF WORK: DRILL ☐ DEEPEN ☐ Reenter

b. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ OTHER Class I Waste Disposal Well SINGLE ZONE ☐ MULTIPLE ZONE ☒

2. NAME OF OPERATOR: Navajo Refining Company 15694

3. ADDRESS AND TELEPHONE NO.: Post Office Box 159, Artesia, New Mexico 88210

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1980' FNL and 660' FWL Unit Letter E
At proposed prod. zone:

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 11 air miles east-southeast of Artesia

16. NO. OF ACRES IN LEASE

17. NO. OF ACRES ASSIGNED TO THIS WELL

10. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

19. PROPOSED DEPTH: 9200'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3607' GR, 3623' KB

22. APPROX. DATE WORK WILL START*: May 1, 1999

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
11"	8-5/8"	32 lb/ft	1995'	800 sx circulated
7-7/8"	5-1/2"	17 lb/ft	9200'	Caliper volume + 20% excess

Proposed reentry of the Eastland Oil Company (originally Fred Pool Drilling, Inc.) Chukka Federal No. 2 (PBTD 1912 feet, September 10, 1985) formerly Amoco Production Company Diamond Federal Gas Com. No. 1 (OTD 10,372 feet, P&A August 31, 1973). The well currently produces oil and gas from perforations from 1446 feet to 1462 feet (Penrose).

Navajo will squeeze the perforations from 1446 feet to 1462 feet, drill out cement plugs and clean out the well to 9200 feet, set 5-1/2 inch casing at 9200 feet and cement to the surface, perforate porous intervals in the Lower Wolfcamp, Cisco, and Canyon Formations between 7270 feet and 9200 feet, and conduct injectivity tests.

Attached are the Well Location Plat, Drilling Program, and Surface Use Plan.

Post ID-1
5-28-99
Re-entry

SUBJECT TO LIKE APPROVAL BY STATE AND RIGHT OF WAY APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.
SIGNED Darrell Moore TITLE Env. Mgr. DATE 4/15/99

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

CONDITIONS OF APPROVAL, IF ANY:

(ORIG. SGD.) DAVID R. GLASS PETROLEUM ENGINEER APR 27 1999

APPROVED BY _____ TITLE _____ DATE _____

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

RECEIVED
APR 1999
OCD - ARTESIA

N.M. Oil Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-102
Revised March 17, 1999

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-20894		Lower Wolfcamp-Cisco-Canyon Injection Zone

[4] Property Code	[5] Property Name	[6] Well Number
	WDW-2	

[7] OGRID No.	[8] Operator Name	[9] Elevation
	Navajo Refining Company	3607' GR

[10] Surface Location

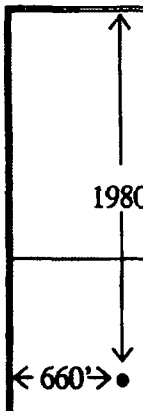
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	18S	27E		1980	North	660	West	Eddy

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief

Darrell Moore

Signature

Darrell Moore

Printed Name

Title Env. Mgr.

Date 9/15/99

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey

Signature and Seal of Professional Surveyor:

Well is active. Location was not re-surveyed by Navajo.

Certificate Number

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

4/12/99
Date

Darrell Moore
Signature

Darrell Moore
Name

Env. Mgr. for Water + Waste
Title

Navajo Refining Company
Company

TELEPHONE
(505) 748-3311

EASYLINK
62905278

N.M. Oil Cons. Division
811 S. 1st Street
ARTESIA, NM 88210

C/SF

NAVAJO REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

May 10, 1999

Mr. Tim Gumm
State of New Mexico
Energy, Minerals and Natural
Resources Department
Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210

RE: Re-Entry for Navajo Refining Company's Waste Disposal Well No. 2

Dear Mr. Gumm:

Navajo Refining Company (Navajo) has contracted Subsurface Technology, Inc. to re-enter, test and complete Waste Disposal Well No. 2 (WDW-2), formerly the Chukka Federal No. 2 operated by The Eastland Oil Company. The United States Department of the Interior, Bureau of Land Management approved the Application for Permit to Drill or Deepen on April 27, 1999. Subsequent approval from the State of New Mexico Oil Conservation Commission (OCD) was granted on Tuesday, May 4, 1999.

Navajo initiated field operations on Wednesday, May 5, 1999. The existing pumping equipment, rods, and tubing were removed from the wellbore. The perforations from 1446 feet to 1462 feet were squeezed using 100 sacks of Class 'H' cement (approximately 50 sacks of cement were displaced into the perforated interval). The cement was allowed to cure and drilled out to a total depth of 1922 feet (KB)(1911 feet below ground level).

On Sunday, May 9, 1999, the 8-5/8 inch surface casing, set from 1955 feet (KB) to surface, was pressure tested for internal mechanical integrity between 1922 feet (KB) and 30 feet (KB) using a packer set at 30 feet. The 8-5/8 inch surface casing was pressure tested to 660 pounds per square inch and monitored at the surface for one hour (Attachment A). The fluid used for testing was a clean fresh water fluid. A pressure loss of 1 psi (0.15%) was observed during the first 30 minutes of the test. A pressure loss of 2 psi (0.30%) was observed during the last 30 minutes of the test. The results from the pressure test confirmed internal mechanical integrity of the 8-5/8 inch surface casing from 1922 feet (KB) to 30 feet (KB).

The 8-5/8 inch surface casing was originally set in an 11 inch open-hole to a depth of 1955 feet (KB) and cemented to surface using 700 sacks of Class 'H' cement with 2% gel and 100 sacks of Class 'H' neat. A total of 200 sacks of cement was recorded circulated to surface. The calculated volume between an 11 inch hole and 8-5/8 inch casing is (0.2407 cubic feet per foot X 1955 feet) 471 cubic feet. The volume of cement pumped is (1.18 cubic feet per sack X 800 sacks) 944 cubic feet for an excess of 473 cubic feet or 400 sacks circulated to surface. The calculated volume of cement and apparent volume of actual cement pumped indicated excess cement was circulated to surface.

On Sunday, May 9, 1999, Halliburton Logging Services completed a cement bond and microsiesmogram (same as a variable density log) logging survey within the 8-5/8 inch casing from a wireline total depth of 1919 feet (KB) to the surface (Attachment B). The results from the survey indicate a continuous column of cement from 1922 feet to surface with good bonding characteristics. The cement behind the 8-5/8 inch casing will provide an effective hydraulic seal to prevent the movement of groundwater fluids into the underground source of drinking water with a base at 473 feet.

Please review and approve the pressure testing and cement bond log results at your earliest convenience. Navajo will proceed with the mobilization of the drilling rig Wednesday, May 12, 1999 and begin re-entry of the WDW-2 wellbore according to the approved drilling program. Navajo will periodically contact the OCD, Artesia office with a status update of the re-entry operations. The Bureau of Land Management will be notified in sufficient time for a representative to witness the cementing of the 5-1/2 inch protection casing.

Should you have any questions or concerns, please call me at (505) 748-3311.

Sincerely yours,

Darrell Moore

Darrell Moore
Environmental Manager for Water and Waste

APPROVED

JUN 02 1999

(ORIG. SGD.) DAVID R. GLASS
AUTHORIZED OFFICER, MINERALS
BUREAU OF LAND MANAGEMENT

SUBJECT TO
LIKE APPROVAL
BY STATE

c: Mr. David Glass
Bureau of Land Management
Roswell Field Office
2909 West Second Street
Roswell, New Mexico 88201

Mr. Brian Rogers
Subsurface Technology, Inc.
7020 Portwest, Suite 100
Houston, Texas 77024

File: Injection Wells

Patterson Drilling Company
410 N. Loraine Street — (915) 682-9401
Midland, Texas 79701

RECEIVED
JUN 0 4 1999
SUBSURFACE TECHNOLOGY, INC.

June 2, 1999

Drilling Department
Subsurface Construction Corporation
7020 Port West, Ste 100
Houston, TX 77024

RE: Inclination Report
Navajo WDW-2
Sec 12; T-18-S; R-27-E

Gentlemen:

The following is an inclination survey on the above referenced well located in Eddy County, New Mexico:

2898' – 0.25
3838' – 0.25
4783' – 0.50
6106' – 0.75
6633' – 0.50

Sincerely,

Rebecca Edwards

Rebecca A. Edwards
Administrative Assistant

STATE OF TEXAS)
)
COUNTY OF MIDLAND)

The foregoing was acknowledged before me this 2nd day of June, 1999 by Rebecca A. Edwards.

MY COMMISSION EXPIRES:

Treva Forrester
NOTARY PUBLIC

TREVA FORRESTER
NOTARY PUBLIC
STATE OF TEXAS
My Comm. Exp. 9-2-2000

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or ed well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests cted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon	8390	T. Ojo Alamo		T. Penn. "B"	
T. Salt		T. Strawn	8894	T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka		T. Pictured Cliffs		T. Penn. "D"	
T. Yates		T. Miss		T. Cliff House		T. Leadville	
T. 7 Rivers		T. Devonian		T. Menefee		T. Madison	
T. Queen		T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg		T. Montoya		T. Mancos		T. McCracken	
T. San Andres	2005	T. Simpson		T. Gallup		T. Ignacio Otzte	
T. Glorieta		T. McKee		Base Greenhorn		T. Granite	
T. Paddock		T. Ellenburger		T. Dakota		T	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	
T.Tubb		T. Delaware Sand		T.Todilto		T	
T. Drinkard		T. Bone Springs		T. Entrada		T.	
T. Abo	5506	T.		T. Wingate		T.	
T. Wolfcamp	6728	T.		T. Chinle		T.	
T. Penn		T.		T. Permian		T.	
T. Cisco (Bough C)	7645	T.		T. Penn "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from.....to..... No. 3, from.....to.....

from.....to..... No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....

No. 2, from.....to.....feet.....

No. 3, from.....to.....feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology	From	To	Thickness In Feet	Lithology

Submit To Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
District I
1625 N. French Dr., Hobbs, NM 87240
District II
811 South First, Artesia, NM 87210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-105
Revised March 25, 1999

Federal Well

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

WELL API NO.
30-015-20894

5. Indicate Type of Lease
STATE ☐ FEE ☒ Federal

State Oil & Gas Lease No. NM 6852

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:
OIL WELL ☐ GAS WELL ☐ DRY ☐ OTHER Class I Waste Disposal Well Injecting

b. Type of Completion:
NEW WELL ☐ WORK OVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF. RESVR. ☒ OTHER - Recomp

7. Lease Name or Unit Agreement Name
Navajo Refining Company
WDW-2

2. Name of Operator
Navajo Refining Company

8. Well No.
WDW-2

3. Address of Operator
Post Office Box 159, Artesia, New Mexico 88211

9. Pool name or Wildcat
~~L Wolfcamp-Cisco-Canyon Injection Zone~~ Navajo Permo-Penn 96918

RECEIVED JUL 1999 OCD - ARTESIA

4. Well Location
Unit Letter E : 1980 Feet From The North Line and 660 Feet From The West Line

Section 12 Township 18 South Range 27 East NMPM Eddy County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF& R(B. RT, GR, etc.)	14. Elev. Casinghead
July 18, 1973	August 27, 1973	June 8, 1999	3607 feet GL, 3623 feet RKB	3609 feet GL

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
10,372 feet	8770 feet	1		All	N/A

19. Producing Interval(s), of this completion - Top, Bottom, Name
L. Wolfcamp-Cisco-Canyon

20. Was Directional Survey Made
Yes

21. Type Electric and Other Logs Run
Fracture Finder and Caliper Logs, Dual Induction Laterolog, Compensated Neutron Formation Density

22. Was Well Cored
No

23. **CASING RECORD** (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	N/A	40'	N/A	N/A	None
8-5/8"	32	1995'	11"	800 sacks circulated	None
5-1/2"	17	8869'	7-7/8"	1570 sacks circulated	None

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
3-1/2"	7528'	7528'

26. Perforation record (interval, size, and number)
7570' to 7620', 7676' to 7736', 7826' to 7834', 7858' to 7880', 7886' to 7904', 7916' to 7936', 7944' to 7964', 7990' to 8042', 8096' to 8116', 8191' to 8201', 8304' to 8319', 8395' to 8399' (2 jspf for total of 598 holes).

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
7570' to 8399'	10,000 gallons of 15% HCl, plus 4600 pounds of rock salt as diverter

28. **PRODUCTION**

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
N/A	N/A	N/A

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil – Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
N/A	N/A	N/A		--	--	--	--

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)
--	--		--	--	--	--

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
N/A

Test Witnessed By

30. List Attachments
Deviation Report

31. I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief

Signature Darrell Moore Printed Name Darrell Moore Title Env Mgr. Date 7/19/99

N.M. Oil Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

Form 3160-4
July, 1992)

SUBMIT IN DUPLICATE (See other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 1995

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

5. LEASE DESIGNATION AND SERIAL NO.: NM 6852
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:
8. FARM OR LEASE NAME, WELL NO.: WDW-2
9. API WELL NO.: 30-015-20894
10. FIELD AND POOL, OR WILDCAT: Navajo Permo-Penn ~~L. Wolfcamp-Cisco Canyon~~ 9/9/8
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Section 12, Township 18 South Range 27 East, Unit Letter E
12. COUNTY OR PARISH: Eddy
13. STATE: New Mexico

RECEIVED
OCD - ARTESIA

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other: Class I Waste Disposal Well

1b. TYPE OF COMPLETION: NEW WELL ☐ DEEPEN ☐ PLUG BACK ☐ DIFF-GENVR ☒ Other: Reentry

2. NAME OF OPERATOR: Navajo Refining Company

3. ADDRESS AND TELEPHONE NO.: Post Office Box 159, Artesia, New Mexico 88211

4. LOCATION OF WELL
At surface: 1980' FNL and 660' FWL Unit Letter E
At top prod. interval reported below: Same
At total depth: Same

14. PERMIT NO.: WDW-2
DATE ISSUED: April 27, 1999

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMP (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
7-18-73	8-27-73	6-8-99	3607' GL; 3623' RKB	3609' GL

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,372' TVD	8770'	1	→	All	--

24. PRODUCING INTERVAL (S), OF THIS COMPLETION - TOP, BOTTOM NAME (MD AND TVD)*: L. Wolfcamp-Cisco-Canyon

25. WAS DIRECTIONAL SURVE MADE?: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: Fracture Finder and Caliper Logs, Induction Laterlog, Compensated Neutron, Formation Density

27. WAS WELL CORED?: No

CASING RECORD (Report all strings set in well)

SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
13-3/8"	N/A	40'	N/A	Surface	None
8-5/8"	32	1995'	11	Surface, 800 sx C1H	None
5-1/2"	17	8869'	7-7/8"	Surface, 1570 sx C1H and C1C	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD	PACKER SET (MD)
3-1/2"	7528'	7528'

31. PERFORATION RECORD (Interval, size and number)
7570'-7620', 7676'-7736', 7826'-7834'
7858'-7880', 7886'-7904', 7916'-7936'
7944'-7964', 7990'-8042', 8096'-8116'
8191'-8201', 8304'-8319', 8395'-8399'
(2 jspf for total of 598 holes)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
7570' to 8399'	10,000 gallons 15% HCl, plus 4600 pounds of rock salt as diverter

PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping-size and type of pump)	WELL STATUS (Producing or shut-in)
N/A	N/A	N/A

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL-BBL.	GAS-MCF.	WATER-BBL.	GAS-OIL RATIO
N/A	N/A	N/A	→			--	--

FLOW. TUBING PRESS	CASING PRESSURE	24-HOUR RATE CALCULATED	OIL-BBL.	GAS-MCF.	WATER-BBL.	OIL GRAVITY-API (CORE)
N/A	N/A	→	--			--

34. DISPOSITION OF (Sold, used for fuel, vented, etc.): N/A
TEST WITNESSED BY:

35. LIST OF ATTACHMENTS: Deviation Report

ACCEPTED FOR RECORD
JUL 29 1999
(ORIG. SGD.) GARY GOURLEY

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

ED Darrell Moore TITLE Env. Mgr. DATE 7/19/99

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

Patterson Drilling Company
410 N. Loraine Street — (915) 682-9401
Midland, Texas 79701

RECEIVED
1999 JUL 21 A 10:22
BUREAU OF LAND MGMT.
ROSWELL RESOURCE AREA

RECEIVED
JUN 04 1999
SUBSURFACE TECHNOLOGY, INC.

June 2, 1999

Drilling Department
Subsurface Construction Corporation
7020 Port West, Ste 100
Houston, TX 77024

RE: Inclination Report
Navajo WDW-2
Sec 12; T-18-S; R-27-E

Gentlemen:

The following is an inclination survey on the above referenced well located in Eddy County, New Mexico:

2898' – 0.25
3838' – 0.25
4783' – 0.50
6106' – 0.75
6633' – 0.50

Sincerely,

Rebecca Edwards

Rebecca A. Edwards
Administrative Assistant

STATE OF TEXAS)
)
COUNTY OF MIDLAND)

The foregoing was acknowledged before me this 2nd day of June, 1999 by Rebecca A. Edwards.

MY COMMISSION EXPIRES:

Treva Forrester
NOTARY PUBLIC

TREVA FORRESTER
NOTARY PUBLIC
STATE OF TEXAS
My Comm. Exp. 9-2-2000

TELEPHONE
5) 748-3311

EASYLINK
62905278

REFINING COMPANY

501 EAST MAIN STREET • P. O. BOX 159
ARTESIA, NEW MEXICO 88211-0159

FAX
(505) 746-6410 ACCTG
(505) 746-6155 EXEC
(505) 748-9077 ENGR
(505) 746-4438 P / L

July 19, 1999

RECEIVED
1999 JUL 21 A 10:23
BUREAU OF LAND MGMT.
ROSWELL RESOURCE AREA

Mr. James Amos
United States Department of the Interior
Bureau of Land Management
P.O. Box 1778
Roswell, NM 88220

RE: Well Completion Report for Navajo's WDW-2i in E-12-T18S, R27E

Dear Mr. Amos,

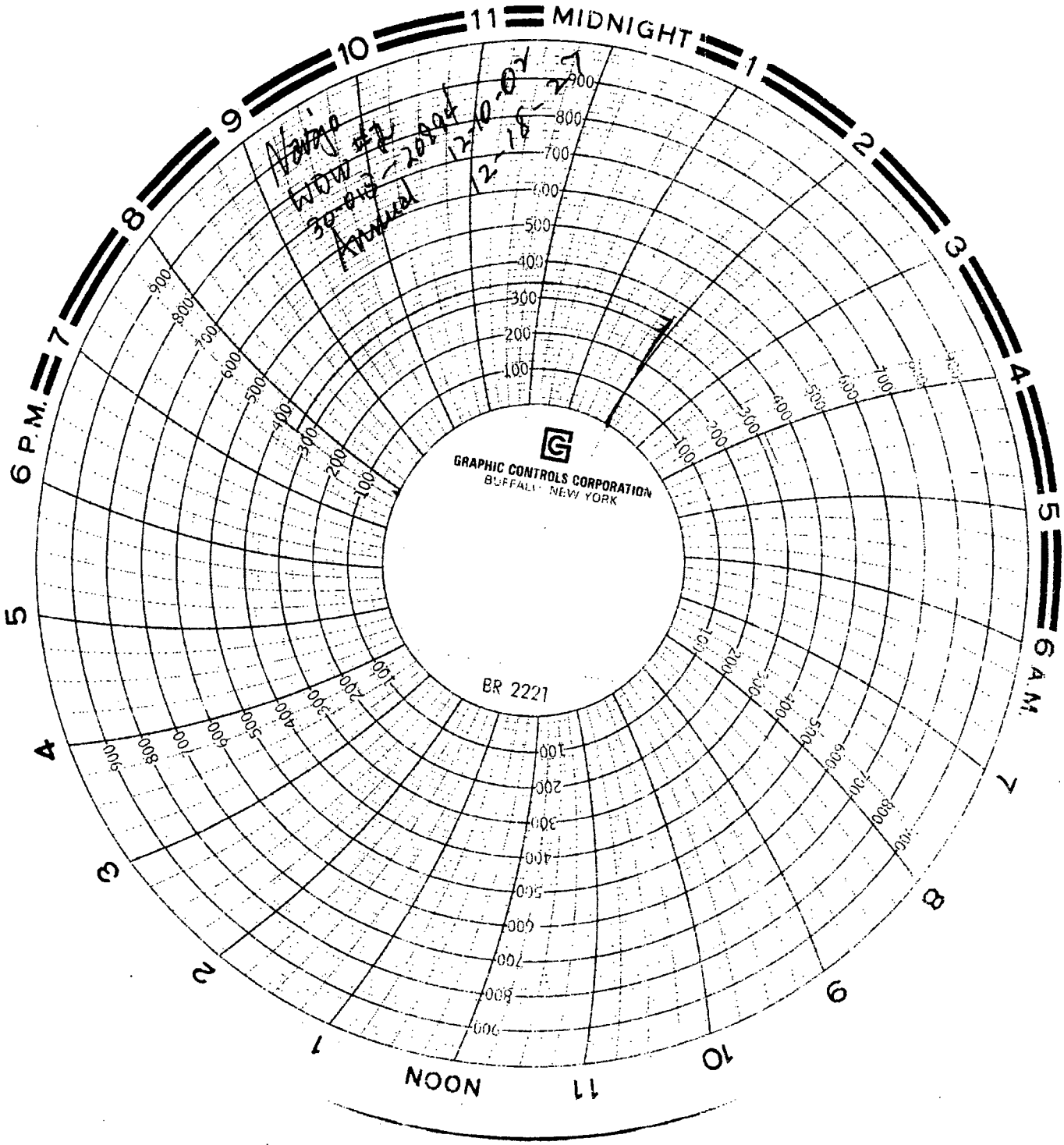
Enclosed, please find two (2) copies of form OMB Form 1004-0137 pertaining to our WDW-2 injection well. If there are any questions concerning this submission, please call me at 505-748-3311. Thank you for your time in this matter.

Sincerely,
NAVAJO REFINING COMPANY

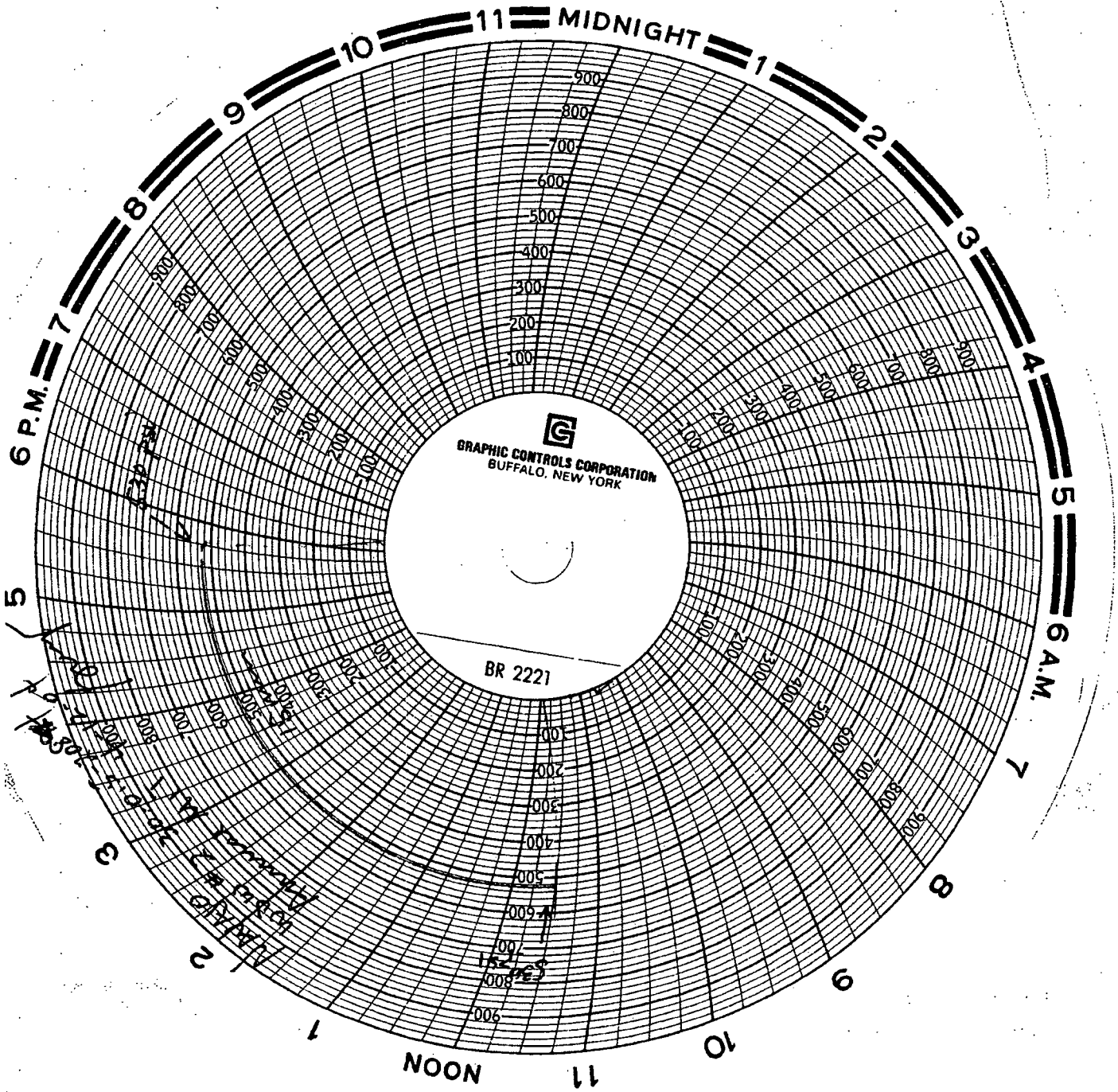
Darrell Moore

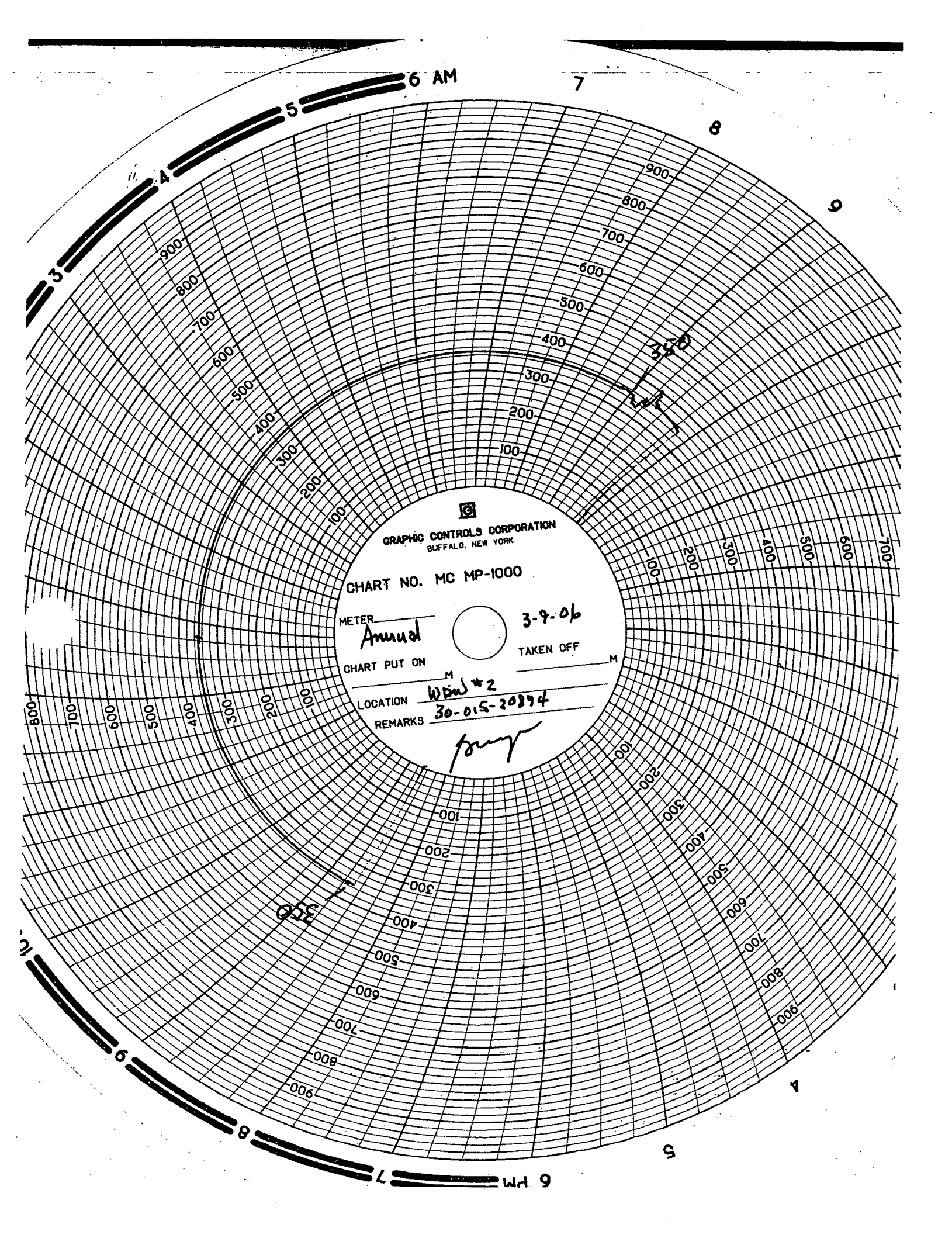
Darrell Moore
Environmental Mgr. for Water and Waste

Encl.


MIDNIGHT
NOON
6 P.M.
6 A.M.
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
BR 2221

RECEIVED
APR 1 5 2004
OCD-ARTESIA




6 AM
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6 PM
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
CHART NO. MC MP-1000
METER Annual
3-9-06
CHART PUT ON
TAKEN OFF
LOCATION Wpw #2
REMARKS 30-015-20894
350
350

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, August 12, 2010 1:55 PM
To: 'Moore, Darrell'; Dade, Randy, EMNRD
Cc: Lackey, Johnny
Subject: RE: Mechanical Integrity Tests

Darrell:

OCD confirms that the annual MITs performed on WDW-1 (UICI-8) and WDW-2 (UICI-8-1) passed.

Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Moore, Darrell [mailto:Darrell.Moore@hollycorp.com]
Sent: Thursday, August 12, 2010 10:39 AM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD
Cc: Lackey, Johnny
Subject: MIT's

Carl

Attached, please find the charts for the MIT's that were performed on our Injection wells WDW-1 and WDW-2 today. Both wells passed the Mechanical Integrity Tests with no drop off in pressure. As you know, the MIT on WDW-3 was performed earlier in the year and was submitted to OCD. In addition, there was no pressure on either of the well's bradenhead. If there are any questions concerning this submission, please call me or email me. Thank you.

Darrell Moore
Environmental Manager for Water and Waste
Navajo Refining Company, LLC
Phone Number 575-746-5281
Cell Number 575-703-5058
Fax Number 575-746-5451

CONFIDENTIAL
This e-mail message and all corresponding e-mail messages, including all attachments, are intended solely for the individual(s) named above. They contain confidential and/or proprietary information. Do not forward, copy, distribute or otherwise relay the messages or their content to any individual without first contacting the sender of this message. If you have received this e-mail message in error, do not read, forward, copy or distribute it or any of its content to anyone. In addition, please notify the sender that you have received this message immediately by return e-mail and delete it.

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attachments. Unless expressly stated, nothing contained in this message should be construed as a digital or electronic signature or a commitment to a binding agreement.

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GRAPHIC CONTROLS CORPORATION
BUFFALO
NEW YORK

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N French Dr, Hobbs, NM 88240
District II – (575) 748-1283
811 S First St, Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd, Aztec, NM 87410
District IV – (505) 476-3460
1220 S St Francis Dr, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised August 1, 2011

WELL API NO.
30-015-20894

5. Indicate Type of Lease
STATE ☒ FEE ☐

6. State Oil & Gas Lease No. **6852**

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

7. Lease Name or Unit Agreement Name
Chukka WDW-2

1. Type of Well: Oil Well ☐ Gas Well ☐ Other **Injection Well**

8. Well Number **WDW-2**

2. Name of Operator
Navajo Refining Company

9. OGRID Number

3. Address of Operator
Post Office Box 159, Artesia, New Mexico 88211

10. Pool name or Wildcat **Navajo Permo-Penn 96918**

4. Well Location
Unit Letter **E** : **1980** feet from the **North** line and **660** feet from the **West** line
Section **12** Township **18S** Range **27E** NMPM County **Eddy**

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3607' GL, 3623' RKB

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
OTHER: **PERFORM PRESSURE FALLOFF TEST, ANNULUS PRESSURE TEST** ☒				OTHER:			☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

October 17, 2011 – Perform an annulus pressure test with an initial pressure of 600 psig and run the test for 30 minutes. Install bottomhole gauges into WDW-1, WDW-2, and WDW-3 by 11:45am. Continue injection into all three wells.
October 18, 2011 – Continue injection into all three wells.
October 19, 2011 – At 12:15pm, the offset wells WDW-1 and WDW-3 will be shut-in. A constant injection rate will be established for WDW-2 and continue for a 30 hour injection period. Do not exceed 1000 psig wellhead pressure.
October 20, 2011 – At 7:00pm, WDW-2 will be shut in for a 30-hour falloff period. WDW-1 and WDW-3 will remain shut-in.
October 21,2011 – All three wells will continue to be shut in while monitoring falloff pressure in all three wells.
October 22, 2011 – At 7:00am, acquire downhole pressure gauges from all three wells. Tag bottom of fill and come out of hole very slowly, making 7-minute gradient stops while coming out of the WDW-2 every 1000 feet (7000 ft, 6000 ft, 5000 ft, 4000 ft, 3000 ft, 2000 ft, 1000 ft, surface). Run in hole with a temperature tool and conduct temperature survey from the surface to the top of the fill. Turn the wells back to Navajo personnel.

RDade 10/11/11
Accepted for record
NMOCD

RECEIVED
OCT 07 2011
NMOCD ARTESIA

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011

Type or print name Timothy Jones E-mail address: tjones@subsurfacegroup.com PHONE: 713-550-4640

For State Use Only

APPROVED BY: _____ TITLE _____ DATE _____

Conditions of Approval (if any):

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised August 1, 2011

WELL API NO.
30-015-20894

5. Indicate Type of Lease
STATE ☒ FEE ☐

6. State Oil & Gas Lease No. **6852**

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
Chukka WDW-2

1. Type of Well: Oil Well ☐ Gas Well ☐ Other **Injection Well**

8. Well Number **WDW-2**

2. Name of Operator
Navajo Refining Company

9. OGRID Number

3. Address of Operator
Post Office Box 159, Artesia, New Mexico 88211

10. Pool name or Wildcat: **Navajo Permo-Penn 96918**

4. Well Location
Unit Letter **E** : **1980** feet from the **North** line and **660** feet from the **West** line
Section **12** Township **18S** Range **27E** NMPM County **Eddy**

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3607' GL, 3623' RKB

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
OTHER: **PERFORM PRESSURE FALLOFF TEST, ANNULUS PRESSURE TEST** ☒		OTHER:	☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

October 17, 2011 – Perform an annulus pressure test with an initial pressure of 600 psig and run the test for 30 minutes. Install bottomhole gauges into WDW-1, WDW-2, and WDW-3 by 11:45am. Continue injection into all three wells.
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Spud Date: | Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011

Type or print name Timothy Jones E-mail address: tjones@subsurfacegroup.com PHONE: 713-880-4640

or State Use Only

APPROVED BY: Carl J. Chavez TITLE Environmental Engineer DATE 10/19/2011

Conditions of Approval (if any): See E-mail conditions dated 10/19/2011 attached to WDW-1.

Chavez, Carl J, EMNRD

rom:	Chavez, Carl J, EMNRD
ent:	Wednesday, October 19, 2011 4:06 PM
To:	'Moore, Darrell'
Cc:	Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject:	Navajo Refining Company UIC Class I (NH) Injection Wells WDWs 1, 2 & 3 (UICI-008) Fall Off Test Plan (August 2011)

Darrell:

The New Mexico Oil Conservation Division (OCD) is in receipt of your above subject test plan. OCD has already approved the Fall-Off Test (FOT) Plan with conditions on July 28, 2009. The OCD notes that it is also in the process of reviewing C-103s Sundry Notices for the upcoming FOTs.

OCD observes some changes in this FOT Plan submittal that are not acceptable to the OCD. For example, Exhibit 1 is not an acceptable exhibit to the OCD for reasons specified in the 2010 FOT report review and later during the May 2011 meeting in Santa Fe. However, the operator continues to submit exhibits with certain assumptions that have not been accepted or approved by the OCD; i.e., that the injection wells are show interconnection with the injection zone during past FOTs. Perhaps the operator can conduct the 2011 FOT with the information and exhibits needed to prove the interconnection of injection wells with the injection zone? The Certified PE should provide the exhibits in the 2011 FOT Report with the analysis and conclusions supporting any claims for the OCD to review and consider before approving. This is apparently a FOT frequency per well issue that the operator is attempting to prove.

The OCD provides the following comments, observations, and/or recommendations on the above subject plan below.

Comments:

- The OCD approved the original Fall-Off Test (FOT) Plan based on OCD Guidance dated December 3, 2007. There should not be any significant changes to this FOT Plan because it is flexible where needed to allow operators to implement it on each injection well.
- OCD likes to be notified to witness the installation of bottom hole gauges and to be present at least one hour before injection shut-off and commencement of FOT monitoring.
- OCD is concerned about the Section VI No. 1(e) WDW-3 Cement Bond Log quality being poor from 900 ft. to 1200 ft- especially at the depths: 2662 – 2160; 4876 – 5372; and 6750 – 7600 ft. micro annulus scenario.

Observations:

- Section V No. 2: The objective of the FOT is NOT to achieve or limit a 100 psig pressure differential before vs. after FOT injection vs. shut-off, but it is a minimum pressure differential that OCD stipulates in its guidance for a successful FOT and injection zone that may still continue to be utilized for disposal, i.e., not too pressured up and subject to continued fracturing under daily allowed maximum surface injection pressure operational limits.
- Section V No. 7 and Exhibit 1: OCD observes a bottom hole pressure chart for WDWs 1, 2 and 3 at 7660 feet that the operator presented in the 2010 FOT and again during a May 2011 meeting in Santa Fe, New Mexico to show the interconnection between injection wells and the injection formation. The OCD had commented that there was no explanation or conclusion provided from the Certified PE who conducted and completed the 2010 FOT report that supports the operator's claim that all injection wells are interconnected based on Exhibit 1.

  Furthermore, the OCD requested a statement or information supporting the operator's claim by the Certified PE, but never received one. At the meeting, the OCD explained that based on Exhibit 1, there was no support for the claim. In order to make the interconnection determination, during each FOT at each well and off-set injection wells (WDWs not being FOT'd) before and throughout the FOT would need bottom hole pressures monitored in tandem at each well location to establish the interconnectivity of the injection wells with the receiving injection formation under a uniform time scale. This would be a chart that could be plotted that would show during the test the interconnectivity of the wells for each FOT. The OCD doubts that the operator can make the case for interconnectivity between injection wells and injection formation because of the significant distance between the injection wells and fact that sedimentation in formation varies laterally and uniformity in sedimentation, saturated porosity and permeability due to variation in sedimentation would by chance make the injection formation aerially extensive and uniform over a 3 to 5 mile radius from each injection well. Also, even if by chance there was

uniformity over the mileage specified, the distance between injection wells and corresponding pressure would likely not be observed.
- Exhibit 6: OCD observes in Section B a proposed MIT once every 5 years. OCD's UIC Program requires annual MITs and/or after down hole work is performed on a well.

Recommendations:

- Operator is running survey logs to the bottom of fill or below USDW (fresh water) zones, which excludes an evaluation of casing in the fresh water zone. Please run logs up to surface.
- Be sure to also record and provide injection flow rate and pressure leading up to shut-off and monitoring throughout the FOT monitoring period. OCD needs to confirm that a pseudo steady-state condition was achieved before shut-off. This data is also needed for software modeling of the FOT.
- Please provide electronic data from the FOTs at each well in order for the OCD to run its software model to confirm the results in the report.
- Section V No. 13: Surface pressure monitoring and Horner Plot during injection should be used to confirm radial flow condition is achieved instead of waiting a set period if operator wishes to reduce the injection period.

Disclaimer: *Please be advised that OCD has already approved with conditions Navajo Refining Company's Fall-Off Test (FOT) Plan on July 28, 2009, and is not providing approval of this FOT Plan; however, comments, observations and recommendations herein should help Navajo Refining Company understand the OCD's concerns based on the submittal.*

Please contact me if you have questions. Thank you.

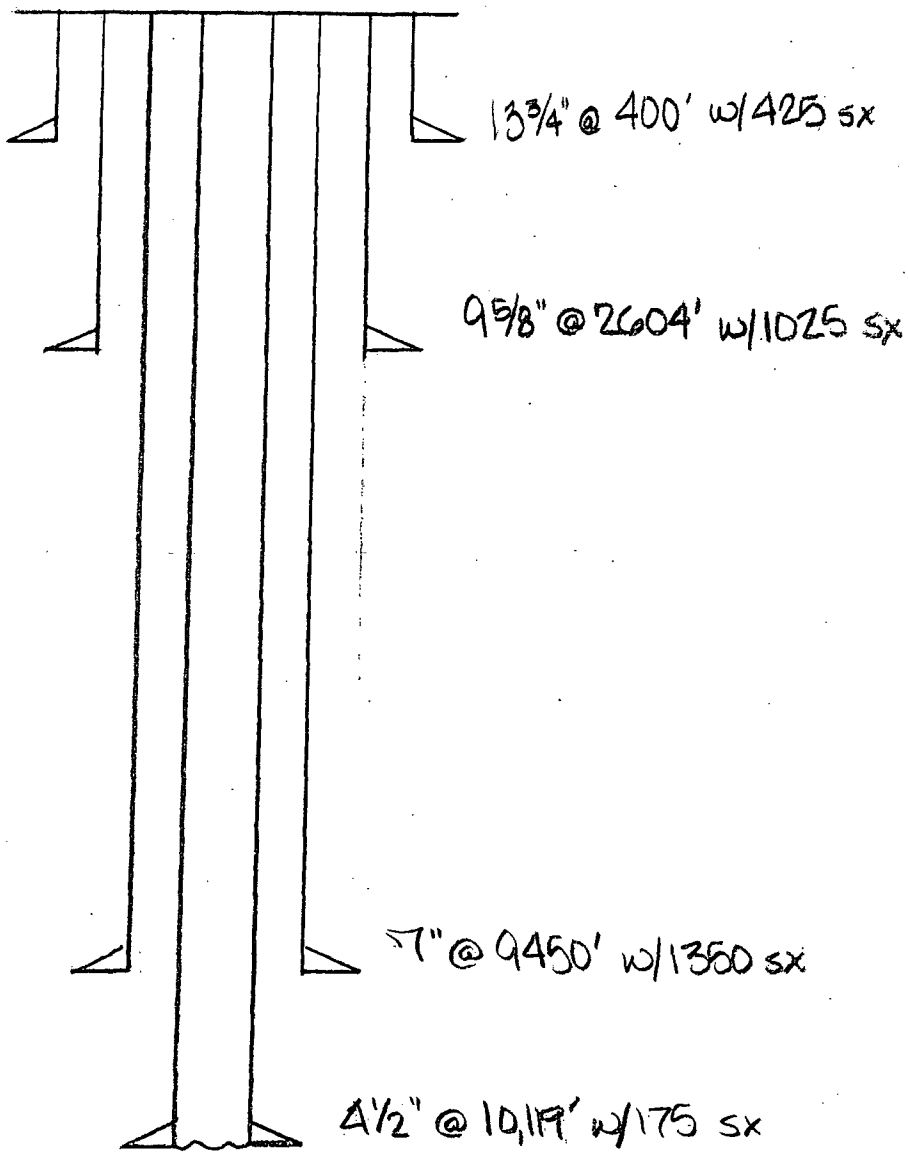
Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
ebsite: http://www.emnrd.state.nm.us/ocd/
Why not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 96
Artificial Penetration Review

OPERATOR Navajo Refining Co.	**STATUS** Active
LEASE WDW	**LOCATION** Sec. 6 -T18S-R27E
WELL NUMBER 3	**MUD FILLED BOREHOLE** —
DRILLED N/A	**TOP INJECTION ZONE** -3694'
PLUGGED N/A	**API NO.** 30-015-26575

REMARKS:



MAP ID NO. 96

NAVAJO REFINING COMPANY
WASTE DISPOSAL WELL NO. 3

API NO. 30-015-26575

C/SF

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Oil Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☐ Gas Well ☒ Other

8. Well Name and No.
Chalk Bluff Federal Comm #1

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-26575

3. Address and Telephone No.
PO Box 5270, Hobbs, NM 505-393-5905

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
790' FSL & 2250' FWL, Sec.1 T-18S R-27E

11. County or Parish, State
Eddy, NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans	
☒ Subsequent Report	☐ Recompletion	☐ New Construction	
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing	
	☐ Casing Repair	☐ Water Shut-Off	
	☐ Altering Casing	☐ Conversion to Injection	
	☒ Other MIT	☐ Dispose Water	

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)*

The above caption well was successfully MIT'ed on 10/25/2000. (500 psi for 30 min.)
The pressure chart is enclosed.
If any question, please call.

ACCEPTED FOR RECORD
NOV 15 2000
BLM

RECEIVED
OCD - ARTESIA

14. I hereby certify that the foregoing is true and correct

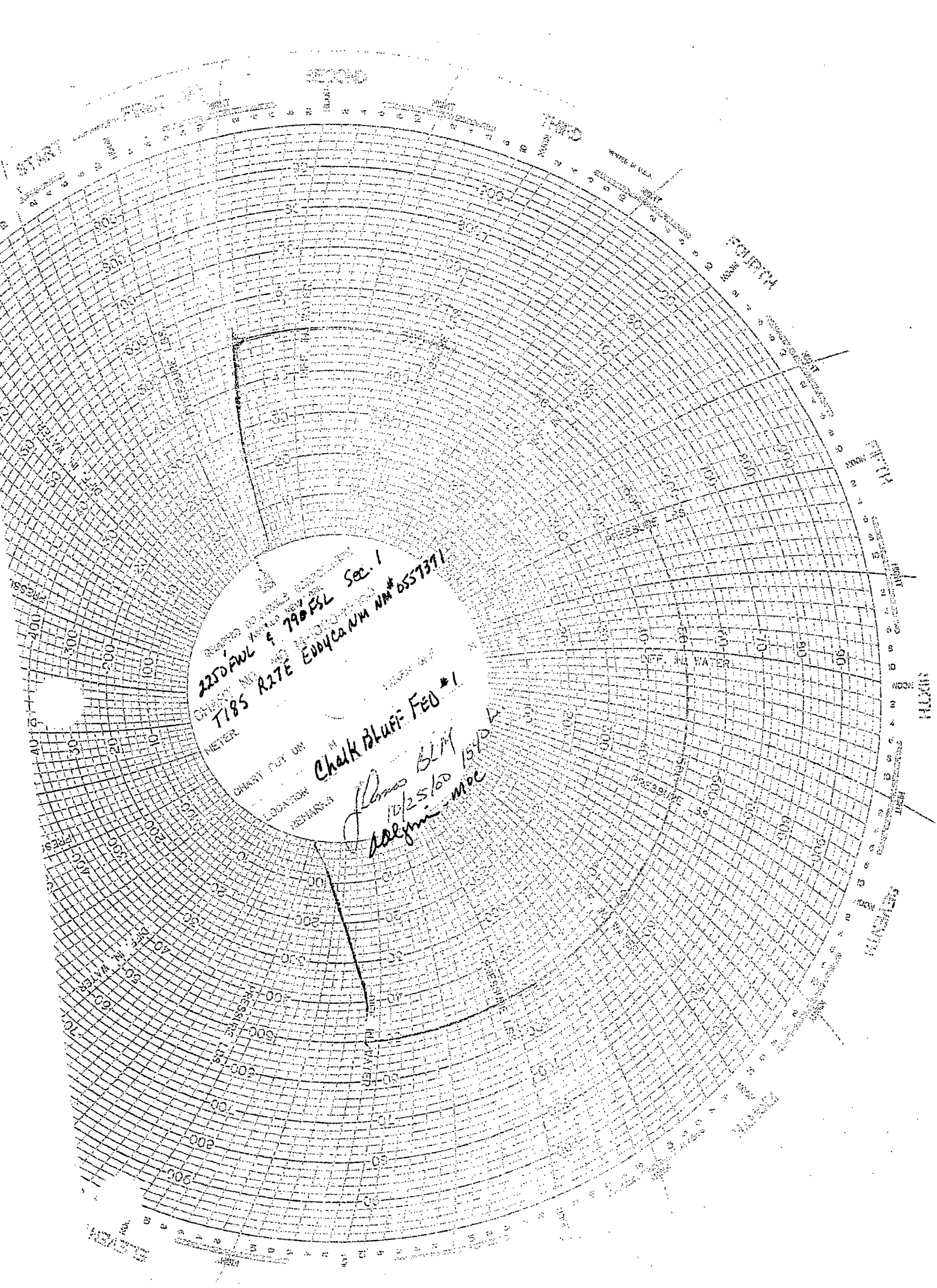
Signed _____ Title N.M. Young District Manager Date 11/01/00

(This space for Federal or State office use)

Approved by Record Only Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side


2250 FWL & 790 FSL Sec. 1
T18S R27E Eddy Co NM NM 0557371
Chalk Bluff Fed #1
10/25/00

c15F

RECEIVED

JUN 20 1991

O. C. D.
ARTESIA, OFFICE

Form 3160-5
(1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

BUREAU OF LAND MANAGEMENT RECEIVED MAY 24 1991 DIST. 6 N.M. Carlsbad, New Mexico

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.: CHALK BLUFF FED. COM #1

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26575

3. Address and Telephone No.: P. O. Box 7698, Tyler, Texas 75711

10. Field and Pool, or Exploratory Area: No. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2250' FWL & 790' FSL of Sec. 1, T18S-R27E

11. County or Parish, State: Eddy, New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other Fracture Treat	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

4/24/91 - Western fracture treated Morrow Sand perfs 9936-46', 9964'67' down tubing with 16,000 gals 73 downhole slurry quality Binary Westfoam carrying 16,000# 20/40 mesh ACFRAC Black Westprop-3. Screened out with 545 gals CO_2/N_2 2% KCL water. Screened out at 10,100# with 1200 gals of 3# stage in formation and 545 gals flush in tubing. Pumped 116 sxs Proppant into formation and left 25 sacks in casing and 19 sacks in tubing. ISDP 8300#, 5 mins 7600#, 10 mins 7200#, 15 mins 6800#. Avg 10.0 BPM at 8200#. Job complete 10:20 AM.

ACCEPTED FOR RECORD
JUN 14 1991
CARLSBAD, NEW MEXICO

14. I hereby certify that the foregoing is true and correct

Signed Clayton Thompson Title Engr. Oprns. Secretary Date 5/21/91

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

NM OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

FEB 21 1994

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2250' FWL & 790' FSL Sec. 1-T18S-R27E

5. Lease Designation and Serial No.: NM-0557371
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:
8. Well Name and No.: Chalk Bluff Fed. Com. #1
9. API Well No.: 30-015-26575
10. Field and Pool, or Exploratory Area: N. Illinois Camp
11. County or Parish, State: Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
■ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Shut-In-Status	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil Company here by requests temporarily abandon status pending further evaluation of the lease for the above well. The well was spudded 12/22/90.

APPROVED FOR 12 MONTH PERIOD
ENDING 1/25/95

14. I hereby certify that the foregoing is true and correct
Signed Robert G. Jones Title Petroleum Engineer Date 01/25/94

(This space for Federal or State office use)
Approved by (ORIG. SGD.) JOE G. LARA Title PETROLEUM ENGINEER Date 2/16/94
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

dsf

Form 3160-3 RECEIVED
(June 1990)

OCT 15 11:32 AM '93

OIL CON. DIV.
DIST.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other

NOV 17 1993

O. C. D.

8. Well Name and No.: Chalk Bluff Fed. Comm. #1

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26575

3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

10. Field and Pool, or Exploratory Area: N. Illinois Camp

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

2250' FWL & 790' FSL of Sec. 1-T18S-R27E

11. County or Parish, State: Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[X] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[X] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other _____	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

* Verbal from Adam Salameh

9/10/93 Abandon Morrow formation. Set CIBP @ 9800' & cover w/35' cement.
9/11/93 Perforate Cisco from 7826'-7830'. Test & evaluate.
9/12/93 Squeeze Cisco from 7826'-7830' w/600 sx. Class "C".
9/15/93 Drill out squeeze perfs. to 7792'. Squeeze held 2,000#.
9/16/93 Perforate Cisco from 7676'-7678'. Test and evaluate.
9/17/93 Abandon Cisco formation, set CIBP @ 7600' & cover w/35' cement.
9/18/93 Perforate Wolfcamp 7304'-7314'. Test & evaluate.
9/19/93 Acidize Wolfcamp w/1500 gal. 15% NE-FE from 7304'-7314'.
9/21/93 Set CIBP @ 7294' & perforate Wolfcamp from 7262'-7278'. Test & evaluate.
9/22/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7262'-7278'.
9/23/93 Set CIBP @ 7208' & perforate Wolfcamp from 7050'-7102'. Test & evaluate.
9/24/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7050'-7102'.
9/25/93 Set CIBP @ 7010'.

14. I hereby certify that the foregoing is true and correct

Signed Robert G. Jones Title Petroleum Engineer Date 10/05/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

ACCEPTED FOR RECORD
NOV 15 1993
CARLSBAD, NEW MEXICO

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction On Reverse Side

C/SF

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

RECEIVED
OCT 19 1993
O. C. D.

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2250' FWL & 790' FSL of Sec. 1-T18S-R27E
8. Well Name and No.: Chalk Bluff Fed. Com. #1
9. API Well No.: 30-015-26575
10. Field and Pool, or Exploratory Area: N. Illinois Camp
11. County or Parish, State: Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☒ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☒ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

09/08/93 Abandon Morrow Perfs 9861' - 9967'

- Set CIBP @ 9800' - cover w/35' cement.
- Recomplete in Cisco Formation - Test & evaluate.
- If unecomomical recomplete in Wolfcamp - Test & evaluate.

RECEIVED
SEP 22 10 48 AM '93
CARLSBAD, NEW MEXICO

14. I hereby certify that the foregoing is true and correct
Signed K. G. Jones Title Petroleum Engineer Date 09/07/93

(This space for Federal or State office use)
Approved by (ORIG. SGD.) JOE G. LARA Title PETROLEUM ENGINEER Date 10/15/93
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

RECEIVED
SEP 28 1992
O. C. D.

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed.Com.#1

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-26575

3. Address and Telephone No.
P. O. Box 7698, Tyler, Texas 75711 (903) 561-2900

10. Field and Pool, or Exploratory Area
N.Illinois Camp-Mor.-Gas

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2250' FWL & 790' FSL Sec. 1, T18S-R27E

11. County or Parish, State
Eddy

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Additional perfs, acidize & frac	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

8/13/92 - Perf Middle Morrow 9861-9882', 2 SPF, 10' Net, 22 holes.

8/14/92 - Acidized w/3500 gals 7½% HCL + additives + 1000 SCF/bbl nitrogen carrying 80 ball sealers. Flushed w/2% KCL wtr + 1000 SCF/bbl nitrogen. ISDP 4300#, 5 mins 3800#, 10 mins 3400#, 15 mins 2800#. Avg rate 3.7 BPM, AP 5000#, MP 5600#. Blew well down to pit 8/15 - 8/18/92.

8/19/92 - MI swab unit. Pressure tested tbg to 2000#.Held OK. Removed tree. RU BOP. RU swab. Swabbed well down to 5300'.

8/20/92 - Swabbed down to 6500'. POOH w/tbg & pkr. TIH w/new pkr assembly & 200 jts tbg. Tested tbg to 8000#. 8/21/92 - Continued testing tbg. Set pkr @ 9740.68' w/15 pts compression. Press annulus to 2000#. Held OK. Started swabbing. Had light blow of gas.

8/22/92 - RU Western Co. Acidized perfs w/1500 gals 7½% HCL acid + additives + 1000 scf/bbl nitrogen + 35 ball sealers. Flushed w/2% KCL wtr. ISDP 400#. 5 min 3700#, 10 min 3700#, 15 min 3600#. ATP 5100#, MTP 5400#. RD Western. Opened well to pit on 12/64" choke. No show of gas or oil. Recovering load.

8/23/92 - RU swab. FL @ 7000'. Swabbed dry in 3 runs. Continued swabbing. Recovering load.

14. I hereby certify that the foregoing is true and correct

Signed [signature] Title Engr. Oprns. Secretary Date 9/11/92

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Revised 10-1-78

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

RECEIVED
MAY 5 7 46 AM '91

RECEIVED
MAY - 7 1991
OCD
ARTESIA, OFFICE

Type Test: [X] Initial [ ] Annual [ ] Special — Test Date: 03/15/91

Company: Mewbourne Oil Company	Connection: Transwestern		
Pool: Undesignated North Illinois Camp Morrow	Formation: Morrow	Unit: N	
Completion Date: 03/05/91	Total Depth: 10,120'	Plug Back TD: 10,075'	Farm or Lease Name: Chalk Bluff Federal
Csg. Size: 4 1/2" 5 1/2" / Wt.: 11.6# / d: / Set At: 10,120'		Perforations: From 9936' To 9967'	Well No.: 1
Tbg. Size: 2 7/8" / Wt.: 6.5 / d: / Set At: 9,805'		Perforations: From Open To End	Unit: N / Sec.: 1 / Twp.: 18S / Rge.: 27E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: Single Gas		Packer Set At: 9805'	County: Eddy
Producing Thru: Tbg.	Reservoir Temp. °F: 148 @ 10,120	Mean Annual Temp. °F: 72	Baro. Press. – P_a: 13.2
			State: New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
9949	9949	.660	.43	.42	---		3.068	Flg.

NO.	FLOW DATA: Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI	S.I.				2380				72 Hr.
1.	3 X 1.125	426.8	4	51	2175		Pkr.		1 Hr.
2.	3 x 1.125	446.8	11	51	2070		Pkr.		1 Hr.
3.	3 x 1.125	446.8	32	51	1900		Pkr.		1 Hr.
4.	3 x 1.125	426.8	72	45	1605		Pkr.		1 Hr.
5.									

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	6.217	41.952	440	1.009	1.225	1.048	337
2.	6.217	71.134	460	1.009	1.225	1.051	574
3	6.217	121.326	460	1.009	1.225	1.051	980
4.	6.217	177.989	440	1.015	1.225	1.051	1446
5							

NO.	P_t	Temp. °R	T_r	Z
1	.65	511	1.37	.910
2.	.68	511	1.37	.906
3.	.68	511	1.37	.906
4.	.65	505	1.35	.905
5				

Gas Liquid Hydrocarbon Ratio: Dry Gas Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Deg.
Specific Gravity Separator Gas: .660 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 673 P.S.I.A. P.S.I.A.
Critical Temperature: 374 R R

P_c 2472 P_c^2 6110.7

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		2264	5125	985.7
2		2147	4609	1501.7
3		1966	3865	2245.7
4		1639	2686	3424.7
5				

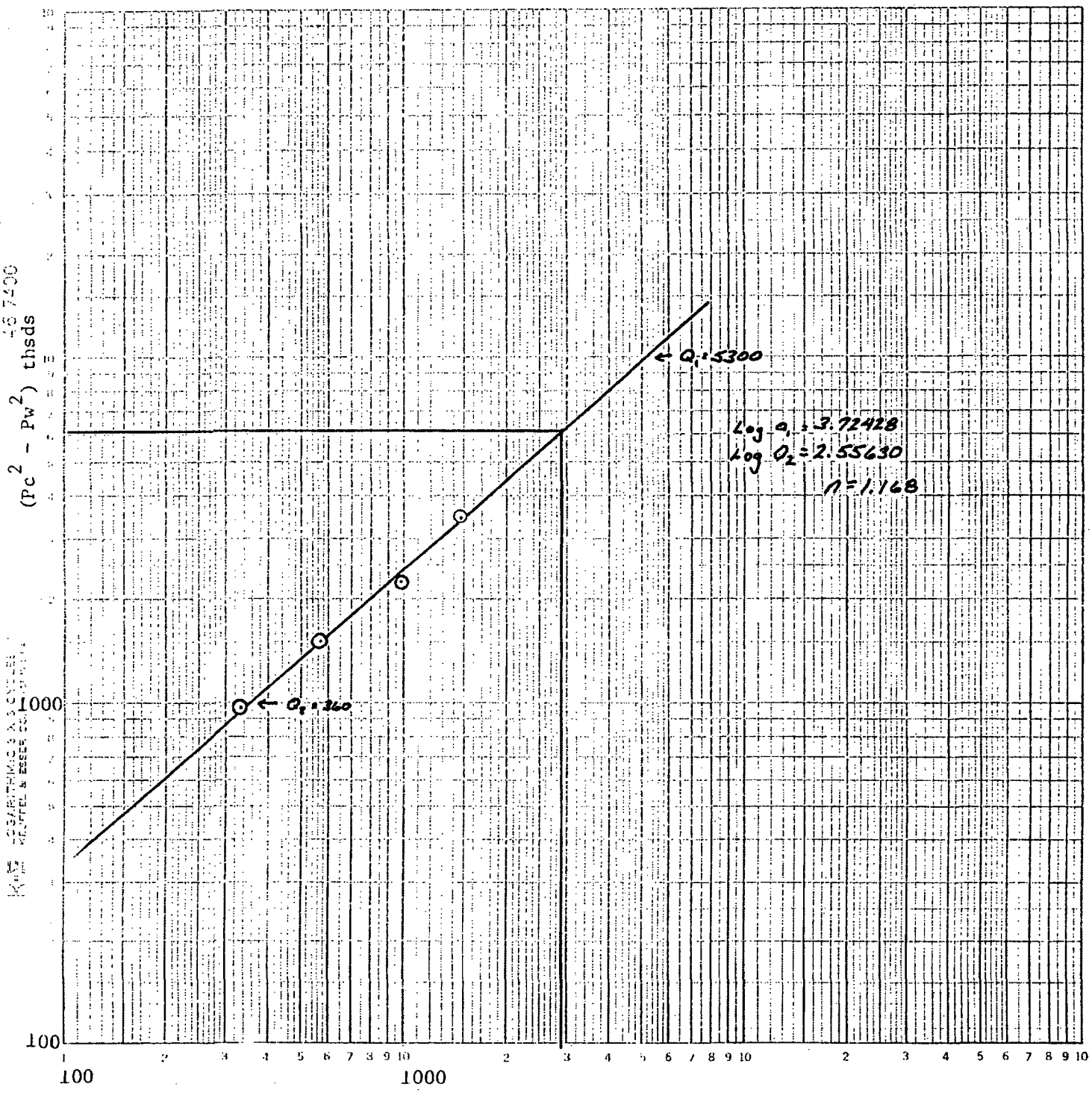
(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.784$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.967$

$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2.844$

Absolute Open Flow: 2,844 Mcfd @ 15.025 Angle of Slope @: 41° Slope, n: 1.168

Remarks: Well made 0 bbl. fluid during test

Approved By Division	Conducted By:	Calculated By:	Checked By:
	Greg Milner	Greg Milner	Bill Pierce


$(Pc^2 - Pw^2)$ thsds
$Q_1 = 5300$
$Q_2 = 340$
Log $Q_1 = 3.72428$
Log $Q_2 = 2.55630$
$n = 1.168$
1000
100
100
1000
Q MCF/D

AOF = 2.9 MMCF/D

Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR:	Mewbourne Oil Co.	SAMPLE IDENTIFICATION:	Chalk Bluff
	Attention: Mr, Greg Milner		Federal #1
	P. O. Box 5270	COMPANY:	Mewbourne Oil Co.
	Hobbs, New Mexico 88241	LEASE:	
		PLANT:	

SAMPLE DATA:	DATE SAMPLED:	03-15-91	GAS (XX)	LIQUID ( )
	ANALYSIS DATE:	03-18-91	SAMPLED BY:	Gregory Milner
	PRESSURE - PSIG	460.00	ANALYSIS BY:	Rolland Perry
	SAMPLE TEMP. °F	51.00		
	ATMOS. TEMP. °F			

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Oxygen	(O2)		
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	0.42	
Carbon Dioxide	(CO2)	0.43	
Methane	(C1)	87.54	
Ethane	(C2)	7.07	1.886
Propane	(C3)	2.38	0.654
I-Butane	(IC4)	0.31	0.100
N-Butane	(NC4)	0.54	0.169
I-Pentane	(IC5)	0.20	0.071
N-Pentane	(NC5)	0.14	0.052
Hexane	(C6)	0.97	0.399
Heptanes Plus	(C7+)	0.00	0.000
		100.00	3.331

BTU/CU.FT. - DRY	1156	MOLECULAR WT	19.0972
AT 14.650 DRY	1153		
AT 14.650 WET	1133	26# GASOLINE -	0.578
AT 15.025 DRY	1182		
AT 15.025 WET	1162		
SPECIFIC GRAVITY -			
CALCULATED	0.660		
MEASURED	0.000		

WORK SHEET FOR CALCULATION OF WEL .D PRESSURES (P_c or [redacted])

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or [redacted])

Form C-122F
Adopted 9-1-65

OMPANY Newbourne Oil LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91

OCATION: Unit _____ Section 1 Township 18S Range 27E

9949 H 9949 L/H 1.000 G .660 % CO_2 .43 % N_2 .42 % H_2S —

GH 6566 P_{cr} 673 (TABLE IX & X) T_{cr} 374 (TABLE IX & X)

LINE		1	2	3	4	5	6	7	8
1	T_w(W.H. °R)	532	532						
2	T_s(B.H. °R)	608	608						
3	$T=(\frac{T_w + T_s}{2})$	570	570						
4	Z (Est.)	.800	.790						
5	TZ	456.0	450.4						
6	GH/TZ	14.399	14.578						
7	e^s(Table XIV)	1.716	1.727						
8	P_f or [redacted]	3249	3249						
9	P_f^2 or [redacted]	10556	10556						
10	$P_c^2 = P_f^2/e^s$ or [redacted]	6151.7	6110.6						
11	P_c or [redacted]	2480.3	2472.0	= P_c					
12	$P=(\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_f}{2})$	2864.6	2860.5						
13	$P_r = (P/P_{cr})$	4.26	4.25						
14	$T_r = (T/T_{cr})$	1.52	1.52						
15	Z (Table XI)	.790	.790						

One copy to be filed in District Office (Work copy acceptable)

WORK SHEET FOR CALCULATION OF W. EAD PRESSURES (or P_w)

FROM KNOWN BOTTOM HOLE PRESSURE (or P_s)

Form C-122
Adopted 9-1-65

COMPANY Mewbourne LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91

LOCATION: Unit ____ Section 1 Township 18S Range 27E

L 9949 H 9949 L/H 1.00 G .660 % CO_2 .43 % N_2 .42 % H_2S —

GH 6566 P_{cr} 673 (TABLE IX & X) T_{cr} 374 (TABLE IX & X)

LINE		1	2	3	4	5	6	7	8
1	T_w(W.H. °R)	532	532	532	532	532	532	532	532
2	T_s(B.H. °R)	608	608	608	608	608	608	608	608
3	$T=(\frac{T_w + T_s}{2})$	570	570	570	570	570	570	570	570
4	Z (Est.)	.835	.783	.783	.781	.781	.780	.780	.792
5	TZ	476.0	446.5	446.5	445.1	445.2	444.8	444.6	451.7
6	GH/TZ	13.796	14.704	14.712	14.753	14.749	14.761	14.768	14.537
7	e^s(Table XIV)	1.678	1.736	1.736	1.739	1.739	1.739	1.740	1.725
8	or P_s	2983	2983	2831	2831	2593	2593	2152	2152
9	or P_s^2	8898.3	8898.3	8014.6	8014.6	6723.6	6723.6	4631.1	4631.1
10	$= P_f^2/e^s$ or $P_w^2 = P_s^2/e^s$	5304.3	5126.6	4616.2	4609.0	3867.2	3865.5	2661.7	2684.9
11	or P_w	2303.1	2264.2	2148.5	2146.9	1966.5	1966.1	1631.5	1638.6
12	$P=(\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_f}{2})$	2643.1	2623.6	2489.8	2488.9	2279.8	2279.5	1891.7	1895.3
13	$P_r = (P/P_{cr})$	3.93	3.90	3.70	3.70	3.39	3.39	2.81	2.82
14	$T_r = (T/T_{cr})$	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
15	Z (Table XI)	.783	.783	.781	.781	.780	.780	.792	.792

One copy to be filed in District Office (Work copy acceptable)

COMPANY: PRO WIRELINE

CLIENT: MEWBOURNE OIL

GAUGE NUMBER: 12235

WELL NAME: CHALK BLUFF

WELL NUMBER: 1

TEST NUMBER: 1

LOCATION:

TEST OPERATOR: BURRELL

COMMENTS: 4 POINT FLOW TEST RAN
AFTER 72 HOUR BUILD UP

POSITION	GAUGE SERIAL NUMBER
1	
2	
3	
4	

AGE START DATE: 3/15/91 GAUGE S/N: 12235

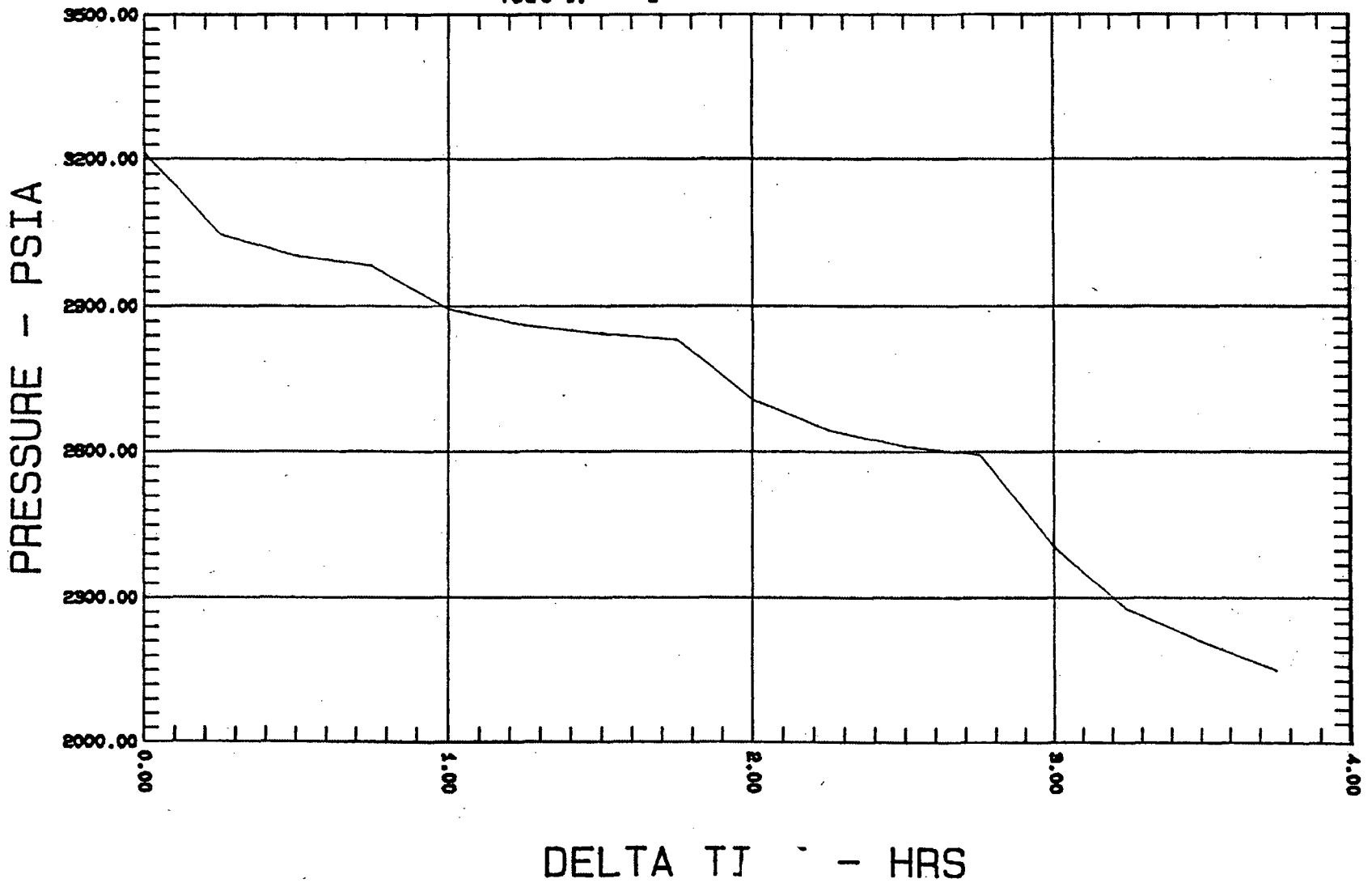
DATA FILE: 3

REAL TIME	DELTA TIME HRS	PRESSURE PSIA	TEMPERATURE °F	COMMENTS
9:45: 0	0.0000	3213.00		START RATE 1
10: 0: 0	0.2500	3046.00		
10:15: 0	0.5000	3003.00		
10:30: 0	0.7500	2983.00		START RATE 2
10:45: 0	1.0000	2894.00		
11: 0: 0	1.2500	2861.00		
11:15: 0	1.5000	2843.00		
11:30: 0	1.7500	2831.00		START RATE 3
11:45: 0	2.0000	2707.00		
12: 0: 0	2.2500	2643.00		
12:15: 0	2.5000	2610.00		
12:30: 0	2.7500	2593.00		START RATE 4
12:45: 0	3.0000	2405.00		
13: 0: 0	3.2500	2276.00		
13:15: 0	3.5000	2210.00		
13:30: 0	3.7500	2152.00		END OF TEST

Plot starting date: 3/15/91
time: 9:45: 0
Gauge S/N

Company: PRO WIRELINE
Client: MEWBOURNE OIL
Well name: CHALK BLUFF
Well #: 1
Test #: 1

Location:
Operator: BURRELL
Comments: 4 POINT FLOW TEST RAN
AFTER 72 HOUR BUILD UP



Form 3160-4
(November 1983)
(formerly 9-330)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

UNITED STATES SUBMIT IN DUPLICATE*
DEPARTMENT OF THE INTERIOR (See other instructions on reverse side)
BUREAU OF LAND MANAGEMENT

5. LEASE DESIGNATION AND SERIAL NO.: NM-0557371

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other

7. UNIT AGREEMENT NAME:

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

CONFIDENTIAL — RECEIVED JUL 23 1992 O.C.D. ARTESIA, OFFICE

8. FARM OR LEASE NAME: Chalk Bluff Federal Com

2. NAME OF OPERATOR: Mewbourne Oil Company

9. WELL NO.: 1

3. ADDRESS OF OPERATOR: P. O. Box 7698, Tyler, Texas 75711

10. FIELD AND POOL, OR WILDCAT: N. Illinois Camp Morrow

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements.*)
At surface: 2250' FWL & 790' FSL
At top prod. interval reported below
At total depth: Same

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 1-T18S-R27

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
API #30-015-26575		Eddy	N.M.

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
12/22/90	1/29/91	3/07/91	KB 3625', GR 3609'	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,120'	10,079'		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: 9936-46', 9964-67' - Morrow

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: SDL-DSN, DLL-MSFL, DILL

27. WAS WELL CORED: No

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.50#	400'	17-1/2"	425 - Circ	None
9-5/8"	36#	2604'	12-1/4"	1025 - Circ	None
7"	26# & 29#	9450'	8-3/4"	1350 - Circ	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
4-1/2"	9051'	10119'	175	

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	9805'	9805'

31. PERFORATION RECORD (*Interval, size and number*)
9936-46', 9964-67'
13', 2 SPF, Total 28

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
9936-67'	3000 gals Mod-101 acid + 1000 SCF/bbl N2 + 50 ball sealers. Flushed w/35 bbls 2% KCL water + 1000 SCF/bbl N2.

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
	Flowing	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
3/11/91	24 hrs	8/64"		1	886	0	886:1

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
1600#			1	886	0	58

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*): Sold

TEST WITNESSED BY: W. H. Gravley

35. LIST OF ATTACHMENTS: Logs

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.

SIGNED Dayna Thompson TITLE Engr. Oprns. Secretary DATE 3/18/91

ACCEPTED FOR RECORD
APR 1 1991
CARLSBAD, NEW MEXICO

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries)

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Lower Morrow	9936'	9967'	Sandstone
Middle Morrow	9861'	9881'	Sandstone

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Yates	424'	
Queen	1138'	
Grayburg	1484'	
San Andres	1976'	
Glorietta	3458'	
Tubb	4451'	
Drinkard	5376'	
Abo	5794'	
Wolfcamp	6420'	
Cisco	7666'	
Canyon	8368'	
Strawn	8844'	
Morrow	9454'	
Morrow Clastics	9770'	
Barnett	10016'	

KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT

WEK DRILLING CO., INC. — OIL WELL DRILLING CONTRACTORS

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

February 05, 1991

Mewbourne Oil Company, Inc.
P.O. Box 5270
Hobbs, N.M. 88241

REF: Chalk Bluff Fed Comm #1

Gentlemen:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

400' - 1/4°	4674' - 1 1/4°	6559' - 2 1/2°
905' - 3/4°	5120' - 1 1/2°	6650' - 2 1/4°
1303' - 3/4°	5639' - 1 1/4°	7146' - 1 3/4°
1901' - 1 1/4°	6077' - 3 1/2°	7672' - 3/4°
2399' - 1 3/4°	6126' - 3 3/4°	7800' - 3/4°
2600' - 1 3/4°	6189' - 3 3/4°	8291' - 1°
3098' - 1 1/2°	6250' - 3 3/4°	8815' - 1°
3592' - 1 1/2°	6312' - 3 1/2°	9313' - 3/4°
3682' - 3/4°	6374' - 3 1/4°	9808' - 1 1/4°
4177' - 1°	6467' - 2 3/4°	10,120' 3/4° TD

Sincerely,

Arnold Newkirk

Arnold Newkirk
Vice-President

STATE OF NEW MEXICO)
)
COUNTY OF CHAVES)

The foregoing was acknowledged before me this 05th day of February 1991 by Arnold Newkirk.

MY COMMISSION EXPIRES

October 07, 1992

Linda Rogers

NOTARY PUBLIC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Revised 10-1-78

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

RECEIVED
MAY 5 7 46 AM '91
RECEIVED
MAY - 7 1991
O. C. D.
ARTESIA, OFFICE

Type Test: [X] Initial [ ] Annual [ ] Special — Test Date: 03/15/91

Company: Mewbourne Oil Company	Connection: Transwestern	Unit: N	
Pool: Undesignated North Illinois Camp Morrow	Formation: Morrow		
Completion Date: 03/05/91	Total Depth: 10,120'	Plug Back TD: 10,075'	Farm or Lease Name: Chalk Bluff Federal
Csg. Size: 4 1/2" 5 1/2" / Wt.: 11.6# / d: / Set At: 10,120'		Perforations: From 9936' To 9967'	Well No.: 1
Tbg. Size: 2 7/8" / Wt.: 6.5 / d: / Set At: 9,805'		Perforations: From Open To End	Unit: N / Sec.: 1 / Twp.: 18S / Rge.: 27E
Type Well – Single – Bradenhead – G.G. or G.O. Multiple: Single Gas	Packer Set At: 9805'		County: Eddy
Producing Thru: Tbg.	Reservoir Temp. °F: 148 @ 10,120	Mean Annual Temp. °F: 72	Baro. Press. – P_a: 13.2
			State: New Mexico

L	H	Cg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
9949	9949	.660	.43	.42	---		3.068	Flg.

NO.	FLOW DATA: Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	Temp. °F	CASING DATA: Press. p.s.i.g.	Temp. °F	Duration of Flow
SI	S.I.				2380				72 Hr.
1.	3 X 1.125	426.8	4	51	2175		Pkr.		1 Hr.
2.	3 x 1.125	446.8	11	51	2070		Pkr.		1 Hr.
3.	3 x 1.125	446.8	32	51	1900		Pkr.		1 Hr.
4.	3 x 1.125	426.8	72	45	1605		Pkr.		1 Hr.
5.									

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	6.217	41.952	440	1.009	1.225	1.048	337
2.	6.217	71.134	460	1.009	1.225	1.051	574
3	6.217	121.326	460	1.009	1.225	1.051	980
4.	6.217	177.989	440	1.015	1.225	1.051	1446
5							

NO.	P_t	Temp. °R	T_f	Z
1	.65	511	1.37	.910
2.	.68	511	1.37	.906
3.	.68	511	1.37	.906
4.	.65	505	1.35	.905
5				

Gas Liquid Hydrocarbon Ratio: Dry Gas Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Deg.
Specific Gravity Separator Gas: .660 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 673 P.S.I.A. P.S.I.A.
Critical Temperature: 374 R R

P_c 2472 P_c^2 6110.7

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		2264	5125	985.7
2		2147	4609	1501.7
3		1966	3865	2245.7
4		1639	2686	3424.7
5				

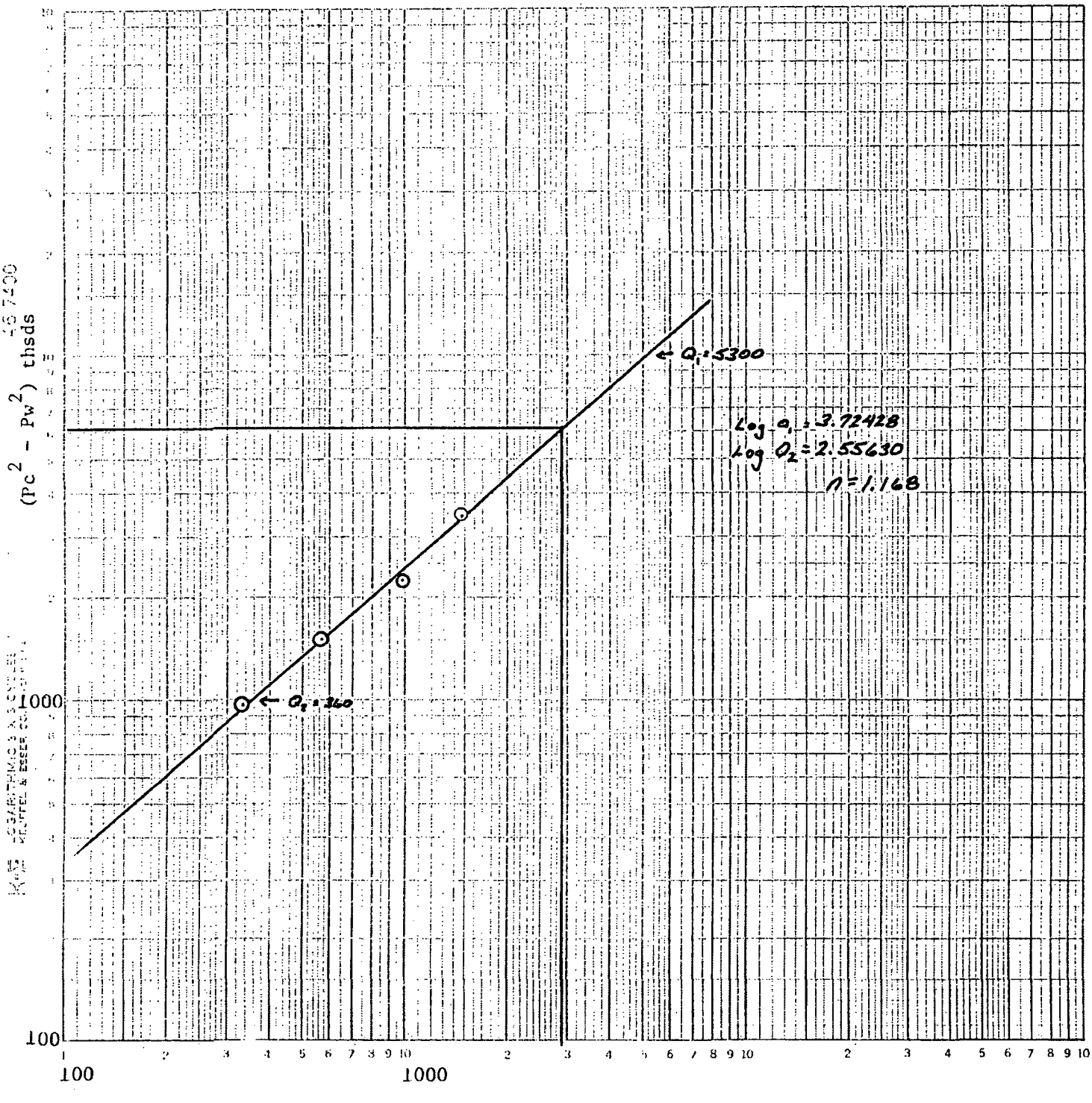
(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.784$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.967$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2.844$

Absolute Open Flow: 2,844 Mcfd @ 15.025 | Angle of Slope @: 41° | Slope, n: 1.168

Remarks: Well made 0 bbl fluid during test

Approved By Division	Conducted By:	Calculated By:	Checked By:
	Greg Milner	Greg Milner	Bill Pierce


$(Pc^2 - Pw^2)$ thsds
$Q_1 = 360$
$Q_2 = 5300$
Log Q_1 = 3.72428
Log Q_2 = 2.55630
$n = 1.168$
100
1000
100
1000
Q MCF/D

AOF = 2.9 MMCF/D

Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Mewbourne Oil Co.
Attention: Mr, Greg Milner
P. O. Box 5270
Hobbs, New Mexico 88241

SAMPLE IDENTIFICATION: Chalk Bluff Federal #1
COMPANY: Mewbourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 03-15-91
ANALYSIS DATE: 03-18-91
PRESSURE - PSIG 460.00
SAMPLE TEMP. °F 51.00
ATMOS. TEMP. °F

GAS (XX) LIQUID ( )
SAMPLED BY: Gregory Milner
ANALYSIS BY: Rolland Perry

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Oxygen	(O2)		
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	0.42	
Carbon Dioxide	(CO2)	0.43	
Methane	(C1)	87.54	
Ethane	(C2)	7.07	1.886
Propane	(C3)	2.38	0.654
I-Butane	(IC4)	0.31	0.100
N-Butane	(NC4)	0.54	0.169
I-Pentane	(IC5)	0.20	0.071
N-Pentane	(NC5)	0.14	0.052
Hexane	(C6)	0.97	0.399
Heptanes Plus	(C7+)	0.00	0.000
		100.00	3.331

BTU/CU.FT. - DRY	1156	MOLECULAR WT	19.0972
AT 14.650 DRY	1153		
AT 14.650 WET	1133	26# GASOLINE -	0.578
AT 15.025 DRY	1182		
AT 15.025 WET	1162		
SPECIFIC GRAVITY -			
CALCULATED	0.660		
MEASURED	0.000		

WORK SHEET FOR CALCULATION OF WELL D PRESSURES (P_c or ~~P_w~~)

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or ~~P_s~~)

Form C-122F
Adopted 9-1-65

COMPANY Newbourne Oil LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91

LOCATION: Unit ____ Section 1 Township 18S Range 27E

9949 H 9949 L/H 1.000 G .660 % CO_2 .43 % N_2 .42 % H_2S ——

GH 6566 P_{cr} 673 (TABLE IX & X) T_{cr} 374 (TABLE IX & X)

LINE		1	2	3	4	5	6	7	8
1	T_w(W.H. °R)	532	532						
2	T_s(B.H. °R)	602	608						
3	$T=(\frac{T_w + T_s}{2})$	570	570						
4	Z (Est.)	.800	.790						
5	TZ	456.0	450.4						
6	GH/TZ	14.399	14.578						
7	e^s(Table XIV)	1.716	1.727						
8	P_f or ~~P_s~~	3249	3249						
9	P_f^2 or ~~P_s^2~~	10556	10556						
10	$P_c^2 = P_f^2/e^s$ or ~~$P_s^2 e^s$~~	6151.7	6110.6						
11	P_c or ~~P_s~~	2480.3	2472.0	= P_c					
12	$P=(\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_f}{2})$	2864.6	2860.5						
13	$P_r = (P/P_{cr})$	4.26	4.25						
14	$T_r = (T/T_{cr})$	1.52	1.52						
15	Z (Table XI)	.790	.790						

One copy to be filed in District Office (Work copy acceptable)

WORK SHEET FOR CALCULATION OF W. EAD PRESSURES (or P_w)

FROM KNOWN BOTTOM HOLE PRESSURE (or P_s)

Form C-122
Adopted 9-1-65

COMPANY Mewbourne LEASE Chalk Bluff Fed. WELL NO. 1 DATE 3-18-91

LOCATION: Unit ____ Section 1 Township 18S Range 27E

L 9949 H 9949 L/H 1.00 G .660 % CO_2 .43 % N_2 .42 % H_2S —

GH 6566 P_{cr} 673 (TABLE IX & X) T_{cr} 374 (TABLE IX & X)

LINE		1	2	3	4	5	6	7	8
1	T_w(W.H. °R)	532	532	532	532	532	532	532	532
2	T_s(B.H. °R)	608	608	608	608	608	608	608	608
3	$T=(\frac{T_w + T_s}{2})$	570	570	570	570	570	570	570	570
4	Z (Est.)	.835	.783	.783	.781	.781	.780	.780	.792
5	TZ	476.0	446.5	446.5	445.1	445.2	444.8	444.6	451.7
6	GH/TZ	13.796	14.704	14.712	14.753	14.749	14.761	14.768	14.537
7	e^S(Table XIV)	1.678	1.736	1.736	1.739	1.739	1.739	1.740	1.725
8	or P_s	2983	2983	2831	2831	2593	2593	2152	2152
9	or P_s^2	8898.3	8898.3	8014.6	8014.6	6723.6	6723.6	4631.1	4631.1
10	= P_t^2/e^s or $P_w^2 = P_s^2/e^s$	5304.3	5126.6	4616.2	4609.0	3867.2	3865.5	2661.7	2684.9
11	or P_w	2303.1	2264.2	2148.5	2146.9	1966.5	1966.1	1631.5	1638.6
12	$P=(\frac{P_w + P_s}{2})$ or $(\frac{P_c + P_f}{2})$	2643.1	2623.6	2489.8	2488.9	2279.8	2279.5	1891.7	1895.3
13	$P_r = (P/P_{cr})$	3.93	3.90	3.70	3.70	3.39	3.39	2.81	2.82
14	$T_r = (T/T_{cr})$	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
15	Z (Table XI)	.783	.783	.781	.781	.780	.780	.792	.792

One copy to be filed in District Office (Work copy acceptable)

?MPANY:	PRO WIRELINE
CLIENT:	MEWBOURNE OIL
GAUGE NUMBER:	12235
WELL NAME:	CHALK BLUFF
WELL NUMBER:	1
TEST NUMBER:	1
LOCATION:	
TEST OPERATOR:	BURRELL
COMMENTS:	4 POINT FLOW TEST RAN AFTER 72 HOUR BUILD UP

POSITION	GAUGE SERIAL NUMBER
1	
2	
3	
4	

AGE START DATE: 3/15/91 GAUGE S/N: 12235

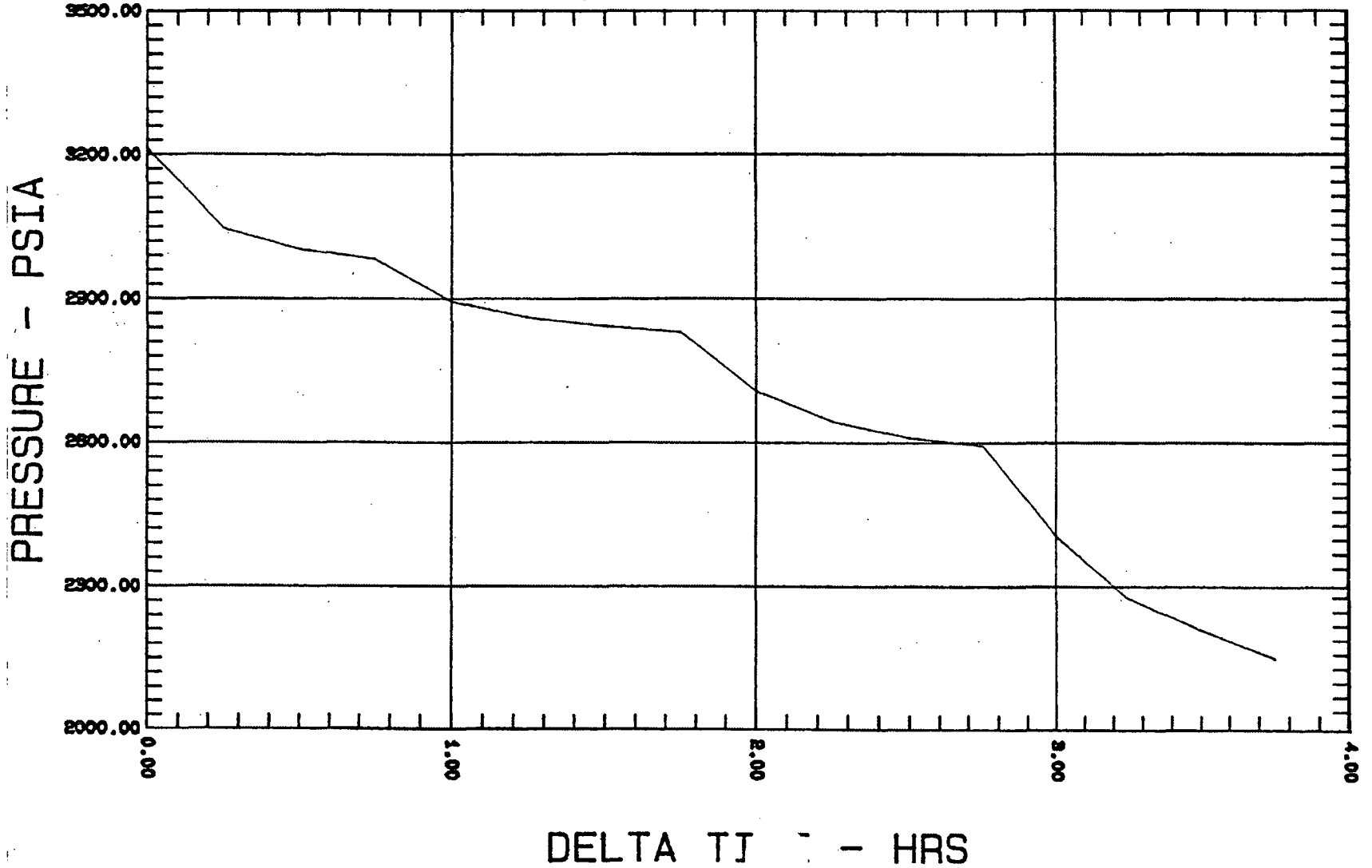
DATA FILE: 3

REAL TIME	DELTA TIME HRS	PRESSURE PSIA	TEMPERATURE °F	COMMENTS
9:45: 0	0.0000	3213.00		START RATE 1
10: 0: 0	0.2500	3046.00		
10:15: 0	0.5000	3003.00		
10:30: 0	0.7500	2983.00		START RATE 2
10:45: 0	1.0000	2894.00		
11: 0: 0	1.2500	2861.00		
11:15: 0	1.5000	2843.00		
11:30: 0	1.7500	2831.00		START RATE 3
11:45: 0	2.0000	2707.00		
12: 0: 0	2.2500	2643.00		
12:15: 0	2.5000	2610.00		
12:30: 0	2.7500	2593.00		START RATE 4
12:45: 0	3.0000	2405.00		
13: 0: 0	3.2500	2276.00		
13:15: 0	3.5000	2210.00		
13:30: 0	3.7500	2152.00		END OF TEST

Plot starting date: 3/15/91
time: 9:45: 0
Gauge S/N

Company: PRO WIRELINE
Client: MEWBOURNE OIL
Well name: CHALK BLUFF
Well #: 1
Test #: 1

Location:
Operator: BURRELL
Comments: 4 POINT FLOW TEST RAN
AFTER 72 HOUR BUILD UP



RECEIVED
SEP 28 1992
O. C. D.
ARTESIA, OFFICE

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.: Chalk Bluff Fed.Com.#1

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26575

3. Address and Telephone No.: P. O. Box 7698, Tyler, Texas 75711 (903) 561-2900

10. Field and Pool, or Exploratory Area: N.Illinois Camp-Mor.-Gas

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
2250' FWL & 790' FSL Sec. 1, T18S-R27E

11. County or Parish, State: Eddy

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Additional perfs, acidize & frac	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

8/13/92 - Perf Middle Morrow 9861-9882', 2 SPF, 10' Net, 22 holes.

8/14/92 - Acidized w/3500 gals 7½% HCL + additives + 1000 SCF/bbl nitrogen carrying 80 ball sealers. Flushed w/2% KCL wtr + 1000 SCF/bbl nitrogen. ISDP 4300#, 5 mins 3800#, 10 mins 3400#, 15 mins 2800#. Avg rate 3.7 BPM, AP 5000#, MP 5600#. Blew well down to pit 8/15 - 8/18/92.

8/19/92 - MI swab unit. Pressure tested tbg to 2000#.Held OK. Removed tree. RU BOP. RU swab. Swabbed well down to 5300'.

8/20/92 - Swabbed down to 6500'. POOH w/tbg & pkr. TIH w/new pkr assembly & 200 jts tbg. Tested tbg to 8000#. 8/21/92 - Continued testing tbg. Set pkr @ 9740.68' w/15 pts compression. Press annulus to 2000#. Held OK. Started swabbing. Had light blow of gas.

8/22/92 - RU Western Co. Acidized perfs w/1500 gals 7½% HCL acid + additives + 1000 scf/bbl nitrogen + 35 ball sealers. Flushed w/2% KCL wtr. ISDP 400#. 5 min 3700#, 10 min 3700#, 15 min 3600#. ATP 5100#, MTP 5400#. RD Western. Opened well to pit on 12/64" choke. No show of gas or oil. Recovering load.

8/23/92 - RU swab. FL @ 7000'. Swabbed dry in 3 runs. Continued swabbing. Recovering load.

14. I hereby certify that the foregoing is true and correct

Signed Clayton Thompson Title Engr. Oprns. Secretary Date 9/11/92

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Form 3160-4
(November 1983)
(formerly 9-330)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

UNITED STATES SUBMIT IN DUPLICATE*
DEPARTMENT OF THE INTERIOR (See other instructions on reverse side)
BUREAU OF LAND MANAGEMENT

5. LEASE DESIGNATION AND SERIAL NO.: NM-0557371

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other

7. UNIT AGREEMENT NAME:

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

CONFIDENTIAL
RECEIVED
JUL 23 1992
O. C. D.
ARTESIA, OFFICE

8. FARM OR LEASE NAME: Chalk Bluff Federal Com

2. NAME OF OPERATOR: Mewbourne Oil Company ✓

9. WELL NO.: 1

3. ADDRESS OF OPERATOR: P. O. Box 7698, Tyler, Texas 75711

10. FIELD AND POOL, OR WILDCAT: N. Illinois Camp Morrow

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)
At surface: 2250' FWL & 790' FSL
At top prod. interval reported below:
At total depth: Same

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 1-T18S-R27

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
API #30-015-26575		Eddy	N.M.

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
12/22/90	1/29/91	3/07/91	KB 3625', GR 3609'	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,120'	10,079'		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: 9936-46', 9964-67' - Morrow

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: SDL-DSN, DLL-MSFL, DILL

27. WAS WELL CORED: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.50#	400'	17-1/2"	425 - Circ	None
9-5/8"	36#	2604'	12-1/4"	1025 - Circ	None
7"	26# & 29#	9450'	8-3/4"	1350 - Circ	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
4-1/2"	9051'	10119'	175	

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	9805'	9805'

31. PERFORATION RECORD (Interval, size and number)
9936-46', 9964-67'
13', 2 SPF, Total 28

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
9936-67'	3000 gals Mod-101 acid + 1000 SCF/bbl N2 + 50 ball sealers. Flushed w/35 bbls 2% KCL water + 1000 SCF/bbl N2.

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
	Flowing	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
3/11/91	24 hrs	8/64"		1	886	0	886:1

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
1600#			1	886	0	58

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.): Sold

TEST WITNESSED BY: W. [illegible]

35. LIST OF ATTACHMENTS: Logs

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Regina Thompson TITLE Engr. Oprns. Secretary DATE 3/18/91

ACCEPTED FOR RECORD
APR 1 1991
CARLSBAD, NEW MEXICO

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries)

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Lower Morrow	9936'	9967'	Sandstone
Middle Morrow	9861'	9881'	Sandstone

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Yates	424'	
Queen	1138'	
Grayburg	1484'	
San Andres	1976'	
Glorietta	3458'	
Tubb	4451'	
Drinkard	5376'	
Abo	5794'	
Wolfcamp	6420'	
Cisco	7666'	
Canyon	8368'	
Strawn	8844'	
Morrow	9454'	
Morrow Clastics	9770'	
Barnett	10016'	

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
MEWBOURNE OIL COMPANY ✓	30-015-26575

Address: P. O. Box 7698, Tyler, Texas 75711

Reason(s) for Filing (Check proper box)

- New Well [X]
- Recompletion [ ]
- Change in Operator [ ]
- Change in Transporter of: Oil [ ] Dry Gas [ ] Casinghead Gas [ ] Condensate [ ]
- Other (Please explain) [ ]

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
CHALK BLUFF FEDERAL	1	North Illinois Camp Morrow	State, Federal or Fee	NM-0557371

Location
Unit Letter N : 2250 Feet From The West Line and 790 Feet From The South Line
Section 1 Township 18 South Range 27 East, NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil or Condensate	Address (Give address to which approved copy of this form is to be sent)
Amoco Pipeline Inter-corporate Trucking [ ] or [X]	Oil Tender Dept.Box 702068,Tulsa,OK 74170-2068
Name of Authorized Transporter of Casinghead Gas or Dry Gas	Address (Give address to which approved copy of this form is to be sent)
Transwestern Pipeline Company [ ] or [X]	P.O.Box 1188, Houston, Texas 77251-1188

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	N	1	18S	27E	Yes	March, 1991

If this production is commingled with that from any other lease or pool, give commingling order number: No

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
12/22/90	3/07/91	10,120'	10,079'
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
KB 3625', GR 3609'	Morrow	9936'	9,805'
Perforations			**Depth Casing Shoe**
9936-46', 9964-67', 13',2 SPF,Total 28			---

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8"	400'	425 Circ 111-2
12-1/4"	9-5/8"	2604'	1025 5-12-91
8-3/3"	7"	9450'	1350 temp BK
7"	4-1/2" Liner	10119'	175

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
Actual Prod. During Test	**Oil - Bbls.**	**Water - Bbls.**	**Gas- MCF**

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
886	.24 hours	1	58
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
Back Pressure	1600#	---	8/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gaylon Thompson
Signature
Gaylon Thompson, Engineering Operations
Printed Name Title
March 11, 1991 (903) 561-2900
Date Telephone No.

OIL CONSERVATION DIVISION

Date Approved MAY 16 1991

By ORIGINAL SIGNED BY MIKE WILLIAMS

Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

C/SF

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2250' FWL & 790' FSL Sec. 1-T18S-R27E UNIT N

5. Lease Designation and Serial No.: NM-0557371
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:
8. Well Name and No.: Chalk Bluff Fed. Comm. #1
9. API Well No.: 30-015-26575
10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow
11. County or Parish, State: Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
■ Notice of Intent	■ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

- Spot 8 sx. (50') cement plug on top of existing CIBP @ 7010'. Circulate hole with plug mud.
- Spot 17 sx. (100') cement plug @ 2650'.
- Spot 17 sx. (100') cement plug @ 450'.
- Cut off and remove wellhead.
- Spot 8 sx. (50') surface plug.
- Install cup and dry hole marker.
- Clean location.

RECEIVED
AUG 18 1995
OIL CON. DIV.
DIST. 2

95 JUN 7 AM 10:54
CARLSBAD

14. I hereby certify that the foregoing is true and correct

Signed _____ Title Engineer Date 5/25/95

(This space for Federal or State office use)

Approved by Orig. Signed by Shannon J. Shaw Title PETROLEUM ENGINEER Date 8/14/95
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

OCD - Artesia

CISF

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☐ Gas Well ☒ Other

8. Well Name and No.: Chalk Bluff Federal Comm #1

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26575

3. Address and Telephone No.: PO Box 5270, Hobbs, NM 505-393-5905

10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 790' FSL & 2250' FWL, Sec.1 T-18S R-27E

11. County or Parish, State: Eddy, NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other Extend T/ A & CIT.	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

escribe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is irectionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)"

The above caption well is currently under T/A status. Mewbourne Oil Company would like to extend this status. The well has a 7" CIBP above all perfs @ 7010'. We are considering converting this well into a SWD. At this time, Mewbourne would like to schelude a CIT (500 psi) & after passing, extend T/A status for an additional time.

If any question, please call.

NOV 2000
RECEIVED
OCD - ARTESIA

TA Approval for 12 Month Period
Ending 10/25/2001

BUREAU OF LAND MGMT.
CARLSBAD RESOURCE AREA

RECEIVED
2000 OCT 10 P 2:24

14. I hereby certify that the foregoing is true and correct

Signed [signature] Title N.M. Young District Manager Date 10/06/00

(This space for Federal or State office use)

Approved by (ORIG. SGD.) JOE G. LARA Title Petroleum Engineer Date 11/6/2000

Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent nents or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c/sf

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Oil Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☐ Gas Well ☒ Other

8. Well Name and No.
Chalk Bluff Federal Comm #1

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-26575

3. Address and Telephone No.
PO Box 5270, Hobbs, NM 505-393-5905

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
790' FSL & 2250' FWL, Sec.1 T-18S R-27E

11. County or Parish, State
Eddy, NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other MIT	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)*

The above caption well was successfully MIT'ed on 10/25/2000. (500 psi for 30 min.)
The pressure chart is enclosed.
If any question, please call.

ACCEPTED FOR RECORD
NOV 15 2000
BLM

RECEIVED
OCD - ARTESIA

14. I hereby certify that the foregoing is true and correct

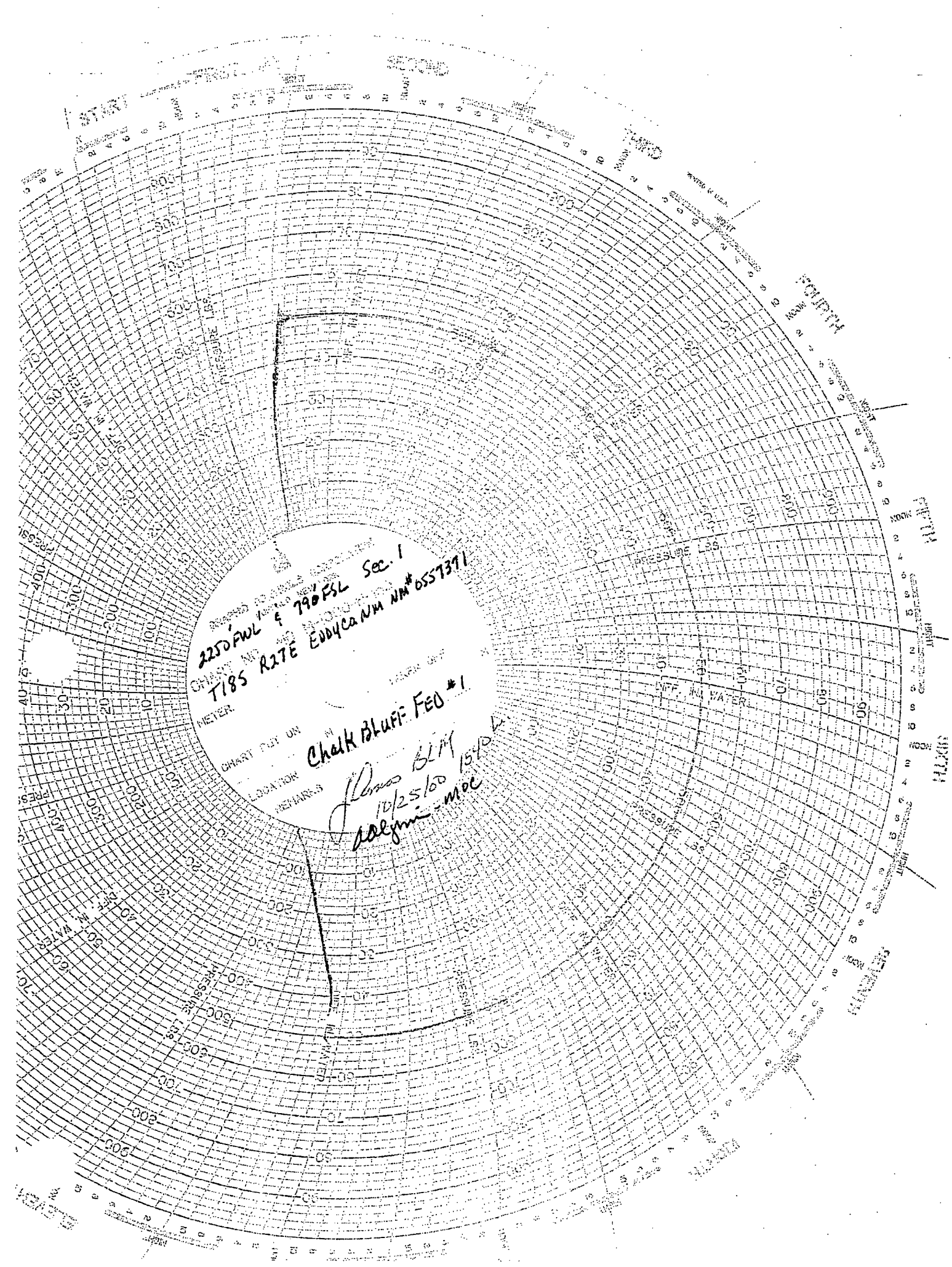
Signed _____ Title N.M. Young District Manager Date 11/01/00

(This space for Federal or State office use)

Approved by Record Only Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side


2250 FWL & 790 FSL Sec. 1
T18S R27E Eddy Co NM NM 0557371
Chalk Bluff Fed #1
10/25/00

NM OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

FEB 21 1994

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2250' FWL & 790' FSL Sec. 1-T18S-R27E

5. Lease Designation and Serial No.: NM-0557371
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:
8. Well Name and No.: Chalk Bluff Fed. Com. #1
9. API Well No.: 30-015-26575
10. Field and Pool, or Exploratory Area: N. Illinois Camp
11. County or Parish, State: Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
■ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Shut-In-Status	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil Company here by requests temporarily abandon status pending further evaluation of the lease for the above well. The well was spudded 12/22/90.

APPROVED FOR 12 MONTH PERIOD
ENDING 1/25/95

14. I hereby certify that the foregoing is true and correct
Signed Robert G. Jones Title Petroleum Engineer Date 01/25/94

(This space for Federal or State office use)
Approved by (ORIG. SGD.) JOE G. LARA Title PETROLEUM ENGINEER Date 2/16/94
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

dsf

Form 3160-3 (June 1990)

RECEIVED
OCT 15 11:32 AM '93
OIL CON. DIV.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation:

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other

NOV 17 1993

O. C. D.
ARTESIA, OFFICE

8. Well Name and No.: Chalk Bluff Fed. Comm. #1

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26575

3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

10. Field and Pool, or Exploratory Area: N. Illinois Camp

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

2250' FWL & 790' FSL of Sec. 1-T18S-R27E

11. County or Parish, State: Eddy Co., N.M.

12. **CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[X] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[X] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other _____	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

* Verbal from Adam Salameh

9/10/93 Abandon Morrow formation. Set CIBP @ 9800' & cover w/35' cement.
9/11/93 Perforate Cisco from 7826'-7830'. Test & evaluate.
9/12/93 Squeeze Cisco from 7826'-7830' w/600 sx. Class "C".
9/15/93 Drill out squeeze perfs. to 7792'. Squeeze held 2,000#.
9/16/93 Perforate Cisco from 7676'-7678'. Test and evaluate.
9/17/93 Abandon Cisco formation, set CIBP @ 7600' & cover w/35' cement.
9/18/93 Perforate Wolfcamp 7304'-7314'. Test & evaluate.
9/19/93 Acidize Wolfcamp w/1500 gal. 15% NE-FE from 7304'-7314'.
9/21/93 Set CIBP @ 7294' & perforate Wolfcamp from 7262'-7278'. Test & evaluate.
9/22/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7262'-7278'.
9/23/93 Set CIBP @ 7208' & perforate Wolfcamp from 7050'-7102'. Test & evaluate.
9/24/93 Acidize Wolfcamp w/2000 gal. 15% NE-FE from 7050'-7102'.
9/25/93 Set CIBP @ 7010'.

14. I hereby certify that the foregoing is true and correct

Signed Robert A. Jones Title Petroleum Engineer Date 10/05/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

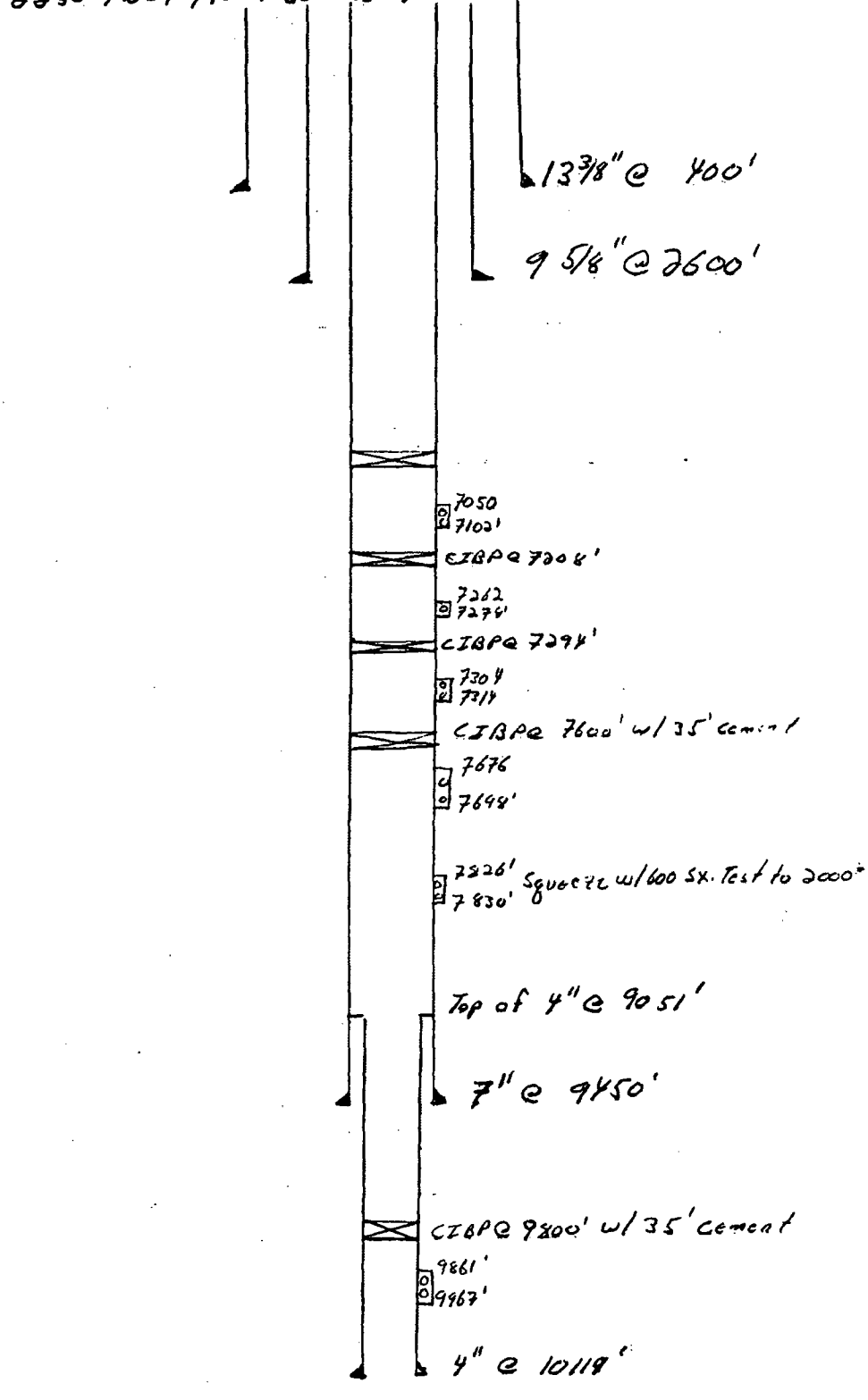
ACCEPTED FOR RECORD
NOV 15 1993
CARLSBAD, NEW MEXICO

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction On Reverse Side

Newbourne Oil Company
Chuck Bluff Federal #1

2250' FWL & 790' FSL Sec. 1-T18S-R27E



RECEIVED

C/SF

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

RECEIVED
OCT 19 1993
O. C. D.
ARTESIA, OFFICE

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 2250' FWL & 790' FSL of Sec. 1-T18S-R27E
8. Well Name and No.: Chalk Bluff Fed. Com. #1
9. API Well No.: 30-015-26575
10. Field and Pool, or Exploratory Area: N. Illinois Camp
11. County or Parish, State: Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☒ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☒ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

09/08/93 Abandon Morrow Perfs 9861' - 9967'

- Set CIBP @ 9800' - cover w/35' cement.
- Recomplete in Cisco Formation - Test & evaluate.
- If unecomomical recomplete in Wolfcamp - Test & evaluate.

RECEIVED
SEP 22 10 48 AM '93
CARLSBAD, NEW MEXICO

14. I hereby certify that the foregoing is true and correct

Signed R. A. Lane Title Petroleum Engineer Date 09/07/93

(This space for Federal or State office use)

Approved by (ORIG. SGD.) JOE G. LARA Title PETROLEUM ENGINEER Date 10/15/93
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

30-015-26575

Ogrid- 147141

Property- 7876

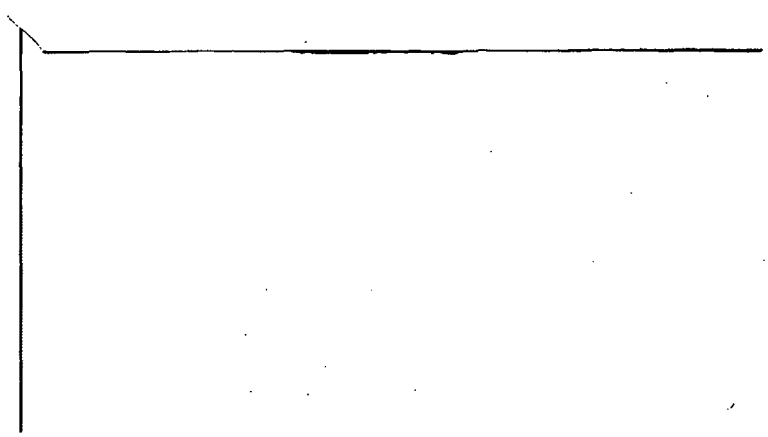
Pool- 78890

3-19-91

Dual Lat.

2595-9446
9330-10112
Dual SPACED
NEUTRON

~~Lat~~ 9417
8500-10121



3-19-91

Dual Lat.

2595-9446
9330-10112
Dual SPACED
NEUTRON

~~Lat~~ 9417
8500-10121

NC Tops DSM 5/14/91

Queen	1140
Grayburg	1630
San Andres	1975
Glorieta	3598
Abo	>
Wolfcamp	6860
Penn	
Strawn	
Atoka	9435
Morrow	9703

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Betty Rivera
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

31 January 2003

File Copy

Navajo Refining Co.
P. O. Box 159
Artesia, New Mexico 88211

RE: Chalk Bluff Federal Com # 1 N-1-18-27 API 30-015-26575 Violation of Rule 201: Idle Well

Dear Sirs:

This second directive is to notify you that this well is still in violation of Rule 201.

On 12 December, 2002 a letter was sent notifying you on the violation of Rule 201. On 3 January, 2003 the form C-104 was faxed to you indicating Navajo Refining was the operator of this well. To date no action has been taken.

Rule 201 of the New Mexico Oil Conservation Division provides as follows:

201 WELLS TO BE PROPERLY ABANDONED
201.A. The operator of any well drilled for oil, gas or injection; for seismic, core or other exploration, or for a service well, whether cased or uncased, shall be responsible for the plugging thereof. [7-12-90...2-1-96]
201.B. A well shall be either properly plugged and abandoned or temporarily abandoned in accordance with these rules within ninety (90) days after:
(1) A sixty (60) day period following suspension of drilling operations, or
(2) A determination that a well is no longer usable for beneficial purposes, or
(3) A period of one (1) year in which a well has been continuously inactive.
[7-12-90...2-1-96]

In the event that a satisfactory response is not received to this letter of direction by 15 March, 2003, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of **CIVIL PENALTIES** for your violation of OCD rules.

Sincerely,

Van Barton
Field Rep. II

To:

Shirley Jones – ***CRUDE OIL SUPPLY CLERK***
LEASE RECORDS
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211-0159
phone (505) 746-5325
fax (505) 746-5283
shirleyj@navajo-refining.com (please note the "j" after shirley)

TO:	District II	*COMPANY:*	Oil Conservation Division
FAX:	505-748-9720	*PHONE:*	505-748-1283
RE:	Chalk Bluff Federal Com #1 API No. 30-015-26575		

MESSAGE:

We have received the enclosed letter from you showing that Navajo Refining Company is the operator for the above referenced lease.

Navajo Refining Company is neither the operator, transporter or purchaser on this lease. Your Internet site shows Mewbourne Oil Company to be the operator.

We do have them as an operator on some of the leases that we transport. But this lease is not one of them.

We have contact information for them of: PO Box 7698, Tyler, TX 75711, with a New Mexico phone for Jerry Elgin of 505-393-5905.

If you have other information that shows Navajo Refining Company as the operator, would you please forward a copy to me so that I may research it further.

Thank you.

Shirley Jones

-Shirley Jones

Shirley – Please note the attached document signed by Darrell Moore.

Jerry

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

Form C-104A
August 11, 2000

Submit 1 copy of the final affected wells list along with 2 copies of this form per number of wells on that list to appropriate District Office

Change of Operator

Previous Operator Information:		New Operator Information:	
		Effective Date:	5 October, 2000
OGRID:	14744	New Ogrid:	15694
Name:	Mewbourne Oil Company	New Name:	Navajo Refining Company
Address:	P. O. Box 7698	Address:	~~100 Century Court, Ste 1600~~
Address:		Address:	P.O. Box 159
City, State, Zip:	Tyler, TX 75711	City, State, Zip:	~~Dallas, TX 75201~~ Artesia, NM 88211

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information on this form and the attached list of wells is true and complete to the best of my knowledge and belief.

New Operator Signature: Darrell Moore

Printed name: Darrell Moore

Title: Env. Mgr. for Water and Waste

Date: 12/6/00 Phone: 505-748-3311

Previous operator complete below:

Previous Operator: Mewbourne Oil Company

Previous OGRID: 14744

Signature: Monty Whetstone

Printed Name: Monty Whetstone

NMOCD Approval

Signature: Jim W. Gum

Printed Name: District Supervisor

District:

Date: NOV 27 2000

27021 - Property code - Chalk Bluff Federal Com #1

1-18S-27E

30-015-26575 - API Number

Form 3160-5
(September 2001)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Oil Cons.
N.M. DIV-Dist. 2
1301 W. Grand Avenue
Artesia, NM 88210

FORM APPROVED
OMB No. 1004-0135
Expires: January 31, 2004

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5. Lease Serial No.

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☐ Other TEMPORARILY ABANDONED

8. Well Name and No.
WDW-3 #3 23592

2. Name of Operator
NAVAJO REFINING COMPANY 15694

9. API Well No.
30-015-26575

3a. Address
PO BOX 159, ARTESIA, NM 88211

3b. Phone No. (include area code)
505-748-3311

10. Field and Pool, or Exploratory Area
NAVAJO INJECTION; PERMO-PENN

4. Location of Well (Footage, Sec., T, R., M., or Survey Description)
790' FSL, 2250' FWL, 1-18S-27E

11. County or Parish, State
EDDY

RECEIVED
OCT 2003
OCD - ARTESIA

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other RECOMPLETE AS CLASS I INJECTION WELL
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☑ Water Disposal	

3. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.) change well name per Darrell Moore

Original well name was CHALK BLUFF FEDERAL COM. NO. 1

SUBJECT TO LIKE APPROVAL BY NMOCD

DRILL OUT BRIDGE PLUG AT 7010' AND CLEAN OUT TO 7208'.
INJECTION-TEST PERFORATIONS AT 7050' - 7102', 7262' - 7278' TO PLAN SQUEEZE-CEMENT JOB.
DRILL OUT BRIDGE PLUGS AT 7208' AND 7294'. CLEAN OUT HOLE THROUGH PERFS AT 7304'-7314'.
SQUEEZE-CEMENT PERFORATIONS AT 7050' - 7102', 7262' - 7278', AND 7304' - 7314'.
DRILL OUT BRIDGE PLUG AT 7600' AND CLEAN OUT TO TOP OF LINER AT 9051'.
RUN CBL/VDL AND CALIPER FROM 9051' TO SURFACE.
PERFORATE 8540' - 8620' AND 7660' - 8450'.
RUN INJECTIVITY TEST, AND ACIDIZE IF NECESSARY.
RUN INJECTION/FALLOFF TEST.
RUN DIFFERENTIAL TEMPERATURE SURVEY.
RUN RADIOACTIVE TRACER SURVEY.
INSTALL INJECTION TUBING AND PACKER TO APPROX. 7600'.
INSTALL WELL ANNULUS MONITORING EQUIPMENT, AND PREPARE WELL FOR INJECTION.

APPROVED
SEP 29 2003
LES BABYAK
PETROLEUM ENGINEER

14. I hereby certify that the foregoing is true and correct
Name (Printed/Typed) Darrell Moore
Title Env. Mgr. for Water & Waste
Signature Darrell Moore
Date 9/11/03

Approved by (Signature)
Name (Printed/Typed)
Title
Office
Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Accepted for record - NMOCD

(Continued on next page)

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised June 10, 2003
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30 - 015 -26575		Navajo Injection; Permo-Penn

[4] Property Code	[5] Property Name	[6] Well Number
23592	WDW	3

[7] OGRID No.	[8] Operator Name	[9] Elevation
15694	Navajo Refining Company	3609' GL; 3625' KB

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	1	18S	27E		790	South	2250	West	Eddy

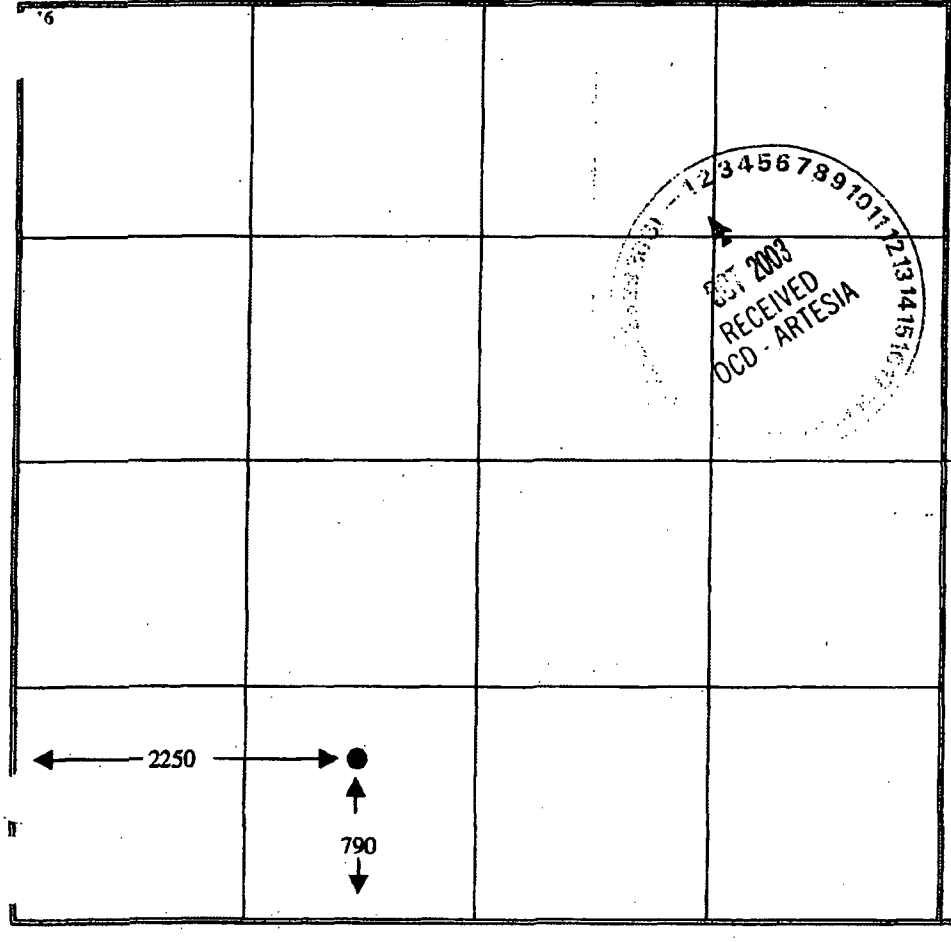
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

[16]



RECEIVED
OCT 2003
OCD - ARTESIA

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: Darrell Moore

Printed Name: Darrell Moore

Title and E-mail Address: Env. Mgr. for Water & Waste darrell@navajo-refining.com

Date: 9/17/02

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number

Accepted for record - NMOCD

REENTRY PROCEDURE

NAVAJO REFINING COMPANY'S WDW-3 (PROPOSED)

790'FSL and 2250' FWL, Section 1, T18S, R27E
Eddy County, New Mexico
Chalk Bluff Federal Com. No. 1, API No. 30-015-26575

All depths are in feet below well's original kelly bushing height (RKB) of 16 feet above ground level. The original KB elevation is 3625 feet above mean sea level. The ground level elevation is 3609 feet above mean sea level.

Tops of Geologic Formations (from RKB)

The base of the lowermost USDW is at 420 feet.

San Andres	1976 feet	Lower Wolfcamp	7303 feet
Yeso	4030 feet	Cisco	7650 feet
Abo	5380 feet	Canyon	8390 feet
Wolfcamp	6745 feet	Strawn	8894 feet

Depth of Plugs

7010 feet in 7-inch casing above perforations 7050 feet to 7102 feet
7208 feet in 7-inch casing above perforations 7262 feet to 7278 feet
7294 feet in 7-inch casing above perforations 7304 feet to 7314 feet
7600 feet in 7-inch casing above perforations 7676 feet to 7678 and 7826 feet to 7830 feet
9800 feet in 4-1/2-inch liner above perforations 9861 feet to 9967 feet

Anticipated Formation Pressure

The expected bottom-hole pressure is 3448 pounds per square inch absolute (psia) at 9000 feet, for a gradient of 0.383 pounds per square inch (psi) per foot, or an equivalent

Accepted for record - NMOCD

mud weight of 7.36 pounds per gallon (ppg). The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-2, or 2813 psia, at 7570 feet. Navajo's WDW-2 is completed in the same interval proposed for WDW-3 and is located in 12-T18S-R27E, 3200 feet southwest of proposed WDW-3. The average specific gravity of the fluid in the Cisco and Canyon Formations is expected to be 1.025, which is the specific gravity of the fluid swabbed from WDW-2 in June 1999 from the interval between 7826 feet and 8399 feet. The expected bottom-hole pressure at 9000 feet in proposed WDW-3 is calculated below:

$$\begin{aligned} \text{BHP (9000 feet)} &= 2813 \text{ psia} + (9000 \text{ feet} - 7570 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.025 \\ &= 3448 \text{ psia} \end{aligned}$$

Reentry Procedure

1. Level location to accommodate a workover rig, pump, tanks, and ancillary equipment. Build a small working pit approximately 30 feet square and 3 feet deep with a plastic lining. Move in the rig, tank, shale shaker, and work string.

2. Install a 7-1/16-inch, 3000-psi double hydraulic blowout preventer (BOP) and a 7-1/16-inch, 3000-psi annular BOP (see Exhibit A for schematic). Pressure test the BOP stack and casing to 1500 psi for 30 minutes. Pick up a 6-1/8-inch bit, and sufficient 4-3/4-inch drill collars to drill out the cement plugs, on a 2-7/8-inch work string. Mix a tank of 8.5-ppg sodium chloride brine water for circulating fluid.

3. Run the bit to 7000 feet and circulate the wellbore fluid out of the casing into a frac tank for disposal. Drill out the cast iron bridge plug (CIBP), cement at 7010 feet, and clean out to the CIBP at 7208 feet. Circulate the hole clean and pump into the perforations from 7050 feet to 7102 feet to establish a rate and pressure for a pending squeeze cement job.

4. Drill out the CIBP at 7208 feet and clean out past the perforations from 7262 feet to 7278 feet and drill out the third CIBP at 7294 feet. Clean out below the perforations from 7304 feet to 7314 feet. Run a second injection test for injection rate and pressure comparison.

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5. Pull the bit and run a retrievable squeeze packer on the work string. Set the packer at 7150 feet and test for communication between the perforations. Squeeze the perforations from 7262 feet to 7278 feet and 7304 feet to 7314 feet with approximately 100 sacks of neat cement (actual squeeze cement volume to be determined by the injection rate established previously), attempting to reach 1500 psi to 2000 psi squeeze pressure. Release the packer and reverse out any excess cement, then re-test the perforations to the squeeze pressure.

6. Re-set the packer at 6900 feet and squeeze the perforations from 7050 feet to 7102 feet as before.

7. Lay down the squeeze packer and drill out the cement to the CIBP at 7600 feet. Conduct a pressure test to 500 psi for 12 hours to confirm the squeeze cement will contain the annular fluid pressure required during injection operations.

8. Drill out the CIBP at 7600 feet and circulate to the top of the liner at 9051 feet. Circulate the casing clean with 8.5-ppg brine water. Pull the bit and lay down the drill collars.

9. Run a cement bond log with variable density (CBL/VDL) from the liner top to the surface, followed by a baseline multi-finger caliper log from the liner top to the surface.

10. Perforate the intervals 8540 feet to 8620 feet and 7660 feet to 8450 feet with 2 JSPF, using hollow steel carrier perforating guns.

11. Run the work string and retrievable packer to 7600 feet. Swab, or backflow, the perforated interval to recover a representative sample of the formation water for laboratory analysis. Monitor the recovered fluid for hydrogen sulfide.

12. Conduct a short injectivity test with 8.5-ppg brine water to determine the need for stimulation. If required, stimulate the perforations with acid (type and amount to be determined from injectivity results), followed by 500 barrels of 8.5-ppg brine water.

Accepted for record - NMOCD

13. Pull the work string and lay it down. Run a surface readout pressure gauge, with memory backup, to 7600 feet. Conduct an injection test down the casing at 420 gallons per minute for 12 hours (7200 barrels). Shut the well in and record the pressure falloff for a minimum of 12 hours.

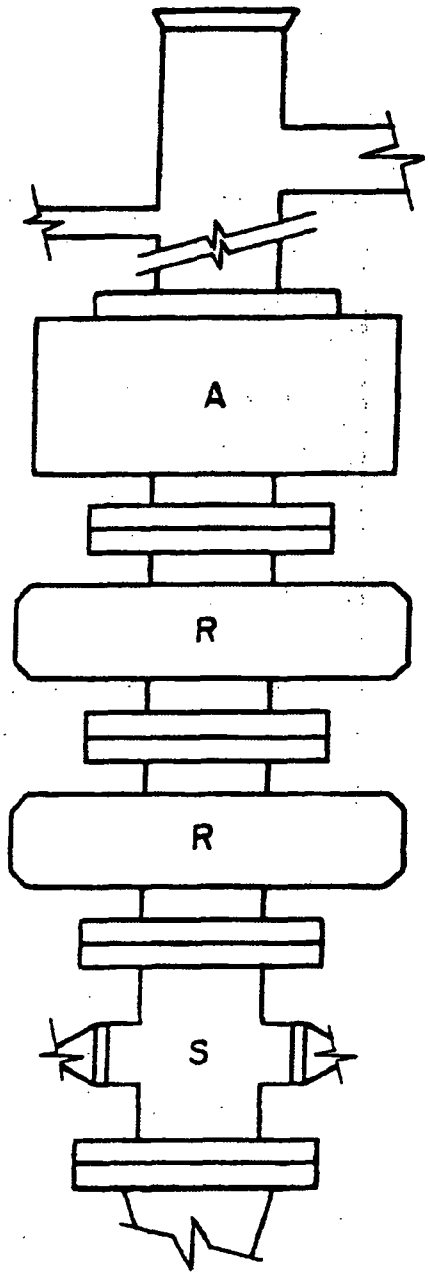
14. Pull the gauges and run a differential temperature survey from surface to 9100 feet. Run a radioactive tracer survey to demonstrate mechanical integrity.

15. Run a tubing conveyed injection packer on 4-1/2-inch, 11.60 lb/ft, K-55, LT&C, 8rd injection tubing. Set the packer at approximately 7600 feet. Fill the annular space with 8.5-ppg brine water containing oxygen scavenger and corrosion inhibitor. Land the injection tubing in the wellhead and install the upper section.

16. Pressure test the annulus as required by New Mexico regulations.

17. Install well annulus monitoring equipment and prepare the well for injection.

Accepted for record - NMOCD



A = ANNULAR BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

R = RAM TYPE BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLETS
7-1/16", 3000 psi working pressure

Manual Choke Manifold 2", 3000 psi working pressure

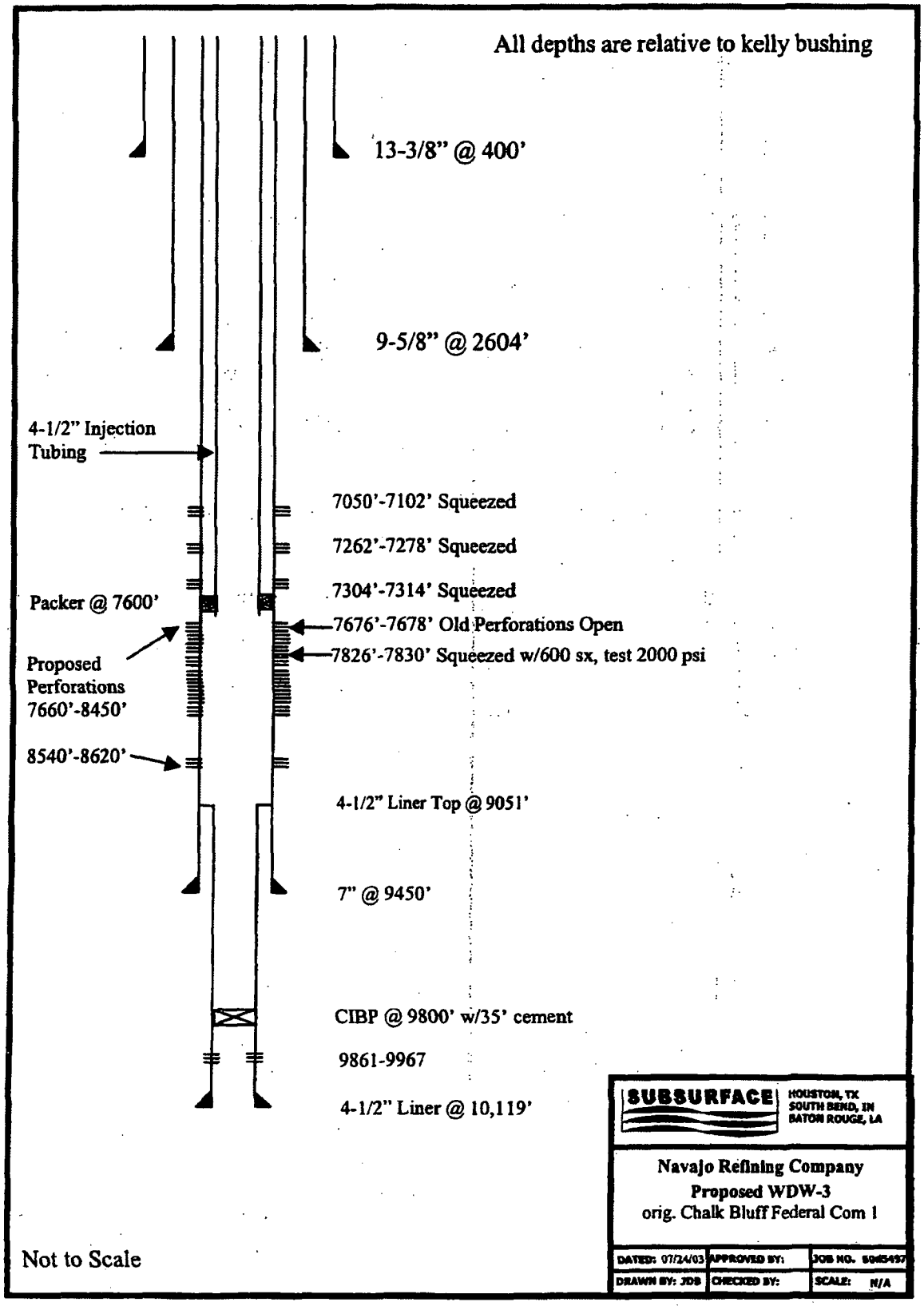
Source: API RP 53, Recommended Practices for Blowout Prevention EquipmentSystems

SUBSURFACE
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

Exhibit A
Blowout Preventer Minimum Requirements

DATED: 07/24/03	APPROVED BY:	JOB NO. 60d5497
DRAWN BY: JDB	CHECKED BY:	SCALE: N/A

Accepted for record - NMOCD
Accepted for record - NMOCD



Accepted for record - NMOCD

SURFACE USE PLAN

NAVAJO REFINING COMPANY
PROPOSED WDW-3
790' FSL, 2250' FWL, 1-T 18S-R27E
EDDY COUNTY, NEW MEXICO

1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.

2. Access Roads To Be Constructed: No new access road is proposed.

3. Location of Existing Wells: Existing wells within one mile of proposed WDW-3 are shown on Exhibit B.

4. Location of Proposed Facilities If Well Is Completed: The well will be shut in after completion and testing.

5. Location and Type of Water Supply: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.

6. Source of Construction Materials: No construction materials will be required.

7. Methods of Handling Waste Disposal:

   A. Drill cuttings will be disposed of in the drilling pits.

   B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.

   C. Water produced during tests will be disposed of in the drilling pits.

   D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind.

   E. All trash and debris will be buried or removed from the wellsite after finishing drilling and/or completion operations.

Accepted for record - NMOCD

8. Ancillary Facilities: None anticipated.

9. Wellsite Layout:

   A. The existing well pad will be leveled to accommodate a workover rig, pump, tanks, and ancillary equipment.

   B. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the uphill end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.

   C. The well pad will be surfaced with material found in place.

   D. A small working pit will be constructed to hold drilling fluids and cuttings. The approximate dimensions of the pit will be 30 feet x 30 feet x 3 feet.

   E. The working pit for drilling fluids and cuttings will be lined with 6-mil plastic.

10. Plans for Restoration of Surface:

   A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.

   B. Any unguarded pits containing fluids will be fenced until they are filled.

   C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.

   D. The stockpiled topsoil will be spread over the surface of the location.

11. Surface Ownership: U.S. Department of Interior, Bureau of Land Management.

12. Archaeological Survey: Navajo Refining Company is conducting an archeological survey. The report of the survey will be submitted by Navajo under separate cover.

13. Operator's Representatives: Representatives responsible for assuring compliance with the approved Surface Use Plan:

Accepted for record - NMOCD

Mr. Darrell Moore
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505/748-3311

Mr. Jim Bundy
Subsurface Technology, Inc.
7020 Portwest Drive, Suite 100
Houston, Texas 77024
713/880-4640

Exhibits

A. Topographic Map
B. Oil and Gas Map

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

9/17/03
Date

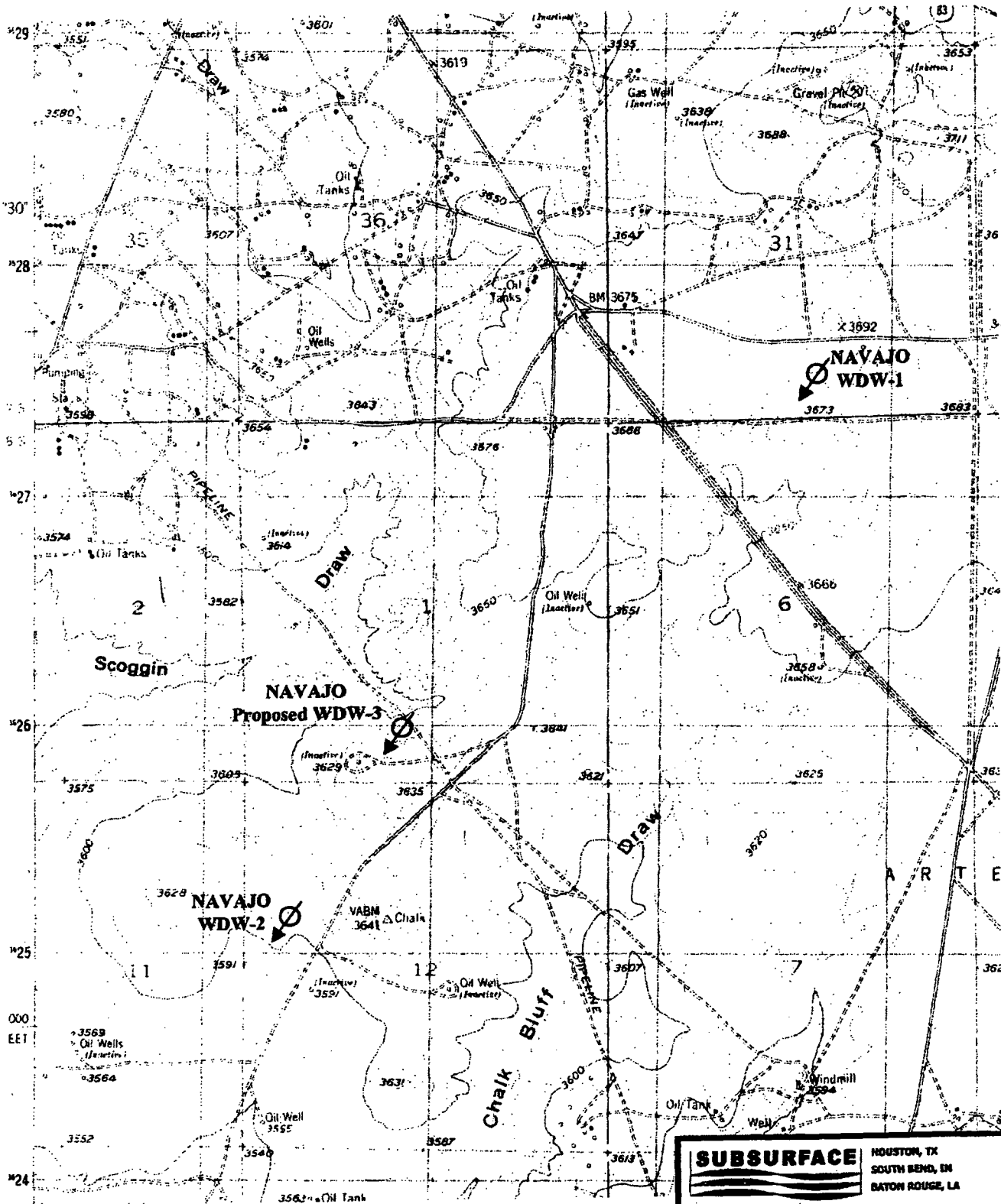
Darrell Moore
Signature

Darrell Moore
Name

Env. Mgr. for Water + Waste
Title

Navajo Refining Company
Company

Accepted for record - NMOCD



SUBSURFACE — HOUSTON, TX; SOUTH BEND, IN; BATON ROUGE, LA

EXHIBIT A
NAVAJO REFINING COMPANY
PROPOSED WDW-3
790' FSL, 2250' FWL 1-18S-27E

DATE: 7/28/03	APPROVED BY: NLH	JOB NO: 6605497
DRAWN BY:	CHECKED BY:	SCALE: 1"=2000'

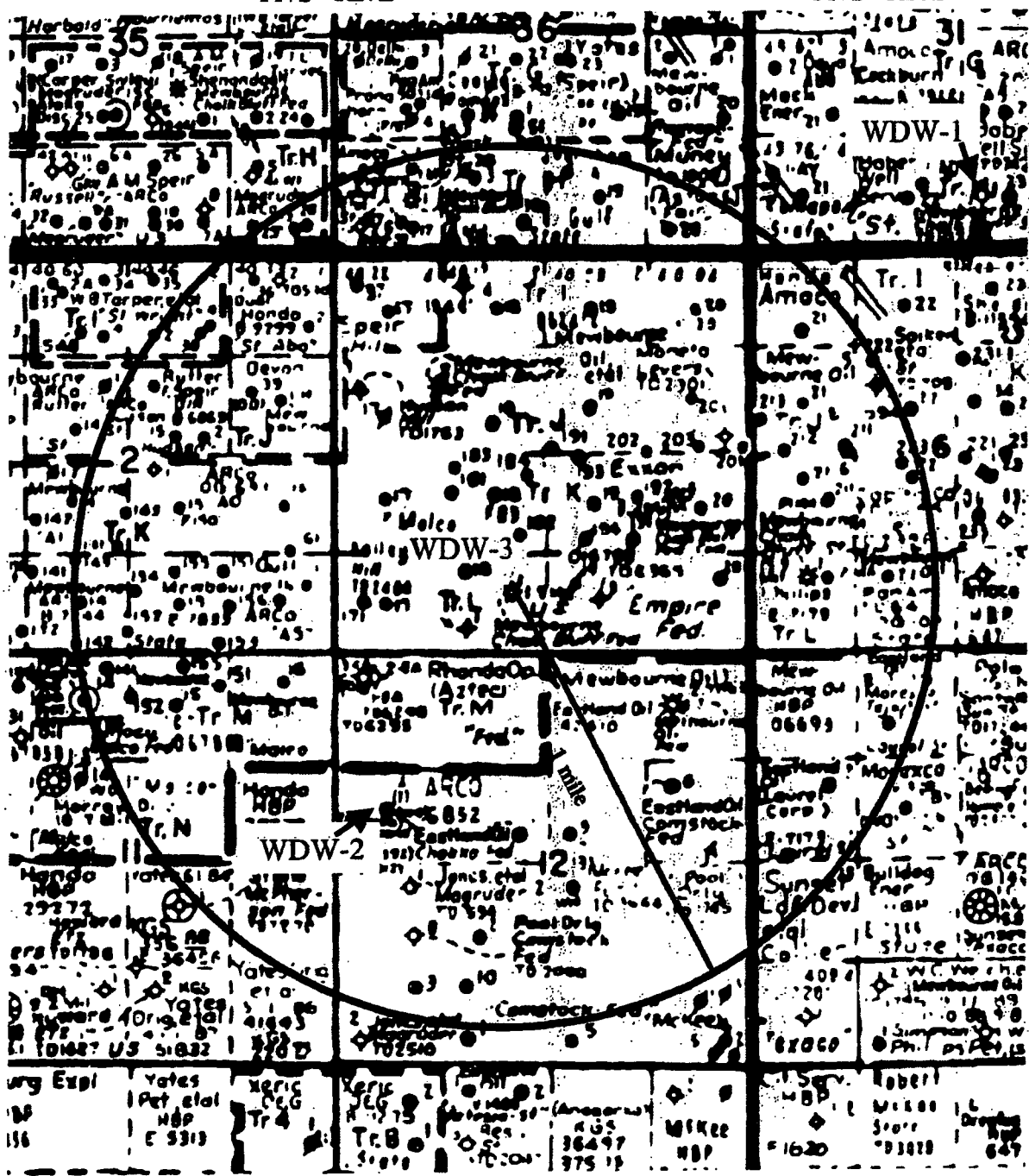
USGS Topographic Map
Red Lake Quadrangle, Eddy County, NM

Section corners marked with +

Accepted for record - NMOCD

T17S - R27E

T17S - R28E



T18S - R27E

EDDY COUNTY, NM

SUBSURFACE	HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA
EXHIBIT B WELLS WITHIN 1 MILE OF NAVAJO REFINING COMPANY PROPOSED WDW-3	
DATED: 7/28/03	APPROVED BY: NLN
DRAWN BY:	CHECKED BY:
JOB NO. 6005407	SCALE: N/A

Accepted for record - NMOCD

Map courtesy of Midland Map Company

OCD-ARTESIA

Form 3160-5
(February 2005)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: March 31, 2007

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE- Other instructions on reverse side.

1. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other
2. Name of Operator: **NAVAJO REFINING COMPANY**
3a. Address: **P.O. BOX 159, ARTESIA, NM 8821**
3b. Phone No. (include area code): **505-746-5281**
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): **790' FSL, 2250' FWL, I-18S - 27E**

RECEIVED
JUL 17 2006
OCD-ARTESIA

5. Lease Serial No.: **NM-0557371**
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA/Agreement, Name and/or No.:
8. Well Name and No.: **WDW-3**
9. API Well No.: **30-015-26575**
10. Field and Pool, or Exploratory Area: **NAVAJO INJECTION; PERMO-PEN**
11. County or Parish, State: **EDDY, NM**

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☑ Other **RECOMPLETE AS CLASS I INJECTION WELL**
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☑ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

ORIGINAL WELL NAME WAS CHALK BLUFF FEDERAL COM. NO. 1
WELL WILL BE PLUGGED BACK AND COMPLETED AS A CLASS I INJECTION WELL AS FOLLOWS:

DRILL OUT BRIDGE PLUG AT 7010' AND CLEAN OUT TO 7208';
INJECTION-TEST PERFORATIONS AT 7050'-7102', 7262'-7278' TO PLAN SQUEEZE CEMENT JOB;
DRILL OUT BRIDGE PLUGS AT 7208' AND 7294'. CLEAN OUT HOLE THROUGH PERFS AT 7304'-7314';
SQUEEZE-CEMENT PERFORATIONS AT 7050'-7102',7262'-7278', AND 7304'-7314';
DRILL OUT BRIDGE PLUG AT 7600' AND CLEAN OUT TO TOP OF LINER AT 9051';
RUN CBL/VDL AND CALIPER FROM 9051' TO SURFACE;
PERFORATE 8540'-8620' AND 7660'-8450';
RUN INJECTIVITY TEST, AND ACIDIZE IF NECESSARY;
RUN INJECTION/FALLOFF TEST;
RUN DIFFERENTIAL TEMPERATURE SURVEY;
RUN RADIOACTIVE TRACER SURVEY;
INSTALL INJECTION TUBING AND PACKER TO APPROX. 7600'; AND
INSTALL WELL ANNULUS MONITORING EQUIPMENT, AND PREPARE FOR WELL INJECTION.

ACCEPTED FOR RECORD
JUL 12 2006
LES BABYAK
PETROLEUM ENGINEER

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)*: **DARRELL MOORE** Title **ENVIRONMENTAL MANAGER FOR WATER & WASTE**
Signature: Darrell Moore Date: 6/29/06

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

Accepted for record
NMOCD

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
(Carl Chavez & Leonard Lowe- OCD)
November 15, 2006

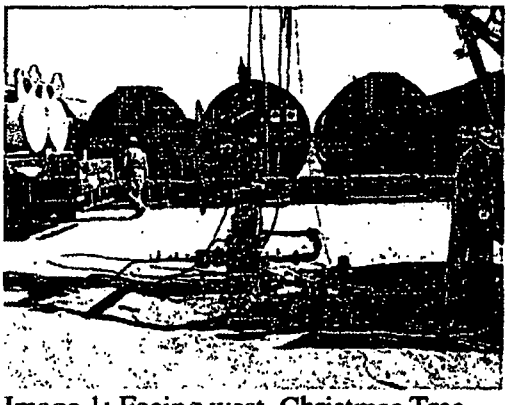


Image 1: Facing west. Christmas Tree with 500-barrel tanks in background. Far left tank was the only tank providing salt water. Truck on left is the pump truck pumping brine water only. Right truck is the rig truck (Wood Group Logging Service).

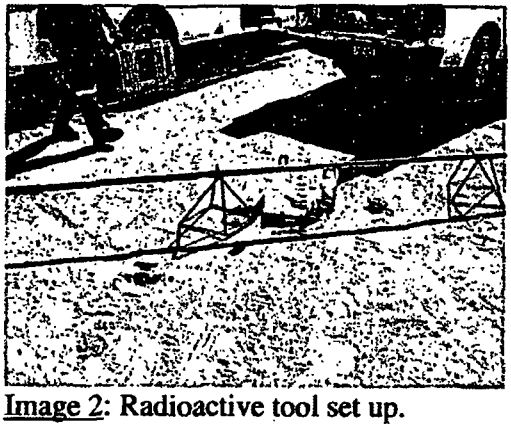


Image 2: Radioactive tool set up. Tracer, Iodine 131 (half-life ~ 8 days).

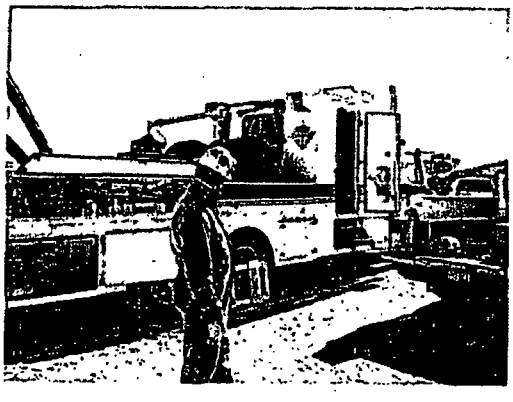


Image 3: Rig truck with view of data logger compartment (Wood Group Logging Services).

Image 4: Petroplex workers prepping wellhead for wire line tool entry.

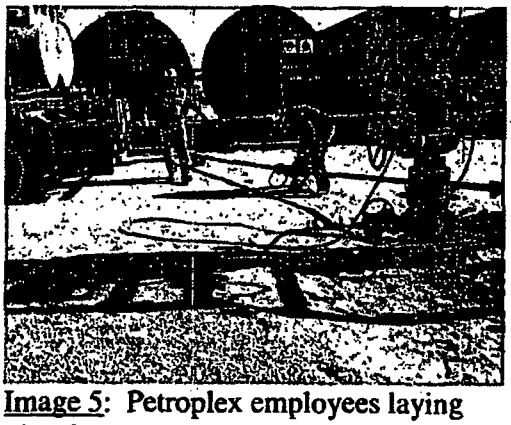


Image 5: Petroplex employees laying pipe from pump truck to well head.

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
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November 15, 2006

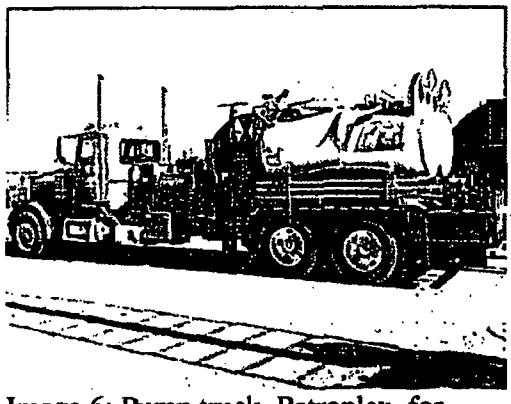

Image 6: Pump truck, Petroplex, for Brine water pumping only. No HCL used throughout process.

Image 7: Securing of the wire line to the wellhead.

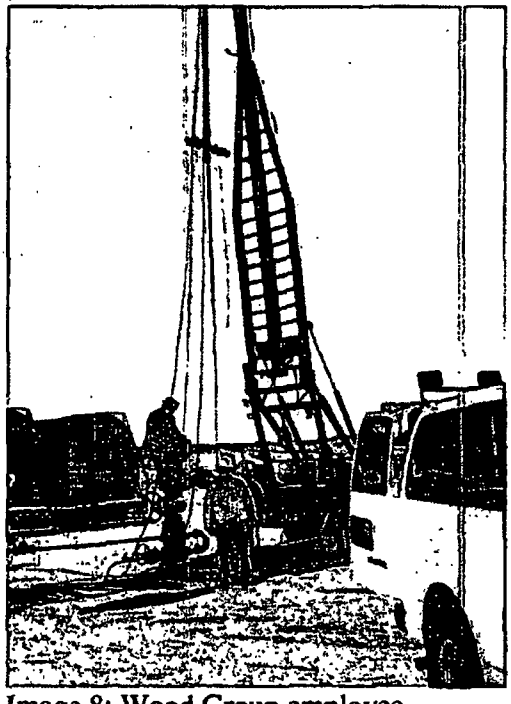

Image 8: Wood Group employee securing wellhead for tool entry.

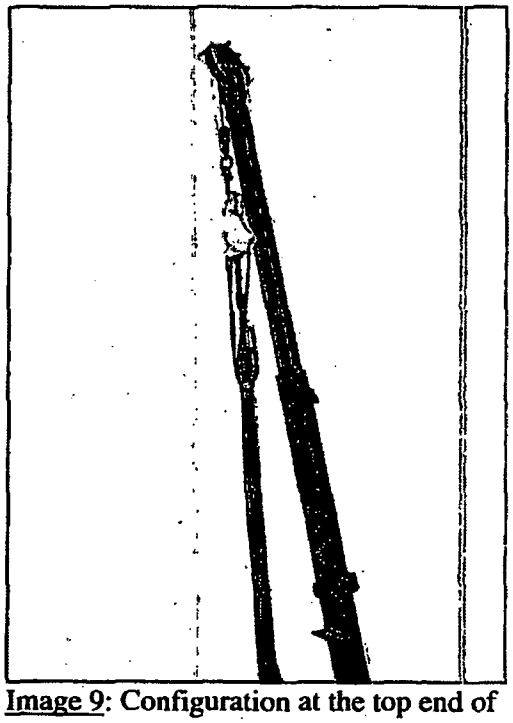

Image 9: Configuration at the top end of the boom.

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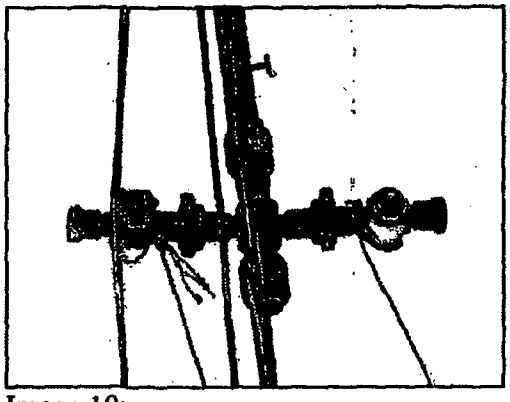
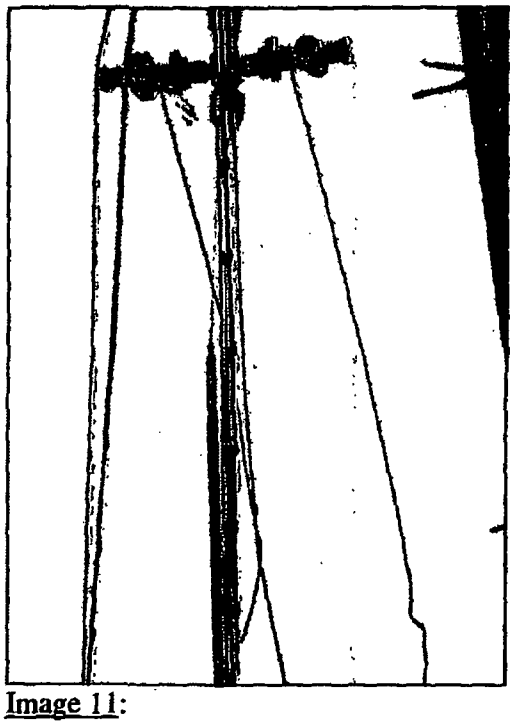


Image 10:



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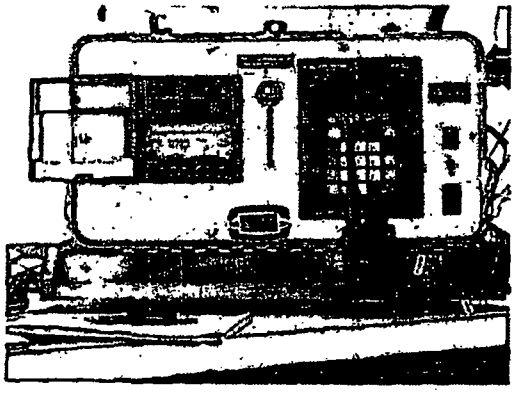

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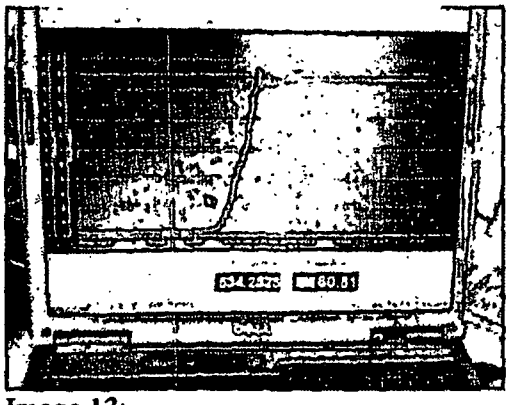

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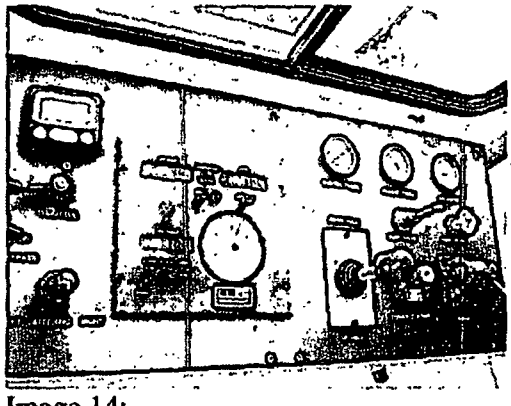

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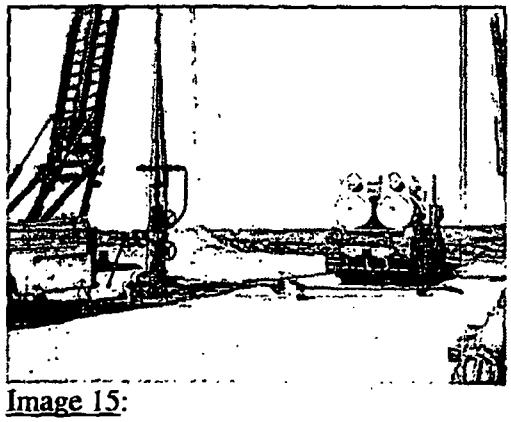
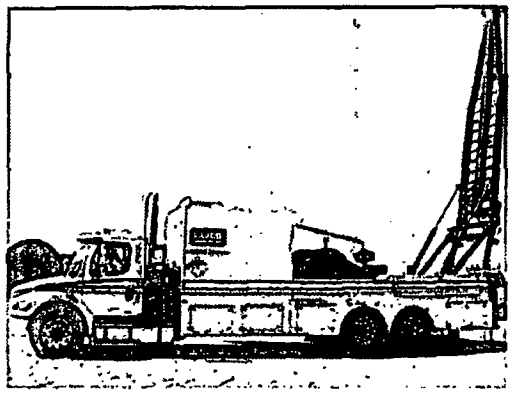


Image 15:

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
(Carl Chavez & Leonard Lowe- OCD)
November 15, 2006



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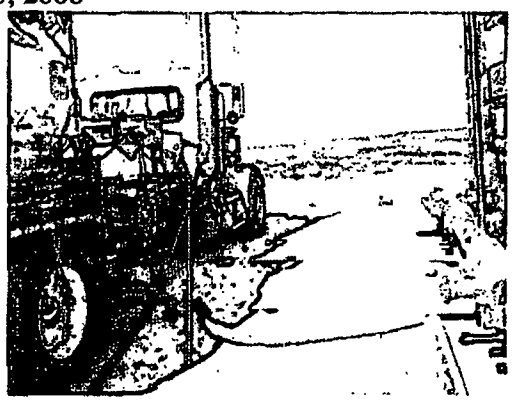

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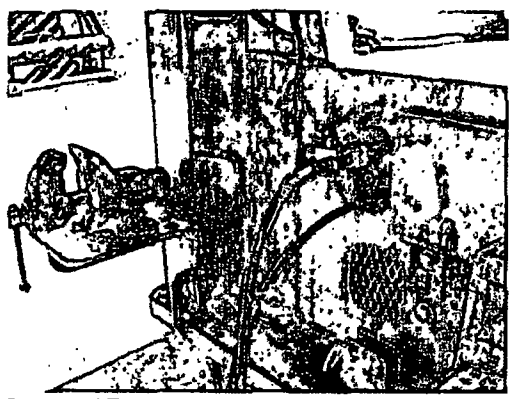

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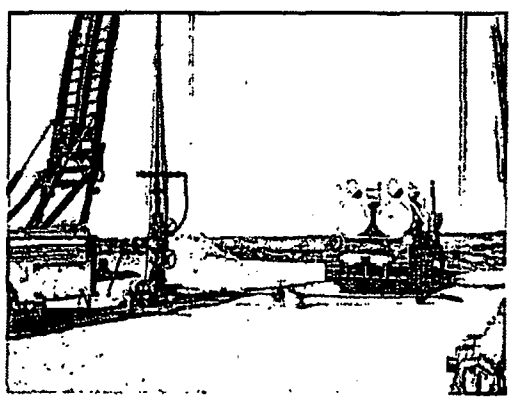

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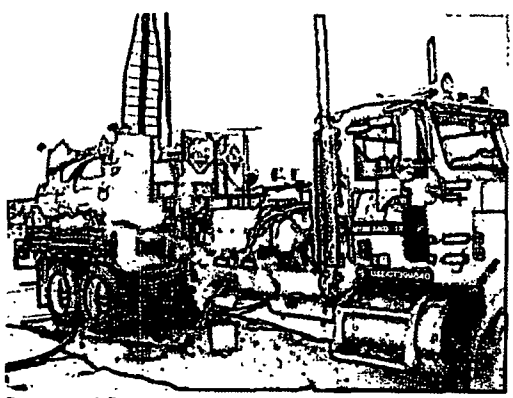


Image 18:

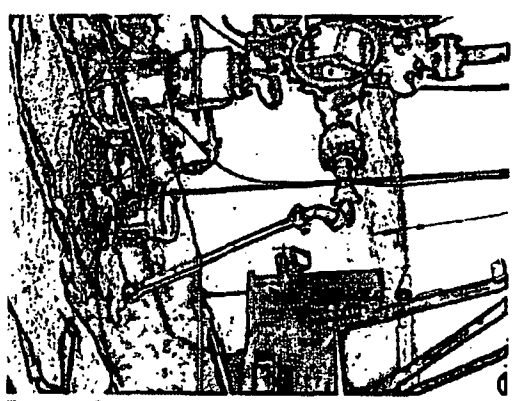
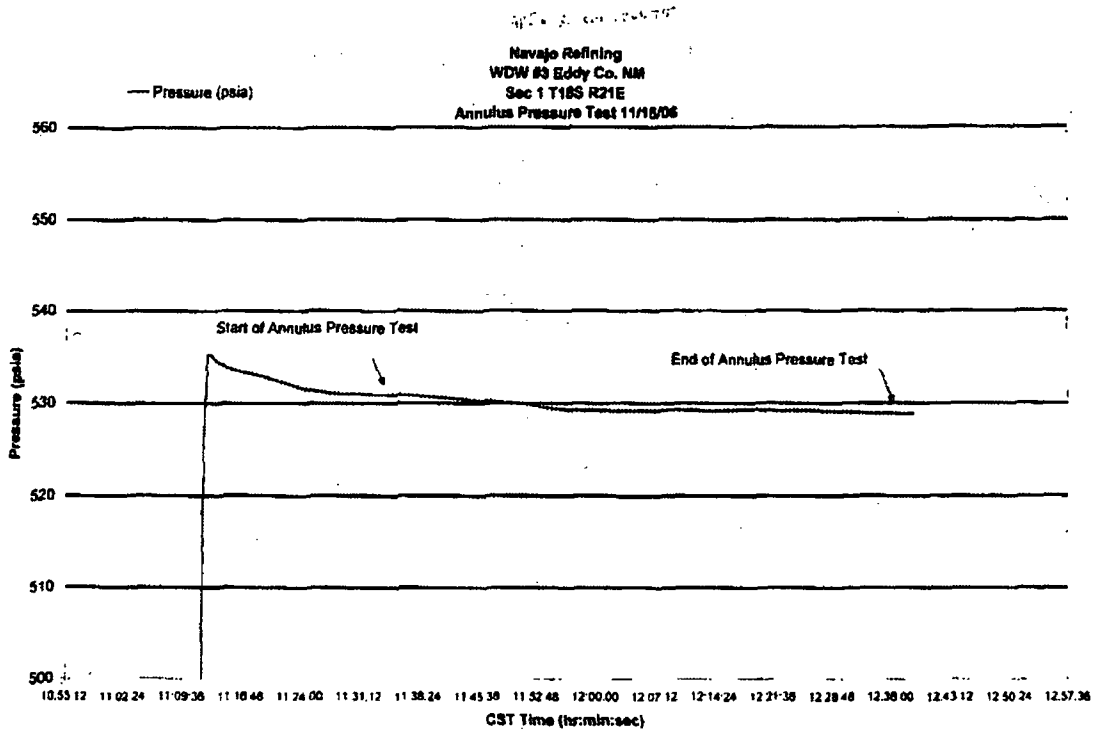
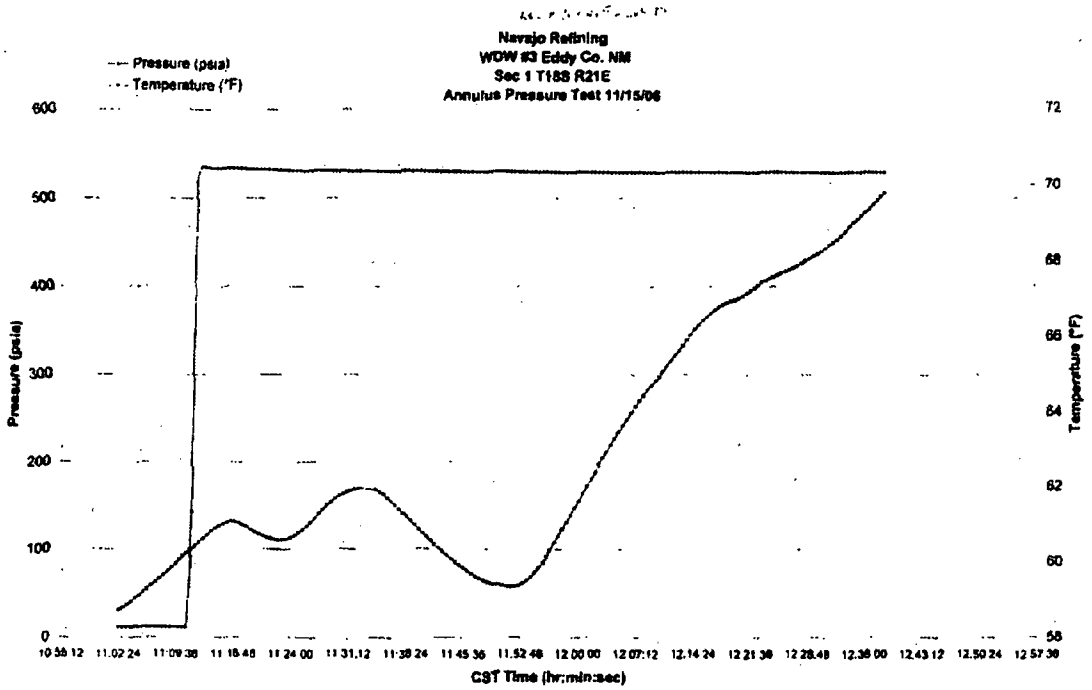


Image 21:

Navajo-Artesia WDW #3 EPA Annulus MIT and Tracer Test [API# 30-015-26575]
(Carl Chavez & Leonard Lowe- OCD)
November 15, 2006





District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-101
May 27, 2004

Submit to appropriate District Office

☐ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

[1] Operator Name and Address	OGRID Number
NAVAJO RENING COMPANY	API Number 30 – 015-26575

Property Code	Property Name	Well No.
	WDW	3

Proposed Pool 1	Proposed Pool 2
NAVAJO INJECTION; PERMO-PENN	

Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
	I	18S	27E		2250 FWL		750 FSL		EDDY

[8] Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Additional Well Information

[11] Work Type Code	[12] Well Type Code	[13] Cable/Rotary	[14] Lease Type Code	[15] Ground Level Elevation
E	I	R		3609
[16] Multiple	**[17] Proposed Depth**	**[18] Formation**	**[19] Contractor**	**[20] Spud Date**
NO	9051'	CANYON		

Depth to Groundwater	Distance from nearest fresh water well	Distance from nearest surface water
UNKNOWN	1.25 MI TO 18.28.7.330	10 MILES

Pit: Liner: Synthetic ☐ ____mils thick Clay ☐ Pit Volume:_____bbls

Drilling Method:

Closed-Loop System ☐

Fresh Water ☐ Brine ☒ Diesel/Oil-based ☐ Gas/Air ☐

Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2"	13 3/8"	54.50#	400'	425 - CIRC	
12-1/4"	9 5/8"	36#	2604'	1025 - CIRC	
8-3/4"	7"	26# and 29#	9450'	1350 - CIRC	

[22] Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

ORIGINAL WELL NAME WAS CHALK BLUFF FEDERAL COM. NO. 1
WELL WILL BE PLUGGED BACK AND COMPLETED AS A CLASS I INJECTION WELL AS FOLLOWS:
DRILL OUT BRIDGE PLUG AT 7010' AND CLEAN OUT TO 7208';
INJECTION-TEST PERFORATIONS AT 7050'-7102', 7262'-7278' TO PLAN SQUEEZE CEMENT JOB;
DRILL OUT BRIDGE PLUGS AT 7208' AND 7294'. CLEAN OUT HOLE THROUGH PERFS AT 7304'-7314';
SQUEEZE-CEMENT PERFORATIONS AT 7050'-7102',7262'-7278', AND 7304'-7314';
DRILL OUT BRIDGE PLUG AT 7600' AND CLEAN OUT TO TOP OF LINER AT 9051';
RUN CBL/VDL AND CALIPER FROM 9051' TO SURFACE;
PERFORATE 8540'-8620' AND 7660'-8450';
RUN INJECTIVITY TEST, AND ACIDIZE IF NECESSARY;
RUN INJECTION/FALLOFF TEST;
RUN DIFFERENTIAL TEMPERATURE SURVEY;
RUN RADIOACTIVE TRACER SURVEY;
INSTALL INJECTION TUBING AND PACKER TO APPROX. 7600', AND
INSTALL WELL ANNULUS MONITORING EQUIPMENT, AND PREPARE FOR WELL INJECTION.

[23] I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOCD guidelines ☐, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.

Printed name: Darrell Moore
Title: Env. Mgr. for Water & Waste
E-mail Address: darrell.moore@navajo-refining.com
Date: 6/29/06 Phone: 505-746-5281

OIL CONSERVATION DIVISION

Approved by: Wayne Price
Title:
Approval Date: 8/11/06 Expiration Date: 8/11/07
Conditions of Approval Attached ☑ DISTRICT OFFICE MUST APPROVE CASING PROGRAM.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised June 10, 2003
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30 - 015 -26575		Navajo Injection; Permo-Penn

[4] Property Code	[5] Property Name	[6] Well Number
	WDW	3

[7] OGRID No.	[8] Operator Name	[9] Elevation
	Navajo Refining Company	3609' GL; 3625' KB

[10] Surface Location

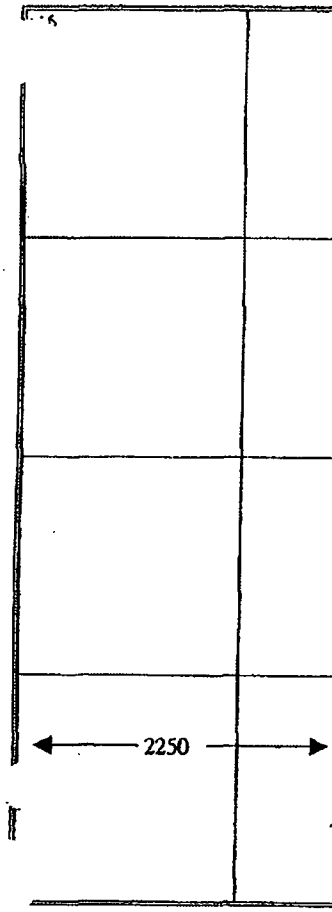
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	1	18S	27E		790	South	2250	West	Eddy

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: Darrell Moore

Printed Name: Darrell Moore

Title and E-mail Address: Env. Mgr. for Water & Waste darrell@navajo-refining.com

Date: 9/17/03

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number

REENTRY PROCEDURE

NAVAJO REFINING COMPANY'S WDW-3 (PROPOSED)

790'FSL and 2250' FWL, Section 1, T18S, R27E
Eddy County, New Mexico
Chalk Bluff Federal Com. No. 1, API No. 30-015-26575

All depths are in feet below well's original kelly bushing height (RKB) of 16 feet above ground level. The original KB elevation is 3625 feet above mean sea level. The ground level elevation is 3609 feet above mean sea level.

Tops of Geologic Formations (from RKB)

The base of the lowermost USDW is at 420 feet.

San Andres	1976 feet	Lower Wolfcamp	7303 feet
Yeso	4030 feet	Cisco	7650 feet
Abo	5380 feet	Canyon	8390 feet
Wolfcamp	6745 feet	Strawn	8894 feet

Depth of Plugs

7010 feet in 7-inch casing above perforations 7050 feet to 7102 feet
7208 feet in 7-inch casing above perforations 7262 feet to 7278 feet
7294 feet in 7-inch casing above perforations 7304 feet to 7314 feet
7600 feet in 7-inch casing above perforations 7676 feet to 7678 and 7826 feet to 7830 feet
9800 feet in 4-1/2-inch liner above perforations 9861 feet to 9967 feet

Anticipated Formation Pressure

The expected bottom-hole pressure is 3448 pounds per square inch absolute (psia) at 9000 feet, for a gradient of 0.383 pounds per square inch (psi) per foot, or an equivalent

mud weight of 7.36 pounds per gallon (ppg). The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-2, or 2813 psia, at 7570 feet. Navajo's WDW-2 is completed in the same interval proposed for WDW-3 and is located in 12-T18S-R27E, 3200 feet southwest of proposed WDW-3. The average specific gravity of the fluid in the Cisco and Canyon Formations is expected to be 1.025, which is the specific gravity of the fluid swabbed from WDW-2 in June 1999 from the interval between 7826 feet and 8399 feet. The expected bottom-hole pressure at 9000 feet in proposed WDW-3 is calculated below:

$$\begin{aligned} \text{BHP (9000 feet)} &= 2813 \text{ psia} + (9000 \text{ feet} - 7570 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.025 \\ &= 3448 \text{ psia} \end{aligned}$$

Reentry Procedure

1. Level location to accommodate a workover rig, pump, tanks, and ancillary equipment. Build a small working pit approximately 30 feet square and 3 feet deep with a plastic lining. Move in the rig, tank, shale shaker, and work string.

2. Install a 7-1/16-inch, 3000-psi double hydraulic blowout preventer (BOP) and a 7-1/16-inch, 3000-psi annular BOP (see Exhibit A for schematic). Pressure test the BOP stack and casing to 1500 psi for 30 minutes. Pick up a 6-1/8-inch bit, and sufficient 4-3/4-inch drill collars to drill out the cement plugs, on a 2-7/8-inch work string. Mix a tank of 8.5-ppg sodium chloride brine water for circulating fluid.

3. Run the bit to 7000 feet and circulate the wellbore fluid out of the casing into a frac tank for disposal. Drill out the cast iron bridge plug (CIBP), cement at 7010 feet, and clean out to the CIBP at 7208 feet. Circulate the hole clean and pump into the perforations from 7050 feet to 7102 feet to establish a rate and pressure for a pending squeeze cement job.

4. Drill out the CIBP at 7208 feet and clean out past the perforations from 7262 feet to 7278 feet and drill out the third CIBP at 7294 feet. Clean out below the perforations from 7304 feet to 7314 feet. Run a second injection test for injection rate and pressure comparison.

5. Pull the bit and run a retrievable squeeze packer on the work string. Set the packer at 7150 feet and test for communication between the perforations. Squeeze the perforations from 7262 feet to 7278 feet and 7304 feet to 7314 feet with approximately 100 sacks of neat cement (actual squeeze cement volume to be determined by the injection rate established previously), attempting to reach 1500 psi to 2000 psi squeeze pressure. Release the packer and reverse out any excess cement, then re-test the perforations to the squeeze pressure.

6. Re-set the packer at 6900 feet and squeeze the perforations from 7050 feet to 7102 feet as before.

7. Lay down the squeeze packer and drill out the cement to the CIBP at 7600 feet. Conduct a pressure test to 500 psi for 12 hours to confirm the squeeze cement will contain the annular fluid pressure required during injection operations.

8. Drill out the CIBP at 7600 feet and circulate to the top of the liner at 9051 feet. Circulate the casing clean with 8.5-ppg brine water. Pull the bit and lay down the drill collars.

9. Run a cement bond log with variable density (CBL/VDL) from the liner top to the surface, followed by a baseline multi-finger caliper log from the liner top to the surface.

10. Perforate the intervals 8540 feet to 8620 feet and 7660 feet to 8450 feet with 2 JSPF, using hollow steel carrier perforating guns.

11. Run the work string and retrievable packer to 7600 feet. Swab, or backflow, the perforated interval to recover a representative sample of the formation water for laboratory analysis. Monitor the recovered fluid for hydrogen sulfide.

12. Conduct a short injectivity test with 8.5-ppg brine water to determine the need for stimulation. If required, stimulate the perforations with acid (type and amount to be determined from injectivity results), followed by 500 barrels of 8.5-ppg brine water.

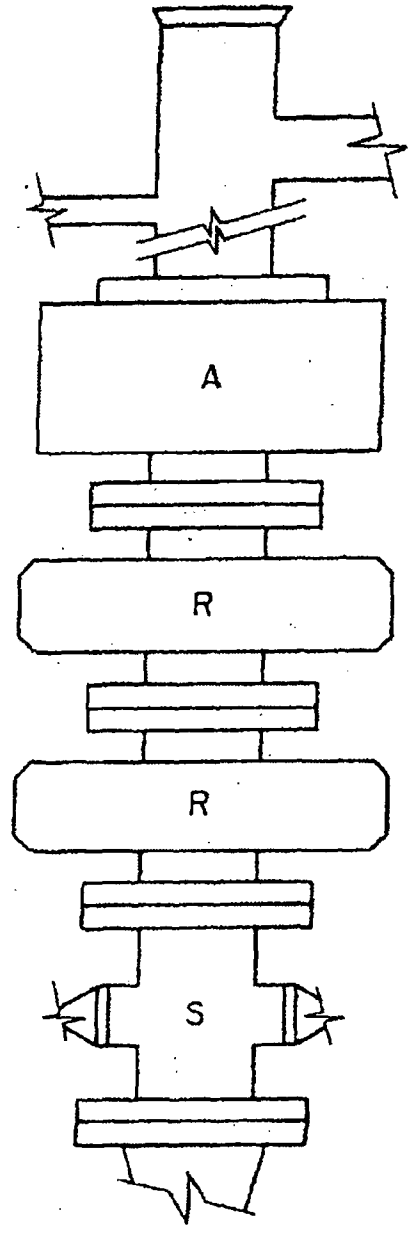
13. Pull the work string and lay it down. Run a surface readout pressure gauge, with memory backup, to 7600 feet. Conduct an injection test down the casing at 420 gallons per minute for 12 hours (7200 barrels). Shut the well in and record the pressure falloff for a minimum of 12 hours.

14. Pull the gauges and run a differential temperature survey from surface to 9100 feet. Run a radioactive tracer survey to demonstrate mechanical integrity.

15. Run a tubing conveyed injection packer on 4-1/2-inch, 11.60 lb/ft, K-55, LT&C, 8rd injection tubing. Set the packer at approximately 7600 feet. Fill the annular space with 8.5-ppg brine water containing oxygen scavenger and corrosion inhibitor. Land the injection tubing in the wellhead and install the upper section.

16. Pressure test the annulus as required by New Mexico regulations.

17. Install well annulus monitoring equipment and prepare the well for injection.



A = ANNULAR BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

R = RAM TYPE BLOWOUT PREVENTER
7-1/16", 3000 psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLETS
7-1/16", 3000 psi working pressure

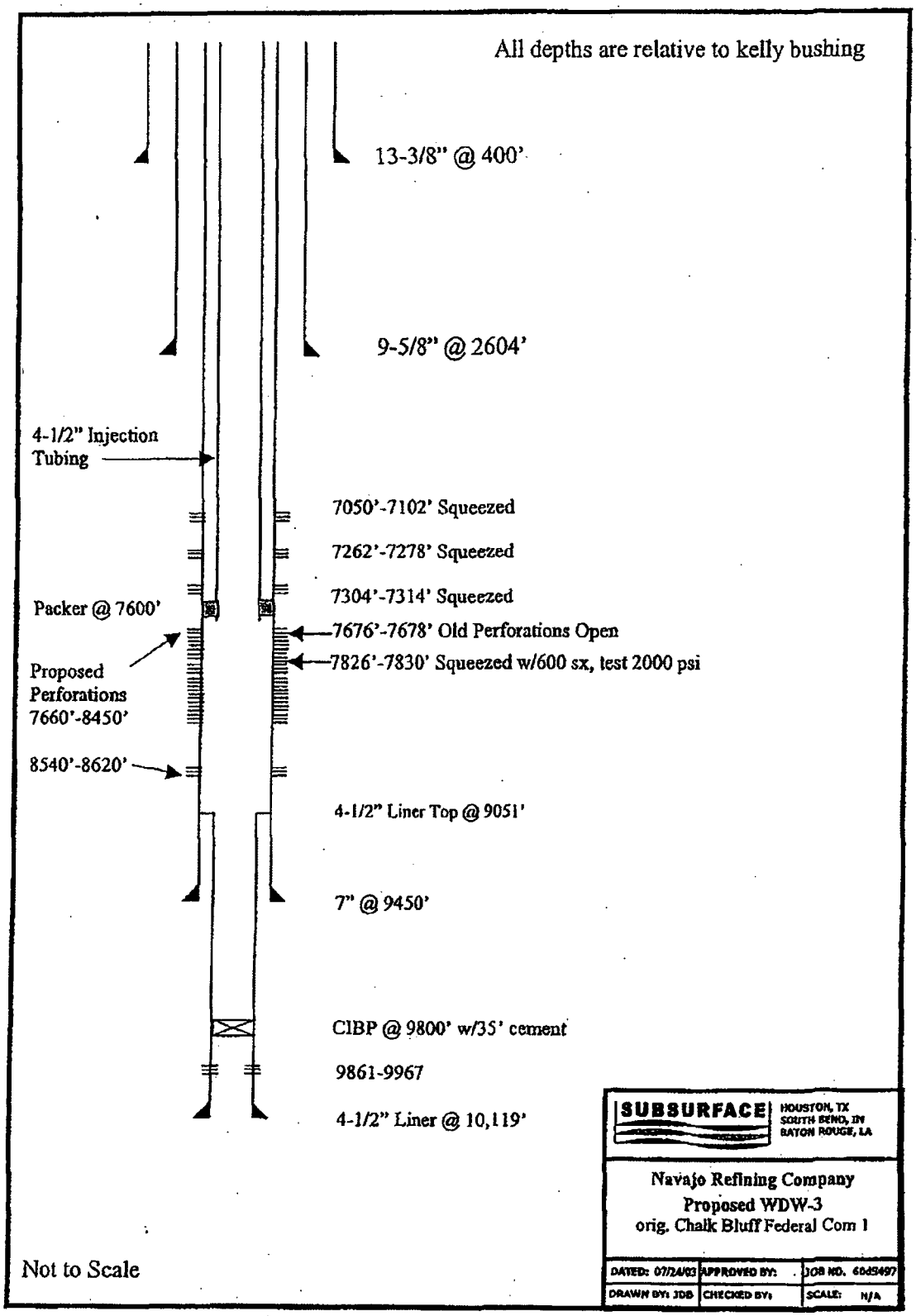
Manual Choke Manifold 2", 3000 psi working pressure

Source: API RP 53, Recommended Practices for Blowout Prevention EquipmentSystems

SUBSURFACE
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

Exhibit A
Blowout Preventer Minimum Requirements

DATE: 07/24/03	APPROVED BY:	JOB NO. 6035-107
DRAWN BY: JDB	CHECKED BY:	SCALE: N/A


All depths are relative to kelly bushing
13-3/8" @ 400'
9-5/8" @ 2604'
4-1/2" Injection Tubing
7050'-7102' Squeezed
7262'-7278' Squeezed
7304'-7314' Squeezed
Packer @ 7600'
7676'-7678' Old Perforations Open
7826'-7830' Squeezed w/600 sx, test 2000 psi
Proposed Perforations 7660'-8450'
8540'-8620'
4-1/2" Liner Top @ 9051'
7" @ 9450'
CIBP @ 9800' w/35' cement
9861-9967
4-1/2" Liner @ 10,119'
Not to Scale
SUBSURFACE
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA
Navajo Refining Company
Proposed WDW-3
orig. Chalk Bluff Federal Com 1
DATED: 07/24/03
APPROVED BY:
JOB NO. 6045497
DRAWN BY: JDB
CHECKED BY:
SCALE: N/A

SURFACE USE PLAN

NAVAJO REFINING COMPANY
PROPOSED WDW-3
790' FSL, 2250' FWL, 1-T 18S-R27E
EDDY COUNTY, NEW MEXICO

1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.

2. Access Roads To Be Constructed: No new access road is proposed.

3. Location of Existing Wells: Existing wells within one mile of proposed WDW-3 are shown on Exhibit B.

4. Location of Proposed Facilities If Well Is Completed: The well will be shut in after completion and testing.

5. Location and Type of Water Supply: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.

6. Source of Construction Materials: No construction materials will be required.

7. Methods of Handling Waste Disposal:

   A. Drill cuttings will be disposed of in the drilling pits.

   B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.

   C. Water produced during tests will be disposed of in the drilling pits.

   D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind.

   E. All trash and debris will be buried or removed from the wellsite after finishing drilling and/or completion operations.

8. Ancillary Facilities: None anticipated.

9. Wellsite Layout:

   A. The existing well pad will be leveled to accommodate a workover rig, pump, tanks, and ancillary equipment.

   B. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the uphill end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.

   C. The well pad will be surfaced with material found in place.

   D. A small working pit will be constructed to hold drilling fluids and cuttings. The approximate dimensions of the pit will be 30 feet x 30 feet x 3 feet.

   E. The working pit for drilling fluids and cuttings will be lined with 6-mil plastic.

10. Plans for Restoration of Surface:

   A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.

   B. Any unguarded pits containing fluids will be fenced until they are filled.

   C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.

   D. The stockpiled topsoil will be spread over the surface of the location.

11. Surface Ownership: U.S. Department of Interior, Bureau of Land Management.

12. Archaeological Survey: Navajo Refining Company is conducting an archeological survey. The report of the survey will be submitted by Navajo under separate cover.

13. Operator's Representatives: Representatives responsible for assuring compliance with the approved Surface Use Plan:

Mr. Darrell Moore
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505/748-3311

Mr. Jim Bundy
Subsurface Technology, Inc.
7020 Portwest Drive, Suite 100
Houston, Texas 77024
713/880-4640

Exhibits

A. Topographic Map
B. Oil and Gas Map

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

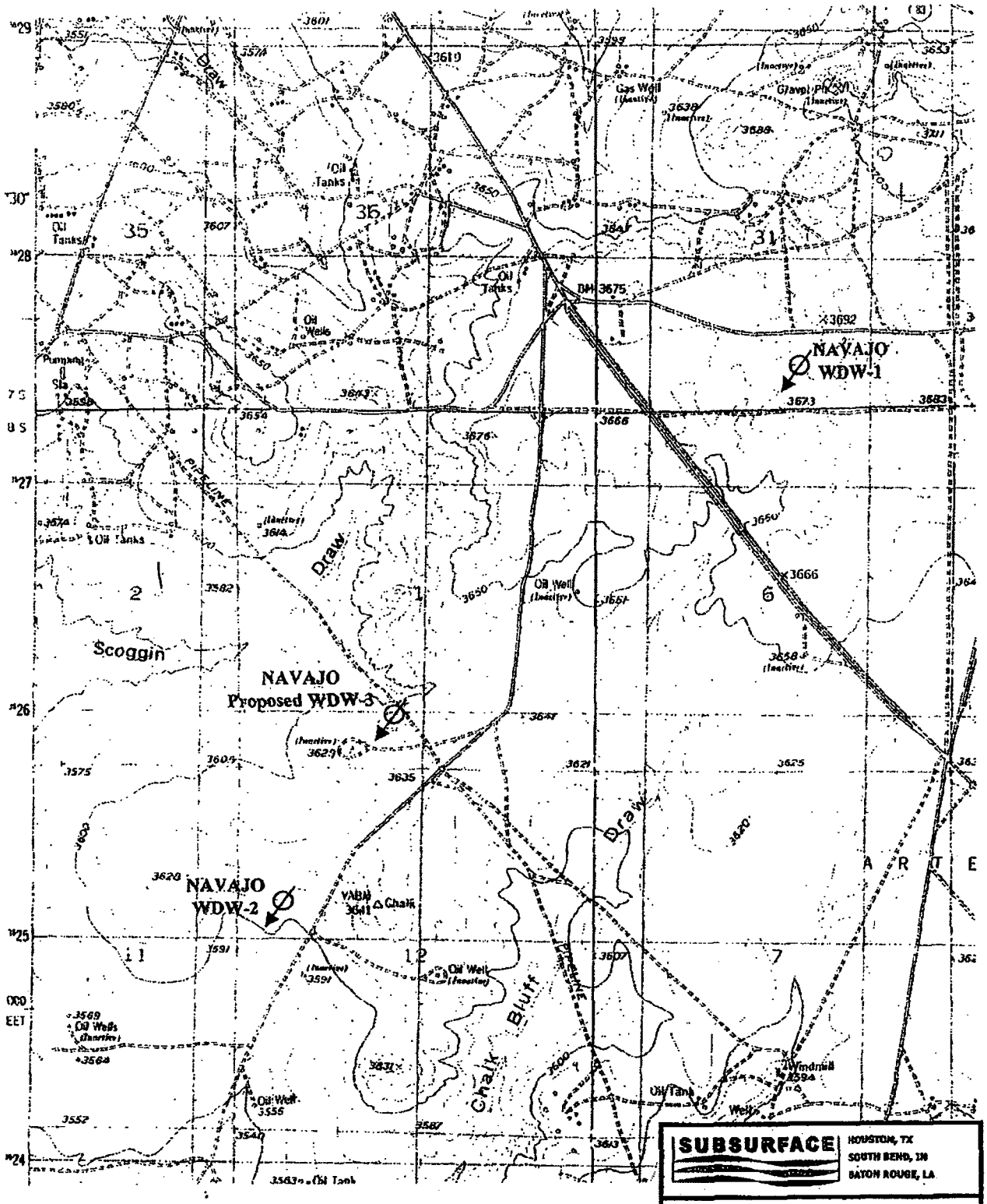
9/17/03
Date

Darrell Moore
Signature

Darrell Moore
Name

Env. Mgr. for Water + Waste
Title

Navajo Refining Company
Company


NAVAJO
WDW-1
NAVAJO
Proposed WDW-3
NAVAJO
WDW-2
Scoggin
Draw
Chalk Bluff
Oil Tanks
Oil Wells
Gas Well
Windmill
Oil Well
Pipeline
DM 3675
3692
3666
3673
3683
3658
3629
3620
3625
3635
3607
3591
3555
3569
3564
3552
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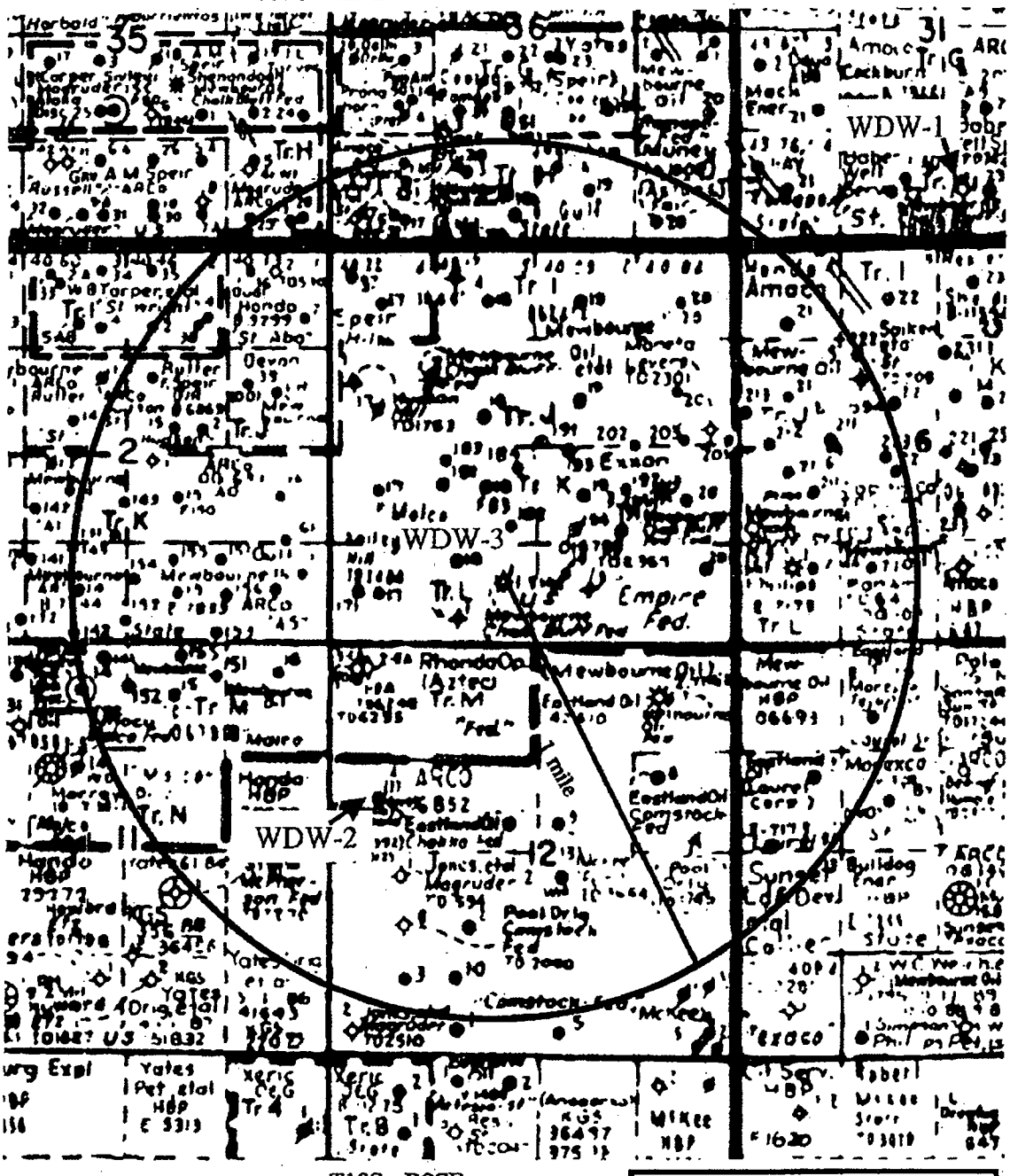
T17S - R27E

T17S - R28E



T18S - R27E

EDDY COUNTY, NM

SUBSURFACE	HOUSTON, TX SOUTH BEND, IN BATON ROUGE, LA

EXHIBIT B

WELLS WITHIN 1 MILE OF
NAVAJO REFINING COMPANY
PROPOSED WDW-3

DATED: 7/28/03	APPROVED BY: RLN	JOB NO. 6005407
DRAWN BY:	CHECKED BY:	SCALE: N/A

Map courtesy of Midland Map Company

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., Artesia, NM 88210
District III
00 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
May 27, 2004

WELL API NO.
30 – 015 - 26575

5. Indicate Type of Lease
STATE X FEE ☐

6. State Oil & Gas Lease No.
NM-0557371

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
WDW - 3

1. Type of Well: Oil Well ☐ Gas Well X Other

8. Well Number 3

2. Name of Operator
NAVAJO REFINING COMPANY

9. OGRID Number

3. Address of Operator
P.O. BOX 159, ARTESIA, NM 88211

10. Pool name or Wildcat

RECEIVED
OCD - ARTESIA

4. Well Location
Unit Letter ____: 790 feet from the SOUTH line and 2250 feet from the WEST line
Section 1 Township 18 south Range 27 East NMPM County Eddy

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
GR 3609', RKB 3625'

Pit or Below-grade Tank Application ☐ or Closure ☐

Pit type N/A Depth to Groundwater 100 FT Distance from nearest fresh water well 1 MILE Distance from nearest surface water 6 MILES

Pit Liner Thickness: N/A mil Below-Grade Tank: Volume N/A bbls; Construction Material N/A

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
OTHER: To complete a Class 1 non-hazardous waste well		OTHER: Well completion report to follow	X

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

See attached well summary document and well schematic.

MIT Witnessed by Carl Chavez
No Chart Submitted
JO.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Darrell Moore TITLE Env. Mgr. for Water & Waste DATE 1/18/07

Type or print name
For State Use Only

E-mail address: Telephone No.

Accepted for record
NMOCD JO.

APPROVED BY: TITLE DATE
Conditions of Approval (if any):

Submit To Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
District I
1625 N. French Dr., Hobbs, NM 88240
District II
W. Grand Avenue, Artesia, NM 88210
District III
Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-105
Revised June 10, 2003

WELL API NO.
30 – 015 - 26575

5. Indicate Type of Lease
STATE X FEE ☐

State Oil & Gas Lease No.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:
OIL WELL ☐ GAS WELL ☐ DRY ☐ OTHER Non-hazardous Waste Disposal Well

b. Type of Completion:
NEW WELL ☐ WORK OVER X DEEPEN ☐ PLUG BACK ☐ DIFF RESVR ☐ OTHER

RECEIVED
JAN 2008
OCD - ARTESIA

7. Lease Name or Unit Agreement Name
Waste Disposal Well / WDW - 3

2. Name of Operator
NAVAJO REFINING COMPANY

8. Well No. 3

3. Address of Operator
P.O. BOX 159, ARTESIA, NM 88211

9. Pool name or Wildcat

4. Well Location
Unit Letter _____ : 790 Feet From The SOUTH Line and 2250 Feet From The WEST Line

Section 1 Township 18 South Range 27 East NMPM County Eddy, NM

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF& RKB, RT, GR, etc.)	14. Elev. Casinghead
12/22/90	1/29/91	Injection 1/15/07	DF 3616 ft / GR 3609 ft	3609 ft

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools (Reentry Drill out CIBP Plugs with Swivel)	Cable Tools
10,119 ft	9020 ft	2			

19. Producing Interval(s), of this completion - Top, Bottom, Name
Injection Interval 7660 ft to 8450 ft Cisco & 8540 ft to 8620 ft Canyon

20. Was Directional Survey Made
No

21. Type Electric and Other Logs Run
CBL/VDL, Temperature, Caliper, Radioactive Tracer, Pressure

22. Was Well Cored
No

23. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	54.50	400'	17 ½"	425-CIRC	NONE
9 5/8"	36	2604'	12 ¼"	1025-CIRC	NONE
7"	29 & 26	9450'	8 ¾"	1350-CIRC	NONE

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
4 ½"	9051'	10,119'	175	NONE

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
4 ½"	7567'	7575'

26. Perforation record (interval, size, and number)

7660' TO 8450' / 0.5" / 2 JSPF / 60°
8540' TO 8620' / 0.5" / 2 JSPF / 60°

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
7050' TO 7102'	80 SKS PREM 14.8 PPG CMT SQZ PERF
7262' TO 7278'	100 SKS PREM 14.8 PPG CMT SQZ PERF
7304' TO 7314'	80 SKS PREM 14.8 PPG CMT SQZ PERF

28 PRODUCTION

Date First Production	Production Method *(Flowing, gas lift, pumping - Size and type pump)*	Well Status *(Prod. or Shut-in)*
(INJECTION WELL)	(INJECTION PUMP)	(SHUT-IN)

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
10/19/06	4 HOURS	NO CHOKE INJECT TEST	N/A	N/A	N/A	N/A	N/A

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - *(Corr.)*
MAX INJECT 1450 PSI	750 PSI	8 BPM	N/A	N/A	N/A	N/A

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*
NO GAS

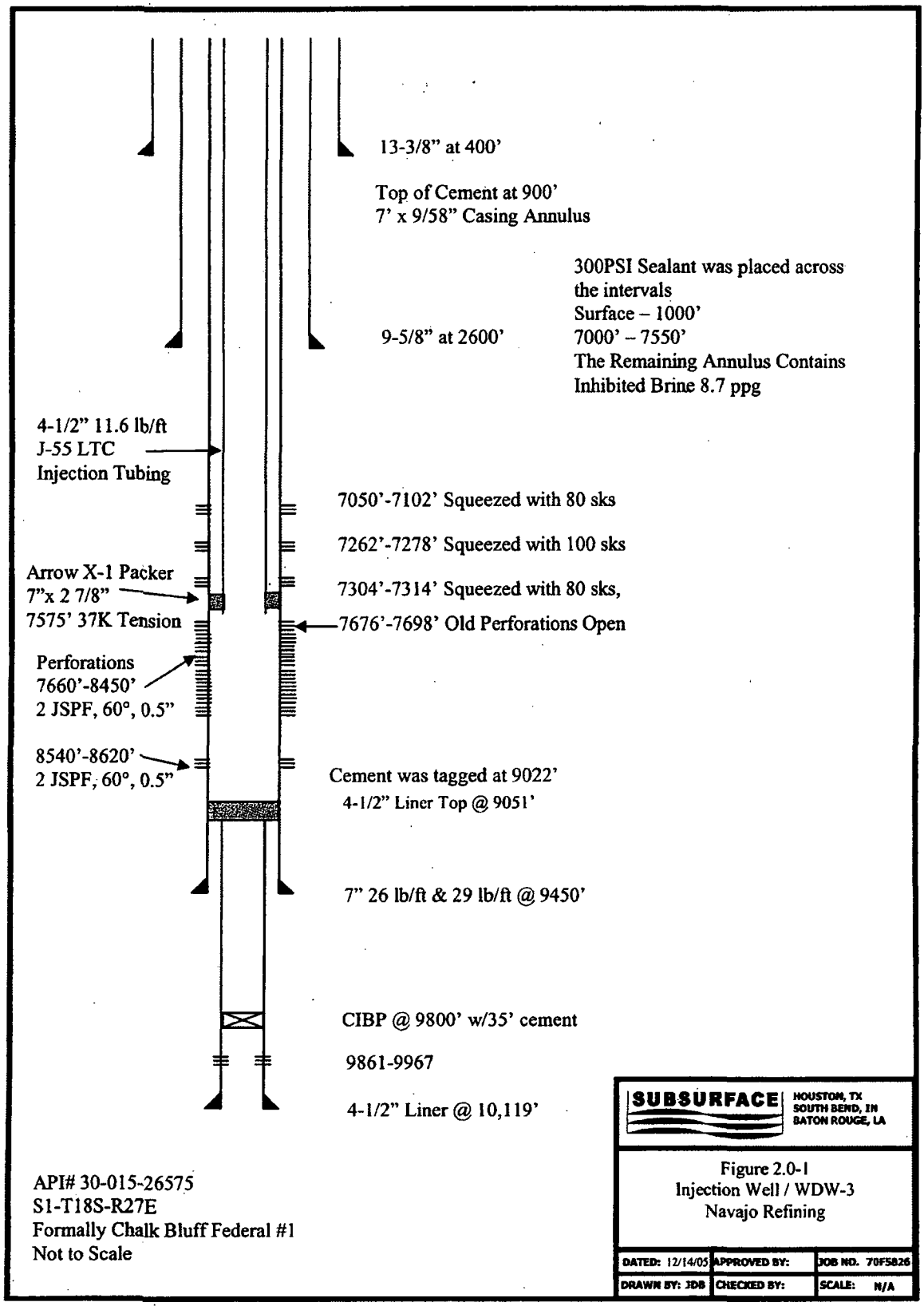
Test Witnessed By

30. List Attachments
WELL SUMMARY OF EVENTS, WELL WAS CONVERTED TO A CLASS 1 NON-HAZARDOUS WATER WASTE DISPOSAL WELL. A FULL REPORT WILL FOLLOW AT A LATER DATE.

31. *I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief*

Signature Darrell Moore Printed Name Darrell Moore Title Env. Mgr. Date 1/8/07

E-mail Address darrell.moore@navajo-refining.com


13-3/8" at 400'
Top of Cement at 900'
7' x 9/58" Casing Annulus
300PSI Sealant was placed across the intervals
Surface – 1000'
7000' – 7550'
The Remaining Annulus Contains Inhibited Brine 8.7 ppg
9-5/8" at 2600'
4-1/2" 11.6 lb/ft
J-55 LTC
Injection Tubing
7050'-7102' Squeezed with 80 sks
7262'-7278' Squeezed with 100 sks
Arrow X-1 Packer
7"x 2 7/8"
7575' 37K Tension
7304'-7314' Squeezed with 80 sks,
7676'-7698' Old Perforations Open
Perforations
7660'-8450'
2 JSPF, 60°, 0.5"
8540'-8620'
2 JSPF, 60°, 0.5"
Cement was tagged at 9022'
4-1/2" Liner Top @ 9051'
7" 26 lb/ft & 29 lb/ft @ 9450'
CIBP @ 9800' w/35' cement
9861-9967
4-1/2" Liner @ 10,119'
API# 30-015-26575
S1-T18S-R27E
Formally Chalk Bluff Federal #1
Not to Scale
SUBSURFACE
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA
Figure 2.0-1
Injection Well / WDW-3
Navajo Refining
DATED: 12/14/05
APPROVED BY:
JOB NO. 70F5826
DRAWN BY: JDB
CHECKED BY:
SCALE: N/A

Well Summary

Navajo Refining Company (Navajo) contracted Subsurface Technology, Inc. (Subsurface), to prepare an application for permit and to reenter a plugged and abandoned (P&A) oil and gas well. The Application for Permit to Drill or Reenter and the Sundry Notices and Reports on Wells was submitted to the Department of the Interior, Bureau of Land Management (BLM), on June 29, 2006 and approved. The Application for Permit to Drill, Re-enter, Deepen, Plug Back, or add a Zone was submitted to the State of New Mexico Oil Conservation Commission (OCD) on June 29, 2006 and approved.

Subsurface prepared an engineering plan to reenter the P&A'ed oil and gas well formally owned by Mewbourne Oil Company. The original well name was Caulk Bluff Federal #1 (API number 30-015-26575), and a Change of Operator application was submitted to the OCD on December 5, 2000 and approved under the well name of WDW-3. Under contract to Navajo, Subsurface commenced field operations on September 25, 2006. The existing location was cleared and prepared for reentry operations. An earthen lined reserve pit was dug to catch returns. All depths unless stated are referenced to rig floor at six feet to seven feet above ground level. The rig floor was moved from six feet to seven feet after drilling out the cast iron bridge plugs.

A workover rig and reverse unit was placed on location and the existing wellhead was removed. The first cast iron bridge plug (CIBP) at 7010 feet was drilled and the perforated interval from 7050 feet to 7102 feet was squeezed off with neat cement and successfully pressured tested to six hundred eighty pounds per square inch gauge pressure (680 psig). The second and third CIBP at 7190 feet and 7279 feet was drilled. There appeared to be ten feet of cement on top of the third CIBP. The perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314 feet was squeezed with neat cement. The squeezed interval was pressure tested to 920 psig and would not hold. A second cement squeeze was performed across the perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314. The interval was pressured tested to 630 psig and continued to lose pressure at a rate of two pounds per square inch every thirty minutes (2 psi/30 min). The fourth CIBP at 7595 feet was drilled and at 7838 feet a cement plug was encountered and drilled through. Cement was tagged twenty nine (29) feet above the top of the liner at 9022 feet. The hole was circulated clean and prepared for logging.

A Cement Bond Log (CBL), Variable Density Log (VDL), caliper log, and temperature survey were performed. The CBL/VDL showed that the top of the cement (TOC) behind the 7-inch casing was located 900 feet from the surface. The OCD was notified and approved the existing well condition. The casing was perforated from 7660 feet to 8450 feet and from 8540 feet to 8620 feet at 2-JSPF on sixty degree (60°) phasing.

A packer was set at 7546 feet with 2 7/8-inch PH-6 tubing, the well was swabbed back and samples of the formation fluid were recovered. It was estimated that two hundred twenty six barrels (226 bbls) of formation fluid was returned to the surface. A pressure test on the annulus between the 7-inch and 2 7/8-inch was performed at 660 psig with the annulus losing pressure at a rate of 8 psi/hr.

An injection test was performed on the well down the 2 7/8-inch tubing with the annulus open to the bottom of the well. The open annulus will allow for the calculation of the bottom hole pressure while pumping down the 2 7/8-inch tubing with out the influence of tubing friction pressure on the bottom hole calculations. The injection rates were from two barrels per minute (2 bpm) to ten barrels per minute (10 bpm). From the data collected during the injection test it appears that the well will be able to accept an injection rate up to 10 bpm at the permitted pressure of 1550 psig with 4 1/2-inch, 11.6 pound per foot (11.6 lb/ft) tubing in the wellbore.

At the request of the OCD, Subsurface went back into the wellbore with a retrievable bridge plug (RBP) to test the casing and isolate any leaks to within 1000 feet. The RBP was set at 7550 feet and the packer was set at 6985 feet to isolate the squeezed interval from 7050 feet to 7314 feet. The squeezed interval was pressure tested to 490 psig and the annulus to 632 psig. The squeezed interval was losing pressure at a rate of 6 psi/hr and the annulus was gaining pressure due to thermal affects. The RBP was moved up the wellbore to 1255 feet and casing pressure tested to 569 psig. The casing above 1255 feet was losing pressure at a rate of 2 psi/hr. The casing leaks were isolated to the squeezed interval from 7050 feet to 7314 feet and in the interval from surface to 1255 feet. The OCD was called and approved the 300PSI sealing application to stop the casing leaks across the two intervals.

The 4 1/2-inch tubing was run into the wellbore and the Arrow X-1 packer was set at 7575.73 feet with 37,000 lbs of tension. Prior to running the 4 1/2-inch tubing a new Superior hanging spool was installed. Prior to setting the tubing packer, the annulus between the 4 1/2-inch tubing and the 7-inch casing was filled with inhibited brine, with the 300psi sealant across the squeezed perforations and across the upper section of the 7-inch casing. Once the packer was set and casing hung off in the spool a new Superior wellhead was installed and the P-seals were pressure tested to 3000 psig. After the wellhead was assembled the annulus was squeezed at 545 psig for four hours (4 hrs) as specified by the sealant manufacture representative on site. The annulus was then pressure tested to 480 psig overnight with no pressure loss. Workover rig was disassembled and moved off location with all associated equipment.

A 12 hr pump in and falloff test was performed down the 4 1/2-inch tubing. To maintain a surface injection pressure that was below the permitted pressure of 1550 psi the injection rate was lowered to 9 bpm at the end of the pump in procedure. The BHP gauge was placed at 8630 feet for 14 hrs to monitor BHP, when the gauge was pulled five minute (5 min) gradient stops were made every 1000 feet with the first stop at 7000 feet. The analysis of the data showed interference from the adjacent injection wells, which skewed the results for determination of the skin and possibly the permeability. The equipment used to perform the falloff testing was moved off location to prepare for mechanical integrity testing (MIT).

The MIT was performed and witnessed by the OCD. The MIT consisted of an annulus pressure test, and a radioactive tracer survey. The temperature survey was performed during the CBL/VDL logging event and will be used as a baseline for any future temperature surveys. The annulus pressure test was performed at 530 psia and lost 2.5 psi over a one hour period, which was within the OCD requirements of five percent (5%)

over a 30 min time interval. The radioactive tracer survey showed no signs of fluid flow out of the permitted interval above 7650 feet. The OCD witnessed the annular pressure test and the first half of the radioactive tracer survey.

The annulus monitoring system was installed and tested. The well was turned over to Navajo for injection.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-144
June 1, 2004

For drilling and production facilities, submit to appropriate NMOCD District Office.
For downstream facilities, submit to Santa Fe office

Month - Year
FEB 15 2007
OCD - Artesia, NM

Pit or Below-Grade Tank Registration or Closure

Is pit or below-grade tank covered by a "general plan"? Yes ☐ No ☑
Type of action: Registration of a pit or below-grade tank ☐ Closure of a pit or below-grade tank ☑

Operator: Navajo Refining Company Telephone: (505) 748-3311 e-mail address:
Address: 501 East Main Street Artesia NM 88210
Facility or well name: WDW #3 API #: 30-015-26575 U/L or Qtr/Qtr Sec 1 T 18S R 27E
County: Eddy Latitude Longitude NAD: 1927 ☐ 1983 ☐
Surface Owner: Federal ☒ State ☐ Private ☐ Indian ☐

Pit	Below-grade tank
Type: Drilling ☑ Production ☐ Disposal ☐ Workover ☐ Emergency ☐ Lined ☑ Unlined ☐ Liner type: Synthetic ☑ Thickness 12 mil Clay ☐ Pit Volume ____ bbl	Volume: ____ bbl Type of fluid: ____ Construction material: ____ Double-walled, with leak detection? Yes ☐ If not, explain why not.

Depth to ground water (vertical distance from bottom of pit to seasonal high water elevation of ground water.)	Less than 50 feet 50 feet or more, but less than 100 feet 100 feet or more	(20 points) (10 points) (0 points)	10
Wellhead protection area: (Less than 200 feet from a private domestic water source, or less than 1000 feet from all other water sources.)	Yes No	(20 points) (0 points)	0
ance to surface water: (horizontal distance to all wetlands, playas, ation canals, ditches, and perennial and ephemeral watercourses.)	Less than 200 feet 200 feet or more, but less than 1000 feet 1000 feet or more	(20 points) (10 points) (0 points)	0
	Ranking Score (Total Points)		10

If this is a pit closure: (1) Attach a diagram of the facility showing the pit's relationship to other equipment and tanks. (2) Indicate disposal location: (check the onsite box if your are burying in place) onsite ☐ offsite ☒ If offsite, name of facility CRI. (3) Attach a general description of remedial action taken including remediation start date and end date. (4) Groundwater encountered: No ☒ Yes ☐ If yes, show depth below ground surface ____ ft. and attach sample results.
(5) Attach soil sample results and a diagram of sample locations and excavations.

Additional Comments: Navajo Refining Company Plans to close Drilling pit on the WDW #3 As per New Mexico Oil Conservation Division rule 50 in the Pit and Below grade tank Guidelines. Navajo Plans to remove all fluids and Drill cuttings. All cuttings will be taken to a N.M.O.C.D. Approved site for Disposal and Backfill with onsite stockpiled soils. We Will Notify O.C.D 48 hours Prior to Beginning work.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. **I further certify that the above-described pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☒, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.**

Date: 2/14/06
Printed Name/Title Chad Hill-Agent Signature Chad Hill

Your certification and NMOCD approval of this application/closure does not relieve the operator of liability should the contents of the pit or tank contaminate ground water or otherwise endanger public health or the environment. Nor does it relieve the operator of its responsibility for compliance with any other federal, state, or local laws and/or regulations.

roval:
ed Name/Title Jim W. Gum District II Supervisor Signature Date: 2/12/07

RECEIVED
JAN 2007
OCD - ARTESIA

Form 3160-4
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

FORM APPROVED
OMB NO. 1004-0137
Expires: March 31, 2007

1a. Type of Well ☑ Oil Well ☐ Gas Well ☐ Dry ☐ Other
b. Type of Completion: ☐ New Well ☑ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr,.
Other

5. Lease Serial No. NM - 0557371
6. If Indian, Allottee or Tribe Name N/A
7. Unit or CA Agreement Name and No.
8. Lease Name and Well No. WDW - 3
9. AFI Well No. 30 - 015 - 26575
10. Field and Pool, or Exploratory
11. Sec., T., R., M., on Block and Survey or Area SI - T18S - R27E
12. County or Parish EDDY
13. State NM

2. Name of Operator NAVAJO REFINING COMPANY

3. Address P.O. BOX 159, ARTESIA, NM 88211

3a. Phone No. *(include area code)*

4. Location of Well *(Report location clearly and in accordance with Federal requirements)**

At surface 790' FROM THE SOUTH LINE AND 2250' FROM THE WEST LINE

At top prod. interval reported below 7650' AT THE SAME LOCATION AS ABOVE

At total depth PLUG BACK 10,119' AT THE SAME LOCATION AS ABOVE

14. Date Spudded	15. Date T.D. Reached	16. Date Completed	17. Elevations (DF, RKB, RT, GL)*
12/22/1990	01/29/1991	☐ D & A ☐ Ready to Prod.	3689'

18. Total Depth:	19. Plug Back T.D.:	20. Depth Bridge Plug Set:
MD 10,119'	MD 9022'	MD CMT 9051'-9022'
TVD 10,119'	TVD 9022'	TVD CMT 9051'-9022'

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CBL/VDL, MULI-ARM CALIPER, TEMP, RADIOACTIVE TRACER (2006)

22. Was well cored? ☑ No ☐ Yes (Submit analysis)
Was DST run? ☑ No ☐ Yes (Submit report)
Directional Survey? ☑ No ☐ Yes (Submit copy)

23. Casing and Liner Record *(Report all strings set in well)*

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17 1/2"	13 3/8"	54.5	SURF	400'	400'	425 CLASS C		SURF	NONE
12 1/4"	9 5/8"	36	SURF	2604'	2604'	1025 "C"		SURF	NONE
8 3/4"	7"	29 & 26	SURF	9450'	9450'	1350 "H"		900'	NONE
6 1/4"	4 1/2"		9051'	10,119'	10,119'	175 CLASS H		9051'-TOL	NONE

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4 1/2"	7567'	7567'						

25. Producing Intervals / 26. Perforation Record

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) CISCO	7650'	8450'	7660' - 8450'	0.5"	1580	2 JSPF / 60°
B) CANYON	8540'	8620'	8540' - 8620'	0.5"	160	2 JSPF / 60°
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
7050' - 7102'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7262' - 7278'	100 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7304' - 7314'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATIONS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
									NON-HAZARDOUS CLASS I WELL
Choke Size	**Tbg. Press. Flwg. SI**	**Csg. Press.**	**24 Hr. Rate →**	**Oil BBL**	**Gas MCF**	**Water BBL**	**Gas/Oil Ratio**	**Well Status**	
									WAITING ON STATE APPROVAL TO INJECT

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
									NON-HAZARDOUS CLASS I WELL
Choke Size	**Tbg. Press. Flwg. SI**	**Csg. Press.**	**24 Hr. Rate →**	**Oil BBL**	**Gas MCF**	**Water BBL**	**Gas/Oil Ratio**	**Well Status**	
									WAITING ON STATE APPROVAL TO INJECT

(See instructions and spaces for additional data on page 2)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*

N/A (NON-HAZARDOUS CLASS I WELL)

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth

32. Additional remarks (include plugging procedure):

THE PLUGGED AND ABONDONED WELL WAS AQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM. THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH CEMENT AT 7050' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'. A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'. MIT WAS WITNESSED BY OCD.

(SEE ATTACHED WELL SUMMARY FOR MORE DETAILS)

33. Indicate which itmes have been attached by placing a check in the appropriate boxes:

☑ Electrical/Mechanical Logs (1 full set req'd.) ☐ Geologic Report ☐ DST Report ☐ Directional Survey

☑ Sundry Notice for plugging and cement verification ☐ Core Analysis ☐ Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name *(please print)* Darrell Moore Title Env. Mgr for Western Waste

Signature Darrell Moore Date 1/24/07

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Form 3160-4
(April 2004)

JAN 27 2007
RECEIVED
OCD - ARTESIA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: March 31, 2007

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No. NM - 0557371

1a. Type of Well ☑ Oil Well ☐ Gas Well ☐ Dry ☐ Other
b. Type of Completion ☐ New Well ☑ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr.,
Other

6. If Indian, Allottee or Tribe Name: N/A

7. Unit or CA Agreement Name and No.

2. Name of Operator: NAVAJO REFINING COMPANY

8. Lease Name and Well No.: WDW - 3

3. Address: P.O. BOX 159, ARTESIA, NM 88211

3a. Phone No. (include area code)

9. API Well No.: 30 - 015 - 26575

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface: 790' FROM THE SOUTH LINE AND 2250' FROM THE WEST LINE

At top prod. interval reported below: 7650' AT THE SAME LOCATION AS ABOVE

At total depth: PLUG BACK 10,119' AT THE SAME LOCATION AS ABOVE

10. Field and Pool, or Exploratory

11. Sec., T., R., M., on Block and Survey or Area: S1 - T18S - R27E

12. County or Parish: EDDY

13. State: NM

14. Date Spudded	15. Date T.D. Reached	16. Date Completed	17. Elevations (DF, RKB, RT, GL)*
12/22/1990	01/29/1991	☐ D & A ☐ Ready to Prod.	3689'

18. Total Depth:	19. Plug Back T.D.:	20. Depth Bridge Plug Set:
MD 10,119'	MD 9022'	MD CMT 9051'-9022'
TVD 10,119'	TVD 9022'	TVD CMT 9051'-9022'

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)

CBL/VDL, MULI-ARM CALIPER, TEMP, RADIOACTIVE TRACER (2006)

22. Was well cored? ☑ No ☐ Yes (Submit analysis)
Was DST run? ☑ No ☐ Yes (Submit report)
Directional Survey? ☑ No ☐ Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17 1/2"	13 3/8"	54.5	SURF	400'	400'	425 CLASS C		SURF	NONE
12 1/4"	9 5/8"	36	SURF	2604'	2604'	1025 "C"		SURF	NONE
8 3/4"	7"	29 & 26	SURF	9450'	9450'	1350 "H"		900'	NONE
6 1/4"	4 1/2"		9051'	10,119'	10,119'	175 CLASS H		9051'-TOL	NONE

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4 1/2"	7567'	7567'						

25. Producing Intervals / 26. Perforation Record

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) CISCO	7650'	8450'	7660' - 8450'	0.5"	1580	2 JSPF / 60°
B) CANYON	8540'	8620'	8540' - 8620'	0.5"	160	2 JSPF / 60°
C)						
D)						

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
7050' - 7102'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7262' - 7278'	100 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7304' - 7314'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATIONS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
									NON-HAZAROUS CLASS I WELL
Choke Size	**Tbg. Press. Flwg. SI**	**Csg. Press.**	**24 Hr. Rate →**	**Oil BBL**	**Gas MCF**	**Water BBL**	**Gas/Oil Ratio**	**Well Status**	
									WAITING ON STATE APPROVAL TO INJECT

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
									NON-HAZAROUS CLASS I WELL
Choke Size	**Tbg. Press. Flwg. SI**	**Csg. Press.**	**24 Hr. Rate →**	**Oil BBL**	**Gas MCF**	**Water BBL**	**Gas/Oil Ratio**	**Well Status**	
									WAITING ON STATE APPROVAL TO INJECT

(See instructions and spaces for additional data on page 2)

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*

N/A (NON-HAZARDOUS CLASS I WELL)

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth

32. Additional remarks (include plugging procedure):

THE PLUGGED AND ABONDONED WELL WAS AQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM. THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH CEMENT AT 7050' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'. A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'. MIT WAS WITNESSED BY OCD.

(SEE ATTACHED WELL SUMMARY FOR MORE DETAILS)

33. Indicate which itmes have been attached by placing a check in the appropriate boxes:

☑ Electrical/Mechanical Logs (1 full set req'd.) ☐ Geologic Report ☐ DST Report ☐ Directional Survey

☑ Sundry Notice for plugging and cement verification ☐ Core Analysis ☐ Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name *(please print)* Darrell Moore Title Env. Mgr for Waters Waste

Signature Darrell Moore Date 1/24/07

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

OCD-ARTESIA

Form 3160-5
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: March 31, 2007

RECEIVED
MAR - 5 2007
OCD - ARTESIA, NM

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE- Other instructions on reverse side.

1. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other	5. Lease Serial No. NM-0557371
2. Name of Operator NAVAJO REFINIG COMPANY	6. If Indian, Allottee or Tribe Name N/A
3a. Address P.O. BOX 159, ARTESIA, NM 88211	3b. Phone No. *(include area code)*
4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)* S1 - T18S - R27E ; 790' FROM THE SOUTH LINE AND 2250' FROM THE WEST LINE	7. If Unit or CA/Agreement, Name and/or No. 8. Well Name and No. WDW-3 9. API Well No. 30 - 015 - 26575 10. Field and Pool, or Exploratory Area 11. County or Parish, State EDDY

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☑ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☑ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☑ Other NON-HAZARDOUS CLASS I WELL
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☑ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

THE PLUGGED AND ABONDONED WELL WAS AQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM.

10/1/06 -THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH NEAT CEMENT AT 7050' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'.

10/13/06 - RAN CBL/VDL AND TEMPERATURE SURVEY, PERFORATED INTERVAL FROM 7650' TO 8450' AND FROM 8540' TO 8620'.

10/24/06 - A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'.

11/4/06 - PERFROMED AN INJECTION/FALLOFF TEST ON THE WELL AT 9 TO 10 BPM.

11/15/06 - MECHANICALLY INTEGRITY TEST WERE PERFORMED AND WITNESSED BY THE OCD. THE MECHANICALLY INTEGRITY TEST CONSISTED OF RADIOACTIVE TRACER TEST AND AN ANNULUS PRESSURE TEST. (SEE THE ATTACHED WELL SUMMARY FOR MORE DETAILS.)

SUBJECT TO LIKE APPROVAL BY STATE

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)* Darrell Moore — Title Env. Mgr. for Water & Waste

Signature Darrell Moore — Date 1/24/07

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

ACCEPTED FOR RECORD

Approved by	Title	Date FEB 28 2007
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.	Office	

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

FREDERICK WRIGHT
PETROLEUM ENGINEER

(Instructions on page 2)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13 - Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C.396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3 - 4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

This information is being collected to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer, (WO-630), Mail Stop 401 LS, 1849 C St., N.W., Washington D.C. 20240

SUNDRY NOTICE SPECIAL STIPULATIONS

1. **Approval is granted for the water disposal method presented in the sundry subject to the following conditions:**

2. The operator must provide a water analysis of the water to be injected, together with a copy of the disposal permit granted by the state.

****** Approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.**

Engineering
can be reached at 505-706-2779 for any variances that might be necessary.

F Wright 2/28/07

OCD-ARTESIA

Form 3160-4
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: March 31, 2007

Month - Year - 5 2007 ARTESIA, NM

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No. NM - 0557371

1a. Type of Well ☐ Oil Well ☐ Gas Well ☐ Dry ☐ Other
b. Type of Completion: ☐ New Well ☑ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr,.
Other

6. If Indian, Allottee or Tribe Name: N/A

7. Unit or CA Agreement Name and No.

2. Name of Operator: NAVAJO REFINING COMPANY

8. Lease Name and Well No.: WDW - 3

3. Address: P.O. BOX 159, ARTESIA, NM 88211

3a. Phone No. (include area code)

9. API Well No.: 30 - 015 - 26575

4. Location of Well (Report location clearly and in accordance with Federal requirements)*

At surface: 790' FROM THE SOUTH LINE AND 2250' FROM THE WEST LINE

At top prod. interval reported below: 7650' AT THE SAME LOCATION AS ABOVE

At total depth: PLUG BACK 10,119' AT THE SAME LOCATION AS ABOVE

10. Field and Pool, or Exploratory

11. Sec., T., R., M., on Block and Survey or Area: S1 - T18S - R27E

12. County or Parish: EDDY

13. State: NM

14. Date Spudded: 12/22/1990

15. Date T.D. Reached: 01/29/1991

16. Date Completed ☐ D & A ☐ Ready to Prod.

17. Elevations (DF, RKB, RT, GL)*: 3609'

18. Total Depth: MD 10,119' TVD 10,119'

19. Plug Back T.D.: MD 9022' TVD 9022'

20. Depth Bridge Plug Set: MD CMT 9051'-9022' TVD CMT 9051'-9022'

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CBL/VDL, MULI-ARM CALIPER, TEMP, RADIOACTIVE TRACER (2006)

22. Was well cored? ☑ No ☐ Yes (Submit analysis)
Was DST run? ☑ No ☐ Yes (Submit report)
Directional Survey? ☑ No ☐ Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sks. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17 1/2"	13 3/8"	54.5	SURF	400'	400'	425 CLASS C		SURF	NONE
12 1/4"	9 5/8"	36	SURF	2604'	2604'	1025 "C"		SURF	NONE
8 3/4"	7"	29 & 26	SURF	9450'	9450'	1350 "H"		900'	NONE
6 1/4"	4 1/2"		9051'	10,119'	10,119'	175 CLASS H		9051'-TOL	NONE

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4 1/2"	7567'	7567'						

25. Producing Intervals / 26. Perforation Record

	Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A)	CISCO	7650'	8450'	7660' - 8450'	0.5"	1580	2 JSPF / 60°
B)	CANYON	8540'	8620'	8540'- 8620'	0.5"	160	2 JSPF / 60°
C)							
D)							

27. Acid, Fracture, Treatment, Cement Squeeze, etc.

Depth Interval	Amount and Type of Material
7650' - 7102'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7262' - 7278'	100 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATION
7304' - 7314'	80 SKS PREM 14.8 PPG NEAT CMT FOR PERF SQZ ON PREVIOUS PERFORATIONS

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
									NON-HAZAROUS CLASS I WELL

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status
								WAITING ON STATE APPROVAL TO INJECT

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
									NON-HAZAROUS CLASS I WELL

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status
								WAITING ON STATE APPROVAL TO INJECT

(See instructions and spaces for additional data on page 2)

ACCEPTED FOR RECORD
FEB 28 2007
FREDERICK WRIGHT
PETROLEUM ENGINEER

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production →	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate →	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status

29. Disposition of Gas *(Sold, used for fuel, vented, etc.)*

N/A (NON-HAZARDOUS CLASS I WELL)

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth

32. Additional remarks (include plugging procedure):

THE PLUGGED AND ABONDONED WELL WAS AQUIRED FROM MEWBOURNE OIL COMPANY BY NAVAJO REFINING. NAVAJO RECOMPLETED THE WELL FOR INJECTING NON-HAZARDOUS WASTE WATER FROM THEIR REFINERY IN ARTESIA, NM. THE EXISTING PLUGS WERE DRILLED OUT TO THE TOP OF THE LINER PLUG AT 9022' AND THE EXISTING PERFORATIONS WERE SQUEEZED OFF WITH CEMENT AT 7050' TO 7102', 7262' TO 7278', AND FROM 7304' TO 7314'. A 4 1/2" 11.6 #/FT TUBING STRING WAS SET WITH A TENSION PACKER AT 7568' AND BOTTOM OF PACKER AT 7575'. MIT WAS WITNESSED BY OCD.

(SEE ATTACHED WELL SUMMARY FOR MORE DETAILS)

33. Indicate which items have been attached by placing a check in the appropriate boxes:

☑ Electrical/Mechanical Logs (1 full set req'd.) ☐ Geologic Report ☐ DST Report ☐ Directional Survey
☑ Sundry Notice for plugging and cement verification ☐ Core Analysis ☐ Other:

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name *(please print)* Darrell Moore Title Env. Mgr for Water & Waste

Signature Darrell Moore Date 1/24/07

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

INSTRUCTIONS

GENERAL: This form is designed for submitting a complete and correct well completion/recompletion report and log on all types of wells on Federal and Indian leases to a Federal agency, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal office.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, and all types electric), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal laws and regulations. All attachments should be listed on this form, see item 33.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal office for specific instructions.

ITEM 17: Indicate which reported elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

ITEM 23: Show how reported top(s) of cement were determined, i.e. circulated (CIR), or calculated (CAL), or cement bond log (CBL), or temperature survey (TS).

PRIVACY ACT

The Privacy Act of 1974 and the regulation in 43 CFR 2.48 (d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. et seq.; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is to be used to evaluate the actual operations performed in the drilling, completing and testing of a well on a Federal or Indian lease.

ROUTINE USES: (1) Evaluate the equipment and procedures used during the drilling and completing/recompleting of a well. (2) The review of geologic zones and formation encountered during drilling. (3) Analyze future applications to drill in light of data obtained and methods used. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this report and disclosure of the information is mandatory once a well drilled on a Federal or Indian lease is completed/recompleted.

The Paperwork Reduction Act of 1995 requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling and completing/recompleting wells on Federal and Indian oil and gas leases.

This information will be used to analyze operations and to compare equipment and procedures actually used with those proposed and approved.

Response to this request is mandatory only if the operator elects to initiate drilling and completing/recompleting operations on an oil and gas lease.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 60 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer, (WO-630), MS 401 LS, 1849 C Street, N.W., Washington, D.C. 20240.

Well Summary

Navajo Refining Company (Navajo) contracted Subsurface Technology, Inc. (Subsurface), to prepare an application for permit and to reenter a plugged and abandoned (P&A) oil and gas well. The Application for Permit to Drill or Reenter and the Sundry Notices and Reports on Wells was submitted to the Department of the Interior, Bureau of Land Management (BLM), on June 29, 2006 and approved. The Application for Permit to Drill, Re-enter, Deepen, Plug Back, or add a Zone was submitted to the State of New Mexico Oil Conservation Commission (OCD) on June 29, 2006 and approved.

Subsurface prepared an engineering plan to reenter the P&A'ed oil and gas well formally owned by Mewbourne Oil Company. The original well name was Caulk Bluff Federal #1 (API number 30-015-26575), and a Change of Operator application was submitted to the OCD on December 5, 2000 and approved under the well name of WDW-3. Under contract to Navajo, Subsurface commenced field operations on September 25, 2006. The existing location was cleared and prepared for reentry operations. An earthen lined reserve pit was dug to catch returns. All depths unless stated are referenced to rig floor at six feet to seven feet above ground level. The rig floor was moved from six feet to seven feet after drilling out the cast iron bridge plugs.

A workover rig and reverse unit was placed on location and the existing wellhead was removed. The first cast iron bridge plug (CIBP) at 7010 feet was drilled and the perforated interval from 7050 feet to 7102 feet was squeezed off with neat cement and successfully pressured tested to six hundred eighty pounds per square inch gauge pressure (680 psig). The second and third CIBP at 7190 feet and 7279 feet was drilled. There appeared to be ten feet of cement on top of the third CIBP. The perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314 feet was squeezed with neat cement. The squeezed interval was pressure tested to 920 psig and would not hold. A second cement squeeze was performed across the perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314. The interval was pressured tested to 630 psig and continued to lose pressure at a rate of two pounds per square inch every thirty minutes (2 psi/30 min). The fourth CIBP at 7595 feet was drilled and at 7838 feet a cement plug was encountered and drilled through. Cement was tagged twenty nine (29) feet above the top of the liner at 9022 feet. The hole was circulated clean and prepared for logging.

A Cement Bond Log (CBL), Variable Density Log (VDL), caliper log, and temperature survey were performed. The CBL/VDL showed that the top of the cement (TOC) behind the 7-inch casing was located 900 feet from the surface. The OCD was notified and approved the existing well condition. The casing was perforated from 7660 feet to 8450 feet and from 8540 feet to 8620 feet at 2-JSPF on sixty degree (60°) phasing.

A packer was set at 7546 feet with 2 7/8-inch PH-6 tubing, the well was swabbed back and samples of the formation fluid were recovered. It was estimated that two hundred twenty six barrels (226 bbls) of formation fluid was returned to the surface. A pressure test on the annulus between the 7-inch and 2 7/8-inch was performed at 660 psig with the annulus losing pressure at a rate of 8 psi/hr.

An injection test was performed on the well down the 2 7/8-inch tubing with the annulus open to the bottom of the well. The open annulus will allow for the calculation of the bottom hole pressure while pumping down the 2 7/8-inch tubing with out the influence of tubing friction pressure on the bottom hole calculations. The injection rates were from two barrels per minute (2 bpm) to ten barrels per minute (10 bpm). From the data collected during the injection test it appears that the well will be able to accept an injection rate up to 10 bpm at the permitted pressure of 1550 psig with 4 1/2-inch, 11.6 pound per foot (11.6 lb/ft) tubing in the wellbore.

At the request of the OCD, Subsurface went back into the wellbore with a retrievable bridge plug (RBP) to test the casing and isolate any leaks to within 1000 feet. The RBP was set at 7550 feet and the packer was set at 6985 feet to isolate the squeezed interval from 7050 feet to 7314 feet. The squeezed interval was pressure tested to 490 psig and the annulus to 632 psig. The squeezed interval was losing pressure at a rate of 6 psi/hr and the annulus was gaining pressure due to thermal affects. The RBP was moved up the wellbore to 1255 feet and casing pressure tested to 569 psig. The casing above 1255 feet was losing pressure at a rate of 2 psi/hr. The casing leaks were isolated to the squeezed interval from 7050 feet to 7314 feet and in the interval from surface to 1255 feet. The OCD was called and approved the 300PSI sealing application to stop the casing leaks across the two intervals.

The 4 1/2-inch tubing was run into the wellbore and the Arrow X-1 packer was set at 7575.73 feet with 37,000 lbs of tension. Prior to running the 4 1/2-inch tubing a new Superior hanging spool was installed. Prior to setting the tubing packer, the annulus between the 4 1/2-inch tubing and the 7-inch casing was filled with inhibited brine, with the 300psi sealant across the squeezed perforations and across the upper section of the 7-inch casing. Once the packer was set and casing hung off in the spool a new Superior wellhead was installed and the P-seals were pressure tested to 3000 psig. After the wellhead was assembled the annulus was squeezed at 545 psig for four hours (4 hrs) as specified by the sealant manufacture representative on site. The annulus was then pressure tested to 480 psig overnight with no pressure loss. Workover rig was disassembled and moved off location with all associated equipment.

A 12 hr pump in and falloff test was performed down the 4 1/2-inch tubing. To maintain a surface injection pressure that was below the permitted pressure of 1550 psi the injection rate was lowered to 9 bpm at the end of the pump in procedure. The BHP gauge was placed at 8630 feet for 14 hrs to monitor BHP, when the gauge was pulled five minute (5 min) gradient stops were made every 1000 feet with the first stop at 7000 feet. The analysis of the data showed interference from the adjacent injection wells, which skewed the results for determination of the skin and possibly the permeability. The equipment used to perform the falloff testing was moved off location to prepare for mechanical integrity testing (MIT).

The MIT was performed and witnessed by the OCD. The MIT consisted of an annulus pressure test, and a radioactive tracer survey. The temperature survey was performed during the CBL/VDL logging event and will be used as a baseline for any future temperature surveys. The annulus pressure test was performed at 530 psia and lost 2.5 psi over a one hour period, which was within the OCD requirements of five percent (5%)

over a 30 min time interval. The radioactive tracer survey showed no signs of fluid flow out of the permitted interval above 7650 feet. The OCD witnessed the annular pressure test and the first half of the radioactive tracer survey.

The annulus monitoring system was installed and tested. The well was turned over to Navajo for injection.

LOGGING SERVICES

R/A TRACER LOG INTERPRETATION

11/27/2006

PLANT: NAVAJO REFINING CO.
C/O: SUBSURFACE TECHNOLOGY
WELL NAME: CHALK BLUFF FEDERAL # 1 WDW # 3

RE: Radioactive Tubing & Packer Survey ran on 11/18/2006

A Pre Base Log was run from 9020' to 7350' to detect and record background gamma counts.

Iodine 131 was then ejected at a depth of 7375' and pumped down the tubing and into the permitted interval. Overlapping logging passes tracked the R/A tracer material as it moved down in the wellbore. The R/A material was seen traveling down the tubing, past the packer, and exiting the permitted injection interval.

The flow profile log was then repeated and this survey also showed R/A material going out into the permitted interval.

Two Stationary Time Drive surveys were run with the tool at 7640'. No indications of upward migration were recorded.

A Post Base log was then run from 9016' to 7342' and noted that all R/A material was flushed out of the wellbore into the permitted interval.

John Croce

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GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
BR 2221
API #30-015-26575
WDW #3
Navajo
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Cnd 570#
Annual
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(Dynamic)
Low pass
Chevron
8/5/2008
Dilc-8
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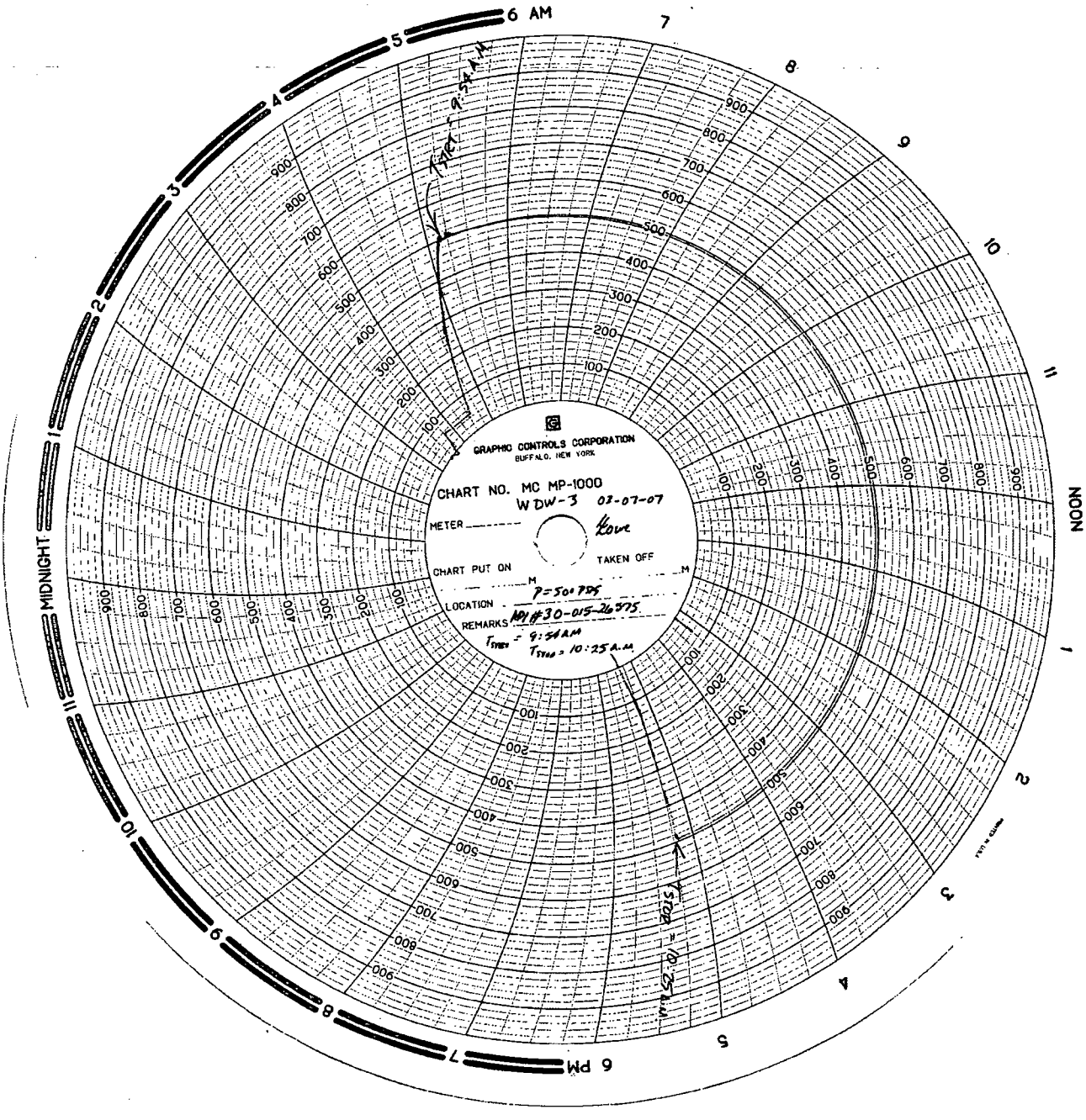
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GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
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API #30-015-26575
T start = 9:54 AM
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Time 9:54 AM
Pipe 0 PSI

Oil Conservation Division, Environmental Bureau
C/O: Carl Chavez
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test June 30, 2010 Operator Navajo Refining API #30-015-26575

Property Name WDW Injecting Well No. 3 Location: Unit O Section 1 Township 18S Range 27E

Well Status ~~(Shut-In or Producing)~~ Tubing ___ Intermediate ___ Casing ___ Bradenhead ___

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

TIME	PRESSURES: BRADENHEAD	INTERMEDIATE	CASING
5 minutes	0	0	
10 minutes	N/A	N/A	
15 minutes	N/A	N/A	
20 minutes	N/A	N/A	
25 minutes	N/A	N/A	
30 minutes	N/A	N/A	

	BRADENHEAD FLOWED	INTERMEDIATE FLOWED
Steady Flow	N/A	N/A
Surges	N/A	N/A
Down to Nothing	immediately	immediately
Nothing	X	X
Gas	N/A	N/A
Gas & Water	N/A	N/A
Water	N/A	N/A

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR ___ FRESH ___ SALTY ___ SULFUR ___ BLACK ___

5 MINUTE SHUT-IN BRADENHEAD 0 INTERMEDIATE 0

REMARKS:

Both the surface and intermediate bradenheads were opened one at a time. Both had a puff of air upon opening the valve (from heat build-up) and then nothing. No flow. No pressure.

By Darrell Moore Darrell Moore Witness ___

Env. Mgr. for Water & Waste Navajo Refining
(Position)

E-mail address darrell.moore@hollycorp.com

MIDNIGHT
6 A.M.
NOON
6 P.M.
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
BR 2221

Chavez, Carl J, EMNRD

From: Moore, Darrell [Darrell.Moore@hollycorp.com]
Sent: Friday, March 05, 2010 8:51 AM
To: Chavez, Carl J, EMNRD
Subject: WDW-3 Qtrl MIT

Carl

Attached, please find the chart for the MIT we did on our WDW-3 on February 24, 2010. We also opened the did a bradenhead test and there was no sustained pressure. There was a slight puff but it dissipated quickly and can be attributed to temperature changes.

If there are any questions concerning this submission, please call me at 575-746-5281.

Darrell Moore

Environmental Manager for Water and Waste

Navajo Refining Company, LLC

Phone Number 575-746-5281

Cell Number 575-703-5058

Fax Number 575-746-5451

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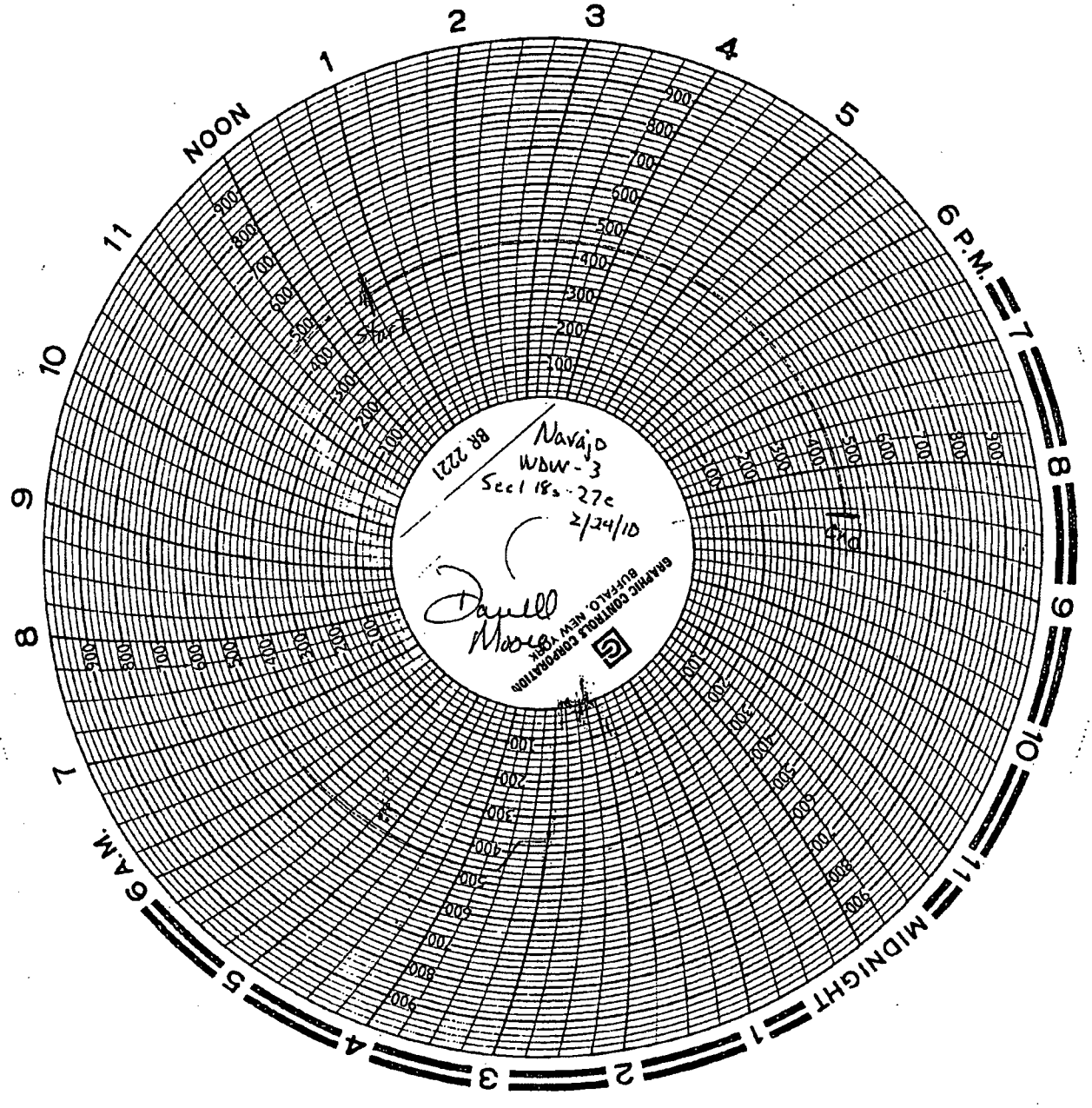
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GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK

Chavez, Carl J, EMNRD

rom: Chavez, Carl J, EMNRD
Sent: Tuesday, July 06, 2010 9:04 AM
To: 'Moore, Darrell'
Subject: RE: Sewer Testing

Darrell:

Thanks for the notification.

Also, the OCD needs Navajo to complete the quarterly Bradenhead information on the form provided to you last week for our records. Let me know if you have any questions. Staff in Artesia questioned the 30 minutes in the form, and I determine that Navajo just needs to use the form to document compliance with our quarterly Bradenhead testing requirement for WDW-3. The MITs for Class I Wells need to be completed by 9/30/2010 along with Annual Fall-Off Test. OCD can use the MIT pressure chart for WDW-3 to satisfy the MIT requirement this season.

Please contact me if you have questions. Thanks.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

---

rom: Moore, Darrell [mailto:Darrell.Moore@hollycorp.com]
Sent: Tuesday, July 06, 2010 7:24 AM
To: Chavez, Carl J, EMNRD
Subject: Sewer Testing

Carl

We will be testing sewers in the Vacuum Unit at the Artesia Refinery on Friday July 9, 2010 starting at 8 am. If OCD would like to witness let me know.

Darrell Moore
Environmental Manager for Water and Waste
Navajo Refining Company, LLC
Phone Number 575-746-5281
Cell Number 575-703-5058
Fax Number 575-746-5451

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Oil Conservation Division, Environmental Bureau
C/O: Carl Chavez
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

BRADENHEAD TEST REPORT

(Submit 2 copies to above address)

Date of Test June 30, 2010 Operator Navajo Refining API #30-015-26575

Property Name WDW Injecting Well No. 3 Location: Unit O Section 1 Township 18S Range 27E

Well Status ~~(Shut-In or Producing)~~ Tubing ___ Intermediate ___ Casing ___ Bradenhead ___

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

TIME	PRESSURES: BRADENHEAD	INTERMEDIATE	CASING
5 minutes	0	0	
10 minutes	N/A	N/A	
15 minutes	N/A	N/A	
20 minutes	N/A	N/A	
25 minutes	N/A	N/A	
30 minutes	N/A	N/A	

	BRADENHEAD FLOWED	INTERMEDIATE FLOWED
Steady Flow	N/A	N/A
Surges	N/A	N/A
Down to Nothing	immediately	immediately
Nothing	X	X
Gas	N/A	N/A
Gas & Water	N/A	N/A
Water	N/A	N/A

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR ___ FRESH ___ SALTY ___ SULFUR ___ BLACK ___

5 MINUTE SHUT-IN BRADENHEAD 0 INTERMEDIATE 0

REMARKS:

Both the surface and intermediate bradenheads were opened one at a time. Both had a puff of air upon opening the valve (from heat build-up) and then nothing. No flow. No pressure.

By Darrell Moore Darrell Moore Witness ___

Env. Mgr. for Water & Waste Navajo Refining
(Position)

E-mail address darrell.moore@hollycorp.com

Chavez, Carl J, EMNRD

From: Moore, Darrell [Darrell.Moore@hollycorp.com]
Sent: Wednesday, June 30, 2010 1:47 PM
To: Chavez, Carl J, EMNRD; Dade, Randy, EMNRD
Subject: FW:
Attachments: WDW-3.pdf

Gentlemen,

Attached, please find the quarterly MIT for Navajo's WDW-3 Injection well located in Sec 1, 18 south 27 east. If there are any questions concerning this submission, please call me at 575-746-5281.

From: Hernandez, Carrie
Sent: Wednesday, June 30, 2010 1:44 PM
To: Moore, Darrell
Subject:

Carrie Hernandez
Environmental Administrative Assistant
Navajo Refining Co. LLC
Direct Line 575-748-6733
Direct Fax 575-746-5451
Life is a Journey. Roll down the Windows and Enjoy the Breeze

---

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GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
BR 2221

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised August 1, 2011

WELL API NO.
30-015-26575

5. Indicate Type of Lease
STATE ☒ FEE ☐

6. State Oil & Gas Lease No.
NM-0557371

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
Gaines WDW-3

1. Type of Well: Oil Well ☐ Gas Well ☐ Other **Injection Well**

8. Well Number **WDW-3**

2. Name of Operator
Navajo Refining Company

9. OGRID Number

3. Address of Operator
Post Office Box 159, Artesia, New Mexico 88211

10. Pool name or Wildcat: **Navajo Permo-Penn**

4. Well Location
Unit Letter **N** : **790** feet from the **South** line and **2250** feet from the **West** line
Section **01** Township **18S** Range **27E** NMPM County **Eddy**

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3609' GL, ' RKB

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
OTHER: **PERFORM PRESSURE FALLOFF TEST** ☒		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

December 12, 2011 –Install bottomhole gauges into WDW-1, WDW-2, and WDW-3 by 11:45am. Continue injection into all three wells.
December 13, 2011 – Continue injection into all three wells.
December 14, 2011 – At 12:15pm, the offset wells WDW-1 and WDW-2 will be shut-in. A constant injection rate will be established for WDW-3 and continue for a 30 hour injection period. Do not exceed 1000 psig wellhead pressure.
December 15, 2011 – At 7:00pm, WDW-3 will be shut in for a 30-hour falloff period. WDW-1 and WDW-2 will remain shut-in.
December 16, 2011 – All three wells will continue to be shut in while monitoring falloff pressure in all three wells.
December 17, 2011 – At 7:00am, acquire downhole pressure gauges from all three wells. Tag bottom of fill and come out of hole very slowly, making 7-minute gradient stops while coming out of WDW-3 every 1000 feet (7000 ft, 6000 ft, 5000 ft, 4000 ft, 3000 ft, 2000 ft, 1000 ft, surface). Run in hole with a temperature tool and conduct temperature survey from the surface to the top of the fill. Turn the wells back to Navajo personnel.

Spud Date: | Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011

Type or print name Timothy Jones E-mail address: tjones@subsurfacegroup.com PHONE: 713-880-4640

For State Use Only

APPROVED BY: Carl J. Chesney TITLE Environmental Engineer DATE 10/19/2011

Conditions of Approval (if any):

See E-mail conditions dated 10/19/2011 attached to WDW-1.

Chavez, Carl J, EMNRD

ɔm: Chavez, Carl J, EMNRD
ɔent: Wednesday, October 19, 2011 4:06 PM
To: 'Moore, Darrell'
Cc: Sanchez, Daniel J., EMNRD; VonGonten, Glenn, EMNRD; Dade, Randy, EMNRD
Subject: Navajo Refining Company UIC Class I (NH) Injection Wells WDWs 1, 2 & 3 (UICI-008) Fall Off Test Plan (August 2011)

Darrell:

The New Mexico Oil Conservation Division (OCD) is in receipt of your above subject test plan. OCD has already approved the Fall-Off Test (FOT) Plan with conditions on July 28, 2009. The OCD notes that it is also in the process of reviewing C-103s Sundry Notices for the upcoming FOTs.

OCD observes some changes in this FOT Plan submittal that are not acceptable to the OCD. For example, Exhibit 1 is not an acceptable exhibit to the OCD for reasons specified in the 2010 FOT report review and later during the May 2011 meeting in Santa Fe. However, the operator continues to submit exhibits with certain assumptions that have not been accepted or approved by the OCD, i.e., that the injection wells are show interconnection with the injection zone during past FOTs. Perhaps the operator can conduct the 2011 FOT with the information and exhibits needed to prove the interconnection of injection wells with the injection zone? The Certified PE should provide the exhibits in the 2011 FOT Report with the analysis and conclusions supporting any claims for the OCD to review and consider before approving. This is apparently a FOT frequency per well issue that the operator is attempting to prove.

The OCD provides the following comments, observations, and/or recommendations on the above subject plan below.

Comments:

- The OCD approved the original Fall-Off Test (FOT) Plan based on OCD Guidance dated December 3, 2007. There should not be any significant changes to this FOT Plan because it is flexible where needed to allow operators to implement it on each injection well.
- OCD likes to be notified to witness the installation of bottom hole gauges and to be present at least one hour before injection shut-off and commencement of FOT monitoring.
- OCD is concerned about the Section VI No. 1(e) WDW-3 Cement Bond Log quality being poor from 900 ft. to 1200 ft- especially at the depths: 2662 – 2160; 4876 – 5372; and 6750 – 7600 ft. micro annulus scenario.

Observations:

- Section V No. 2: The objective of the FOT is NOT to achieve or limit a 100 psig pressure differential before vs. after FOT injection vs. shut-off, but it is a minimum pressure differential that OCD stipulates in its guidance for a successful FOT and injection zone that may still continue to be utilized for disposal, i.e., not too pressured up and subject to continued fracturing under daily allowed maximum surface injection pressure operational limits.
- Section V No. 7 and Exhibit 1: OCD observes a bottom hole pressure chart for WDWs 1, 2 and 3 at 7660 feet that the operator presented in the 2010 FOT and again during a May 2011 meeting in Santa Fe, New Mexico to show the interconnection between injection wells and the injection formation. The OCD had commented that there was no explanation or conclusion provided from the Certified PE who conducted and completed the 2010 FOT report that supports the operator's claim that all injection wells are interconnected based on Exhibit 1.

  Furthermore, the OCD requested a statement or information supporting the operator's claim by the Certified PE, but never received one. At the meeting, the OCD explained that based on Exhibit 1, there was no support for the claim. In order to make the interconnection determination, during each FOT at each well and off-set injection wells (WDWs not being FOT'd) before and throughout the FOT would need bottom hole pressures monitored in tandem at each well location to establish the interconnectivity of the injection wells with the receiving injection formation under a uniform time scale. This would be a chart that could be plotted that would show during the test the interconnectivity of the wells for each FOT. The OCD doubts that the operator can make the case for interconnectivity between injection wells and injection formation because of the significant distance between the injection wells and fact that sedimentation in formation varies laterally and uniformity in sedimentation, saturated porosity and permeability due to variation in sedimentation would by chance make the injection formation aerially extensive and uniform over a 3 to 5 mile radius from each injection well. Also, even if by chance there was

uniformity over the mileage specified, the distance between injection wells and corresponding pressure would likely not be observed.
- Exhibit 6: OCD observes in Section B a proposed MIT once every 5 years. OCD's UIC Program requires annual MITs and/or after down hole work is performed on a well.

Recommendations:

- Operator is running survey logs to the bottom of fill or below USDW (fresh water) zones, which excludes an evaluation of casing in the fresh water zone. Please run logs up to surface.
- Be sure to also record and provide injection flow rate and pressure leading up to shut-off and monitoring throughout the FOT monitoring period. OCD needs to confirm that a pseudo steady-state condition was achieved before shut-off. This data is also needed for software modeling of the FOT.
- Please provide electronic data from the FOTs at each well in order for the OCD to run its software model to confirm the results in the report.
- Section V No. 13: Surface pressure monitoring and Horner Plot during injection should be used to confirm radial flow condition is achieved instead of waiting a set period if operator wishes to reduce the injection period.

Disclaimer: *Please be advised that OCD has already approved with conditions Navajo Refining Company's Fall-Off Test (FOT) Plan on July 28, 2009, and is not providing approval of this FOT Plan; however, comments, observations and recommendations herein should help Navajo Refining Company understand the OCD's concerns based on the submittal.*

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
New Mexico Energy, Minerals & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
Office: (505) 476-3490
Fax: (505) 476-3462
E-mail: CarlJ.Chavez@state.nm.us
'ebsite: http://www.emnrd.state.nm.us/ocd/
Vhy not Prevent Pollution; Minimize Waste; Reduce the Cost of Operations; & Move Forward with the Rest of the Nation?" To see how, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Submit 1 Copy To Appropriate District Office
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State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised August 1, 2011

WELL API NO. **30-015-26575**	
5. Indicate Type of Lease STATE ☒ FEE ☐	
6. State Oil & Gas Lease No. **NM-0557371**	
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)	7. Lease Name or Unit Agreement Name **Gaines WDW-3**
1. Type of Well: Oil Well ☐ Gas Well ☐ Other **Injection Well**	8. Well Number **WDW-3**
2. Name of Operator **Navajo Refining Company**	9. OGRID Number
3. Address of Operator **Post Office Box 159, Artesia, New Mexico 88211**	10. Pool name or Wildcat: **Navajo Permo-Penn**
4. Well Location Unit Letter **N** : **790** feet from the **South** line and **2250** feet from the **West** line Section **01** Township **18S** Range **27E** NMPM County **Eddy**	
11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* **3609' GL,' RKB**	

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
OTHER: **PERFORM PRESSURE FALLOFF TEST** ☒		OTHER: ☐	

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KDade 10/11/11
Accepted for record
NMOCD

RECEIVED
OCT 07 2011
NMOCD ARTESIA

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Timothy Jones TITLE Project Engineer DATE 10/3/2011

Type or print name Timothy Jones E-mail address: tjones@subsurfacegroup.com PHONE: 713-880-4640

For State Use Only

APPROVED BY:_____ TITLE_____ DATE_____

Conditions of Approval (if any):

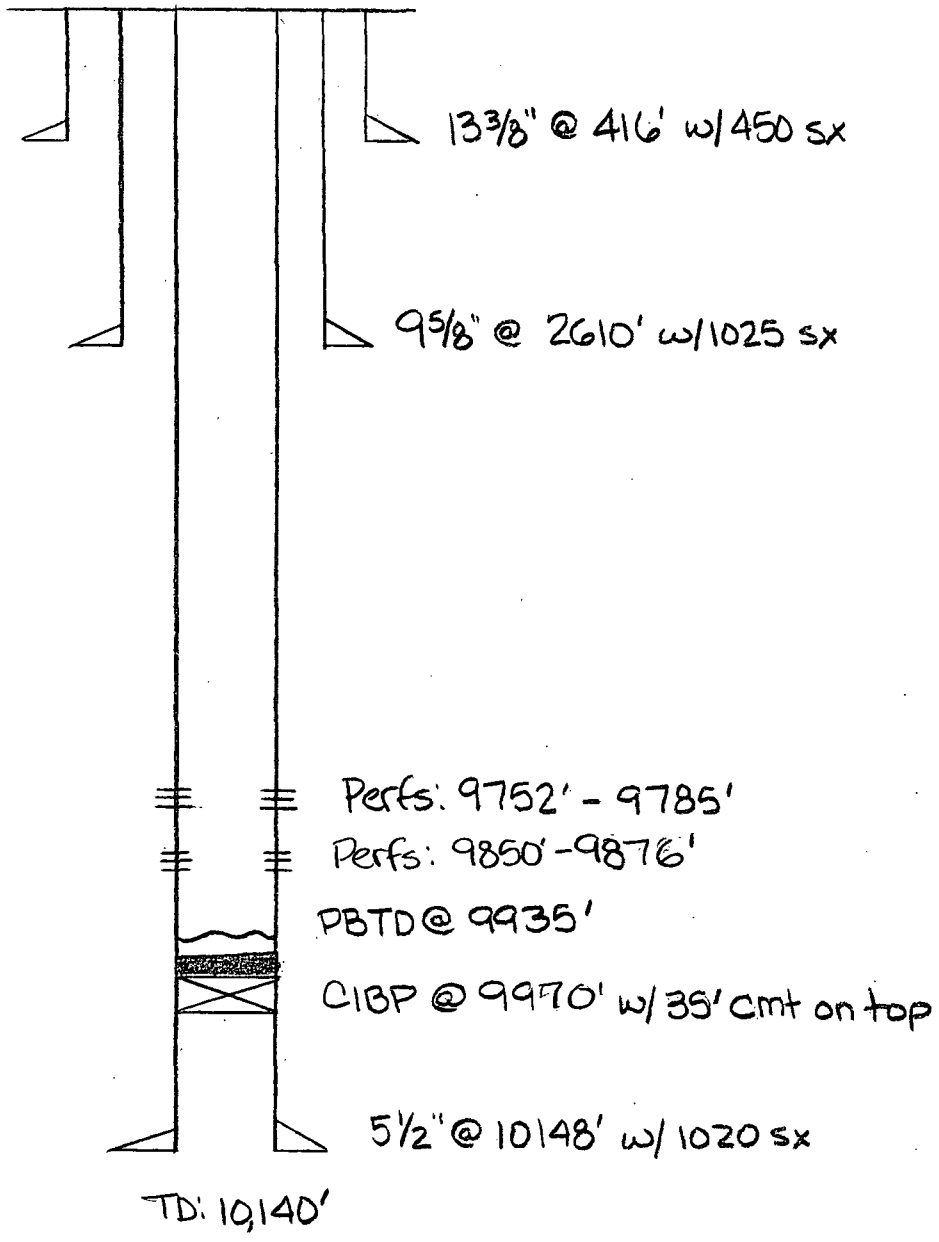
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 97
Artificial Penetration Review

OPERATOR Newbourne Oil Co.
LEASE Chalk Bluff Fed. Com
WELL NUMBER #002
DRILLED 8/24/91
PLUGGED N/A

STATUS Active
LOCATION Sec. 1 -T18S-R27E
MUD FILLED BOREHOLE N/A
TOP INJECTION ZONE -3591'
API NO. 30-015- 26741

REMARKS:



MAP ID NO. 97

MEWBOURNE OIL CO.
CHALK BLUFF FEDERAL COM NO. 002

API NO. 30-015-26741

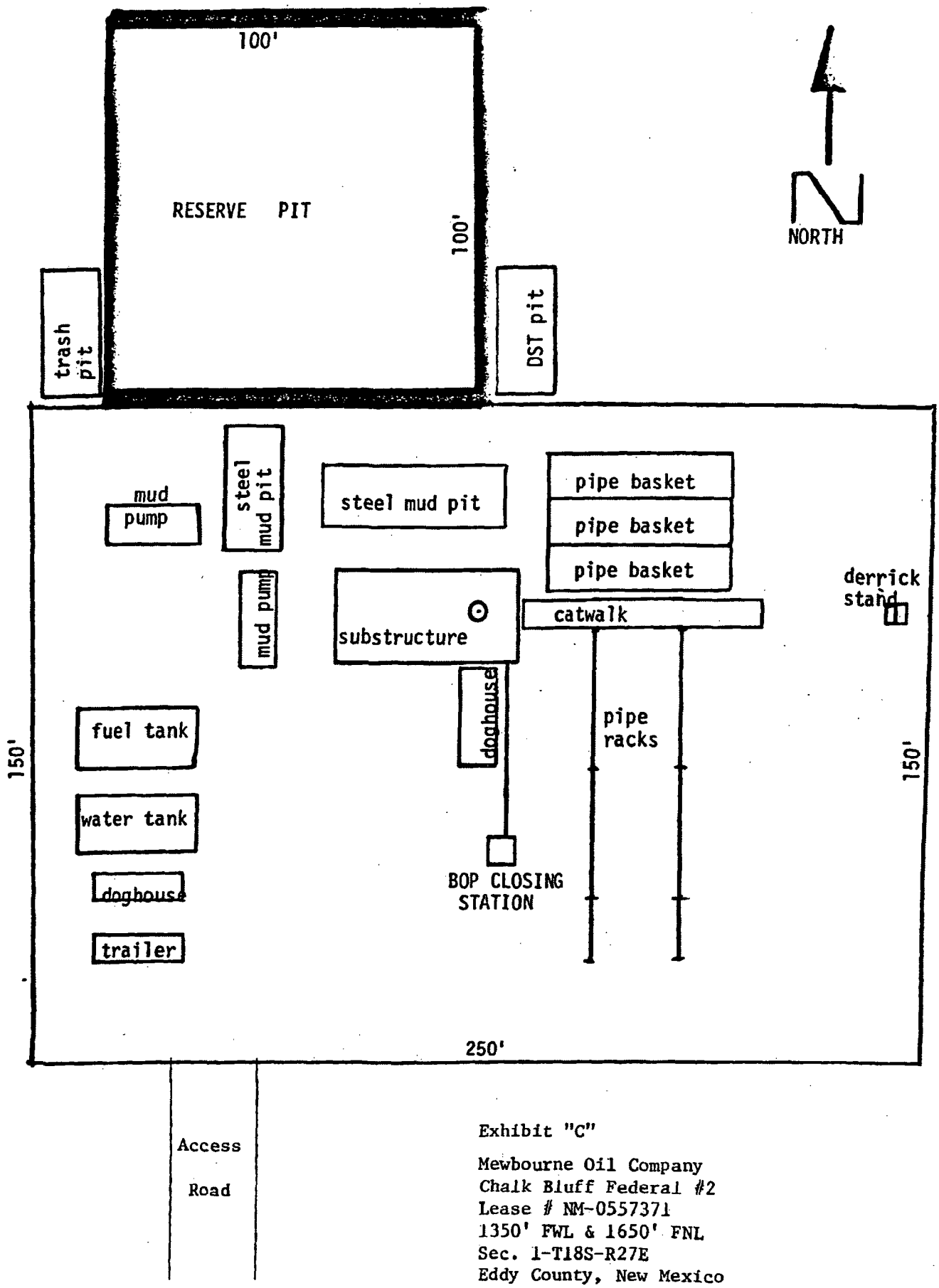
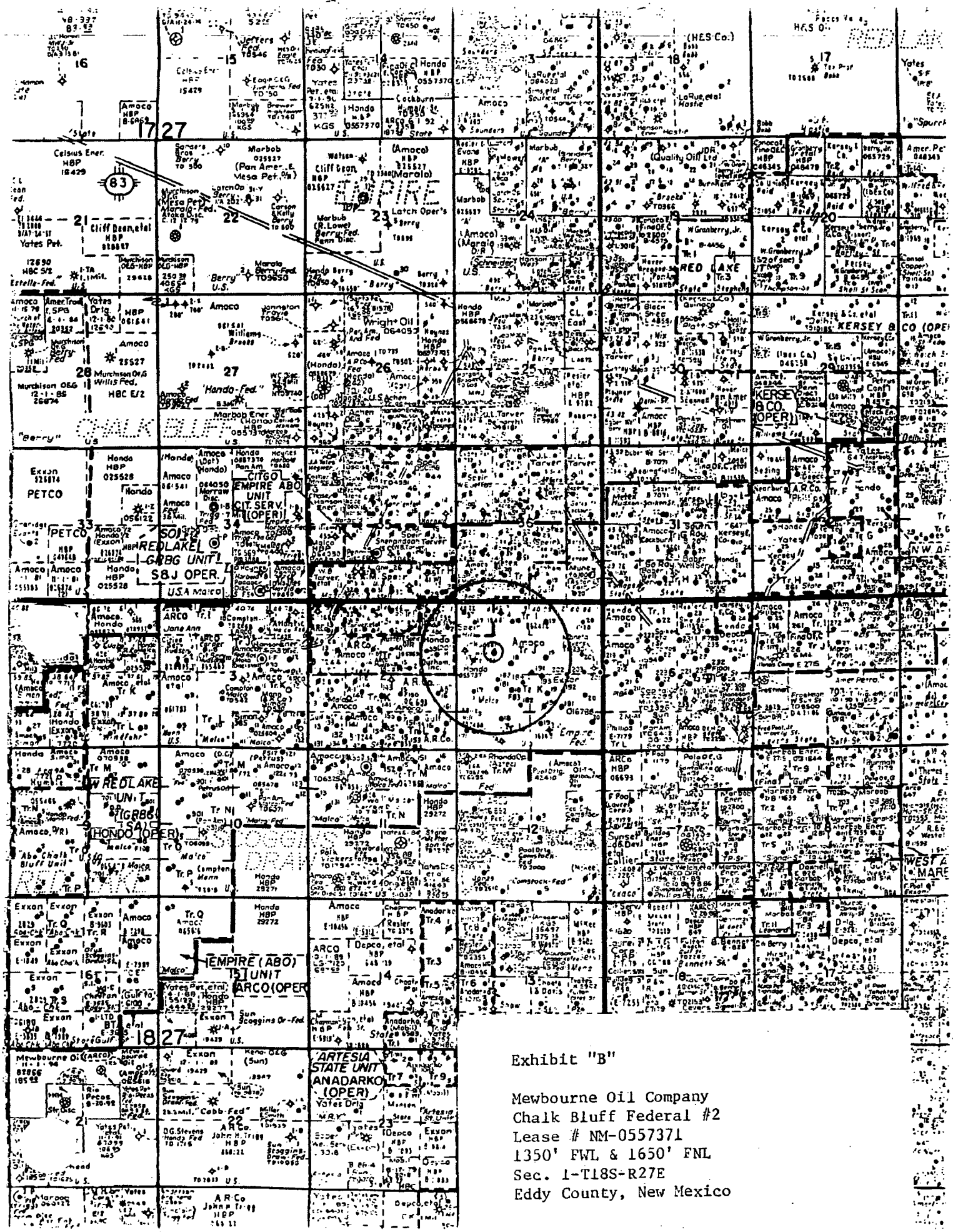


Exhibit "C"

Mewbourne Oil Company
Chalk Bluff Federal #2
Lease # NM-0557371
1350' FWL & 1650' FNL
Sec. 1-T18S-R27E
Eddy County, New Mexico


EMPIRE (ABO) UNIT
ARCO (OPER)
ARTESIA STATE UNIT
ANADARKO (OPER)
Yates Drlg
CITGO EMPIRE ABO UNIT CIT. SERV. (OPER)
PETCO
REDLAKE GRBG UNIT S&J OPER.
USA Malco
W REDLAKE UNIT (GRBG SAND) HONDO (OPER)
KERSEY & CO. (OPER)
RED LAKE
Cliff Dean, etal
Yates Pet.
Amoco
Hondo
Marbob
Mesa Pet.
Wright + Oil
Celsius Ener.
Quality Oil Ltd
Mewbourne Oil
Exxon
ARCO
Depco, etal
Anadarko
Sun
Yates
Meridian Oil
Pogo Prod.
Conoco
Kersey & Co.
Tarver
Sperry-Sun
Chevron
Gulf
Texaco
Phillips
Pool
Cabot
Cox
Sinclair
Enron
Cities Service
Shell
Mobil
Union Texas
Santa Fe Energy
Bass
Bettis, Boyle & Stovall
Harvey E. Yates
Jerry Yates
Abo Chalk Bluff Unit
Chalk Bluff Draw
Chalk Bluff Federal #2
Lease # NM-0557371
1350' FWL & 1650' FNL
Sec. 1-T18S-R27E
Eddy County, New Mexico
Exhibit "B"

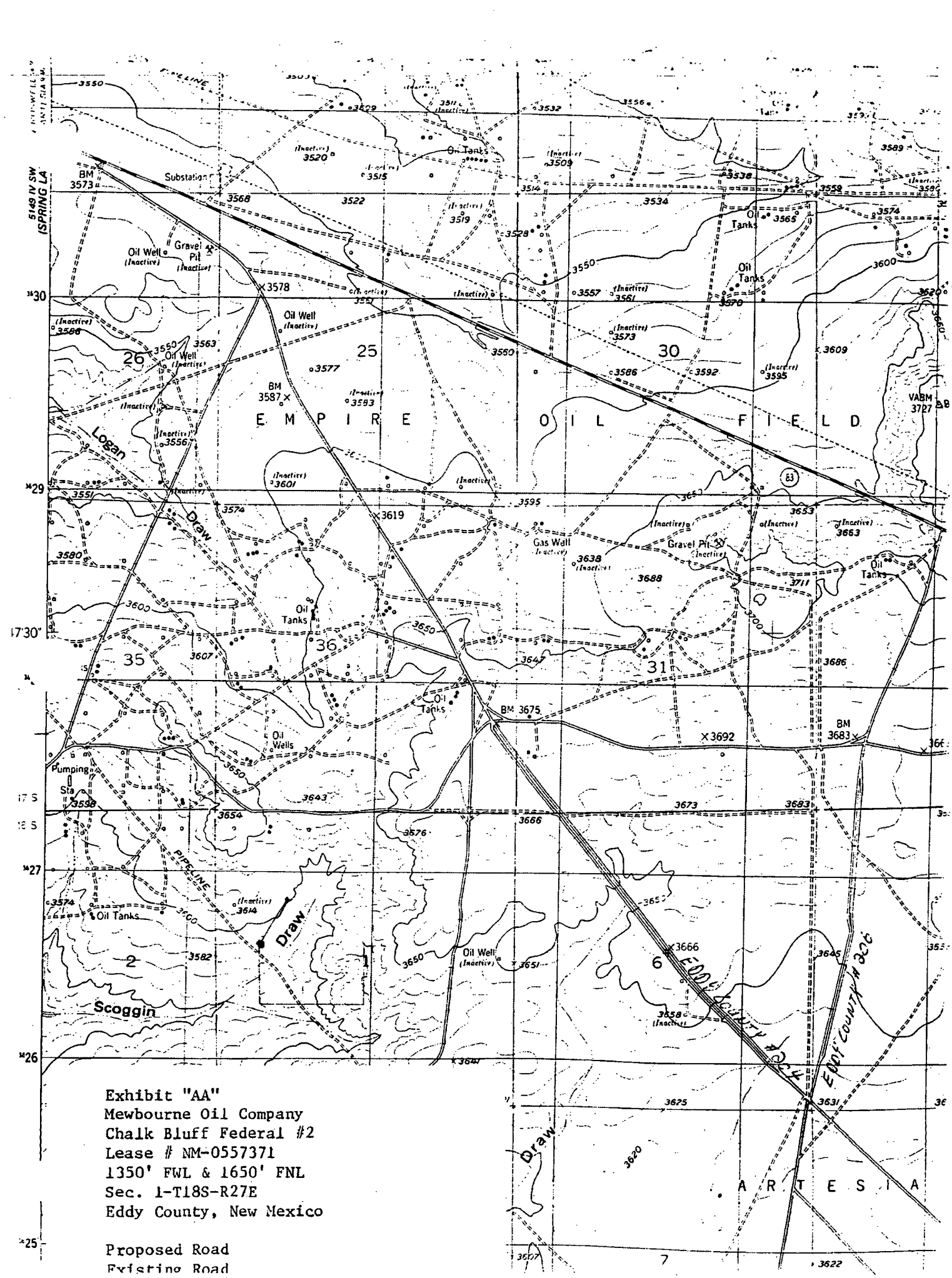


Exhibit "AA"
Mewbourne Oil Company
Chalk Bluff Federal #2
Lease # NM-0557371
1350' FWL & 1650' FNL
Sec. 1-T18S-R27E
Eddy County, New Mexico

Proposed Road
Existing Road

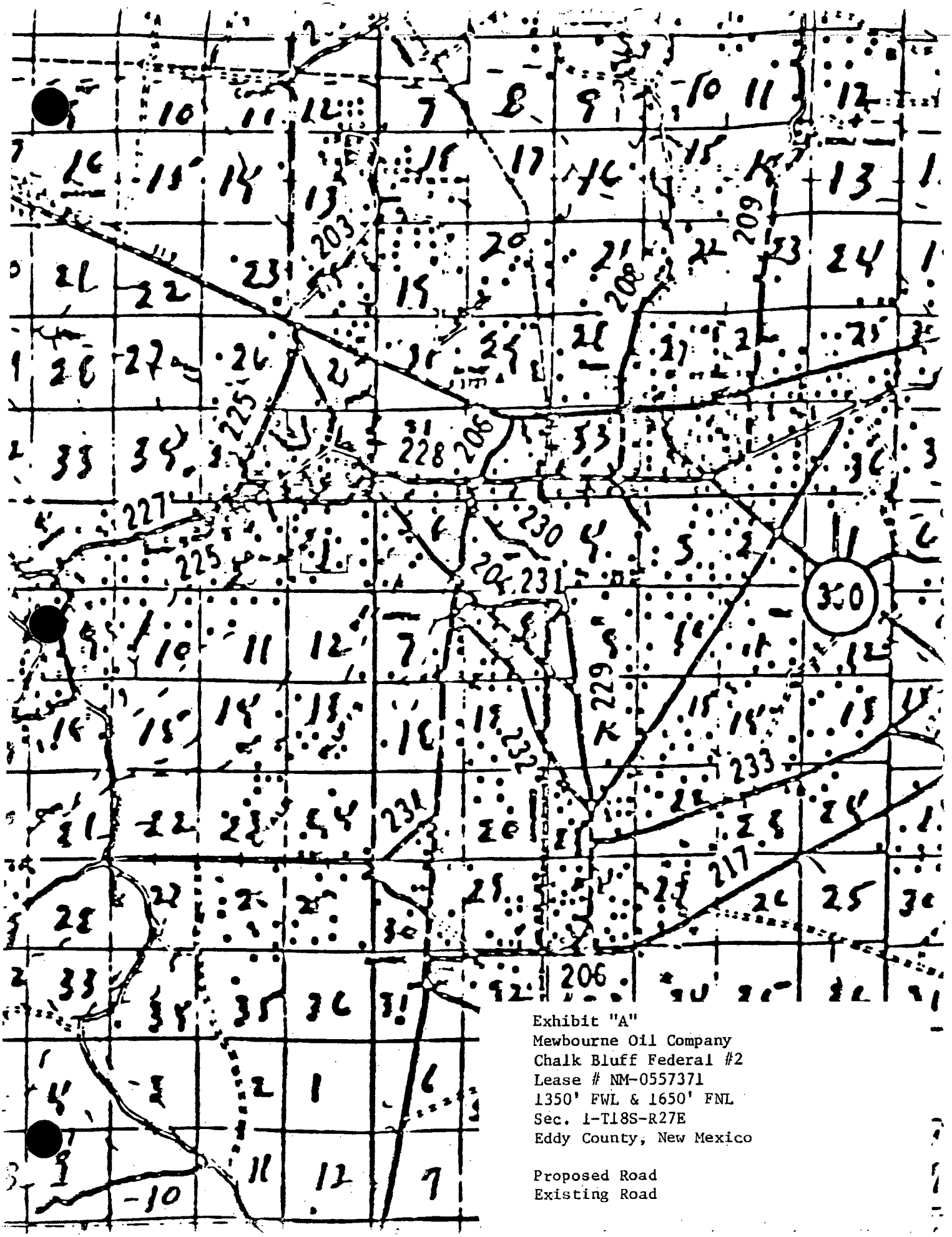
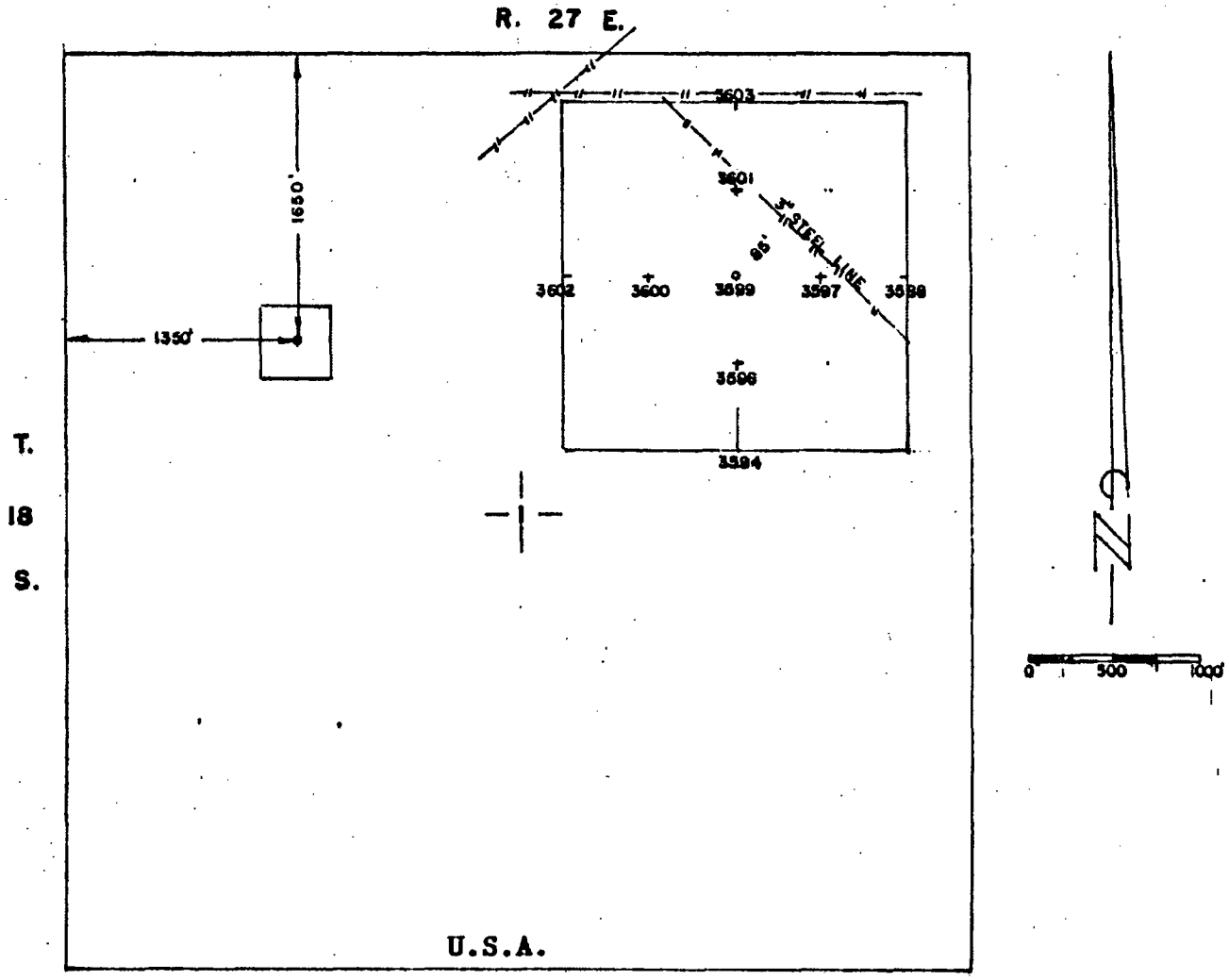


Exhibit "A"
Mewbourne Oil Company
Chalk Bluff Federal #2
Lease # NM-0557371
1350' FWL & 1650' FNL
Sec. 1-T18S-R27E
Eddy County, New Mexico

Proposed Road
Existing Road

SECTION 1, TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM,
EDDY COUNTY, NEW MEXICO.

JOB No.



12. CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Mewbourne Oil Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

April 2, 1991

Date

W.H. Cravey

W.H. Cravey
Production Superintendent
Mewbourne Oil Company

10. OTHER INFORMATION:

A. The geologic surface formation is hard clay interspersed with sand and chert outcroppings. Vegetative cover is generally sparse and consist mostly of greasewood and bear grass.

B. The estimated tops of geologic markers are as follows:

Queen	1260'	Cisco	7740'
San Andres	2100	Canyon	8350'
Glorieta	3720'	Strawn	8900'
Tubb	4930	Atoka	9500'
Abo	5900	Morrow	9600'
Wolfcamp	6900	Mississippian	10100'

C. The estimated depths at which anticipated water, oil or gas are expected to be encountered:

Water: Possible surface water between 100'-300'.

Oil: Penrose @ 1520'.

Gas: Wolfcamp @ 6900'.

D. Proposed Casing Program: See Form 9-331C.

E. Pressure Control Equipment: See Form 9-331C and Exhibit "D".

F. Mud Program: See Form 9-331C.

G. Auxiliary Equipment: Mud-gas seperator and PVT system from 6,000'-T.D.

H. Testing and Coring Program: Possibility of 4 DST's in the following zones:
Wolfcamp, Cisco, Strawn, Morrow. No cores are planned at this time.

Logging: Gamma Ray - Spectral
Density - Dual Spaced Neutron Log; T.D. to surface
Gamma Ray - Dual Latero Log
Microguard Log; T.D. to Intermediate casing.

I. No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered the proposed mud program will be modified to increase the weight.

J. Anticipated Starting Date: As soon as possible after BLM approval.

11. OPERATOR'S REPRESENTATIVE:

The field representatives responsible for assuring compliance with the approved surface use and operations plan are as follows:

W.H. Cravey	(505) 393-5905	701 S. Cecil
Erick W. Nelson	24 Hrs. Svc.	Hobbs, N.M.

5. SOURCE OF CONSTRUCTION MATERIALS:

A. Caliche will be taken from a BLM pit located in the NE4/NW4 of Section 12-T18S-R27E which would be BLM pit # 18271203. This pit also extends into the SE4/SW4 of Section 1-T18S-R27E which would be BLM pit # 18270114. An alternate pit which may be used in the event BLM pit # 18271203 contains unsuitable material would be a BLM pit located in the SW4/NE4 of Section 1-T18S-R27E which would be BLM pit # 18270107.

6. METHODS OF HANDLING WASTE DISPOSAL:

A. Drill cuttings will be disposed of in the drilling pits.

B. Drilling fluids will be allowed to evaporate in the drilling pits until pits are dry.

C. Water produced during tests will be disposed of in the drilling pits. Oil produced during tests will stored in test tanks until sold.

D. Current laws and regulations pertaining to the disposal of human water will be complied with.

E. All trash, junk and other waste material will be contained to prevent scattering and will be removed and deposited in an approved sanitary landfill.

F. All trash and debris will be buried or removed from the wellsite within 30 days after finishing drilling and/or completion operations.

7. ANCILLIARY FACILITIES:

A. None required.

8. WELLSITE LAYOUT:

A. Exhibit "C" shows the relative location and dimensions of the well pad, mud pits, reserve pit, trash pit and location of major rig components.

B. The pad and pit area has been staked and flagged.

9. PLANS AND RESTORATION OF THE SURFACE

A. After completion of drilling and/or completion operations all equipment and other material not needed for operations will be removed. Pits will be filled and location cleaned of all trash and junk to leave the wellsite in an aesthetically pleasing condition as possible.

MULTI-POINT SURFACE USE AND OPERATING PLAN

MEWBOURNE OIL COMPANY

CHALK BLUFF FEDERAL WELL NO. 2

1350' FWL & 1650' FNL OF SEC. 1-T18S-R27E

EDDY COUNTY, NEW MEXICO

NEW MEXICO LEASE NO. NM-0557371

This plan is submitted with the Application for Permit to Drill (APD) the above described well. The purpose of the plan is to describe the location of the proposed well, the proposed construction activities and operations plan and the magnitude of necessary surface disturbance involved, so that a complete appraisal can be made of the enviromental effects associated with the operation. The surface to be disturbed is privately owned and a surface use agreement has been signed with the land owner.

1. EXISTING ROADS:

   A. From the junction of U.S. 82 and U.S. 285 Highways in Artesia, proceed east on U.S. 82 for 12 miles. Turn right (South) on Eddy County #206 (Illinois Camp Road) and proceed south for 1.75 miles. Turn right on Eddy County Road #204 and proceed northwest for .75 miles. Turn left (West) and proceed for 1 mile. Turn left (south) and proceed for 1/4 mile. Turn right (west) and proceed for 1/3 mile. Turn right (north) and proceed for 1/4 mile. Turn right(northeast) and proceed for 1/4 mile into location.

   B. Culverts: None Required.

   C. Cuts and Fills: A three and half to four foot cut will be required for construction of the location.

   D. Turn-Outs: None required.

   E. Gates and Cattleguards: None required.

2. LOCATION OF EXISTING WELLS:

   A. Existing wells in a 1 mile radius are shown on Exhibit "B".

3. LOCATION OF PROPOSED FACILITIES:

   A. If the well is productive, all production facilities will be constructed on the existing pad and no additional surface disturbance will occur.

4. LOCATION AND TYPE OF WATER SUPPLY:

   A. Water will be purchased and trucked to the wellsite over the existing and proposed roads shown on Exhibits "A" and "AA".

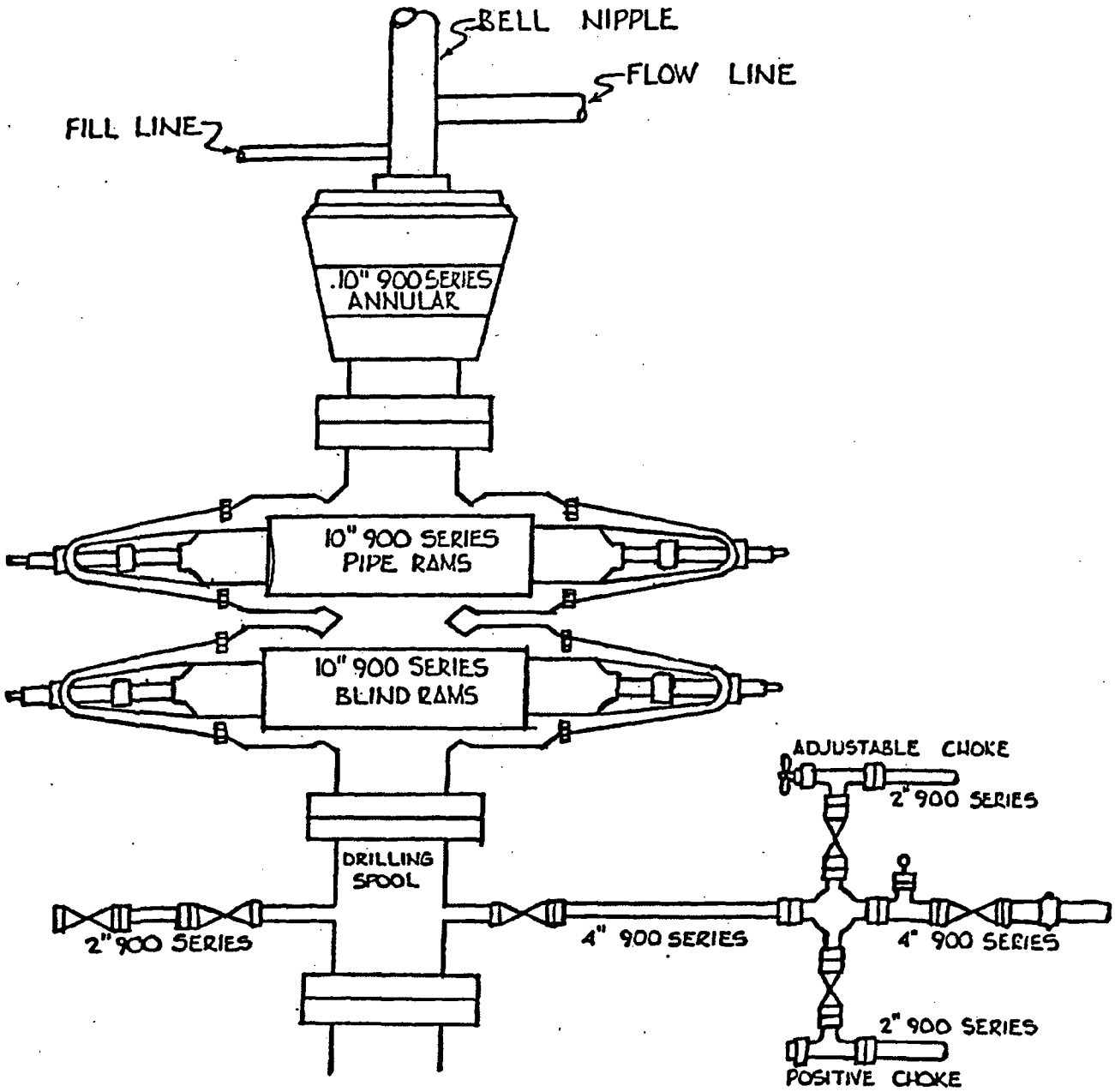


Exhibit "D"

Mewbourne Oil Company
Chalk Bluff Federal #2
Lease # NM-0557371
1350' FWL & 1650' FNL
Sec. 1-T18S-R27E
Eddy County, New Mexico

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

SDS

Operator	Lease	Well No.
MEWBOURNE OIL COMPANY	CHALK BLUFF FEDERAL Com.	2

Unit Letter	Section	Township	Range	County
F	1	18 SOUTH	27 EAST NMPM	EDDY

Actual Footage Location of Well:
1350 feet from the WEST line and 1650 feet from the NORTH line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3599	Morrow	North Illinois Camp Morrow	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

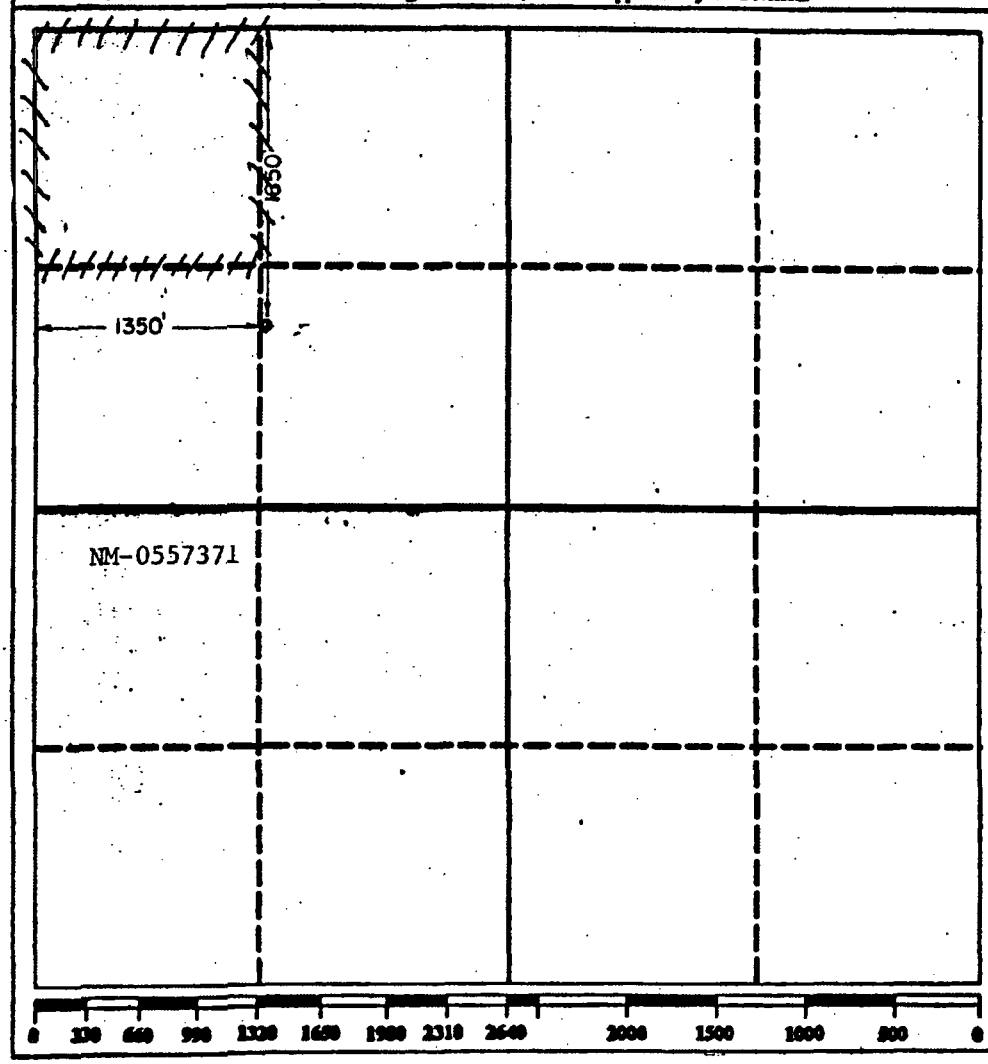
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☑ Yes ☐ No If answer is "yes" type of consolidation _____

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: W.H. Cravey

Printed Name: W.H. Cravey

Position: District Supt.

Company: Mewbourne Oil Co.

Date: April 2, 1991

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 3/28/91

Signature & Seal of Professional Surveyor: NEW MEXICO HERSCHEL L JONES

Certificate No. 3640

30-015-26741

Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: NM-0557371

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Chalk Bluff Federal Com.

9. WELL NO.: 2

10. FIELD AND POOL, OR WILDCAT: North Illinois Camp Mor.

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 1-T18S-R27E

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [X] OTHER — SINGLE ZONE [ ] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: Mewbourne Oil Company

3. ADDRESS OF OPERATOR: P.O. Box 5270 Hobbs, New Mexico 88241

RECEIVED
MAY - 8 1991
O. C. D.
ARTESIA, OFFICE

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1350' FWL & 1650' FNL
At proposed prod. zone: Same

12. COUNTY OR PARISH: Eddy — 13. STATE: N.M.

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 7 miles Southeast of Artesia, New Mexico

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
1350'	320	320
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
	10,200'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3599' GR

22. APPROX. DATE WORK WILL START*: Upon BLM approval

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	13-3/8"	61#	400'±	450 sks. Class "C" circulated
12 1/4"	9-5/8"	36#	2,600'±	800 sks. Class "C" Tie back into surface
8 3/4"	5-1/2"	17# & 20#	10,200'±	600 sks. Class "H" (600' above Wolfcamp)

Mud Program:

0' - 400' Spud mud with fresh water gel and lime. LCM as needed.
400' - 2,600' Fresh water gel and lime. LCM as needed.
2,600' - 8,500' Cut brine with lime for pH control. Wt. 9.2-9.6 ppg, WL - NC. LCM as needed.
8,500' - 10,200' Cut brine with Drispac, salt gel, lime, soda ash, and starch. Wt. 9.2-9.6 ppg. WL 10 cc or less. Raise weight accordingly if abnormal pressures are encountered.

BOP Program

900 series BOP and Hydril on 13-3/8" surface casing and on 9 5/8" intermediate casing.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED W. K. Clancy TITLE District Superintendent DATE April 2, 1991

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE 5-7-91

CONDITIONS OF APPROVAL, IF ANY:

NSL 304 APPROVAL SUBJECT TO
Appv. 4-25-91 GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

*See Instructions On Reverse Side

N.O.S. 3-12-91

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

c/SF

Form 3160-5
(1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
JUN 20 1991
O. C. D.
ARTESIA, OFFICE

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED
MAY 24 1991
DIST. 6 N.M.
Carlsbad, New Mexico
BUREAU OF LAND MANAGEMENT

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.: Chalk Bluff Federal Com #2

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26741

3. Address and Telephone No.: P. O. Box 7698, Tyler, Texas 75711

10. Field and Pool, or Exploratory Area: North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

11. County or Parish, State: Eddy, New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other Spud & set Pipe	☐ Dispose Water

(Note. Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

5/13/91 - Spud @ 8:00 PM 5/13/91.

5/15/91 - Ran 13 jts 13-3/8" 61# ST&C surface casing set at 416'. Cemented with 100 sxs Class "C" thixset w/½# flocele, 5# Gilsonite & 3% CaCl and 100 sxs Class "C" w/6% gel, ½# flocele, 5# Gilsonite and 250 sxs Class "C" w/3% CaCl. Plug down @ 9:45 AM. Did not circulate. WOC 6 hrs. Tagged with 1" at 82'. At 3:00 PM cemented w/100 sxs Class "C" w/3% CaCl. Job complete 3:15 PM. Circulated est. 25 sxs to pit. WOC 11 hrs. Pressure tested to 1000# - held okay.

5/20/91 - Ran 60 jts 9-5/8" 36# J-55 ST&C Intermediate casing set at 2610' K.B. Cemented w/825 sxs Class "C" + 6% gel + 5# Gilsonite + ½# flocele + 2% CaCl followed by 200 sxs Class "C" + 2% CaCl. PD at 5:45 AM. Pressure tested 1000-1500#. Float held. Circulated 125 sxs cement to pit. WOC 18 hrs.

14. I hereby certify that the foregoing is true and correct

Signed Jaylon L. Thompson Title Engr. Oprns. Secretary Date 5/20/91

(This space for Federal or State office use)

Approved by _____ Title _____

Conditions of approval, if any:

ACCEPTED FOR RECORD
SJS
JUN 17 1991
CARLSBAD, NEW MEXICO

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c15F

RECEIVED
JUN 21 11 25 AM '91
CARLSBAD, NEW MEXICO AREA

RECEIVED
JUN 25 1991
O. C. D.
ARTESIA, OFFICE

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.: Chalk Bluff Federal Com #2

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26741

3. Address and Telephone No.: P. O. Box 7698, Tyler, Texas 75711

10. Field and Pool, or Exploratory Area: North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

11. County or Parish, State: Eddy, New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Run 5-1/2" casing	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

6/16/91 - Ran 5-1/2" 17# & 20# N-80 casing set at 10,148'. DVT @ 7606'. Circulated 30 mins. Cemented 1st stage with 260 sacks Hal-Lite Class "H" w/5# Gilsonite, + 1/4# Flocele + 3/10% CFR-3. Tailed in with 300 sacks Premium containing 5/10% Halad-22A + 3/10% CFR-3 + 3# Gilsonite + 5# KCL. Plug down with full returns. Pressure tested to 1000#. Held OK. Drop bomb open DVT. Circulated 6 hrs.

6/17/91 - Cemented 2nd stage with 260 sacks Hal-Lite Class "C" containing 3# Gilsonite + ¼# Flocele. Tailed in with 200 sacks Prem H cement. Plug down 4:15 PM 6/16/91 with full returns. Closed DVT. WOC 18 hrs. Pressure tested to 1500#. Held OK.

14. I hereby certify that the foregoing is true and correct

Signed: Clayton Thompson Title: Engr. Oprns. Secretary Date: 6/18/91

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

ACCEPTED FOR RECORD
SDS
JUN 21 1991
CARLSBAD, NEW MEXICO

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c/ST

3160-5
(1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

AUG 27 1991
O. C. D.
ARTESIA, OFFICE

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.: Chalk Bluff Federal Com #2

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26741

3. Address and Telephone No.: P. O. Box 7698, Tyler, Texas 75711

10. Field and Pool, or Exploratory Area: North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

11. County or Parish, State: Eddy, New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Perforate & Treat	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

7/10/91 - Made final cut-off on 5-1/2" casing. Installed tubinghead and tested to 3000#. Tagged cement on top of DV tool at 7414'. DV tool @ 7606'.

7/11/91 - Pressure tested casing to 1500#. Held OK. Drilled out 192' cement & DV tool. Tested casing to 1500#. TIH w/tubing and tagged cement @ 10,090'. Drilled out 24' to float collar at 10,114'. Tested casing to 1500#. Held OK.

8/12/91 - Perforated 9999'-10,024', 4 SPF, 101 holes. Acidized with 5000 gals 7-1/2% HCL. ISDP 7350#, 5 min 7100#, 10 min 6950#, 15 min 6800#. Max treating press 7500#. Avg treating press 8100#. Avg injection rate 4.4 BPM.

14. I hereby certify that the foregoing is true and correct

Signed Daylon Thompson Title Engr. Oprns. Secretary Date 8/16/91

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

ACCEPTED FOR RECORD
SDS
SEP 3 1991

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c15

RECEIVED

SEP 11 1991

O. C. D.
ARTESIA, OFFICE

Form 3160-5
(1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.: Chalk Bluff Federal Com #2

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26741

3. Address and Telephone No.: P. O. Box 7698, Tyler, Texas 75711

10. Field and Pool, or Exploratory Area: North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

11. County or Parish, State: Eddy, New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

8/17/91 - Rigged up Western to acidize perfs 9999-10,243' using 10,000 gals gelled 15% HCL with 10,000 gals CO_2 containing 2 gal I-22, 1 gal Clay Master 4, 1 gal FS-2, 2 gal Nine-40, 6 gal Acigel & 5 gal citric acid liquid per 1000 gals acid. Pumped as follows:

20,000 Gals Acid/CO_2 6 BPM - total rate @ 9200#. Spotting 5 Ball Sealers; 6 Bbls Foam.
60 Bbls 2% KCL water/CO_2 flush 6 BPM - Total rate @ 9150#.

Tubing loaded with 38 bbls pumped away. Had good ball action throughout but swabbed no noticeable break in treating pressures. Min Press: 8500#. Max Press: 9500#. Avg Press: 9200#. Avg Rate: 6 BPM. ISDP: 6600# (5 Min=6400#; 10 Min=6200#; 15 Min=6150#). Rigged down Western. Started flowing well to pit on 24/64" choke.

14. I hereby certify that the foregoing is true and correct

Signed Leyland Thompson Title Engr. Oprns. Secretary Date 9/03/91

(This space for Federal or State office use)

Approved by _____ Title _____ Date SEP 1 0 1991

Conditions of approval, if any:

ACCEPTED FOR RECORD
SJS
CARLSBAD, NEW MEXICO

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Received

SEP - 5 1991

O. C. D.
ARTESIA, OFFICE

KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT

WEK DRILLING CO., INC. — OIL WELL DRILLING CONTRACTORS

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

June 18,-1991

Mewbourne Oil Company
P.O. Box 5270
Hobbs, N.M. 88241

REF: Chalk Bluff Federal Comm #2

Gentlemen:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

416' - 1/2°	4715' - 1 1/4°	5766' - 4 1/2°	6944' - 2 1/2°
917' - 1°	5182' - 1 1/2°	5829' - 4 1/4°	7441' - 2°
1423' - 1°	5222' - 2 1/4°	5891' - 4 1/2°	7939' - 2°
1791' - 3/4°	5306' - 3 1/4°	5951' - 3 3/4°	8435' - 1 3/4°
2093' - 1/2°	5398' - 4°	6013' - 3 3/4°	8623' - 1°
2610' - 1°	5459' - 4°	6075' - 3 3/4°	9093' - 1°
3088' - 1°	5521' - 4°	6136' - 3 1/2°	9570' - 1 1/4°
3564' - 1°	5583' - 3 3/4°	6197' - 3°	9638' - 3/4°
3905' - 1/2°	5645' - 4 1/2°	6253' - 3°	10140' - 3/4° TD
4231' - 1 1/2°	5705' - 4 1/2°	6443' - 2 1/4°	

Sincerely,

Arnold Newkirk

Arnold Newkirk
Vice-President

STATE OF NEW MEXICO)
)
COUNTY OF CHAVES)

The foregoing was acknowledged before me this 18th day of June 1991 by Arnold Newkirk.

MY COMMISSION EXPIRES

October 07,1992

Linda Rogers

NOTARY PUBLIC

Form 3160-4
(November 1983)
(formerly 9-330)

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

CONFIDENTIAL

RECEIVED
OCT 16 1992
O. C. D.
ARTESIA, OFFICE

5. LEASE DESIGNATION AND SERIAL NO.: NM-0557371

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Chalk Bluff Federal Com

9. WELL NO.: 2

10. FIELD AND POOL, OR WILDCAT: N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 1, T18S-R27E

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ■ DRY ☐ Other

b. TYPE OF COMPLETION: NEW WELL ■ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

2. NAME OF OPERATOR: Mewbourne Oil Company

3. ADDRESS OF OPERATOR: P. O. Box 7698, Tyler, Texas 75711

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 1350' FWL & 1650' FNL
At top prod. interval reported below
At total depth: Same

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
API #30-015-26741		Eddy	N.M.

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
5/13/91	6/12/91	8/24/91	KB 3615', DF 3613', GL 3599'	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,140'	10,125'		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: 9,999'-10,024' - Morrow

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: Dual Spaced Neutron/CBL

27. WAS WELL CORED: No

CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	61#	416'	17-1/2"	450 - Circulated	None
9-5/8"	36#	2,610'	12-1/4"	1025 - Circulated	None
5-1/2"	17# & 20#	10,148'	8-3/4"	1020 - Circulated	None

29. LINER RECORD					30. TUBING RECORD		
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
					2-7/8"	9939'	9939'

31. PERFORATION RECORD (*Interval, size and number*): 9999'-10,024' - 4 SPF, 101 holes

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
9999-10,024'	Acidized w/5000 gals 7½% HCL.
	Acidized w/20,000 gals acid/CO_2

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
8/26/91	Flowing	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
8/29/91	24 hrs.	16/64"		0	118	0	—

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
410#	—		0	118	0	—

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*): Sold

TEST WITNESSED BY: Bill Pierce

35. LIST OF ATTACHMENTS: Logs

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Raylon Thompson TITLE Engr. Oprns. Secretary DATE 9/03/91

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Middle Morrow	9752'	9785'	Sandstone
Lower Morrow	9808'	9878'	Sandstone
Basal Morrow	9999'	10024'	Detrital Limestone

38. GEOLOGIC MARKERS

NAME	TOP	
	MEAS. DEPTH	TRUE VERT. DEPTH
Yates	370'	
Queen	1,034'	
Grayburg	1,346'	
San Andres	1,833'	
Glorietta	3,178'	
Tubb	4,130'	
Drinkard	5,076'	
Abo	5,380'	
Wolfcamp	6,644'	
Cisco	7,602'	
Canyon	8,326'	
Strawn	8,808'	
Morrow	9,496'	
Morrow Clastics	9,696'	
Chester	10,056'	

Submit in duplicate to
ar ate district office
S 401 & Rule 122

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-122
Revised 4-1-91

OIL CONSERVATION DIVISION

P.O. Box 208
[illegible], New Mexico 87504-2088

MULTIPOINT BACK PRESSURE AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: MEWBOURNE OIL COMPANY			Lease or Unit Name: CHALK BLUFF FED	
Type Test: X Initial / Annual / Special	Test Date: 8-25-92		Well No.: 2	
Completion Date: 9-1-91	Total Depth: 10144'	Plug Back TD: 10024	Unit Ltr. - Sec. - TWP - Rge.: F 1 18 27	
Csg. Size: 5½	Wt.: 20#	Set At: 10144'	Perforations: 9911'	County: Eddy
Tbg. Size: 2 7/8	Wt.: 6.5#	Set At: 9911'	Perforations:	Pool:
Type Well - Single - Bradenhead - G.G. or G.O. Multiple: Single				Formation: Morrow
Producing Thru: TBG	Reservoir Temp. °F: 174° @9906'	Mean Annual Temp. °F: 60	Baro. Press. - P_a:	Connection:
L: 10011.5	H: 10011.5	Gg: .72	% CO2:	% N2:
			Prover:	Meter Run: 3.068
				Taps: FLG

FLOW DATA

NO.	Prover Line Size	X	Orifice Size	Type Prover	Press. p.s.i.g.	Diff. h_w	Temp. °F	Gravity Fg.	Flowing Temp. Ft	Compress. Factor, Fpv	Rate of Flow Q, Mcfd	Duration of Flow
SI												72 hr.
1.	3	X	.375			94		.172		1.022	95	1 hr.
2.	3	X	.375			66		.172		1.040	108	1 hr.
3.	3	X	.375			64		.172		1.065	170	1 hr.
4.	3	X	.375			34		.172		1.058	168	1 hr.
5.												

TUBING DATA / CASING DATA

NO.	Temp. °F	Press. p.s.i.g.	Temp °F
SI		Pkr	
1.		"	
2.		"	
3.		"	
4.		"	
5.			

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 HOUR)	Pressure P_m	Flowing Temp. °F	Gravity Factor Fg.	Super Compress. Factor, Fpv.	Rate of Flow Q, Mcfd
1.	.6677	20		.172	1.022	95
2.	.6677	130		.172	1.040	108
3.	.6677	202		.172	1.065	170
4.	.6677	107		.172	1.058	168
5.						

P_c **1036

NO.	P_w	P_t	F_c	$(F_c Q)^2$	$(F_c Q)^2 / (P_c^2 - P_w^2)$	P_w
1.	**	1036	5.76			
2.	**	1027	5.7			
3.	**	1019	5.0			
4.	**	1022	5.9			
5.						

Liquid Hydrocarbon Ratio: Dry Gas Mcf/bbl.
Specific Gravity Separator Gas: Dry Deg.
Specific Gravity Flowing Fluid: .728 XXXXXXXXX
P_c: XXXXX
P_d: 68 P.S.I.A. P.S.I.A.
T_c: 28 R R

$$\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2.631$$

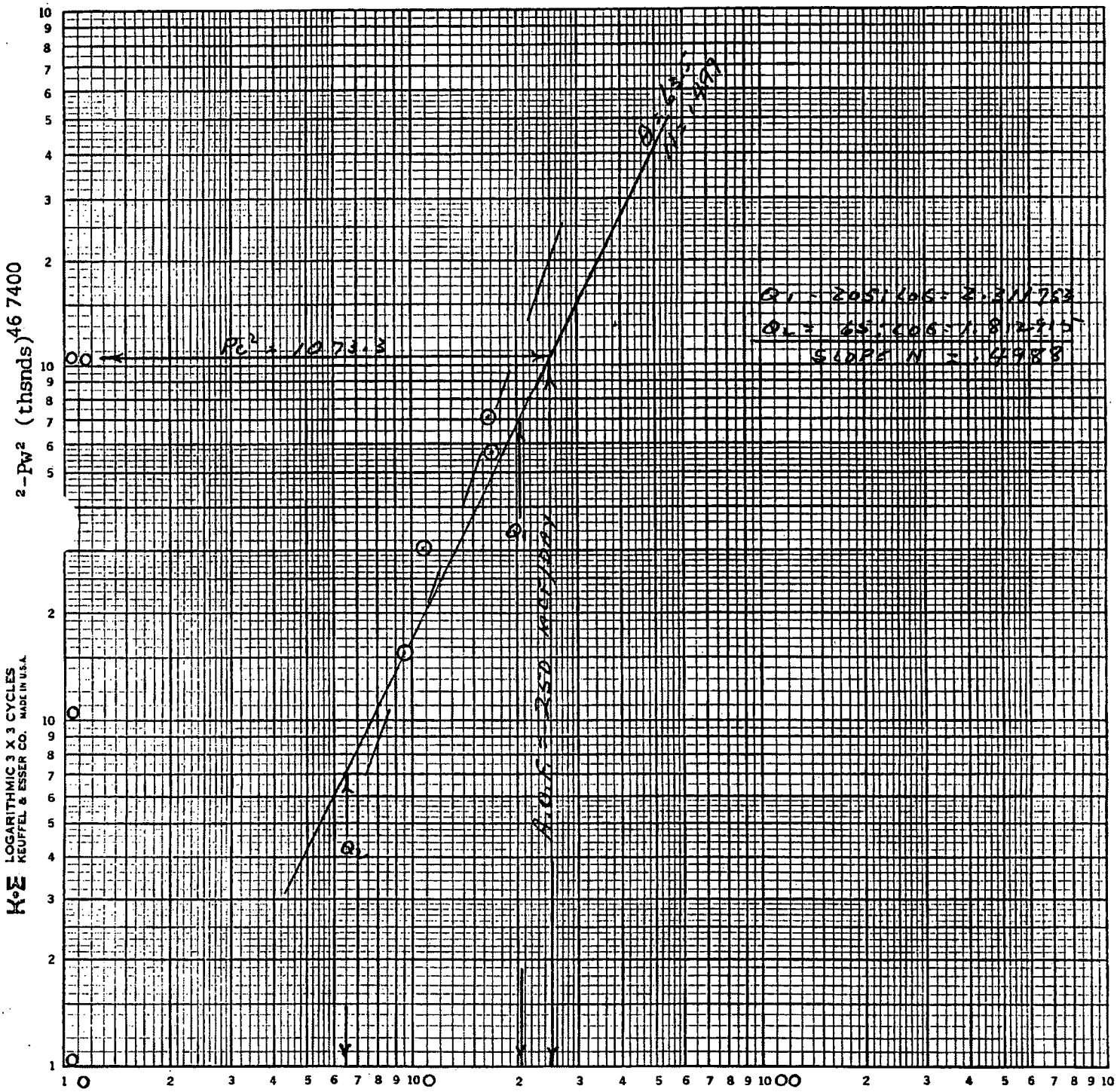
$$\left[\quad\right]^n = .25$$

Absolute Open Flow: Angle of Slope: Slope n: .490

Remarks: [illegible]

Approved By Commission: Conducted By: Calculated By: NO FLUID PRODUCED Checked By:

MEWBOURNE OIL COMPANY
Chalk Bluff Fed., Well 2
1-18-27
Eddy County, New Mexico
2-25-92



Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Received
SEP - 5 1991
O. C. D.
ARTESIA OFFICE

Form C-104
Revised 1-1-89
See Instructions at Bottom of Page

C/SF LT GT Dp

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

CONFIDENTIAL

I.

Operator	Well API No.
MEWBOURNE OIL COMPANY	30-015-26741
Address: P. O. Box 7698, Tyler, Texas 75711	

Reason(s) for Filing (Check proper box)
New Well [X] Change in Transporter of: Other (Please explain)
Recompletion [ ] Oil [ ] Dry Gas [ ]
Change in Operator [ ] Casinghead Gas [ ] Condensate [ ]

If change of operator give name and address of previous operator

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease State, Federal or Fee	Lease No.
CHALK BLUFF FEDERAL	2	N. Illinois Camp-Morrow Gas		NM-0557371

Location
Unit Letter F : 1350 Feet From The West Line and 1650 Feet From The North Line
Section 1 Township 18 South Range 27 East, NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [ ] or Condensate [X]	Address (Give address to which approved copy of this form is to be sent)
Amoco Pipeline Intercorporate Trucking	Oil Tender Dept. Box 702068, Tulsa, Ok 74170-2068
Name of Authorized Transporter of Casinghead Gas [ ] or Dry Gas [X]	Address (Give address to which approved copy of this form is to be sent)
Transwestern Pipeline Company	P.O. Box 1188, Houston, Texas 77251-1188

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	F	1	18S	27E	Yes	8/13/91

If this production is commingled with that from any other lease or pool, give commingling order number: No

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
5/13/91	8/24/91	10,140'	10,125'
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
KB 3615', DF 3613', GL 3599'	Morrow	9,999'	9,939'
Perforations			**Depth Casing Shoe**
9999'-10,024'			—

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8"	416'	450 - Circulated
12-1/4"	9-5/8"	2,610'	1025 - Circulated
8-3/4"	5-1/2"	10,148'	1020 - Circulated

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
			Pmp ID-2 5-1-92 comp + BR
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
Actual Prod. During Test	**Oil - Bbls.**	**Water - Bbls.**	**Gas- MCF**

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
118	24 hours	0	0
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
Back Pressure	410#	—	16/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gaylon Thompson
Signature
Gaylon Thompson, Engr. Oprns. Secretary
Printed Name
Title
9/03/91
Date
(903) 561-2900
Telephone No.

OIL CONSERVATION DIVISION

Date Approved APR 2 3 1992

By ORIGINAL SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT II

Title

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

RECEIVED

OCT 16 1992

O. C. D.
ARTESIA, OFFICE

d/SF

n 3160-5
: 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed Com #2

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-26741

3. Address and Telephone No.
P. O. Box 7698, Tyler, Texas 75711 (903) 561-2900

10. Field and Pool, or Exploratory Area
North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1350' FWL & 1650' FNL of Sec. 1, T18S-R27E

11. County or Parish, State
Eddy, New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	■ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

9/10/92 - Killed well. Pulled tbg & pkr. Ran in hole w/CIBP set at 9970'. Dumped 35'cement on top. PBTD @ 9935'.

9/11/92 - RIH w/tbg & pkr set at 9731'. Tested to 8000#. Set pkr w/15 pts compression. Tested annulus to 2000#. Held OK. Tested tbg to 2500#. Held OK. Swabbed well down.

9/12/92 - Perf Lower Morrow 9850-9876' w/2 SPF, 22' net, 46 holes.

9/13/92 - Acidized perfs w/2800 gals 7½% HCL acid + additives containing 1000 SCF/Bbl nitrogen + 60 ball sealers. Flushed w/2% KCL containing 1000 SCF/bbl nitrogen. Pressure tested annulus to 1500# and pumped acid.

9/17/92 - Frac perfs w/40,000 gals Binary foam + 30,000# 20/40 Interprop. ISDP 5400#, 5 mins 4600#, 10 mins 4350#, 15 mins 4150#. AR 12 BPM. AP 8100#. MR 12 BPM. MP 8400#. Opened well and left flowing to pit.

9/19/92 - Well flowing thru test unit. Put well down sales line @ 5:00 PM 9/19/92.

AR

15 1992

14. I hereby certify that the foregoing is true and correct
Signed Clayton Thompson Title Engr.Oprns.Secretary Date 9/30/92

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c15F

Form 3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
Aug 6 9 58 AM '92

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed. Com.

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
2

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241

10. Field and Pool, or Exploratory Area
North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1350' FWL & 1650' FNL
Sec. 1-T18S-R27E

11. County or Parish, State
Eddy County, N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☒ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Well is currently producing from Basal Morrow perforations at 9999' - 10,024' and has reached it's economical limit. Plans are to recomplete into lower Morrow Sands.

1. Set CIBP at 9950'. Cap with 50' cement.
2. Perforate Lower Morrow (9850'-9860'; 9864'-9878'; 9752'-9762'; 9764'-9774'; 9778'-9785')
3. Stimulate well as necessary and evaluate.
4. Restore well to production.

Will commence operations upon BLM approval.

AUG 12 1992
O. C. D.
ARTESIA, OFFICE

14. I hereby certify that the foregoing is true and correct

Signed Earl W. Nelson Title Engineer Date August 3, 1992

(This space for Federal or State office use)

Approved by _____ Title _____ Date 8/11/92
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

REC. ED

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NOV 1 8 1992
O. C. D.
ARTESIA, NEW MEXICO

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed. Com. #2

2. Name of Operator
Mewbourne Oil Company

9. API Well No.

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1350'FWL & 1650'FNL
Ut. F
1-22S-27E

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☒ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

9-09-92 Set CIBP @ 9970'. Dumped 35' cement on CIBP.

9-11-92 Perforated Morrow formation (9850'-9860' & 9864'-9876') with 2 SPF for a total of 46 holes.

9-12-92 Acidized Morrow perforations with 2800 gal. 7 1/2% HCL and 1000 SCF/bbl. N2.

9-16-92 Fraced Morrow perforations with 40,000 gal. binary foam carrying 30,000# 20/40 sand.

ACCEPTED FOR RECORD
NOV 2 1992
CARLSBAD, NEW MEXICO

NOV 2 9 23 AM '92
RECEIVED

14. I hereby certify that the foregoing is true and correct

Signed _____ Title District Supt. Date Oct. 27, 1992

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Laboratory Services

1331 Tasker Drive

Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Pro Well Testing & Wireline
Attention: Mr. Ray Gallagher
P. O. Box 791
Hobbs, New Mexico 88240

SAMPLE IDENTIFICATION: Chaulk Bluff Fed. #2
COMPANY: Mewbourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 11/5/92 3:15PM
ANALYSIS DATE: 11-05-92
PRESSURE - PSIG 540.00
SAMPLE TEMP. °F 78.00
ATMOS. TEMP. °F 48.00

GAS (XX) LIQUID ( )
SAMPLED BY: Gallagher-Pro Well
ANALYSIS BY: Rolland Perry

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Oxygen	(O2)		
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	0.40	
Carbon Dioxide	(CO2)	0.59	
Methane	(C1)	88.27	
Ethane	(C2)	7.05	1.881
Propane	(C3)	2.37	0.652
I-Butane	(IC4)	0.29	0.095
N-Butane	(NC4)	0.52	0.164
I-Pentane	(IC5)	0.15	0.055
N-Pentane	(NC5)	0.10	0.036
Hexane	(C6+)	0.26	0.107
Heptanes Plus	(C7)	0.00	0.000
		100.00	2.990

BTU/CU.FT. - DRY	1125	MOLECULAR WT	18.5705
AT 14.650 DRY	1121		
AT 14.650 WET	1102	26# GASOLINE -	0.253
AT 15.025 DRY	1150		
AT 15.025 WET	1130		
SPECIFIC GRAVITY -			
CALCULATED	0.641		
MEASURED	0.000		

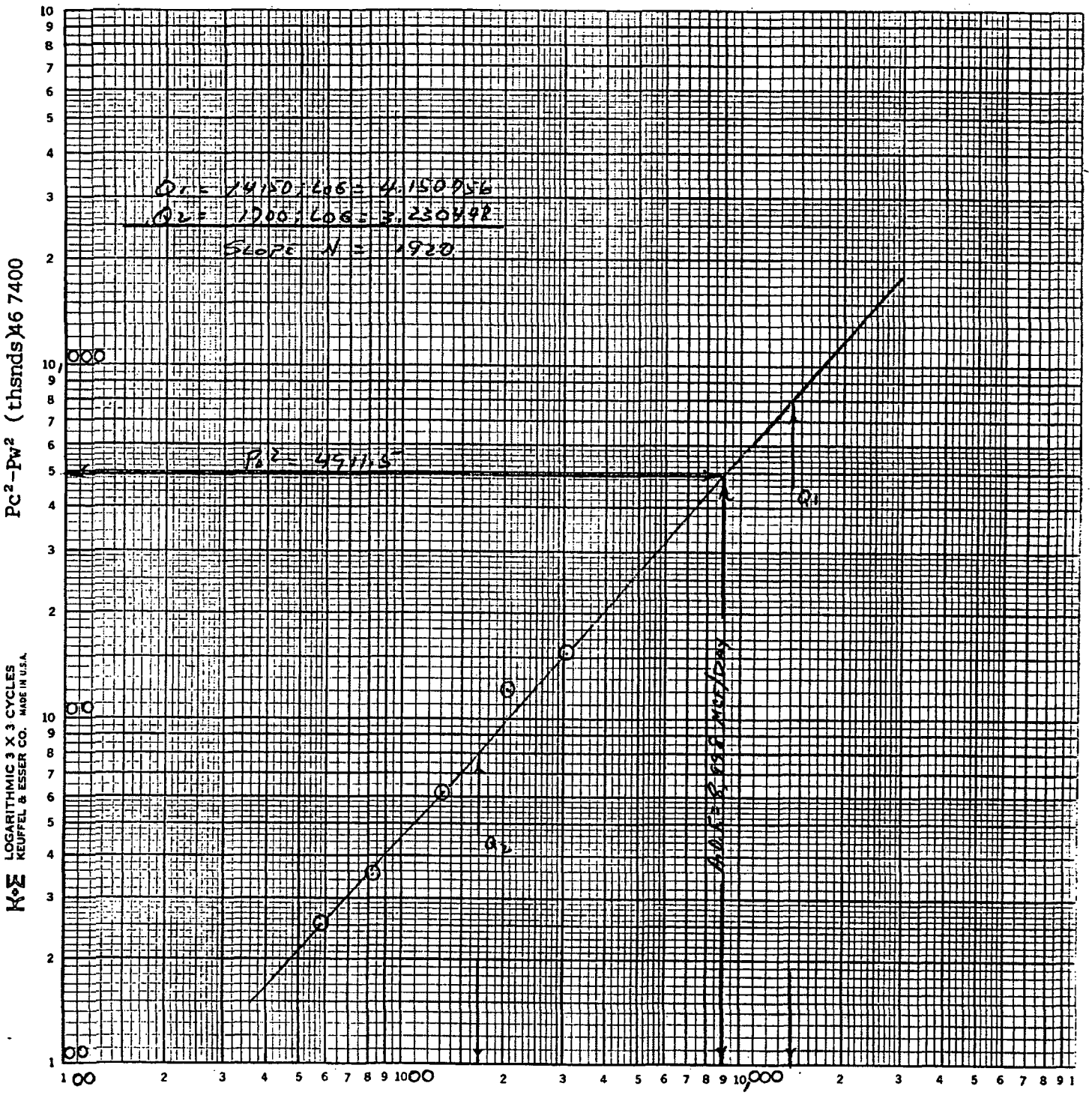
SUGGESTED FIELD DATA SHEET (Not Required To File)

Test: ☒ Initial ☐ Annual ☐ Special		Test Date: 11-5-92	Lease No. or Serial No.
Company: MEWBOURNE OIL COMPANY	Connection		Allottee
Field	Reservoir: MORROW	Location	Unit
Completion Date	Total Depth	Plug Back TD: 9935	Elevation
			Farm or Lease Name: Chalk Bluff
Csg. Size: 5½	Wt. d	Set At: 9935	Perforation From: 9850 To: 9876
			Well No.: 2
Tbg. Size: 2 7/8	Wt.: 6.5 d	Set At: 2,441 / 9731	Perforation: From To
			Sec.: 1 Twp-Blk.: 18 Rge.: 27
Type Completion (Describe): single		Packer Set At: 9731	County or Parish: Eddy
Producing Thru: tbg	Reservoir Temp. F	Mean Annual Temp. F: 60	Baro. Press. – P_a: 13.2
			State: New Mexico
L: 9731	H: 9731	G_g: .641	% CO_2: .59 % N_2: .40 % H_2S: Prover: Meter Run: 3.068 Flg.

DATE Time of Reading	ELAP. TIME Hrs.	Wellhead Working Pressure: Tbg. Psig.	Csg. Psig	Temp. F	METER OR PROVER: Pressure Psig	Diff.	Temp. F	Orifice	REMARKS (Include liquid Production data Type–A.P.I. Gravity-Amount)
	72	2203	PKR.						
1st	1	2145	"		530	3.00	78	1.500	
2nd	30min.	2120	"		530	6.00	84	1.500	
3rd	45m	2055	"		540	15.00	78	1.500	
4th	1	1900	"		540	36.00	70	1.500	
5th	30m	1805	"		545	78.00	66	1.500	
									NO FLUID – DRY GAS

Page of Data By

MEWBOURNE OIL COMPANY
Chalk Bluff Well #2
1-18-27
Eddy County, New Mexico
11-5-92



Submit in duplicate to appropriate district office
See Rule 401 & Rule 1122

Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

OIL CONSERVATION DIVISION RECEIVED '92 NOV 16 AM 9 20

RECEIVED DEC 3 1992 O. C. D. ARTESIA, OFFICE

Form C-122
Revised 4-1-91

C/SF File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: Mewbourne						Lease or Unit Name: Chalk Bluff		
Type Test: ☒ Initial ☐ Annual ☐ Special						Test Date: 11-5-92	Well No.: 2	
Completion Date		Total Depth		Plug Back TD: 9935		Elevation	Unit Ltr. - Sec. - TWP - Rge.: 1 - 18 - 27	
Csg. Size: 5½	Wt.	d	Set At: 9935	Perforations: From: 9850	To: 9876		County: Eddy	
Tbg. Size: 2 7/8	Wt.: 6.5	d: 2.441	Set At: 9731	Perforations: From:	To:		Pool: N Illinois Camp Morr	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple: single				Packer Set At: 9731			Formation: Morrow	
Producing Thru: tbg.	Reservoir Temp. °F: 171° @9731		Mean Annual Temp. °F: 60	Baro. Press - P_a: 13.2			Connection: Phillips	

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
9731	9731	.641	.59	.40			3.068	flg.

	FLOW DATA				TUBING DATA		CASING DATA		
NO.	Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI					2203		PRK		72 hr.
1.	3 X 1.500	530	3.00	78	2145		"		1 hr.
2.	3 X 1.500	530	6.00	84	2120		"		30 min.
3.	3 X 1.500	540	15.00	78	2055		"		45 min.
4.	3 X 1.500	540	36.00	70	1900		"		1 hr.
5.	3 X 1.500	545	78.00	66	1805		"		30 min.

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, Fpv.	Rate of Flow Q, Mcfd
1.	11.13	40.37	543.2	.9831	1.249	1.055	582
2.	11.13	57.09	543.2	.9777	1.249	1.049	832
3.	11.13	91.09	553.2	.9831	1.249	1.056	1315
4.	11.13	141.12	553.2	..9905	1.249	1.056	2052
5.	11.13	208.66	558.2	.9943	1.249	1.057	3049

NO.	P_r	Temp. °R	T_r	Z
1.	.81	538	1.44	.898
2.	.81	544	1.46	.909
3.	.82	538	1.44	.897
4.	.82	530	1.42	.897
5.	.83	526	1.41	.895

Gas Liquid Hydrocarbon Ratio: Dry Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: .641 Deg.
Specific Gravity Separator Gas: XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: 670 P.S.I.A. ____ P.S.I.A.
Critical Temperature: 372 R ____ R

P_c 2216.2 P_c^2 4911.5

NO.	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1.		2159.0	4661.1	250.4
2.		2134.8	4557.3	354.3
3.		2073.3	4294.3	617.3
4.		1923.9	3701.3	1210.2
5.		1843.0	3396.6	1514.9

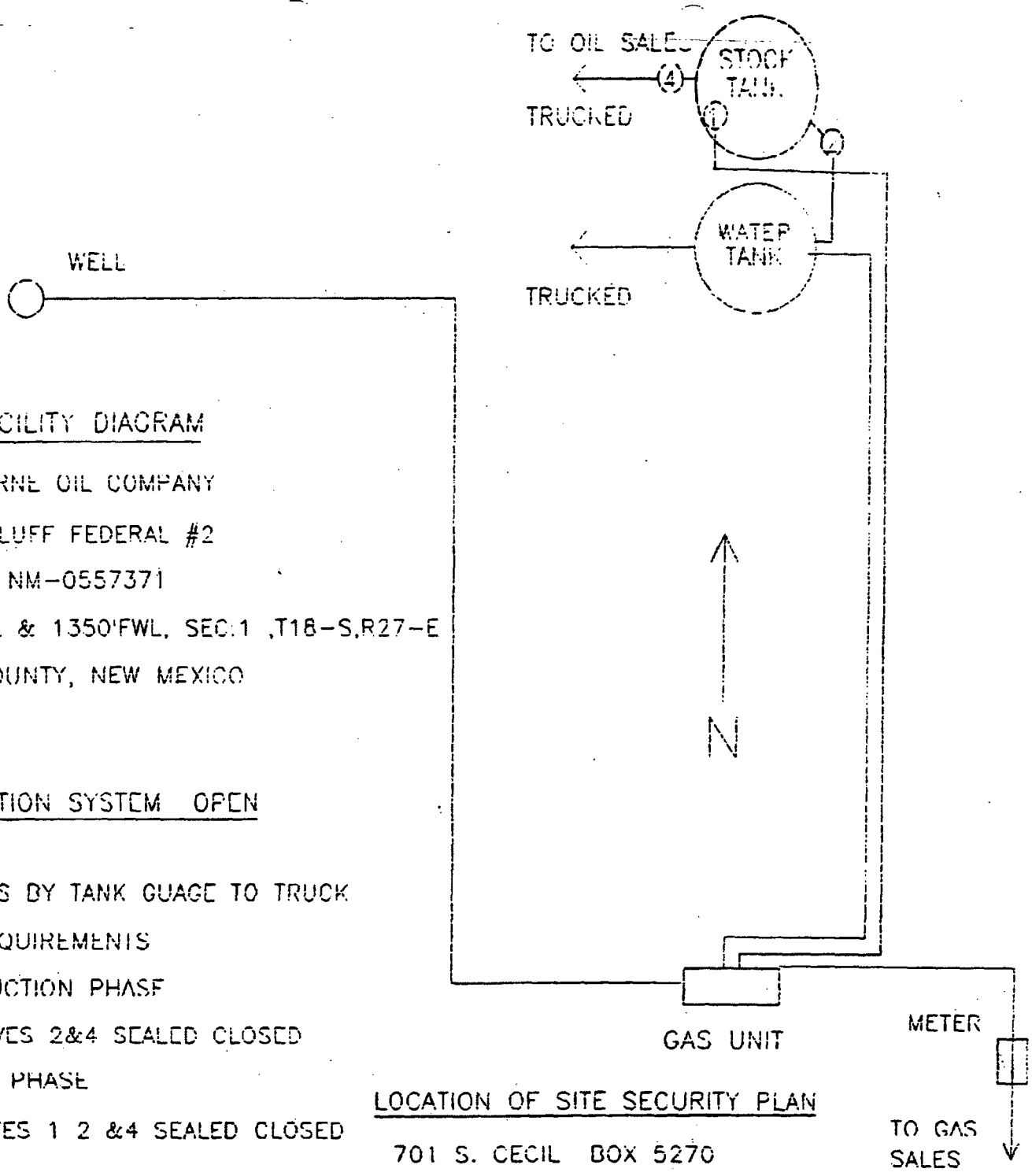
1) $\frac{P_c^2}{P_c^2 - P_w^2} = 3.242$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2.951$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 8.998$

Absolute Open Flow: 8.998 Mcfd @ 15.025 | Angle of Slope θ: 47.4 | Slope, n: .920

Remarks: No Fluid Produced during Test

Approved By Division	Conducted By:	Calculated By:	Checked By:
	PRO WELL TESTERS	BM	BM



SITE FACILITY DIAGRAM

MEWBOURNE OIL COMPANY

CHALK BLUFF FEDERAL #2

LEASE # NM-0557371

1650'FNL & 1350'FWL, SEC.1 ,T18-S,R27-E

EDDY COUNTY, NEW MEXICO

PRODUCTION SYSTEM OPEN

OIL SALES BY TANK GUAGE TO TRUCK

SEAL REQUIREMENTS

PRODUCTION PHASE

VALVES 2&4 SEALED CLOSED

SALES PHASE

VALVES 1 2 &4 SEALED CLOSED

LOCATION OF SITE SECURITY PLAN

701 S. CECIL BOX 5270

HOBBS, NEW MEXICO

LEGEND

GAS SALES

OIL DUMPLINE

WATER DUMPLINE

WATER DRAIN

Continued:

The proposed operation is described in detail on the attached diagrams.

A map is enclosed showing the lease numbers and location of all leases and wells that will contribute production to the proposed commingling/common storage facility. All unitized/communitized areas, producing zones/pools are also clearly illustrated.

A schematic diagram is also attached which clearly identifies all equipment that will be utilized.

The storage and measuring facility is located at NM -1/4, Sec. 1, T 18 S, R 27 E, on lease No. 0557371, Eddy County, New Mexico. BLM will be notified if there is any future change in the facility location.

Details of the proposed method for allocating production to contributing sources is as follows:

Gas will be measured at the individual leases and a percentage of contribution will be calculated and applied to the integrated sales volume. There is currently 6 wells producing into the system.

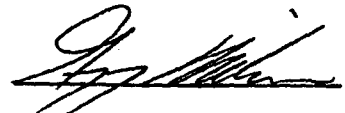
The working interest owners have been notified of the proposal.

The proposed commingling of production is in the interest of conservation and will not result in reduced royalty or improper measurement of production.

The proposed commingling is necessary for continued operation of the above referenced Federal leases.

We understand that the requested approval will not constitute the granting of any right-of-way or construction rights not granted by the lease instrument. And, we will submit within 30 days an application for right-of-way approval to the BLM's Realty Section in your office if we have not already done so.

Additional wells require additional commingling approvals.

Signature: 

Name: Gregory Milner

Title: Engineer

Date: 6/06/95

CRA BLM FORMAT

APPLICATION FOR SURFACE COMMINGLING, OFF LEASE STORAGE AND MEASUREMENT APPROVAL

This Format Should Be Attached To A Sundry Notice

To: Bureau of Land Management
P. O. Box 1778
Carlsbad, New Mexico 88221-1778

Newbourne Oil Company (Operator's Name) is requesting approval for surface commingling and off-lease storage and measurement of hydrocarbon production from the following formation(s) and well(s) on Federal Lease No. NM-0557371 ; Lease Name: Chalk Bluff Federal

Well No.	Loc.	Sec.	Twp.	Rng.	Formation
#2	F	1	18S	27E	Morrow
#3	I	1	18S	27E	Morrow

with hydrocarbon production from the following formation(s) and well(s) on State lease No. E-7179 ; Lease Name: Chalk Bluff "6"
E-647 Illinois Camp 17
E-1313 Illinois Camp 20

Well No.	Loc.	Sec.	Twp.	Rng.	Formation
Chalk Bluff 6 St. #1	M	6	18S	28E	Morrow
Illinois Camp 17 St. #1	F	17	18S	28E	Morrow
Illinois Camp 17 St. #2	J	17	18S	28E	Morrow
Illinois Camp 20 St. #1	C	20	18S	28E	Morrow

Production from the wells involved is as follows:

Well Name and No.	BOPD	Oil Gravity	MCFPD
Chalk Bluff Fed. #2	N/A	N/A	80
Chalk Bluff Fed. #3	N/A	N/A	54
Chalk Bluff 6 St. #1	N/A	N/A	166
Illinois Camp 17 St. #1	N/A	N/A	1200
Illinois Camp 17 St. #2	N/A	N/A	744
Illinois Camp 20 St. #1	N/A	N/A	118

* Only gas will be comingled off lease

Continued ...

C/SF

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well
☐ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator
Mewbourne Oil Company

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1350' FWL & 1650' FNL
Sec. 1-T18S-R27E

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

8. Well Name and No.
Chalk Bluff Fed. Com. #2

9. API Well No.
30-015-26741

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other Application for Measurement Approval	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

See Attached Forms & Diagrams.

RECEIVED
OCT 10 1995
OIL CON. DIV.
DIST. 2

14. I hereby certify that the foregoing is true and correct

Signed _____ Title Engineer Date 6/06/95

(This space for Federal or State office use)

Approved by Orig. Signed by Adam Salamon Title Petroleum Engineer Date 10/5/95

Conditions of approval, if any:

...ue 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

C/SF

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-0557371

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.: Chalk Bluff Fed #2

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26741

3. Address and Telephone No.: P. O. Box 5270, Hobbs, NM 88241 (505)393-5905

10. Field and Pool, or Exploratory Area: North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 1650' FNL & 1350' FWL of Section 1, T18S, R27E, Eddy County, NM

11. County or Parish, State: Eddy, NM

FEB 1999
RECEIVED
OCD - ARTESIA

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☒ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

cribe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is ctionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)*

Set cast iron bridge plug to abandon Morrow Sand perforations 9850-9860' and 9864-9876'. Perforate Morrow Sands 9764-74' and 9778-85' and test.

14. I hereby certify that the foregoing is true and correct

Signed _____ Title District Manager Date 01/11/99

(This space for Federal or State office use)

Approved by (ORIG. SGD.) GARY GOURLEY Title PETROLEUM ENGINEER Date JAN 29 1999

Conditions of approval, if any:

8 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent ments or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

29-Jul-05

MEWBOURNE OIL CO
PO Box 5270
Hobbs NM 88241

NOTICE OF VIOLATION - Inspection

Dear Operator:

The following inspection(s) indicate that the well, equipment, location or operational status of the well(s) failed to meet standards of the New Mexico Oil Conservation Division as described in the detail section below. To comply with standards imposed by Rules and Regulations of the Division, corrective action must be taken immediately and the situation brought into compliance. The detail section indicates preliminary findings and/or probable nature of the violation. This determination is based on an inspection of your well or facility by an inspector employed by the Oil Conservation Division on the date(s) indicated.

Please notify the proper district office of the Division, in writing, of the date corrective actions are scheduled to be made so that arrangements can be made to reinspect the well and/or facility.

INSPECTION DETAIL SECTION

CHALK BLUFF FEDERAL COM No.002 F-1-18S-27E **30-015-26741-00-00**

Inspection Date	Type Inspection	Inspector	Violation?	*Significant Non-Compliance?	Corrective Action Due By:	Inspection No.
07/29/2005	Routine/Periodic	Chris Beadle	Yes	No	8/29/2005	iCLB0521034161

Violations
Absent Well Identification Signs (Rule 103)

Comments on Inspection: Well sign not visible for distance required by Rule 103. Well sign is hidden inside bush grown up around the sign.

In the event that a satisfactory response is not received to this letter of direction by the "Corrective Action Due By:" date shown above, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Divison Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

Sincerely,

Artesia OCD District Office

Note: Information in Detail Section comes directly from field inspector data entries - not all blanks will contain data.
*Significant Non-Compliance events are reported directly to the EPA, Region VI, Dallas, Texas.

SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 95
Artificial Penetration Review

OPERATOR Apache Corp.	**STATUS** Active
LEASE Federal T	**LOCATION** Sec. 12 -T 18S-R 27E
WELL NUMBER 001	**MUD FILLED BOREHOLE** NA
DRILLED 9/13/90	**TOP INJECTION ZONE** -3731'
PLUGGED NA	**API NO.** 30-015-26404

REMARKS:

MAP ID NO. 95

APACHE CORPORATION
FEDERAL T NO. 001

API NO. 30-015-26404

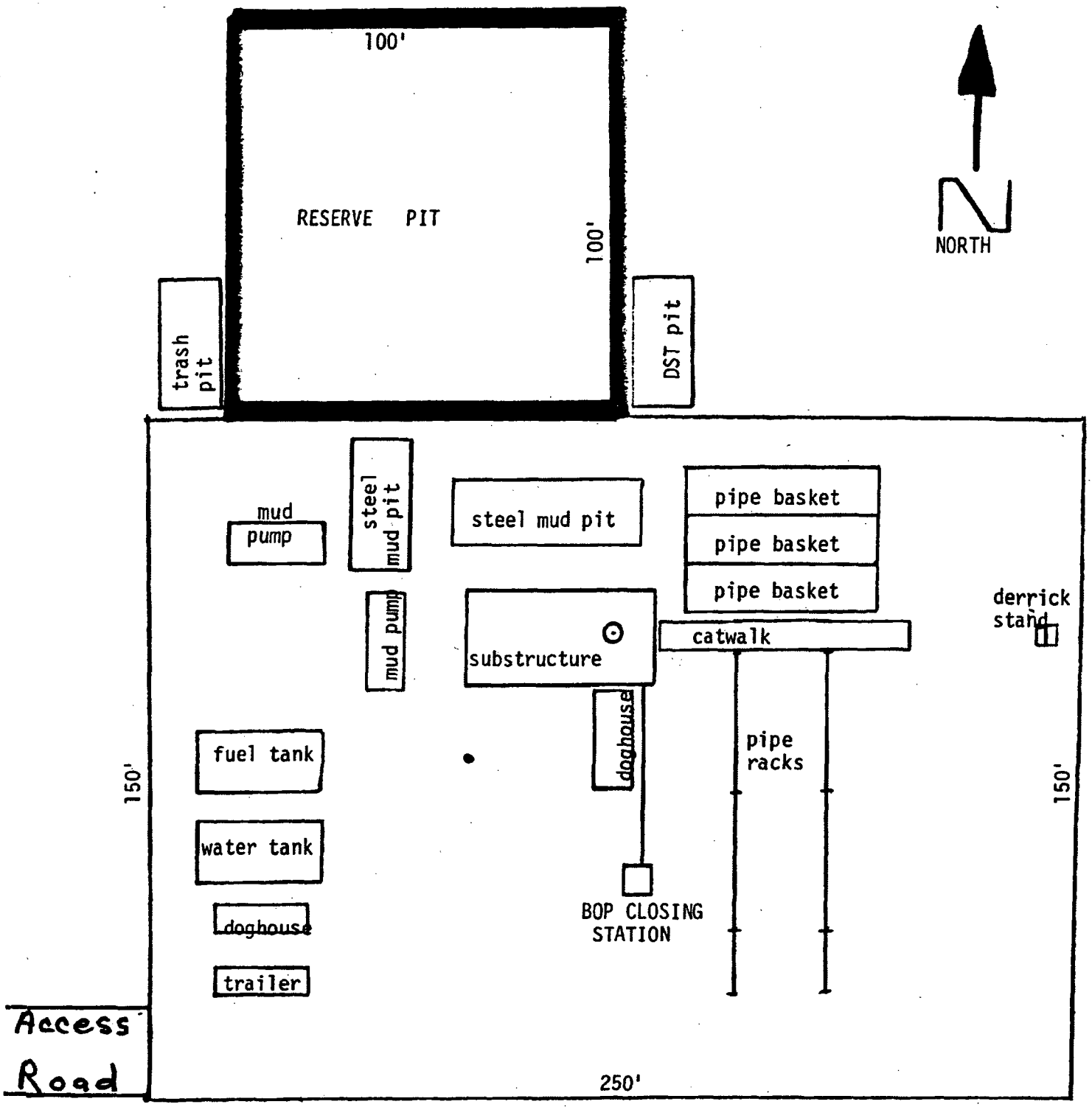


EXHIBIT "C"

MEWBOURNE OIL COMPANY
FEDERAL "T" # 1
LEASE # NM-42410
990' FEL & 660' FNL
SEC. 12-T18S-R27E
EDDY COUNTY, NEW MEXICO

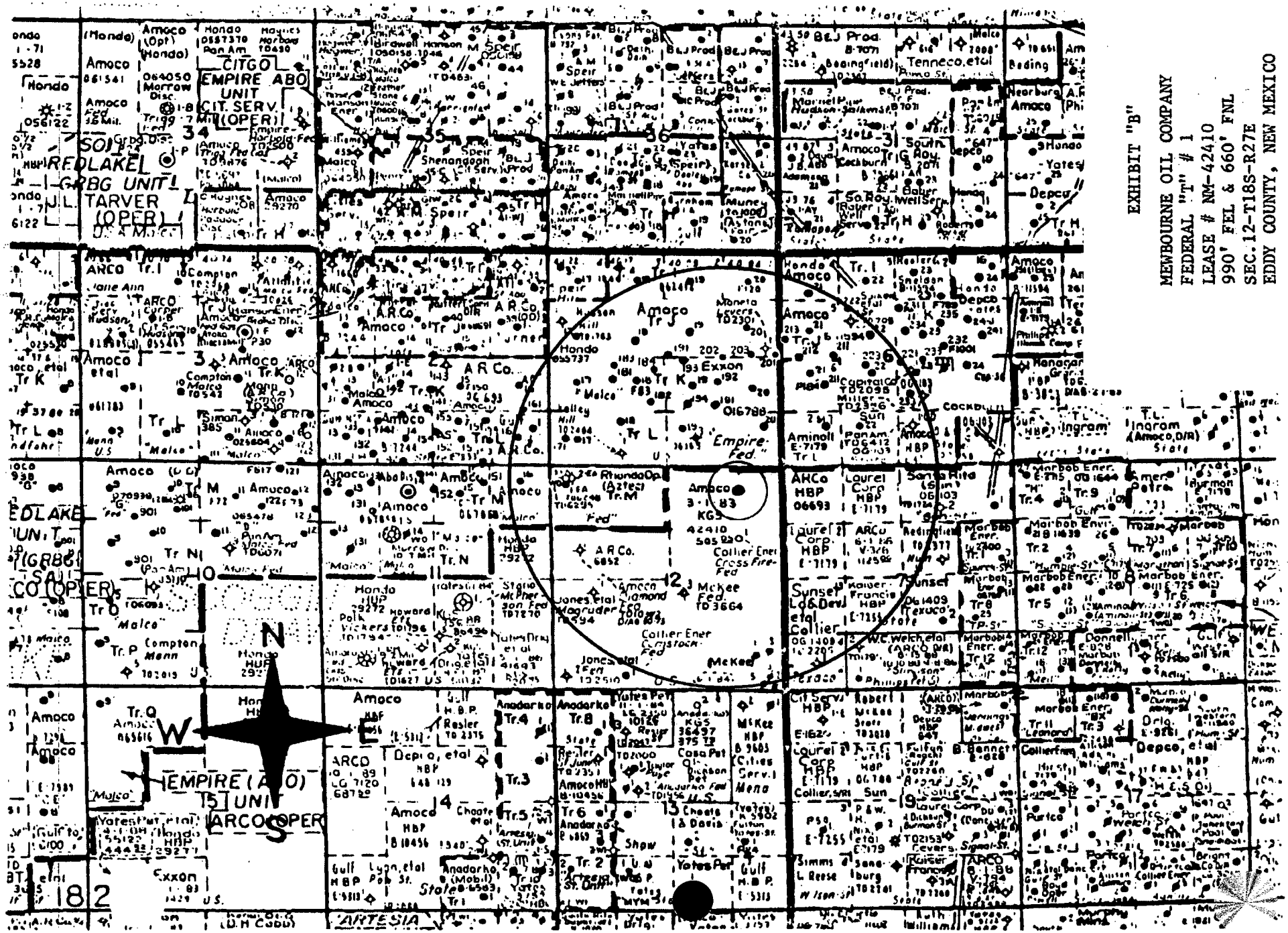


EXHIBIT "B"
MEWBOURNE OIL COMPANY
FEDERAL "I" # 1
LEASE # NM-42410
990' FEL & 660' FNL
SEC. 12-T18S-R27E
EDDY COUNTY, NEW MEXICO
N
W
E
S
EMPIRE (ABO) UNIT
REDLAKE (GRBG SAN AND) UNIT
ARTESIA

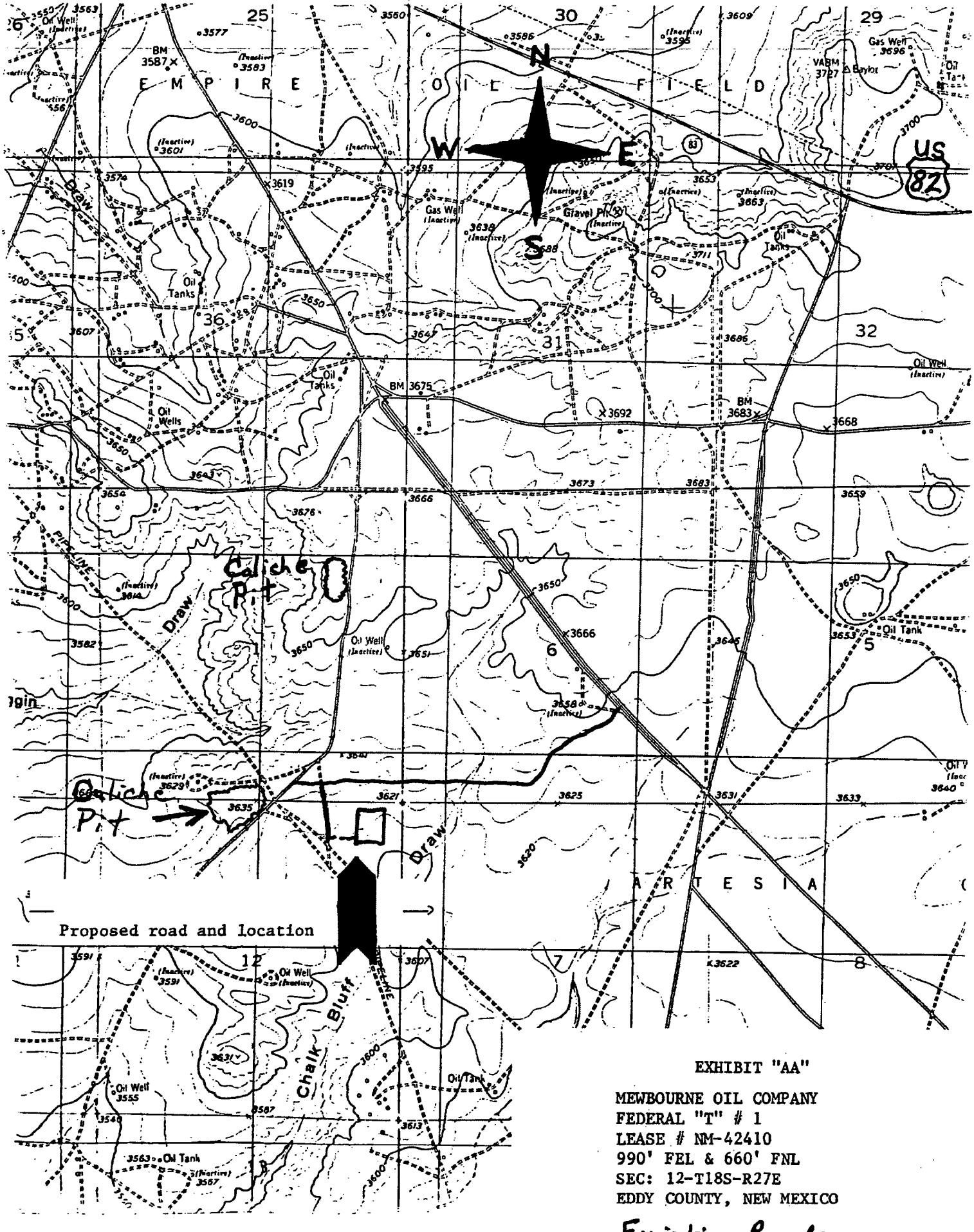


EXHIBIT "AA"

MEWBOURNE OIL COMPANY
FEDERAL "T" # 1
LEASE # NM-42410
990' FEL & 660' FNL
SEC: 12-T18S-R27E
EDDY COUNTY, NEW MEXICO

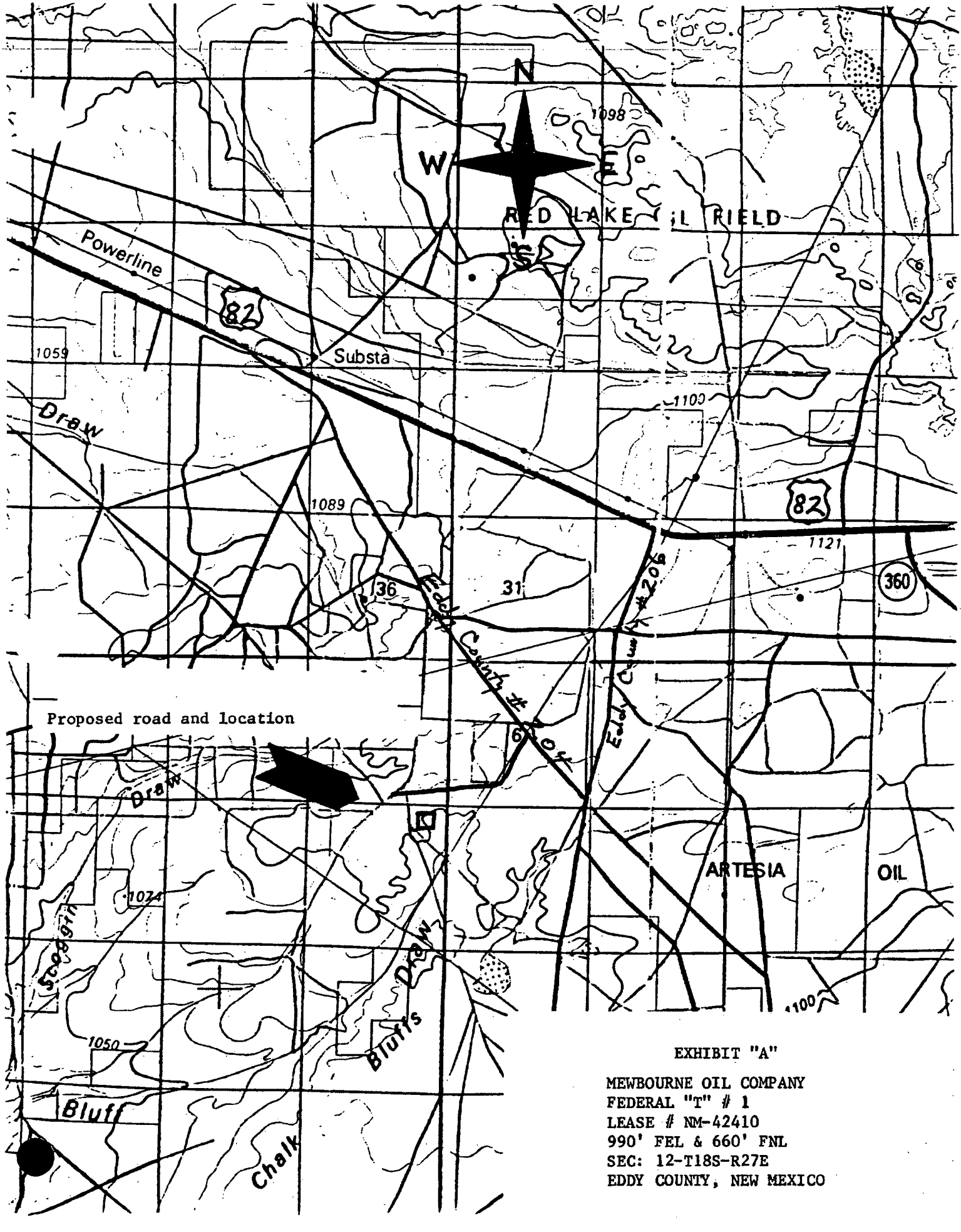


EXHIBIT "A"

MEWBOURNE OIL COMPANY
FEDERAL "T" # 1
LEASE # NM-42410
990' FEL & 660' FNL
SEC: 12-T18S-R27E
EDDY COUNTY, NEW MEXICO

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

May 3, 1990

Mewbourne Oil Company
c/o Hinkle, Cox, Eaton, Coffield & Hensley
500 Marquette, NW
Suite 800
Albuquerque, NM 87102-2121

Attention: James Bruce

Administrative Order NSL-2785

Dear Mr. Bruce:

Reference is made to your application on behalf of Mewbourne Oil Company dated April 12, 1990 for a non-standard gas well location for your Federal "T" Well No. 1 to be located 660 feet from the North line and 990 feet from the East line (Unit A) of Section 12, Township 18 South, Range 27 East, NMPM, Undesignated North Illinois Camp Morrow Gas Pool, Eddy County, New Mexico. The N/2 of said Section 12 shall be dedicated to the well forming a standard 320-acre gas spacing and proration unit for said pool.

By the authority granted me under the provisions of General Rule 104 (II) the above-described unorthodox gas well location is hereby approved.

Sincerely,

William J. LeMay
Director

WJL/MES/ag

cc: Oil Conservation Division - Artesia
US Bureau of Land Management - Carlsbad

12. CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Mewbourne Oil Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

May 18, 1990

Date

For W.H. Cravey

Bill Prince

W.H. Cravey
Production Superintendent
Mewbourne Oil Company

10. OTHER 1. ORMATION:

A. The geologic surface formation is hard clay interspersed with sand and chert outcroppings. Vegetative cover is generally sparse and consist mostly of greasewood and bear grass.

B. The estimated tops of geologic markers are as follows:

Queen	1260'	Cisco	7740'
San Anres	2100'	Canyon	8350'
Glorieta	3720'	Strawn	8900'
Tubb	4930'	Atoka	9500'
Abo	5900'	Morrow	9600'
Wolfcamp	6900'	Mississippian	10,100'

C. The estimated depths at which anticipated water, oil, or gas are expected to be encountered:

Water: Possible surface water between 100-300'.

Oil: Penrose @ 1520'.

Gas: Wolfcamp @ 6900'.

D. Proposed Casing Program: See Form 9-331C.

E. Pressure Control Equipment: See Form 9-331C and Exhibit "D".

F. Mud Program: See Form 9-331C.

G. Auxiliary Equipment: Mud-gas seperator and PVT aystem from 6,000' - T.D.

H. Testing and Coring Program: Possibility of 6 DST's in the following zones; Wolfcamp, Cisco, Canyon, Strawn, Atoka, and Morrow. No cores are planned at this time.

Logging: Gamma Ray - Spectral
Density - Dual Spaced Neutron Log; T.D. to surface.
Gamma Ray - Dual Latero Log
Microguard Log; T.D. to Intermediate casing.

I. No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered the proposed mud program will be modified to increase the weight.

J. Anticipated Starting Date: As soon as possible after BLM approval.

11. OPERATOR'S REPRESENTATIVE

The field representatives responsible for assuring compliance with the approved surface use and operations plan are as follows:

W.H. Cravey
Erick W. Nelson
Bill Pierce
701 South Cecil Street
Hobbs, New Mexico
Phone: (505) 393-5905

5. SOURCE OF CONSTRUCTION MATERIALS:

A. Caliche for surfacing the road and location hopefully will come from the construction site. In the event that unsuitable material is encountered, caliche will be taken from a BLM pit located in the NE4/NW4 of section 12-T18S-R27E, which would be BLM pit # 18271203. This pit also extends into the SE4/SW4 of section 1-T18S-R27E which would be BLM pit # 18270114. An alternate pit which may be used in the event BLM pit # 18271203 contains unsuitable material would be a BLM pit located in the SW4/NE4 of section 1-T18S-R27E, which would be BLM pit # 18270107.

6. METHODS OF HANDLING WASTE DISPOSAL:

A. Drill cuttings will be disposed of in the drilling pits.

B. Drilling fluids will be allowed to evaporate in the drilling pits until pits are dry.

C. Water produced during tests will be disposed of in the drilling pits. Oil produced during tests will be stored in test tanks until sold.

D. Current laws and regulations pertaining to the disposal of human water will be complied with.

E. All trash, junk and other waste material will be contained to prevent scattering and will be removed and deposited in an approved sanitary landfill.

F. All trash and debris will be buried or removed from the wellsite within 30 days after finishing drilling and/or completion operations.

7. ANCILLIARY FACILITIES:

A. None required.

8. WELLSITE LAYOUT:

A. Exhibit "C" shows the relative location and dimensions of the well pad, mud pits, reserve pit, trash pit, and location of major rig components.

B. The pad and pit area has been staked and flagged.

9. PLANS AND RESTORATION OF THE SURFACE:

A. After completion of drilling and/or completion operations all equipment and other material not needed for operations will be removed. Pits will be filled and location cleaned of all trash and junk to leave the wellsite in an aesthetically pleasing condition as possible.

MULTI-POINT SURFACE USE AND OPERATING PLAN

MEWBOURNE OIL COMPANY

FEDERAL "T" WELL NO. 1

990' FEL & 660' FNL OF SEC. 12-T18S-R27E

EDDY COUNTY, NEW MEXICO

NEW MEXICO LEASE NO. NM-42410

This plan is submitted with the Application for Permit to Drill (APD) the above described well. The purpose of the plan is to describe the location of the proposed well, the proposed construction activities and operations plan and the magnitude of necessary surface disturbance involved, so that a complete appraisal can be made of the enviromental effects associated with the operation. The surface to be disturbed is privately owned and a surface use agreement has been signed with the land owner.

1. EXISTING ROADS:

   A. Exhibit "A" is a portion of a BLM map, 30 x 60 minute quadrangle; Artesia, New Mexico, showing the location of the proposed well as staked. From the junction of U.S. 82 and U.S. 285 Highways in Artesia, proceed east on U.S. 82 for 12 miles. Turn right (south) on Eddy County Road #206 (Illinois Camp Road) and proceed south for 1 3/4 miles. Turn right (west) on Eddy County Road #204 and proceed west for 3/10 of a mile. Turn left (south) on an existing caliche lease road and follow southwest for 7/8 of a mile. Turn left (south) and proceed 1/4 mile, turn left (east) into location.

   B. Culverts: None required.

   C. Cuts and Fills: A three foot cut will be required for construction of the location.

   D. Turn-Outs: None required.

   E. Gates and Cattleguards: None required.

2. LOCATION OF EXISTING WELLS:

   A. Existing wells in a 1 mile radius are shown of Exhibit "B".

3. LOCATION OF PROPOSED FACILITIES:

   A. If the well is productive, all production facilities will be constructed on the existing pad and no additional surface disturbance will occur.

4. LOCATION AND TYPE OF WATER SUPPLY:

   A. Water will be purchased and trucked to the wellsite over the existing and proposed roads shown on Exhibits "A" and "AA".

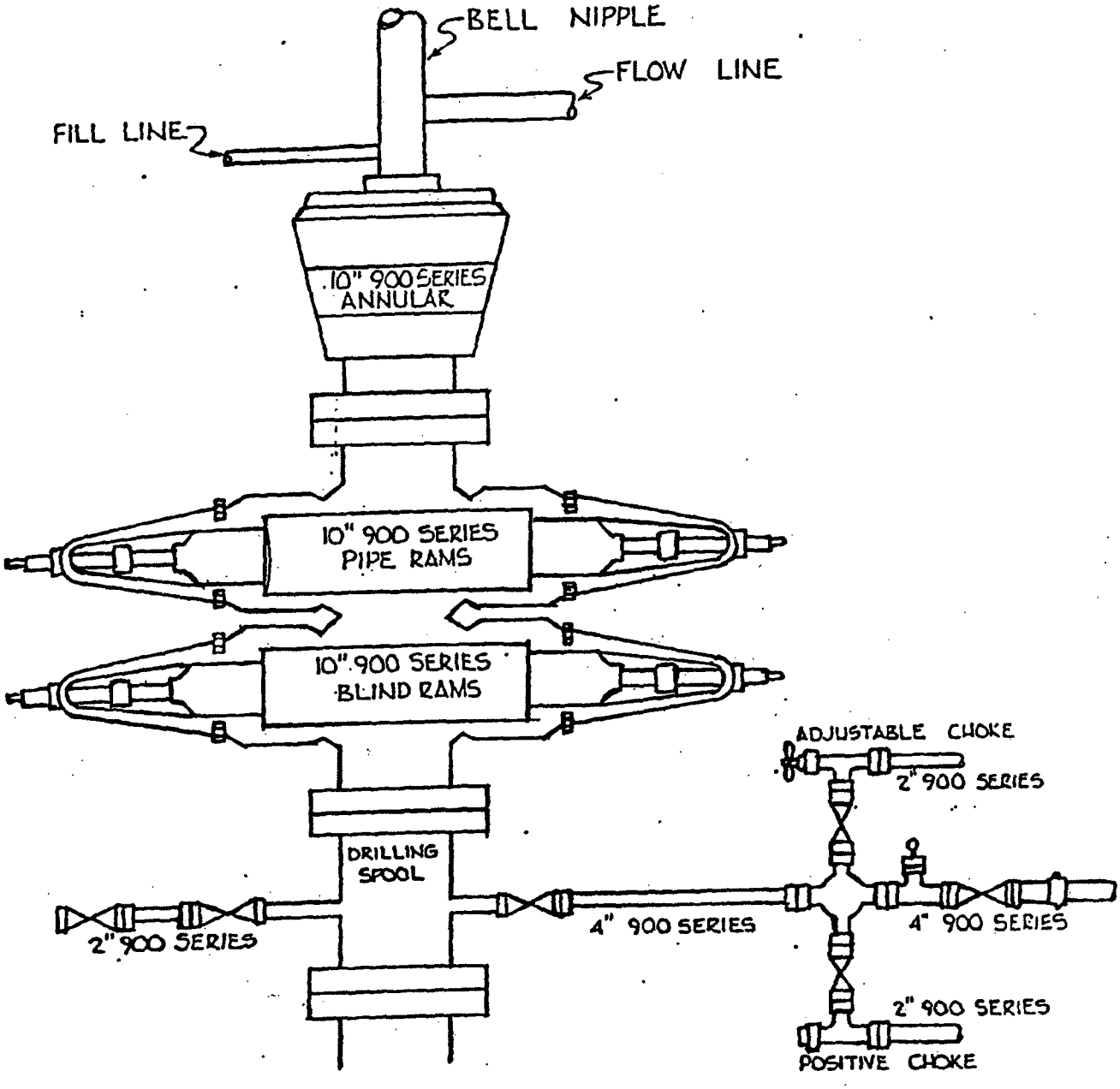


EXHIBIT "D"

MEWBOURNE OIL COMPANY
FEDERAL "T" # 1
LEASE # NM-42410
990' FEL & 660' FNL
SEC.12-T18S-R27E
EDDY COUNTY, NEW MEXICO

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
JUN 15 '90
O. C. D.
ARTESIA, OFFICE

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
MEWBOURNE OIL COMPANY	FEDERAL "T"	1

Unit Letter	Section	Township	Range	County
A	12	18 South	27 East NMPM	Eddy

Actual Footage Location of Well:
660 feet from the North line and 990 feet from the East line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3618.9	Morrow	North Illinois Camp Morrow	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

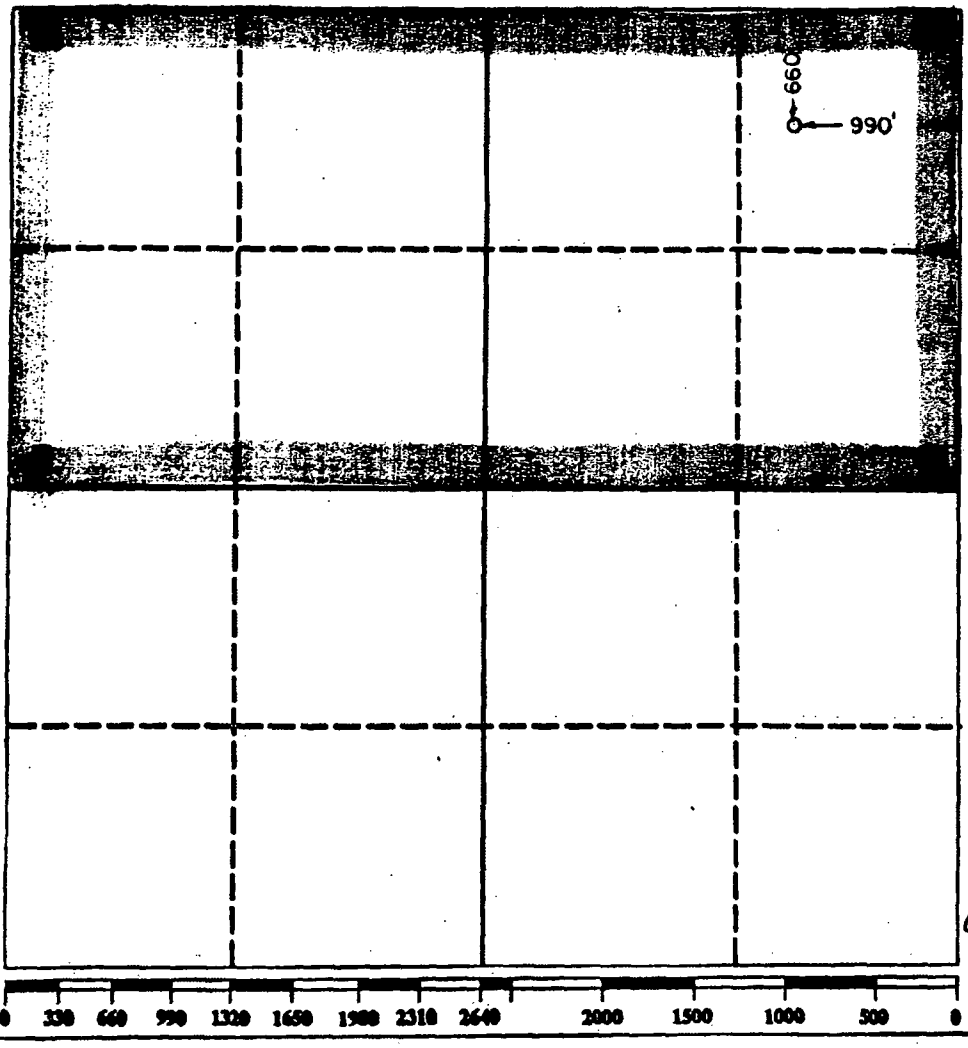
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☐ Yes ☐ No If answer is "yes" type of consolidation _____

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: W.H. Cravey

Printed Name: W.H. Cravey

Position: District Supt.

Company: Mewbourne Oil Company

Date: April 12, 1990

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 4/7/90

Signature & Seal of Professional Surveyor: HERSCHEL L. JONES

Certificate No. 3640

STATE OF NEW MEXICO
REGISTERED LAND SURVEYOR

30-015-26707

Form 3160-3
(November 1983)
(formerly 9-331C)

Drawer DD
Artesia, NM 88210

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: NM 42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WORK: DRILL XXX ☐ DEEPEN ☐ PLUG BACK ☐

7. UNIT AGREEMENT NAME:

b. TYPE OF WELL: OIL WELL ☐ GAS WELL XX ☐ OTHER — SINGLE ZONE ☐ MULTIPLE ZONE ☐

8. FARM OR LEASE NAME: FEDERAL "T"

2. NAME OF OPERATOR: MEWBOURNE OIL COMPANY ✓ RECEIVED

9. WELL NO.: 1

3. ADDRESS OF OPERATOR: Box 5270; Hobbs, New Mexico 88241 JUN 15 '90

10. FIELD AND POOL, OR WILDCAT: North Illinois Camp Morrow

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 660' FNL & 990' FEL Unit A
At proposed prod. zone: SAME
O. C. D. ARTESIA, OFFICE

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 12-T18S-R27E

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 8 miles southeast of Artesia, New Mexico

12. COUNTY OR PARISH: EDDY — 13. STATE: N. MEX.

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
660'	320	320
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
	10,300'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3618.9' GR

22. APPROX. DATE WORK WILL START*: Upon BLM approval

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17½"	13 3/8"	61#	450'±	450 sks. Class C - Circulated
11"	8 5/8"	24# & 32#	2600'±	700 sks. Class C - Circ back into surf.
7 7/8"	5½"	17# & 20#	10,300' ±	600 sks. Class H

RECEIVED
MAY 18 9 55 AM '90
O. C. D.
ARTESIA, OFFICE

Mud Program :
0 - 450' Spud mud with fresh water gel and lime. LCM as needed.
450' - 2600' Fresh water gel and lime. LCM as needed.
2600' -8500' Cut brine with lime for pH control. WT. 9.2 - 9.6ppg, WL - NC, LCM as needed.
8500' - 10,300' Cut brine with Drispac, salt gel, lime, soda ash, and starch. Wt. 9.2 - 9.6 ppg. WL 10 cc's or less. Raise weight accordingly if abnormal pressures are encountered.

Post ID-1
6-12-90
New Lse + API

BOP PROGRAM:

900 series BOP and Hydril on 13 3/8" surface casing and on 8 5/8" intermediate casing.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. For W.H. Cravey

SIGNED B. W. Pierce TITLE District Superintendent DATE 5/18/90

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY Orig. Signed by Richard L. Manus TITLE _____ DATE 6-13-90

CONDITIONS OF APPROVAL, IF ANY:
APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

NSL-2785 Appv. 5-3-90

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated, on all types of lands and leases for appropriate action by either a Federal or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable State or Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on this reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal or State agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective production zone.

ITEM 22: Consult applicable Federal or State regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR Part 3160.

PRINCIPAL PURPOSE: The information is to be used to process and evaluate your application for permit to drill, deepen, or plug back an oil or gas well.

ROUTINE USES: (1) The analysis of the applicant's proposal to discover and extract the Federal or Indian resources encountered. (2) The review of procedures and equipment and the projected impact on the land involved. (3) The evaluation of the effects of proposed operation on surface and subsurface water and other environmental impacts. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions, as well as routine regulatory responsibility.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if the lessee elects to initiate drilling operation on an oil and gas lease.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq) requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases.

This information will be used to analyze and approve applications.

Response to this request is mandatory only if the lessee elects to initiate drilling operations on an oil and gas lease.

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.: NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED

SEP 13 '90

O. C. D.
ARTESIA, OFFICE

1. OIL WELL ☐ GAS WELL ☒ OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Mewbourne Oil Company

8. FARM OR LEASE NAME: FEDERAL "T"

3. ADDRESS OF OPERATOR: P. O. Box 7698, Tyler, Texas 75711

9. WELL NO.: 1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 660' FNL & 990' FEL

10. FIELD AND POOL, OR WILDCAT: N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 12-18S-27E

14. PERMIT NO.: API #30-015-26404

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 3618.9' FR

12. COUNTY OR PARISH: Eddy

13. STATE: N.M.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

8/12/90 - Ran 5-1/2" casing as follows: 237 jts N-80, 17#, LT&C Used Casing set at 9473', cemented with 430 sxs Class "H" + .7 CF-14 + 5# salt + ¼# Celloseal. Overdisplaced 1 bbl without bumping plug. No back flow or vacuum.

8/27/90 - Ran 4" liner set at 10,140' with top of liner at 9055'. Pumped 500 gallons Sure Bone, followed by 5 bbl fresh water. Spaced and cemented with 80 sacks Class "H" with 1% CF-14. Liner wiper plug down at 11:30 AM.

RECEIVED
SEP 10 11 31 AM '90

SEP 11 1990

18. I hereby certify that the foregoing is true and correct

SIGNED: Daylene Thompson TITLE: Engr. Oprns. Secretary DATE: 9/06/90

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.
NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

RECEIVED
OCT 9 10 41 AM '90
CARLSBAD, NEW MEXICO
AREA MANAGER'S OFFICE
RECEIVED
OCT 17 '90
O. C. D.
ARTESIA, OFFICE

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL ☐ GAS WELL ☒ OTHER

7. UNIT AGREEMENT NAME

2. NAME OF OPERATOR
Mewbourne Oil Company

8. FARM OR LEASE NAME
FEDERAL "T"

3. ADDRESS OF OPERATOR
P. O. Box 7698, Tyler, Texas 75711

9. WELL NO.
1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface
660' FNL & 990' FEL

10. FIELD AND POOL, OR WILDCAT
N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
12-18S-27E

14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY OR PARISH	13. STATE
API #30-015-26404	3618.9' GR	Eddy	N.M.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	X	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	X	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

9/14/90 - Perforated Morrow 10,008-014', 12 holes; 10,038-054', 36 holes. Total 48 holes 24'.

9/15/90 - Halliburton broke down perfs with 2000 gals 7½% Morflo B.C. acid containing 1000 SCF/Bbl N_2 carrying 96 ball sealers and flushed with 23 bbls 2% KCL water containing 1000 SCF/Bbl N_2. Pressured casing to 1000#. Had good ball action. ISDP 5050#. In 5 mins., 4580#, In 10 mins, 4300#, In 15 mins, 4130#. Max 6000#. Max Rate 3.7 BPM. Avg 5850#. Avg Rate 3.4 BPM. 71 Bbls load to recover.

9/26/90 - Halliburton frac'd Morrow perfs with 8900 gals gelled 2% KCL water + 87 tons of CO_2 carrying 11,500# 20/40 Interprop. Pressured annulus to 2000#. ISDP 5340#. In 5 mins 5080#, in 10 mins 4950#, in 15 mins 4850#. Avg 9500#. Avg rate 6 BPM. Max 9800#. Max rate 6.7 BPM. 211 bbls load to recover.

18. I hereby certify that the foregoing is true and correct

SIGNED Peggy Stompson TITLE Engr. Oprns. Secretary DATE 10/02/90

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

RECEIVED
OCT 9 10 41 AM '90
CARLSBAD, NEW MEXICO
AREA MANAGERS OFFICE

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.: NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL ☐ GAS WELL ☒ OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Mewbourne Oil Company

8. FARM OR LEASE NAME: FEDERAL "T"

3. ADDRESS OF OPERATOR: P. O. Box 7698, Tyler, Texas 75711

9. WELL NO.: 1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface: 660' FNL & 990' FEL

10. FIELD AND POOL, OR WILDCAT: N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 12-18S-27E

14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY OR PARISH	13. STATE
API #30-015-26404	3618.9' GR	Eddy	N.M.

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	X	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	X	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

9/14/90 - Perforated Morrow 10,008-014', 12 holes; 10,038-054', 36 holes. Total 48 holes 24'.

9/15/90 - Halliburton broke down perfs with 2000 gals 7½% Morflo B.C. acid containing 1000 SCF/Bbl N_2 carrying 96 ball sealers and flushed with 23 bbls 2% KCL water containing 1000 SCF/Bbl N_2. Pressured casing to 1000#. Had good ball action. ISDP 5050#. In 5 mins., 4580#, In 10 mins, 4300#, In 15 mins, 4130#. Max 6000#. Max Rate 3.7 BPM. Avg 5850#. Avg Rate 3.4 BPM. 71 Bbls load to recover.

9/26/90 - Halliburton frac'd Morrow perfs with 8900 gals gelled 2% KCL water + 87 tons of CO_2 carrying 11,500# 20/40 Interprop. Pressured annulus to 2000#. ISDP 5340#. In 5 mins 5080#, in 10 mins 4950#, in 15 mins 4850#. Avg 9500#. Avg rate 6 BPM. Max 9800#. Max rate 6.7 BPM. 211 bbls load to recover.

18. I hereby certify that the foregoing is true and correct

SIGNED Peggy Stompson TITLE Engr. Oprns. Secretary DATE 10/02/90

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT

WEK DRILLING CO., INC. — OIL WELL DRILLING CONTRACTORS

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

RECEIVED
JAN 31 1991
O. C. D.
ARTESIA, OFFICE

August 29, 1990

Mewbourne Oil Co., Inc.
P.O. Box 5270
Hobbs, NM 88241

Ref: Federal "T" #1

Gentlement:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

472' - ¼°	4062' - ½°	6841' - 3½°
840' - 1°	4560' - ½°	6934' - 3½°
1380' - ½°	5048' - 0°	7026' - 2 3/4°
1759' - ¼°	5546' - 3/4°	7148' - 2 3/4°
2253' - 3/4°	5950' - 1¼°	7272' - 2°
2589' - ¼°	6479' - 3 3/4°	8137' - 2°
3068' - ½°	6564' - 4½°	8815' - 2°
3567' - ¼°	6626' - 4¼°	9470' - 1 3/4°
		10141' - TD

Sincerely,

Arnold Newkirk

Arnold Newkirk
Vice-President

STATE OF NEW MEXICO)
)
COUNTY OF CHAVES)

The foregoing was acknowledged before me on this 29th day of August 1990 by Arnold Newkirk.

My Commission Expires:

10-07-1992

Linda Reyes
Notary Public

SHIPPED AUG 31 1990

N. M. OIL CONS. COMMISSION
P. O. BOX 1980
ROSWELL, NEW MEXICO 88201

Form 3160-4
(November 1983)
(formerly 9-330)

CONFIDENTIAL

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

RECEIVED
BUREAU OF LAND MANAGEMENT
OCT 30 1990
Carlsbad, New Mexico

RECEIVED
SEP 24 1991
O. C. D.
ARTESIA, OFFICE

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

2. NAME OF OPERATOR: Mewbourne Oil Company ✓

3. ADDRESS OF OPERATOR: P. O. Box 7698, Tyler, Texas 75711

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface: 660' FNL & 990' FEL
At top prod. interval reported below:
At total depth: Same

5. LEASE DESIGNATION AND SERIAL NO.: NM-42410

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: FEDERAL "T"

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: North Illinois Camp Morrow

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: 12-18S-27E

DATE ISSUED: API #30-015-26404

12. COUNTY OR PARISH: Eddy

13. STATE: N.M.

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
6/28/90	8/25/90	9/13/90	KB 3634', DF 3632', GL 3618'	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,141'	10,100'		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
10,008-054' Morrow

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN
DLL-MGRD, SDL-DSN

27. WAS WELL CORED: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	68#	472'	17-1/2"	450 sacks - Circ	None
8-5/8"	32#	2589'	12-1/4"	900 sacks - Circ	None
5-1/2"	17#	9473'	7-7/8"	430 sacks - Circ	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
4"	9055'	10,141'	80	

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-3/8"	9842'	8888'

31. PERFORATION RECORD (Interval, size and number)
10,008-014', 12 holes)
10,038-054', 36 holes) 24'

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
10,008-054'	2000 gals 7½% acid. Frac'd w/ 8900 gals 2% KCL wtr + 87 tons CO_2 + 11,500# 20/40 Interprop.

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
9/15/90	Flowing	Shut-in WOPL

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
10/03/90	24 hrs.	34/64"		1 BC	923	2	923:1

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
160#	0#		1 BC	923	2	58.0°

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)
Vented

TEST WITNESSED BY: Eric Nelson

35. LIST OF ATTACHMENTS
Logs

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Daylene Thompson TITLE Engr. Oprns. Secretary DATE 10/25/90

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
Penrose	1522'	1556'	Sandstone
Atoka	9566'	9575'	Sandstone
Middle Morrow	9902'	9928'	Sandstone
Lower Morrow	10008'	10054'	Sandstone
DST #1 Drinkard	5749'	5850'	No cushion. Tool open 30 mins. IFP 88-45#, ISIP 296#. 62 mins. FFP 88-50#. FSIP 430#. 120 mins. Recovered 30' drilling fluid.
DST #2 Abo	6475'	6499'	No cushion. Tool open 30 mins. IFP 72-37#. ISIP 1953#. 60 mins. FFP 59-59# 60 mins. FSIP 1894#. 120 mins. Recovered 2' free oil, 122' drilling fluid.

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Yates	476'	
Queen	1218'	
Grayburg	1572'	
San Andres	2072'	
Tubb	4824'	
Abo	6016'	
Wolfcamp	6716'	
Cisco	7682'	
Strawn	8912'	
Atoka	9513'	
Morrow	9628'	
Morrow Clastics	9828'	
Lower Morrow	9965'	
Barnett	10104'	

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

RECEIVED
JAN 31 1991
O. C. D.
ARTESIA, OFFICE

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
Mewbourne Oil Company ✓	30-015-26404

Address: P. O. Box 7698, Tyler, Texas 75711

Reason(s) for Filing (Check proper box)
- New Well [X]
- Recompletion [ ]
- Change in Operator [ ]
- Change in Transporter of: Oil [ ] Dry Gas [ ] Casinghead Gas [ ] Condensate [ ]
- Other (Please explain) [ ]

If change of operator give name and address of previous operator: _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
FEDERAL "T"	1	North Illinois Camp Morrow	State, Federal or Fee	NM-42410

Location: Unit Letter A : 660 Feet From The North Line and 990 Feet From The East Line

Section 12 Township 18S Range 27E NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil	or Condensate	Address (Give address to which approved copy of this form is to be sent)
Amoco Pipeline Inter-corporate Trucking	[ ]	Oil Tender Dept. Box 702068, Tulsa, OK 74170-2068
Name of Authorized Transporter of Casinghead Gas	or Dry Gas [X]	Address (Give address to which approved copy of this form is to be sent)
Transwestern Pipeline Company		P. O. Box 1188, Houston, Texas 77251-1188

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	A	12	18S	27E	No	February, 1991

If this production is commingled with that from any other lease or pool, give commingling order number: No

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
6/28/90	9/13/90	10,141'	10,100'
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
DF 3632', GL 3618'	Morrow	10,008'	9,842'
Perforations			**Depth Casing Shoe**
10,008-054'			---

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8"	472'	450
12-1/4"	8-5/8"	2589'	900
7-7/8"	5-1/2"	9473'	430
5-1/2"	4" Liner	10140'	80

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
			Post ID-2
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size** 3-15-91
			camp + BK
Actual Prod. During Test	**Oil - Bbls.**	**Water - Bbls.**	**Gas- MCF**

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
923	24 hours	1	58°
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
Back Pressure	2300#	---	34/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gaylon Thompson
Signature

Gaylon Thompson, Engr. Oprns.Sec.
Printed Name / Title

1/28/91 (903) 561-2900
Date / Telephone No.

OIL CONSERVATION DIVISION

Date Approved MAR 12 1991

By _____

Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

c/s/ File

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RECEIVED

Form C-122
Revised 10-1-78

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test			Test Date	
[X] Initial	[ ] Annual	[ ] Special	10-11-90	O. C. D. ARTESIA, OFFICE

Company	Connection	Unit
Mewbourne Oil Company	Vented	A

Pool	Formation	
North Illinois Comp Morrow	Morrow	

Completion Date	Total Depth	Plug Back TD	Elevation	Farm or Lease Name
09-13-90	10141	10100	3634 KB	Federal T

Csg. Size	Wt.	d	Set At	Perforations	Well No.
4"	10.46		10141	From 10008 To 10054	1

Tbg. Size	Wt.	d	Set At	Perforations	Unit	Sec.	Twp.	Rge.
2 3/8	4.7		9842	From OPEN To END	A	12	18S	27E

Type Well – Single – Bradenhead – G.C. or G.O. Multiple	Packer Set At	County
Single	8888	Eddy

Producing Thru	Reservoir Temp. °F	Mean Annual Temp. °F	Baro. Press. – P_a	State
TBG	174 @ 10031	60	13.2	New Mexico

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
10031	10031	.656	2.293	.39	---		2.067	Flg.

	FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI							2745		PKR		72 hrs
1.	2	X	1.250	67	12.96	56	2590		PKR		1 hr.
2.	2	X	1.250	167	14.44	50	2470		PKR		1 hr.
3.	2	X	1.250	179	65.61	47	2110		PKR		1 hr.
4.	2	X	1.250	299	94.09	54	1630		PKR		1 hr.
5.											

RATE OF FLOW CALCULATIONS

NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1.	8.120	32.24	80.2	1.004	1.235	1.010	328
2.	8.120	51.01	180.2	1.010	1.235	1.020	527
3.	8.120	112.30	192.2	1.013	1.235	1.021	1165
4.	8.120	171.39	312.2	1.006	1.235	1.036	1791
5.							

NO.	P_t	Temp. °R	T_t	Z
1.	.12	516	1.38	.981
2.	.26	510	1.37	.962
3.	.28	507	1.36	.959
4.	.46	514	1.38	.932
5.				

Gas Liquid Hydrocarbon Ratio 61.2 Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons 58.0 @ 60° Deg.
Specific Gravity Separator Gas .656 XXXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure *678 P.S.I.A. P.S.I.A.
Critical Temperature *372 R R

P_c 2817.3 P_c^2 7937.2

NO	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1		2696.2	7269.5	667.7
2		2555.8	6532.1	1405.1
3		2173.1	4722.4	3214.8
4		1689.2	2853.4	5083.8
5				

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.561$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 1.521$

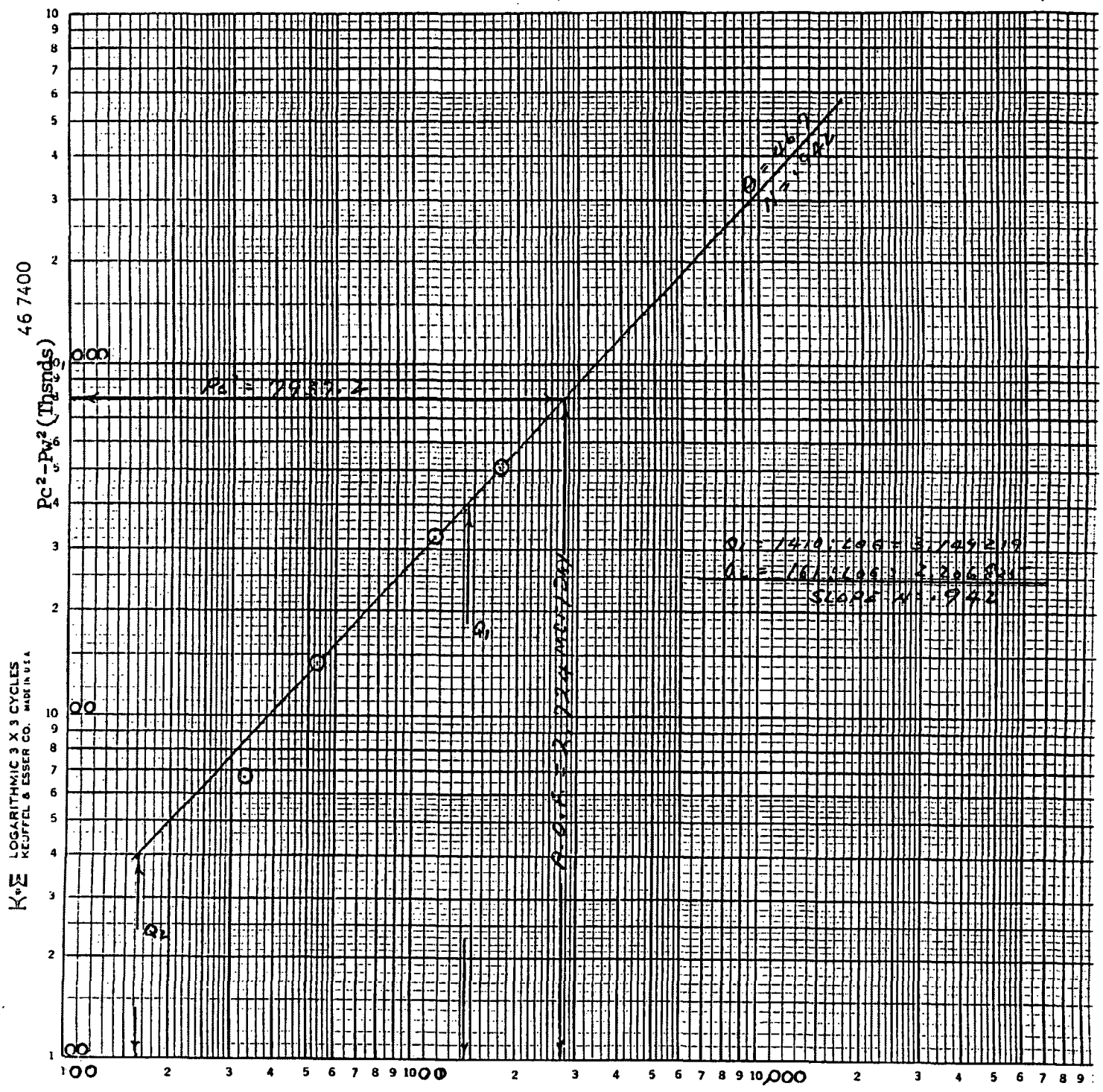
AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 2.724$

Absolute Open Flow 2,724 Mcfd @ 15.025 Angle of Slope θ 46.7 Slope, n .942

Remarks: *=corrected to 2.293% CO_2 & .39% N_2
Well made 2.6 BBLS 58.0 API CONDENSATE during test & .5 BBL H^2O

Approved By Division	Conducted By:	Calculated By:	Checked By:

Mewbourne Oil Company
Federal T, Well #1
Eddy County, New Mexico
12 - 18S - 27E
10-11-90



Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Depar[illegible]nt

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
Mewbourne Oil Company	30-015-26404
Address P.O. Box 5270 Hobbs, New Mexico	

Reason(s) for Filing *(Check proper box)*
New Well [X] Recompletion [ ] Change in Operator [ ]
Change in Transporter of: Oil [ ] Dry Gas [ ] Casinghead Gas [ ] Condensate [ ]
Other *(Please explain)* [ ]

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Federal "T"	1	North Illinois Camp Morrow	~~State~~, Federal ~~or Fee~~	NM-42410

Location
Unit Letter A : 660 Feet From The North Line and 990 Feet From The East Line
Section 12 Township 18S Range 27E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil or Condensate	Address *(Give address to which approved copy of this form is to be sent)*
Amoco Pipeline Inter-corporate Trucking [ ] or [X]	Oil Tender Dept. Box 702068 Tulsa, Ok 74170-2068
Name of Authorized Transporter of Casinghead Gas or Dry Gas	**Address *(Give address to which approved copy of this form is to be sent)***
Transwestern Pipeline Company [ ] or [X]	P.O. Box 1188 Houston, Texas 77251-1188

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	A	12	18S	27E	Yes	02/07/91

If this production is commingled with that from any other lease or pool, give commingling order number: No

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
Elevations *(DF, RKB, RT, GR, etc.)*	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
Perforations			**Depth Casing Shoe**

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method *(Flow, pump, gas lift, etc.)*	
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
Actual Prod. During Test	**Oil - Bbls.**	**Water - Bbls.**	**Gas- MCF**

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method *(pitot, back pr.)*	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

W H Cravey
Signature

W.H. Cravey — District Supt.
Printed Name — Title

02/18/91 — (505) 393-5905
Date — Telephone No.

OIL CONSERVATION DIVISION

Date Approved MAR 12 1991

By ORIGINAL SIGNED BY
MIKE WILLIAMS
Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

BRUCE KING
GOVERNOR

OIL CONSERVATION DIVISION
ARTESIA DISTRICT OFFICE

P.O. DRAWER DD
ARTESIA, NEW MEXICO 88211
(505) 748-1283

Date: August 9, 1991

Mewbourne Oil Co.
P.O. Box 5270
Hobbs, N.M. 88241

Re: Wells placed in pool

Gentlemen:
As the result of Division Order R-9545 the following described well (s) ~~(has~~ have) been placed in the pool ~~(s)~~ shown below. This change in nomenclature has been made in our files. Please change your records to reflect the proper pool name. All subsequent reports must show this nomenclature until further notice.

North Illinois Camp- Morrow Gas Pool - 78890

Federal T #1 A-12-18-27
Chalk Bluff Fed. Com. #1 N-1-18-27

Transporters are advised, by copy of this letter, to change their records to reflect the pool name as established by this order, effective July 1, 1991.

Sincerely,

Darrell Moore

Darrell Moore
District Geologist

cc: Each Transporter Amoco Pipeline, Transwestern
Santa Fe
Mae
Well File
Joe Chism
BLM

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-42410

6. If Indian, Allottee or Tribe Name

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED
AUG - 2 1993
O. C. D.
ARTESIA, NM

7. If Unit or CA, Agreement Designation

1. Type of Well
[X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
Federal "T" No. 1

2. Name of Operator
Mewbourne Oil Company

9. API Well No.

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

10. Field and Pool, or Exploratory Area
Canyon

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
660' FNL & 990' FEL
Sec. 12-T18S-R27E

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
[X] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[ ] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[X] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other _____	[ ] Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

1. Plug back existing perforations (10,008'-10,054') with a CIBP @ 9950' and 9040'. Cap both plugs with 50' cement.

2. Perforate the Cisco formation @ 7700'-8050'.

3. Stimulate if necessary.

BUREAU OF LAND MANAGEMENT
RECEIVED
JUL 16 1993
DIST. 6 N.M.
Carlsbad, New Mexico

Procedure per conversation with Adam S. on June 23, 1993.

14. I hereby certify that the foregoing is true and correct

Signed _____ Title District Supt. Date July 14, 1993

(This space for Federal or State office use)

Approved by (ORIG. SGD.) DAVID R. GLASS Title Petroleum Engineer Date JUL [illegible] 1993

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

c15F

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

Form 3160-5
(June 1990)

RECEIVED
SEP 10 11:46 AM '93
CAR

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

RECEIVED
OCT - 6 1993
O. C. D.

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-42410
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 660' FNL & 990' FEL, Sec. 12-T18S-R27E

8. Well Name and No.: Federal "T" #1
9. API Well No.: 30-015-26404
10. Field and Pool, or Exploratory Area: North Illinois Camp Morrow
11. County or Parish, State: Eddy Co. New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☒ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

* Verbal from Adam Salameh

08/14/93 Well pumping 1442 BW. 0 BO, 0 MCF from attempted completion in Cisco formation. MIRU well service rig.
08/15/93 Set CIBP @ 7595' over Cisco Perfs (7685'-7695'). Dump 4 sx. cmt. on plug. Perf. Wolfcamp formation (7330'-7360') (44 H)
08/16/93 Swabbed well down w/no entry.
08/17/93 Acidized Wolfcamp formation w/3000 gal 15% FE acid. Swabbed water w/no show of oil or gas.
08/18/93 Set CIBP @ 7300' over Wolfcamp formation (7330'-7360'). Dump 4 sx. cmt. on plug. Perf'd Wolfcamp formation (7092'-7146') (62H). Swabbed well down. No entry.
08/19/93 Acidized Wolfcamp formation (7092'-7146') w/3000 gal. 15% FE acid.
08/20/93 Swabbed well w/no show of oil or gas.
08/21/93 Set CIBP @ 7078' over Perfs (7092'-7146'). Perf'd Wolfcamp (6868'-7038') (80H)
08/22/93 Acidized Wolfcamp formation (6868'-7038') w/3000 gal. 15% FE acid.
08/24/93 Swabbing water w/trace of oil.
08/26/93 Acid frac'd Wolfcamp (6868'-7038') w/3000 gal. 20% FE acid & 15,000 gal. gel water.
See attached page.

14. I hereby certify that the foregoing is true and correct

Signed Brent Rumm Title Production Engineer Date 09/08/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

ACCEPTED FOR RECORD
OCT - 4 1993
CARLSBAD, NEW MEXICO

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

08/27/93 RIH w/pump & started pumping well.
08/28/93 0 BO 276 BW 8 MCF
09/03/93 5 BO 30 BW 5 MCF
09/05/93 2 BO 25 BW 4 MCF

c157

Form 3160-5 (June 1990)

RECEIVED
AUG 24 11 03 AM '93
CARLSBAD, NEW MEXICO

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

RECEIVED
SEP - 8 1993
O. C. D.

5. Lease Designation and Serial No.: NM-42410
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other
2. Name of Operator: Newbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 660' FNL & 990' FEL Sec. 12-T18S-R27E

8. Well Name and No.: Federal "T" #1
9. API Well No.: 30-015-26404
10. Field and Pool, or Exploratory Area: North Illinois Camp Morrow
11. County or Parish, State: Eddy Co. N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☒ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Verball from Adam - BLM.

07/19/93 Set 4" CIBP @ 9950' over Morrow Perfs. (10,008'-10,054') Dump 2 sx. cmt.
07/21/93 Set 5-1/2" CIBP @ 9040' @ top of liner. Dumped 4 sx. cmt.
07/22/92 Perf. Cisco Formation (8034'-8042' w/2 SPF & 8055'-8060' w/2SPF. Swabbed tested all water.
07/24/93 Set cmt. retainer @ 8000'. Pumped 100 sx. cmt. into perfs. (8034'-8060')
07/25/93 Perf. Cisco Formation 7832'-7840' w/2 SPF. Swab tested all water.
07/27/93 Set cmt. retainer @ 7820'. Pumped 100 sx. cmt. into perfs. (7832'-7840')
07/28/93 Perf. Cisco Formation 7790'-7798' w/2 SPF. Swab tested all water.
07/29/93 Set cmt. retainer @ 7780'. Pumped 100 sx. cmt. into perfs. (7790'-7798')
07/30/93 Perf. Cisco Formation 7760'-7768' w/2 SPF. Swab tested all water.
07/31/93 Set cmt. retainer @ 7745'. Pumped 100 sx. cmt. into perfs. (7760'-7768')
08/01/93 Perf. Cisco Formation 7685'-7695' w/4 SPF. Swab tested water w/show of gas.
08/03/93 Acidized Cisco Formation (7685'-7695') w/3000 gal 15% FE acid.
08/04/93 RIH w/tbg. pump to 5033' & started pumping well.
08/05/93 1100 BWPD No oil.
08/06/93 1200 BWPD No oil.

14. I hereby certify that the foregoing is true and correct

Signed Brett Newman Title Engineer Date August 20, 1993

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

L. Lara

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions at Bottom of Page

RECEIVED
OCT - 4 1993
O. C. D.

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
MEWBOURNE OIL COMPANY	30-015-26404

Address: P.O. BOX 5270, HOBBS, NM 88241

Reason(s) for Filing (Check proper box)
- New Well [ ]
- Recompletion [ ]
- Change in Operator [ ]
- Change in Transporter of: Oil [ ] Dry Gas [ ] Casinghead Gas [X] Condensate [ ]
- Other (Please explain) [ ]

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
FEDERAL "T"	1	NORTH ILLINOIS CAMP, ~~WOLFCAMP~~ Morrow	State, Federal or Fee	NM-42410

Location
Unit Letter A : 660' Feet From The FNL Line and 990' Feet From The FEL Line
Section 12 Township 18S Range 27E NMPM, EDDY County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [X] or Condensate [ ]	Address (Give address to which approved copy of this form is to be sent)
AMO	
Name of Authorized Transporter of Casinghead Gas [X] or Dry Gas [ ]	Address (Give address to which approved copy of this form is to be sent)
GPM GAS CORPORATION	BARTLESVILLE, OKLAHOMA 74004

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
		12	18S	27E	YES	8-1-93

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation	Top Oil/Gas Pay	Tubing Depth
Perforations			Depth Casing Shoe

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas- MCF

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pitot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature
JAY PRUDHOMME — PRODUCTION ENGINEER
Printed Name — Title
SEPT. 28, 1993 — (505) 393-5905
Date — Telephone No.

OIL CONSERVATION DIVISION

Date Approved OCT - 7 1993

By ORIGINAL SIGNED BY
MIKE WILLIAMS
Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

C/SP

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-42410

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

RECEIVED
OCT 26 1993
O. C. D.

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Federal "T" #1

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-26404

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

10. Field and Pool, or Exploratory Area
North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
660' FNL & 990' FEL
Sec. 12-T18S-R27E

11. County or Parish, State
Eddy Co. N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other Shut-in Status	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil Company here by requests "shut-in" status pending further evaluation of the lease for the above well. The well was spudded 06/28/90. Attached is a copy of the stimulation report which charts the annulus pressure during a break down on the Wolfcamp reompletion.

Approved For 12 Month Period
Ending 8/27/94

SEP 27 11 09 AM '93

14. I hereby certify that the foregoing is true and correct
Signed Brent Rumsey Title Production Engineer Date 09/21/93

(This space for Federal or State office use)
Approved by Orig. Signed: Steven Caffey Title Petroleum Engineer Date 10/18/93
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

HALLIBURTON SERVICES

ACQUIRE Version 1.52

CUSTOMER AND JOB INFORMATION

Customer	MEWBOURNE OIL	Date	21-Aug-1993
Contractor	X-PERT	County	EDDY
Lease	FED-T	Town	
Location	ARTESIA	Section	
Formation		Range	
Job Type	ACID	Permit No	
Country	USA	Well No	1
State	NM	Field Name	

Customer Representative BRENT THURMAP Halliburton Operator TOMMY VAUGHN Ticket No. 498331NO

STAGE DESCRIPTIONS

ST ACID
ST FLUSH

WELL CONFIGURATION INFORMATION

Packer Type COMP Depth 6765 ft
Bottom Hole Temp. 120.0 Deg F

PIPE CONFIGURATION

Wellbore Segment Number	Measured Depth (ft)	TVD (ft)	Casing ID (inch)	Casing OD (inch)	Tubing ID (inch)	Tubing OD (inch)
1	6868	6868	4.950	5.500	2.441	2.875

PERFORATIONS

Perforation Interval	Top (ft)	Bottom (ft)	Shots per (ft)
1	6868	7038	2

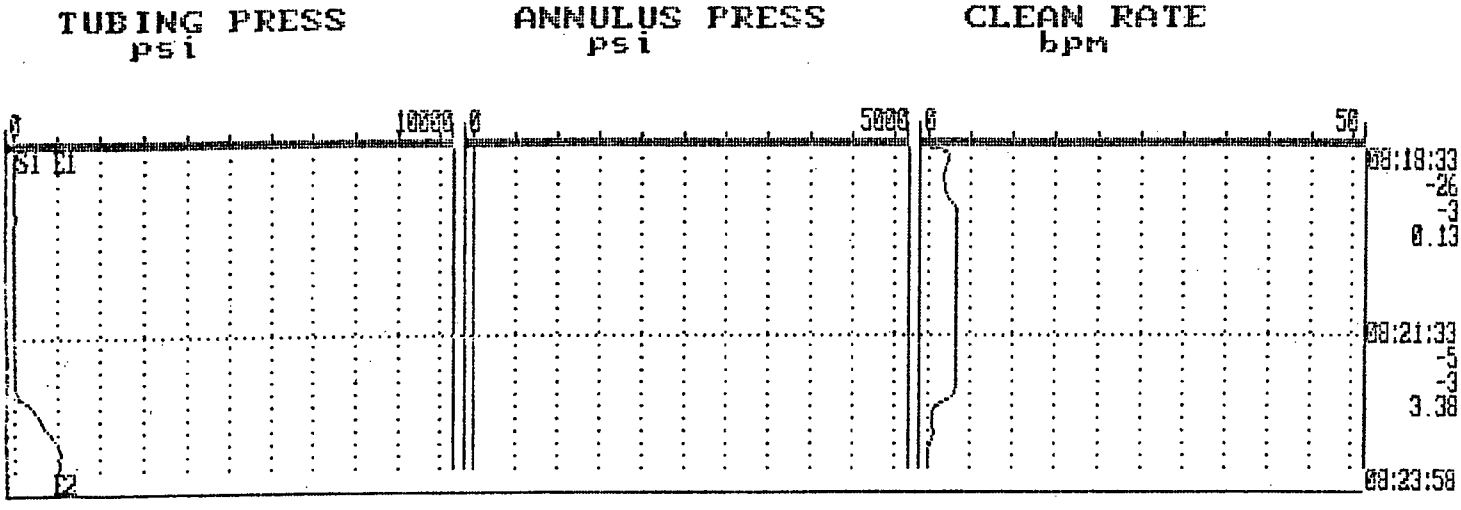
REMARKS ABOUT JOB

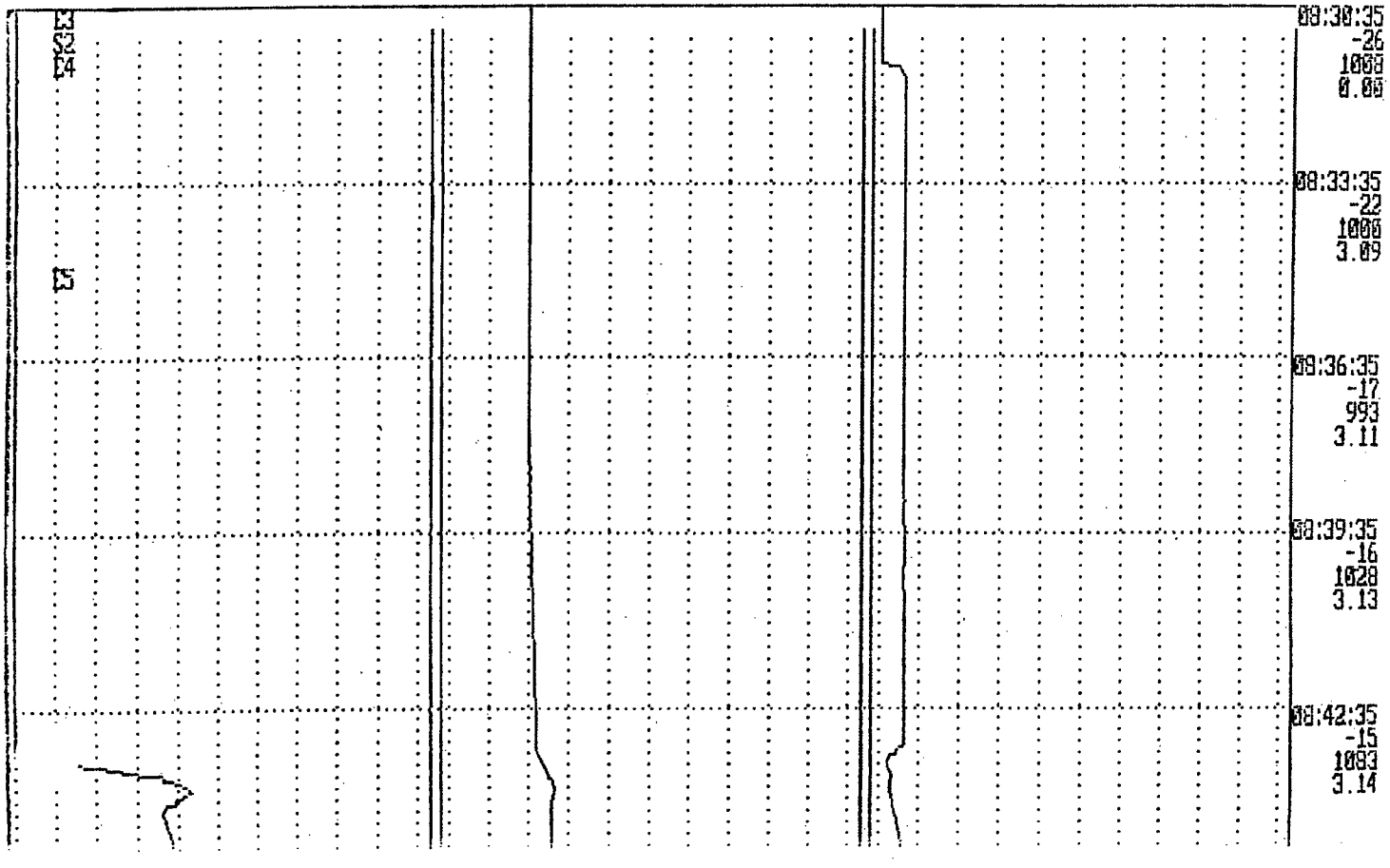
TREAT AS INST

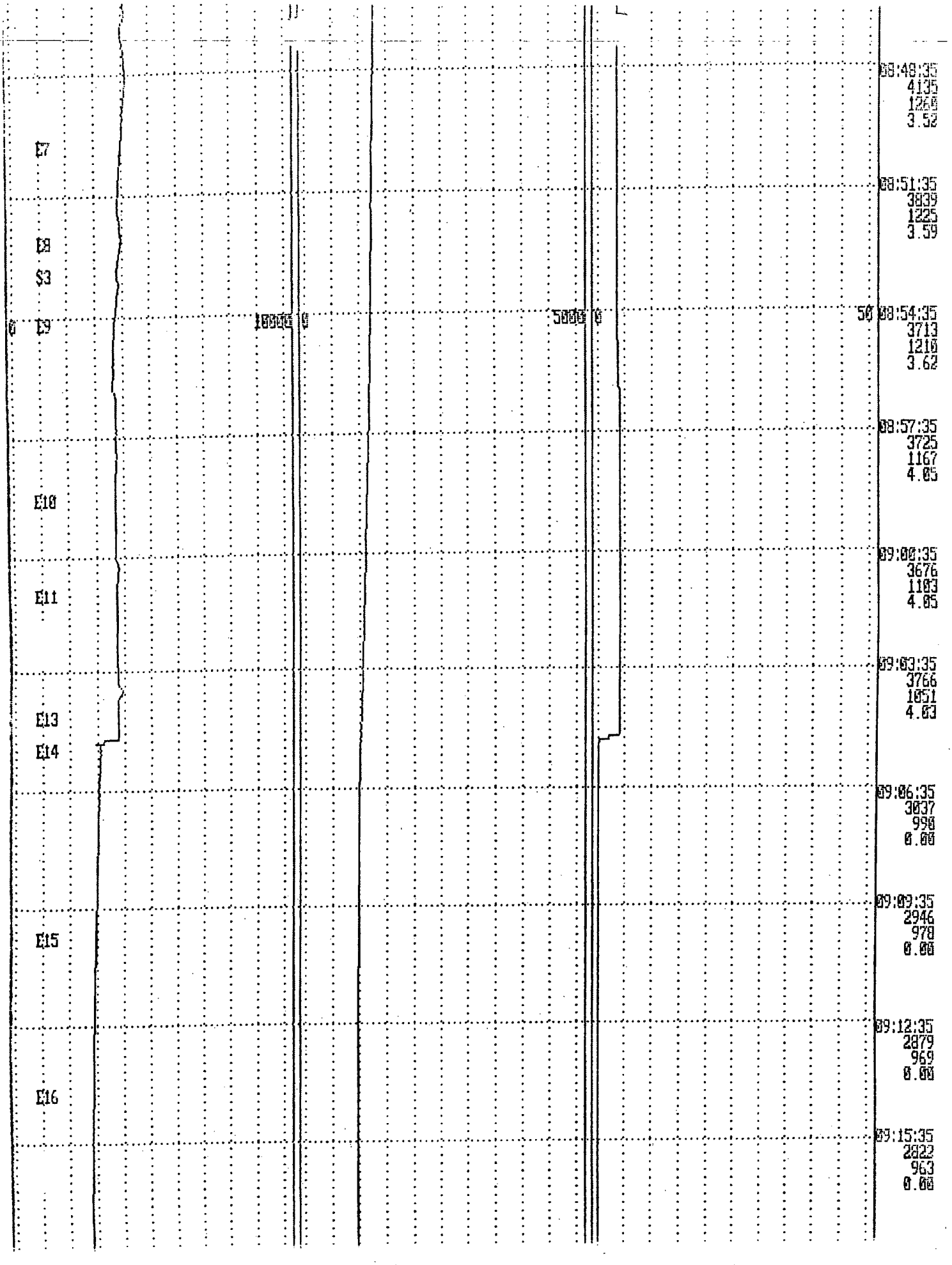
ICE: THIS REPORT IS BASED ON SOUND ENGINEERING PRACTICES, BUT BECAUSE OF VARIABLE WELL CONDITIONS AND OTHER INFORMATION WHICH MUST BE RELIED UPON, HALLIBURTON MAKES NO WARRANTY, EXPRESSED OR IMPLIED, AS TO THE ACCURACY OF THE DATA OR OF ANY CALCULATIONS OR OPINIONS EXPRESSED HEREIN. YOU AGREE THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DUE TO NEGLIGENCE

REALTIME STRIP CHART

1. Tubing Press (psi)
2. Annulus Press (psi)
3. Clean Rate (bpm)



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963
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NM OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM 42410
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 660' FNL & 990' FEL Sec. 12-T18S-R27E Unit A
8. Well Name and No.: Federal T #1
9. API Well No.: 30-015-26404
10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow
11. County or Parish, State: Eddy Co., N.M.

12. **CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Casing Integrity Test	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

- Loaded casing with 80 bbls. water and tested to 1,000#. Lost 10# in 30 minutes. Casing integrity test witnessed and approved by BLM representative Chris Williams on 5/23/95.

- Had no pressure on 5-1/2" - 8-5/8" Annulus or 8-5/8" - 13-3/8" Annulus

RECEIVED
JUL 10 1995
OIL CON. DIV.
DIST. 2

ACCEPTED FOR RECORD
L. Lara
JUN 7 1995
CARLSBAD, NEW MEXICO

14. I hereby certify that the foregoing is true and correct

Signed [signature] Title Engineer Date 5/24/95

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any

18 U.S.C. Section 1001 makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

NM OIL CONS COMMISSION
Drawer DD
Artesia, NM 88210

[redacted]

Form 3160-5
ne 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM 42410
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ■ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 660' FNL & 990' FEL Sec. 12-T18S-R27E Unit A
8. Well Name and No.: Federal "T" #1
9. API Well No.: 30-015-26404
10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow
11. County or Parish, State: Eddy Co. N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
■ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Temporary Abandonment	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil requests temporary abandonment status for the above referenced well for the purpose of evaluating further behind pipe potential. This well passed the casing integrity test as noted on the attached sundry notice.

TA APPROVED FOR 12 MONTH PERIOD
ENDING 5/23/96

RECEIVED
AUG 30 1995
OIL CON. DIV.
DIST. 2

RECEIVED
AUG 1 8 59 AM '95
CARLSBAD AREA

14. I hereby certify that the foregoing is true and correct
Signed [signature] Title Engineer Date Aug. 3, 1995

(This space for Federal or State office use)
Approved by ORIG. SGD.) JOE G. LARA Title PETROLEUM ENGINEER Date 8/28/95
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Oil Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

DEC 05 '96
O. C. D.
ARTESIA, OFFICE

1. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other
2. Name of Operator: Mewbourne Oil Company
3. Address and Telephone No.: P.O. Box 5270, Hobbs, NM 88241 (505) 393-5905
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 660' FNL & 990' FEL, Sec. 12-T18S-R27E

5. Lease Designation and Serial No.: NM 42410
6. If Indian, Allottee or Tribe Name:
7. If Unit or CA, Agreement Designation:
8. Well Name and No.: Federal T #1
9. API Well No.: 30-015-26404
10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow
11. County or Parish, State: Eddy Co., NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other Temporary Abandonment	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Mewbourne Oil Company requests an extension of Temporary Abandonment Status for the above referenced well for the purpose of evaluating further behind pipe potential. This well passed the casing integrity test on 05/23/95 and indicates no additional tests should be needed.

RECEIVED
Nov 27 9 50 AM '96
070 ARTESIA, NM

14. I hereby certify that the foregoing is true and correct
Signed Robert G. Jones Title Engineer Date 11/25/96

(This space for Federal or State office use)
Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

N.M. Oil Cons. Division
811 S. 1st Street
Artesia, NM 88210-2834

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-42410

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☐ Gas Well ☒ Other

8. Well Name and No.: Federal T #1

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26404

3. Address and Telephone No.: PO Box 5270, Hobbs, NM 505-393-5905

10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
660' FNL & 990' FEL, Sec.12 T-18S R-27E

11. County or Parish, State: Eddy, NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other MIT.	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)*

The above caption well was successfully MIT'ed on 10/25/2000. (520 psi for 30 mins.)
The pressure chart is enclosed.
If any question, please call.

ACCEPTED FOR RECORD
NOV 15 2000
LB
BLM

14. I hereby certify that the foregoing is true and correct

Signed _____ Title N.M. Young District Manager Date 11/01/00

(This space for Federal or State office use)

Approved by Record Only Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

OCD - Artesia

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: NM-42410

6. If Indian, Allottee or Tribe Name:

7. If Unit or CA, Agreement Designation:

1. Type of Well: ☐ Oil Well ☐ Gas Well ☒ Other

8. Well Name and No.: Federal T #1

2. Name of Operator: Mewbourne Oil Company

9. API Well No.: 30-015-26404

3. Address and Telephone No.: PO Box 5270, Hobbs, NM 505-393-5905

10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 660' FNL & 990' FEL, Sec.12 T-18S R-27E

11. County or Parish, State: Eddy, NM

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other CIT & Extend T/ A.	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)"

The above caption well is currently under T/A status. Mewbourne Oil Company would like to extend this status. The well has a 5 1/2" CIBP above all perfs @ 6800". We are considering converting this well into a SWD. At this time, Mewbourne would like to schelude a CIT (500 psi) & after passing, extend T/A status for an additional time.

If any question, please call.

NOV 2000
RECEIVED
OCD - ARTESIA

TA approved for 12 Month Period
Expires 10/25/2001

BUREAU OF LAND MGMT.
CARLSBAD RESOURCE AREA

RECEIVED
2000 OCT 10 P 2:34

14. I hereby certify that the foregoing is true and correct

Signed N.M. Young Title N.M. Young District Manager Date 10/06/00

(This space for Federal or State office use)

Approved by (ORIG. SGD.) JOE G. LARA Title Petroleum Engineer Date 11/6/2000

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

TED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD - Artesia

CISF

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

o not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

1. Type of Well: ☐ Oil Well ☐ Gas Well ☒ Other	5. Lease Designation and Serial No.: NM-42410
2. Name of Operator: Mewbourne Oil Company	6. If Indian, Allottee or Tribe Name:
3. Address and Telephone No.: PO Box 5270, Hobbs, NM 505-393-5905	7. If Unit or CA, Agreement Designation:
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 660' FNL & 990' FEL, Sec.12 T-18S R-27E	8. Well Name and No.: Federal T #1
	9. API Well No.: 30-015-26404
	10. Field and Pool, or Exploratory Area: N. Illinois Camp Morrow
	11. County or Parish, State: Eddy, NM

RECEIVED
OCD - ARTESIA

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other CIT & Extend T/ A.	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)*

The above caption well is currently under T/A status. Mewbourne Oil Company would like to extend this status. The well has a 5 1/2" CIBP above all perfs @ 6800". We are considering converting this well into a SWD. At this time, Mewbourne would like to schelude a CIT (500 psi) & after passing, extend T/A status for an additional time.

If any question, please call.

TA Approved For 12 Month Period
Ending 10/25/2001

Note to Operator:
Please submit a copy of pressure test Chart.
Rec'd a copy on 11/9/2000

RECEIVED
2000 OCT 10 P 2:34
BUREAU OF LAND MGMT.
CARLSBAD RESOURCE AREA

14. I hereby certify that the foregoing is true and correct

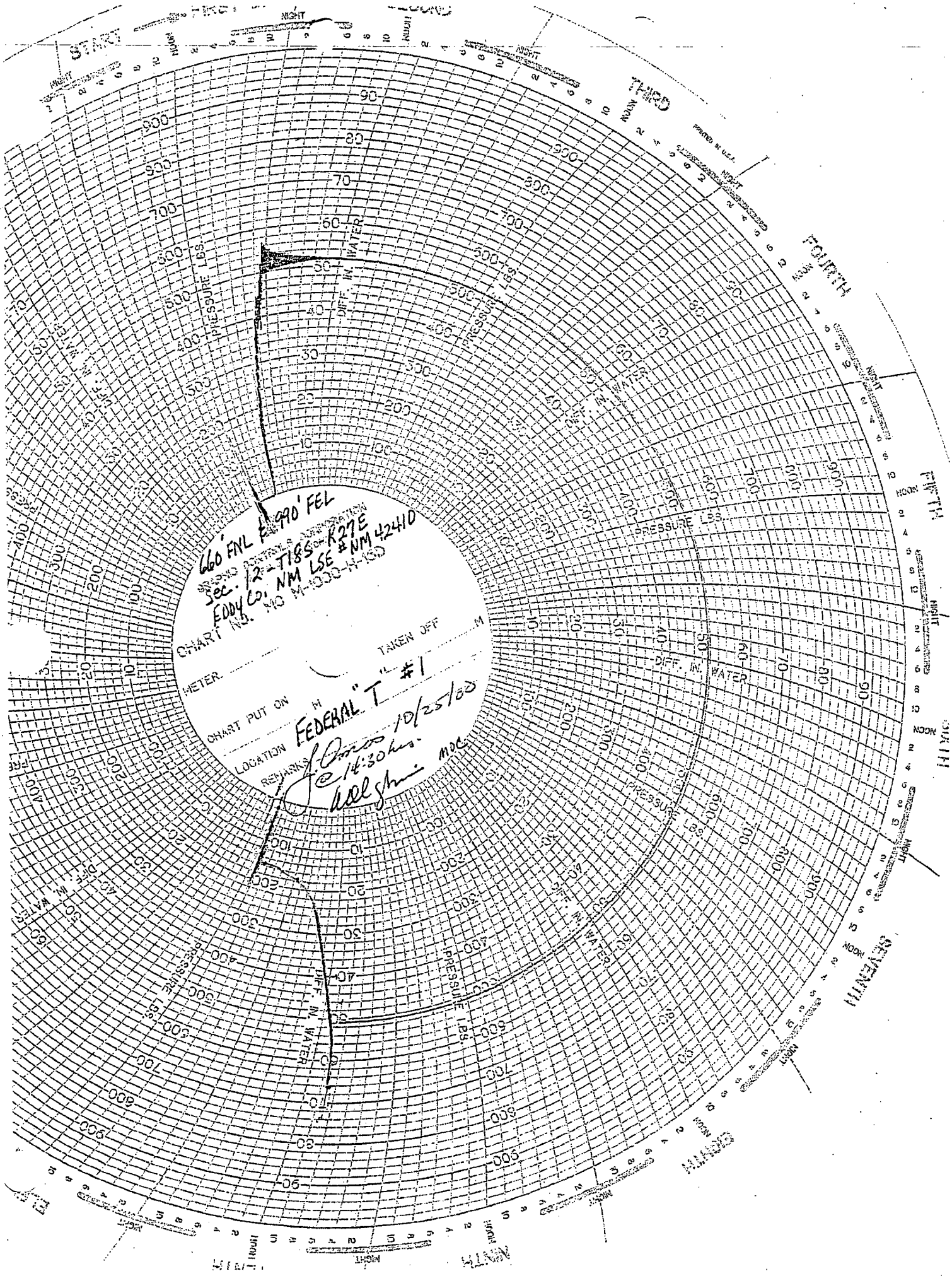
Signed N.M. Young Title N.M. Young District Manager Date 10/06/00

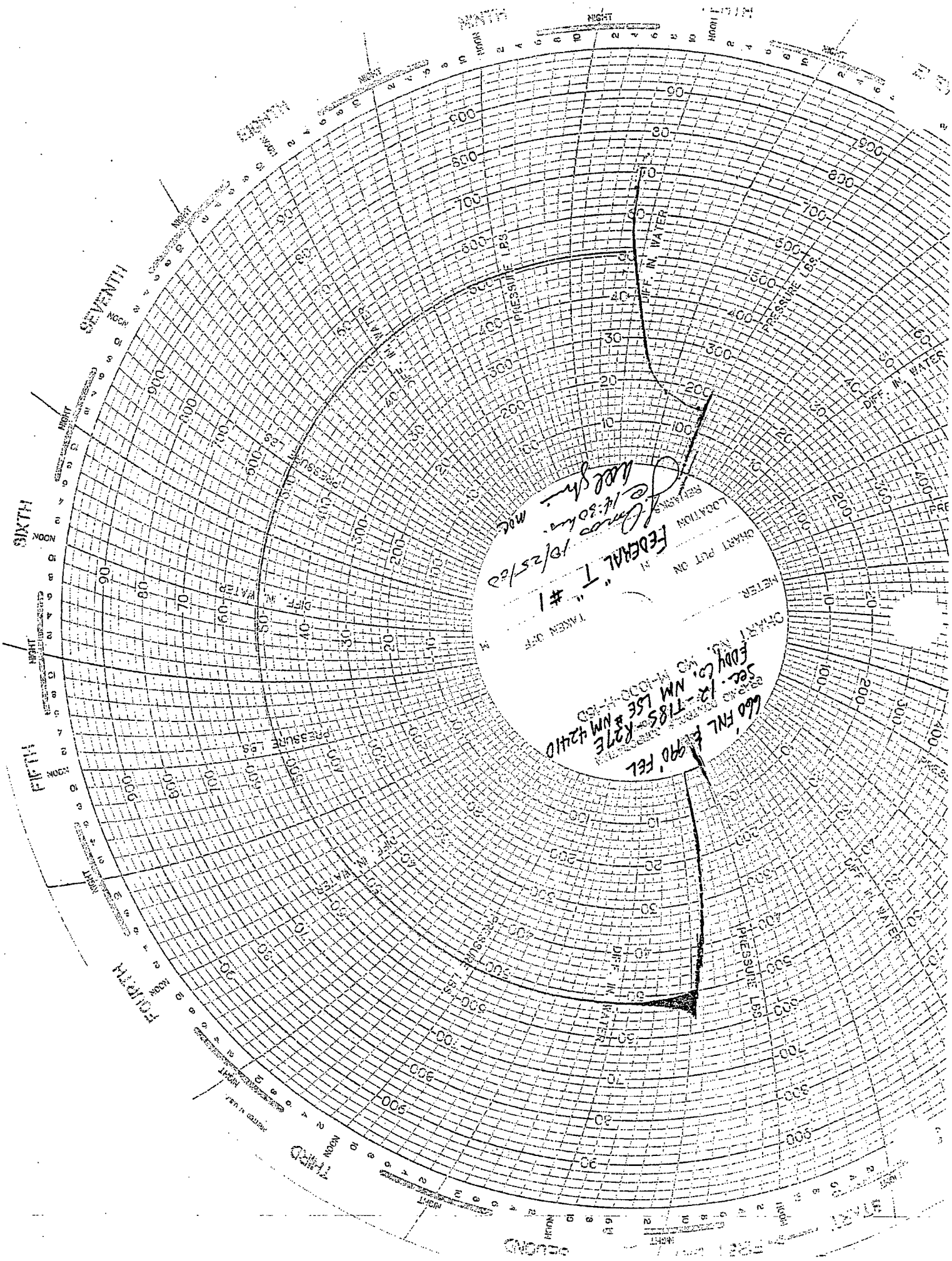
(This space for Federal or State office use)

Approved by Joe G. Lara Title Petroleum Engineer Date 11/6/2000
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side


START
SECOND
THIRD
FOURTH
FIFTH
SIXTH
SEVENTH
EIGHTH
NINTH
TENTH
ELEVENTH
TWELFTH
NOON
NIGHT
PRESSURE LBS.
DIFF. IN WATER
660' FNL & 990' FEL
Sec. 12-T18S-R27E
Eddy Co., NM LSE #NM 42410
CHART NO. MP M-1000-H-160
METER
TAKEN OFF
CHART PUT ON
LOCATION
FEDERAL "T" #1
REMARKS
10/23/80
@ 1:30 hrs.
MOC


FEDERAL "1" #1
1650' FNL & 990' FEL
Sec. 12-T18S-R27E
Eddy Co., NM
LEASE # NM 42410
NO. M-1000-11-ISD
CHART PUT ON
TAKEN OFF
LOCATION
REMARKS
METER
PRESSURE LBS
DIFF. IN WATER
MAXIMUM
SIXTH
SEVENTH
FIFTH
FOURTH
THIRD
NOON
NIGHT

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

Field Inspection Program
"Preserving the Integrity of Our Environment"

05-Dec-03

MEWBOURNE OIL CO
PO BOX 7698
TYLER, TX 75711-0000

NOTICE OF VIOLATION - Inspection

Dear Operator:

The following inspection(s) indicate that the well, equipment, location or operational status of the well(s) failed to meet standards of the New Mexico Oil Conservation Division as described in the detail section below. To comply with standards imposed by Rules and Regulations of the Division, corrective action must be taken immediately and the situation brought into compliance. The detail section indicates preliminary findings and/or probable nature of the violation. This determination is based on an inspection of your well or facility by an inspector employed by the Oil Conservation Division on the date(s) indicated.

Please notify the proper district office of the Division, in writing, of the date corrective actions are scheduled to be made so that arrangements can be made to reinspect the well and/or facility.

INSPECTION DETAIL SECTION

FEDERAL T 001 A-12-18S-27E **30-015-26404-00-00**

Inspection Date	Type Inspection	Inspector	Violation?	*Significant Non-Compliance?	Corrective Action Due By:	Inspection No.
12/05/2003	Routine/Periodic	Mike Bratcher	Yes	No	3/9/2004	iMLB0333931134

Comments on Inspection: TA status for this well expired 10/25/01. Last production reported was 7/93. Well is in violation of Rule 201. (Idle Well)

In the event that a satisfactory response is not received to this letter of direction by the "Corrective Action Due By:" date shown above, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Divison Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

Sincerely,

Mike Bratcher

Artesia OCD District Office

Note:nformation in Detail Section comes directly from field inspector data entries - not all blanks will contain data.
*Significant Non-Compliance events are reported directly to the EPA, Region VI, Dallas, Texas.

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

Field Inspection Program
"Preserving the Integrity of Our Environment"

05-Dec-03

MEWBOURNE OIL CO
PO BOX 7698
TYLER, TX 75711-0000

NOTICE OF VIOLATION - Inspection

Dear Operator:

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Please notify the proper district office of the Division, in writing, of the date corrective actions are scheduled to be made so that arrangements can be made to reinspect the well and/or facility.

INSPECTION DETAIL SECTION

FEDERAL T 001 A-12-18S-27E **30-015-26404-00-00**

Inspection Date	Type Inspection	Inspector	Violation?	*Significant Non-Compliance?	Corrective Action Due By:	Inspection No.
12/04/2003	Routine/Periodic	Mike Bratcher	Yes	No	3/9/2004	iMLB0333840462

Comments on Inspection: Well sign is illegible and is not standing. Violation Rule 103.

In the event that a satisfactory response is not received to this letter of direction by the "Corrective Action Due By:" date shown above, further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Divison Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of CIVIL PENALTIES for your violation of OCD rules.

Sincerely,

Artesia OCD District Office

Note:nformation in Detail Section comes directly from field inspector data entries - not all blanks will contain data.
*Significant Non-Compliance events are reported directly to the EPA, Region VI, Dallas, Texas.

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

9 January 2004

MEWBOURNE OIL CO
PO Box 7698
Tyler TX 75711

RE: Federal T 001 A-12-18s-27e API 30-015-26404 Violation of Rule 103:Well sign violation

Dear Sirs:
This second directive is to notify you that these wells are still in violation of Rule 103

On December 4,2003 a letter was sent notifying you on the violation of Rule 103. An inspection of the wells on January 6, 2004 found no action had been taken.

Rule 103 of the New Mexico Oil Conservation Division provides as follows:
103 SIGN ON WELLS
All wells and related facilities by the Division shall be identified by a sign, which sign shall remain in place until the well is plugged and abandoned and the related facilities are closed. For drilling wells, the sign shall be posted on the derrick or not more than 20 feet from the well. The sign shall be of durable construction and the lettering shall be legible and large enough to be read under normal conditions at a distance of 50 feet. The wells on each lease or property shall be numbered in non-repetitive, logical and distinctive sequence. An operator will have 90 days from the effective date of an operator name change to change the operator name on the well sign unless an extension of time, for good cause shown along with a schedule for making the changes, is granted. Each sign shall show the:
1. number of well;
2. name of property;
3. name of operator;
4. location by footage, quarter-quarter section, township and range (or Unit Letter can be substituted for the quarter-quarter section), and
5. API number.

In the event that a satisfactory response is not received to this letter of direction by February 6,2004 further enforcement will occur. Such enforcement may include this office applying to the Division for an order summoning you to a hearing before a Division Examiner in Santa Fe to show cause why you should not be ordered to permanently plug and abandon this well. Such a hearing may result in imposition of **CIVIL PENALTIES** for your violation of OCD rules.

Sincerely,

Mike Bratcher, Compliance Officer

Form 3160-5
(September 2001)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT OCD-ARTESIA

FORM APPROVED
OMB No. 1004-0135
Expires: January 31, 2004

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

5. Lease Serial No.
NM-42410

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☐ Oil Well ☐ Gas Well ☑ Other

8. Well Name and No.
Federal T #1

2. Name of Operator
Mewbourne Oil Company 14744

9. API Well No.
30-015-26404

3a. Address
PO Box 5270 Hobbs, NM 88240

3b. Phone No. *(include area code)*
505-393-5905

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OCD-ARTESIA

10. Field and Pool, or Exploratory Area
N Illinois Camp Morrow

4. Location of Well *(Footage, Sec., T, R., M., or Survey Description)*
660' FNL & 990' FEL, Sec 12-T18S-R27E

11. County or Parish, State
Eddy Co NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☑ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☑ Other MIT Test
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

3. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

The above caption well was successfully MIT'ed on 01/26/04. (Pressured casing to 570#, held OK for 30 mins)
The pressure chart is enclosed.

Requesting extension of temporary abandon status.
5 1/2" CIBP set @ 6800'. No type of hardware in hole.

TA APPROVED FOR 12 MONTH PERIOD
ENDING 1/26/05

Accepted for record - NMOCD

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)*
NM Young

Title Hobbs District Manager

Signature

Date 01/27/04

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by *(Signature)* /s/ Joe G. Lara

Name *(Printed/Typed)* /s/ Joe G. Lara

Title Pet. Engr.

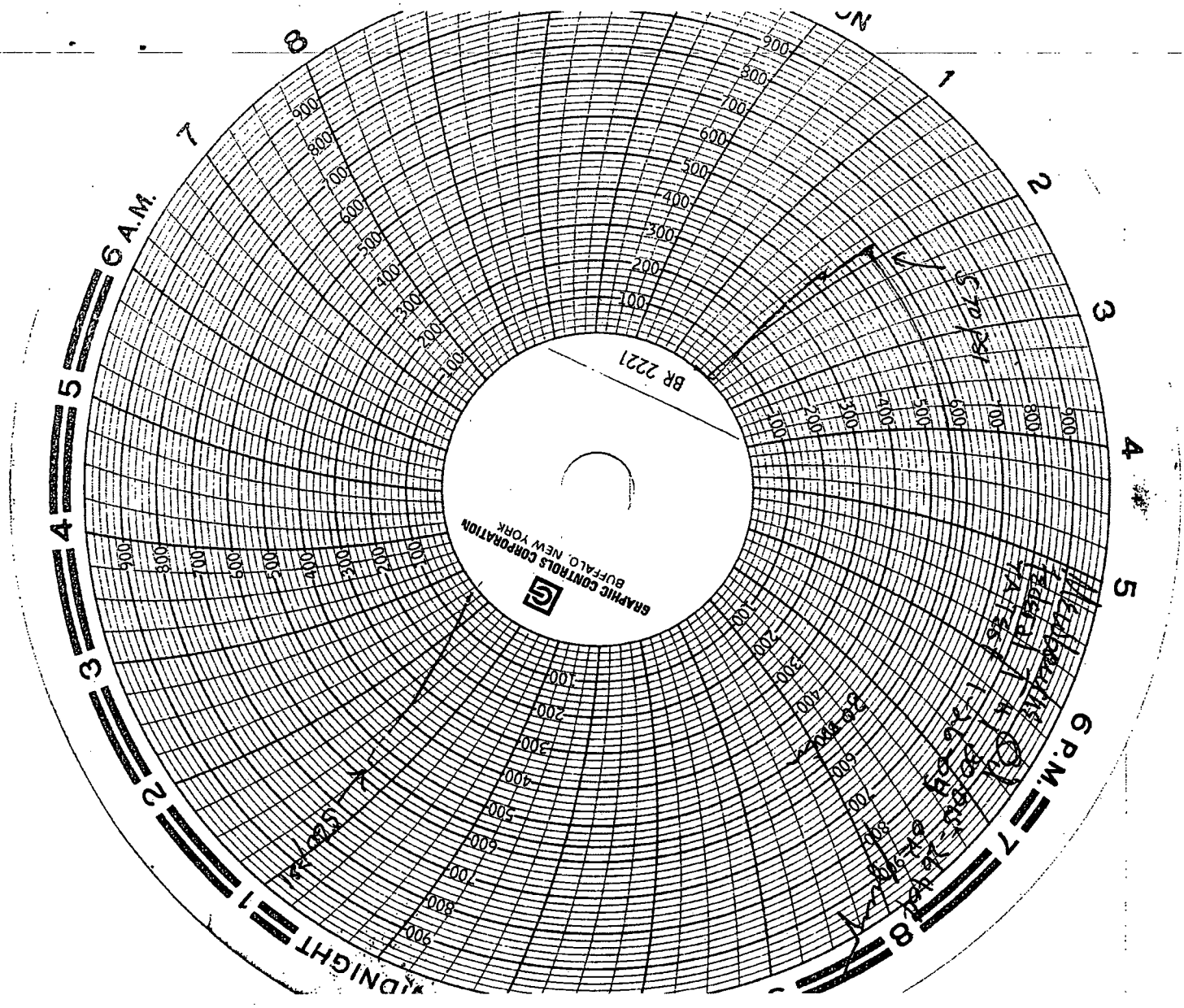
Office CARLSBAD FIELD OFFICE

Date 4/20/04

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on next page)



RECEIVED

APR 2 2 2004

OCD-ARTESIA

District II
1301 W. Grand Ave., Artesia, NM 88210
Phone:(505) 748-1283 Fax:(505) 748-9720

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-145
Permit 72521

Change of Operator

Previous Operator Information		New Operator Information	
		Effective Date:	4/1/2008
OGRID:	14744	OGRID:	6137
Name:	MEWBOURNE OIL CO	Name:	DEVON ENERGY PRODUCTION COMPANY, LP
Address:	PO BOX 5270	Address:	20 N Broadway
Address:		Address:	
City, State, Zip:	HOBBS , NM 88241	City, State, Zip:	Oklahoma City , OK 73102

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the formation on this form and the certified list of wells is true to the best of my knowledge and belief.

Previous Operator		New Operator	
Signature:	Monty Whetstone	Signature:	Gregg Jacob
Printed Name:	Monty L. Whetstone	Printed Name:	Gregg Jacob
Title:	Vice-President Operations	Title:	Western Operations Manager
Date:	4/4/08 Phone: (903) 561-2900	Date:	4/07/08 Phone:(405) 552-4591

NMOCD Approval
Electronic Signature: Carmen Reno, District 2
Date: April 07, 2008

Form 3160-5
(August 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
EXPIRES: NOVEMBER 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

OCD-ARTESIA

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals

SUBMIT IN TRIPLICATE

JUL 21 2008

OCD-ARTESIA

1a Type of Well ☐ Oil Well ☑ Gas Well ☐ Other	5. Lease Serial No. **NM-42410**
2. Name of Operator **DEVON ENERGY PRODUCTION COMPANY, LP**	6. If Indian, Allottee or Tribe Name
3. Address and Telephone No. **20 North Broadway, Oklahoma City, OK 73102** **405-552-8198**	7. Unit or CA Agreement Name and No.
4. Location of Well (Report location clearly and in accordance with Federal requirements)* **660' FNL & 990' FEL** **Section 12 T18S R27E, Unit A**	8 Well Name and No. **Federal T 1**
	9. API Well No **30-015-26404**
	10. Field and Pool, or Exploratory **Wolfcamp**
	12. County or Parish **Eddy** 13. State **NM**

CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OS SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☑ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13 Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work and approximate duration thereof If the proposal deepen directionally or recomplete horizontally, give subsurface location and measured and true vertical depths of all pertinent markers and zones Attach the Bond under which the work will be performed or provide the Bond No on file with BLM/BIA Required subsequent reports shall be filed within 30 days following completion of the involved operations If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed Final Abandonment Notices shall be filed only after all requirement, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection)

Devon Energy Production Company, LP is preparing Form C108, Applicaton for Authorization to Inject that will be filed with the Oil Conservation Division, Santa Fe, New Mexcio office. Devon is proposing to convert the Federal T #1 well to SWD in the Lower Wolfcamp and Cisco zones from 7400' to 8200'. The BLM has been sent a copy of C108 :ation filed with the OCD.

1. RIH and drill out CIBP's at 6,800', 7,078', & 7,265'.
2. Perform injection step rate test in the Lower Wolfcamp.
3. Drill out CIBP at 7,560' and cement retainers at 7,745', 7,780', & 7,820', & 8,000'.
4. Perforate / Reperforate Cisco with casing gun, 0.42" EHD, 2 spf from 7,893'-7,899'; 7,902'-7,907'; 7,910'-7,916'; 7,919'-7,927'; 7,932'-7,959'; 7,965'-7,967'; 7,971'-7,972'; 7,976'-7,978'; 8,034'-8,042'; 8,055'-8,060'; 8160'-8164'.
5. Frac as recommended.
6. RIH with RBP and set at +/- 7,865'.
7. Perforate / Reperforate Cisco with casing gun, 0.42" EHD, 2 spf at 7,758'-7,768'; 7,790'-7,798'; 7,800'-7818'; 7,832'-7,840'.
8. Frac as per recommended.
9. POOH with RBP and RIH with tubing and packer. Set packer at 7,600'. Perform injection step rate test in Cisco.
10. Tie in disposal line routed from West Red Lake SWD Battery and establish injection.

* Either, return the well to active status by 11-16-08 or submit plans for abandonment.

14. I hereby certify that the foregoing is true and correct

Signed _____ Name **Norvella Adams** Title **Sr. Staff Engineering Technician** Date 6/17/2008

APPROVED

(This space for Federal or State Office use)

Approved by _____ Title _____ Date JUL 16 2008

Conditions of approval, if any:

JAMES A. AMOS
SUPERVISOR EPS

C Section 1001, makes it a crime for any person knowingly and willfully to make any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its

*See Instruction on Reverse Side

Accepted for record - NMOCD

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr , Hobbs, NM 88240
District II
1301 W Grand Ave., Artesia, NM 88210
District III
000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
May 27, 2004

WELL API NO. **30-015-26404**

5. Indicate Type of Lease STATE ☐ FEE ☐

6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

7. Lease Name or Unit Agreement Name **Federal T**

1. Type of Well: Oil Well ☐ Gas Well ☐ Other –Convert to SWD

8. Well Number **1**

2. Name of Operator **DEVON ENERGY PRODUCTION COMPANY, LP**

9. OGRID Number **6137**

3. Address of Operator **20 North Broadway, Oklahoma City, OK 73102** **405-552-8198**

10. Pool name or Wildcat **L. Wolfcamp and Cisco** 96136

4. Well Location
Unit Letter A : 660' feet from the NORTH line and 990' feet from the EAST line
Section 12 Township 18S Range 27E NMPM County Eddy

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* **3709' KB; 3697' GL**

Pit or Below-grade Tank Application ☐ or Closure ☐

Pit type_____ Depth to Groundwater_____ Distance from nearest fresh water well_____ Distance from nearest surface water_____

Pit Liner Thickness: ____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
OTHER: ☐		OTHER ☒ **Convert to SWD, Admin. Order SWD-1135**	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

8/04/08 RU unit. ND wellhead and NU BOP. TIH with bit and drill collars.
8/05/08 Drill CIBP at 6800' and 7078'.
8/06/08 Drilled through cement at 7525', CIBP at 7300' and cement at 7560' and CIBP at 7595'.
8/07/08 Ran step rate test; pumped 50 bbls at ½ bbl/min – 0# psi, pumped 50 bbls at 1 bbl/min -20# psi, pumped 50 bbls at 2 bbls/min – 75# psi, pumped 50 bbls at 3 bbls/min – 170# psi, pumped 50 bbls at 4 bbls/min – 250 psi.
8/08/08 Trucked in and established injection in the Wolfcamp at 150 BWPD at 170 psi.
8/11/08 Drilled cement retainers at 7745', and 7780'.
8/12/08 Drilled cement retainer at 7820' and 8000'. Circulate hole and TOH with tubing and bit.
8/13/08 Perforate Cisco from 7893' – 8060'; total 140 holes. TIH and set packer at 7688'. Frac with 5,040 gals 15% HCl + 120,372 gals Spectra Star 2500 + 167,552 # 20/40 White sand.
8/14/08 TIH with retrievable tool and latch onto packer. Release packer and TOOH with packer and tubing. RU wireline and perforate Cisco from 7758'-7840'; 228 total holes.
8/15/08 TIH with packer and set at 7582'. NU frac valve.
8/16/08 Frac 7758'-8060' with 4500 gals 15% Spearhead acid + 119,255 gals Spectra 2500 + 106,750 # 20/40 100% White sand. RD.
8/18/08 Release packer. TOOH with packer and tubing.
8/20/08 TIH with bailer and bailed sand. Bailed sand to 8460'. TOOH with tubing. ND BOP and NU flange. Waiting on tubing.
9/15/08 TIH with packer and tubing. Set packer at 6789'. ND BOP and NU tree. Ran MIT test to 500 # for 30 minutes – ok, notified Mike Bratcher with OCD. TOOH with tubing. RIH with 3 ½" IPC tubing and set at 6789'. Injection line installation in progress.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. **I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.**

SIGNATURE _____ TITLE **Sr. Staff Engineering Technician** DATE 9/17/08

Type or print name Norvella Adams E-mail address: **norvella.adams@dvn.com** Telephone No. **405-552-8198**

For State Use Only

APPROVED BY: _____ TITLE _____ DATE _____

Conditions of Approval (if any):

Accepted for record
NMOCD

DEVON ENERGY PRODUCTION COMPANY LP

Well Name: FEDERAL T #1	Field: NORTH ILLINOIS CAMP MORROW	
Location: 660' FNL & 990' FEL; SEC 12-T18S-R27E	County: EDDY	State: NM
Elevation: 3634' KB; 3618' GL	Spud Date: 6/28/90	Compl Date: 9/13/90
API#: 30-015-26404 Prepared by: Norvella Adams	Date: 9/17/08	Rev:

Current Schematic
L. Wolfcamp and Cisco SWD

17-1/2" Hole
13-3/8", 68#, LTC, @ 472'
Cmt'd w/450 Sx. Circ to surface

12-1/4" Hole
8-5/8", J55, 32#, STC, @ 2,589'
Cmt'd w/900 Sx. Circ to surface

WOLFCAMP *(8/21/93)*
6,868' - 7,038'

WOLFCAMP *(8/18/93)*
7,092' - 7,097'; 7,120' - 7,146'

WOLFCAMP *(8/16/93)*
7,330' - 7,340'; 7,350' - 7,360'

SWD Perforations:
CISCO *(8/1/93)*
7,685' - 7,695'

CISCO *(7/30/93)*
7,760' - 7,768'

CISCO *(7/28/93)*
7,790' - 7,798'

CISCO *(7/25/93)*
7,932' - 7,940'

CISCO *(7/22/93)*
8,034' - 8,042'
8,055' - 8,060'

4" Liner top @ 9,055'

7-7/8" Hole
5-1/2", N80, 17#, LTC, @ 9,473'
Cmt'd w/430 Sx

MORROW *(9/14/90)*
10,008' - 10,014'
10,038' - 10,054'

4-3/4" Hole
4" 10.46#, L80 Liner @ 9,055' - 10,141'
Cmt'd w/80 Sx

10,141' TD

Formation Tops

Morrow 9,600-10,250'
Atoka 9.230'- 9,700'
Upper Wolfcamp 6,400' - 7,200'
Abo 5,600' - 6,200'
Yeso 3,300' 0 3,900'
San Andres 2,000' - 2,800'
Queen 1,450' - 1,650'

3-1/2", 9.3 #, N80, Injection tubing @ 6789'

5-1/2" IPC Packer @ 6,789'

Frac 7758'-7840' with 4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 106,750 # 100% 20/40 White sand.

Frac 7893'-8060' with 5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% 20/40 White sand.

35' cement. 9,005' PBD
CIBP @ 9,040' *(7/21/93)*

CIBP @ 9,950' *(7/19/93)*

10,100' PBD

New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson
Governor

Joanna Prukop
Cabinet Secretary
Reese Fullerton
Deputy Cabinet Secretary

OCT 07 2008
OCD-ARTESIA
OCT 07 2008
OCD-ARTESIA

Mark Fesmire
Division Director
Oil Conservation Division

Administrative Order SWD-1135
July 16, 2008

APPLICATION OF DEVON ENERGY PRODUCTION COMPANY, L.P. FOR PRODUCED WATER DISPOSAL, EDDY COUNTY, NEW MEXICO

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Under the provisions of Rule 701(B), Devon Energy Production Company, L.P. (OGRID No. 6137) made application to the New Mexico Oil Conservation Division for permission to utilize for produced water disposal its Federal T Well No. 1 (API No. 30-015-26404) located 660 feet from the North line and 990 feet from the East line of Section 12, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of Rule 701(B) of the Division Rules. Satisfactory information has been provided that all offset operators and surface owners have been duly notified. The applicant has presented satisfactory evidence that all requirements prescribed in Rule 701 will be met and no objections have been received within the waiting period prescribed by said rule. The applicant is in compliance with Rule 40.

IT IS THEREFORE ORDERED THAT:

Devon Energy Production Company, L.P. ("operator") is hereby authorized to utilize its Federal T Well No. 1 (API No. 30-015-26404) located 660 feet from the North line and 990 feet from the East line of Section 12, Township 18 South, Range 27 East, NMPM, Eddy County, New Mexico, in such manner as to permit the injection of produced water for disposal purposes into the Lower Wolfcamp formation and the Cisco formation through perforations from 7,400 feet to 8,200 feet and through plastic-lined tubing set in a packer located within 100 feet of the top of the injection interval.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

After installing injection tubing, the casing shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved *leak detection device* in order to determine leakage in the casing, tubing, or packer.

The injection well or system shall be equipped with a *pressure limiting device* in workable condition which shall, at all times, limit surface injection pressure to the maximum allowable pressure for this well. The wellhead injection pressure on the well shall be limited to **no more than 1480 psi**.

The Director of the Division may authorize an increase in the maximum injection pressure upon a proper showing by the operator that such higher pressure would not result in migration of the injected fluid from the injection formation. Such proper showing should be supported by a valid step rate test run in accordance with procedures acceptable to the Division.

The operator shall notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment and of any mechanical integrity test so that the same may be inspected and witnessed.

The operator shall immediately notify the supervisor of the Artesia district office of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

PROVIDED FURTHER THAT, jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh water or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, or without notice and hearing in event of an emergency subject to NMSA 1978 Section 70-2-23, terminate the injection authority granted herein.

The operator shall provide written notice of the date of commencement of injection and the initial reservoir pressure to the Artesia district office of the Division.

The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 706 and 1120.

The injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request by the operator

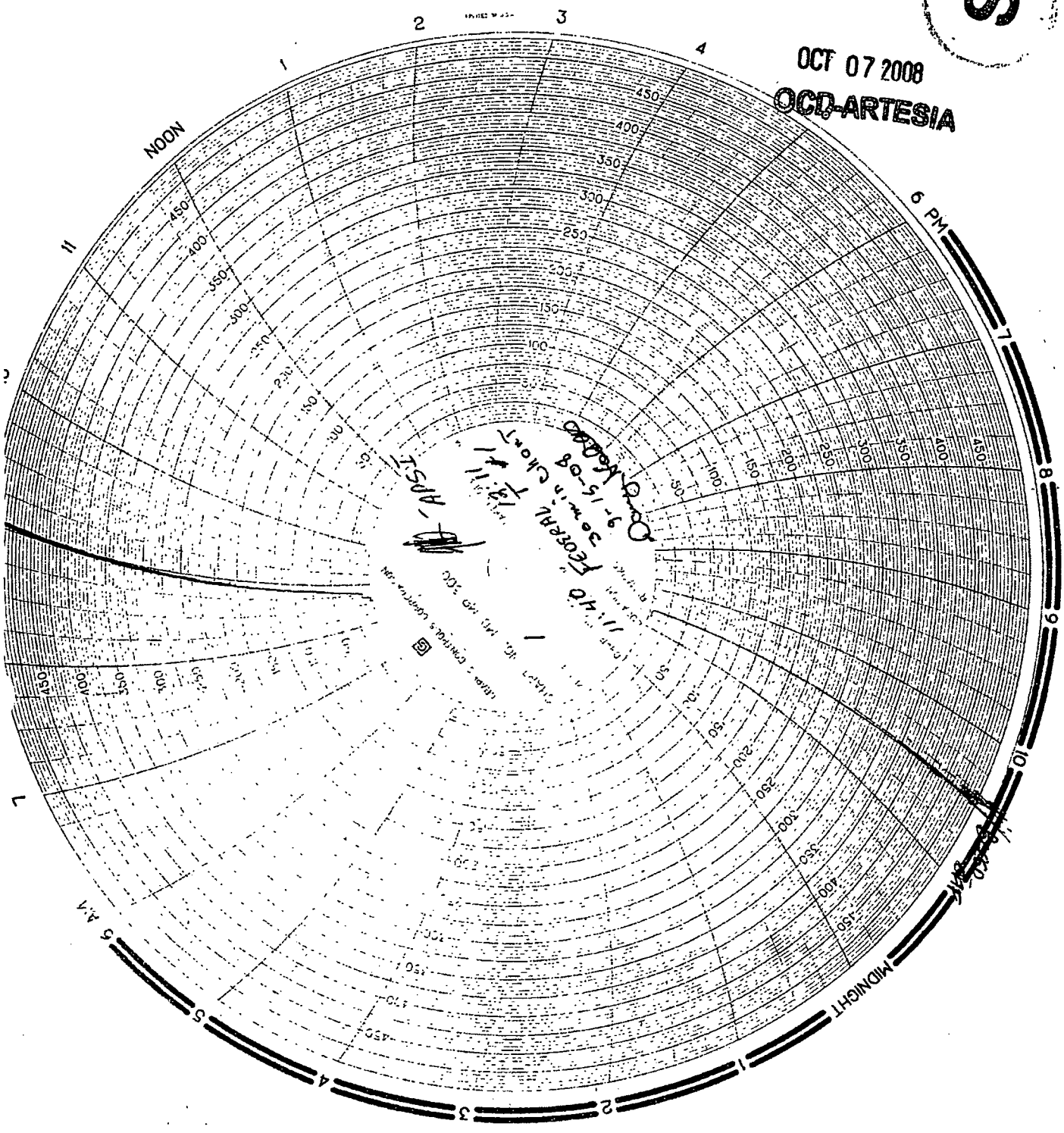
mailed prior to the expiration date, may grant an extension thereof for good cause shown.

This order does not relieve the operator of responsibility should its operations cause any actual damage or threat of damage to protectable fresh water, human health or the environment; nor does it relieve the operator of responsibility for complying with applicable Division rules or other state, federal, or local laws or regulations.

MARK E. FESMIRE, P.E.
Director

MEF/wvjj

cc: Oil Conservation Division – Artesia
Bureau of Land Management – Carlsbad


NOON
6 PM
MIDNIGHT
OCT 07 2008
OCD-ARTESIA

SEP 19 2008

OCD-ARTESIA

S

Submit to Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
District I
French Dr , Hobbs, NM 88240
District II
Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd, Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-105
Revised June 10, 2003

Well API No. 30-015-26404

5. Indicate Type of Lease ☐ STATE ☐ FEE

State Oil & gas Lease No

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a Type of Well
☐ Oil Well ☐ Gas Well ☐ Dry ☑ Other **Convert to SWD: Admin Order SWD-1135**

b Type of Completion
☐ New Well ☐ Work Over ☐ Deepen ☑ Plug Back ☐ Diff. Resvr., ☐ Other

7 Lease Name and Unit Agreement Name: **Federal T 1**

2 Name of Operator: **DEVON ENERGY PRODUCTION COMPANY, LP**

8. Well No.

3 Address of Operator: **20 North Broadway, Oklahoma City, OK 73102**

9 Pool name or Wildcat: **L. Wolfcamp and Cisco** 96136

4 Well Location

Unit Letter **A** **660'** feet from the **NORTH** line and **990'** feet from the **EAST** line

Section **12** Township **18S** Range **27E** NMPM County **Eddy**

10. Date Spudded	11. Date T D Reached	12 Date Completed	13 Elevations (DR, RKB, RT, GL)*	14 Elev Casinghead
6/28/1990	8/25/1990	Orig 9/13/90 SWD 9/15/08	3634' KB; 3618' GL	

15. Total Depth MD	16 Plug Back T.D	17 If Multiple Compl How Many Zones	18. Intervals Drilled BY	Rotary Tools	Cable Tools
10,141	9005'	No		X	

19 Producing Intervals(s), of this completion - Top, Bottom, Name
L. Wolfcamp; 6,868' - 7,360' and Cisco; 7,758' - 8,060' (Salt Water Disposal Only)

20 Was Directional Survey Made: **No**

21. Type Electric and Other Logs Run
DLL-MGRD, SDL-DSN (original logs)

22 Was Well Cored: **No**

23 CASING RECORD (Report all strings set in well)

Casing Size	Weight LB /FT.	Depth Set	Hole Size	Cementing Record	Amount Pulled
13-3/8"	68#	472'	17-1/2"	450 sx	
8-5/8"	32#	2589'	12 1/4"	900 sx	
5-1/2"	17#	9473'	7-7/8"	430 sx	

Liner Record

	top	Bottom	Sacks Cement	Screen
4"	9055'	10141'	80 sx	

25 Tubing Record

Size	Depth Set	Packer Set
3-1/2" (IPC)	6789'	6789'

26 Perforation record (interval, size, and number)

Wolfcamp; 6868'-7038' (8/21/93)
Wolfcamp; 7092'-7097'; 7120'-7146' (8/18/93)
Wolfcamp; 7330'-7340'; 7350'-7360' (8/16/93)
Cisco; 7893'-8060'; (140 holes)
Cisco; 7758'-7840'; (228 holes)
Morrow; 10008'-10054'; (still under CIBP)

27. Acid, Shot, Fracture, Cement, Squeeze, ETC.

Depth Interval	Amount and Kind Material Used
7893'-8060'	Frac--5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% White 20/40 Sand.
7758'-7840'	Frac--4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 106,750 # 100% White 20/40 Sand.

28 PRODUCTION

Date First Production	Production Method (Flowing, Gas lift, pumping - Size and type pump)	Well Status (Prod Or Shut-In)
NA		9/16/08-Converted to SWD

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - BbL	Gas - MCF	Water - Bbl	Gas - Oil Ratio
	24						#DIV/0!

Flowing Tubing Press	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl	Gas - MCF	Water - Bbl	Oil Gravity - API (Corr)

29. Disposition of Gas (Sold, used for fuel, vented, etc) **NA--Converted to SWD 9/16/08**

Test Witnessed By

30. List Attachments
Wellbore schematic

31 I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief

SIGNATURE _____ Printed Name Norvella Adams Title Sr Staff Engineering Technician DATE 9/17/2008

E-mail Address. norvella.adams@dvn.com

Accepted for record
NMOCD

This Form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly drilled or deepened well It shall be [redacted]mpanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem test. All depths [redacted]ed shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported For multiple completions, items 25 through 29 shall be reported for each zone The form is to be filed in quintuplicate except on state land, where six copies are required See Rule 1105

INDICATE FORMATIONS TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

rn New Mexico		Northwestern New Mexico			
Yates	476'	T. Canyon		T Ojo Alamo	T. Penn "B"
Queen	1218'	T Strawn		T. Kirtland-Fruitland	T. Penn "C"
Grayburg	1572'	T Atoka		T. Pictured Cliffs	T Penn "D"
San Andres	2072'	T Miss		T Cliff House	T. Leadville
Tubb	4824'	T. Devonian		T. Menefee	T. Madison
Abo	6016'	T Silunan		T. Point Lookout	T Elbert
Wolfcamp	7682'	T Montoya		T Mancos	T. McCracken
Cisco	8912'	T. Simpson		T. Gallup	T Ignacio Otzte
Strawn	9513'	T McKee		Base Greenhorn	T Granite
Atoka	9628'	T. Ellenburger		T. Dakota	T
Morrow	9828'	T Gr Wash		T. Morrison	T
Morrow Clastics	9965'	T Delaware Sand		T. Todilto	T.
Lower Morrow	10104'	T. Bone Spnngs		T Entrada	T
Barnett		T		T Wingate	T
T. Wolfcamp		T		T Chinle	T
T Penn		T.		T Permian	T
T Cisco (Bough C)		T.		T. Penn "A"	T.

OIL OR GAS SANDS OR ZONES

No. 1, from ..... to ..... No 3, from ..... to .....
No 2, from ..... to ..... No 4, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole

No 1, from ..... to ..... feet .....
No 2, from ..... to ..... feet .....
No. 3, from ..... to..... feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology	From	To	Thickness in Feet	Lithology

Form 3160-4
(February 2005)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCT 06 2008
OCD-ARTESIA

FORM APROVED
OMB NO. 1004-0137
EXPIRES. March 31, 2007

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

a Type of Well ☐ Oil Well ☐ Gas Well ☐ Dry ☑ Other SWD- Order 1135 b Type of Completion ☐ New Well ☐ Work Over ☐ Deepen ☑ Plug Back ☐ Diff. Resvr., ☐ Other	5. Lease Serial No NM-42410
	6 If Indian, Allottee or Tribe Name
	7 Unit or CA Agreement Name and No
2 Name of Operator DEVON ENERGY PRODUCTION COMPANY, LP	8 Lease Name and Well No Federal T 1
3 Address 20 North Broadway Oklahoma City, OK 73102-8260 3a Phone No (include area code) 405-552-8198	9 API Well No. 30-015-26404 0052
4 Location of Well (Report location clearly and in accordance with Federal requirements)* At Surface 660 FNL 990 FEL At top prod Interval reported below At total Depth	10. Field and Pool, or Exploratory L.Wolfcamp and Cisco 96136 11. Sec, T , R , M , on Block and Survey or Area 12 18S 27E 12. County or Parish Eddy 13. State NM
14 Date Spudded 6/28/1990 15 Date T D Reached 8/25/1990 16. Date Completed 9/15/08 - SWD 9/13/90 orig cmpl ☐ D & A ☑ Ready to Prod.	17 Elevations (DR, RKB, RT, GL)* 3634' KB; 3618' GL
18. Total Depth: MD 7600' TVD 19. Plug Back T D . MD 6142' TVI 20 Depth Bridge Plug Set: MD 6177 TVI	
21 Type Electric & Other Mechanical Logs Run (Submit copy of each) DLL-MGRD, SDL_DSN (original logs)	22 Was well cored? ☑ No ☐ Yes (Submit analysis) Was DST run? ☑ No ☐ Yes (Submit report) Directional Survey? ☑ No ☐ Yes (Submit copy)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt (#/ft)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No of Sks & Type Cement	Slurry Vol (BBL)	Cement Top*	Amount Pulled
17-1/2"	13-3/8"/LT&C	68		472'		450 Sx		Surf	
12 1/4"	8-5/8"/J55	32		2589'		900 Sx		Surf	
7-7/8"	5-1/2"/LT&C	17		9473'		430 Sx		Surf	
4 3/4"	4" / L80	10.46		10,141'		80 Sx		9055'	

24 Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2 1/2" IPC	6789'	6789'						

25 Producing Intervals / 26 Perforation Record

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf Status
Wolfcamp	6868'	7360'	6868'-7360'		140	Open for SWD
Cisco	7893'	7840'	7893-7840'		228	Open for SWD
Morrow	10,008'	10,054'	10,008-10,054'			Abandoned
D.						

27 Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
7893-8060'	Frac - 5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% White 20/40 sand.
7758-7840'	Frac - 4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 106,750 # 100% White 20/40 sand.

28 Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
NA		24	→						
Choke Size	Tbg Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status	
			→				#DIV/0!		

28a Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method

ACCEPTED FOR RECORD
/S/ DAVID R. GLASS
SEP 29 2008
DAVID R. GLASS
PETROLEUM ENGINEER

			→						
Choke Size	Tbg. Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status	
			→						

(See instructions and spaces for additional data on reverse side)

28b Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status	
			→						

28c Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg Press. Flwg SI	Csg Press	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas : Oil Ratio	Well Status	
			→						

(See instructions and spaces for additional data on reverse side)

29. Disposition of Gas (Sold, used for fuel, vented, etc.)

30 Summary of Porous Zones (Include Aquifers).

Show all important zones of porosity and contents thereof, Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31 Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc	Name	Top Meas Depth
				Yates	476'
				Queen	1218'
				Grayburg	1572'
				San Andres	2072'
				Tubb	4824'
				Abo	6016'
				Wolfcamp	7682'
				Cisco	8912'
				Strawn	9513'
				Atoka	9628'
				Morrow	9828'
				Morrow Clastics	9965'
				Lower Morrow	10104'

32. Additional remarks (include plugging procedure).

33 Indicate which items have been attached by placing a check in the appropriate box

☐ Electrical/Mechanical Logs (1 full set req'd) ☐ Geologic Report ☐ DST Report ☐ Directional Survey

☐ Sundry Notice for plugging and cement verification ☐ Core Analysis ☑ Other Wellbore Schematic

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*

Name (Please print) Norvella Adams Title Sr. Staff Engineering Technician

Signature Date 9/17/2008

Title 18 U.S.C Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Form 3160-5
(February 2005)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APROVED
OMB NO. 1004-0137
EXPIRES: March 31, 2007

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well ☐ Oil Well ☐ Gas Well ☑ Other **SWD conversion. Admin Order SWD-1135**	5 Lease Serial No **NM-42410**
2. Name of Operator **DEVON ENERGY PRODUCTION COMPANY, LP**	6. If Indian, Allottee or Tribe Name
3a. Address **20 North Broadway, Oklahoma City, OK 73102**	3b. Phone No. (include area code) **405-552-8198**
4 Location of Well (Footage, Sec., T., R., M , or Survey Description) **660 FNL 990 FEL A 12 18S 27E**	7. Unit or CA Agreement Name and No.
	8 Well Name and No **Federal T 1**
	9 API Well No **30-015-26404**
	10. Field and Pool, or Exploratory Area **L.Wolfcamp and Cisco**
	11. County or Parish, State **Eddy NM**

12. CHECK APPROPRIATE BOX(es) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OS SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☑ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☑ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13 Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work and approximate duration thereof If the proposal deepen directionally or recomplete horizontally, give subsurface location and measured and true vertical depths of all pertinent markers and zones Attach the Bond under which the work will be performed or provide the Bond No on file with BLM/BIA Required subsequent reports shall be filed within 30 days following completion of the involved operations If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed Final Abandonment Notices shall be filed only after all requirement, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection)

Converted to SWD. Administrative Order SWD-1135
8/04/08 RU unit. ND wellhead and NU BOP. TIH with bit and drill collars.
8/05/08 Drill CIBP at 6800' and 7078'.
8/06/08 Drilled through cement at 7525', CIBP at 7300' and cement at 7560' and CIBP at 7595'.
8 Ran step rate test; pumped 50 bbls at ½ bbl/min – 0# psi, pumped 50 bbls at 1 bbl/min -20# psi, pumped 50 bbls at 2 bbls/min – 75# psi, pumped 50 3 bbls/min – 170# psi, pumped 50 bbls at 4 bbls/min – 250 psi.
08 Trucked in and established injection in the Wolfcamp at 150 BWPD at 170 psi.
8/11/08 Drilled cement retainers at 7745', and 7780'.
8/12/08 Drilled cement retainer at 7820' and 8000'. Circulate hole and TOH with tubing and bit.
8/13/08 Perforate Cisco from 7893' – 8060', total 140 holes. TIH and set packer at 7688'. Frac with 5,040 gals 15% HCl + 120,372 gals Spectra Star 2500 + 167,552 # 20/40 White sand.
8/14/08 TIH with retrievable tool and latch onto packer. Release packer and TOOH with packer and tubing. RU wireline and perforate Cisco from 7758'-7840'; 228 total holes
8/15/08 TIH with packer and set at 7582'. NU frac valve.
8/16/08 Frac 7758'-8060' with 4500 gals 15% Spearhead acid + 119,255 gals Spectra 2500 + 106,750 # 20/40 100% White sand. RD.
8/18/08 Release packer. TOOH with packer and tubing
8/20/08 TIH with bailer and bailed sand. Bailed sand to 8460'. TOOH with tubing. ND BOP and NU flange. Waiting on tubing.
9/15/08 TIH with packer and tubing. Set packer at 6789'. ND BOP and NU tree Ran MIT test to 500 # for 30 minutes – ok, notified Mike Bratcher with OCD TOOH with tubing. RIH with 3 ½" IPC tubing and set at 6789'. Injection line installation in progress.

14. I hereby certify that the foregoing is true and correct
Name: Norvella Adams — Title **Sr. Staff Engineering Technician**
Signature — Date 9/17/2008

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by /S/ DAVID R. GLASS — Title — Date SEP 29 2008

Accepted for record
NMOCD

Conditions of approval, if any are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

DAVID R. GLASS
PETROLEUM ENGINEER

Office

ACCEPTED FOR RECORD

S C Section 1001 and Title 43 U S C Section 1212 make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or ions as to any matter within its jurisdiction

DEVON ENERGY PRODUCTION COMPANY LP

Well Name: FEDERAL T #1	Field: NORTH ILLINOIS CAMP MORROW		
Location: 660' FNL & 990' FEL; SEC 12-T18S-R27E	County: EDDY	State: NM	
Elevation: 3634' KB; 3618' GL	Spud Date: 6/28/90	Compl Date: 9/13/90	
API#: 30-015-26404	Prepared by: Norvella Adams	Date: 9/17/08	Rev:

Current Schematic
L. Wolfcamp and Cisco SWD

17-1/2" Hole
13-3/8", 68#, LTC, @ 472'
Cmt'd w/450 Sx. Circ to surface

12-1/4" Hole
8-5/8", J55, 32#, STC, @ 2,589'
Cmt'd w/900 Sx. Circ to surface

WOLFCAMP *(8/21/93)*
6,868' - 7,038'

WOLFCAMP *(8/18/93)*
7,092' - 7,097'; 7,120' - 7,146'

WOLFCAMP *(8/16/93)*
7,330' - 7,340'; 7,350' - 7,360'

SWD Perforations:
CISCO *(8/1/93)*
7,685' - 7,695'

CISCO *(7/30/93)*
7,760' - 7,768'

CISCO *(7/28/93)*
7,790' - 7,798'

CISCO *(7/25/93)*
7,932' - 7,940'

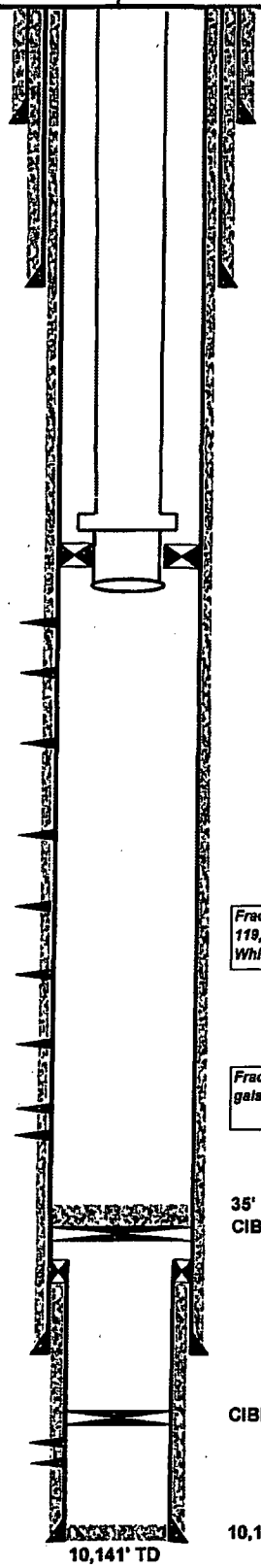
CISCO *(7/22/93)*
8,034' - 8,042'
8,055' - 8,060'

4" Liner top @ 9,055'

7-7/8" Hole
5-1/2", N80, 17#, LTC, @ 9,473'
Cmt'd w/430 Sx

MORROW *(9/14/90)*
10,008' - 10,014'
10,038' - 10,054'

4-3/4" Hole
4" 10.46#, L80 Liner @ 9,055' - 10,141'
Cmt'd w/80 Sx



10,141' TD

Formation Tops

Morrow 9,600-10,250'
Atoka 9,230'- 9,700'
Upper Wolfcamp 6,400' - 7,200'
Abo 5,600' - 6,200'
Yeso 3,300' 0 3,900'
San Andres 2,000' - 2,800'
Queen 1,450' - 1,650'

3-1/2", 9.3 #, N80, injection tubing @ 6789'

5-1/2" IPC Packer @ 6,789'

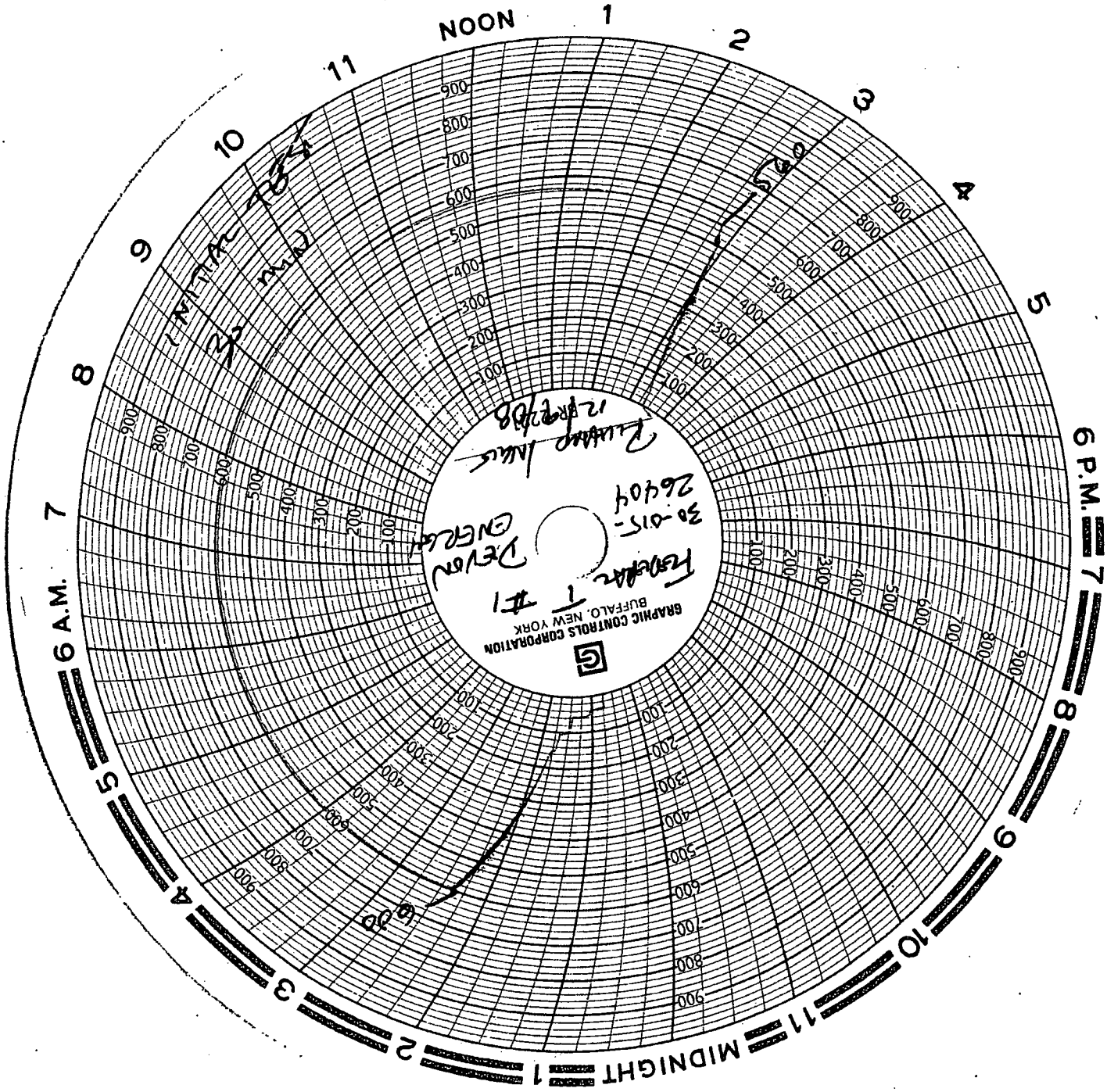
Frac 7758'-7840' with 4500 gals 15% Spearhead acid and 119,255 gals Spectra Star 2500 + 108,750 # 100% 20/40 White sand.

Frac 7893'-8060' with 5040 gals 15% HCl acid and 120,372 gals Spectra Star 2500 + 167,552 # 100% 20/40 White sand.

35' cement. 9,005' PBD
CIBP @ 9,040' *(7/21/93)*

CIBP @ 9,950' *(7/19/93)*

10,100' PBD


NOON
1
2
3
4
5
6 P.M.
7
8
9
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11
MIDNIGHT
1
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6 A.M.
7
8
9
10
11
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
100
200
300
400
500
600
700
800
900

LIME ROCK RESOURCES II-A, L.P. certifies that all below-grade tanks constructed and installed prior to June 16, 2008 associated with the selected wells are in compliance with 19.15.17 NMAC, have been closed pursuant to 19.15.17.13 NMAC, or have been retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC.

LIME ROCK RESOURCES II-A, L.P. understands that the OCD's approval of this operator change:

1. constitutes approval of the transfer of the permit for any permitted pit, below-grade tank or closed-loop system associated with the selected wells; and
2. constitutes approval of the transfer of any below-grade tanks constructed and installed prior to June 16, 2008 associated with the selected wells, regardless of whether the transferor has disclosed the existence of those below-grade tanks to the transferee or to the OCD, and regardless of whether the below-grade tanks are in compliance with 19.15.17 NMAC.

As the operator of record of wells in New Mexico, LIME ROCK RESOURCES II-A, L.P. agrees to the following statements:

1. I am responsible for ensuring that the wells and related facilities comply with applicable statutes and rules, and am responsible for all regulatory filings with the OCD. I am responsible for knowing all applicable statutes and rules, not just the rules referenced in this list. I understand that the OCD's rules are available on the OCD website under "Rules," and that the Water Quality Control Commission rules are available on the OCD website on the "Publications" page.
2. I understand that if I acquire wells from another operator, the OCD must approve the operator change before I begin operating those wells. See 19.15.9.9.B NMAC. I understand that if I acquire wells or facilities subject to a compliance order addressing inactive wells or environmental cleanup, before the OCD will approve the operator change it may require me to enter into an enforceable agreement to return those wells to compliance. See 19.15.9.9.C(2) NMAC.
3. I must file a monthly C-115 report showing production for each non-plugged well completion for which the OCD has approved an allowable and authorization to transport, and injection for each injection well. See 19.15.7.24 NMAC. I understand that the OCD may cancel my authority to transport from or inject into all the wells I operate if I fail to file C-115 reports. See 19.15.7.24.C NMAC.
4. I understand that New Mexico requires wells that have been inactive for certain time periods to be plugged or placed on approved temporary abandonment. See 19.15.25.8 NMAC. I understand the requirements for plugging and approved temporary abandonment in 19.15.25 NMAC. I understand that I can check my compliance with the basic requirements of 19.15.25.8 NMAC by using the "Inactive Well List" on OCD's website.
5. I must keep current with financial assurances for well plugging. I understand that New Mexico requires each state or fee well that has been inactive for more than two years and has not been plugged and released to be covered by a single-well financial assurance, even if the well is also covered by a blanket financial assurance and even if the well is on approved temporary abandonment status. See 19.15.8.9.C NMAC. I understand that I can check my compliance with the single-well financial assurance requirement by using the "Inactive Well Additional Financial Assurance Report" on the OCD's website.
6. I am responsible for reporting releases as defined by 19.15.29 NMAC. I understand the OCD will look to me as the operator of record to take corrective action for releases at my wells and related facilities, including releases that occurred before I became operator of record.
7. I have read 19.15.5.9 NMAC, commonly known as "Part 5.9," and understand that to be in compliance with its requirements I must have the appropriate financial assurances in place, comply with orders requiring corrective action, pay penalties assessed by the courts or agreed to by me in a settlement agreement, and not have too many wells out of compliance with the inactive well rule (19.15.25.8 NMAC). If I am in violation of Part 5.9, I may not be allowed to drill, acquire or produce any additional wells, and will not be able to obtain any new injection permits. See 19.15.16.19 NMAC, 19.15.26.8 NMAC, 19.15.9.9 NMAC and 19.15.14.10 NMAC. If I am in violation of Part 5.9 the OCD may, after notice and hearing, revoke my existing injection permits. See 19.15.26.8 NMAC.
8. For injection wells, I understand that I must report injection on my monthly C-115 report and must operate my wells in compliance with 19.15.26 NMAC and the terms of my injection permit. I understand that I must conduct mechanical integrity tests on my injection wells at least once every five years. See

19.15.26.11 NMAC. I understand that when there is a continuous one-year period of non-injection into all wells in an injection or storage project or into a saltwater disposal well or special purpose injection well, authority for that injection automatically terminates. See 19.15.26.12 NMAC. I understand that if I transfer operation of an injection well to another operator, the OCD must approve the transfer of authority to inject, and the OCD may require me to demonstrate the well's mechanical integrity prior to approving that transfer. See 19.15.26.15 NMAC.

9. I am responsible for providing the OCD with my current address of record and emergency contact information, and I am responsible for updating that information when it changes. See 19.15.9.8.C NMAC. I understand that I can update that information on the OCD's website under "Electronic Permitting."
10. If I transfer well operations to another operator, the OCD must approve the change before the new operator can begin operations. See 19.15.9.9.B NMAC. I remain responsible for the wells and related facilities and all related regulatory filings until the OCD approves the operator change. I understand that the transfer will not relieve me of responsibility or liability for any act or omission which occurred while I operated the wells and related facilities.

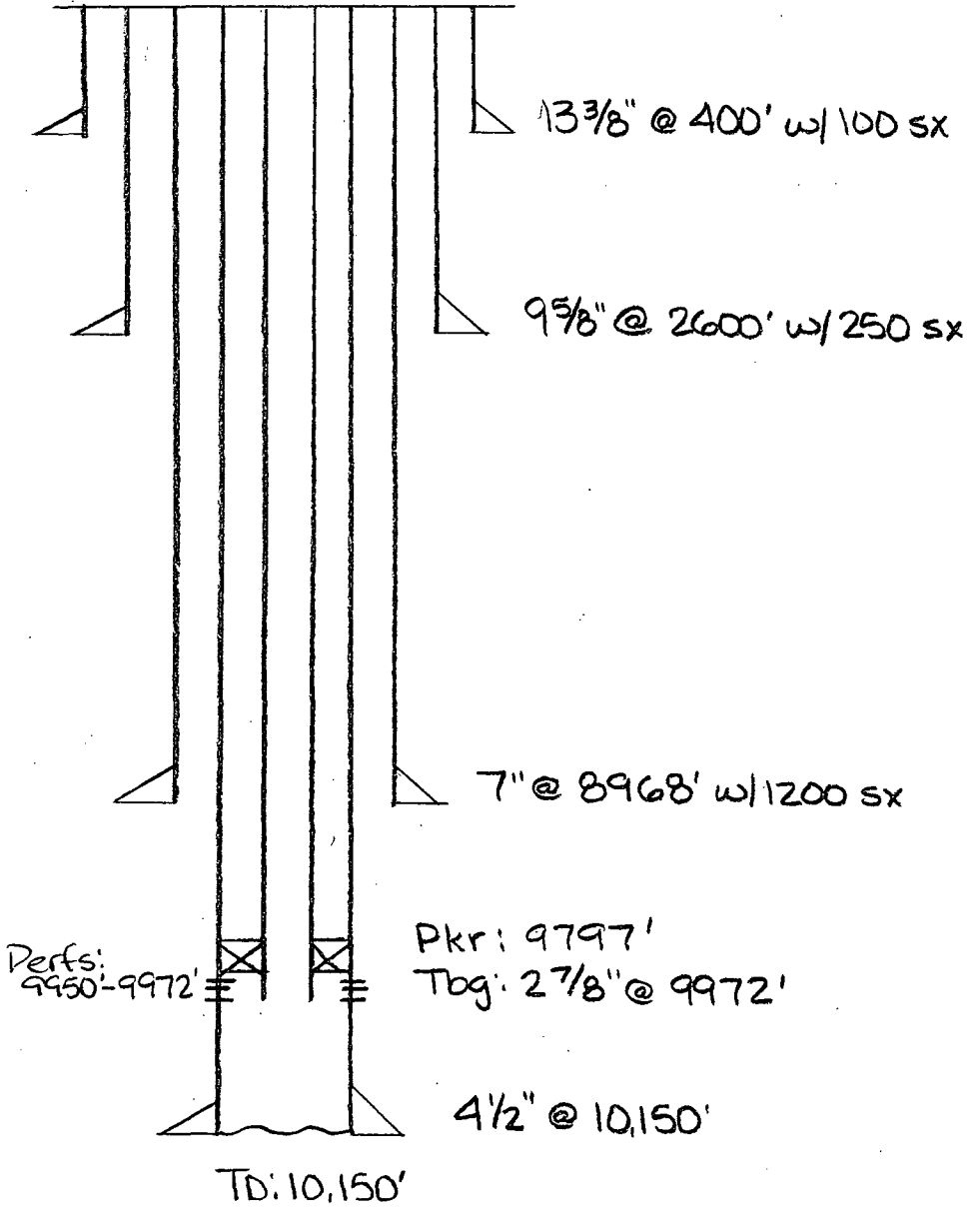
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 99
Artificial Penetration Review

OPERATOR Mewbourne Oil
LEASE Chalk Bluff Federal
WELL NUMBER 3
DRILLED 1/16/93
PLUGGED NA

STATUS Active
LOCATION Sec. 1 -T18S-R27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE -3702'
API NO. 30-015- 27163

REMARKS:



MAP ID NO. 99

MEWBOURNE OIL CO.
CHALK BLUFF FEDERAL COM NO. 003

API NO. 30-015-27163

APD ATTATCHMENT

Mewbourne Oil Company Chalk Bluff Federal Comm. #3 NM-016788
1980' FSL & 990' FEL Sec. 1-T18S-R27E Eddy County, NM.

1.) Casing Design and Safety Factors (See schedule 1 for used casing design program.)

2.) Cement Program for Casing Strings.

Surface Casing:
250 sacks of Class "C" containing 2% CaCL2 + 1/4#/sack of cellophane flakes followed by 200 sacks of Class "C" containing 3% CaCL2.

Intermediate Casing:
700 sacks of Class "C" containing 6% gel + 2% CaCL2 + 1/2#/sack of cellophane flakes + 5#/sack of Gilsonite followed by 200 sacks of CLass "C" containing 3% CaCL2

Production Casing:
A cement diverter tool (D. V. Tool) will be run at a depth of approximately 7500' from surface.
1st Stage:
850 sacks of Class "H" containing 5#/sack KCL + .7% fluid loss additive + 5#/sack compressive strength extender.
2nd Stage:
900 sacks of Class "C" Lite containing 1/2#/sack cellophane flakes + 5#/sack Gilsonite + .4% fluid loss extender followed by 100 sacks of Class "H" containing .4% fluid loss additive + 5#/sack compressive strength extender.

3.) Drilling time will require approximately 35 - 40 days and drilling operations should begin approximately November 1, 1992.

4.) The possibility of encountering H2S gas in this area remote. Mewbourne Oil Company has drilled offset wells to this proposed location and none of these wells have encountered any H2S gas in the Pennsylvanian. In the event H2S is encountered, the necessary H2S safety equipment will be installed on location to provide for a safe working enviroment.

5.) Anticipated formation temperature and pressure in the Morrow zone will be approximately 155 degrees fahrenheit and 3,000# psi.

6.) This location is a non-standard location. A hearing is scheduled for October 15, 1992 in Santa Fe, New Mexico before the New Mexico Oil Conservation Division for an unorthodox location exception.

7.) The pressure rating on the BOP STACK (see exhibit "D" of the APD) is 3,000# psi. The correct pressure rating of ANSI 900 series is noted in the APD. The API standard for pressure ratings for flanged equipment is in ANSI series. ANSI 600 series is 2,000# psi working pressue test, ANSI 900 series is 3,000# psi working pressure, ANSI 1500 series is 5,000# psi work-pressure.

SCHEDULE ONE

LEASE NAME: CHALK BLUFF FEDERAL #3 **TYPE OF CSG STRING:** PRODUCTION

LEGALS: SEC 1-18S-27E **DEPTH OF CSG:** 10,300

CASING MINIMUM PERFORMANCE PROPERTIES

	CSG TYPE	K-FACTOR	COLLAPSE	BURST	TENSION
1	5 1/2" 20# N-80 LT&C	991,000	8830	9190	428000
2	5 1/2" 17# N-80 LT&C	844,000	6380	7740	348000
3	5 1/2" 20# N-80 LT&C	991,000	8830	9190	428000
4					
5					

GRADE OF CASING: 85 % OF NEW

	CSG TYPE	COLLAPSE	BURST	TENSION
1	5 1/2" 20# N-80 LT&C	7506	7812	363800
2	5 1/2" 17# N-80 LT&C	5423	6579	295800
3	5 1/2" 20# N-80 LT&C	7506	7812	363800
4	0	0	0	0
5	0	0	0	0

SETTING DEPTH (WT. OF CSG IN AIR)

	FROM	TO	CASING WT. (LB/FT)	INTERVAL LGTH (FT.)	INTERVAL WT. (LBS)	CUMMULATIVE WT. (LBS)
1	0	1,000	20	1000	20,000	181,100
2	1,000	9,300	17	8300	141,100	161,100
3	9,300	10,300	20	1000	20,000	20,000
4	0			0	0	0
5	0			0	0	0

WELLBORE CONDITIONS

MUD WEIGHT: 9.6 PPG

BOUYANCY FACTOR 0.853 (AIR = 1)

DISPLACEMENT FLUID WT: 8.5 PPG

	DEPTH	ANNULAR HYDROSTATIC PRESSURE	COLLAPSE W/AXIAL LOADING	HOLE HYDROSTATIC PRESSURE	TENSION
	0	0		0	154,478
1	1000	499	5982	442	137,418
2	9300	4643	5290	4111	17,060
3	10300	5142	7506	4553	0
4	0	0	ERR	0	0
5	0	0	ERR	0	0

FINIAL CASING DESIGN

		FROM	TO	LENGTH	SAFTEY FACTORS COLLAPSE >1.125	BURST >1.00	TENSION >2.00
0		0	0	0	ERR	ERR	ERR
0		0	0	0	ERR	ERR	ERR
5	1/2" 20# N-80 LT&C	10,300	9,300	1000	1.460	1.716	21.325
5	1/2" 17# N-80 LT&C	9,300	1,000	8300	1.139	1.600	2.153
5	1/2" 20# N-80 LT&C	1,000	0	1000	11.983	17.673	2.355

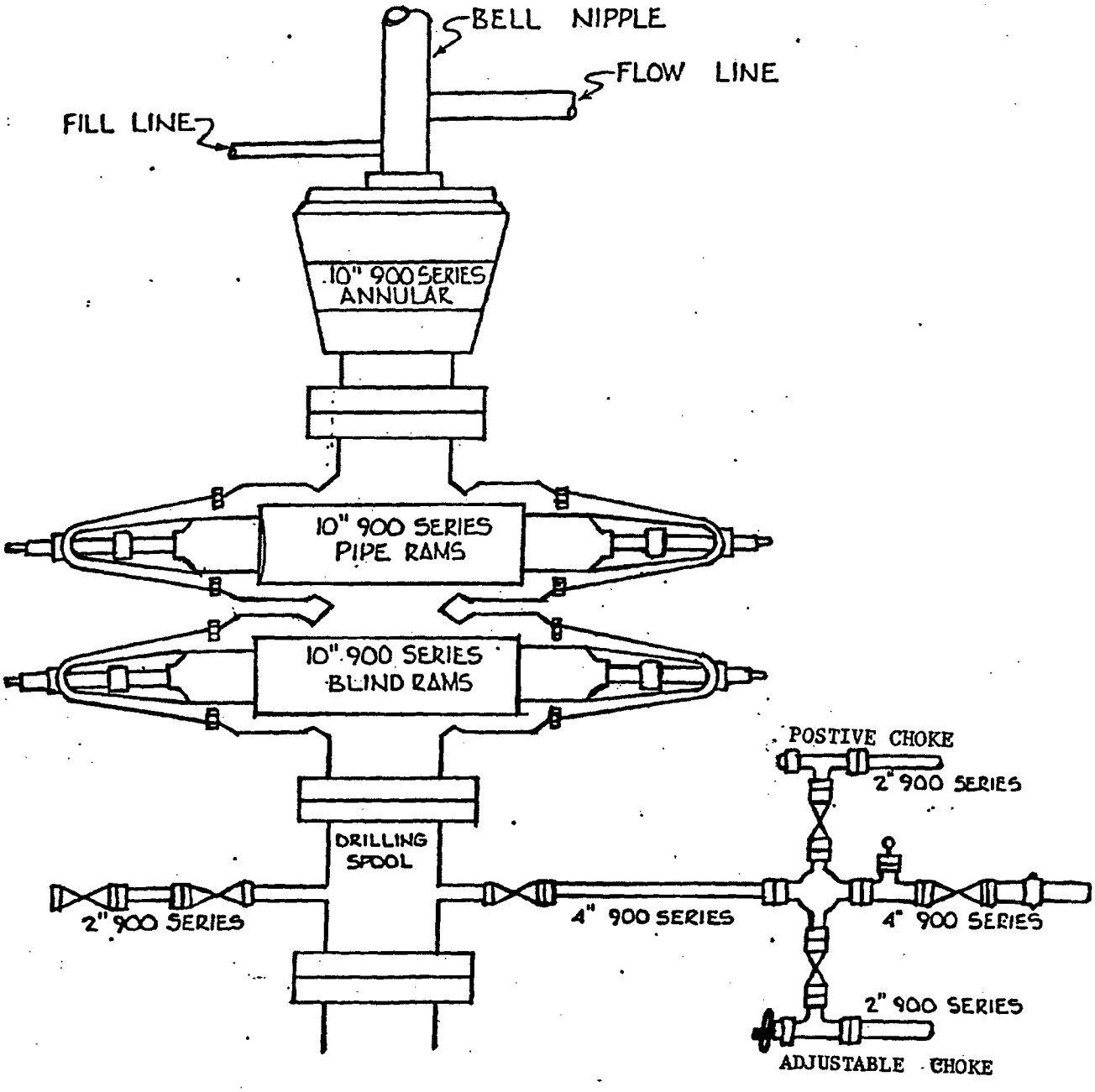
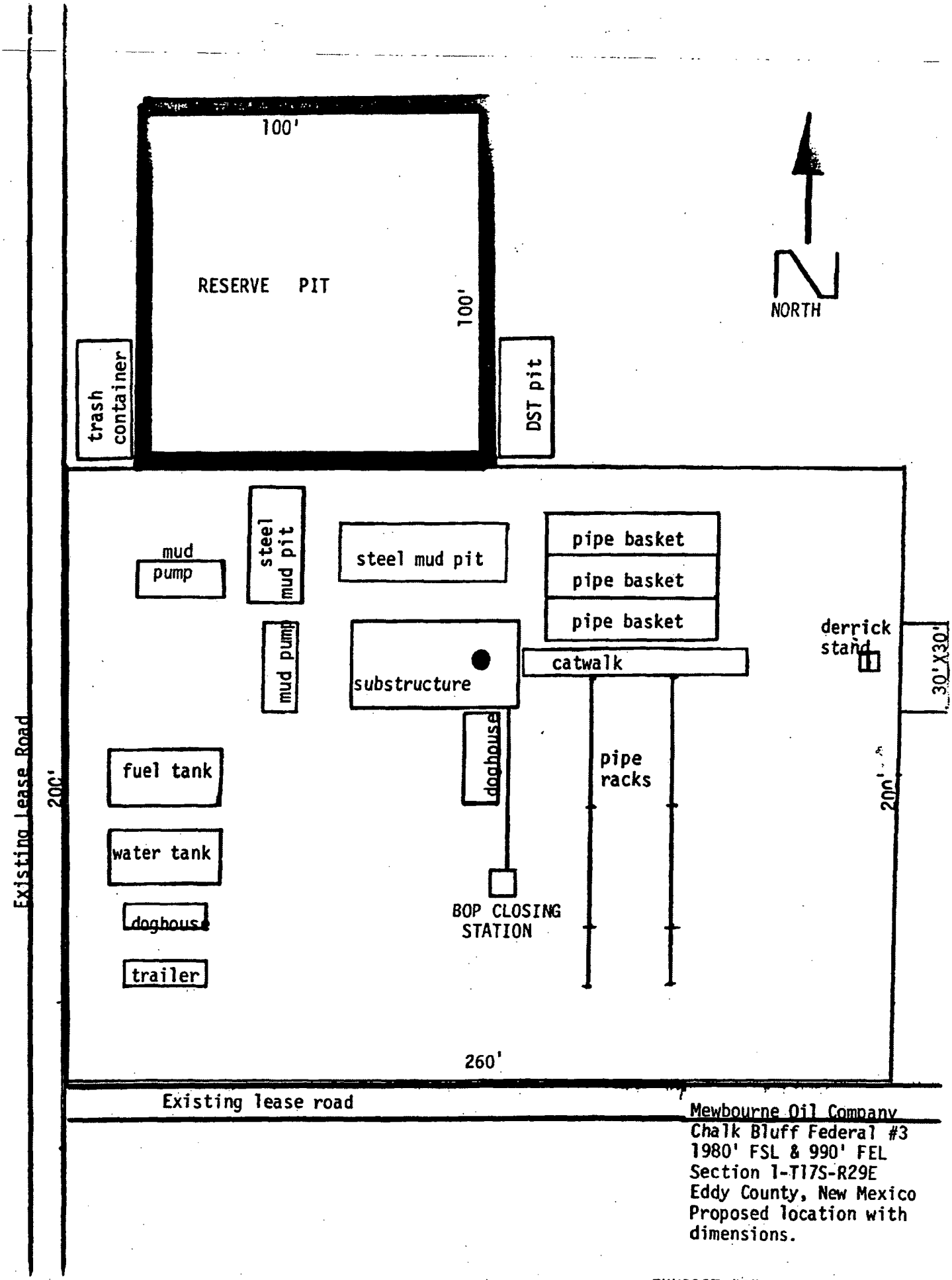


EXHIBIT "D"

Mewbourne Oil Company
Chalk Bluff Federal #3
1980' FSL & 990' FEL
Section 1-T17S-R29E
Eddy County, New Mexico



Mewbourne Oil Company
Chalk Bluff Federal #3
1980' FSL & 990' FEL
Section 1-T17S-R29E
Eddy County, New Mexico
Proposed location with dimensions.

EXHIBIT "C"

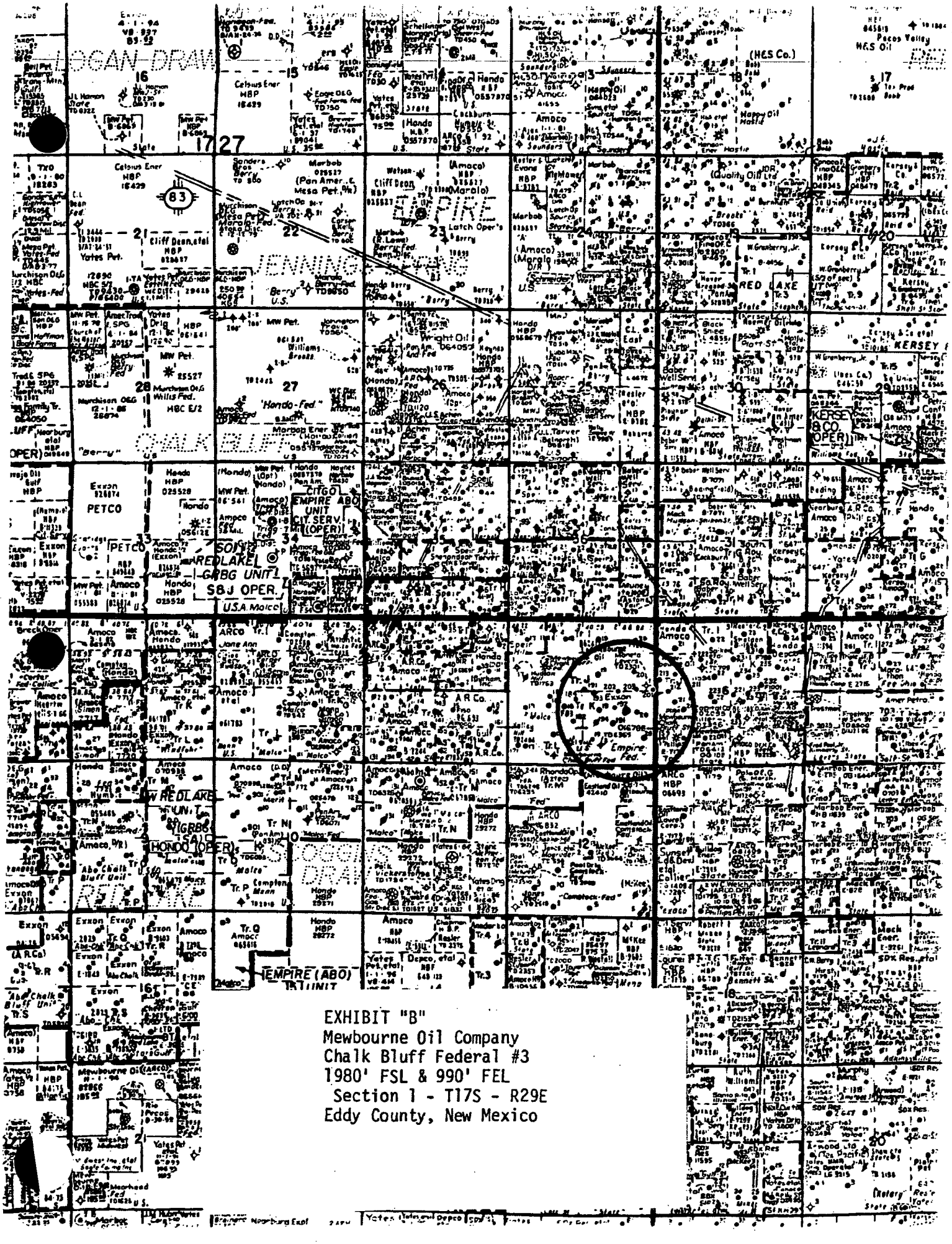


EXHIBIT "B"
Mewbourne Oil Company
Chalk Bluff Federal #3
1980' FSL & 990' FEL
Section 1 - T17S - R29E
Eddy County, New Mexico

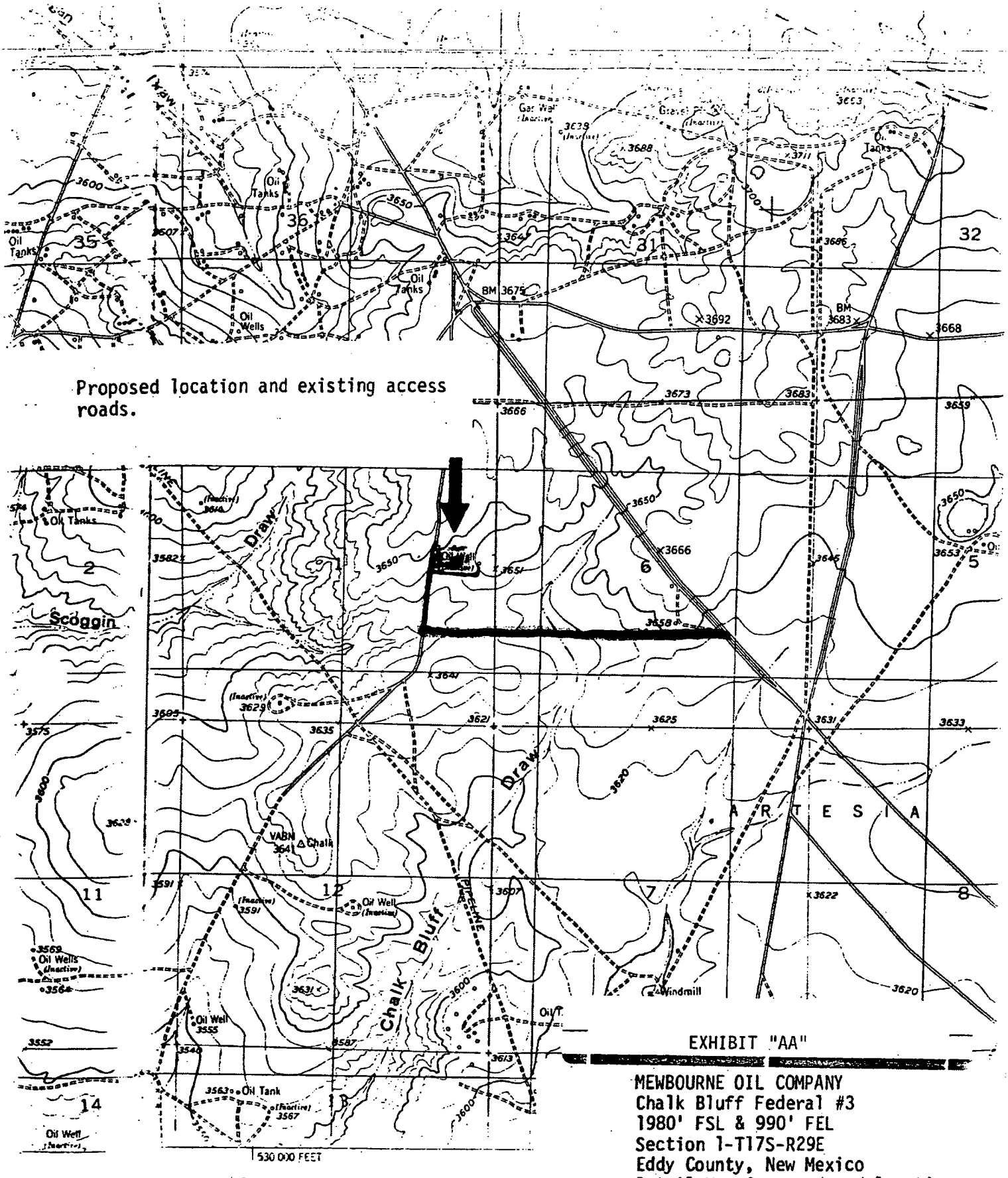


EXHIBIT "AA"

MEWBOURNE OIL COMPANY
Chalk Bluff Federal #3
1980' FSL & 990' FEL
Section 1-T17S-R29E
Eddy County, New Mexico
Detail Map for road and location.

Existing Roads

Proposed Location

ped, edited ... ished by the Geological Survey

USGS ... GS

... planimetric survey) 1965

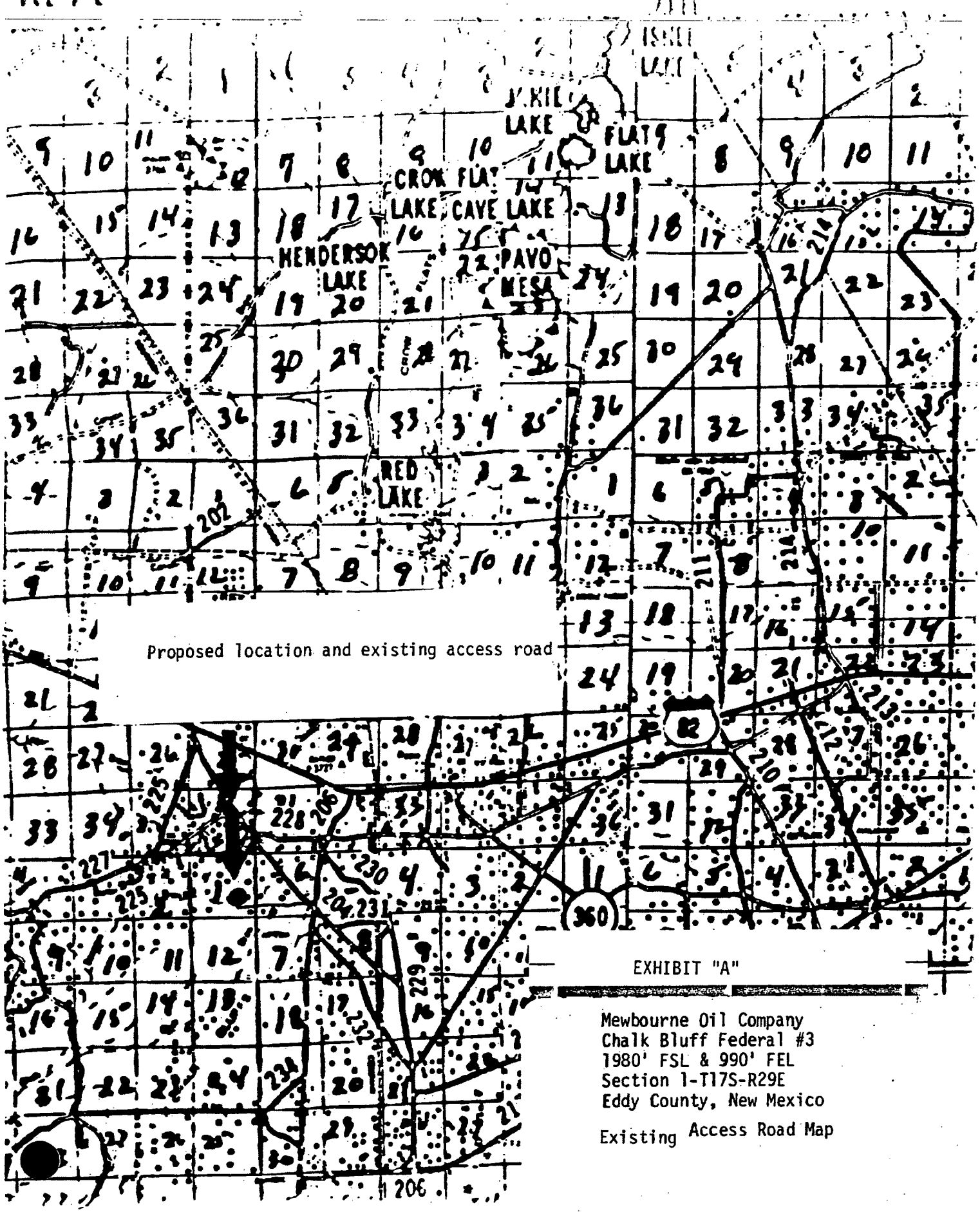


EXHIBIT "A"

Mewbourne Oil Company
Chalk Bluff Federal #3
1980' FSL & 990' FEL
Section 1-T17S-R29E
Eddy County, New Mexico

Existing Access Road Map

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
MEWBOURNE OIL COMPANY	CHALK BLUFF FEDERAL	3

Unit Letter	Section	Township	Range	County
I	1	18 SOUTH	27 EAST NMPM	EDDY

Actual Footage Location of Well:
1980 feet from the SOUTH line and 990 feet from the EAST line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3628	Morrow	North Illinois Camp Morrow	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

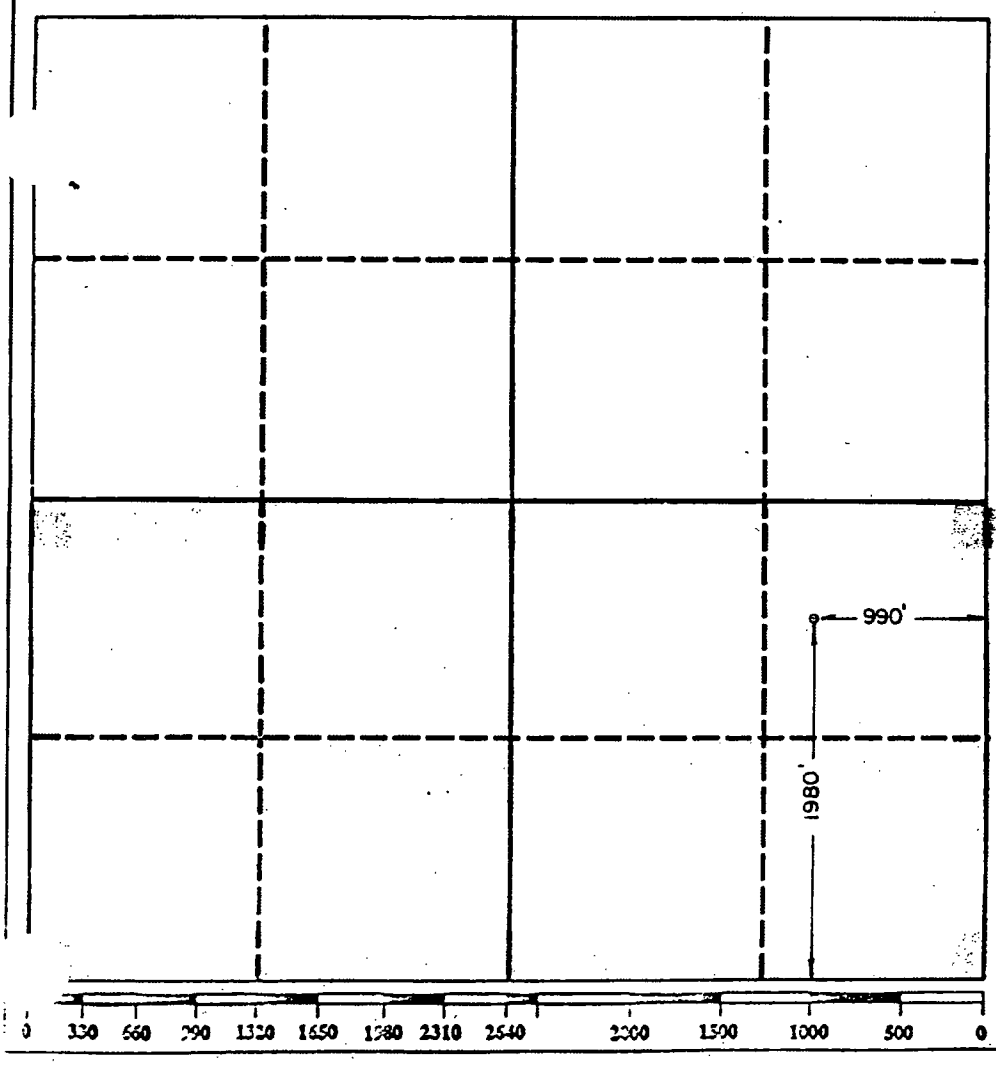
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

[XX] Yes [ ] No If answer is "yes" type of consolidation Communitization

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: Bill Pierce

Printed Name: Bill Pierce

Position: Drilling Superintendent

Company: Mewbourne Oil Company

Date: August 31, 1992

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 8/26/92

Signature & Seal of Professional Surveyor: STATE OF NEW MEXICO HERSCHEL L JONES

Certificate No. 3640

12. CERTIFICATION:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drilling site and necessary access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by MEWBOURNE OIL COMPANY and its' contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

September 9, 1992

Kelly Ryan
District Superintendent
MEWBOURNE OIL COMPANY

C. The estimated depths at which anticipated water, oil or natural gas can be expected are:

Water: Possible surface water between 100' - 300'.
Oil: Penrose @ 1520'
Gas: Wolfcamp @ 6900'

D. Proposed Casing Program: See Form 3160-3

E. Pressure Control Equipment: See Form 3160-3 and Exhibit "D".

F. Mud Program: See Form 3160-3.

G. Auxiliary Equipment: Mud-gas seperator, PVT system, and Hydraulic choke from 6,000' to T.D.

H. Testing and Coring Program: Possibility of 4 DST's in the following zones: Wolfcamp, Cisco, Strawn, Morrow. No cores are planned at this time.

I. Logging: Gamma Ray - Spectral Density Dual Spaced Neutron Log from T.D. to surface.
Gamma Ray - Dual LaterLog - Micro Guard Log from T. D. to Intermediate casing.

J. No abnormal pressures or temperatures are anticipated. In the event abnormal pressures are encountered the proposed mud program will be modified to accomodate the increased pressures.

K. Anticipated Starting Date: As soon as possible after BLM approval.

11. OPERATOR'S REPRESENTATIVES:

The field representatives responsible for assuring compliance with the approved surface use and operations plan are as follows:

Kelly Ryan	(505) 393-5905	Box 5270
Bill Pierce	24. hour aswering	Hobbs, NM
Greg Milner	service.	88241

7. ANCILLARY FACILITIES:

A. None required.

8. WELLSITE LAYOUT:

A. Exhibit "C" shows the relative location and dimensions of the well pad, mud pits, reserve pits, trash container and location of major rig components.

B. A 400' X 400' area has been flagged surround- the staked well.

9. PLANS AND RESTORATION OF THE SURFACE:

A. After completion of drilling and/or completion operations, all equipment not needed for producing operations will be removed. Pits will be filled in after all fluids have evaporated and the location cleaned of all trash and junk to leave the wellsite in an asthetically pleasing condition as reasonably possible. All production facilities left on location will be painted to conform with BLM painting regulations within 120 days of completion.

10. OTHER INFORMATION:

A. The geologic surface formation is hard clay interspersed with sand and chert outcroppings. Vegatative covering is generally sparse except in low-lying areas where grass is prevelant. Other vegatative covering consists mostly of greasewood and bear grass.

B. The estimated tops of geologic markers are as follows:

Queen	1260'	Cisco	7740'
San Andres	2100'	Canyon	8350'
Glorieta	3720'	Strawn	8900'
Tubb	4930'	Atoka	9500'
Abo	5900'	Morrow	9600'
Wolfcamp	6900'	Miss.	10,100'

4. LOCATION AND TYPE OF WATER SUPPLY:

A. Water will be purchased from trucking companies servicing this area and will be trucked to the wellsite over existing and/or proposed roads shown on Exhibits "A" and "AA".

5. LOCATION OF CONSTRUCTION MATERIALS:

A. Caliche for construction of the location and any needed road repairs hopefully will come from the location itself. If this is not possible, caliche will be taken from a BLM pit located in the NE4/NW4 of Sec. 12-T18S-R27E which is BLM pit #18271203. This pit also extends into the SE4/SW4 of Sec. 1-T18S-R27E which is BLM pit # 18270114. An alternative pit which may be used in the event BLM pit #18271203 contains unsuitable material is a BLM pit located in the SW4/NE4 of Sec. 1-T18S-R27E which is BLM pit #18270107.

6. METHODS OF HANDLING WASTE DISPOSAL:

A. Drill cuttings will be disposed of in the drilling pits.

B. Drilling fluids will be allowed to evaporate in the drilling pits until pits are dry.

C. Water used and produced during stimulation, production testing, squeezing opeations etc. will be disposed of in the drilling pits. Oil produced during tests will be stored on site in steel test tanks until sold.

D. Current laws and regulations pertaining to the disposal of human waste will be complied with.

E. All trash, junk and other waste material will be contained in an appropriate container to prevent scattering and will be removed and deposited in an approved sanitary landfill.

F. All trash and debris will be buried or removed from the wellsite within 90 days after drilling and/or completion operations have ceased.

MULTI-POINT SURFACE USE AND OPERATING PLAN
MEWBOURNE OIL COMPANY
CHALK BLUFF FEDERAL WELL NO. 3
1980' FSL & 990' FEL OF SEC. 1-T18S-R30E
EDDY COUNTY, NEW MEXICO
NEW MEXICO LEASE NO. NM-016788

This plan is submitted with the Application for Permit to Drill (APD) the above captioned well. The purpose of the plan is to describe the location of the proposed well, the proposed construction activities, operations plan and the magnitude of necessary surface disturbance involved, so that a complete, comprehensive appraisal can be made as to the enviromental effects associated with this operation. The surface is owned by the Federal Government and is managed by the Bureau of Land Management.

1. EXISTING ROADS:
   A. From the junction of U. S. 82 and U. S. 285 Highways in Artesia, proceed east on U. S. 82 12 miles. Turn right (south) on Eddy County Road #206 (Illinois Camp Road) and proceed south for 1.75 miles. Turn right (northwest) on Eddy County Road #204 and proceed .75 miles. Turn left (west) on caliche lease road and proceed 1 mile. Turn right (north) 100 yards on caliche lease road and location will be on the right hand side of the lease road. (Exhibit "A" & "AA")

   B. Culverts: None required

   C. Cuts and Fills: A two foot cut will be required to construct the location.

   D. Turn-Outs: None required.

   E. Gates or Cattleguards: None required.

2. LOCATION OF EXISTING WELLS

   A. Existing wells in a 1 mile radius are shown on Exhibit "B".

3. LOCATION OF PROPOSED ACTIVITIES:

   A. If the well is productive, all production facilities will be constructed on the existing pad.

Form 3160-3
(November 1983)
(formerly 9-331C)

NM OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

30-015-27163

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: NM-~~016788~~ 0557371
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:
8. FARM OR LEASE NAME: Chalk Bluff Fed. Comm.
9. WELL NO.: 3
10. FIELD AND POOL, OR WILDCAT: North Illinois Camp Morrow
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 18 27E 1-T17S-R29E
12. COUNTY OR PARISH: Eddy
13. STATE: NM

1a. TYPE OF WORK: DRILL XXX DEEPEN ☐ PLUG BACK ☐

b. TYPE OF WELL: OIL WELL ☐ GAS WELL [X] OTHER — SINGLE ZONE [X] MULTIPLE ZONE ☐

2. NAME OF OPERATOR: Mewbourne Oil Company ✓

3. ADDRESS OF OPERATOR: Box 5270 Hobbs, New Mexico 88241

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1980' FSL and 990' FEL Unit I
At proposed prod. zone: Same

RECEIVED
OCT 19 1992
O. C. D.
ARTESIA, OFFICE

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 12 miles southeast of Artesia, New Mexico

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any)	16. NO. OF ACRES IN LEASE	17. NO. OF ACRES ASSIGNED TO THIS WELL
990'	320	320
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.	**19. PROPOSED DEPTH**	**20. ROTARY OR CABLE TOOLS**
2040'	10,300'	Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 3628' GR
22. APPROX. DATE WORK WILL START*: Upon BLM approval

23. PROPOSED CASING AND CEMENTING PROGRAM — No Water Basin

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	13 3/8"	61#	400' ±	450 sks. Class C circulated
12 1/4"	9 5/8"	36#	2,600' ±	800 sks. Tie back into surface.
8 3/4"	5 1/2"	17 & 20#	10,300' ±	600 sks. of Class "H" - SEE STIPS.

Part ID-1
10-16-92
New Loc + BPE

Mud Program:

0-400' Spud mud with fresh water gel and lime. LCM as needed.
400' - 2600' Fresh water gel and lime. LCM as needed.
2,600' - 8500' Cut brine with lime for pH control. Wt. 9.2 - 9.6# ppg, WL - NC. LCM as needed.
8,500 - 10.300' Cut brine with Drispac, salt gel, lime, soda ash, and starch. Wt. 9.2 - 9.6 ppg. WL 10 CC or less. Raise weight accordingly if abnormal pressures are encountered.

BOP PROGRAM:

900 series BOP and Hydrill on 13 3/8" surface casing and on 9 5/8" intermediate casing.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24.

SIGNED Kelly Roper TITLE District Superintendent DATE 09/09/1992

(This space for Federal or State office use)

PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE 9-22

CONDITIONS OF APPROVAL, IF ANY:
APPROVAL SUBJECT TO
GENERAL REQUIREMENTS AND
SPECIAL STIPULATIONS
ATTACHED

BUREAU OF LAND MANAGEMENT
RECEIVED
SEP 10 1992
CARLSBAD DISTRICT
CARLSBAD, N.M.

*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated, on all types of lands and leases for appropriate action by either a Federal or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable State or Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on this reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal or State agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective production zone.

ITEM 22: Consult applicable Federal or State regulations, or appropriate officials, concerning approval of the proposal before operations are started.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR Part 3160.

PRINCIPAL PURPOSE: The information is to be used to process and evaluate your application for permit to drill, deepen, or plug back an oil or gas well.

ROUTINE USES: (1) The analysis of the applicant's proposal to discover and extract the Federal or Indian resources encountered. (2) The review of procedures and equipment and the projected impact on the land involved. (3) The evaluation of the effects of proposed operation on surface and subsurface water and other environmental impacts. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions, as well as routine regulatory responsibility.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if the lessee elects to initiate drilling operation on an oil and gas lease.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq) requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases.

This information will be used to analyze and approve applications.

Response to this request is mandatory only if the lessee elects to initiate drilling operations on an oil and gas lease.

dsf

RECEIVED

JAN 04 1993

O. C. D.
ARTESIA, OFFICE

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.
NM-0557377

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Federal Comm. #3

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
3001527163

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

10. Field and Pool, or Exploratory Area
North Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1980' FSL & 990' FEL
Sec. 1-T18S-R27E

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Spud well & cemented 13-3/8" surf. csg.	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Spudded well @ 4:00 p.m. MST 11/24/92. Drilled 17-1/2" surface hole to 400' KB. Ran 10 joints of 13-3/8", 54.50#, New LS, ST&C casing and set @ 400' KB. Western cemented w/100 sks. Class "H" cement containing 12% Thixad + 3% CaCl2 followed by 265 sks. of Class "C" containing 6% Gel + 3% CaCl2 + 1/4 pps celloseal + 5 pps gilsonite followed by 150 sks. of Class "C" neet containing 3% CaCl2. Circulated 50 sks. of cement to the pit. Job complete @ 5:30 a.m. 11/25/92.

BUREAU OF LAND MANAGEMENT
RECEIVED
DEC 07 1992
CARLSBAD, N.M.

14. I hereby certify that the foregoing is true and correct

Signed Bill Pierce Title Drilling Supt. Date 12/02/92

(This space for Federal or State office use)

Approved by David R. Glass Title _____ Date _____

Conditions of approval, if any:

1992

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated, on Federal and Indian lands pursuant to applicable Federal law and regulations, and, if approved or accepted by any State, on all lands in such State, pursuant to applicable State law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office.

SPECIFIC INSTRUCTIONS

Item 4—If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

Item 13—Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by local Federal and/or State offices. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well; and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et. seq., 351 et. seq., 25 U.S.C. et. seq.; 43 CFR 3160.

PRINCIPAL PURPOSE — The information is to be used to evaluate, when appropriate, approve applications, and report completion of secondary well operations, on a Federal or Indian lease.

ROUTINE USES:

(1) Evaluate the equipment and procedures used during the proposed or completed subsequent well operations.

(2) Request and grant approval to perform those actions covered by 43 CFR 3162.3-2(2).

(3) Analyze future applications to drill or modify operations in light of data obtained and methods used.

(4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION — Filing of this notice and report and disclosure of the information is mandatory once an oil or gas well is drilled.

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501, et. seq.) requires us to inform you that:

This information is being collected in order to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

This information will be used to report subsequent operations once work is completed and when requested, to obtain approval for subsequent operations not previously authorized.

Response to this request is mandatory for the specific types of activities specified in 43 CFR Part 3160.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management, (Alternate) Bureau Clearance Officer, (WO-771), 18 and C Streets, N.W., Washington, D.C. 20240, and the Office of Management and Budget, Paperwork Reduction Project (1004-0135), Washington, D.C. 20503.

*U.S. GPO: 1990-773-016/26019

C1SF

RECEIVED

JAN 04 1993

O. C. D.
ARTESIA, OFFICE

3160-5
1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Federal Comm. #3

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
3001527163

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1980' FSL & ~~1980~~ 990' FEL
Sec. 1-T18S-R27E

11. County or Parish, State
Eddy Co., New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Cement 9-5/8" Inter. Casing	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled 12-1/4" Intermediate hole to 2600' KB. Ran 59 joints of 9-5/8", 36#, New LS, ST&C casing and set @ 2600' KB. Western cemented with 590 sacks of Class "C" lite containing 6% gel + 10 pps NaCl + 1/4 pps celloseal followed by 250 sacks of Class "C" containing 2% CaCl2. Circulated 50 sacks of cement to the pit. Job complete @ 11: 50 p.m. 11/29/92.

BUREAU OF LAND MANAGEMENT
RECEIVED
DEC 07 1992
CARLSBAD DIST. & N.M.

14. I hereby certify that the foregoing is true and correct

Signed Bill Pierce Title Drilling Supt. Date 12-02-92

(This space for Federal or State office use)

Approved by David R. Glass Title _____ Date _____

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

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NOTICE

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(3) Analyze future applications to drill or modify operations in light of data obtained and methods used.

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This information will be used to report subsequent operations once work is completed and when requested, to obtain approval for subsequent operations not previously authorized.

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*U.S. GPO: 1990-773-016/26019

95F

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.
NM-055737]

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed. Comm. 3

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-27163

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1980' FSL & ~~1980'~~ 990' FEL
Sec. 1-T18S-R27E

11. County or Parish, State
Eddy

12. **CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Cement 7" casing	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

escribe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Lost complete returns @ 7683'. Dry drilled 8-3/4" hole to 8968'. Ran 226 Jts. of 7", 26# & 29#, N-80 & S-95 grade used API casing and set @ 8968'. Multiple stage cementer @ 6997' and external casing packer @ 7026'. Western cemented the first stage w/350 sks. of Class "H" containing 8 pps CSE + .75% CF-14 + 5 pps Gilsonite + .35% Thrifty Lite. Set ECP and opened DV tool. Cemented 2nd stage w/750 sks. of Class "C" containing 1 pps celloseal + 5 pps gilsonite + 3% salt followed by 100 sks. of Class "H" Neet. Plug down to 6997' @ 2:45 a.m. 12/26/92

ACCEPTED FOR RECORD
(ORIG. SGD.) DAVID R. GLASS
FEB 4 1993
CARLSBAD, NEW MEXICO

CARLSBAD AREA OFFICE

RECEIVED
JAN 25 9 40 AM '93

14. I hereby certify that the foregoing is true and correct
Signed Bill Vance Title Drilling Superintendent Date 01/20/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ■ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed. Comm. #3

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-27163

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1980' FSL & ~~1980'~~ 990' FEL
Sec. 1-T18S-R27E

11. County or Parish, State
Eddy

12. **CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
■ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	■ Other Run 4-1/2" Liner	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled well to a total depth of 10,150' w/6" hole, ran 45 jts. of 4-1/2", 11.6#, N-80, used API casing and hung liner from 8599' to 10,150'. Western cemented w/200 sks. of Class "H" containing 5 pps CSE + 20 pps SF-3 + .9% CF-14 + 1 gal./100 sacks of Klay-Treat. Plug down to 10,113' @ 5:00 a.m. 01/06/93. Released rig and moved off location. 01/08/93

ACCEPTED FOR RECORD
(ORIG. SGD.) DAVID R. GLASS
FEB 4 1993
CARLSBAD, NEW MEXICO

JAN 25 9 40 AM '93
RECEIVED

14. I hereby certify that the foregoing is true and correct
Signed Bill Pierce Title Drilling Superintendent Date 01/21/93

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

SEC 1 TWN 18 ··· RGE 27 API # 30-015-27163

OPERATOR MEWBOURNE OIL CO

WELL NAME CHALK BLUFF FED Com #3

STATE OCD TOPS AS PER MARK ASHLEY DATE 1-25-93

Southeastern New Mexico			Northwestern New Mexico	
. Anhy		T. Canyon	T. Ojo Alamo	T. Penn. "B"
. Salt		T. Strawn 9932	T. Kirtland-Fruitland	T. Penn. "C"
. Salt		T. Atoka 9490	T. Pictured Cliffs	T. Penn. "D"
. Yates 450		T. Miss	T. Cliff House	T. Leadville
. 7 Rivers 565		T. Devonian	T. Menefee	T. Madison
. Queen 1159		T. Silurian	T. Point Lookout	T. Elbert
. Grayburg 1494		T. Montoya	T. Mancos	T. McCracken
. San Andres 1985		T. Simpson	T. Gallup	T. Ignacio Otzte
. G[illegible]z 3535		T. McKee	Base Greenhorn	T. Granite
. Paddock		T. Ellenburger	T. Dakota	T.
. Blinebry		T. Gr. Wash	T. Morrison	T.
. Tubb 4760		T. Delaware Sand	T. Todilto	T.
. Drinkard		T. Bone Springs	T. Entrada	T.
. Abo 5745		T. MORROW LS 9710	T. Wingate	T.
. Wolfcamp 6475		T.	T. Chinle	T.
. Penn 7970		T.	T. Permain	T.
. Cisco (Bough C)		T.	T. Penn "A"	T.

OIL OR GAS SANDS OR ZONES

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet .....

No. 2, from ..... to ..... feet .....

No. 3, from ..... to ..... feet .....

REMARKS:

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions
at Bottom of Page

RECEIVED
JAN 28 1993
O. C. D.
ARTESIA, OFFICE

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
Mewbourne Oil Company	30-015-27163
Address: P.O. Box 5270 Hobbs, New Mexico 88241	

Reason(s) for Filing (Check proper box)

New Well	[X]	Change in Transporter of:	
Recompletion	[ ]	Oil [ ]	Dry Gas [ ]
Change in Operator	[ ]	Casinghead Gas [ ]	Condensate [ ]

Other (Please explain) [ ]

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Chalk Bluff Federal Comm.	3	North Illinois Camp Morrow	~~State~~, Federal or ~~Fee~~	NM-0557371

Location: Unit Letter I : 1980 Feet From The South Line and 990 Feet From The East Line

Section 1 Township 18S Range 27E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [ ] or Condensate [X]	Address (Give address to which approved copy of this form is to be sent)
Amoco Pipeline IPC	502 N. West Ave. Levelland, Tx. 79336-3914
Name of Authorized Transporter of Casinghead Gas [ ] or Dry Gas [X]	Address (Give address to which approved copy of this form is to be sent)
Transwestern Pipeline Company	P.O. Box 1188 Houston, Texas 77251

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	I	1	18S	27E	Yes	01/15/93

If this production is commingled with that from any other lease or pool, give commingling order number: None

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
11/24/92	01/16/93	10,150'	10,102'
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
KB 3643' DF 3641' GL 3628'	Lower Morrow	9950'	9972'
Perforations			**Depth Casing Shoe**
9950'-9954' 9957'-9972'			10,150'

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8" 54.5#	400'±	100 sacks Perf'd-2
12-1/4"	9-5/8" 36#	2,600'	250 sacks 2-12-93
8-3/4"	7" 26#	8,968'	1200 sacks comp + circ
6"	4-1/2" Liner 11.6#	8,600' to 10,150'	200 sacks

V. TEST DATA AND REQUEST FOR ALLOWABLE

2-3/8" & 2-7/8"

OIL WELL *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
Actual Prod. During Test	**Oil - Bbls.**	**Water - Bbls.**	**Gas- MCF**

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
2000 MCF/D	24 Hrs.	30 : 1	N/A
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
Back Pressure	2850	0	10/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

R. G. Jones

Signature
Robert A Jones — Engineer
Printed Name — Title
01/19/93 — (505) 393-5905
Date — Telephone No.

OIL CONSERVATION DIVISION

Date Approved JAN 29 1993

By ORIGINAL SIGNED BY MIKE WILLIAMS

Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

Form 3160-4
(October 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Artesia, NM 88210

FOR APPROVED
OMB NO. 1004-0137
Expires: December 31, 1991

5. LEASE DESIGNATION AND SERIAL NO.: NM-0557371

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME, WELL NO.: Chalk Bluff Fed. Comm. #3

9. API WELL NO.: 30-015-27163

10. FIELD AND POOL, OR WILDCAT: N. Illinois Camp Morrow

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 1-T18S-R27E

12. COUNTY OR PARISH: Eddy

13. STATE: N.M.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [ ] Other

b. TYPE OF COMPLETION: NEW WELL [X] WORK OVER [ ] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] Other

CONFIDENTIAL

2. NAME OF OPERATOR: Mewbourne Oil Company

3. ADDRESS AND TELEPHONE NO.: P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 1980' FSL & 990' FEL
At top prod. interval reported below
At total depth: Same

14. PERMIT NO. | DATE ISSUED

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
11/24/92	01/06/93	01/16/93	KB 3643' DF 3641' GL 3628'	3628'

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,150'	10,102'		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: 9950'-9954', 9957'-9972' Lower Morrow Orange Sand

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: SDL-DSN Dual-Latero-MFSL-GR Sonic CBL

27. WAS WELL CORED: No

CASING RECORD (*Report all strings set in well*)

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.5#	400'±	17-1/2"	100 sx. Class "H"	None
9-5/8"	36#	2,600'±	12-1/4"	250 sx. Class "C"	None
7"	26 & 29#	8,968'	8-3/4"	1200 sx. Class "C & H"	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
4-1/2"	8600'	10,150'	200 sxs.	None

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-7/8"	9972'	9797'
2-3/8"		

31. PERFORATION RECORD (*Interval, size and number*)

9950'-9954' 9957'-9972'

4 SPF 19' 76 holes

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
9950'-9954'	None
9957'-9972'	None

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)
01/16/93	Flowing	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
01/16/93	24	10/64"		50	2000	0	40 MCF/BBL

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
2720	0		60	2000	0	

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*): Sold

TEST WITNESSED BY: B. Jones

35. LIST OF ATTACHMENTS: Logs- * Please hold in confidence

ACCEPTED FOR RECORD
FEB 4 1993

I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED R. G. Jones TITLE Engineer DATE 01/21/93

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
M. Morrow	9950'	9972'	Sandstone

38. GEOLOGIC MARKERS

NAME	TOP	
	MEAS. DEPTH	TRUE VERT. DEPTH
Yates	450'	
7 Rivers	564'	
Queen	1159'	
Grayburg	1492'	
San Andres	1985'	
Glorieta	3536'	
Tubb	4760'	
Drinkard	5524'	
Abo	5744'	
Wolfcamp	6474'	
Cisco	7686'	
Canyon	8440'	
Strawn	8932'	
Atoka	9490'	
Morrow	9594'	
Morrow Clastic	9800'	
L. Morrow	9911'	

U.S. GPO:1991-575-735/46086

KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT

WEK DRILLING CO., INC. — OIL WELL DRILLING CONTRACTORS

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

RECEIVED
JAN 27 10 52 AM '93
CARL... AREA...

January 06,1993

Mewbourne Oil Company
P.O. Box 5270
Hobbs, N.M. 88240

RE: Chalk Bluff Federal #3

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

400' - 3/4°	5033' - 2 3/4°	5813' - 4°
887' - 1°	5096' - 3°	5875' - 4°
1359' - 1°	5158' - 3°	5967' - 3 3/4°
1864' - 2°	5222' - 3 1/4°	6094' - 3 3/4°
2336' - 1 1/2°	5283' - 3 3/4°	6217' - 3 1/4°
2600' - 3/4°	5346' - 3 3/4°	6720' - 3 1/2°
2792' - 1 1/4°	5409' - 4°	7213' - 3°
3086' - 1°	5464' - 4 1/4°	7685' - 2 1/2°
3580' - 1 1/3°	5555' - 4 1/4°	8155' - 2 1/4°
4079' - 1°	5587' - 4 1/4°	8654' - 2°
4358' - 1 3/4°	5650' - 4 1/4°	9003' - 2°
4846' - 2 3/4°	5719' - 4 1/2°	9509' - 1/4°
		9837' - 3/4°
		10150' - 1 3/4° TD

Sincerely,

Gary W. Chappell

Gary W. Chappell
Contracts Manager

STATE OF NEW MEXICO)
)
COUNTY OF CHAVES)

The foregoing was acknowledged before me this 06th day of January 1993 by Gary W. Chappell.

MY COMMISSION EXPIRES

October 07,1996

Linda Rogers
NOTARY PUBLIC

RECEIVED JAN 0 7 1993

COMPANY :MEWBOURNE OIL LEASE :CHALK BLUFF FED.COMWELL NO. : 3

UNIT :I SECTION : 1 TOWNSHIP : 18

L : 9961 H : 9961 L/H : 1 G/GMIX : 0.849

%CO2 : 0.42 %N2 : 0.33 H2S : DATE :

d : 2.279 Fr :0.012892 GH : 8456.9 RANGE : 27

VOL 1 : 655 PSIA 1 : 2243.2 RESV.TEMP 173.6

VOL 2 : 1310 PSIA 2 : 2193.2

VOL 3 : 2283 PSIA 3 : 2113.2 SHUT-IN PR= 2273.2

VOL 4 : 3294 PSIA 4 : 2013.2

PCR : 668

TCR : 401

LINE	RATE 1		RATE 2		RATE 3		RATE 4	
	1ST	2ND	1ST	2ND	1ST	2ND	1ST	2ND
1	0.655	0.655	1.310	1.310	2.283	2.283	3.294	3.294
2 TW	534	534	534	534	534	534	534	534
3 Ts	633.6	633.6	633.6	633.6	633.6	633.6	633.6	633.6
4 T	583.8	583.8	583.8	583.8	583.8	583.8	583.8	583.8
PR (est)	3.36		3.28		3.16		3.01	
5 Z(est)	0.727	0.738	0.727	0.736	0.723	0.733	0.731	0.730
6 TZ	424.5	430.8	424.6	429.5	425.2	427.7	426.5	426.0
7 GH/TZ	19.924	19.629	19.918	19.691	19.891	19.774	19.829	19.852
8 eS	2.111	2.088	2.110	2.093	2.108	2.099	2.104	2.105
9 1-e-S	0.526	0.521	0.526	0.522	0.526	0.524	0.525	0.525
10 Pt	2243.2	2243.2	2193.2	2193.2	2113.2	2113.2	2013.2	2013.2
11 Pt2 /1000	5031.9	5031.9	4810.1	4810.1	4465.6	4465.6	4053.0	4053.0
12 Fr	0.012892	0.012892	0.012892	0.012892	0.012892	0.012892	0.012892	0.0128924
13 Fc=FrTZ	5.472	5.555	5.474	5.537	5.481	5.514	5.498	5.492
14 Fcn	3.58	3.64	7.17	7.25	12.51	12.59	18.11	18.09
15 L/H(Fcn)	12.8	13.2	51.4	52.6	156.6	158.5	328.0	327.3
16 Fw	6.761363	6.896363	27.05758	27.47157	62.32401	62.97398	172.0865	171.83059
17 Pw2	5038.7	5038.8	4837.2	4837.6	4547.9	4548.6	4225.1	4224.8
18 Ps2	10636.7	10519.8	10208.7	10123.1	9588.7	9547.9	8897.4	8894.3
19 Ps	3261.4	3243.4	3195.1	3181.7	3096.6	3090.0	2981.2	2982.3
20 P	2752.3	2743.3	2694.2	2687.4	2604.9	2601.6	2497.2	2497.8
21 Pr	4.12	4.11	4.03	4.02	3.90	3.89	3.74	3.74
22 Tr	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
23 Z	0.733	0.738	0.736	0.735	0.733	0.732	0.730	0.730

Pc = 2273.2 Pc2 = 5167.4

Pt2 = 5031.9 Pw = 2244.7
4810.1 2199.5
4465.6 2132.7
4053.0 2055.4

Pc2-Pw2= 128.6 Pw2 = 5038.8
329.8 4837.6
618.9 4548.6
942.6 4224.8

n = 0.884

Pc2/(Pc2-Pw2) = 40.184
15.666
8.350
5.482

[Pc2/Pc2-Pw2]n = 26.181
11.386
6.528
4.500

AOF= Q 17.148
14.915
14.903
14.823

Laboratory Services
1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Mewbourne Oil Co.
Attention: Mr. R.Jones
P. O. Box 5270
Hobbs, New Mexico 88240

SAMPLE IDENTIFICATION: Chalk Bluff #3
COMPANY: Mewebourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 3/4/93 12:30PM
ANALYSIS DATE: 03-05-93
PRESSURE - PSIG 530.0
SAMPLE TEMP. °F
ATMOS. TEMP. °F

GAS (XX) LIQUID ( )
SAMPLED BY: R. Jones
ANALYSIS BY: Rolland Perry

REMARKS:

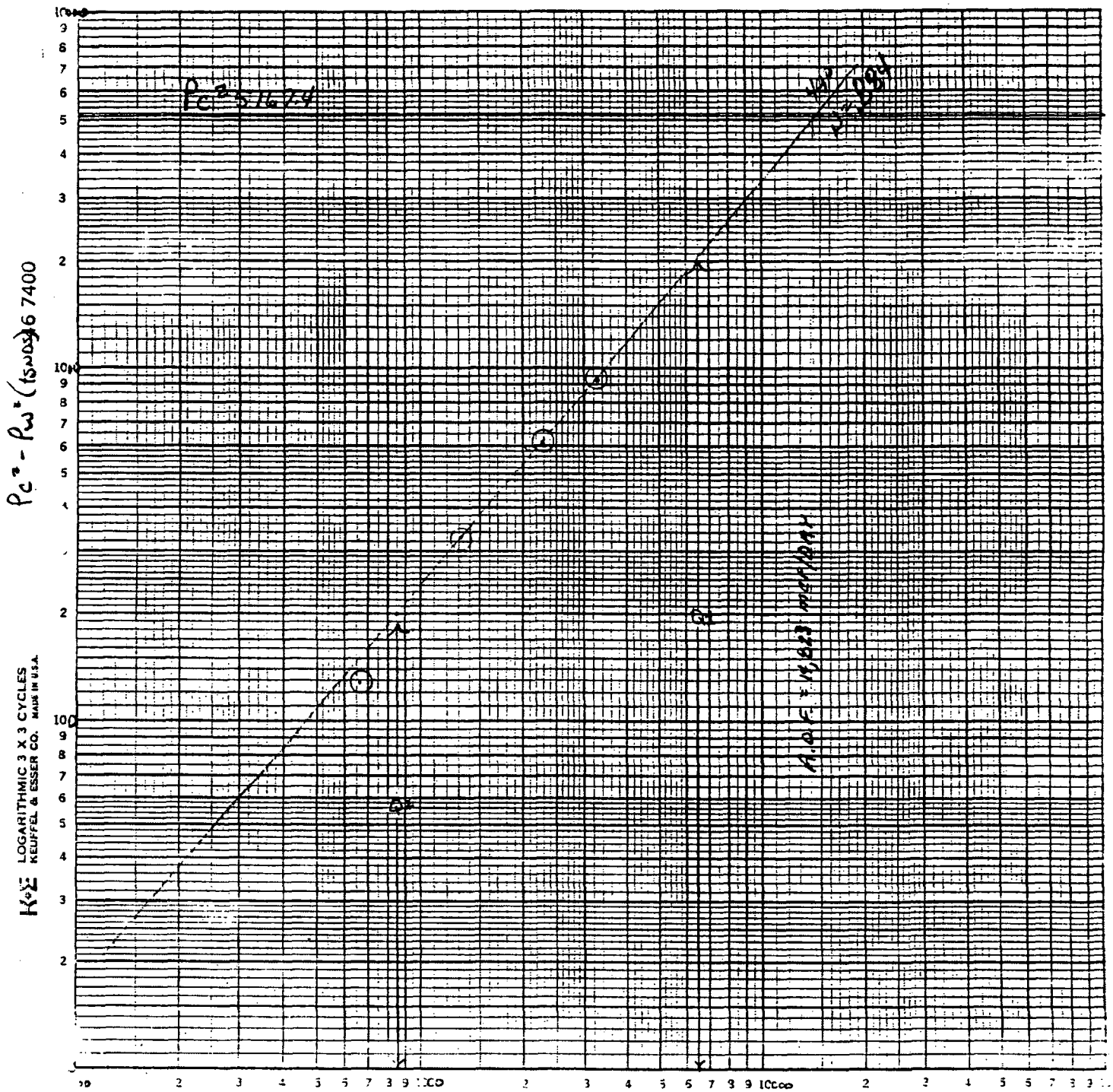
COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	0.33	
Carbon Dioxide	(CO2)	0.42	
Methane	(C1)	83.10	
Ethane	(C2)	8.14	2.164
Propane	(C3)	3.14	0.862
I-Butane	(IC4)	0.40	0.130
N-Butane	(NC4)	0.86	0.270
I-Pentane	(IC5)	0.39	0.140
N-Pentane	(NC5)	0.41	0.147
Hexane	(C6)	2.81	1.214
Heptanes Plus	(C7+)	0.00	0.000
		100.00	4.927

BTU/CU.FT. - DRY		1269	MOLECULAR WT.	21.1701
AT 14.650	DRY	1265		
AT 14.650	WET	1239	26# GASOLINE -	1.591
AT 15.025	DRY	1298		
AT 15.025	WET	1304		

SPECIFIC GRAVITY -
CALCULATED 0.731
MEASURED

MEWBOURNE OIL COMPANY
Chalk Bluff Federal Com. Well #3
1-18S-27E
Eddy County, New Mexico
3/4/93



0155 File

RECEIVED
APR 93

Submit in duplicate to appropriate district office Rule 401 & Rule 1122

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-122
Revised 4-1-91

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: MEWVOURNE OIL COMPANY						Lease or Unit Name: CHALK BLUFF FEDERAL COM.		
Type Test: ☒ Initial ☐ Annual ☐ Special						Test Date: 3/4/93	Well No.: 3	
Completion Date: 1/16/93	Total Depth: 10150			Plug Back TD: 10102		Elevation: GL 3628'	Unit Ltr. - Sec. - TWP - Rge.: I 1 18S 27E	
Csg. Size: 4½	Wt.: 10.5	d: 4.052	Set At: 8600 10150	Perforations: From: 9950	To: 9954		County: EDDY	
Tbg. Size: 2 7/8 2 3/8 &	Wt.: 4.7 & 6.5	d: 1.91 2.441	Set At: 9972	Perforations: From: 9957	To: 9972		Pool: MORROW NORTH ILLINOIS Comp	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple: subgke				Packer Set At: 9797			Formation: MORROW	
Producing Thru: tbg.	Reservoir Temp. °F: 133	Mean Annual Temp. °F: 60		Baro. Press - P_a: 13.2			Connection: Transwestern	
L: 9950	H: 9950	Gg: .731	% CO_2: .42	% N_2: .33	% H_2S:	Prover:	Meter Run: 3.068	Taps: flg.

FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI					2260		Pkr.		48 hr.
1.	3 X 1.500	530	5	148	2230		"		1 hr.
2.	3 X 1.500	530	19	124	2180		"		1 hr.
3.	3 X 1.500	535	52	88	2100		"		1 hr.
4.	3 X 1.500	540	102	70	2000		"		1 hr.
5.									

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, F pv.	Rate of Flow Q, Mcfd
1.	11.13	52.12	543.2	.9248	1.170	1.043	655
2.	11.13	101.59	543.2	.9436	1.170	1.049	1310
3.	11.13	168.84	548.2	.9741	1.170	1.066	2283
4.	11.13	237.54	553.2	.9905	1.170	1.075	3294
5.							

NO.	P_r	Temp. °R	T_r	Z
1.	.81	608	1.52	.919
2.	.81	584	1.46	.909
3.	.82	548	1.37	.880
4.	.83	530	1.32	.865
5.				

Gas Liquid Hydrocarbon Ratio: 23.63 Mcf/bbl.
A.P. I Gravity of Liquid Hydrocarbons: 57.0 Deg.
Specific Gravity Separator Gas: .731 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX G Mix .849
Critical Pressure: 668 P.S.I.A. 664 P.S.I.A.
Critical Temperature: 401 R 441 R

P_c 2273.2 P_c^2 5167.4

NO.	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1.	5031.9	2244.7	5038.8	128.6
2.	4810.1	2199.5	4837.6	329.8
3.	4465.6	2132.7	4548.6	618.9
4.	4053.9	2055.4	4224.8	942.6
5.				

1) $\frac{P_c^2}{P_c^2 - P_w^2} = 5.4821$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 4.500$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 14,823$

Absolute Open Flow: 14,823 Mcfd @ 15.025 | Angle of Slope θ: 49 | Slope, n: .884

Remarks: 13.3 BBLS CONDENSATE PRODUCED DURING TEST

Approved By Division	Conducted By:	Calculated By:	Checked By:
	PRO WELL TESTERS	KS	KS

THE WESTERN COMPANY OF NORTH AMERICA

WATER ANALYSIS

HOBBS, NEW MEXICO LAB	ANALYSIS #: HB010251

GENERAL INFORMATION

OPERATOR:	Mewbourne Oil Company	DEPTH:	0
WELL:	Chalk Bluff Fed #3	DATE SAMPLED:	
FIELD:		DATE RECEIVED:	02/24/93
FORMATION:		SUBMITTED BY:	Leonard Pounds
COUNTY:	Eddy	WORKED BY:	M Keith
STATE:	NM	PHONE #:	505-392-5556

SAMPLE DESCRIPTION: all water

PHYSICAL AND CHEMICAL DETERMINATIONS

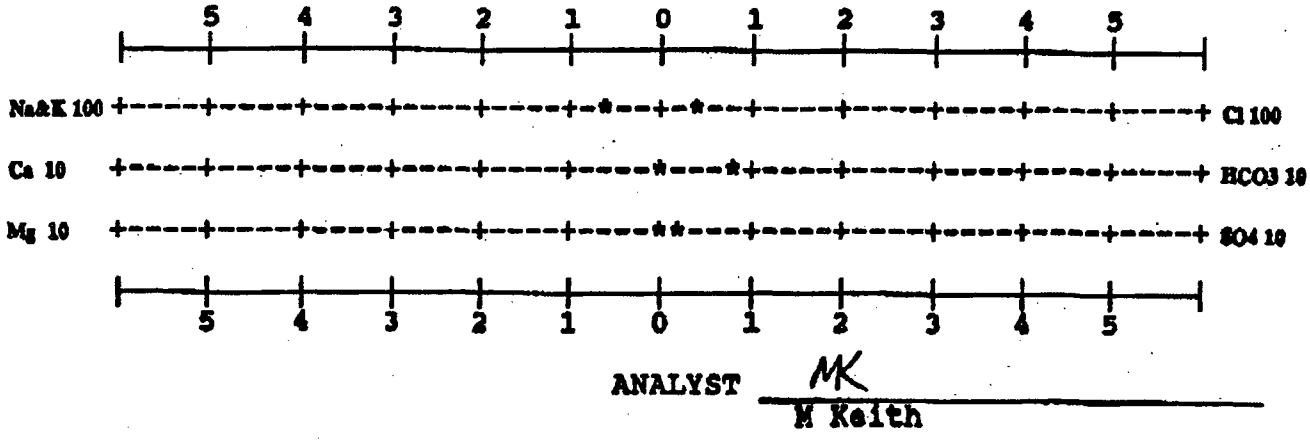
SPECIFIC GRAVITY: 1.003 @ 70 °F PH: 6.75

RESISTIVITY (MEASURED): 3 OHMS @ 0 °F

IRON (FE++):	150 PPM	SULFATE:	100 PPM
CALCIUM:	10 PPM	TOTAL HARDNESS:	50 PPM
MAGNESIUM:	6 PPM	BICARBONATE:	487 PPM
CHLORIDE:	1595 PPM	SODIUM CHLORIDE (CALC)	2624 PPM
SODIUM+POTASS:	1243 PPM	TOT. DISSOLVED SOLIDS:	3474 PPM
KCL	:no trace	OIL	:none

REMARKS:

STIFF TYPE PLOT (IN MEQ/L)



ANALYST MK

M Keith

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OIL CONS. COMMISSION
Drawer DD
Artesia, NM 88210

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM-0557371

6. If Indian, Allottee or Tribe Name

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed. Com. #3

2. Name of Operator
Mewbourne Oil Company

RECEIVED

9. API Well No.
30-015-27163

3. Address and Telephone No.
P.O. Box 5270 Hobbs, New Mexico 88241

APR 26 1993

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
990' FSL & ~~1980'~~ FEL
Sec. 1-T18S-R27E

C. C. D.

11. County or Parish, State
Eddy Co., N.M.

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☐ Notice of Intent	☐ Abandonment	☐ Change of Plans
☒ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other _____	☒ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

scribe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

1) Formation: Morrow
2) Amount of water produced 10 BW/mo.
3) Water analysis attached
4) Water is stored on lease in fiberglass tank
5) Produced water will be trucked by I & W Inc.
6) The disposal well is I & W Inc., Walter Solt #1, Unit Letter L, Section 5-T18S-R28E Eddy County, New Mexico

SWD #318

14. I hereby certify that the foregoing is true and correct

Signed [signature] Title Production Engineer Date March 4, 1993

(This space for Federal or State office use)

Approved by (ORIG. SGD.) DAVID R. GLASS Title PETROLEUM ENGINEER Date 4/22/93

Conditions of approval, if any:

SEE ATTACHED

8 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

| | | |

Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Mewbourne Oil Co.
Attention: Mr. R.Jones
P. O. Box 5270
Hobbs, New Mexico 88240

SAMPLE IDENTIFICATION: Chalk Bluff #3
COMPANY: Mewebourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 3/4/93 12:30PM
ANALYSIS DATE: 03-05-93
PRESSURE - PSIG 530.0
SAMPLE TEMP. °F
ATMOS. TEMP. °F

GAS (XX) LIQUID ( )
SAMPLED BY: R. Jones
ANALYSIS BY: Rolland Perry

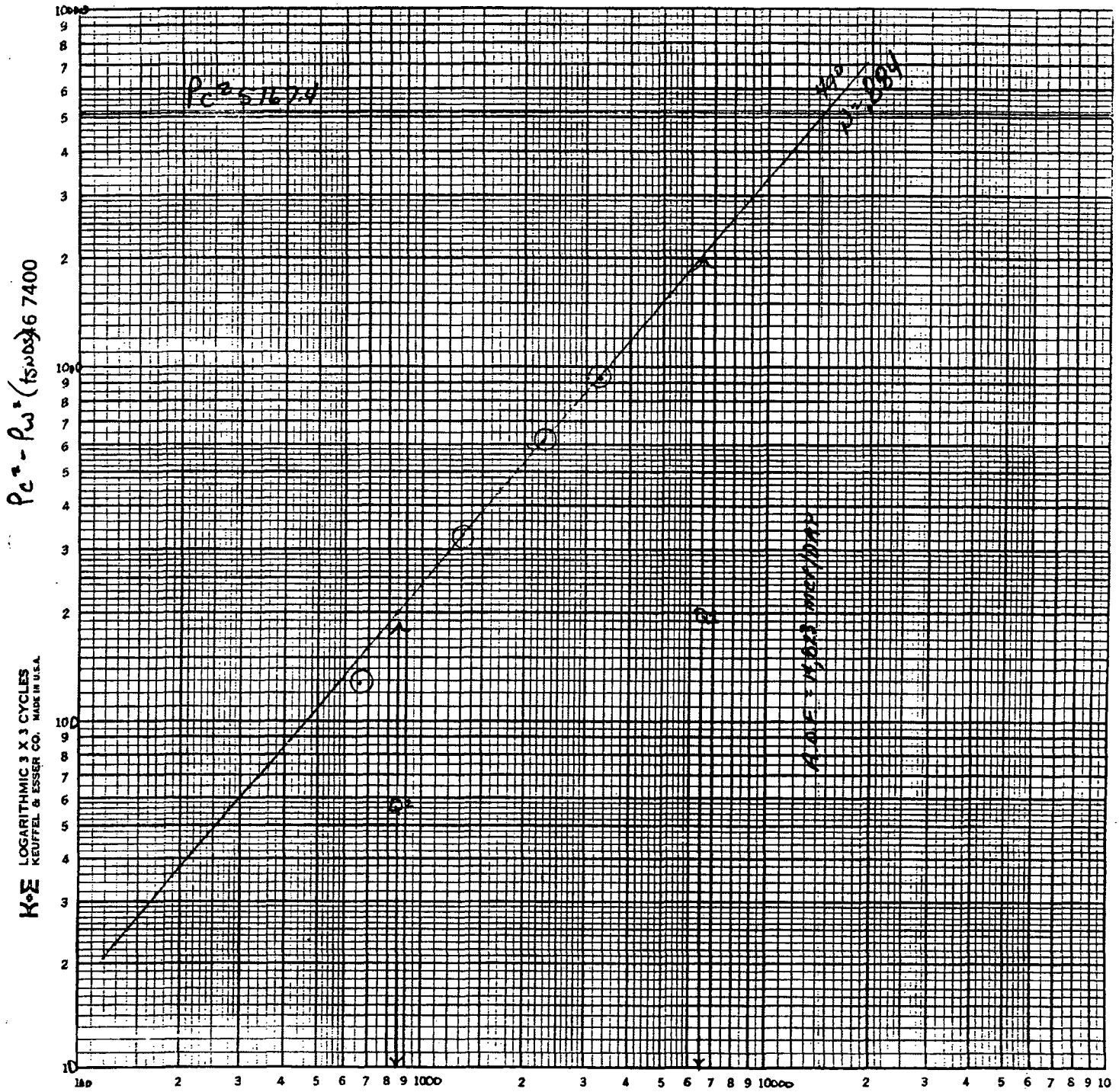
REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	0.33	
Carbon Dioxide	(CO2)	0.42	
Methane	(C1)	83.10	
Ethane	(C2)	8.14	2.164
Propane	(C3)	3.14	0.862
I-Butane	(IC4)	0.40	0.130
N-Butane	(NC4)	0.86	0.270
I-Pentane	(IC5)	0.39	0.140
N-Pentane	(NC5)	0.41	0.147
Hexane	(C6)	2.81	1.214
Heptanes Plus	(C7+)	0.00	0.000
		100.00	4.927

BTU/CU.FT. - DRY		1269	MOLECULAR WT.	21.1701
AT 14.650	DRY	1265		
AT 14.650	WET	1239	26# GASOLINE -	1.591
AT 15.025	DRY	1298		
AT 15.025	WET	1304		
SPECIFIC GRAVITY - CALCULATED		0.731		
MEASURED				

MEWBOURNE OIL COMPANY
Chalk Bluff Federal Com. Well #3
1-18S-27E
Eddy County, New Mexico
3/4/93



Log Q_1 = 6500 : Log = 3.81291

Log Q_2 = 850 : Log = 2.92942

Slope N = .88349 = .884

Submit in duplicate to appropriate district office
See Rule 401 & Rule 1122

State of New Mexico
Energy, Minerals and Natural Resources Dept.

Received
APR 0 6 1993

Form C-122
Revised 4-1-91

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: MEWBOURNE OIL COMPANY						Lease or Unit Name: CHALK BLUFF FEDERAL COM.				
Type Test: [X] Initial [ ] Annual [ ] Special						Test Date: 3/4/93		Well No.: 3		
Completion Date: 1/16/93		Total Depth: 10150		Plug Back TD: 10102		Elevation: GL 3628'		Unit Ltr. - Sec. - TWP - Rge.: I 1 18S 27E		
Csg. Size: 4½	Wt.: 10.5	d: 4.052	Set At: 8600 10150	Perforations: From: 9950	To: 9954			County: EDDY		
Tbg. Size: 2 7/8 2 3/8 &	Wt.: 4.7 & 6.5	d: 1.91 2.441	Set At: 9972	Perforations: From: 9957	To: 9972			Pool: MORROW NORTH ILLINOIS Camp		
Type Well - Single - Bradenhead - G.G. or G.O. Multiple: subgke				Packer Set At: 9797				Formation: MORROW		
Producing Thru: tbg.	Reservoir Temp. °F: 133	Mean Annual Temp. °F: 60		Baro. Press - P_a: 13.2				Connection: Transwestern		
L: 9950	H: 9950	Gg: .731	% CO_2: .42	% N_2: .33	% H_2S:	Prover:		Meter Run: 3.068	Taps: flg.	

FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI					2260		Pkr.		48 hr.
1.	3 X 1.500	530	5	148	2230		"		1 hr.
2.	3 X 1.500	530	19	124	2180		"		1 hr.
3.	3 X 1.500	535	52	88	2100		"		1 hr.
4.	3 X 1.500	540	102	70	2000		"		1 hr.
5.									

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, F pv.	Rate of Flow Q, Mcfd
1.	11.13	52.12	543.2	.9248	1.170	1.043	655
2.	11.13	101.59	543.2	.9436	1.170	1.049	1310
3.	11.13	168.84	548.2	.9741	1.170	1.066	2283
4.	11.13	237.54	553.2	.9905	1.170	1.075	3294
5.							

NO.	P_r	Temp. °R	T_r	Z
1.	.81	608	1.52	.919
2.	.81	584	1.46	.909
3.	.82	548	1.37	.880
4.	.83	530	1.32	.865
5.				

Gas Liquid Hydrocarbon Ratio: 23.63 Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: 57.0 Deg.
Specific Gravity Separator Gas: .731 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX G Mix .849
Critical Pressure: 668 P.S.I.A. 664 P.S.I.A.
Critical Temperature: 401 R 441 R

P_c 2273.2 P_c^2 5167.4

NO.	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1.	5031.9	2244.7	5038.8	128.6
2.	4810.1	2199.5	4837.6	329.8
3.	4465.6	2132.7	4548.6	618.9
4.	4053.9	2055.4	4224.8	942.6
5.				

1) $\frac{P_c^2}{P_c^2 - P_w^2} = 5.4821$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 4.500$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 14,823$

Absolute Open Flow: 14,823 Mcfd @ 15.025 | Angle of Slope θ: 49 | Slope, n: .884

Remarks: 13.3 BBLS CONDENSATE PRODUCED DURING TEST

Approved By Division	Conducted By:	Calculated By:	Checked By:
	PRO WELL TESTERS	KS	KS

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

N.M. Oil ... ns Division
811 S. 1st
Artesia, NM ... 210-9824

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

5. Lease Designation and Serial No.
NM 0557371

6. If Indian, Allottee or Tribe Name

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Chalk Bluff Fed. ~~Comm.~~ #3

2. Name of Operator
Mewbourne Oil Company

9. API Well No.
30-015-27163

3. Address and Telephone No.
P. O. Box 5270, Hobbs, NM 88241 505-393-5905

10. Field and Pool, or Exploratory Area
N. Illinois Camp Morrow

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
1980' FSL & 990' FEL of Section 1, T18S, R27E

11. County or Parish, State
Eddy

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☒ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other W/O	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinet details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markders and zones pertinent to this work.)*

Add Morrow perforations 9860' to 9870'.

ACCEPTED FOR RECORD
APR 07 1999
BLM

APR 1999
RECEIVED
OCD - ARTESIA

99 APR 15 AM 11

(ORIG. SGD.) GARY GOURLEY

14. I hereby certify that the foregoing is true and correct

Signed Kelly Edgar Title District Manager Date 04/15/99

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent ments or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

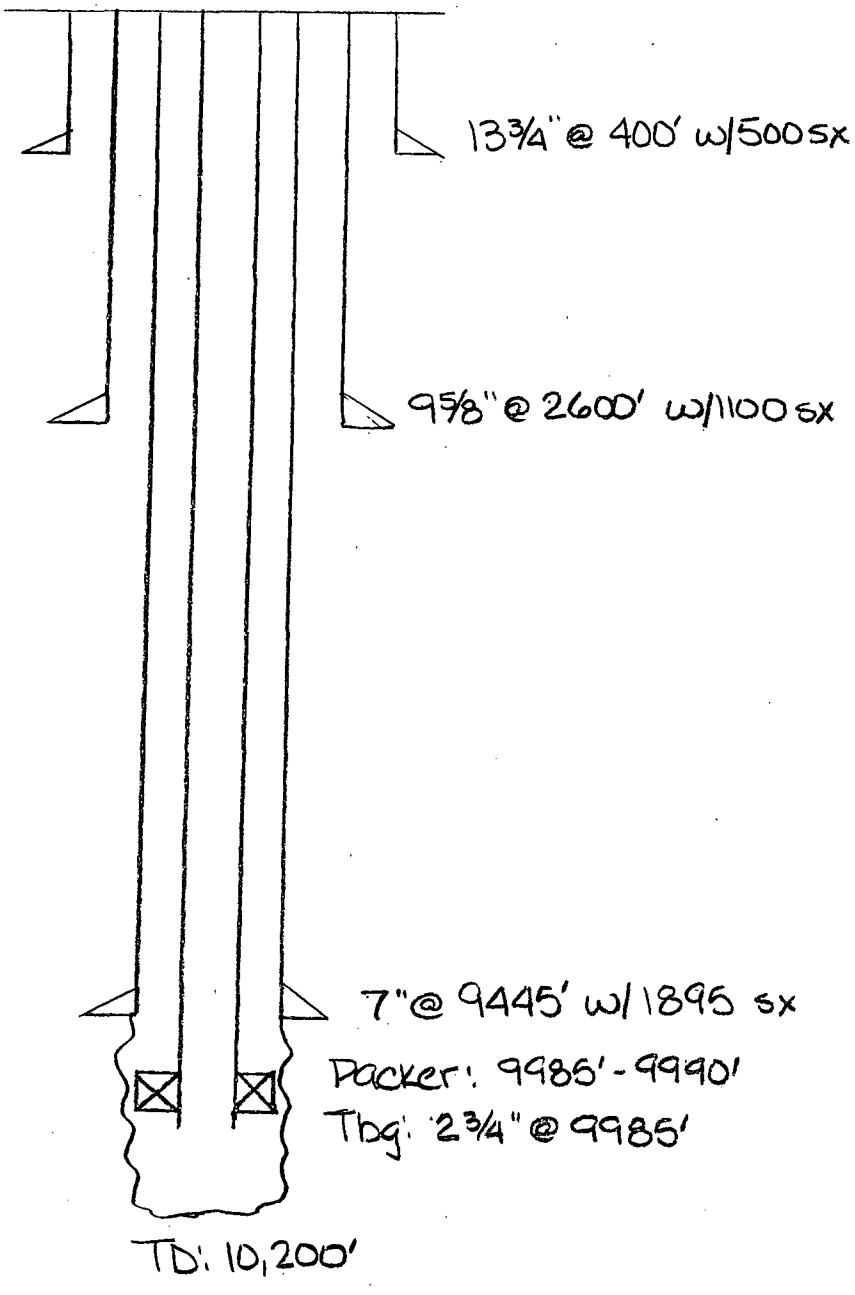
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 98
Artificial Penetration Review

OPERATOR Mewbourne Oil
LEASE Chalk Bluff 6 State
WELL NUMBER 1
DRILLED 4/16/92
PLUGGED NA

STATUS Active
LOCATION Sec. 6 -T 18S-R 27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE
API NO. 30-015- 26943

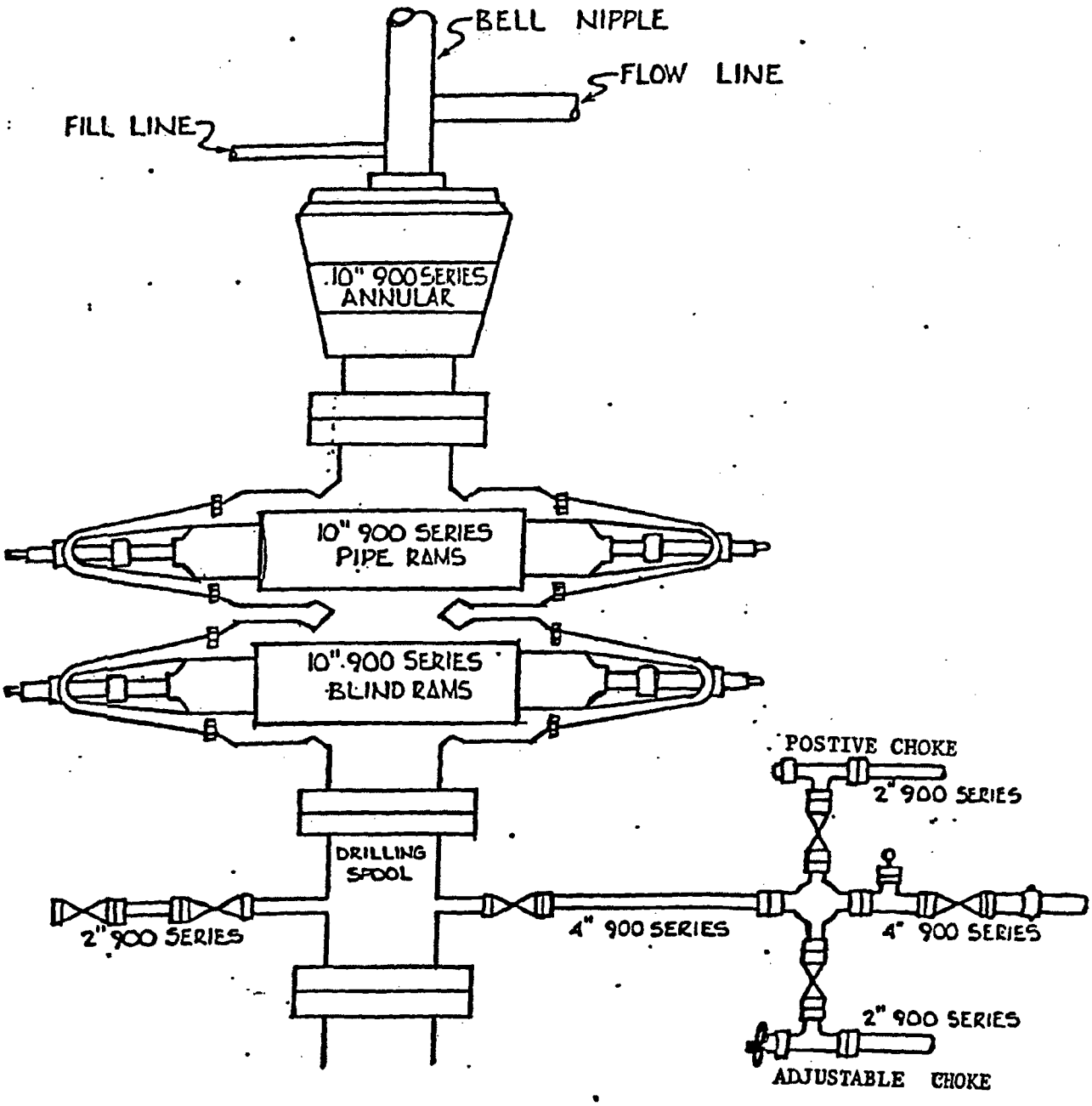
REMARKS:



MAP ID NO. 98

MEWBOURNE OIL CO.
CHALK BLUFF 6 STATE NO. 001

API NO. 30-015-26943



Mewbourne Oil Company
990' FSL & 730' FWL
Sec. 6-T18S-R28E
Chalk Bluff "6" State #1

BOP Diagram

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Dep[illegible]ent

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
MEWBOURNE OIL COMPANY	CHALK BLUFF "6" State	1

Unit Letter	Section	Township	Range	County
M	6	18 SOUTH	28 EAST NMPM	EDDY

Actual Footage Location of Well:
990 feet from the SOUTH line and 730 feet from the WEST line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3635.0	Morrow	North Illinois Camp Morrow	334.98 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

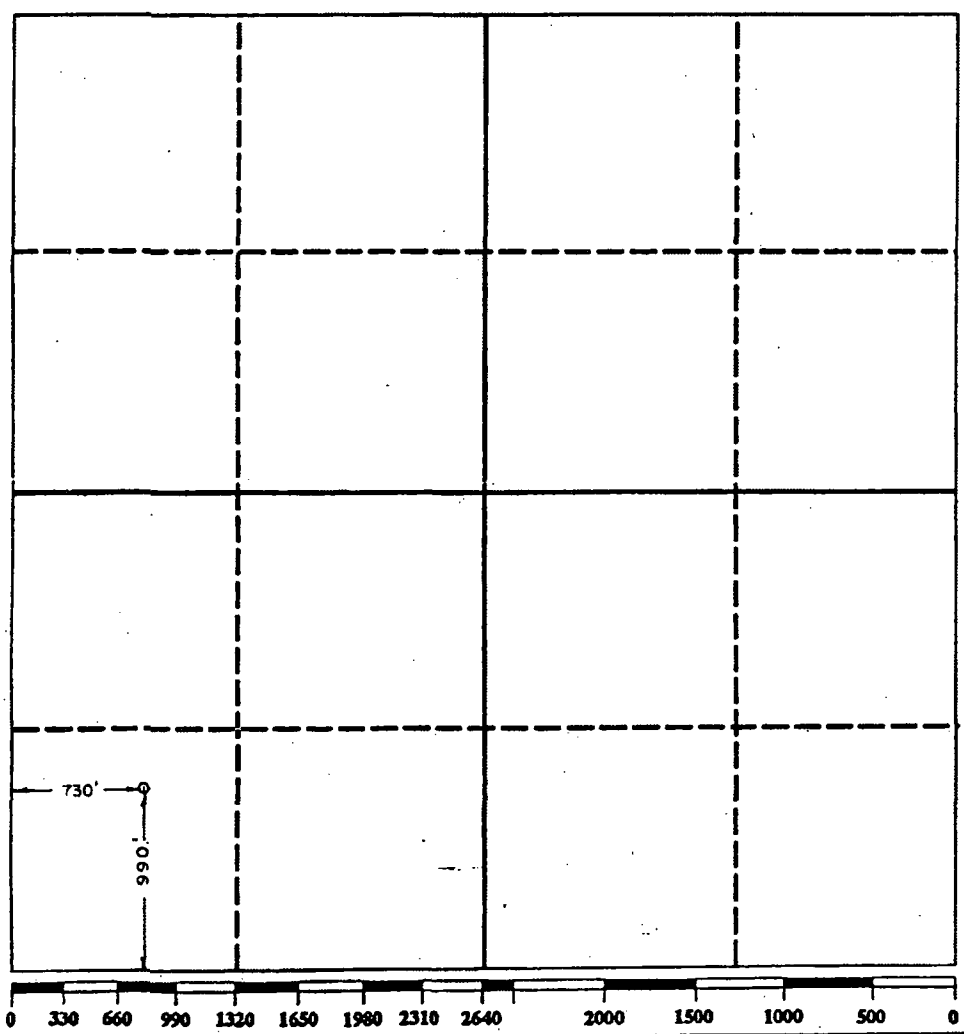
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☐ Yes ☐ No If answer is "yes" type of consolidation _____

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein in true and complete to the best of my knowledge and belief.

Signature: W H Cravey

Printed Name: W.H. Cravey

Position: District Supt.

Company: Mewbourne Oil Co.

Date: July 9, 1991

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 6/28/[illegible]

Signature & Seal of Professional Surveyor: STATE OF NEW MEXICO HERSCHEL L JONES 3640 REGISTERED LAND SURVEYOR

Certificate No. 3640

Submit to Appropriate
District Office
State Lease – 6 copies
Fee Lease – 5 copies

DISTRICT I
O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
JUL 15 1991
O. C. D.
ARTESIA, OFFICE

Form C-101
Revised 1-1-89

API NO. (assigned by OCD on New Wells) 30-015-26943

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No. E-7179

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
DRILL [X] RE-ENTER [ ] DEEPEN [ ] PLUG BACK [ ]

b. Type of Well:
OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [ ]

7. Lease Name or Unit Agreement Name: Chalk Bluff "6" State

2. Name of Operator: Mewbourne Oil Company

8. Well No. 1

3. Address of Operator: P.O. Box 5270 Hobbs, New Mexico 88241

9. Pool name or Wildcat: North Illinois Camp Morrow

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Proposed Depth	11. Formation	12. Rotary or C.T.
10,200'	Morrow	Rotary

13. Elevations (Show whether DF, RT, GR, etc.)	14. Kind & Status Plug. Bond	15. Drilling Contractor	16. Approx. Date Work will start
3635' G.L.	Blanket on file	WEK Drilling Co.	August 10, 1991

17. PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
17-1/2"	13-3/8"	68#	± 400'	500	Surface
12-1/4"	9-5/8"	36#	± 2,600'	1000	Surface
7-7/8"	5-1/2"	17#	10,200'	600	Back 6,000'

Blow Out Preventor: Schaffer LWS or equivalent (Double Ram Hydraulic) 900 series. Hydril 900 series annular preventor. Grant rotating head, totco flow monitors on pits.

Post ID-1 2-14-92 upon Lat + API

Mud Program:
0' - 400' Fresh water with spud mud. Paper for LCM material
400' - 2,600' Fresh water with LCM as needed.
2,600' - 8,400' Cut brine with lime.
8,400' - 10,200' Cut brine with Drispac, salt gel, lime, soda ash
Wt. 9.2-9.6 ppg WL 10 cc's or less

Gas is not dedicated.

APPROVAL VALID FOR 180 DAYS
PERMIT EXPIRES 8/11/92
UNLESS DRILLING UNDERWAY

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE W. R. Mewbourne TITLE District Supt. DATE July 11, 1991

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use) ORIGINAL SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT II

APPROVED BY TITLE DATE FEB 11 1992

CONDITIONS OF APPROVAL, IF ANY:

NSL-R-9631

RECEIVED
APR 3 1992
O. C. D.
ARTESIA, OFFICE

Submit 3 Copies to Appropriate District Office

Form C-103
Revised 1-1-89

DISTRICT I
P. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MAR 23 1992
O. C. D.
ARTESIA, OFFICE

WELL API NO.
30-015-26943

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-7179

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
CHALK BLUFF "6" STATE

1. Type of Well:
OIL WELL ☐ GAS WELL ■ OTHER

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

9. Pool name or Wildcat
NORTH ILLINOIS CAMP MORROW

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (*Show whether DF, RKB, RT, GR, etc.*)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ■	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐		CASING TEST AND CEMENT JOB ■	
OTHER: ☐		OTHER: ☐	

12. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

2/18/92 - Spud 7:45 AM 2/17/92. Cemented 13-3/8" casing at 400' with 100 sxs Class "C" + 10 pps Calseal + 5 pps Gilsonite + 1/2 pps Flocele + 2% $CaCl^2$ and 200 sxs Class "C" + 6% gel + ¼ pps Flocele + 5# gilsonite + 2% $CaCl^2$. Tailed in with 200 sxs Class "C" + 2% $CaCl^2$. Plug down 4:15 PM 2/17/92. Pressure tested casing to 1000#. Float held okay. Did not circulate cement. WOC 3 hrs. Ran 1" and tagged at 190'. Cemented with 150 sxs Class "C" Neat. Circulated 20 sacks to pit. Total 12-1/4 hrs. WOC.

2/22/92 - Ran 9-5/8" 24# J-55 casing set at 2600' and cemented with 100 sxs Class "C" + 10# calseal + ¼ pps Flocele + 5 pps Gilsonite + 2% $CaCl^2$ and 700 sxs Class "C" Lite + ¼ pps Flocele + 5 pps Gilsonite. Tailed in with 300 sxs Class "C" + 2% $CaCl^2$. Had full returns while cementing. Plug down at 10:30 PM 2/22/92. Pressure tested casing to 1000# for 30 mins, float held okay. Circ 65 sxs to pit. WOC 8½ hours.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Clayton Thompson TITLE Engr.Oprns.Secretary DATE 3/19/92

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use)

ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II

APPROVED BY TITLE DATE APR 23 1992

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies to Appropriate District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

c/SF DP

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MAR 23 1992
O. C. D.
ARTESIA, OFFICE

WELL API NO.
30-015-26943

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-7179

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
CHALK BLUFF "6" STATE

1. Type of Well:
OIL WELL ☐ GAS WELL ■ OTHER

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

9. Pool name or Wildcat
NORTH ILLINOIS CAMP MORROW

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
ORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
JR ALTER CASING ☐		CASING TEST AND CEMENT JOB ■	
OTHER: ☐		OTHER: ☐	

12. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

3/14/92 - Ran 7" 26# S-95 casing set at 9445'. Bottom of packer at 7096'. DVT at 7033'. CEMENTED 1ST STAGE with 325 sacks Class "H" + 2 pps KCL + .3% CFR-3 + .4% Halad 22A + 5 pps Gilsonite + 5 pps Silicalite & 300 sacks Class "H" + 2 pps KCL + .3% CFR-3 + .4% Halad 22A + 5 pps Silicalite. Plug down at 9:00 AM 3/15/92. Pressure tested casing to 2600# and set packer. Checked float collar. Held okay. Did not have returns while cementing. Dropped bomb and opened DVT at 9:30 AM. Pumped 1 bbl and had full returns. Circulated bottoms up from DVT. Did circulate cement. CEMENTED 2ND STAGE with 1170 sacks H/L + ¼ pps Flocele + 5 pps Silicalite + 5 pps salt. Tailed in with 100 sacks Class "H" + 5# Silicalite + 2 pps KCL. Had full returns while cementing. Started losing returns with 140 bbls displacement gone. Lost complete returns with 240 bbls of displacement gone. Plug down at 11:45 AM 3/15/92. Closed DVT. Held okay. Did not circulate on 2nd stage. WOC 19-1/4 hours.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Clayton Thompson TITLE Engr.Oprns.Secretary DATE 3/19/92

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use)

APPROVED BY ORIGINAL SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT II TITLE DATE MAR 26 1992

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies to Appropriate District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

c15F Dp

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL API NO.
30-015-26943

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-7179

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
CHALK BLUFF "6" STATE

1. Type of Well:
OIL WELL ☐ GAS WELL ■ OTHER

RECEIVED
APR 24 1992
O. C. D.
ARTESIA, OFFICE

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

9. Pool name or Wildcat
NORTH ILLINOIS CAMP MORROW

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	■		
OTHER:	☐			OTHER:			☐

12. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

3/24/92 - Ran 4-1/2" 11.6# N-80 liner. Top of liner at 9077'. Set liner at 10,198'. Cemented with 750 gals mud flush followed by 175 sxs Class "H" + 5 pps KCL + 5 pps Silicalite + 6/10% Halad 22A + 4/10% CRF-3. Plug down to 10,151' at 7:15 AM 3/23/92 with full returns. Checked float. Held okay.

4/10/92 - Tested casing to 1000# for 30 mins, held okay. Drilled out 120' cement in 4½" liner. Drilled through at 9200'. Tagged up at 10,103'. Drilled down to landing collar at 10,151'. Circulated hole. Tested casing to 1000# for 30 mins. Held OK.

4/11/92 - Western spotted acid over perforation interval. Ran CBL from TD 10,159' to 620'. Had good bond around 4½" lienr from TD to 9600'.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Crystal Trimpson TITLE Engr. Oprns. Secretary DATE 4/22/92

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use)
ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II

APPROVED BY TITLE DATE MAY 25 1992

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies to Appropriate District Office

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-103
Revised 1-1-89

WELL API NO.
30-015-26943

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-7179

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

RECEIVED
APR 24 1992
O. C. D.
ARTESIA, OFFICE

7. Lease Name or Unit Agreement Name
CHALK BLUFF "6" STATE

1. Type of Well:
OIL WELL ☐ GAS WELL ■ OTHER

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

9. Pool name or Wildcat
NORTH ILLINOIS CAMP MORROW

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐		CASING TEST AND CEMENT JOB ☐	
OTHER: ☐		OTHER: Perforate and acidize ■	

12. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

4/14/92 - Ran 2-3/8" tubing set at 9990'. Tested to 8000#. Held okay. Set packer with 16 points compression.

4/15/92 - Perforated Lower Morrow 10,084' - 10,092'. 8' net, 1 SPF, 9 holes.

4/16/92 - Acidized perfs with 2600 gals 7½% HCL + additives and 1367 scf/bbl N^2 & 15 frac balls. MTP 3800#. Max TP 7600#. Avg 6300#. Well started flowing to pit on 10/64" choke. FTP 3000#.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Raylene Bomprose TITLE Engr.Oprns.Secretary DATE 4/22/92

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use)

APPROVED BY ORIGINAL SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT II TITLE DATE MAY 25 1992

CONDITIONS OF APPROVAL, IF ANY:

SEC 6 TWN 18s RGE 28e API # 30-015-26943

OPERATOR Mewbourne Oil

WELL NAME Chalk Bluff "6" St. #1

STATE OCD TOPS AS PER Darrell Moore DATE 5/27/92

Southeastern New Mexico			Northwestern New Mexico		
T. Anhy	T. Canyon		T. Ojo Alamo	T. Penn. "B"	
T. Salt	T. Strawn	8910	T. Kirtland-Fruitland	T. Penn. "C"	
B. Salt	T. Atoka	9593	T. Pictured Cliffs	T. Penn. "D"	
T. Yates	T. Miss		T. Cliff House	T. Leadville	
T. 7 Rivers	T. Devonian		T. Menefee	T. Madison	
T. Queen	T. Silurian		T. Point Lookout	T. Elbert	
T. Grayburg	T. Montoya		T. Mancos	T. McCracken	
T. San Andres	T. Simpson		T. Gallup	T. Ignacio Otzte	
T. Glorieta	T. McKee		Base Greenhorn	T. Granite	
T. Paddock	T. Ellenburger		T. Dakota	T.	
T. Blinebry	T. Gr. Wash		T. Morrison	T.	
T. Tubb	T. Delaware Sand		T. Todilto	T.	
T. Drinkard	T. Bone Springs		T. Entrada	T.	
T. Abo	T. Morrow	9842	T. Wingate	T.	
T. Wolfcamp	T.		T. Chinle	T.	
T. Penn	T.		T. Permain	T.	
T. Cisco (Bough C)	T.		T. Penn "A"	T.	

T. Anhy		T. Canyon	
T. Salt		T. Strawn	8910
B. Salt		T. Atoka	9593
T. Yates		T. Miss	
T. 7 Rivers		T. Devonian	
T. Queen	1209	T. Silurian	
T. Grayburg	1560	T. Montoya	
T. San Andres	2062	T. Simpson	
T. Glorieta	3632	T. McKee	
T. Paddock		T. Ellenburger	
T. Blinebry		T. Gr. Wash	
T. Tubb		T. Delaware Sand	
T. Drinkard		T. Bone Springs	
T. Abo		T. Morrow	9842
T. Wolfcamp	6910	T.	
T. Penn		T.	
T. Cisco (Bough C)		T.	

T. Ojo Alamo		T. Penn. "B"	
T. Kirtland-Fruitland		T. Penn. "C"	
T. Pictured Cliffs		T. Penn. "D"	
T. Cliff House		T. Leadville	
T. Menefee		T. Madison	
T. Point Lookout		T. Elbert	
T. Mancos		T. McCracken	
T. Gallup		T. Ignacio Otzte	
Base Greenhorn		T. Granite	
T. Dakota		T.	
T. Morrison		T.	
T. Todilto		T.	
T. Entrada		T.	
T. Wingate		T.	
T. Chinle		T.	
T. Permain		T.	
T. Penn "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from.....to..... No. 3, from.....to.....

No. 2, from.....to..... No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....

No. 2, from.....to.....feet.....

No. 3, from.....to.....feet.....

REMARKS: Perfs reported (10,084 - 10,092) are wrong.

KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT

WEK DRILLING CO., INC. — OIL WELL DRILLING CONTRACTORS

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

March 31, 1992

Mewbourne Oil Company
P.O. Box 5270
Hobbs, N.M. 88202

REF: Chalk Bluff "6" St. #1

Gentlemen:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

400' - 3/4°	5168' - 2°	6351' - 2 3/4°
912' - 1°	5262' - 2 1/2°	6443' - 2 1/2°
1405' - 3/4°	5316' - 2 1/2°	6534' - 2 3/4°
1878' - 1°	5419' - 2 3/4°	6625' - 1 1/4°
2367' - 1°	5513' - 3°	7151' - 3/4°
2600' - 1 1/4°	5605' - 2 1/2°	7278' - 1 1/4°
3082' - 2 1/4°	5698' - 2 1/2°	7770' - 1 1/4°
3176' - 1 1/2°	5792' - 2 1/2°	8289' - 1°
3299' - 1 1/4°	5885' - 2 1/4°	8778' - 1°
3791' - 1 1/2°	5979' - 2 3/4°	9282' - 1 1/4°
4287' - 2 1/4°	6072' - 2 3/4°	9450' - 1 3/4°
438-' - 1 1/4°	6166' - 3 1/4°	10200' - 1 1/2°
4752' - 1 1/4°	6259' - 3°	

Sincerely,

Arnold Newkirk
Vice President

STATE OF NEW MEXICO)
)
COUNTY OF CHAVES)

The foregoing was acknowledged before me this 31st day of March 1992 by Arnold Newkirk.

MY COMMISSION EXPIRES

October 07, 1992

NOTARY PUBLIC

C/SF BLM BTM Ld SX

Submit to Appropriate District Office
State Lease – 6 copies
Fee Lease – 5 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
MAY - 4 1992
O. C. D.
ARTESIA, OFFICE

Form C-105
Revised 1-1-89

WELL API NO.
30-015-26943

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-7179

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well: OIL WELL ☐ GAS WELL ■ DRY ☐ OTHER

b. Type of Completion: NEW WELL ■ WORK OVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF RESVR ☐ OTHER

7. Lease Name or Unit Agreement Name
CHALK BLUFF "6" STATE

2. Name of Operator
MEWBOURNE OIL COMPANY

8. Well No.
1

3. Address of Operator
P. O. Box 7698, Tyler, Texas 75711

9. Pool name or Wildcat
NORTH ILLINOIS CAMP MORROW

4. Well Location
Unit Letter M : 730 Feet From The WEST Line and 990 Feet From The SOUTH Line

Section 6 Township 18S Range 28E NMPM EDDY County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF& RKB, RT, GR, etc.)	14. Elev. Casinghead
2/17/92	3/21/92	4/16/92	DF 3339', GR 3324'	

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
10,200'	10,151'			X	

19. Producing Interval(s), of this completion - Top, Bottom, Name
10,084'-10,092' - Morrow

20. Was Directional Survey Made
Yes

Type Electric and Other Logs Run
SDL-DSN, DIL/DLL-MSFL

22. Was Well Cored
NO

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	48# & 68#	400'	17-1/2"	500 sxs - circ	None
9-5/8"	24#	2,600'	12-1/4"	1100 sxs - circ	None
7"	26#	9,445'	7-7/8"	1895 sxs - circ 1st string	None

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
4-1/2"	9077'	10,198'	175	

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-3/8"	9,990'	9,990'

26. Perforation record (interval, size, and number)
10,084'-10,092' - 8', 1 SPF, 9 holes

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
10,084-092'	Acidized with 2600 gals 7½% HCL + additives & 1367 scf/ bbl N^2 & 15 frac balls.

PRODUCTION

28.

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
4/17/92	Flowing	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
4/28/92	24 hours	12/64"		36	1,902	0	52,833:1

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)
2690#	—		36	1,902	0	51.6

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
Sold

Test Witnessed By
Bill Pierce

List Attachments
Logs

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Gaylon Thompson Printed Name Gaylon Thompson Title Engr.Oprns.Sec. Date 4/28/92

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon	8,432'	T. Ojo Alamo		T. Penn. "B"	
T. Salt		T. Strawn	8,944'	T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka	9,562'	T. Pictured Cliffs		T. Penn. "D"	
T. Yates	478'	T. Miss		T. Cliff House		T. Leadville	
T. 7 Rivers	596'	T. Devonian		T. Menefee		T. Madison	
T. Queen	1,209'	T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg	1,560'	T. Montoya		T. Mancos		T. McCracken	
T. San Andres	2,062'	T. Simpson		T. Gallup		T. Ignacio Otzte	
T. Glorieta	3,626'	T. McKee		Base Greenhorn		T. Granite	
T. Paddock		T. Ellenburger		T. Dakota		T.	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	
T. Tubb	4,736'	T. Delaware Sand		T. Todilto		T.	
T. Drinkard	5,531'	T. Bone Springs		T. Entrada		T.	
T. Abo	5,878'	T. Morrow	9,664'	T. Wingate		T.	
T. Wolfcamp	6,606'	T. Mor.Clast.	9,874'	T. Chinle		T.	
T. Penn		T. L.Morrow	10,006'	T. Permain		T.	
T. Cisco	7,742'	T.		T. Penn "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from 10,084' to 10,092' No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from NONE to ..... feet .....

No. 2, from ..... to ..... feet .....

No. 3, from ..... to ..... feet .....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology	From	To	Thickness in Feet	Lithology
0'	430'	430'	Red Bed & Anhydrite				
430'	2490'	2060'	Anhydrite				
2490'	2600'	110'	Anhydrite & Dolomite				
2600'	4782'	2182'	Dolomite				
4782'	7520'	2730'	Dolomite & Lime				
7520'	9450'	1930'	No Returns				
9450'	9840'	390'	Lime				
9840'	10028'	188'	Lime & Shale				
10028'	10200'	172'	Shale				

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-104
Revised 1-1-89
See Instructions at Bottom of Page

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
MEWBOURNE OIL COMPANY	30-015-26943

Address: P. O. Box 7698, Tyler, Texas 75711

Reason(s) for Filing (Check proper box) — RECEIVED (Please explain)

- New Well ■
- Recompletion ☐
- Change in Operator ☐
- Change in Transporter of: Oil ☐ Dry Gas ☐ Casinghead Gas ☐ Condensate ☐

APR 24 1992
O. C. D.
ARTESIA, OFFICE

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease State, Federal or Fee	Lease No.
CHALK BLUFF "6" STATE	1	N. ILLINOIS CAMP MORROW		E-7179

Location: Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil ☐ or Condensate ■	Address (Give address to which approved copy of this form is to be sent)
PHILLIPS PETROLEUM COMPANY - TRUCKS	4001 Pembrook, Odessa, Texas 79761
Name of Authorized Transporter of Casinghead Gas ☐ or Dry Gas ■	Address (Give address to which approved copy of this form is to be sent)
TRANSWESTERN PIPELINE COMPANY	P.O.Box 1188, Houston, Texas 77251

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	M	6	18S	28E	Yes	4/22/92

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
2/17/92	4/16/92	10,200'	10,151'
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
DF 3339',GR 3324'	Morrow	10,084'	9,990'
Perforations			**Depth Casing Shoe**
10,084' - 10,092'			--

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8"	400'	500 - circ
12-1/4"	9-5/8"	2,600'	1100 - circ
7-7/8"	7"	9,445'	1895 - circ 1st stg.
7"	4½" Liner	10,198'	175

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL. *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
		Post ID-2 6-5-92	
Length of Test	**Tubing Pressure**	**Casing Pressure**	**Choke Size**
			comp & BK
Actual Prod. During Test	**Oil - Bbls.**	**Water - Bbls.**	**Gas- MCF**

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
2,149 Mcf	24 hours	89.9:1	~~N/A~~ 51.6
Testing Method (pilot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
Back Pressure	N/A	---	12/64"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Gaylon Thompson

Signature

Gaylon Thompson, Engr Oprns.Secretary
Printed Name — Title

April 22, 1992 (903) 561-2900
Date — Telephone No.

OIL CONSERVATION DIVISION

Date Approved MAY 2 5 1992

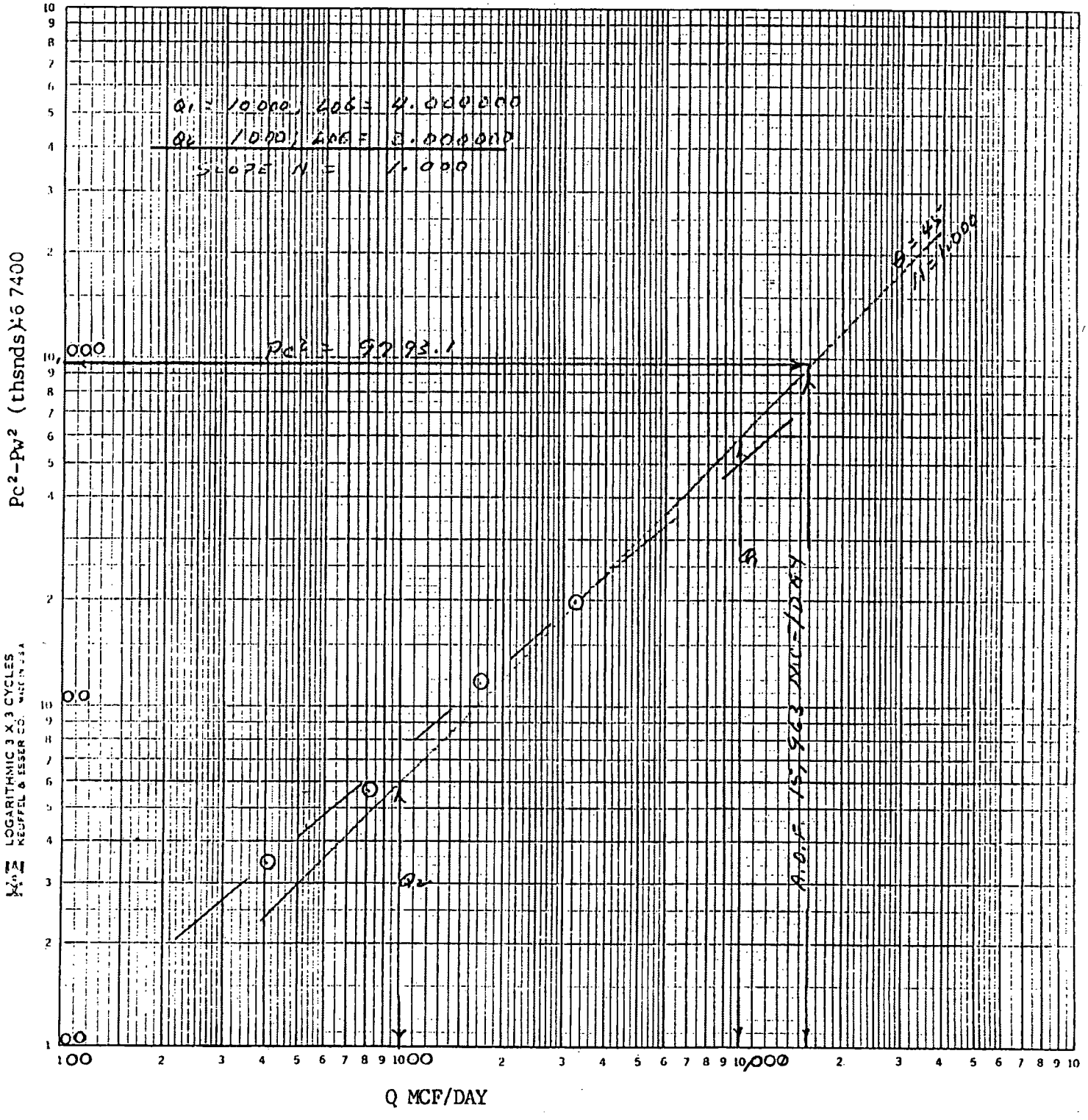
By ORIGINAL SIGNED BY MIKE WILLIAMS

Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

MEWBOURNE OIL COMPANY
Chalk Bluff "6" St., Well # 1
6-18-28
Eddy County, New Mexico
4-24-92



Submit in duplicate to appropriate district office
Rule 401 & Rule 1122

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-122
Revised 4-1-91

c15r File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: MEWBOURNE OIL COMPANY				Lease or Unit Name: CHALK BLUFF '6' St.	
Type Test: ☒ Initial ☐ Annual ☐ Special				Test Date: 4-24-92	Well No.: 1
Completion Date: 4-16-92	Total Depth: 10151	Plug Back TD: 10151		Elevation:	Unit Ltr. - Sec. - TWP - Rge.: M 6 18 28
Csg. Size: 7" & 4½"	Wt. 26# 19.6#	d:	Set At: 10198	Perforations: From: 10084 To: 10092	County: Eddy
Tbg. Size: 2 7/8 &2 3/8	Wt. 6.5 4.7	d: 2.441 1.995	Set At: 9976	Perforations: From: To:	Pool: N. Illinoise Camp
Type Well - Single - Bradenhead - G.G. or G.O. Multiple			Packer Set At: 9976		Formation: Morrow
Producing Thru: TBG	Reservoir Temp. °F: 175 @10088	Mean Annual Temp. °F: 60	Baro. Press - P_a: 13.2		Connection:

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
*10088	10088	.643	.44	.38			3.068	FLG

	FLOW DATA				TUBING DATA		CASING DATA		
NO.	Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI					2960		PKR		72 hrs.
1.	3 X .750	430	34.00	111	2815		"		1 hr.
2.	3 X 1.000	440	40.00	102	2730		"		1 hr.
3.	3 X 1.500	435	32.00	78	2590		"		1 hr.
	3 X 1.750	480	49.00	54	2575		"		1 hr.

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, Fpv.	Rate of Flow Q, Mcfd
1.	2.672	122.76	443.2	.9543	1.247	1.035	404
2.	4.789	134.64	453.2	.9619	1.247	1.035	801
3.	11.13	119.76	448.2	.9831	1.247	1.045	1708
4.	15.61	155.46	493.2	1.006	1.247	1.058	3221
5.							

NO.	P_r	Temp. °R	T_r	Z
1.	.66	571	1.53	.934
2.	.67	562	1.51	.933
3.	.66	538	1.44	.916
4.	.73	514	1.38	.893
5.				

Gas Liquid Hydrocarbon Ratio 40.1 Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons 51.6 @60° Deg.
Specific Gravity Separator Gas .643 XXXXXXXXX
Specific Gravity Flowing Fluid XXXXX
Critical Pressure 670 P.S.I.A. P.S.I.A.
Critical Temperature 372 R R

P_c **3129.4 P_c^2 9793.1

NO.	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1.	**	3073.7	9447.6	345.5
2.	**	3037.7	9227.6	565.5
3.	**	2933.4	8604.8	1188.3
4.	**	2795.9	7817.1	1976.0
5.				

1) $\frac{P_c^2}{P_c^2 - P_w^2} = 4.956$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 4.956$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 15.963$

Absolute Open Flow 15,963 Mcfd @ 15.025 Angle of Slope θ 45 Slope, n 1.000

Remarks: * BHP Instrument Set @ this Depth
** From Known B.H.P. Calculated back to Surface
~~*** Well Made 6.375 BBLS 51.6 @60 Condensate & 3.0 BBLS H^2O~~

Approved By Division	Conducted By:	Calculated By:	Checked By:
	Pro Well Testers	BM	BM

Submit 3 Copies to Appropriate District Office

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

NOV 16 1993

O. C. D.

Form C-103
Revised 1-1-89

WELL API NO
30-015-26943

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-7179

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
Chalk Bluff "6" State

1. Type of Well:
OIL WELL ☐ GAS WELL ■ OTHER

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
P.O. Box 5270 Hobbs, New Mexico 88241 (505) 393-5905

9. Pool name or Wildcat
North Illinois Camp Morrow

4. Well Location
Unit Letter M : 730 Feet From The West Line and 990 Feet From The South Line

Section 6 Township 18S Range 28E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3339' DF 3324' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	☐		
OTHER:	☐			OTHER: Add Perforations	■		

12. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

11/02/93 Rig up Schlumberger and perf'd Morrow 10,044' - 10,064' with 2 SPF. 20' and 41 holes.

11/03/93 Acidized Morrow formation with 4,000 gal. 7 1/2% FE acid & 1,000 CF/bbl. nitrogen Put well on production.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE _____ TITLE Production Engineer DATE 11/15/93

TYPE OR PRINT NAME Brent Thurman TELEPHONE NO (505) 393-5905

(This space for State Use)

APPROVED BY ORIGINAL SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT II TITLE _____ DATE NOV 23 1993

CONDITIONS OF APPROVAL, IF ANY:

30-015-26943

OGRID 14744

POOL 7877

POOL 78890

1923010-O

1923830-G

1923050-W

Oxford®

ESSELTE

MADE IN U.S.A. NO. R753 1/3

R-9631
12-19-91

IT IS THEREFORE ORDERED THAT:

(1) All mineral interests, whatever they may be, from the base of the Abo formation to the base of the Morrow formation, underlying Lots 3 through 7, the SE/4 NW/4, and the E/2 SW/4 (W/2 equivalent) of Section 6, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico, thereby forming a non-standard 334.98-acre gas spacing and proration unit for any and all formations and/or pools developed on 320-acre spacing within said vertical extent, which presently includes, but is not necessarily limited to the Undesignated Empire-Pennsylvanian Gas Pool and the Undesignated North Illinois Camp-Morrow Gas Pool, are hereby pooled, said unit shall be dedicated to a well to be drilled at an unorthodox gas well location 990 feet from the South line and 730 feet from the West line (Unit M) of said Section 6.

R-9631
Comp. Poly.
NSP & NSL
12-19-91

5-22-92
Dual Spacing
Amendment
Surf - 9416
Dual Lat
2588 - 9464
9451 - 10295
Dual Application
2588 - 9452

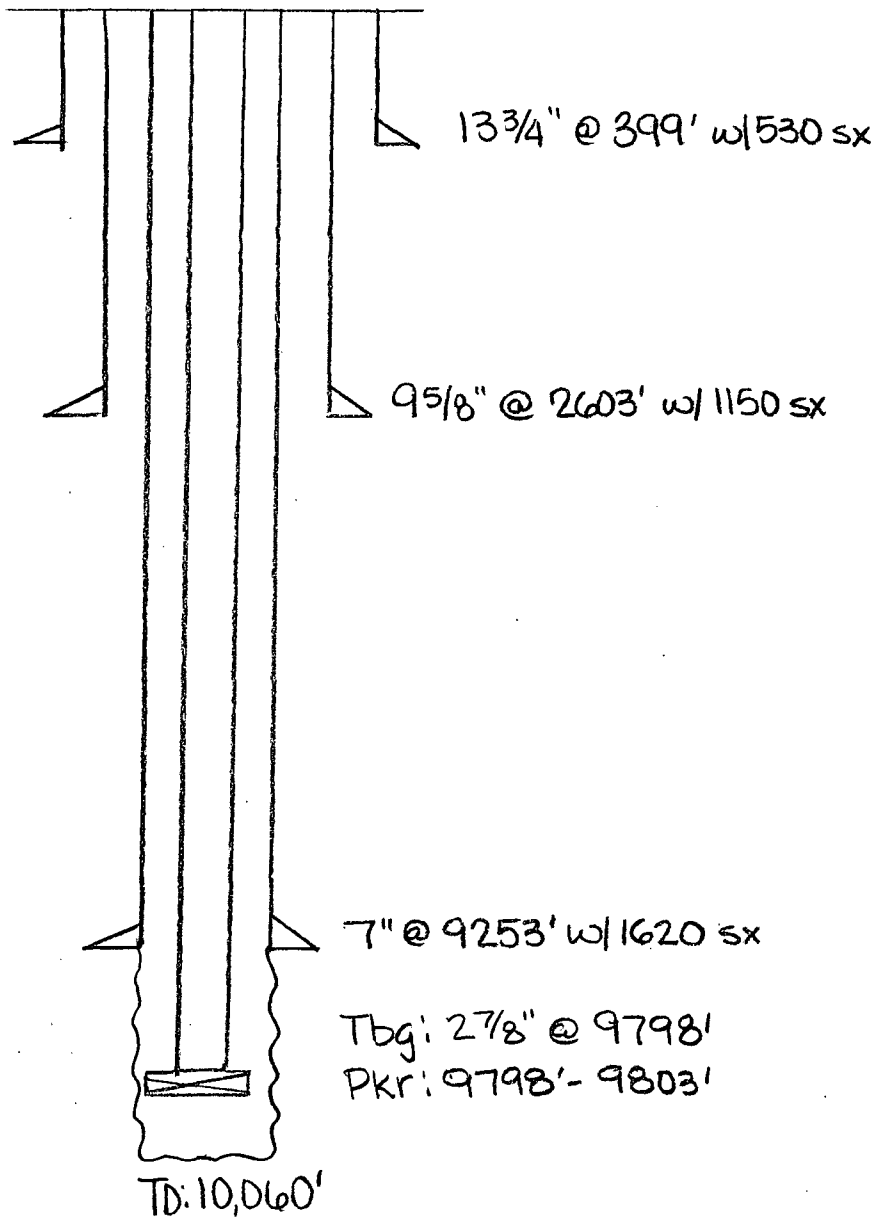
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 100
Artificial Penetration Review

OPERATOR Newbourne Oil
LEASE Chalk Bluff 36 State
WELL NUMBER 1
DRILLED 3/30/93
PLUGGED NA

STATUS Active
LOCATION Sec. 36-T17S-R27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE -3561'
API NO. 30-015- 27286

REMARKS:



MAP ID NO. 100

MEWBOURNE OIL CO.
CHALK BLUFF 36 STATE NO. 001

API NO. 30-015-27286

Submit to Appropriate
District Office
State Lease – 6 copies
Fee Lease – 5 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-101
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
JAN 19 1993
O. C. D.
ARTESIA, OFFICE

API NO. (assigned by OCD on New Wells) 30-015-27286

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No. E-379-4

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
DRILL [X] RE-ENTER [ ] DEEPEN [ ] PLUG BACK [ ]

b. Type of Well:
OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [X] MULTIPLE ZONE [ ]

7. Lease Name or Unit Agreement Name: Chalk Bluff "36" State

2. Name of Operator: Mewbourne Oil Company

8. Well No. 1

3. Address of Operator: P.O. Box 5270 Hobbs, New Mexico 88241

9. Pool name or Wildcat: Illinois Camp Morrow North

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line

Section 36 Township 17S Range 27E NMPM Eddy County

10. Proposed Depth	11. Formation	12. Rotary or C.T.
10,300'	Morrow	Rotary

13. Elevations (Show whether DF, RT, GR, etc.)	14. Kind & Status Plug. Bond	15. Drilling Contractor	16. Approx. Date Work will start
3635' G.R.	Blanket on file	WEK Drilling	Jan. 31, 1993

17. PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
17-1/2"	13-3/8"	48#	400'±	400 sks.	Circ.
12-1/4"	9-5/8"	36#	2,600'±	700 sks.	Tie back into surf.
8-3/4"	5-1/2"	17#	10,300'±	600 sks.	Bring above top of Abo

Mud Program:

0' - 400' Spud mud w/fresh water gel, LCM as needed.
400' - 2,600' Fresh water gel & lime. LCM as needed.
2,600' - 9,200' Cut brine with lime for pH control. WL-NC.
9,200' - 10,300' Cut brine w/Drispac, salt gel, lime, soda ash and starch. Wt. 9.2-9.6 ppg, WL 10 cc or less, Vis. 32-36. Raise wt. accordingly if abnormal pressures are encountered.

BOP Program:

1500 Series Double Ram Hydraulic BOP w/900 Series Hydril from Intermediate csg. to T.D. 900 Series Hydril on Surface csg. to Intermediate csg. point. PVT system, mud-gas seperator, rotating head from Wolfcamp to T.D.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 01/18/93

TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. (505) 393-5905

(This space for State Use)

APPROVED BY Mark Ashley TITLE Geologist DATE 1-19-93

CONDITIONS OF APPROVAL, IF ANY:

NSL # R-9915

NOTIFY N.M.O.C.D. IN SUFFICIENT TIME TO WITNESS CEMENTING THE 13 3/8 CASING

APPROVAL VALID FOR 180 DAYS
PERMIT EXPIRES 7-19-93
UNLESS DRILLING UNDERWAY

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT
All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
MEWBOURNE OIL COMPANY	CHALK BLUFF 36 STATE	1

Unit Letter	Section	Township	Range	County
M	36	17 SOUTH	27 EAST NMPM	EDDY

Actual Footage Location of Well:
990 feet from the WEST line and 660 feet from the SOUTH line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3635	Morrow	Illinois Camp Morrow North	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

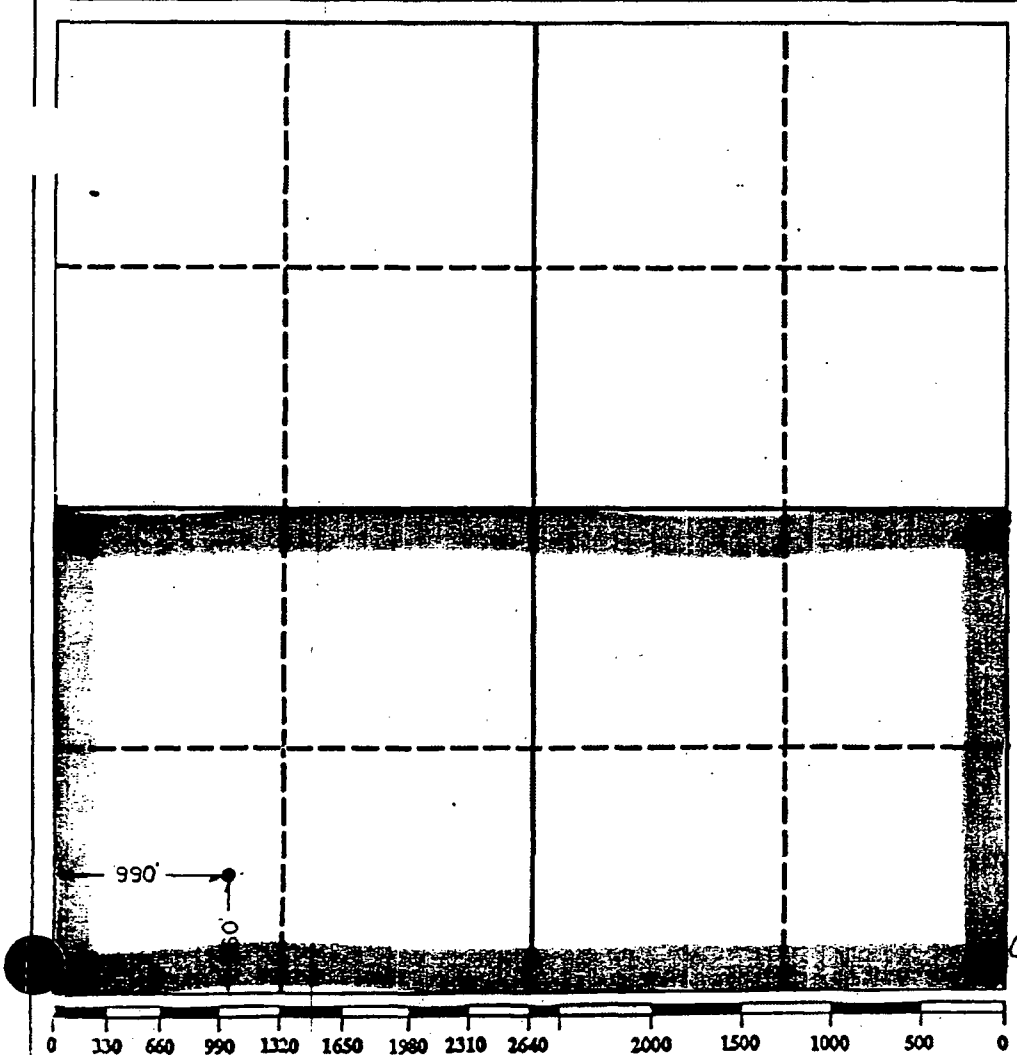
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

[X] Yes [ ] No If answer is "yes" type of consolidation Communitization

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: Bill Pierce

Printed Name: Bill Pierce

Position: Drilling Superintendent

Company: Mewbourne Oil Company

Date: October 27, 1992

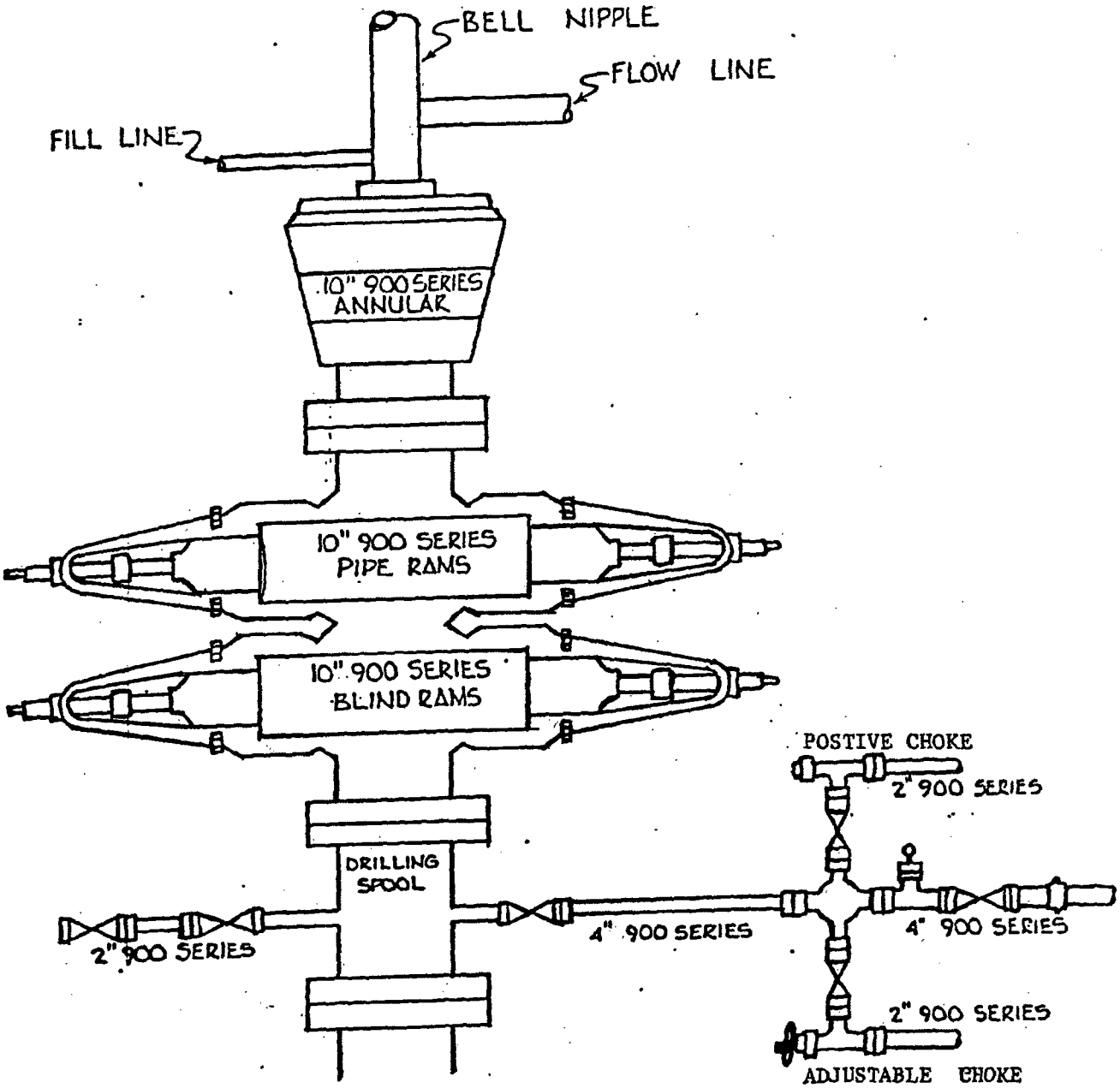
SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 10/19/92

Signature & Seal of Professional Surveyor

Certificate No. 3640



Mewbourne Oil Company
Chalk Bluff "36" State #1
660' FSL & 990' FWL
Section 36-T17S-R27E
Eddy County, New Mexico
Lease Number E-379-4

FIELD REPORT FOR CEMENTING OF WELLS

OIL CONSERVATION DIVISION

API 30-015-27286

Operator	Lease	Well #
Mewbourne Oil Co.	Chalk Bluff "36" St.	1

Location of Well	Unit	Section	Township	Range	County
	M	36	17	27	Eddy

Drilling Contractor	Type of Equipment
WEK Drilling	Rotary

APPROVED CASING PROGRAM

* Witness

Size of Hole	Size of Casing	Weight Per Foot	New or Used	Depth	Sacks Cement
17 1/2	* 13 3/8	48 #		400 ±	400 Circ
12 1/4	9 5/8	36 #		2600 ±	700 Surf
8 3/4	5 1/2	17 #		10,300±	600 Top of ABO

Casing Data:

Surface ____ joints of 13 3/8" inch 48 # Grade H-40

(Approved) (Rejected) ____

nspected by MCS. date Jan 2-93

Cementing Program

Size of hole 17 1/2" Size of Casing 13 3/8" Sacks cement required ____

Type of Shoe used guide Float collar used insert Btm 3 jts welded yes

TD of hole 400' Set 400' Feet of 13 3/8" Inch 48 # Grade H-40

(New) used csg. @ 400' with 200 2%cc sacks neat cement around shoe

+ 230 sax Halliburton Lite additives 1/4# flocele, 5# gilsonite, 2%cc

Plug down @ 8:45 (AM) (PM) Date JAN. 3-1992

Cement circulated Yes No. of Sacks 30 *

Cemented by Halliburton Witnessed by Mike Stubblefield

Temp. Survey ran @ ____ (AM) (PM) Date ____ top cement @ ____

Casing test @ ____ (AM) (PM) Date ____

Method Used ____ Witnessed by ____

Checked for shut off @ ____ (AM) (PM) Date ____

Method used ____ Witnessed by ____

Remarks: * cement fell back after Plug Down.

Ready mixed cmt top to surface 2 yards.

4 centralizers

Lost circ. @ 349'

Submit 3 Copies to Appropriate District Office

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

FEB 9 1993

O. C. D.

Form C-103
Revised 1-1-89

C15F

WELL API NO.
30-015-27286

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-379-4

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

1. Type of Well:
OIL WELL ☐ GAS WELL ■ OTHER

2. Name of Operator
Mewbourne Oil Company ✓

8. Well No.
1

3. Address of Operator
P. O. Box 5270 Hobbs, New Mexico 88241

9. Pool name or Wildcat
Illinois Camp Morrow North

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line

Section 36 Township 17S Range 27E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	■	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	■		
OTHER:	☐			OTHER:	☐		

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

2-2-93: MIRU WEK Drilling Co. Rig #2. Spudded 17 1/2" surface hole @ 6:00 P. M. MST.

2-3-93: Drilled 17 1/2" surface hole to 400' K. B. Ran 9 jts. of 13 3/8", 48#, J-55, STC new casing to 400'. Howco cemented w/100 sks. of Class "C" containing 10#/sk. Cal-Seal + 5#/sk. Gilsonite + 1/2#/sk. Flocele + 2% $CaCl_2$ followed by 230 sacks of Class "C" Lite containing 1/4#/sk. Flocele + 5#/sk. Gilsonite + 2% $Cacl_2$, tailed in with 100 sacks of CLass "C" Neet containing 2% $CaCl_2$. Plug down to 353' @ 8:45 AM. MST. Circulated 30 sacks of cement to the pit. Cement job witnessed by Mike Stubblefield w/NMOCD office in Artesia. Cement slurry volume for lead cement was 580 cu. ft. Slurry volume for tail cement was 268 cu. ft. Total slurry volume was 848 cu. ft. Compressive strength for tail slurry is 1350 psi in 12 hrs. @ 70° F. Estimated formation temperature is 68° F, estimated slurry temp. was 70° F. NU BOP and WOC 13 1/2 hrs. Pressure tested blind rams, pipe rams and casing to 600# each for 30 min. w/rig pump. All held O. K.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 2/4/93

TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 505 393-5905

(This space for State Use)

APPROVED BY FEB 15 1993 TITLE DATE

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies to Appropriate District Office

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

FEB 09 1993
O. C. D.

Form C-103
Revised 1-1-89

C1ST DP

WELL API NO. 30-015-27286

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No. E-379-4

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Chalk Bluff "36" State

1. Type of Well: OIL WELL ☐ GAS WELL ■ OTHER

2. Name of Operator: Mewbourne Oil Company

8. Well No. 1

3. Address of Operator: P. O. Box 5270 Hobbs, New Mexico 88241

9. Pool name or Wildcat: Illinois Camp Morrow, North

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line

Section 36 Township 17S Range 27E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	■		
OTHER:	☐			OTHER:			☐

12. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

2-7-93: Drilled 12 1/4" Intermediate hole to 2603' K.B. Ran 58 jts. of 9 5/8", 36#, J-55, new LS casing and set @ 2603' K. B. Howco cemented w/950 sks. of Class "C" Lite containing 1/4#/sk. flocele + 8#/sk. salt followed by 200 sks. of Class "C" Neet cement containing 2% $CaCl_2$. Plug down to 2557' @ 6:15 P.M. MST 2-7-93. Circulated 50 sacks to pit. Lead slurry weighed 13.8#/gal. and yield was 1.66 cu. ft./sk. Slurry volume was 1520 cu. ft. Tail slurry weighed 14.8#/gal and yield was 1.36 cu. ft./sk. Slurry volume was 268 cu. ft. Total slurry volume was 1,754 cu. ft. Compressive strength for tail slurry is 1350 psi in 12 hrs. @ 70° F. Estimated formation temp. is 75° F, estimated slurry temp. was 72° F. WOC 12 hrs. NU BOP and pressure tested blind and pipe rams, and casing to 1,000# for 30 min. w/rig pump. All held O. K.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 2/8/93

TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 505 393-5905

(This space for State Use)

APPROVED BY ORIGINAL SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT II TITLE DATE FEB 15 1993

CONDITIONS OF APPROVAL, IF ANY:

Submit 3 Copies to Appropriate District Office

DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MAR 24 1993
O. C. D.

Form C-103
Revised 1-1-89

WELL API NO.
30-015-27286

5. Indicate Type of Lease STATE ■ FEE ☐

6. State Oil & Gas Lease No.
E-379-4

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

1. Type of Well: OIL WELL ☐ GAS WELL ■ OTHER

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
Box 5270 Hobbs, New Mexico 88241

9. Pool name or Wildcat
Illinois Camp Morrow, North

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line

Section 36 Township 17S Range 27E NMPM Eddy County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)
3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	■		
OTHER:	☐			OTHER:	☐		

12. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

2-24-93: Drilling 8 3/4" production hole. Lost complete returns @ 8250'. Spotted mud pills and spotted 150 sack cement plug. Regained partial returns.
3-5-93: Drilled to 9289'. Ran 215 joints of new 26#, N-80, 7" API casing and set @ 9253'. Casing stuck 36' off of bottom. Cemented 1st stage by Howco w/535 sacks of Class "H" containing 3% KCL + 1% Halad 322 + 5#/sk. Gilsonite + 5#/sk. SilicaLite + 10#/sk. Microbond. Opened D. V. tool @ 6654' and circulated 6 hrs. Cemented 2nd stage w/750 sacks of Class "H" Lite containing 1/4#/sk. Flocele followed by 335 sacks of Class "H" containing 8#/sk. SilicaLite + 1/4#/sk. Flocele + .6% Halad 322. Plug down to 6654' @ 5:00 PM 3-5-93. Circulated 56 sacks to the pit. 1st stage cement slurry weighed 14.8#/gal. with a yield of 1.53 cu. ft./sk. Total slurry volume was 818 cu. ft. BHT by logs was 123° F. Estimated slurry temp. was 73° F. Compressive strength of cement was 2025 psi in 12 hrs. 2nd. stage lead cement slurry yield was 1.85 cu. ft./sk. @ 12.7#/gal. Yield for slurry was 1387 cu. ft. Tail cement slurry yield was 1.75 cu. ft./sk. 13.6#/gal. Yield was 586 cu. ft. Total slurry volume was 1973 cu. ft. Estimated

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Superintendent DATE 3-22-93

TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 505 393-5905

(This space for State Use)
ORIGINAL SIGNED BY
MIKE WILLIAMS
SUPERVISOR, DISTRICT II

APPROVED BY _____ TITLE _____ DATE APR 5 1993

CONDITIONS OF APPROVAL, IF ANY:

formation temp. was 100° F, estimated slurry temp. was 72° F. Compressive strength for 2nd stage lead slurry in 12 hrs. was 1600 psi and tail slurry was 1900 psi. WOC 24 hrs. Drilled out D. V. Tool, float collar, and 1/2 of shoe joint. Pressure tested casing, blind rams, and pipe rams to 2,000# for 30 min. Held O. K.

Submit 3 Copies to Appropriate District Office

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-103
Revised 1-1-89

RECEIVED
MAR 24 1993
O.C.D.

WELL API NO. 30-015-27286

5. Indicate Type of Lease STATE [■] FEE [ ]

6. State Oil & Gas Lease No. E-379-4

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: Chalk Bluff "36" State

1. Type of Well: OIL WELL [ ] GAS WELL [■] OTHER

2. Name of Operator: Mewbourne Oil Company

8. Well No. 1

3. Address of Operator: P.O. Box 5270 Hobbs, New Mexico 88241

9. Pool name or Wildcat: Illinois Camp Morrow-North

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line

Section 36 Township 17S Range 27E NMPM County

10. Elevation (*Show whether DF, RKB, RT, GR, etc.*) 3635' GR

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	[ ]	PLUG AND ABANDON	[ ]	REMEDIAL WORK	[ ]	ALTERING CASING	[ ]
TEMPORARILY ABANDON	[ ]	CHANGE PLANS	[ ]	COMMENCE DRILLING OPNS.	[ ]	PLUG AND ABANDONMENT	[ ]
PULL OR ALTER CASING	[ ]			[redacted] CEMENT JOB	[■]		
OTHER:	[ ]			OTHER:	[ ]		

12. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

3/19/93 T.D. 6" hole @ 10,060'. Ran logs and 37 jts. of new 11.35#, N-80, 4-1/2" flush joint liner. Hung liner @ 10,057' KB. Howco cemented w/225 sks. of Class "H" containing 5% salt + 5% Halad 22-A + 5% CFR-3. Plug down to 10,012' @ 6:15 p.m. 03/19/93. Top of liner @ 8439' KB. Rig released @ 3:00 p.m. 03/20/93

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Bill Pierce TITLE Drilling Supt. DATE 03/22/93

TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 505 393-5905

This space for State Use)

APPROVED BY ORIGINAL/SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT II TITLE DATE APR 5 1993

CONDITIONS OF APPROVAL, IF ANY:

SEC 36 TWN 17 S RGE 27 E API # 30-015-27286

OPERATOR MEWBOURNE OIL CO

WELL NAME CARLSBAD 36 ST #1

STATE OCD TOPS AS PER MA DATE 4-23-93

Southeastern New Mexico			Northwestern New Mexico	
T. Anhy		T. Canyon 9327	T. Ojo Alamo	T. Penn. "B"
T. Salt		T. Strawn 8820	T. Kirtland-Fruitland	T. Penn. "C"
B. Salt		T. Atoka 9380	T. Pictured Cliffs	T. Penn. "D"
T. Yates 328		T. Miss 10040	T. Cliff House	T. Leadville
T. 7 Rivers 464		T. Devonian	T. Menefee	T. Madison
T. Queen 1088		T. Silurian	T. Point Lookout	T. Elbert
T. Grayburg 1360		T. Montoya	T. Mancos	T. McCracken
T. San Andres 1785		T. Simpson	T. Gallup	T. Ignacio Otzte
T. Glorieta 3155		T. McKee	Base Greenhorn	T. Granite
T. Paddock		T. Ellenburger	T. Dakota	T.
T. Blinebry		T. Gr. Wash	T. Morrison	T.
T. Tubb 4025		T. Delaware Sand	T. Todilto	T.
T. Drinkard 4855		T. Bone Springs	T. Entrada	T.
T. Abo 5120		T. Morrow Ln 9494	T. Wingate	T.
T. Wolfcamp 6702		T. " Clr 9624	T. Chinle	T.
T. Penn 8210		T.	T. Permain	T.
T. Cisco (Bough C)		T.	T. Penn "A"	T.

OIL OR GAS SANDS OR ZONES

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet .....

No. 2, from ..... to ..... feet .....

No. 3, from ..... to ..... feet .....

REMARKS:

KEN REYNOLDS—PRESIDENT
ARNIE NEWKIRK—VICE-PRESIDENT

WEK DRILLING CO., INC. — OIL WELL DRILLING CONTRACTORS

P. O. Box 1498 ROSWELL, NEW MEXICO 88202-1498
505/623-5070 ROSWELL, NM
505/746-2719 ARTESIA, NM

RECEIVED
APR 15 1993
O. C. D.

March 19,1993

Mewbourne Oil Company
P.O. Box 5270
Hobbs, N.M. 88240

RE: Chalk Bluff "36" State #1

Gentlemen:

The following is a Deviation Survey on the above referenced well located in Eddy County, New Mexico.

424' - 3/4°	4197' 2 3/4°	5411' - 3°	6415' - 2 3/4°	
920' - 3/4°	4290' - 2 3/4°	5505' - 3°	6915' - 1 3/4°	
1391' - 1°	4384' - 2 1/2°	5599' - 2 1/2°	7322' - 1 12/°	
1891' - 1 1/4°	4477' - 2 3/4°	5693' - 3°	7824' - 1 1/4°	
2396' - 1 3/4°	4572' - 2 1/2°	5787' - 2 1/2°	8274' - 1 1/4°	
2600' 2 1/4°	4664' - 2 1/4°	5882' - 3°	8702' - 1 1/2°	
2779' - 2°	4758' - 2°	5976' - 4°	8973' - 1 1/2°	
3193' - 1 3/4°	4851' - 2 1/2°	6039' - 4°	9289' - 1 1/2°	
3688' - 2 1/2°	4943' - 3 1/4°	6070' - 4°	9388' - 1 3/4°	
3814' - 2 3/4°	5036' - 3°	6132' - 3 3/4°	9833' - 2 1/2°	
3907' - 2 3/4°	5129' - 3 1/4°	6195' - 4°	10060' - 2 1/2°	T.D.
4001' - 2 1/2°	5223' - 3°	6258' - 3 1/4°		
4096' - 2 3/4°	5317' - 2 3/4°	6320' - 3°		

Sincerely,

Gary W. Chappell
Contracts manager

STATE OF NEW MEXICO)
)
COUNTY OF CHAVES)

The foregoing was acknowledged before me this 19th day of March 1993 by Gary W. Chappell.

MY COMMISSION EXPIRES

October 07, 1996

Linda Rogers
NOTARY PUBLIC

Submit to Appropriate
District Office
State Lease – 6 copies
Fee Lease – 5 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-105
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
APR 15 1993
O. C. D.

WELL API NO.
30-015-27[illegible]

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No.
E-379-4

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:
OIL WELL [ ] GAS WELL [X] DRY [ ] OTHER

b. Type of Completion:
NEW WELL [X] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF RESVR [ ] OTHER

7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
P.O. Box 5270 Hobbs, New Mexico 88241

9. Pool name or Wildcat
N. Illinois Camp Morrow

4. Well Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line

Section 36 Township 17S Range 27E NMPM Eddy County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF & RKB, RT, GR, etc.)	14. Elev. Casinghead
02/02/93	03/17/93	03/30/93	3650' KB 3635' GR	3635' GR

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
10,060'	10,012'	2		X	

19. Producing Interval(s), of this completion - Top, Bottom, Name
9842'-9886': Lower Morrow

20. Was Directional Survey Made
Yes

21. Type Electric and Other Logs Run
SDL-DSN, DLL-MSFL-GR, Sonic, CBL

22. Was Well Cored
No

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	48#/ft.	399'	17-1/2"	530 sx. Class "C"	Circulated
9-5/8"	36#/ft.	2603'	12-1/4"	1150 sx. Class "C"	Circulated
7"	26#/ft.	9253'	8-3/4"	1620 sx. Class "H"	Circulated

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
4-1/2"	8439'	10,057'	225 sx.	

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-7/8-2-3/8"	9803'	9702'

26. Perforation record (interval, size, and number)

9842'-9856' 14' 4 spf 49 holes
9864'-9886' 22' 4 spf 80 holes

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED

PRODUCTION

28.

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
03/30/93	Flowing	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
03/31/93	24 Hours	1/4"		10	1500	0	150 MCF/BBL

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)
1500#	Packer		10	1500	0	55.0

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
Sold

Test Witnessed By
Erick W. Nelson

30. List Attachments
Logs

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Erick W. Nelson Printed Name Erick W. Nelson Title Engineer Date 04/05/93

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon	8328'	T. Ojo Alamo		T. Penn. "B"	
T. Salt		T. Strawn	8822'	T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka	9380'	T. Pictured Cliffs		T. Penn. "D"	
T. Yates	328'	T. Miss	10040'	T. Cliff House		T. Leadville	
T. 7 Rivers	464	T. Devonian		T. Menefee		T. Madison	
T. Queen	1007'	T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg	1322'	T. Montoya		T. Mancos		T. McCracken	
T. San Andres	1784'	T. Simpson		T. Gallup		T. Ignacio Otzte	
T. Glorieta	3164'	T. McKee		Base Greenhorn		T. Granite	
T. Paddock		T. Ellenburger		T. Dakota		T.	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	
T. Tubb	4028'	T. Delaware Sand		T. Todilto		T.	
T. Drinkard	4870'	T. Bone Springs		T. Entrada		T.	
T. Abo	5120'	T. Morrow Lime	9494	T. Wingate		T.	
T. Wolfcamp	6706'	T. Morrow Clastics	9674	T. Chinle		T.	
T. Penn	8208'	T.		T. Permain		T.	
T. Cisco (Bough C)		T.		T. Penn "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from 9842' to 9856' No. 3, from ..... to .....

No. 2, from 9864' to 9886' No. 4, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from None to ..... feet .....

No. 2, from ..... to ..... feet .....

No. 3, from ..... to ..... feet .....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology	From	To	Thickness in Feet	Lithology
0'	1600'	1600'	Redbed & Anhydrite				
1600'	6700'	5100'	Dolomite Sandston				
6700'	8200'	1500'	Limestone & Shale				
8200'	8600'	400'	No Returns				
8600'	9700'	1100'	Lime & Shale				
9700'	9900'	200'	Sand & Shale				
9900'	10060'	160'	Shale				

Laboratory Services
1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Newbourne Oil Company
Attention: Mr. Jay Prudhomme
P. O. Box 5270
Hobbs, New Mexico 88241

SAMPLE IDENTIFICATION: Chalk Bluff 36 State #1
COMPANY: Newbourne Oil Co.
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 05-18-93
ANALYSIS DATE: 05-18-93
PRESSURE - PSIG
SAMPLE TEMP. °F
ATMOS. TEMP. °F

GAS (XX) LIQUID ( )
SAMPLED BY:
ANALYSIS BY: Vickie Walker

REMARKS:

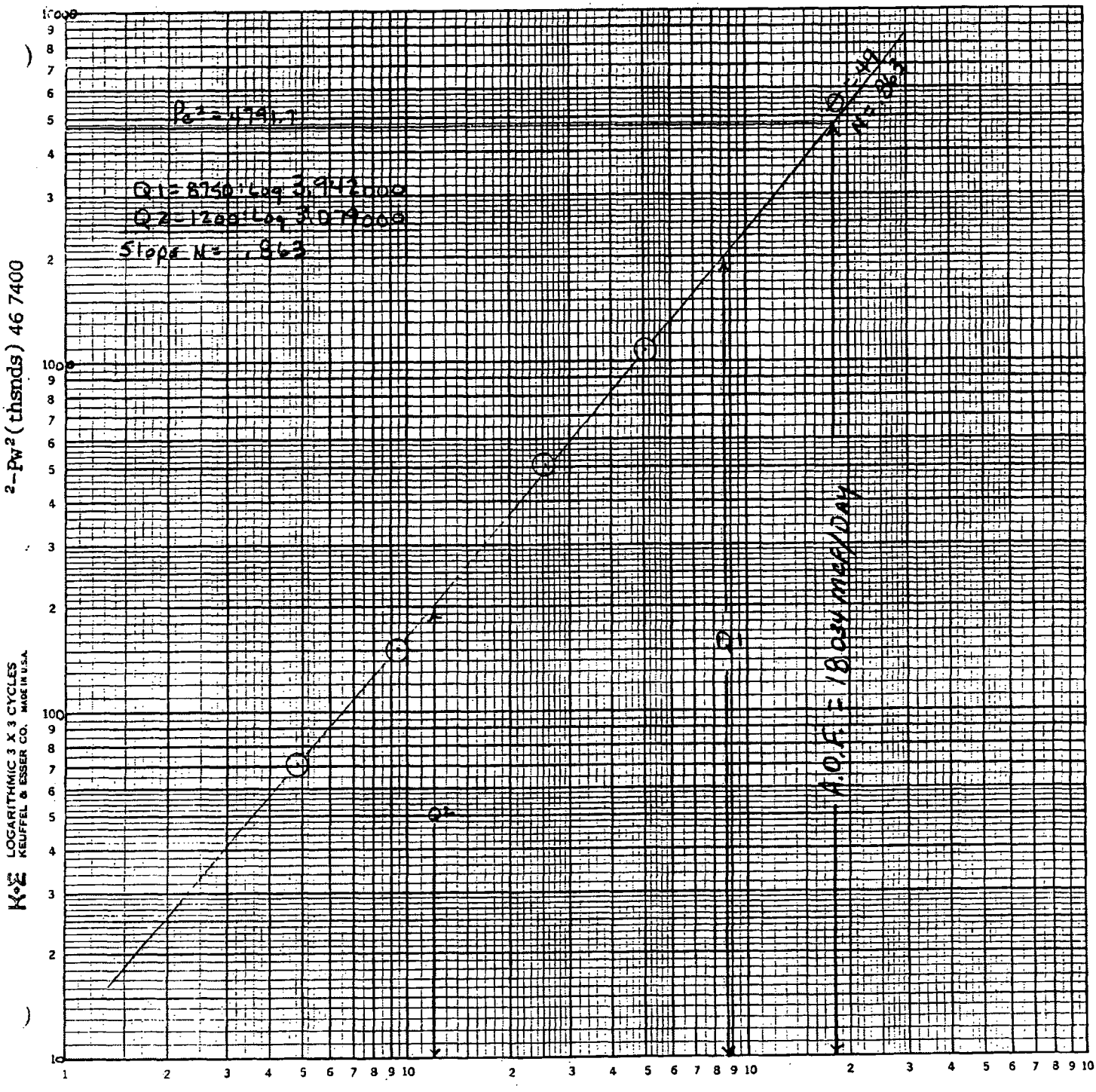
COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	0.41	
Carbon Dioxide	(CO2)	0.41	
Methane	(C1)	88.13	
Ethane	(C2)	7.02	1.866
Propane	(C3)	2.44	0.669
I-Butane	(IC4)	0.31	0.102
N-Butane	(NC4)	0.59	0.184
I-Pentane	(IC5)	0.19	0.070
N-Pentane	(NC5)	0.15	0.055
Hexane	(C6)	0.35	0.150
Heptanes Plus	(C7+)	0.00	0.000
		100.00	3.096

BTU/CU.FT.				
AT 14.696	DRY	1135	MOLECULAR WT.	18.6894
AT 14.650	DRY	1132		
AT 14.650	WET	1109	26# GASOLINE -	0.337
AT 15.025	DRY	1161		
AT 15.025	WET	1166		

SPECIFIC GRAVITY -
CALCULATED 0.645
MEASURED

MEWBOURNE OIL COMPANY
Chalk Bluff 36 State, Well #1
36-17S-27E
Eddy County, New Mexico
5-18-93



Q MCF/DAY

Submit in duplicate to appropriate district office
See Rule 401 & Rule 1122

State of New Mexico
Energy, Minerals and Natural Resources Departm

RECEIVED
MAY 24 1992
O. C. D.

Form C-122
Revised 4-1-91

C/S File

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: MEWBOURNE OIL COMPANY				Lease or Unit Name: CHALK BLUFF 36 STATE	
Type Test: [X] Initial [ ] Annual [ ] Special				Test Date: 5-18-93	Well No.: 1
Completion Date: 3-18-93	Total Depth: 10060	Plug Back TD: 10009		Elevation: 3635	Unit Ltr. - Sec. - TWP - Rge.: 36-17S-27E
Csg. Size: 4½	Wt.: 11.60	d: 4.052	Set At: 10012	Perforations: From: 9842 To: 9856	County: EDDY
Tbg. Size: 2 3/8 / 2 7/8	Wt.: 6.5 / 4.7	d: 2.441 / 1.91	Set At: 8024 / 9688	Perforations: From: 9864 To: 9886	Pool: NORTH ILLINOIS
Type Well - Single - Bradenhead - G.G. or G.O. Multiple: single			Packer Set At: 9688		Formation: MORROW
Producing Thru: tbg.	Reservoir Temp. °F	Mean Annual Temp. °F: 60°	Baro. Press - P_a: 13.2		Connection: Transwestern

L	H	Gg	% CO_2	% N_2	% H_2S	Prover	Meter Run	Taps
9864	9864	.645	.41	.41			3.068	Flg.

	FLOW DATA					TUBING DATA		CASING DATA		
NO.	Prover Line Size	X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	Duration of Flow
SI						2140		Pkr.		
1.	3.068	X 1.000	425	15.00	105	2125		"		60 Min
2.	3.068	X 1.000	425	57.00	90	2100		"		60 Min
3.	3.068	X 1.750	425	38.00	82	1990		"		60 Min
4.	3.068	X 2.000	440	74.00	75	1800		"		60 Min

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, Fpv.	Rate of Flow Q, Mcfd
1.	4.789	81.07	438.2	.9594	1.245	1.034	480
2.	4.789	158.04	438.2	.9680	1.245	1.038	947
3.	15.61	129.04	438.2	.9795	1.245	1.039	2552
4.	21.32	183.13	453.2	.9859	1.245	1.047	5018
5.							

NO.	P_r	Temp. °R	T_r	Z
1.	.654	565	1.519	.935
2.	.654	550	1.478	.929
3.	.654	542	1.457	.926
4.	.676	535	1.438	.913
5.				

Gas Liquid Hydrocarbon Ratio: 62.479 Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: 53 Deg.
Specific Gravity Separator Gas: .645
Specific Gravity Flowing Fluid: XXXXX — XXXXXXXXX / GMIX .693
Critical Pressure: 670 P.S.I.A. — 669 P.S.I.A.
Critical Temperature: 372 R — 388 R

P_c 2189.0 P_c^2 4791.7

NO.	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1.		2172.6	4720.2	71.5
2.		2153.7	4638.4	153.3
3.		2068.9	4280.3	511.4
4.		1924.4	3703.3	1088.4
5.				

1) $\frac{P_c^2}{P_c^2 - P_w^2} = 4.403$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 3.594$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n = 18.034$

Absolute Open Flow: 18,034 Mcfd @ 15.025 | Angle of Slope θ: 49 | Slope, n: .863

Remarks: 6 BBLS of 53 Gravity Oil During Test
Calculated with B.H.P. Instruments.

Approved By Division	Conducted By:	Calculated By:	Checked By:
	PRO WELL TESTERS	KS	KS

Submit 5 Copies
Appropriate District Office
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED
APR 15 1993
O. C. D.

Form C-104
Revised 1-1-89
See Instructions at Bottom of Page

clsr LT GT

REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

I.

Operator	Well API No.
Mewbourne Oil Company	30-015-27286
Address P.O. Box 5270 Hobbs, New Mexico 88241	

Reason(s) for Filing (Check proper box)

New Well	[X]	Change in Transporter of:	
Recompletion	[ ]	Oil [ ]	Dry Gas [ ]
Change in Operator	[ ]	Casinghead Gas [ ]	Condensate [ ]

[ ] Other (Please explain)

If change of operator give name and address of previous operator _____

II. DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease State, ~~Federal or Fee~~	Lease No.
Chalk Bluff "36" State	1	N. Illinois Camp Morrow		E-379-4

Location
Unit Letter M : 990 Feet From The West Line and 660 Feet From The South Line
Section 36 Township 17S Range 27E , NMPM, Eddy County

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil [ ] or Condensate [X]	Address (Give address to which approved copy of this form is to be sent)
Amoco Pipeline ICT	Oil Tender Dept. Box 702068 Tulsa, Ok 74170-206
Name of Authorized Transporter of Casinghead Gas [ ] or Dry Gas [X]	**Address (Give address to which approved copy of this form is to be sent)**
Transwestern Pipeline Company	P.O. Box 1188 Houston, Texas 77251

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When ?
	M	36	17S	27E	Yes	03/30/93

If this production is commingled with that from any other lease or pool, give commingling order number: _____

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v	Diff Res'v
		X	X					

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
02/02/93	03/30/93	10,060'	10,012'
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
3650' KB 3635' GR	Morrow	9,842'	9,803'
Perforations			**Depth Casing Shoe**
9842'-9856', 9864'-9886'			

TUBING, CASING AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
17-1/2"	13-3/8"	399'	530 sx. Class "C"
12-1/4"	9-5/8"	2603'	1150 sx. Class "C"
8-3/4"	7"	9253'	1620 sx. Class "C"
6"	4-1/2" Liner	10057'	225 sx. Class "H"

V. TEST DATA AND REQUEST FOR ALLOWABLE

OIL WELL *(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours.)*

Date First New Oil Run To Tank	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	Post ID-2 4-30-93 comp + AR
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas- MCF

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
1500	24 Hours	6.6	55
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**
Back Pressure	2700#	Packer	1/4"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature _____
Erick W. Nelson Engineer
Printed Name Title
04/02/93 (505) 393-5905
Date Telephone No.

OIL CONSERVATION DIVISION

Date Approved APR 26 1993

By _____

Title SUPERVISOR, DISTRICT II

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.
2) All sections of this form must be filled out for allowable on new and recompleted wells.
3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
4) Separate Form C-104 must be filed for each pool in multiply completed wells.

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

C15F

Form C-101
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

[X] AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1Operator Name and Address	2OGRID Number
Mewbourne Oil Company P. O. Box 5270 Hobbs, NM 88241	14744
	3API Number 30 - 0 15-27286

4Property Code	5Property Name	6Well No.
7871	Chalk Bluff "36" State	1

7Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
M	36	17S	27E		660	South	990	West	Eddy

8Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County

9Proposed Pool 1	10Proposed Pool 2
WC [redacted] Atoka Gas Pool	

11Work Type Code	12Well Type Code	13Cable/Rotary	14Lease Type Code	15Ground Level Elevation
P	G	R	S	3635
16Multiple	**17Proposed Depth**	**18Formation**	**19Contractor**	**20Spud Date**
No	10060	Atoka	Key Energy Services	09-15-99

21Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2"	13-3/8"	48#	399	530	Surface
12-1/4"	9-5/8"	36#	2603	1150	Surface
8-3/4"	7"	26#	9253	1620	Surface
6"	4-1/2" Liner	11.6#	10057	225	TOL @ 8439'

22Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

1) Temporarily abandon Morrow perforations 9842-9856' and 9864-9886' by setting a cast iron bridge plug at 9800' and dumping 20' cement plug on top.

2) Test the Atoka Formation through perforations 9442-9446' and 9452-9464'.

3) File for commingling permit if well conditions warrant.

6" 5000 psi WP dual hydraulic BOP's will be utilized on this project. Any produced fluids will be diverted through a 5000 psi WP adjustable choke to a steel tank via 2" steel lines.

23I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: Jerry Elgin

Printed name: Jerry Elgin

Title: District Manager

OIL CONSERVATION DIVISION

Approved By: ORIGINAL SIGNED BY TIM W. GUM

Title: DISTRICT II SUPERVISOR

Approval Date: 8-17-99

Expiration Date: 8-17-00

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-102
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☒ AMENDED REPORT

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WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015-27286		North Illinois Camp Atoka Gas Pool

4 Property Code	5 Property Name	6 Well Number
	Chalk Bluff "36" State	1

7 OGRID No.	8 Operator Name	9 Elevation
14744	Mewbourne Oil Company	3635

10 Surface Location

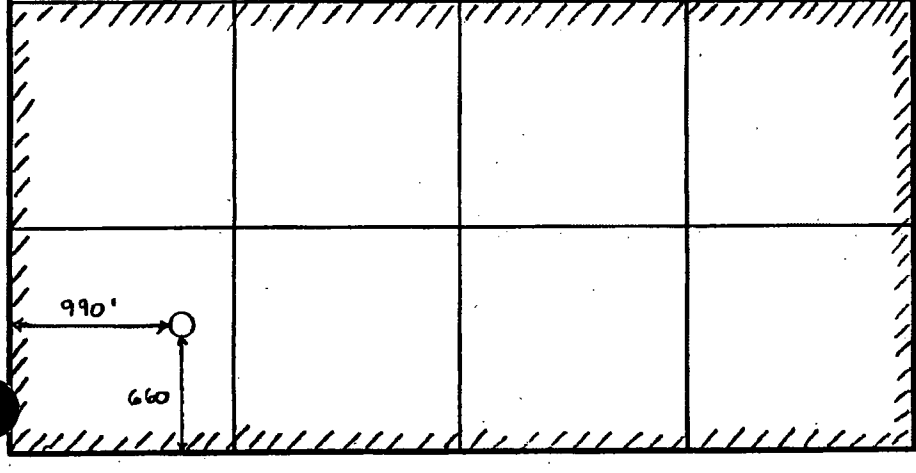
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
M	36	17S	27E		660	South	990	West	Eddy

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
320.00		C	

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief

Signature
Jerry Elgin
Printed Name
District Manager
Title
08-13-99
Date

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

10-19-92
Date of Survey
Signature and Seal of Professional Surveyer:

Original signed by Herschel Jones
Certificate Number

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

NEW MEXICO ENERGY, MINERALS & NATURAL RESOURCES DEPARTMENT

ADMINISTRATIVE ORDER DHC-2464

Mewbourne Oil Company
P.O. Box 7698
Tyler, Texas 75711

Attention: Mr. K. M. Calvert

Chalk Bluff "36" State No. 1
API No. 30-015-27286
Unit M, Section 36, Township 17 South, Range 27 East, NMPM,
Eddy County, New Mexico.
Wildcat-Atoka (Gas –N/A), and
North Illinois Camp-Morrow (Gas – 78890) Pools

Dear Mr. Calvert:

Reference is made to your recent application for an exception to Rule 303.A. of the Division Rules and Regulations to permit the above described well to commingle production from the subject pools in the wellbore.

It appearing that the subject well qualifies for approval for such amendment pursuant to the provisions of Rule 303.C., and that reservoir damage or waste will not result from such downhole commingling, and correlative rights will not be violated thereby, you are hereby authorized to commingle the production as described above and any Division Order which authorized the dual completion and required separation of the zones is hereby placed in abeyance.

The maximum amount of gas which may be produced daily from the well shall be determined by Division Rules and Regulations or by the gas allowable for each respective prorated gas pool as printed in the Division's Southeast Gas Proration Schedule.

Assignment of allowable to the well and allocation of production from the well shall be on the following basis:

Wildcat-Atoka Gas Pool	Oil-100%	Gas-73%
North Illinois Camp-Morrow Gas Pool	Oil-0%	Gas-27%

78890

REMARKS: The operator shall notify the Artesia District Office of the Division upon implementation of the commingling process.

Pursuant to Rule 303.H., the commingling authority granted herein may be rescinded by the Division Director if conservation is not being best served by such commingling.

Approved at Santa Fe, New Mexico on this 21st day of September, 1999.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Lori Wrotenbery by DRC

LORI WROTENBERY
Director

S E A L

LW/DRC

cc: Oil Conservation Division - Artesia
State Land Office-Oil & Gas Division

C15F

Submit 3 Copies to Appropriate District Office

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION

2040 Pacheco St.
Santa Fe, NM 87505

WELL API NO.	30-015-27286
Indicate Type of Lease	STATE ☒ FEE ☐
State Oil & Gas Lease No.	E-379-4

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

Lease Name or Unit Agreement Name	Chalk Bluff 36 State
Type of Well: OIL WELL ☐ GAS WELL ☒ OTHER	
Name of Operator	Mewbourne Oil Company
Well No.	1
Address of Operator	PO Box 5270, Hobbs, New Mexico 88240
Pool name or Wildcat	Wildcat Atoka

Well Location
Unit Letter M 660 Feet From The South Line and 990 Feet From The West Line

Section 36 Township 17s Range 27e NMPM Eddy County

Elevation (Show whether DF, RKB, RT, GR, etc.)
3625 GL

11 Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ANBANDONMENT	☐
PULL OR ALTER CASING	☐			CASING TEST AND CEMENT JOB	☐		
OTHER:	☐			OTHER: Test Atoka	☒		

12 Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

9-21-99...POOH w/ Tbg.
9-22-99...Set RBP over Morrow perfs. Perforate Atoka perfs @ 9466-84. GIH w/ Pkr & tbg.
9-24-99...Acidize new Atoka perfs w/ 3000 gals 7 1/2% HCL adding N2 w/ Ball Sealers. Swab & Flow test.
10-18-99...Frac Atoka perfs w/ 30,000 gals 70 Quality Foam using 10,000 lbs 20/40 Interprop. Flow back & clean-up.
10-19-99...Turn to sales.

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I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE NM Young TITLE Consultant DATE 11-01-99

TYPE OR PRINT NAME NM Young TELEPHONE NO. 505 393-5905

(This space for State Use)

APPROVED BY Steve W. Gum BGA TITLE District Supervisor DATE 11-5-99

CONDITIONS OF APPROVAL, IF ANY:

Submit to Appropriate
District Office
State Lease - 6 copies
Fee Lease - 5 copies
DISTRICT I
Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 Pacheco St.
Santa Fe, NM 87505

Form C-105
Revised 1-1-89

WELL API NO.
30-015-27286

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No.
E-379-4

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well:
OIL WELL [ ] GAS WELL [X] DRY [ ] OTHER

b. Type of Completion:
NEW WELL [ ] WORK OVER [ ] DEEPEN [ ] PLUG BACK [X] DIFF RESVR [ ] OTHER

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7. Lease Name or Unit Agreement Name
Chalk Bluff "36" State

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
P. O. Box 5270, Hobbs, NM 88241

9. Pool name or Wildcat SE Logan Draw Atoka
~~Wildcat Atoka Gas Pool~~

4. Well Location
Unit Letter M 660 Feet From The South Line and 990 Feet From The West Line

Section 36 Township 17S Range 27E NMPM Eddy County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF & RKB, RT, GR, etc.)	14. Elev. Casinghead
02/03/93	03/19/93	09/24/99	3635' GR	3635'

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
10060'	9780'	NA		X	

19. Producing Interval(s), of this completion - Top, Bottom, Name
9466-9470' & 9476-9484', Atoka

20. Was Directional Survey Made
No

21. Type Electric and Other Logs Run
DIL

22. Was Well Cored
No

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB/FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	48#	399'	17-1/2"	530 sks Class C	None
9-5/8"	36#	2603'	12-1/4"	1150 sks Class C	None
7"	26#	9253'	8-3/4"	1620 sks Class H	None

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
4-1/2"	8439'	10057'	225	

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-3/8"	9407'	9407'

26. Perforation record (interval, size, and number)
9466-9484', 0.44" entry hole diameter, 56 holes total

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
9466-9484'	Fracture stimulated with 10000# IP 20/40

PRODUCTION

28.

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
09/24/99	Flowing	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - BbL.	Gas - MCF	Water - BbL.	Gas - Oil Ratio
10/18/99	24	24/64"		2	317	2	158500

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - BbL.	Gas - MCF	Water - BbL.	Oil Gravity - API - (Corr.)
45	Packer		2	317	2	63.8

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
Sold

Test Witnessed By
Mr. Miller

30. List Attachments

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Jerry Elgin Printed Name Jerry Elgin Title District Manager Date 10/19/99

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-104
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
5 Copies

☒ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

[1] Operator name and Address	[2] OGRID Number
Mewbourne Oil Company P. O. Box 5270 Hobbs, NM 88241	14744
	[3] Reason for Filing Code: Plug Back

[4] API Number	[5] Pool Name	[6] Pool Code
30 - 0 15-27288	~~Wildcat Atoka Gas Pool~~ Logan Draw; Atoka, SE	96979
[7] Property Code	**[8] Property Name**	**[9] Well Number**
7871	Chalk Bluff "36" State	1

II. [10] Surface Location

Ul or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
M	36	17S	27E		660	South	990	West	Eddy

[11] Bottom Hole Location

Ul or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County

[12] Lse Code	[13] Producing Method Code	[14] Gas Connection Date	[15] C-129 Permit Number	[16] C-129 Effective Date	[17] C-129 Expiration Date
	Flowing	10/24/94			

III. Oil and Gas Transporters

[18] Transporter OGRID	[19] Transporter Name and Address	[20] POD	[21] O/G	[22] POD ULSTR Location and Description
138648	Amoco Pipeline Company Tulsa, OK	1923810	O	
000990	Transwestern Pipeline Company Houston, TX	2819523	G	

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IV. Produced Water

[23] POD	[24] POD ULSTR Location and Description
1923850	

V. Well Completion Data

[25] Spud Date	[26] Ready Date	[27] TD	[28] PBTD	[29] Perforations	[30] DHC, DC, MC
02/03/93	09/24/99	10060	9780	9466-9484'	

[31] Hole Size	[32] Casing & Tubing Size	[33] Depth Set		[34] Sacks Cement
17-1/2"	13-3/8"	399'	Post ID-1	530
12-1/4"	9-5/8"	2603'	10-29-99	1150
8-3/4"	7"	9253'	comp Atk	1620
6-1/8"	4-1/2"	10057'		225

VI. Well Test Data

[35] Date New Oil	[36] Gas Delivery Date	[37] Test Date	[38] Test Length	[39] Tbg. Pressure	[40] Csg. Pressure
09/24/99	09/24/99	10/18/99	24 hours	45	Packer
[41] Choke Size	**[42] Oil**	**[43] Water**	**[44] Gas**	**[45] AOF**	**[46] Test Method**
24/64"	2	2	317		Sold

[47] I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature: Jerry Elgin

Printed name: Jerry Elgin

Title: District Manager

Date: 10/20/99 Phone: 505-393-5905

OIL CONSERVATION DIVISION

Approved by: ORIGINAL SIGNED BY TIM W. GUM
DISTRICT II SUPERVISOR

Title:

Approval Date: 10-27-99

[48] If this is a change of operator fill in the OGRID number and name of the previous operator

Previous Operator Signature	Printed Name	Title	Date

COMPANY : MEMBOURNE OIL CO. LEASE : C. B. 30 ST. WELL NO. : 1

UNIT : M SECTION : 36 TOWNSHIP : 17

L : 9385 H : 9366 L/H : 1 G/GMIX : 0.696

%CO2 : 4.586 %N2 : 0.788 H2S : DATE :10 27 99

d : 1.995 Fr :0.018231 GH : 6532.0 RANGE : 27

VOL 1 : 89 PSIA 1 : 1332.2 RESV.TEMP 167.9

VOL 2 : 156 PSIA 2 : 1262.2

VOL 3 : 212 PSIA 3 : 1178.2 SHUT-IN PR= 1398.2

VOL 4 : 276 PSIA 4 : 1068.2

PCR : 652

TCR : 381

LINE	RATE 1		RATE 2		RATE 3		RATE 4	
	`1ST	`2ND	`1ST	``2ND	`1ST	`2ND	`1ST	`2ND
1 QM	0.089	0.089	0.156	0.156	0.212	0.212	0.276	0.276
2 TW	534	534	534	534	534	534	534	534
3 Ts	627.9	627.9	627.9	627.9	627.9	627.9	627.9	627.9
4 T	580.9	580.9	580.9	580.9	580.9	580.9	580.9	580.9
PR (est)	2.04		1.94		1.81		1.64	
5 Z(est)	0.809	0.793	0.815	0.799	0.824	0.807	0.835	0.819
6 TZ	469.9	460.5	473.7	464.1	478.5	468.9	485.3	476.0
7 GH/TZ	13.901	14.185	13.790	14.074	13.650	13.929	13.458	13.724
8 eS	1.684	1.702	1.677	1.695	1.668	1.686	1.656	1.673
9 1-e-S	0.406	0.413	0.404	0.410	0.401	0.407	0.396	0.402
10 Pt	1332.2	1332.2	1262.2	1262.2	1178.2	1178.2	1068.2	1068.2
11 Pt2 /1000	1774.8	1774.8	1593.1	1593.1	1388.2	1388.2	1141.1	1141.1
12 Fr	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231	0.018231	0.0182311
`=FrTZ	8.567	8.395	8.636	8.462	8.724	8.549	8.848	8.677
cQm	0.76	0.75	1.35	1.32	1.85	1.81	2.44	2.39
15 L/H(FcQm)	0.6	0.6	1.8	1.7	3.4	3.3	6.0	5.7
16 Fw	0.236154	0.230308	0.732800	0.714522	1.370485	1.336601	2.363611	2.3073869
17 Pw2	1775.0	1775.0	1593.9	1593.9	1389.5	1389.5	1143.4	1143.4
18 Ps2	2989.4	3021.4	2673.2	2701.8	2318.3	2342.6	1894.0	1912.9
19 Ps	1729.0	1738.2	1635.0	1643.7	1522.6	1530.6	1376.2	1383.1
20 P	1530.6	1535.2	1448.6	1453.0	1350.4	1354.4	1222.2	1225.6
21 Pr	2.35	2.35	2.22	2.23	2.07	2.08	1.87	1.88
22 Tr	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
23 Z	0.793	0.792	0.799	0.799	0.807	0.807	0.819	0.819

PC = 1398.2 PC2 = 1955.0

Pt2 =	1774.8	Pw =	1332.3
	1593.1		1262.5
	1388.2		1178.8
	1141.1		1069.3

Pc2-Pw2=	180.0	Pw2 =	1775.0
	361.1		1593.9
	565.5		1389.5
	811.6		1143.4

n = 0.747

Pc2/(Pc2-Pw2) =	10.862
	5.414
	3.457
	2.409

[Pc2/Pc2-Pw2]n =	5.936
	3.529
	2.525
	1.928

AOF= Q 0.528

0.551

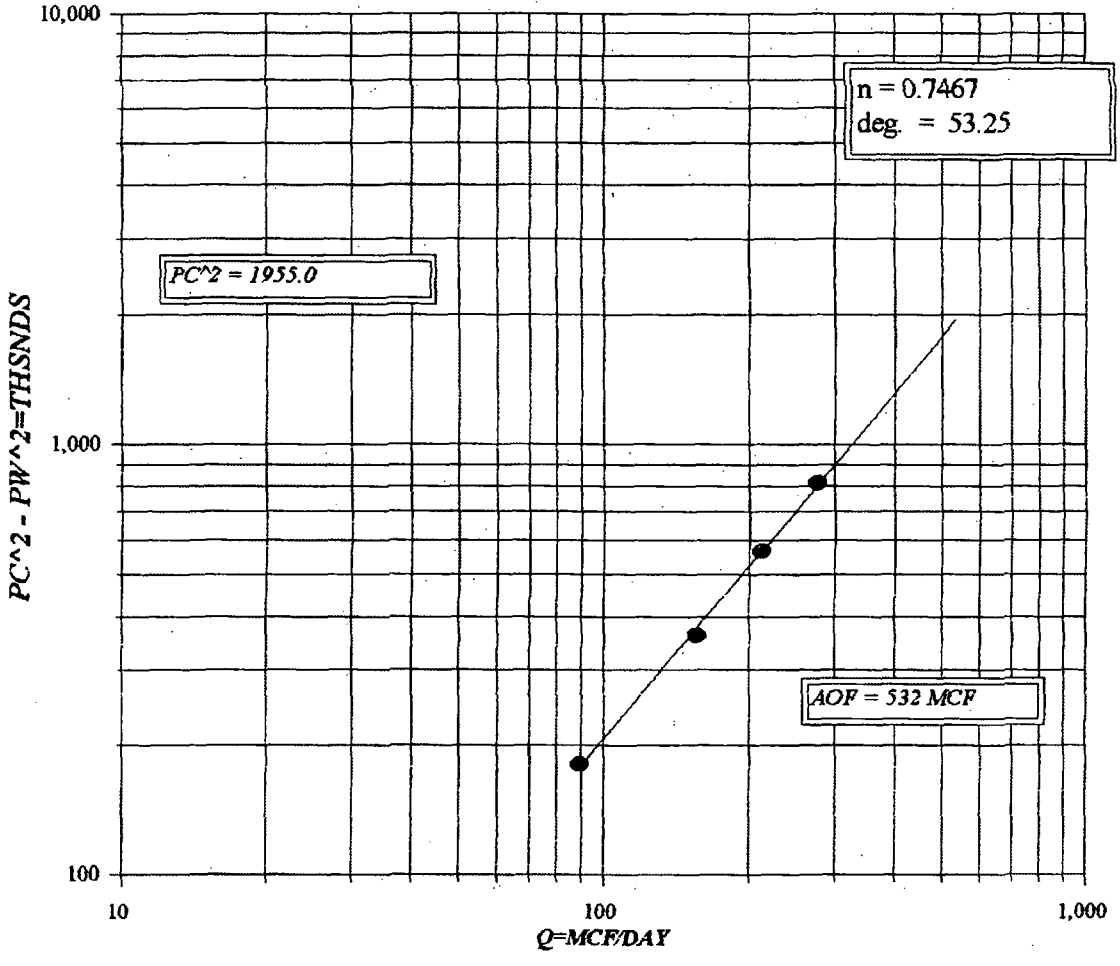
0.535

0.532

FORM C122-D

MEWBOURNE OIL COMPANY

CHALK BLUFF 36 ST. # 1



Submit in duplicate to appropriate district office
See Rule 401 & Rule 1122

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-122
Revised 4-1-91

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: Mewbourne Oil Company						Lease or Unit Name: Chalk Bluff 36 State			
Type Test: [X] Initial [ ] Annual [ ] Special						Test Date: 10/27/99		Well No.: 1	
Completion Date: 10/16/99		Total Depth: 10060		Plug Back TD: 9780		Elevation: 3563' GL		Unit Ltr. - Sec. - TWP - Rge.: M 36 17s 27e	
Csg. Size: 4½	Wt.: 11.35	d: 4.000	Set At: 8439 - 10060	Perforations: From: 9466	To: 9484			County: Eddy	
Tbg. Size: 2 3/8	Wt.: 4.6	d: 1.995	Set At: 9385	Perforations: From: Open	To: Ended			Pool: SE Logan Draw ~~Illinois Camp~~ Atoka	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple: Single				Packer Set At: 9385				Formation: Atoka	
Producing Thru: Tbg	Reservoir Temp. °F	Mean Annual Temp. °F: 60		Baro. Press - P_a: 13.2				Connection: Elk Horn	
L: 9385	H: 9385	Gg: 0.696	% CO_2: 4.586	% N_2: 0.788	% H_2S	Prover		Meter Run: 3.068	Taps: FLG

NO.	FLOW DATA: Prover Line Size X Orifice Size	Press. p.s.i.g.	Diff. h_w	Temp. °F	TUBING DATA: Press. p.s.i.g.	TUBING DATA: Temp. °F	CASING DATA: Press. p.s.i.g.	CASING DATA: Temp. °F	Duration of Flow
SI					1385		PACKER		24 hrs
1.	3.068 x 0.875	28	10.00	60	1319		"		1 hr
2.	3.068 x 0.875	27	32.00	70	1249		"		1 hr
3.	3.068 x 0.875	27	60.00	77	1165		"		1 hr
4.	3.068 x 0.875	29	95.00	68	1055		"		1 hr
5.									

RATE OF FLOW CALCULATIONS

NO.	COEFFICIENT (24 HOUR)	$\sqrt{h_w P_m}$	Pressure P_m	Flow Temp. Factor Ft.	Gravity Factor Fg.	Super Compress. Factor, Fpv.	Rate of Flow Q, Mcfd
1.	3.650	20.30	41.2	1.000	1.199	1.004	89
2.	3.650	35.87	40.2	.9905	1.199	1.004	156
3.	3.650	49.11	40.2	.9840	1.199	1.004	212
4.	3.650	63.32	42.2	.9924	1.199	1.004	276
5.							

NO.	P_r	Temp. °R	T_r	Z
1.	.06	520	1.36	.993
2.	.06	530	1.39	.993
3.	.06	537	1.40	.993
4.	.06	528	1.38	.993
5.				

Gas Liquid Hydrocarbon Ratio: Dry Gas Mcf/bbl.
A.P.I. Gravity of Liquid Hydrocarbons: Dry Deg.
Specific Gravity Separator Gas: .696 XXXXXXXXX
Specific Gravity Flowing Fluid: XXXXX
Critical Pressure: * 652 P.S.I.A. _____ P.S.I.A.
Critical Temperature: * 381 R _____ R

P_c 1398.2 P_c^2 1955.00

NO.	P_t^2	P_w	P_w^2	$P_c^2 - P_w^2$
1.		1332.3	1775.0	180.0
2.		1262.5	1593.9	361.1
3.		1178.8	1389.5	565.5
4.		1069.3	1143.4	811.6
5.				

1) $\frac{P_c^2}{P_c^2 - P_w^2}$ = 2.409 (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n$ = 1.928

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2}\right]^n$ = .532

Absolute Open Flow: 532 Mcfd @ 15.025 | Angle of Slope θ: 53.25 | Slope, n: .7467

Remarks: Well produced no fluid
* Corrected to 4.586% CO2

Approved By Division	Conducted By:	Calculated By:	Checked By:
	Jarrel Services, Inc.	Bob Murray	Bob Murray

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
DISTRICT II ARTESIA
811 S. FIRST ST. ARTESIA, NM 88210
(505) 748-1283
FAX (505) 748-9720

Jennifer A. Salisbury
CABINET SECRETARY

January 28th, ~~1999~~ 2000 MAB

Mewbourne Oil Company
P.O. Box 5270
Hobbs, NM 88241

Re: **Well Placed In Pool**

Gentlemen/Madams:

As the result of Division Order 11300, the following described gas well has been placed in the pool shown below. This change in nomenclature has been made in our files. Please change your records to reflect the proper pool name. All subsequent reports must show this nomenclature until further notice.

Logan Draw; Atoka, Southeast Gas Pool
Chalk Bluff '36' State #1
Unit M, Section 36, Township 17 South, Range 27 East, NMPM
Poolcode: 96979

Transporters are advised by copy of this letter, to change their records to reflect the pool name as established by this order, effective October 1, 1999.

Sincerely,

Bryan Arrant
District Geologist

Cc: Amoco Pipeline Company
Transwestern Pipeline Company
Santa Fe
Mae
Well File

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-101 C15P
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 6 Copies
Fee Lease - 5 Copies

☐ AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1 Operator Name and Address	2 OGRID Number
Mewbourne Oil Company PO Box 5270 Hobbs, N.M. 88241 505-393-5905	14744
	3 API Number: 30 - 015-27286

4 Property Code	5 Property Name	6 Well No.
7871	Chalk Bluff 36 State 1	1

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OCD - ARTESIA

7 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
M	36	17S	28E		660	S	990	W	Eddy

8 Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County

9 Proposed Pool 1	10 Proposed Pool 2

11 Work Type Code	12 Well Type Code	13 Cable/Rotary	14 Lease Type Code	15 Ground Level Elevation
P	G	R	S	3625
16 Multiple	**17 Proposed Depth**	**18 Formation**	**19 Contractor**	**20 Spud Date**
	9400	Canyon/Wolfcamp	TBA	

21 Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC

22 Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

This well has been producing from the Morrow & Atoka formations. Mewbourne Oil Company would like to set a CIBP 100' above top perforations. Cap CIBP w/ 35' cement. Attempt a completion in the Canyon @ +/- 8550'.
If results warrant, Mewbourne Oil Company would like to test the Wolfcamp @ +/-7200'.

During operations of plugback & testing, a 7 1/16 x 3000 psi BOP w/ 2 3/8"rams & blinds will be used.

23 I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: N.M. Young

Printed name: N.M. Young

Title: District Manager

OIL CONSERVATION DIVISION

Approved By: ORIGINAL SIGNED BY TIM W. GUM
DISTRICT II SUPERVISOR

Title:

Approval Date: AUG 29 2001

Expiration Date: AUG 29 2002

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
MEWBOURNE OIL COMPANY	CHALK BLUFF 36 STATE	1

Unit Letter	Section	Township	Range	County
M	36	17 SOUTH	27 EAST NMPM	EDDY

Actual Footage Location of Well:
990 feet from the WEST line and 660 feet from the SOUTH line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3635		Illinois Camp Morrow North	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

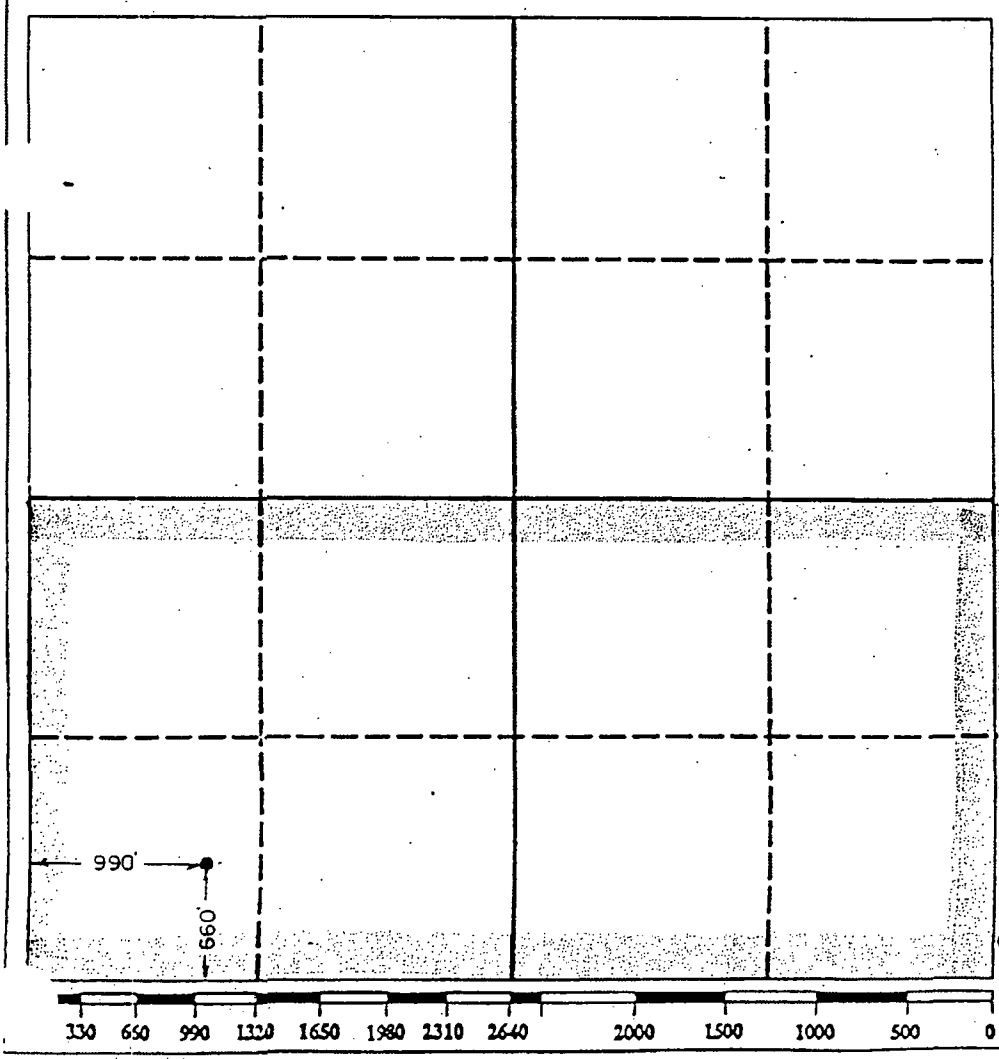
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

[X] Yes [ ] No If answer is "yes" type of consolidation Communitization

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Signature: Bill Pierce

Printed Name: Bill Pierce

Position: Drilling Superintendent

Company: Mewbourne Oil Company

Date: October 27, 1992

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed: 10/19/92

Signature & Seal of Professional Surveyor

Certificate No. 3640

Submit 3 Copies to Appropriate District Office

State of New Mexico
Ene Minerals and Natural Resources Department

C15F 8P

Form C-103
Revised 1-1-89

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION

2040 Pacheco St.
Santa Fe, NM 87505

5 WELL API NO.	30-015-27286
6 Indicate Type of Lease	STATE ☒ FEE ☐
7 State Oil & Gas Lease No.	E-379-4

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

8 Lease Name or Unit Agreement Name	Chalk Bluff 36 State
1 Type of Well: OIL WELL ☐ GAS WELL ☒ OTHER	
2 Name of Operator	Mewbourne Oil Company /
8 Well No.	1
3 Address of Operator	PO Box 5270, Hobbs, New Mexico 88241
9 Pool name or Wildcat	Logan Draw Atoka

4 Well Location

Unit Letter M : 660 Feet From The South Line and 990 Feet From The West Line

Section 36 Township 17S Range ~~R28E~~ 27 NMPM Eddy County

10 Elevation (*Show whether DF, RKB, RT, GR, etc.*) 3635' GL

11 Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ANBANDONMENT ☐
L OR ALTER CASING ☐		CASING TEST AND CEMENT JOB ☐	
OTHER: ☐		OTHER: PB Atoka. Test & plug off Canyon. Test & Produce Wolfcamp ☒	

12 Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

6/28/01... POOH w/ tbg. RIH w/ 4 1/2" CIBP & set @ 9400'. Dump 35' cement on plug. New PBTD @ 9365'. Test to 1000 psi. OK. Perforate Canyon @ 8528-72' (12'. 2 spf. 24 holes). Acidize w/ 2100 gals 20% Ne-Fe & ball sealers. Swab test.

7/05/01...POOH. RIH & set 7" RBP @ 8300'. Load & test to 1000 psi. OK. New PBTD @ 8300'. Perforate Wolfcamp @ 7164-7277' (29'. 2 spf. 58 holes). GIH w/ tbg. Acidize perfs w/ 5000 gals 20% Ne-Fe & ball sealers. Swab test.

7/16/01...POOH w/ test equipment. Run tbg & rods & put well on production.

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OCD - ARTESIA

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE _____ TITLE District Manager DATE 08-24-01

TYPE OR PRINT NAME N.M. Young TELEPHONE NO. 505-393-5905

(This space for State Use)

APPROVED BY ORIGINAL SIGNED BY TIM W. GUM DISTRICT II SUPERVISOR TITLE _____ DATE SEP 06 2001

CONDITIONS OF APPROVAL, IF ANY:

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all specific tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon	8327.0	T. Ojo Alamo		T. Penn. "B"	
T. Salt		T. Strawn	8820.0	T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt		T. Atoka	9380.0	T. Pictured Cliffs		T. Penn. "D"	
T. Yates	328.0	T. Miss	10040.0	T. Cliff House		T. Leadville	
T. 7 Rivers	464.0	T. Devonian		T. Menefee		T. Madison	
T. Queen	1008.0	T. Silurian		T. Point Lookout		T. Elbert	
T. Grayburg	1360.0	T. Montoya		T. Mancos		T. McCracken	
T. San Andres	1785.0	T. Simpson		T. Gallup		T. Ignacio Otzte	
T. Glorieta	3155.0	T. McKee		Base Greenhorn		T. Granite	
T. Paddock		T. Ellenburger		T. Dakota		T.	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	
T. Tubb	4025.0	T. Delaware Sand		T. Todilto		T.	
T. Drinkard	4855.0	T. Bone Springs		T. Entrada		T.	
T. Abo	5120.0	T. Morrow	9494.0	T. Wingate		T.	
T. Wolfcamp	6702.0	T.		T. Chinle		T.	
T. Penn	8210.0	T.		T. Permain		T.	
T. Cisco (Bough C)		T.		T. Penn. "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from ..... to ..... feet .....

No. 2, from ..... to ..... feet .....

No. 3, from ..... to ..... feet .....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology	From	To	Thickness in Feet	Lithology

Submit to Appropriate
District Office
State Lease - 6 copies
Fee Lease - 5 copies
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 Pacheco St.
Santa Fe, NM 87505

Form C-105
Revised 1-1-89

CIS/T
Blm
SEld

WELL API NO.
30-015-27286

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No.
E-379-4

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well: OIL WELL [X] GAS WELL [ ] DRY [ ] OTHER

b. Type of Completion: NEW WELL [ ] WORK OVER [ ] DEEPEN [ ] PLUG BACK [X] DIFF RESVR [ ] OTHER

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OCD - ARTESIA
SEP

7. Lease Name or Unit Agreement Name.
Chalk Bluff 36 State

2. Name of Operator
Mewbourne Oil Company

8. Well No.
1

3. Address of Operator
PO Box 5270, Hobbs, New Mexico 88241

9. Pool name or Wildcat
Logan Draw Wolfcamp

4. Well Location
Unit Letter M : 660 Feet From The South Line and 990 Feet From The West Line

Section 36 Township 17S Range ~~28E~~ 27 NMPM Eddy County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF & RKB, RT, GR, etc.)	14. Elev. Casinghead
02/03/93	03/19/93	07/17/01	3635' GL	3635'

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
10060	8300			all	

19. Producing Interval(s), of this completion - Top, Bottom, Name
7164-7277

20. Was Directional Survey Made
No

21. Type Electric and Other Logs Run
CBL, DN & DLL

22. Was Well Cored
No

23. **CASING RECORD** (Report all strings set in well)

CASING SIZE	WEIGHT LB/FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48#	399'	17 1/2"	530 sks	N/A
9 5/8"	36#	2603'	12 1/4"	1150 sks	N/A
7"	26#	9253	8 3/4"	1620 sks	N/A

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
4 1/2"	8439'	10057'	225	

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2 7/8"	7352	TAC @ 7190'

26. Perforation record (interval, size, and number)
7164-7277'. 58 .38" diameter holes

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
7164-7277	5000 gals 20% Ne-Fe & ball sealers

28. **PRODUCTION**

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
07/17/01	Pumping. 2" x 1 1/2" x 24'	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - BbL.	Gas - MCF	Water - BbL.	Gas - Oil Ratio
07/22/01	24	N/A		88	88	78	1000

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - BbL.	Gas - MCF	Water - BbL.	Oil Gravity - API - (Corr.)
N/A	35		88	88	78	38

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
Sold

Test Witnessed By
J. Capps

30. List Attachments
C-103 & C104.

31. *I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief*

Signature [signature] Printed Name N.M. Young Title District Manager Date 08/24/01

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
811 South First, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C-104
Revised October 18, 1994
Instructions on back
Submit to Appropriate District Office
5 Copies
☐ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

[1] Operator name and Address	[2] OGRID Number
Mewbourne Oil Company PO Box 5270 Hobbs, New Mexico 88241	14744
	[3] Reason for Filing Code: Plug Back/Recompletion

[4] API Number	[5] Pool Name	[6] Pool Code
30 - 0 15-27286	Logan Draw Wolfcamp.	96960

[7] Property Code	[8] Property Name	[9] Well Number
7871	Chalk Bluff 36 State	1

II. [10] Surface Location

Ul or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
	36	17S	27E		660	South	990	West	Eddy

[11] Bottom Hole Location

Ul or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County

[12] Lse Code	[13] Producing Method Code	[14] Gas Connection Date	[15] C-129 Permit Number	[16] C-129 Effective Date	[17] C-129 Expiration Date
	Pumping	07/17/01			

III. Oil and Gas Transporters

[18] Transporter OGRID	[19] Transporter Name and Address	[20] POD	[21] O/G	[22] POD ULSTR Location and Description
138648	Amoco Pipeline Company Tulsa, Ok.	1923810	O	
990	~~Elkhorn Operating Company~~ ARCO Artesia, NM	2829726	G	

SEP 2001
RECEIVED
OCD - ARTESIA

IV. Produced Water

[23] POD	[24] POD ULSTR Location and Description
1923850	

V. Well Completion Data

[25] Spud Date	[26] Ready Date	[27] TD	[28] PBTD	[29] Perforations	[30] DHC, DC, MC
02/03/93	07/17/01	10060	8300	7164-7277	

[31] Hole Size	[32] Casing & Tubing Size	[33] Depth Set	[34] Sacks Cement
17 1/2"	13 3/8"	399'	530
12 1/4"	9 5/8"	2603'	1150
8 3/4"	7"	9253'	1620
6 1/8"	4 1/2"	10057'	225

VI. Well Test Data

[35] Date New Oil	[36] Gas Delivery Date	[37] Test Date	[38] Test Length	[39] Tbg. Pressure	[40] Csg. Pressure
07/17/01	07/17/01	07/22/01	24	N/A	35

[41] Choke Size	[42] Oil	[43] Water	[44] Gas	[45] AOF	[46] Test Method
N/A	88	78	88		Pumping

[47] I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Signature: N.M. Young

Printed name: N.M. Young

Title: District Manager

Date: 08/24/01 Phone: 505-393-5905

OIL CONSERVATION DIVISION

Approved by: ORIGINAL SIGNED BY TIM W. GUM
DISTRICT II SUPERVISOR

Title:

Approval Date: SEP 6 2001

[48] If this is a change of operator fill in the OGRID number and name of the previous operator

Previous Operator Signature	Printed Name	Title	Date

C-101 Ongard
C-102 OK
C-102A

OGRID # 14744

PROP # 7871

POOL # 96960

Oxford®
ESSELTE

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4-15-93
Dual Spaced
Neutron Log
Surf - 9242'
9378' - 10,059
Comp. Sonic Log
1220' - 9260'
Dual Lat.
2598' - 9275'
9310' - 10,059'

DHC - 2464 9-24-99 Allocation 100% 0

NSL - R-9815

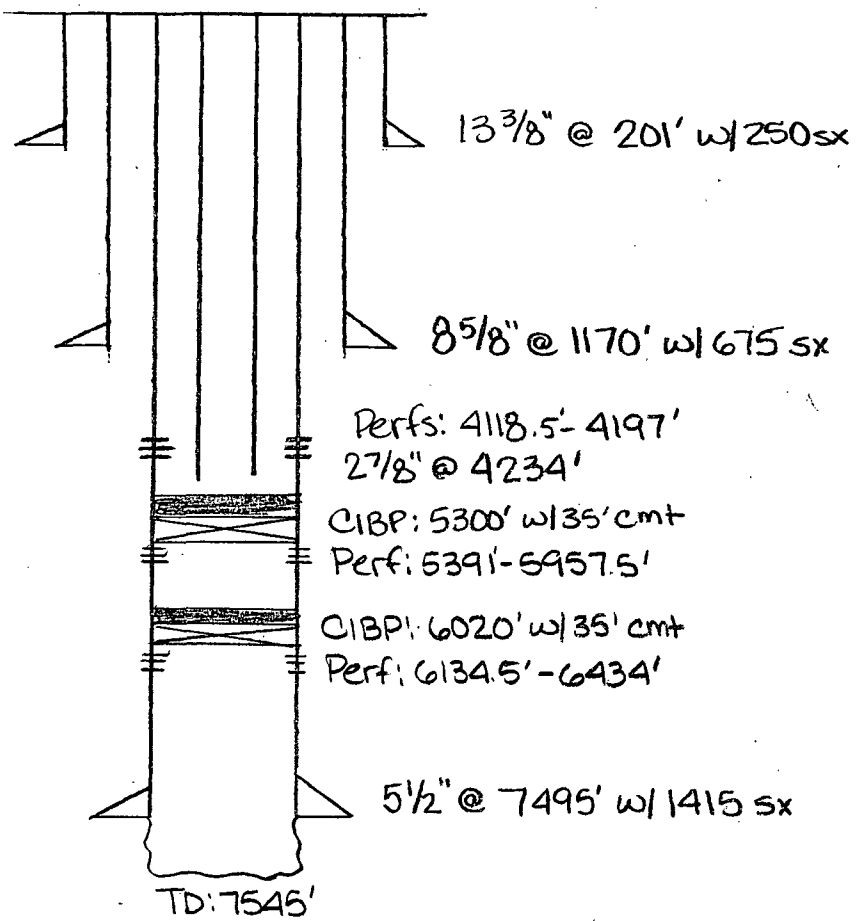
SUBSURFACE

NAVAJO REFINING COMPANY, L.L.C.
Map ID No. 117
Artificial Penetration Review

OPERATOR Mack Energy Corp.
LEASE State H
WELL NUMBER 2
DRILLED 1/11/08
PLUGGED NA

STATUS Active
LOCATION Sec. 2 -T 18S-R 27E
MUD FILLED BOREHOLE NA
TOP INJECTION ZONE ≈ -3615'
API NO. 30-015- 35814

REMARKS:



MAP ID NO. 117

MACK ENERGY CORPORATION
STATE H NO. 2

API NO. 30-015-35814

District II
1301 W. Grand Ave., Artesia, NM 88210
Phone:(505) 748-1283 Fax:(505) 748-9720

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
Permit 60506

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address	2. OGRID Number
MACK ENERGY CORP PO BOX 960 ARTESIA , NM 88211	13837
	3. API Number 30-015-35814

4. Property Code	5. Property Name	6. Well No.
303847	STATE H	002

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
H	2	18S	27E	H	2063	N	441	E	EDDY

8. Pool Information

CHALK BLUFF; WOLFCAMP GAS	96963

Additional Well Information

9. Work Type	10. Well Type	11. Cable/Rotary	12. Lease Type	13. Ground Level Elevation
New Well	OIL		State	3590
14. Multiple	**15. Proposed Depth**	**16. Formation**	**17. Contractor**	**18. Spud Date**
N		Wolfcamp		9/20/2007

Depth to Ground water	Distance from nearest fresh water well	Distance to nearest surface water
50		

Pit: Liner: Synthetic ☐ mils thick Clay ☐ Pit Volume: bbls Drilling Method:
Closed Loop System ☒ Fresh Water ☐ Brine ☐ Diesel/Oil-based ☐ Gas/Air ☐

19. Proposed Casing and Cement Program

Type	Hole Size	Casing Type	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	12.25	8.625	24	360	400	0
Prod	7.875	5.5	17	7313	1300	0

Casing/Cement Program: Additional Comments

Mack Energy proposes to drill a 12 1/4 hole to 360', run 8 5/8 casing and cement. Drill a 7 7/8 hole to 7313', run 5 1/2 casing and cement. Note: On production string a fluid caliper will be run and will figure cement with 25% excess, attempt to circ.

Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
DoubleRam	2000	2000	

I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify that the drilling pit will be constructed according to NMOCD guidelines ☐, a general permit ☐, or an (attached) alternative OCD-approved plan ☐.	OIL CONSERVATION DIVISION
	Approved By: Bryan Arrant
Printed Name: Electronically filed by Jerry Sherrell	Title: Geologist
Title: Production Clerk	Approved Date: 9/19/2007 — Expiration Date: 9/19/2008
Email Address: jerrys@mackenergycorp.com	
Date: 9/11/2007 — Phone: 505-748-1288	Conditions of Approval Attached

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(505) 393-6161 Fax:(505) 393-0720
District II
1301 W. Grand Ave., Artesia, NM 88210
Phone:(505) 748-1283 Fax:(505) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-102
Permit 60506

WELL LOCATION AND ACREAGE DEDICATION PLAT

1. API Number	2. Pool Code	3. Pool Name
30-015-35814	96963	CHALK BLUFF; WOLFCAMP GAS

4. Property Code	5. Property Name	6. Well No.
303847	STATE H	002

7. OGRID No.	8. Operator Name	9. Elevation
13837	MACK ENERGY CORP	3590

10. Surface Location

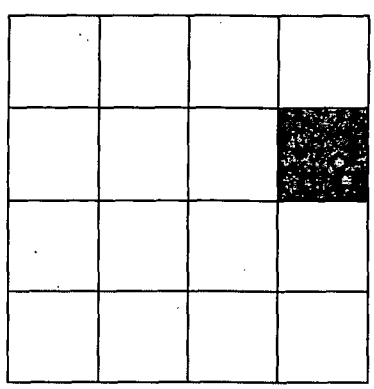
UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
H	2	18S	27E		2063	N	441	E	EDDY

11. Bottom Hole Location If Different From Surface

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
H	2	18S	27E	H	2300	N	340	E	EDDY

12. Dedicated Acres	13. Joint or Infill	14. Consolidation Code	15. Order No.
40.00			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location(s) or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

E-Signed By: Jerry Sherrell
Title: Production Clerk
Date: 9/11/2007

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Surveyed By: Ronald Eidson
Date of Survey: 8/28/2007
Certificate Number: 3239

Permit Comments

Operator: MACK ENERGY CORP , 13837
Well: STATE H #002
API: 30-015-35814

Created By	Comment	Comment Date
JWSHERRELL	H2S concentrations of wells in this area from surface to TD are low enough that a contingency plan is not required.	9/11/2007

Permit Conditions of Approval

Operator: MACK ENERGY CORP , 13837
Well: STATE H #002
API: 30-015-35814

OCD Reviewer	Condition
BArrant	Pit construction and closure must satisfy all requirements of your approved plan, O.C.D. Rule 19.15.2.50, and the Pit and Below-Grade Tank Guidelines
BArrant	As noted, operator to drill surface hole w/fresh water mud.
BArrant	Cement to cover all oil, gas and water bearing zones.

SEP 12 2007
OCD-ARTESIA

MACK Energy Corporation

30-015-35814

Mack Energy Corp.

Eddy County, NM (NAD 27 NME)
State H #2
State H #2
Wellbore #1

Plan: Plan #1

Standard Planning Report

11 September, 2007

Scientific Drilling
Directional Drilling Operations

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well State H #2
Company:	Mack Energy Corp.	**TVD Reference:**	WELL @ 3606.00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	**MD Reference:**	WELL @ 3606.00ft (KB Elev)
Site:	State H #2	**North Reference:**	Grid
Well:	State H #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project Eddy County, NM (NAD 27 NME)

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site State H #2

Site Position:		**Northing:**	648,629.20 ft	**Latitude:**	32° 46' 39.510 N
From:	Map	**Easting:**	528,184.50 ft	**Longitude:**	104° 14' 29.874 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	ft	**Grid Convergence:**	0.05 °

Well State H #2

Well Position	**+N/-S**	0.00 ft	**Northing:**	648,629.20 ft	**Latitude:**	32° 46' 39.510 N
	+E/-W	0.00 ft	**Easting:**	528,184.50 ft	**Longitude:**	104° 14' 29.874 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	3,606.00 ft	**Ground Level:**	0.00 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/11/2007	8.37	60.68	49,269

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	156.92

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
460.00	0.00	0.00	460.00	0.00	0.00	0.00	0.00	0.00	0.00	
768.78	6.18	156.92	768.18	-15.29	6.52	2.00	2.00	0.00	156.92	
2,854.52	6.18	156.92	2,841.82	-221.71	94.48	0.00	0.00	0.00	0.00	
3,163.30	0.00	0.00	3,150.00	-237.00	101.00	2.00	-2.00	0.00	180.00	
7,313.30	0.00	0.00	7,300.00	-237.00	101.00	0.00	0.00	0.00	0.00	PBHL-State H #1

Database:	EDM 2003.16 Single User Db	Local Co-ordinate Reference:	Well State H #2
Company:	Mack Energy Corp.	TVD Reference:	WELL @ 3608.00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3608.00ft (KB Elev)
Site:	State H #2	North Reference:	Grid
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
460.00	0.00	0.00	460.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP,460' Start 2.0°/100'									
500.00	0.80	156.92	500.00	-0.26	0.11	0.28	2.00	2.00	0.00
600.00	2.80	156.92	599.94	-3.15	1.34	3.42	2.00	2.00	0.00
700.00	4.80	156.92	699.72	-9.24	3.94	10.05	2.00	2.00	0.00
768.78	6.18	156.92	768.18	-15.29	6.52	16.62	2.00	2.00	0.00
EOC hold 6.18°									
800.00	6.18	156.92	799.22	-18.38	7.83	19.98	0.00	0.00	0.00
900.00	6.18	156.92	898.64	-28.28	12.05	30.74	0.00	0.00	0.00
1,000.00	6.18	156.92	998.06	-38.18	16.27	41.50	0.00	0.00	0.00
1,100.00	6.18	156.92	1,097.48	-48.07	20.49	52.26	0.00	0.00	0.00
1,200.00	6.18	156.92	1,196.90	-57.97	24.70	63.01	0.00	0.00	0.00
1,300.00	6.18	156.92	1,296.32	-67.87	28.92	73.77	0.00	0.00	0.00
1,400.00	6.18	156.92	1,395.74	-77.76	33.14	84.53	0.00	0.00	0.00
1,500.00	6.18	156.92	1,495.16	-87.66	37.36	95.29	0.00	0.00	0.00
1,600.00	6.18	156.92	1,594.58	-97.55	41.57	106.04	0.00	0.00	0.00
1,700.00	6.18	156.92	1,694.00	-107.45	45.79	116.80	0.00	0.00	0.00
1,800.00	6.18	156.92	1,793.42	-117.35	50.01	127.56	0.00	0.00	0.00
1,900.00	6.18	156.92	1,892.84	-127.24	54.23	138.32	0.00	0.00	0.00
2,000.00	6.18	156.92	1,992.26	-137.14	58.44	149.07	0.00	0.00	0.00
2,100.00	6.18	156.92	2,091.68	-147.04	62.66	159.83	0.00	0.00	0.00
2,200.00	6.18	156.92	2,191.10	-156.93	66.88	170.59	0.00	0.00	0.00
2,300.00	6.18	156.92	2,290.52	-166.83	71.10	181.35	0.00	0.00	0.00
2,400.00	6.18	156.92	2,389.94	-176.73	75.31	192.10	0.00	0.00	0.00
2,500.00	6.18	156.92	2,489.36	-186.62	79.53	202.86	0.00	0.00	0.00
2,600.00	6.18	156.92	2,588.78	-196.52	83.75	213.62	0.00	0.00	0.00
2,700.00	6.18	156.92	2,688.20	-206.41	87.97	224.38	0.00	0.00	0.00
2,800.00	6.18	156.92	2,787.62	-216.31	92.18	235.13	0.00	0.00	0.00
2,854.52	6.18	156.92	2,841.82	-221.71	94.48	241.00	0.00	0.00	0.00
Start Drop 2.0°/100'									
2,900.00	5.27	156.92	2,887.07	-225.88	96.26	245.53	2.00	-2.00	0.00
3,000.00	3.27	156.92	2,986.79	-232.72	99.18	252.97	2.00	-2.00	0.00
3,100.00	1.27	156.92	3,086.71	-236.36	100.73	256.92	2.00	-2.00	0.00
3,163.30	0.00	0.00	3,150.00	-237.00	101.00	257.62	2.00	-2.00	0.00
EOC hold 0.0°									
3,200.00	0.00	0.00	3,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
3,300.00	0.00	0.00	3,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
3,400.00	0.00	0.00	3,386.70	-237.00	101.00	257.62	0.00	0.00	0.00
3,500.00	0.00	0.00	3,486.70	-237.00	101.00	257.62	0.00	0.00	0.00
3,600.00	0.00	0.00	3,586.70	-237.00	101.00	257.62	0.00	0.00	0.00
3,700.00	0.00	0.00	3,686.70	-237.00	101.00	257.62	0.00	0.00	0.00
3,800.00	0.00	0.00	3,786.70	-237.00	101.00	257.62	0.00	0.00	0.00
3,900.00	0.00	0.00	3,886.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,000.00	0.00	0.00	3,986.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,100.00	0.00	0.00	4,086.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,200.00	0.00	0.00	4,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,300.00	0.00	0.00	4,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,400.00	0.00	0.00	4,386.70	-237.00	101.00	257.62	0.00	0.00	0.00

Database:	EDM 2003.16 Single User Db	Local Co-ordinate Reference:	Well State H #2
Company:	Mack Energy Corp.	TVD Reference:	WELL @ 3606.00ft (KB Elev)
Project:	Eddy County, NM(NAD 27,NME)	MD Reference:	WELL @ 3606.00ft (KB Elev)
Site:	State H #2	North Reference:	Grid
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #19		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,500.00	0.00	0.00	4,486.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,600.00	0.00	0.00	4,586.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,700.00	0.00	0.00	4,686.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,800.00	0.00	0.00	4,786.70	-237.00	101.00	257.62	0.00	0.00	0.00
4,900.00	0.00	0.00	4,886.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,000.00	0.00	0.00	4,986.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,100.00	0.00	0.00	5,086.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,200.00	0.00	0.00	5,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,300.00	0.00	0.00	5,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,400.00	0.00	0.00	5,386.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,500.00	0.00	0.00	5,486.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,600.00	0.00	0.00	5,586.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,700.00	0.00	0.00	5,686.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,800.00	0.00	0.00	5,786.70	-237.00	101.00	257.62	0.00	0.00	0.00
5,900.00	0.00	0.00	5,886.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,000.00	0.00	0.00	5,986.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,100.00	0.00	0.00	6,086.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,200.00	0.00	0.00	6,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,300.00	0.00	0.00	6,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,400.00	0.00	0.00	6,386.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,500.00	0.00	0.00	6,486.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,600.00	0.00	0.00	6,586.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,700.00	0.00	0.00	6,686.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,800.00	0.00	0.00	6,786.70	-237.00	101.00	257.62	0.00	0.00	0.00
6,900.00	0.00	0.00	6,886.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,000.00	0.00	0.00	6,986.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,100.00	0.00	0.00	7,086.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,200.00	0.00	0.00	7,186.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,300.00	0.00	0.00	7,286.70	-237.00	101.00	257.62	0.00	0.00	0.00
7,313.30	0.00	0.00	7,300.00	-237.00	101.00	257.62	0.00	0.00	0.00
East HL-State H #1 - PBHL-State H #1 - South HL-State H #1									

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-State H #1 - plan hits target - Circle (radius 10.00)	0.00	0.00	7,300.00	-237.00	101.00	646,392.20	528,285.50	32° 46' 37.184 N	104° 14' 28.693 W
South HL-State H #1 - plan misses by 14.14ft at 7313.30ft MD (7300.00 TVD, -237.00 N, 101.00 E) - Rectangle (sides W0.00 H200.00 D0.00)	0.00	0.00	7,300.00	-247.00	111.00	646,382.20	528,295.50	32° 46' 37.085 N	104° 14' 28.576 W
East HL-State H #1 - plan misses by 14.14ft at 7313.30ft MD (7300.00 TVD, -237.00 N, 101.00 E) - Rectangle (sides W800.00 H0.00 D0.00)	0.00	0.00	7,300.00	-247.00	111.00	646,382.20	528,295.50	32° 46' 37.085 N	104° 14' 28.576 W

Database:	EDM 2003.16 Single User Db	Local Co-ordinate Reference:	Well State H #2
Company:	Mack Energy Corp	TVD Reference:	WELL @ 3606.00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	MD Reference:	WELL @ 3606.00ft (KB Elev)
Site:	State H #2	North Reference:	Grid
Well:	State H #2	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

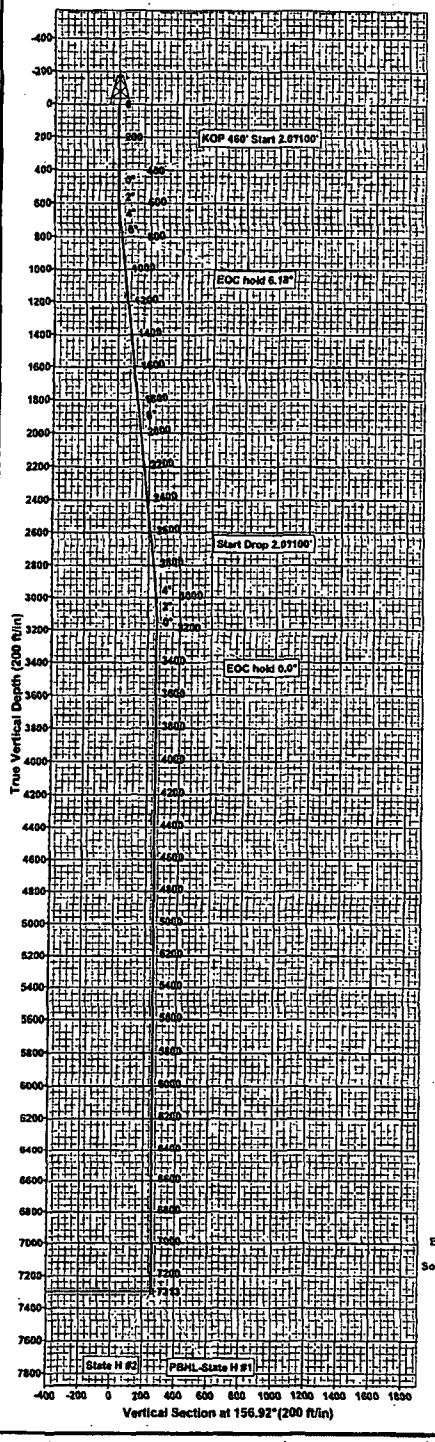
Plan Annotations

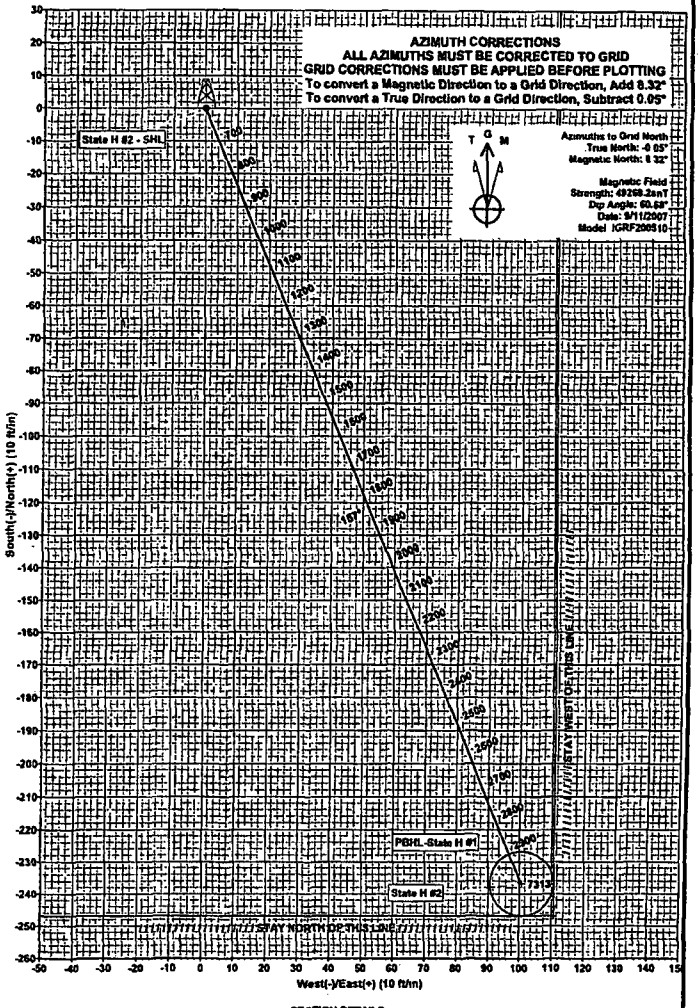
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
460.00	460.00	0.00	0.00	KOP 460' Start 2.0°/100'
768.78	768.18	-15.29	6.52	EOC hold 6.18°
2,854.52	2,841.82	-221.71	94.48	Start Drop 2.0°/100'
3,163.30	3,150.00	-237.00	101.00	EOC hold 0.0°

MACK Energy Corporation

Scientific Drilling for Mack Energy Corp.
Site: Eddy County, NM (NAD 27 NME)
Well: State H #2
Wellbore: Wellbore #1
Design: Plan #1

Scientific Drilling
Directional Drilling Operations





SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	460.00	0.00	0.00	460.00	0.00	0.00	0.00	0.00	0.00	
3	768.78	6.18	156.92	768.18	-15.29	6.52	2.00	156.92	16.62	
4	2854.52	6.18	156.92	2841.62	-221.71	94.48	0.00	0.00	241.00	
5	3163.30	0.00	0.00	3150.00	-237.00	101.00	2.00	180.00	257.62	
6	7313.30	0.00	0.00	7300.00	-237.00	101.00	0.00	0.00	257.62	PBHL-State H #1

WELL DETAILS: State H #2

Ground Level: 0.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	646629.20	528184.50	32° 46' 39.510 N	104° 14' 29.674 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
East HL-State H #1	7300.00	-247.00	111.00	646382.20	528295.50	32° 46' 37.065 N	104° 14' 28.575 W	Rectangle (Sides: L200.00 W0.00
PBHL-State H #1	7300.00	-237.00	101.00	646392.20	528285.50	32° 46' 37.164 N	104° 14' 28.693 W	Circle (Radius: 10.00)
South HL-State H #1	7300.00	-247.00	111.00	646382.20	528295.50	32° 46' 37.065 N	104° 14' 28.576 W	Rectangle (Sides: L0.00 W200.00

PROJECT DETAILS: Eddy County, NM (NAD 27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

Plan: Plan #1 (State H #2/Wellbore #1)

Created By: Julio Pina Date: 11-Sep-07
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

Submit 3 Copies To Appropriate District Office
District I
1625 N French Dr , Hobbs, NM 88240
District II
1301 W Grand Ave , Artesia, NM 88210
District III
1000 Rio Brazos Rd , Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
May 27, 2004

WELL API NO. 30-015-35814

5. Indicate Type of Lease STATE ☒ FEE ☐

6. State Oil & Gas Lease No. B-9391

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

7. Lease Name or Unit Agreement Name: State H

1. Type of Well: Oil Well ☐ Gas Well ☒ Other

8. Well Number 2

2. Name of Operator: Mack Energy Corporation

9. OGRID Number: 013837

3 Address of Operator: P. O. Box 960 Artesia, NM 88211-0960

10. Pool name or Wildcat: Chalk Bluff Wolfcamp

4 Well Location
Unit Letter H 2063 feet from the North line and 441 feet from the East line
Section 2 Township 18S Range 27E NMPM County Eddy

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3590' GR

Pit or Below-grade Tank Application ☐ or Closure ☐

Pit type_____ Depth Groundwater_____ Distance from nearest fresh water well_____ Distance from nearest surface water_____

Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
OTHER: Change casing ☒		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Mack Energy would like to change the casing string approved on this APD.

Drill a 17 1/2" hole to 200', run 13 3/8" 48# H-40 casing and cement.
Drill a 12 1/4" hole to 1150', run 8 5/8" 24# J-55 casing and cement.
Drill a 7 7/8" hole to approximately 7300', run 5 1/2" 17# L-80 casing and cement.

OCT 22 2007
OCD-ARTESIA

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐

SIGNATURE Jerry W. Sherrell TITLE Production Clerk DATE 10/19/07

Type or print name Jerry W. Sherrell E-mail address: jerrys@mackenergycorp.com Telephone No (505)748-1288

For State Use Only

APPROVED BY: BRYAN G. ARRANT DISTRICT II GEOLOGIST TITLE _____ DATE OCT 22 2007

Conditions of Approval (if any):

Mack Energy Corp.

Eddy County, NM (NAD 27 NME)
State H #2
State H #2
Wellbore #1

OCT 22 2007
OCD-ARTESIA

Plan: Plan #2

Standard Planning Report

19 October, 2007

Scientific Drilling
Directional Drilling Operations

Database:	EDM 2003 16 Single User Db	**Local Co-ordinate Reference:**	Well State H #2
Company:	Mack Energy Corp	**TVD Reference:**	WELL @ 3606 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	**MD Reference:**	WELL @ 3606 00ft (KB Elev)
Site:	State H #2	**North Reference:**	Grid
Well:	State H #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Project	Eddy County, NM (NAD 27 NME)		
Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	State H #2				
Site Position:		**Northing:**	646,629 20 ft	**Latitude:**	32° 46' 39 510 N
From:	Map	**Easting:**	528,184 50 ft	**Longitude:**	104° 14' 29 874 W
Position Uncertainty:	0 00 ft	**Slot Radius:**	ft	**Grid Convergence:**	0 05 °

Well	State H #2				
Well Position	**+N/-S**	0 00 ft	**Northing:**	646,629 20 ft	**Latitude:**	32° 46' 39 510 N
	+E/-W	0 00 ft	**Easting:**	528,184 50 ft	**Longitude:**	104° 14' 29 874 W
Position Uncertainty		0 00 ft	**Wellhead Elevation:**	3,606 00 ft	**Ground Level:**	0 00 ft

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	10/19/2007	8 36	60 68	49,259

Design	Plan #2				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0 00
Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**	
	0.00	0 00	0 00	156 92	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0 00	0 00	0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00	
1,250 00	0 00	0.00	1,250 00	0.00	0 00	0 00	0 00	0.00	0.00	
1,785 00	10 70	156.92	1,781.89	-45.82	19 53	2 00	2 00	0 00	156 92	
2,636 01	10 70	156.92	2,618 11	-191 18	81 47	0 00	0 00	0.00	0 00	
3,171 01	0 00	0 00	3,150 00	-237 00	101 00	2 00	-2 00	0.00	180 00	
7,321 01	0 00	0 00	7,300 00	-237.00	101 00	0 00	0 00	0 00	0 00	PBHL-State H #1

Database:	EDM 2003 16 Single User Db	**Local Co-ordinate Reference:**	Well State H #2
Company:	Mack Energy Corp	**TVD Reference:**	WELL @ 3606.00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	**MD Reference:**	WELL @ 3606 00ft (KB Elev)
Site:	State H #2	**North Reference:**	Grid
Well:	State H #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0.00	0 00	0 00
1,150 00	0 00	0 00	1,150 00	0 00	0 00	0.00	0 00	0 00	0.00
8 5/8" Casing									
1,250 00	0 00	0.00	1,250 00	0 00	0.00	0 00	0 00	0 00	0 00
KOP 1250' Start 2.0°/100'									
1,300 00	1 00	156 92	1,299 99	-0.40	0 17	0 44	2.00	2 00	0 00
1,400 00	3 00	156 92	1,399 93	-3 61	1 54	3.93	2 00	2 00	0 00
1,500 00	5.00	156.92	1,499 68	-10 03	4.27	10 90	2 00	2 00	0 00
1,600 00	7 00	156 92	1,599 13	-19 64	8 37	21 35	2.00	2 00	0 00
1,700 00	9 00	156.92	1,698 15	-32 45	13.83	35 27	2 00	2.00	0 00
1,785 00	10 70	156 92	1,781 90	-45 82	19 53	49 81	2 00	2 00	0 00
EOC hold 10.70°									
1,800 00	10 70	156 92	1,796.63	-48 38	20 62	52 59	0 00	0 00	0.00
1,900 00	10 70	156 92	1,894 89	-65 46	27 90	71 16	0 00	0 00	0 00
2,000 00	10 70	156 92	1,993 15	-82 54	35 18	89 73	0 00	0 00	0 00
2,100 00	10 70	156 92	2,091 41	-99 63	42 46	108.29	0 00	0 00	0 00
2,200 00	10.70	156.92	2,189 68	-116 71	49.74	126 86	0 00	0 00	0 00
2,300.00	10.70	156.92	2,287 94	-133 79	57.01	145 43	0 00	0.00	0 00
2,400 00	10 70	156.92	2,386 20	-150 87	64.29	163 99	0 00	0 00	0 00
2,500 00	10.70	156 92	2,484 46	-167 95	71.57	182 56	0.00	0 00	0 00
2,599 99	10 70	156 92	2,582 72	-185 03	78 85	201 13	0 00	0 00	0 00
2,636 01	10 70	156 92	2,618 11	-191 18	81 47	207 81	0 00	0 00	0.00
Start Drop 2.0°/100'									
2,699 99	9.42	156.92	2,681 11	-201 46	85 85	218 99	2 00	-2 00	0 00
2,799 99	7 42	156 92	2,780 03	-214 93	91 59	233 63	2 00	-2 00	0 00
2,899 99	5.42	156.92	2,879 39	-225 22	95.98	244 81	2 00	-2 00	0 00
2,999 99	3 42	156 92	2,979 09	-232 31	99 00	252 52	2 00	-2 00	0 00
3,099 99	1 42	156 92	3,079 00	-236 19	100 65	256 74	2 00	-2 00	0.00
3,171.01	0.00	0.00	3,150 00	-237 00	101 00	257.62	2 00	-2 00	0 00
EOC hold 0.0°									
7,321 01	0 00	0 00	7,300.00	-237 00	101 00	257 62	0 00	0 00	0.00
East HL-State H #1 - PBHL-State H #1 - South HL-State H #1									

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-State H #1 - plan hits target - Circle (radius 10 00)	0 00	0 00	7,300 00	-237 00	101.00	646,392 20	528,285 50	32° 46' 37 164 N	104° 14' 28.693 W
South HL-State H #1 - plan misses by 14 14ft at 7321.01ft MD (7300.00 TVD, -237 00 N, 101.00 E) - Rectangle (sides W0 00 H200.00 D0.00)	0 00	0 00	7,300 00	-247 00	111 00	646,382 20	528,295 50	32° 46' 37 065 N	104° 14' 28 576 W
East HL-State H #1 - plan misses by 14 14ft at 7321 01ft MD (7300 00 TVD, -237.00 N, 101.00 E) - Rectangle (sides W800 00 H0 00 D0 00)	0 00	0 00	7,300 00	-247 00	111 00	646,382.20	528,295 50	32° 46' 37 065 N	104° 14' 28.576 W

Database:	EDM 2003.16 Single User Db	**Local Co-ordinate Reference:**	Well State H #2
Company:	Mack Energy Corp	**TVD Reference:**	WELL @ 3606 00ft (KB Elev)
Project:	Eddy County, NM (NAD 27 NME)	**MD Reference:**	WELL @ 3606 00ft (KB Elev)
Site:	State H #2	**North Reference:**	Grid
Well:	State H #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (ft)	Hole Diameter (ft)
1,150 00	1,150 00	8 5/8" Casing	8 62500	12.25000

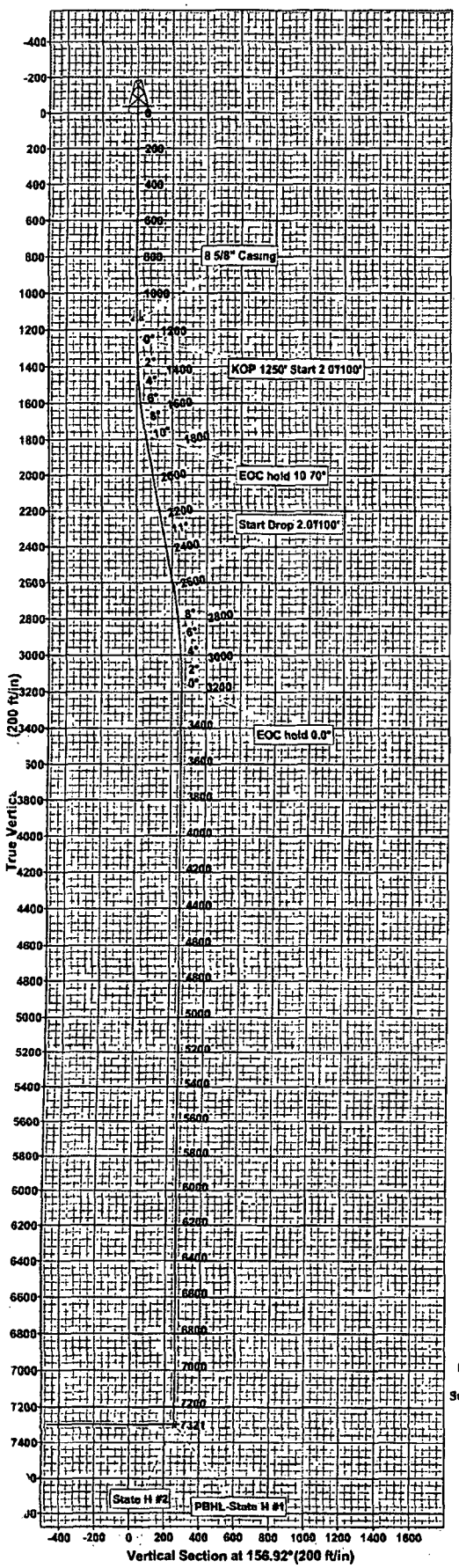
Plan Annotations

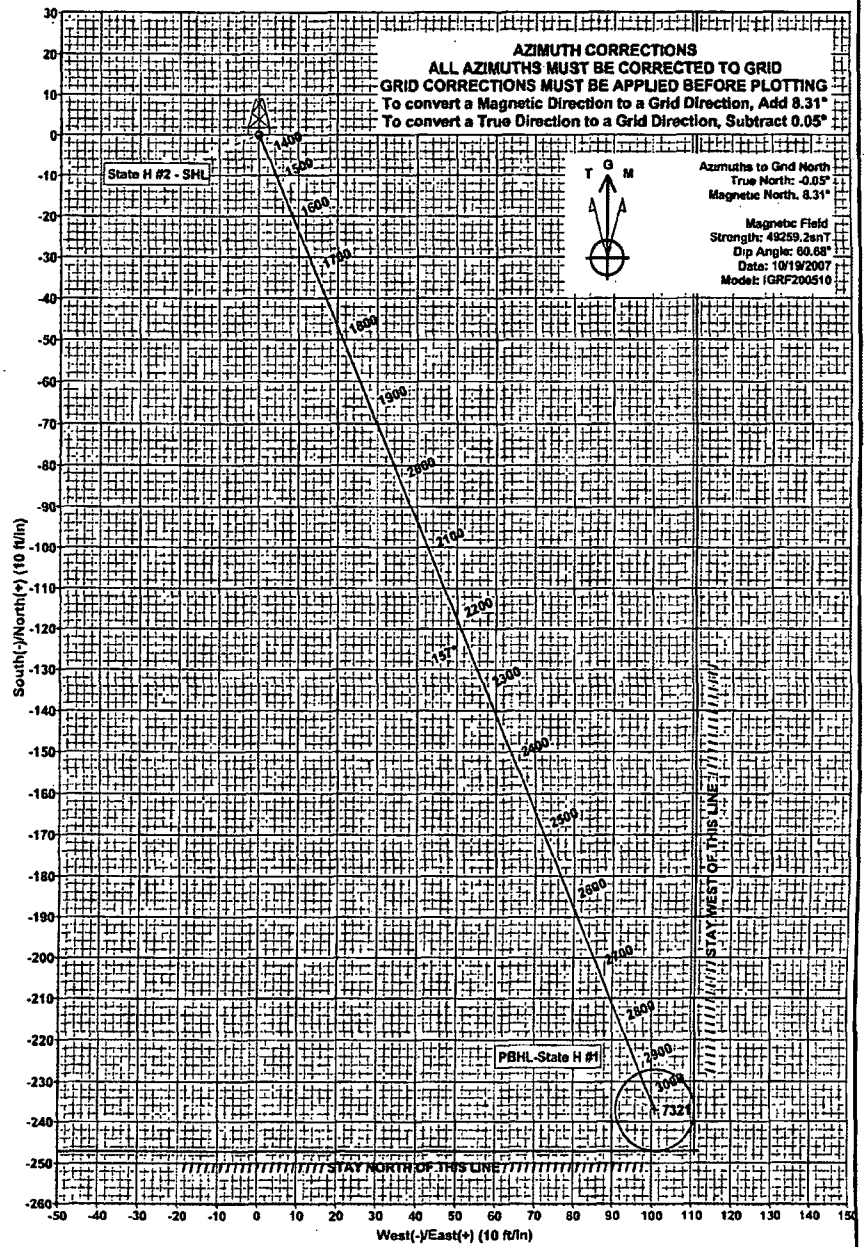
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,250 00	1,250 00	0 00	0 00	KOP 1250' Start 2 0°/100'
1,785 00	1,781 90	-45 82	19.53	EOC hold 10.70°
2,636 01	2,618 11	-191 18	81 47	Start Drop 2 0°/100'
3,171 01	3,150 00	-237 00	101 00	EOC hold 0 0°

MACK Energy Corporation

Scientific Drilling for Mack Energy Corp.
Site: Eddy County, NM (NAD 27 NME)
Well: State H #2
Wellbore: Wellbore #1
Design: Plan #2

Scientific Drilling
Directional Drilling Operations





SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1250.00	0.00	0.00	1250.00	0.00	0.00	0.00	0.00	0.00	
3	1785.00	10.70	156.92	1781.89	-45.82	19.53	2.00	156.92	49.81	
4	2636.01	10.70	156.92	2618.11	-191.18	81.47	0.00	0.00	207.81	
5	3171.01	0.00	0.00	3150.00	-237.00	101.00	2.00	180.00	257.62	
6	7321.01	0.00	0.00	7300.00	-237.00	101.00	0.00	0.00	257.62	PBHL-State H #1

WELL DETAILS: State H #2

Ground Level: 0.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	646629.20	528184.50	32° 46' 39.510 N	104° 14' 29.874 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
East HL-State H #1	7300.00	-247.00	111.00	646382.20	528295.50	32° 46' 37.065 N	104° 14' 28.576 W	Rectangle (Sides: L800.00 W0.00)
PBHL-State H #1	7300.00	-237.00	101.00	646392.20	528285.50	32° 46' 37.164 N	104° 14' 28.693 W	Circle (Radius: 10.00)
South HL-State H #1	7300.00	-247.00	111.00	646382.20	528295.50	32° 46' 37.065 N	104° 14' 28.576 W	Rectangle (Sides: L0.00 W200.00)

PROJECT DETAILS: Eddy County, NM (NAD 27 NME)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

Plan: Plan #2 (State H #2/Wellbore #1)

Created By: Julio Pina Date: 19-Oct-07
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(505) 393-6161 Fax:(505) 393-0720
District II
1301 W. Grand Ave., Artesia, NM 88210
Phone:(505) 748-1283 Fax:(505) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-103
Permit 65781

WELL API NUMBER: 30-015-35814

5. Indicate Type of Lease: S

6. State Oil & Gas Lease No.:

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFRENT RESERVIOR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: STATE H

1. Type of Well: O

8. Well Number: 002

2. Name of Operator: MACK ENERGY CORP

9. OGRID Number: 13837

3. Address of Operator: PO BOX 960 , , 11352 LOVINGTON HWY ARTESIA , NM 88211

10. Pool name or Wildcat:

4. Well Location
Unit Letter H : 2063 feet from the N line and 441 feet from the E line
Section 2 Township 18S Range 27E NMPM Eddy County

11. Elevation (Show whether DR, KB, BT, GR, etc.): 3590 GR

Pit or Below-grade Tank Application ☐ or Closure ☐
Pit Type _____ Depth to Groundwater _____ Distance from nearest fresh water well _____ Distance from nearest surface water _____
Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTER CASING ☐
TEMPORARILY ABANDON ☐	CHANGE OF PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDON ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
Other:		Other: **Drilling/Cement**	☒

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work.) SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

10/31/2007 Spud 17 1/2 hole @ 10:00pm.
11/1/2007 TD @ 201. Ran 5jts 13 3/8 H-40 48# @ 201', Cmt w/250sx C+2%CC, circ 104sx, plug down 12:20pm. WOC 18hrs test to 1800# 30min, OK.
11/4/2007 TD 12 1/4 hole @ 1165'.
11/5/2007 Ran 27jts 8 5/8 J-55 32# @ 1170'. Cmt w/475sx C, 200sx C+2%CC, circ 218sx, plug down 3:00am. WOC 12hrs test to 600# 30min, OK.
11/20/2007 TD @ 7545'.
11/22/2007 Ran 177jts 5 1/2 J-55 17# @ 7495', Cmt w/530sx C, circ 217sx. 2nd stage 365sx C, 520sx C, plug down 6:55pm, circ 200sx. WOC 12hrs test to 600# 20min, OK.
10/31/2007 Spudded well.

Casing and Cement Program

Date	String	Fluid Type	Hole Size	Csg Size	Weight lb/ft	Grade	Est TOC	Dpth Set	Sacks	Yield	Class	1" Dpth	Pres Held	Pres Drop	Open Hole
11/01/07	Surf	FreshWater	17.5	13.375	48	H-40	0	201	250		C		1800	0	Y
11/05/07	Int1	FreshWater	12.25	8.625	32	J-55	0	1170	875		C		600	0	Y
11/22/07	Prod	CutBrine	7.875	5.5	17	J-55	0	7495	1415		C		600	0	Y

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Electronically Signed TITLE Production Clerk DATE 12/11/2007
Type or print name Jerry Sherrell E-mail address jerrys@mackenergycorp.com Telephone No. 505-748-1288

For State Use Only:
APPROVED BY: Bryan Arrant TITLE Geologist DATE 12/12/2007 7:46:02 AM

Submit 3 Copies To Appropriate District Office
District I
1625 N French Dr , Hobbs, NM 88240
District II
1301 W. Grand Ave , Artesia, NM 88210
District III
1000 Rio Brazos Rd , Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
May 27, 2004

WELL API NO. 30-015-35814

5. Indicate Type of Lease STATE ☒ FEE ☐

6. State Oil & Gas Lease No. B-9391

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS)

7. Lease Name or Unit Agreement Name: State H

1. Type of Well: Oil Well ☒ Gas Well ☐ Other

FEB 26 2008

8. Well Number 2

2. Name of Operator: Mack Energy Corporation

OCD-ARTESIA

9. OGRID Number 013837

3. Address of Operator: P. O. Box 960 Artesia, NM 88211-0960

10. Pool name or Wildcat: Red Lake; Glorieta-Yeso, NE

4. Well Location
Unit Letter H 2063 feet from the North line and 441 feet from the East line
Section 2 Township 18S Range 27E NMPM County Eddy

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 3590' GR

Pit or Below-grade Tank Application ☐ or Closure ☐

Pit type_____ Depth Groundwater_____ Distance from nearest fresh water well_____ Distance from nearest surface water_____

Pit Liner Thickness: _____ mil Below-Grade Tank: Volume _____ bbls; Construction Material

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
OTHER: ☐		OTHER: Completion ☒	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

12/15/2007 Perforated from 6134.5-6434' 57 holes.
12/17/2007 Acidized w/4500 gals 15%.
12/18/2007 RIH w/203 joints 2 7/8 tubing SN @ 6439'. RIH w/2 1/2"x2"x20' pump.
12/26/2007 Set CIBP @ 6020' w/35' cement cap. Perforated from 5789.5-5957.5' 52 holes.
12/27/2007 Acidized w/4500 gals 15%.
12/28/2007 Perforated from 5391-5700.5' 83 holes. Acidized w/5000 gals 15%.
12/29/2007 RIH w/188 joints 2 7/8 tubing SN @ 5965'. RIH w/2 1/2"x2"x20' pump.
1/7/2008 Set CIBP @ 5300' w/35' cement cap. Perforated from 4118.5-4197' 40 holes.
1/8/2008 Acidized w/2000 gals 15%.
1/9/2008 Frac w/8130# liteprop, 68,890# 16/30 sand, 14,046# siberprop, 91,292 gals 30/40# gel.
1/11/2008 RIH w/134 joints 2 7/8" tubing SN @ 4243'. RIH 2 1/2 x 2 x 20' Pump.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐, a general permit ☐ or an (attached) alternative OCD-approved plan ☐

SIGNATURE Jerry W. Sherrell TITLE Production Clerk DATE 2/25/08

Type or print name Jerry W. Sherrell E-mail address: jerrys@mackenergycorp.com Telephone No. (575)748-1288

For State Use Only

FOR RECORDS ONLY

APPROVED BY: _____ TITLE _____ DATE 2-28-08

Conditions of Approval (if any):

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

FEB 26 2008
OCD-ARTESIA

Form C-104
Revised Feb. 26, 2007

Submit to Appropriate District Office
5 Copies

☐ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

1 Operator name and Address	2 OGRID Number
Mack Energy Corporation P.O. Box 960 Artesia, NM 88211-0960	013837
	3 Reason for Filing Code/ Effective Date NW

4 API Number	5 Pool Name	6 Pool Code
30-015-35814	Red Lake; Glorieta-Yeso, NE	~~51120~~ 96836
7 Property Code	**8 Property Name**	**9 Well Number**
303847	State H	2

II. Surface Location

UL or lot no	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	2	18S	27E		2063	North	441	East	Eddy

Bottom Hole Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	2	18S	27E		2300	North	340	East	Eddy

12 Lse Code	* Producing Method Code	* Gas Connection Date	C-129 Permit Number	16 C-129 Effective Date	17 C-129 Expiration Date
S	P	1/11/08			

III. Oil and Gas Transporters

18 Transporter OGRID	19 Transporter Name and Address	20 O/G/W
015694	Navajo Refining PO Box 159 Artesia, NM 88211-0159	O
036785	DCP Midstream LP 4001 Penbrook Odessa, TX 79762	G

IV. Well Completion Data

21 Spud Date	22 Ready Date	23 TD	24 PBTD	25 Perforations	26 DHC, MC
10/31/2007	11/23/2007	7545'	5265'	4118.5-4197'	

27 Hole Size	28 Casing & Tubing Size	29 Depth Set	30 Sacks Cement
17 1/2	13 3/8	201	250
12 1/4	8 5/8	1170	675
7 7/8	5 1/2	7495	1415
	2 7/8	4243	

V. Well Test Data

31 Date New Oil	32 Gas Delivery Date	33 Test Date	34 Test Length	35 Tbg. Pressure	36 Csg. Pressure
1/14/2008	1/14/2008	1/30/08	24 hours		
37 Choke Size	**38 Oil**	**39 Water**	**40 Gas**		**41 Test Method**
	8	30	30		P

42 I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief

Signature: Jerry W. Sherrell

Printed name: Jerry W. Sherrell

Title: Production Clerk

E-mail Address: jerrys@mackenergycorp.com

Date: 2/25/08

Phone: (575)748-1288

OIL CONSERVATION DIVISION

Approved by: Kimberly M. Wilson

Title: Compliance Officer

Approval Date: 3-5-08

Submit to Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
DISTRICT I
P O Box 1980, Hobbs, NM 88240
DISTRICT II
1 South First, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd , Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, New Mexico 87505

Form C-105
Revised 1-1-89

WELL API NO: 30-015-35814
5 Indicate Type of Lease: STATE [X] FEE [ ]
6 State Oil & Gas Lease No: B-9391

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1 Type of Well: OIL WELL [X] GAS WELL [ ] DRY [ ] OTHER
b Type of Completion: NEW WELL [X] WORK OVER [ ] Deepen [ ] PLUG BACK [ ] DIFF RESVR [ ] OTHER

7 Lease Name or Unit Agreement Name: State H

2 Name of Operator: Mack Energy Corporation

FEB 26 2008
OCD-ARTESIA

8 Well No: 2

3 Address of Operator: P.O. Box 960, Artesia, NM 88211-0960

9 Pool name or Wildcat: Red Lake; Glorieta-Yeso, NE

4. Well Location
Unit Letter H : 2063 Feet From The North Line and 441 Feet From The East Line
Section 2 Township 18S Range 27E NMPM Eddy County

10 Date Spudded	11 Date TD Reached	12 Date Compl (Ready to Prod.)	13 Elevations (DF & RKB, RT, GR, etc.)	14 Elev Casinghead
10/31/2007	11/21/2007	1/11/08	3590' GR	

15 Total Depth	16. Plug Back TD	17 If Multiple Compl How Many Zones?	18 Intervals Drilled By	Rotary Tools	Cable Tools
7545'	5265'			Yes	

19 Producing Interval(s), of this completion - Top, Bottom, Name: 4118.5-4197'
20 Was Directional Survey Made: Yes
21 Type Electric and Other Logs Run: Gamma Ray, Neutron, Density, Lateralog, Spectral Gamma Ray
22 Was Well Cored: No

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8	48	201	17 1/2	250 sx	None
8 5/8	32	1170	12 1/4	675 sx	None
5 1/2	17	7495	7 7/8	1415 sx	None

24 LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25 TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2 7/8	4243'	

26 Perforation record (interval, size, and number)
6134.5-6434', .42, 57 CIBP @ 6020 w/35' cmt cap
5391-5957.5', .42, 92 CIBP @ 5300' w/35' cmt cap
4118.5-4197', .42, 40

27 ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
	See C-103 for detail

28 PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
1/14/2008	2 1/2x2x20' Pump	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water- Bbl	Gas - Oil Ratio
1/30/08	24 hours			8	30	30	3750

Flow Tubing Press	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl	Gas - MCF	Water- Bbl.	Oil Gravity - API - (Corr.)
			8	30	30	

29 Disposition of Gas (Sold, used for fuel, vented, etc.): Sold
Test Witnessed By: Robert C. Chase

30 List Attachments
ation Survey and Logs

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Jerry W. Sherrell Printed Name Jerry W. Sherrell Title Production Clerk Date 2/25/08

Silver Oak Drilling

PO Box 1370
Artesia, NM 88211-1370
(505) 748-1288

FEB 26 2008
OCD-ARTESIA

November 30, 2007

Mack Energy Corporation
PO Box 960
Artesia, NM 88211-0960

RE: State H #2
2310' FNL & 990' FEL
Sec. 2, T18S, R27E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned re-entered well.

Very truly yours,

Leroy Curry
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 30th day of November, 2007.

Notary Public

OFFICIAL SEAL
REGINIA L. GARNER
NOTARY PUBLIC - STATE OF NEW MEXICO
My commission expires Aug. 30, 2008

Date	Depth	Dev	Dir
11/01/2007	133.00	0.50	0.00
11/02/2007	431.00	0.75	0.00
11/03/2007	700.00	0.50	0.00
11/04/2007	975.00	1.00	0.00
11/04/2007	1134.00	0.50	0.00
11/06/2007	1301.00	1.66	164.90
11/06/2007	1396.00	3.41	161.90
11/07/2007	1492.00	5.19	159.10
11/07/2007	1587.00	7.21	156.40
11/07/2007	1683.00	8.51	155.20
11/07/2007	1778.00	9.94	158.10
11/07/2007	1873.00	9.56	157.60
11/08/2007	1968.00	10.53	159.60
11/08/2007	2064.00	9.83	160.00
11/08/2007	2159.00	9.69	160.50
11/08/2007	2350.00	10.78	156.20
11/08/2007	2445.00	10.67	156.40
11/08/2007	2540.00	10.54	155.40
11/08/2007	2604.00	10.43	156.30
11/09/2007	2699.00	8.58	156.50
11/09/2007	2794.00	7.39	158.60
11/09/2007	2984.00	4.30	162.00
11/09/2007	3080.00	2.86	157.10
11/09/2007	3175.00	1.50	150.00
11/09/2007	3270.00	0.67	256.70
11/09/2007	3365.00	0.82	280.50
11/10/2007	3460.00	0.48	176.00
11/10/2007	3556.00	0.51	181.00
11/10/2007	3651.00	0.65	173.10
11/10/2007	3746.00	0.67	157.20
11/10/2007	3841.00	0.59	154.20
11/10/2007	3936.00	0.24	309.30
11/11/2007	4031.00	0.30	302.30
11/11/2007	4126.00	0.45	322.60
11/11/2007	4222.00	1.06	337.40
11/11/2007	4602.00	1.01	348.10
11/12/2007	4666.00	1.10	18.68
11/12/2007	4729.00	0.53	71.05
11/12/2007	4824.00	0.27	38.14
11/12/2007	4920.00	0.71	12.94
11/12/2007	5015.00	1.19	5.48
11/12/2007	5110.00	0.82	20.33
11/12/2007	5206.00	0.28	132.80
11/13/2007	5301.00	0.54	23.07
11/13/2007	5396.00	0.34	49.15
11/13/2007	5491.00	1.12	153.70
11/13/2007	5586.00	2.14	189.30
11/13/2007	5660.00	1.31	189.40
11/13/2007	5681.00	1.09	194.70
11/13/2007	5745.00	0.67	318.40
11/13/2007	5839.00	0.24	221.30
11/14/2007	5935.00	1.41	161.10
11/15/2007	5998.00	1.01	182.35
11/16/2007	6188.00	0.34	306.90
11/16/2007	6474.00	0.11	334.80
11/16/2007	6570.00	0.15	314.50
11/17/2007	6664.00	0.27	304.50
11/17/2007	6759.00	0.45	295.50
11/17/2007	6854.00	0.46	296.60
11/17/2007	6949.00	0.59	290.10
11/17/2007	7044.00	1.09	134.40
11/18/2007	7140.00	0.38	89.52
11/18/2007	7235.00	0.57	122.40
11/18/2007	7382.00	0.81	125.40

FEB 26 2008
OCD-ARTESIA

Scientific Drilling

MACK ENERGY

Field: Chalk Bluff
Site: Eddy County, NM
Well: State H #2
Wellpath: DH - Job #32D11071006
Survey: 11/05/07-11/14/07

This survey is correct to the best of my knowledge
and is supported by actual field data.

.....Company Representative

Notorized this date 19th of December, 2007.

Deborah Sue Bynum
Notary Signature
County of Midland
e of Texas

NOTARY PUBLIC STATE OF TEXAS
DEBORAH SUE BYNUM
Notary Public, State of Texas
My Commission Expires
5/9/08

Scientific Drilling

Scientific Drilling International
Survey Report

Company:	MACK ENERGY	**Date:** 12/16/2007	**Time:** 18:34.47	**Page:**	1
Field:	Chalk Bluff	**Co-ordinate(NE) Reference:**	Site: Eddy County, NM, Grid North		
Site:	Eddy County, NM	**Vertical (TVD) Reference:**	SITE 0.0		
Well:	State H #2	**Section (VS) Reference:**	Well (0.00N,0.00E,156.92Azi)		
Wellpath:	VH - Job #32K11071013	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Survey:	11/06/07 KSRG 0'-1143'	**Start Date:**	11/06/2007
Company:	Scientific Drilling Internatio	**Engineer:**	Madrid w/P&M
Tool:	Keeper;Keeper Gyro	**Tied-to:**	From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0 00	0.00	359.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.62	77.45	100.00	0.10	0.12	0.53	0.62	0.54	77.45
200.00	0.42	110.33	199.99	0 45	0.11	1.40	0.35	1.40	85.60
300.00	0.37	96.72	299.99	0.86	-0.06	2.06	0.11	2.07	91.59
400.00	0.38	143.78	399.99	1.35	-0.36	2.58	0.30	2.61	98.00
500.00	0.26	212.14	499.99	1.80	-0.82	2.66	0.37	2.78	107.20
600.00	0.28	250.72	599.99	1.91	-1.10	2.30	0.18	2.55	115 41
700.00	0.44	271.18	699.99	1.74	-1.17	1.69	0.20	2.05	124.64
800.00	0.40	74.03	799.98	1.62	-1.06	1.64	0.83	1.96	122.94
900.00	1.01	96.02	899.98	2.09	-1.06	2.85	0.66	3.04	110.38
1000.00	0.95	87.15	999.96	2.81	-1.11	4.56	0.16	4.69	103.70
1100.00	0.56	76.15	1099.95	3.17	-0.95	5.86	0.41	5.94	99.24
1143.00	0.26	86.43	1142.95	3.24	-0.90	6.16	0.72	6.23	98.28

Scientific Drilling

Scientific Drilling International
Survey Report

Company:	MACK ENERGY	**Date:** 12/16/2007 **Time:** 19:33:59	**Page:** 1
Field:	Chalk Bluff	**Co-ordinate(NE) Reference:**	Site: Eddy County, NM, Grid North
Site:	Eddy County, NM	**Vertical (TVD) Reference:**	SITE 0.0
Well:	State H #2	**Section (VS) Reference:**	Well (0.00N,0.00E,156.92Azi)
Wellpath:	DH - Job #32D11071006	**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

Survey:	11/05/07-11/14/07 MWD 1206'-7367'	**Start Date:**	11/05/2007
Company:	Scientific Drilling Internatio	**Engineer:**	Hernandez/Biggs/Elger
Tool:	MWD;MWD	**Tied-to:**	From: Definitive Path

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
1143.00	0.26	86.43	1142.95	3.24	-0.90	6.16	0.00	6.23	98.28
1206.00	0.17	46.81	1205.95	3.26	-0.82	6.37	0.27	6.43	97.37
1301.00	1.66	164.91	1300.94	4.57	-2.06	6.83	1.84	7.14	106.75
1396.00	3.41	161.92	1395.84	8.75	-6.07	8.07	1.85	10.10	126.96
1492.00	5.19	159.14	1491.57	15.93	-12.84	10 50	1.87	16.59	140.73
1587.00	7.21	156.46	1586.01	26.19	-22.32	14.41	2.15	26.57	147.15
1682.00	8.51	155.25	1680.11	39.18	-34.17	19.74	1.38	39.46	149.99
1778.00	9 94	158.14	1774.87	54.56	-48.32	25 80	1.57	54.77	151.90
1873.00	9 56	157.67	1868.50	70.65	-63.22	31.85	0.41	70.79	153.26
1968.00	10.53	159.64	1962.04	87.21	-78.66	37.86	1.08	87.30	154.30
2064.00	9 83	160.07	2056.53	104.15	-94.59	43.71	0.73	104.20	155.20
2159.00	9.69	160.58	2150.15	120.23	-109.75	49.13	0.17	120.25	155.88
2255.00	10 79	160.25	2244.62	137.26	-125.83	54.86	1.15	137.27	156.45
2350.00	10.78	156.23	2337.95	155.02	-142.33	61.44	0.79	155.02	156.65
2445.00	10.67	156.45	2431.29	172.70	-158.52	68.54	0.12	172.70	156.62
2540.00	10.54	155.44	2524.66	190.18	-174.49	75.66	0.24	190.18	156.56
2604.00	10.43	156.37	2587.60	201.82	-185.12	80.42	0.32	201.83	156.52
2699.00	8.58	156.51	2681.29	217.51	-199.50	86.69	1.95	217.52	156.51
2794.00	7.39	158.65	2775.36	230.71	-211.69	91.74	1.29	230.71	156.57
2889.00	5.58	158.12	2869.75	241 43	-221.66	95.68	1.91	241.43	156.65
2984.00	4.30	167.04	2964.40	249.55	-229.42	98.20	1.57	249.55	156.83
3080.00	2.86	157 16	3060.21	255.49	-235.14	99.94	1.63	255.49	156.97
3175.00	1.50	150.04	3155.14	259.10	-238.40	101.48	1.46	259.10	156.94
3270.00	0.67	256.00	3250 13	260.24	-239.61	101.56	1.90	260.24	157.03
3365.00	0.82	280 00	3345.12	259.79	-239.63	100.35	0.36	259.79	157.28
3460.00	0.48	176.03	3440.12	259.79	-239.90	99.71	1.10	259 80	157.43
3556.00	0.51	181.08	3536.11	260 56	-240.73	99.73	0.06	260.57	157.50
3651.00	0.65	173.19	3631.11	261.46	-241.69	99.79	0.17	261.48	157.57
3746.00	0.67	157.21	3726.10	262.54	-242.74	100.07	0.19	262.55	157.60
3841.00	0.59	154.21	3821.10	263.58	-243.69	100.50	0.09	263.60	157 59
3936.00	0.24	309.36	3916.09	263.89	-244.00	100.55	0.86	263 91	157.60
4031.00	0.30	302.31	4011 09	263.51	-243.74	100.19	0.07	263.53	157.66
4126.00	0.45	322.60	4106.09	262.95	-243.32	99.75	0.21	262.97	157.71
4222.00	1.06	337.45	4202.08	261.69	-242.20	99.18	0.66	261.72	157.73
4317.00	0.86	37.93	4297.07	260.47	-240.82	99.29	1.03	260.49	157.59
4412.00	0.59	7.90	4392.06	259.70	-239.78	99.79	0.48	259.71	157.40
4507.00	1.14	0.19	4487.05	258.42	-238.35	99.86	0.59	258.42	157.27
4602.00	1 01	346 16	4582.04	256.72	-236.59	99.66	0.31	256.72	157.16
4667.00	1.10	18.68	4647.03	255.69	-235.44	99.73	0.92	255.69	157.04
4729.00	0.53	71.05	4709.02	255.27	-234.78	100.19	1.42	255.27	156.89
4824.00	0.28	38.14	4804.02	255.19	-234 46	100.75	0.35	255.19	156.75
4920.00	0.71	12.94	4900.01	254.59	-233.69	101.03	0.49	254.60	156.62
5015.00	1.19	5.48	4995.00	253.25	-232.14	101.25	0.52	253.26	156.43
5110.00	0.82	20.33	5089.99	251.89	-230.52	101.58	0.47	251.91	156.22
5206.00	0.28	132.80	5185.98	251.60	-230.03	101.99	1.00	251.63	156.09
5301.00	0.54	23.07	5280.98	251.51	-229.78	102.34	0.72	251.54	155.99
5396.00	0.34	49.15	5375.98	251.11	-229.18	102.73	0.29	251.15	155.86
5491.00	1.12	153 76	5470.97	251.95	-229.83	103.35	1.32	252.00	155.79
5586.00	2.14	189.33	5565.94	254.38	-232.42	103.47	1.46	254.41	156.00

Scientific Drilling

Scientific Drilling International
Survey Report

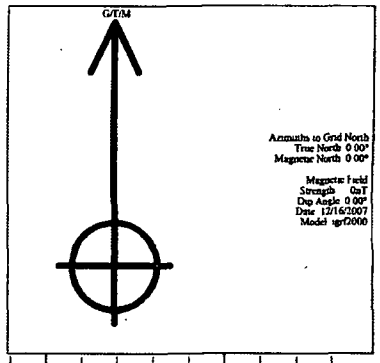
Company:	MACK ENERGY	**Date:** 12/16/2007 **Time:** 19:33:59	**Page:** 2
Field:	Chalk Bluff	**Co-ordinate(NE) Reference:**	Site: Eddy County, NM, Grid North
Site:	Eddy County, NM	**Vertical (TVD) Reference:**	SITE 0.0
Well:	State H #2	**Section (VS) Reference:**	Well (0 00N,0.00E,156.92Azi)
Wellpath:	DH - Job #32D11071006	**Survey Calculation Method:**	Minimum Curvature **Db:** Sybase

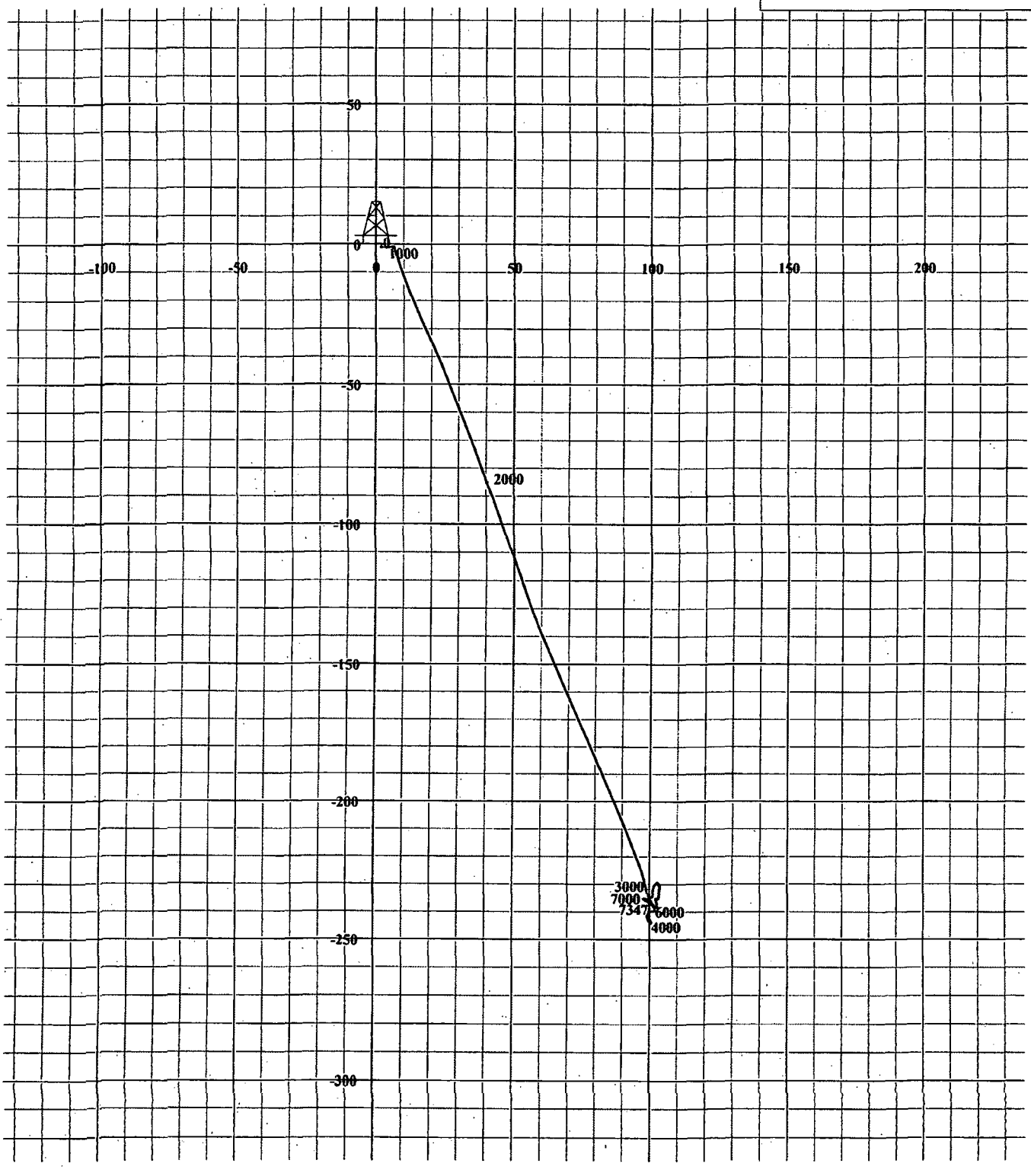
Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
5681.00	1.09	194.79	5660.90	256.59	-235.04	102.96	1.12	256.60	156.34
5745.00	0.67	318.43	5724.89	256.71	-235.35	102.55	2.44	256.72	156.45
5839.00	0.24	221.30	5818.89	256.28	-235.08	102.06	0.79	256.28	156.53
5935.00	1.41	161.10	5914.88	257.54	-236.35	102.31	1.36	257.55	156.59
5998.00	1.01	182.35	5977.87	258 82	-237.64	102.54	0.94	258.82	156.66
6093.00	0.20	294.46	6072.86	259.45	-238.41	102.35	1.16	259.45	156.77
6189.00	0.34	306.99	6168.86	259.08	-238.17	101.97	0.16	259.08	156.82
6284.00	0.45	287.60	6263.86	258.59	-237 89	101.39	0.18	258.59	156.92
6379.00	1.01	331.75	6358.85	257.51	-237.04	100.64	0.79	257.51	157.00
6474.00	0.11	334 85	6453.84	256.59	-236.22	100.20	0.95	256.59	157.01
6570 00	0.15	314.50	6549.84	256.38	-236.04	100.07	0.06	256.38	157.02
6665.00	0.27	304.58	6644.84	256.08	-235.83	99.80	0.13	256.08	157.06
6760.00	0.45	295.56	6739.84	255.61	-235.54	99.28	0.20	255.61	157.14
6855.00	0.46	296.68	6834.84	255 04	-235.21	98.60	0.01	255.04	157.26
6950.00	0 51	281.73	6929.83	254.50	-234.95	97.85	0.14	254.51	157.39
7046.00	1.09	134.41	7025.83	255.10	-235.50	98.08	1.61	255.11	157.39
7140.00	0.38	89.52	7119.82	256.05	-236.13	99.03	0.92	256.05	157.25
7235.00	0.57	122.42	7214.82	256.56	-236.38	99.75	0.34	256.56	157.12
7330.00	0.81	125.40	7309.81	257.52	-237.02	100.69	0.26	257.52	156.98
7367.00	0.87	128 12	7346.81	257.99	-237.35	101.13	0.19	257.99	156.92

Scientific Drilling

Field: Chalk Bluff
Site: Eddy County, NM
Well: State H #2
Wellpath: DH - Job #32D11071006
Survey: 11/05/07-11/14/07





South(-)/North(+) [50

West(-)/East(+) [50ft/in]

Wilson, Kimberly M, EMNRD

From: Jerry Sherrell [jerrys@mackenergycorp.com]
Sent: Wednesday, March 05, 2008 3:37 PM
To: Wilson, Kimberly M, EMNRD
Subject: FW: Financial Assurance/Rule 40- Mack
Importance: High

From: Altomare, Mikal, EMNRD [mailto:Mikal.Altomare@state.nm.us]
Sent: Tuesday, March 04, 2008 11:03 AM
To: Mull, Donna, EMNRD
Cc: Rebecca Groh; Jerry Sherrell; Phillips, Dorothy, EMNRD
Subject: Financial Assurance/Rule 40- Mack
Importance: High

Donna –
I have received a pdf version of what appears to be a properly and fully executed single well bond for the state h no. 001, 03-015-00745, which Mack has assured me that they are overnighting to our office. Everything appears to be in order, and I expect that, upon receipt of the original in our office, it will be reviewed and accepted and Mack will no longer be listed as being out of compliance with financial assurance requirements. That being said, and given that Mack has posted all other necessary financial assurances for all other properties, if there are no other violations or issues with approval of pending Mack applications, consider them to be in compliance for purposes of pending permit applications with your office.
Please contact me if you have any questions.
Thanks,
Mikal

Mikal M. Altomare
Assistant General Counsel
Oil Conservation Division
Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Tel 505.476.3480 ~ Fax 505.476.3462
mikal.altomare@state.nm.us

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APPENDIX C

USGS EARTHQUAKE DATA

NEIC: Earthquake Search Results

U. S. GEOLOGICAL SURVEY

EARTHQUAKE DATA BASE

FILE CREATED: Mon Jun 4 16:13:25 2012
Circle Search Earthquakes= 225
Circle Center Point Latitude: 32.772N Longitude: 104.233W
Radius: 321.860 km
Catalog Used: PDE
Data Selection: Historical & Preliminary Data

CAT	YEAR	MO	DA	ORIG TIME	LAT	LONG	DEP	MAGNITUDE	IEM NFO TF	DTSVNWG	DIST km
PDE	1973	09	22	233835.80	34.47	-106.95	5	3.1 MLGS	...	.....	314
PDE	1974	11	28	033520.50	32.31	-104.14	5	3.7 MLGS	...	.....	51
PDE	1975	08	01	072757.30	31.42	-104.01	5	3.0 LgTUL	.F.	.....	150
PDE	1976	01	19	040330.50	31.90	-103.08	1	3.5 MDGS	.F.	.....	145
PDE	1976	01	22	072157	31.90	-103.07	1	2.8 MDGS	...	.....	145
PDE	1976	01	25	044827.90	31.90	-103.08	2	3.9 MDGS	5F.	.....	145
PDE	1977	01	04	183137.60	32.36	-106.92	5	3.2 MLGS	5F.	.....	256
PDE	1977	04	26	090307.30	31.90	-103.08	4	3.3 MLGS	.F.	.....	144
PDE	1977	11	28	014050.50	32.95	-100.84	5	3.5 MLGS	...	.....	318
PDE	1978	03	02	100452.70	31.56	-102.51	11	3.5 MLGS	.F.	.....	210
PDE	1979	07	05	010501	32.95	-100.89	4	2.7 UKTUL	.H.	.....	312
PDE	1980	03	22	004912.50	34.60	-105.92	5	3.4 MLGS	4F.	.....	255
PDE	1981	05	09	123550.80	33.99	-107.03	5	3.1 MLGS	5F.	.....	293
PDE	1982	01	04	165608.05	31.18	-102.49	5	3.9 LgTUL	3F.	.....	240
PDE	1982	03	16	110302.67	35.36	-103.27	5	3.1 LgTUL	3F.	.....	300
PDE	1982	04	26	083147.79	33.02	-100.84	5	2.8 LgGS	...	.....	318
PDE	1982	05	18	060008.50	34.17	-106.95	9	2.8 MLGS	.F.	.....	296
PDE	1982	05	18	060838.40	34.20	-106.90	6	2.8 MLGS	.F.	.....	293
PDE	1982	05	24	063251.70	34.17	-106.95	6	2.9 MLGS	.F.	.....	295
PDE	1982	09	20	035517.20	33.95	-107.06	11	3.5 LgTUL	4F.	.....	293
PDE	1982	10	07	124125.99	34.31	-106.82	4	2.4 MLGS	.F.	.....	294
PDE	1982	11	28	023648.51	33.00	-100.84	5	3.3 LgTUL	4F.	.....	318
PDE	1983	03	02	232219.40	34.30	-106.89	8	4.3 LgTUL	6D.	.....	299
PDE	1983	04	30	073420.18	33.32	-106.44	7	3.5 MLGS	...	.....	214
PDE	1983	09	15	232536.05	35.14	-104.39	5	3.2 LgTUL	5F.	.....	263
PDE	1983	09	29	074408.43	35.24	-104.30	5	2.7 MDGS	...	.....	274
PDE	1984	05	21	133113.54	35.07	-102.23	5	3.1 LgTUL	...	.....	314
PDE	1984	08	26	021954	34.31	-106.80	5	2.9 MLGS	.F.	.....	292
PDE	1984	12	04	203636.02	32.26	-103.56	5	2.9 MLGS	...	.....	84
PDE	1985	06	05	103600.60	32.56	-106.92	6	2.9 MLGLD	4F.	.....	252
PDE	1985	06	27	182000.03	33.62	-106.47	0	3.4 LgGS	...	....E..	229
PDE	1985	08	16	145652.96	34.13	-106.83	7	4.1 MLGS	6D.	.....	284

PDE	1985	09	06	052246.20	32.54	-106.94	5	2.6	MDGLD	.F. 255
PDE	1985	12	15	071452.23	35.28	-104.64	5	3.6	LgTUL	.F. 280
PDE	1986	04	17	210430.30	32.59	-106.91	5	2.7	MDGLD	.F. 251
PDE	1986	04	28	130016	34.01	-106.82	5	2.6	MDGLD	.F. 276
PDE	1986	08	27	180656.38	35.16	-105.09	5	3.2	MLGS	.F. 276
PDE	1987	05	14	155958.46	33.54	-106.52	0	2.9	MLGS	... .E.. 229
PDE	1988	12	25	075233.93	35.12	-105.96	0	2.8	MDSNM	.F. 304
PDE	1989	01	29	050715.33	35.22	-104.09	7	3.4	MDSNM	 271
PDE	1989	11	29	065438.50	34.46	-106.89	13	4.7	MDSNM	5F. 309
PDE	1990	01	29	131610.68	34.46	-106.88	12	4.8	LgTUL	6D. 308
PDE	1990	01	31	010819.29	34.44	-106.86	10	4.0	LgTUL	5F. 306
PDE	1990	02	21	120219.34	34.01	-106.54	5	3.6	MLGS	.F. 255
PDE	1990	02	27	132322	33.95	-106.59	5	3.9	MDSNM	4F. 255
PDE	1990	05	05	162622.89	34.45	-106.88	6	3.6	MDSNM	.F. 307
PDE	1990	07	21	192822.79	34.46	-106.86	11	3.0	MDSNM	 306
PDE	1990	07	21	203031.34	34.46	-106.86	7	3.1	MDSNM	 306
PDE	1990	07	21	234804.92	34.45	-106.85	7	3.2	MDSNM	 306
PDE	1990	07	22	212705.13	34.84	-106.01	10	3.7	MDSNM	 281
PDE	1990	07	31	073240.18	34.46	-106.86	7	3.3	MDSNM	.F. 307
PDE	1990	11	08	104653.77	34.45	-106.86	6	4.3	MDSNM	4F. 306
PDE	1990	11	08	110346.51	34.45	-106.86	8	3.1	MDSNM	.F. 306
PDE	1990	11	10	121816.85	34.45	-106.85	7	3.1	MDSNM	 305
PDE	1990	11	15	072524.38	34.46	-106.86	6	3.6	MDSNM	4F. 306
PDE	1990	12	05	033644.30	34.45	-106.86	8	2.6	MDSNM	 306
PDE	1991	03	05	201711.40	34.44	-106.87	9	2.9	MDSNM	3F. 306
PDE	1991	03	06	143659.07	34.44	-106.88	7	2.5	MDSNM	 307
PDE	1991	06	05	184414.90	34.45	-106.85	4	3.0	MDSNM	.F. 305
PDE	1991	06	20	1605	33.62	-106.47	0	3.5	MLGS	... .E.. 229
PDE	1991	12	09	124716.50	34.85	-106.55	14	3.1	LgTUL	3F. 314
PDE	1992	01	02	114535.61	32.33	-103.10	5	5.0	LgTUL	5F. 116
PDE	1992	02	23	161752.51	30.65	-105.51	5	3.4	LgTUL	 264
PDE	1992	08	24	012535.20	34.01	-106.86	5	2.6	MDSNM	.F. 280
PDE	1992	08	26	032452.67	32.17	-102.71	5	3.0	LgGS	 157
PDE	1993	03	24	023203.50	35.39	-104.19	5	3.0	LgGS	2F. 290
PDE	1993	06	10	1510	33.62	-106.47	0	3.2	MLGS	... .E.. 229
PDE	1993	06	23	032312.28	31.35	-102.51	5	2.8	MDSNM	 226
PDE	1993	12	22	192511.39	33.33	-105.68	10	3.2	MDSNM	 148
PDE	1994	01	01	025131.29	34.44	-106.98	10	2.5	MDSNM	 314
PDE	1995	03	19	183643.97	35.00	-104.21	5	3.3	LgGS	 246
PDE	1995	04	14	003256.17	30.28	-103.35	17	5.7	MwGS	6CM 287
PDE	1995	04	14	011148.40	30.30	-103.35	10	2.7	LgGS	 286
PDE	1995	04	14	021426	30.30	-103.35	10	2.8	LgGS	 286
PDE	1995	04	14	021938.50	30.30	-103.35	10	3.3	LgGS	.F. 286
PDE	1995	04	14	034842	30.30	-103.35	10	2.6	LgGS	.F. 286
PDE	1995	04	14	041116	30.30	-103.35	10	2.4	LgGS	.F. 286
PDE	1995	04	14	055339	30.30	-103.35	10	2.7	LgGS	 286
PDE	1995	04	14	073936.50	30.30	-103.35	10	2.4	LgGS	.F. 286
PDE	1995	04	14	082712.50	30.30	-103.35	10	2.8	LgGS	.F. 286
PDE	1995	04	14	100258	30.30	-103.35	10	2.9	LgGS	.F. 286
PDE	1995	04	14	105720.40	30.30	-103.35	10	2.3	LgGS	.F. 286
PDE	1995	04	15	031805	30.30	-103.35	10	2.4	LgGS	.F. 286
PDE	1995	04	15	143329.51	30.27	-103.32	10	4.0	LgGS	6D. 290
PDE	1995	04	16	004043.30	30.30	-103.35	10	2.3	LgGS	 286
PDE	1995	04	16	102625.50	30.30	-103.35	10	2.5	LgGS	 286
PDE	1995	04	16	161609.60	30.30	-103.35	10	2.4	LgGS	 286
PDE	1995	04	17	085000.50	30.30	-103.35	10	2.5	LgGS	 286
PDE	1995	04	21	044144	30.30	-103.35	10	2.9	LgGS	3F. 286
PDE	1995	06	01	010615.70	30.30	-103.35	10	3.5	LgGS	4F. 286
PDE	1995	07	06	024151	30.30	-103.35	10	2.7	LgGS	.F. 286
PDE	1995	07	06	024704	30.30	-103.35	10	2.6	LgGS	.F. 286

PDE	1995	08	28	151339.05	34.21	-106.94	3	2.8	LgGS	5F. 297
PDE	1995	11	12	174559.40	30.30	-103.35	10	3.6	LgGS	.F. 286
PDE	1996	03	15	131757.22	33.59	-105.69	10	2.9	LgGS	.F. 163
PDE	1996	03	24	201612.70	34.26	-105.68	10	3.5	LgGS	.F. 212
PDE	1996	03	24	201923.10	34.27	-105.69	10	3.7	LgGS	.F. 214
PDE	1996	07	22	100614.98	34.20	-105.71	10	3.5	LgGS	.F. 209
PDE	1997	05	20	094105.82	34.19	-105.74	10	3.2	LgGS	.F. 210
PDE	1997	12	31	132830.05	34.53	-106.15	5	3.5	MLGS	.F. 264
PDE	1997	12	31	133206.60	34.55	-106.15	5	3.5	MLGS	 265
PDE	1997	12	31	133358.90	34.55	-106.15	5	3.4	MLGS	 265
PDE	1998	01	04	080531.87	34.55	-106.19	5	4.0	MLGS	.F. 268
PDE	1998	04	15	103342.42	30.19	-103.30	10	3.6	LgGS	.F. 299
PDE	1998	07	14	053848.75	35.34	-103.47	5	3.0	MDSNM	.F. 293
PDE	1999	03	01	080023.50	32.57	-104.66	1	2.9	LgGS	 45
PDE	1999	03	14	224317.97	32.59	-104.63	1	4.0	MDSNM	.F. 42
PDE	1999	03	17	122923.11	32.58	-104.67	1	3.5	MDSNM	 46
PDE	1999	05	30	190425.60	32.58	-104.66	10	3.9	MDSNM	 45
PDE	1999	08	09	065122.97	32.57	-104.59	5	2.9	MDSNM	 40
PDE	2000	02	02	071420.26	32.58	-104.63	5	2.7	LgGS	 42
PDE	2000	02	26	030100.83	30.24	-103.61	5	2.8	LgGS	.F. 286
PDE	2001	06	02	015553.72	32.33	-103.14	5	3.3	LgGS	 113
PDE	2001	11	22	000708.02	31.79	-102.63	5	3.1	LgGS	 186
PDE	2002	09	17	154514.47	32.58	-104.63	10	3.5	LgGS	 42
PDE	2002	09	17	233419.35	32.58	-104.63	10	3.3	LgGS	 43
PDE	2003	06	21	020309.56	32.67	-104.50	5	3.6	LgGS	 28
PDE	2004	05	23	092205.28	32.53	-104.57	5	4.0	mbGS	3F. 41
PDE	2004	05	24	213628.56	34.47	-106.90	5	3.5	MLGS	.F. 310
PDE	2004	06	22	085528.23	32.53	-104.58	5	3.7	LgGS	.F. 42
PDE	2004	08	26	184518.62	32.58	-104.50	5	3.4	MLGS	 33
PDE	2004	10	28	025904.82	32.60	-104.50	5	3.0	LgGS	 31
PDE	2004	11	14	212749.90	33.25	-106.20	5	3.5	LgGS	 191
PDE	2005	10	30	025734.81	34.07	-106.98	5	2.4	MLGS	.F. 292
PDE	2005	12	19	202740.37	32.53	-104.55	5	4.1	MwSLM	3FM 40
PDE	2005	12	22	143011.67	32.58	-104.57	5	3.6	LgGS	.F. 37
PDE	2006	01	27	100456.45	32.59	-104.55	5	2.7	LgGS	 35
PDE	2006	01	27	160745.84	32.55	-104.58	5	3.1	LgGS	 40
PDE	2006	02	04	195510.68	32.58	-104.62	5	2.7	MLGS	 42
PDE	2006	03	04	171458.25	30.29	-103.67	5	2.7	LgGS	 280
PDE	2006	03	20	175529.12	32.60	-104.56	5	3.0	MLGS	 36
PDE	2006	04	08	180835.23	31.95	-101.42	5	2.9	MLGS	 279
PDE	2006	08	12	104909.67	32.90	-100.89	5	2.8	LgGS	.F. 312
PDE	2007	05	23	051655.15	34.07	-106.94	5	3.4	MLGS	3F. 289
PDE	2008	01	29	102453.24	32.90	-100.84	5	3.3	LgGS	.F. 317
PDE	2008	02	18	1415	32.27	-101.42	0	2.1	LgGS	.C. ....E.. 269
PDE	2008	04	16	090604.36	33.66	-106.06	5	2.7	MLGS	 196
PDE	2008	05	23	180305.86	32.50	-104.60	5	2.7	LgGS	 45
PDE	2008	07	18	173109.40	32.89	-100.84	5	2.7	LgGS	 317
PDE	2008	12	28	205659.99	30.44	-103.36	5	2.6	MLGS	 271
PDE	2009	01	30	014121.66	32.50	-104.61	5	2.7	LgGS	 46
PDE	2009	06	05	171732.94	31.35	-105.98	0	2.4	MLEPT	.F. 227
PDE	2009	06	05	181023.63	31.35	-105.98	0	2.6	MLEPT	.F. 227
PDE	2009	08	20	015723.10	34.03	-106.87	5	2.7	MLGS	3F. 282
PDE	2009	08	30	003100.29	34.22	-106.89	5	2.5	MLGS	.F. 293
PDE	2009	08	30	063947.47	34.16	-106.86	5	2.6	MLGS	.F. 289
PDE	2009	08	30	070943.72	34.19	-106.88	5	2.1	MLGS	.F. 291
PDE	2009	11	17	185306.84	32.43	-104.64	5	3.0	LgGS	 54
PDE	2010	01	27	045933.05	32.90	-100.83	5	3.1	LgGS	.F. 318
PDE	2010	02	21	095539.77	32.57	-104.61	5	2.8	LgGS	 41
PDE	2010	03	28	000355.08	32.44	-104.50	4	4.1	MwRMT	3FM 44
PDE	2010	04	11	195632.67	32.41	-101.06	5	2.9	LgGS	 300

PDE	2010	04	12	002005.97	32.94	-100.88	5	2.8	LgGS	... .	314
PDE	2010	05	09	071807.37	34.04	-106.83	5	2.1	MLGS	.F.	279
PDE	2010	05	27	204721.87	31.11	-105.58	5	3.7	MLGS	... .	223
PDE	2010	05	31	215819.17	32.52	-104.61	5	4.0	MLGS	... .	44
PDE	2010	08	08	011238.07	32.90	-100.85	5	3.4	MwRMT	2FM	316
PDE	2010	08	25	020514.32	32.95	-100.86	5	2.8	LgGS	... .	315
PDE	2010	08	29	124836.61	32.91	-100.92	5	2.6	LgGS	... .	310
PDE-W	2010	10	09	074227.63	32.93	-100.89	5	3.1	LgGS	... .	313
PDE-W	2010	10	26	065629.79	32.92	-100.85	5	3.1	LgGS	... .	316
PDE-W	2010	11	01	091058.42	33.00	-100.82	5	2.8	LgGS	... .	320
PDE-W	2011	01	11	043415.77	34.39	-106.99	5	2.7	MLGS	... .	312
PDE-W	2011	02	17	182534.41	30.11	-103.30	5	3.3	LgGS	... .	307
PDE-W	2011	03	01	033012.76	32.88	-100.84	5	3.1	LgGS	2F.	317
PDE-W	2011	03	01	063159.89	32.84	-100.80	5	2.5	LgGS	... .	321
PDE-W	2011	03	12	152200.86	32.88	-100.90	5	3.0	LgGS	... .	312
PDE-W	2011	03	14	001948.80	32.96	-100.81	5	3.0	LgGS	... .	320
PDE-W	2011	03	28	091211.95	32.91	-100.82	5	3.0	LgGS	... .	320
PDE-W	2011	04	06	233835.45	34.40	-107.02	5	3.2	MLGS	... .	315
PDE-W	2011	04	25	165631.88	32.82	-100.84	5	2.5	LgGS	... .	317
PDE-W	2011	04	28	010341.97	30.74	-105.71	6	4.4	mbGS	.F.	264
PDE-W	2011	04	28	035625.61	30.74	-105.78	10	4.0	mbGS	... .	268
PDE-W	2011	04	28	045834.59	30.68	-105.75	9	3.6	MwRMT	.FM	272
PDE-W	2011	04	28	074903.45	30.82	-105.80	5	3.1	LgGS	... .	262
PDE-W	2011	04	28	075418.94	30.58	-105.85	5	2.7	LgGS	... .	286
PDE-W	2011	04	30	010716.82	30.76	-105.75	10	4.6	MDUNM	... .	265
PDE-W	2011	05	02	114328.24	30.73	-105.72	10	4.2	MwRMT	2FM	266
PDE-W	2011	05	02	115836.35	30.74	-105.70	10	3.3	MLGS	... .	264
PDE-W	2011	05	02	134032.64	30.69	-105.75	10	3.3	MLGS	... .	271
PDE-W	2011	05	02	135536.79	30.73	-105.67	5	4.4	mbGS	2F.	264
PDE-W	2011	05	03	025830.18	30.67	-105.73	10	3.8	MwRMT	.FM	273
PDE-W	2011	05	03	114203.84	30.49	-105.68	10	2.8	MLGS	... .	287
PDE-W	2011	05	04	162627.03	30.71	-105.79	10	3.7	MwRMT	..M	271
PDE-W	2011	05	05	052010.02	30.79	-105.76	10	3.6	MLGS	... .	262
PDE-W	2011	05	06	002426.09	30.75	-105.73	10	2.8	MLGS	... .	264
PDE-W	2011	05	06	004559.26	30.81	-105.71	10	2.8	MLGS	... .	258
PDE-W	2011	05	07	045100.88	30.64	-105.73	10	4.1	MDUNM	2F.	275
PDE-W	2011	05	08	132449.65	30.75	-105.81	10	3.1	MLGS	... .	269
PDE-W	2011	05	08	134616.49	30.72	-105.76	10	3.2	MLGS	... .	269
PDE-W	2011	05	08	135758.52	30.71	-105.75	10	2.9	MLGS	... .	269
PDE-W	2011	05	08	190732.13	30.81	-105.31	10	3.0	MLGS	... .	239
PDE-W	2011	05	08	225459.93	30.74	-105.74	10	3.3	MLGS	... .	266
PDE-W	2011	05	09	064019.15	30.76	-105.69	10	3.9	MDUNM	.F.	261
PDE-W	2011	05	10	184118.44	30.72	-105.72	10	3.4	MLGS	... .	267
PDE-W	2011	05	13	124916.26	30.76	-105.45	10	2.6	MLGS	... .	250
PDE-W	2011	05	14	220751.11	30.82	-105.74	10	3.9	MDUNM	.F.	259
PDE-W	2011	05	17	200820	30.75	-105.74	10	4.2	MDUNM	... .	265
PDE-W	2011	05	19	103523.51	30.80	-105.69	10	3.4	MwRMT	..M	258
PDE-W	2011	05	19	115649.90	30.72	-105.59	10	2.9	MLGS	... .	260
PDE-W	2011	05	20	231419.06	30.20	-105.55	10	2.7	MLGS	... .	310
PDE-W	2011	05	25	100301.09	30.70	-105.63	10	2.8	MLGS	... .	264
PDE-W	2011	05	27	014128.20	30.80	-105.76	10	3.6	MLGS	... .	261
PDE-W	2011	05	27	014908.92	30.98	-105.78	10	3.0	MLGS	... .	246
PDE-W	2011	07	14	102913.60	32.93	-100.81	5	2.5	LgGS	... .	321
PDE-W	2011	09	11	183635.11	32.74	-100.84	5	2.5	LgGS	3F.	318
PDE-W	2011	09	11	203158.11	32.89	-100.85	5	2.8	LgGS	2F.	316
PDE-W	2011	09	12	003149.11	32.80	-100.88	5	2.7	LgGS	2F.	314
PDE-W	2011	09	12	022931.34	32.73	-100.85	5	2.5	LgGS	.H.	317
PDE-W	2011	09	12	091946.71	32.85	-100.85	5	2.6	LgGS	... .	316
PDE-W	2011	09	12	092612.90	32.76	-100.84	5	2.7	LgGS	2F.	317
PDE-W	2011	09	12	141834.05	32.82	-100.87	7	3.4	LgGS	3F.	314

PDE-W	2011	09	28	214637.55	32.52	-104.66	5	2.7	LgGS	...	 48
PDE-W	2011	11	24	064959.99	32.95	-100.81	5	2.8	LgGS	...	 320
PDE-W	2011	11	24	231549.01	32.94	-100.85	5	3.1	LgGS	...	 317
PDE-W	2011	12	09	184733.24	32.94	-100.86	5	3.5	LgGS	3F.	 315
PDE-W	2011	12	17	144658.46	32.81	-100.85	5	3.2	LgGS	3F.	 316
PDE-W	2011	12	29	061907.64	32.81	-100.91	5	2.5	LgGS	...	 311
PDE-W	2011	12	29	114808.28	32.88	-100.83	5	2.5	LgGS	.F.	 318
PDE-W	2012	01	15	092901.68	31.23	-103.61	5	2.7	LgGS	2F.	 181
PDE-W	2012	01	24	182102.61	30.32	-103.38	5	3.6	LgGS	4F.	 283
PDE-W	2012	02	06	040024.75	32.09	-104.91	5	2.7	LgGS	...	 98
PDE-W	2012	03	06	031149.71	31.81	-106.31	5	2.5	MLGS	3F.	 223
PDE-W	2012	03	18	105722.43	32.28	-103.89	5	3.1	LgGS	...	 63
PDE-Q	2012	04	05	091115.95	31.57	-106.09	5	2.9	MLGS	.F.	 219

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APPENDIX D

INJECTION FLUID ANALYTICAL DATA

ALS Environmental

08-Mar-2011

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly Work Order: **1102690**

Dear Aaron,

ALS Environmental received 2 samples on 24-Feb-2011 08:50 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 39.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

JayLynn F Thibault

Electronically approved by: Glenda H. Ramos

JayLynn F Thibault
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: T104704231-09A-TX

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: **1102690**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1102690-01	Effluent	Water		2/23/2011 08:50	2/24/2011 08:50	☐
1102690-02	Trip Blank	Water		2/23/2011	2/24/2011 08:50	☐

ALS Environmental *Date: 08-Mar-11*

Client:	Navajo Refining Company
Project:	Injection Well Quarterly
Work Order:	1102690

Case Narrative

Prep Comments for 3510_B, Sample 1102690-01F: Matrix Int. Sample Very Dirty.Batch 50327, Method 8270_W, Sample SLCSDW2-110224: Insufficent sample for MS/ MSD
Batch 50327, Semivolatiles, Sample 1102690-01F: Sample had to be ran at 5X due to sample matrix.
Batch R106075, Method 300_W, Sample CCV: Bromide not reported in this analytical sequence. 1102742-01D MS/MSD & 1102725-01B MS/MSD -Spike recoveries out of control due to elevated analytes in background samples causing matrix inteference resulting in poor or over range spike recoveries
Batch R106075, Method 300_W, Sample CCV: Bromide not reported in this analytical sequence. 1102742-01D MS/MSD & 1102725-01b MS/MSD -Spike recoveries out of control due to elevated analytes in background samples causing matrix inteference and poor recoveries

ALS Environmental

Date: *08-Mar-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1102690
Sample ID: Effluent
Lab ID: 1102690-01
Collection Date: 2/23/2011 08:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **3/1/2011**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	3/1/2011 03:35 PM
METALS			**SW6020**		Prep Date: **2/25/2011**	Analyst: **ALR**
Aluminum	**6.00**		**0.500**	**mg/L**	50	2/28/2011 06:13 PM
Arsenic	**0.0557**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Barium	**0.0590**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Beryllium	ND		0.00200	mg/L	1	2/25/2011 09:21 PM
Boron	**0.216**		**0.0200**	**mg/L**	1	2/25/2011 09:21 PM
Cadmium	ND		0.00200	mg/L	1	2/25/2011 09:21 PM
Calcium	**124**		**0.500**	**mg/L**	1	2/25/2011 09:21 PM
Chromium	**0.00562**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Cobalt	ND		0.00500	mg/L	1	2/25/2011 09:21 PM
Copper	**0.0265**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Iron	**3.80**		**0.200**	**mg/L**	1	2/25/2011 09:21 PM
Lead	ND		0.00500	mg/L	1	2/25/2011 09:21 PM
Magnesium	**37.3**		**0.200**	**mg/L**	1	2/25/2011 09:21 PM
Manganese	**0.0940**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Molybdenum	**0.202**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Nickel	**0.0141**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Potassium	**28.7**		**0.200**	**mg/L**	1	2/25/2011 09:21 PM
Selenium	**0.382**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Silver	ND		0.00500	mg/L	1	2/25/2011 09:21 PM
Sodium	**959**		**10.0**	**mg/L**	50	2/28/2011 06:13 PM
Vanadium	**0.0193**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
Zinc	**1.42**		**0.00500**	**mg/L**	1	2/25/2011 09:21 PM
SEMIVOLATILES			**SW8270**		Prep Date: **2/24/2011**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2,4,5-Trichlorophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2,4,6-Trichlorophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Methylnaphthalene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Methylphenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Nitroaniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
2-Nitrophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
3&4-Methylphenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
3-Nitroaniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
4-Nitroaniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
4-Nitrophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Acenaphthene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Acenaphthylene	ND		0.025	mg/L	5	2/25/2011 04:39 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *08-Mar-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1102690
Sample ID: Effluent
Lab ID: 1102690-01
Collection Date: 2/23/2011 08:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Aniline	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Anthracene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Benz(a)anthracene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Benzidine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Hexachloroethane	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Indeno(1,2,3-cd)pyrene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Isophorone	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Naphthalene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Nitrobenzene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
N-Nitrosodimethylamine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
N-Nitrosodi-n-propylamine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
N-Nitrosodiphenylamine	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Pentachlorophenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Phenanthrene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Phenol	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Pyrene	ND		0.025	mg/L	5	2/25/2011 04:39 PM
Surr: 2,4,6-Tribromophenol	*91.8*		*42-124*	*%REC*	5	2/25/2011 04:39 PM
Surr: 2-Fluorobiphenyl	*88.7*		*48-120*	*%REC*	5	2/25/2011 04:39 PM
Surr: 2-Fluorophenol	*65.7*		*20-120*	*%REC*	5	2/25/2011 04:39 PM
Surr: 4-Terphenyl-d14	*80.2*		*51-135*	*%REC*	5	2/25/2011 04:39 PM
Surr: Nitrobenzene-d5	*77.4*		*41-120*	*%REC*	5	2/25/2011 04:39 PM
Surr: Phenol-d6	*64.9*		*20-120*	*%REC*	5	2/25/2011 04:39 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
2-Butanone	ND		0.010	mg/L	1	2/24/2011 06:32 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	2/24/2011 06:32 PM
2-Hexanone	ND		0.010	mg/L	1	2/24/2011 06:32 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Acetone	**0.025**		**0.010**	**mg/L**	1	2/24/2011 06:32 PM
Benzene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Bromodichloromethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Bromoform	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Bromomethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Carbon disulfide	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	2/24/2011 06:32 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *08-Mar-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1102690
Sample ID: Effluent
Lab ID: 1102690-01
Collection Date: 2/23/2011 08:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Chloroethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Chloroform	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Chloromethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Dibromochloromethane	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Ethylbenzene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
m,p-Xylene	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Methylene chloride	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Styrene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Tetrachloroethene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Toluene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Trichloroethene	ND		0.0050	mg/L	1	2/24/2011 06:32 PM
Vinyl acetate	ND		0.010	mg/L	1	2/24/2011 06:32 PM
Vinyl chloride	ND		0.0020	mg/L	1	2/24/2011 06:32 PM
Xylenes, Total	ND		0.015	mg/L	1	2/24/2011 06:32 PM
Surr: 1,2-Dichloroethane-d4	*94.0*		*70-125*	*%REC*	1	2/24/2011 06:32 PM
Surr: 4-Bromofluorobenzene	*95.8*		*72-125*	*%REC*	1	2/24/2011 06:32 PM
Surr: Dibromofluoromethane	*95.2*		*71-125*	*%REC*	1	2/24/2011 06:32 PM
Surr: Toluene-d8	*97.2*		*75-125*	*%REC*	1	2/24/2011 06:32 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	2/28/2011 10:00 AM
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	2/28/2011 10:00 AM
ANIONS			**E300**			Analyst: **TDW**
Chloride	**410**		**5.00**	**mg/L**	10	2/26/2011 01:28 AM
Sulfate	**1,510**		**25.0**	**mg/L**	50	3/2/2011 02:09 AM
Surr: Selenate (surr)	*95.0*		*85-115*	*%REC*	10	2/26/2011 01:28 AM
Surr: Selenate (surr)	*103*		*85-115*	*%REC*	50	3/2/2011 02:09 AM
ALKALINITY			**SM2320B**			Analyst: **DM**
Alkalinity, Bicarbonate (As CaCO3)	**441**		**5.00**	**mg/L**	1	3/4/2011 09:30 AM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	3/4/2011 09:30 AM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	3/4/2011 09:30 AM
Alkalinity, Total (As CaCO3)	**441**		**5.00**	**mg/L**	1	3/4/2011 09:30 AM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **DM**
Specific Conductivity	**6,270**		**1.00**	**µmhos/cm**	1	3/7/2011 09:00 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *08-Mar-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1102690
Sample ID: Effluent
Lab ID: 1102690-01
Collection Date: 2/23/2011 08:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
IGNITIBILITY			**SW1010**			Analyst: **JKP**
Ignitability	> 212		50.0	°F	1	3/4/2011 10:00 AM
PH			**E150.1**			Analyst: **DM**
pH	**7.40**	H	**0.100**	**pH units**	1	3/2/2011 01:00 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **JKP**
Total Dissolved Solids (Residue, Filterable)	**3,310**		**10.0**	**mg/L**	1	3/1/2011 03:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company

ork Order: 1102690

oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50340** Instrument ID **ICPMS03** Method: **SW6020**

MBLK Sample ID: **MBLKW1-022511-50340** Units: **mg/L** Analysis Date: **2/25/2011 03:53 PM**

Client ID: Run ID: **ICPMS03_110225A** SeqNo: **2290830** Prep Date: **2/25/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	0.01716	0.050								J
Cadmium	ND	0.0020								
Calcium	ND	0.50								
Chromium	ND	0.0050								
Cobalt	ND	0.0050								
Copper	ND	0.0050								
Iron	ND	0.20								
Lead	ND	0.0050								
Magnesium	ND	0.20								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
ssium	ND	0.20								
enium	ND	0.0050								
Silver	ND	0.0050								
Sodium	ND	0.20								
Vanadium	ND	0.0050								
Zinc	ND	0.0050								

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50340** Instrument ID **ICPMS03** Method: **SW6020**

LCS Sample ID: **MLCSW1-022511-50340** Units: **mg/L** Analysis Date: **2/25/2011 03:58 PM**

Client ID: Run ID: **ICPMS03_110225A** SeqNo: **2290831** Prep Date: **2/25/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1065	0.010	0.1	0	106	80-120	0			
Arsenic	0.04971	0.0050	0.05	0	99.4	80-120	0			
Barium	0.05105	0.0050	0.05	0	102	80-120	0			
Beryllium	0.05071	0.0020	0.05	0	101	80-120	0			
Boron	0.5158	0.050	0.5	0	103	80-120	0			
Cadmium	0.05049	0.0020	0.05	0	101	80-120	0			
Calcium	5.162	0.50	5	0	103	80-120	0			
Chromium	0.04908	0.0050	0.05	0	98.2	80-120	0			
Cobalt	0.04995	0.0050	0.05	0	99.9	80-120	0			
Copper	0.0506	0.0050	0.05	0	101	80-120	0			
Iron	4.942	0.20	5	0	98.8	80-120	0			
Lead	0.05038	0.0050	0.05	0	101	80-120	0			
Magnesium	5.035	0.20	5	0	101	80-120	0			
Manganese	0.05085	0.0050	0.05	0	102	80-120	0			
Molybdenum	0.04969	0.0050	0.05	0	99.4	80-120	0			
Nickel	0.05028	0.0050	0.05	0	101	80-120	0			
Potassium	5.067	0.20	5	0	101	80-120	0			
'enium	0.04992	0.0050	0.05	0	99.8	80-120	0			
:r	0.05021	0.0050	0.05	0	100	80-120	0			
Sodium	5.035	0.20	5	0	101	80-120	0			
Vanadium	0.04847	0.0050	0.05	0	96.9	80-120	0			
Zinc	0.05204	0.0050	0.05	0	104	80-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50340** Instrument ID **ICPMS03** Method: **SW6020**

MS Sample ID: **1102716-01DMS** Units: **mg/L** Analysis Date: **2/25/2011 04:24 PM**

Client ID: Run ID: **ICPMS03_110225A** SeqNo: **2290836** Prep Date: **2/25/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.383	0.010	0.1	1.317	66	80-120	0			SO
Arsenic	0.05555	0.0050	0.05	0.004552	102	80-120	0			
Barium	0.1866	0.0050	0.05	0.1391	95	80-120	0			
Beryllium	0.05096	0.0020	0.05	0.0002062	102	80-120	0			
Boron	0.6296	0.050	0.5	0.1208	102	80-120	0			
Cadmium	0.05097	0.0020	0.05	0.00001532	102	80-120	0			
Calcium	27.29	0.50	5	22.66	92.6	80-120	0			O
Chromium	0.05251	0.0050	0.05	0.003365	98.3	80-120	0			
Cobalt	0.05036	0.0050	0.05	0.0003329	100	80-120	0			
Copper	0.05437	0.0050	0.05	0.004448	99.8	80-120	0			
Iron	5.848	0.20	5	0.9871	97.2	80-120	0			
Lead	0.05417	0.0050	0.05	0.003855	101	80-120	0			
Magnesium	7.581	0.20	5	2.835	94.9	80-120	0			
Manganese	0.08381	0.0050	0.05	0.03486	97.9	80-120	0			
Molybdenum	0.0538	0.0050	0.05	0.002954	102	80-120	0			
Nickel	0.0514	0.0050	0.05	0.001801	99.2	80-120	0			
Potassium	37.47	0.20	5	33.6	77.4	80-120	0			SO
'enium	0.05219	0.0050	0.05	0.0008471	103	80-120	0			
:r	0.04987	0.0050	0.05	-0.0001762	100	80-120	0			
ɔodium	51	0.20	5	47.13	77.4	80-120	0			SO
Vanadium	0.05334	0.0050	0.05	0.004668	97.3	80-120	0			
Zinc	0.07856	0.0050	0.05	0.02639	104	80-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50340** Instrument ID **ICPMS03** Method: **SW6020**

MSD Sample ID: **1102716-01DMSD** Units: **mg/L** Analysis Date: **2/25/2011 04:29 PM**

Client ID: Run ID: **ICPMS03_110225A** SeqNo: **2290837** Prep Date: **2/25/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.602	0.010	0.1	1.317	285	80-120	1.383	14.7	15	SO
Arsenic	0.05702	0.0050	0.05	0.004552	105	80-120	0.05555	2.61	15	
Barium	0.193	0.0050	0.05	0.1391	108	80-120	0.1866	3.37	15	
Beryllium	0.05114	0.0020	0.05	0.0002062	102	80-120	0.05096	0.353	15	
Boron	0.6442	0.050	0.5	0.1208	105	80-120	0.6296	2.29	15	
Cadmium	0.05162	0.0020	0.05	0.00001532	103	80-120	0.05097	1.27	15	
Calcium	27.63	0.50	5	22.66	99.4	80-120	27.29	1.24	15	O
Chromium	0.05323	0.0050	0.05	0.003365	99.7	80-120	0.05251	1.36	15	
Cobalt	0.05094	0.0050	0.05	0.0003329	101	80-120	0.05036	1.15	15	
Copper	0.05558	0.0050	0.05	0.004448	102	80-120	0.05437	2.2	15	
Iron	6.006	0.20	5	0.9871	100	80-120	5.848	2.67	15	
Lead	0.05441	0.0050	0.05	0.003855	101	80-120	0.05417	0.442	15	
Magnesium	7.626	0.20	5	2.835	95.8	80-120	7.581	0.592	15	
Manganese	0.08481	0.0050	0.05	0.03486	99.9	80-120	0.08381	1.19	15	
Molybdenum	0.05382	0.0050	0.05	0.002954	102	80-120	0.0538	0.0372	15	
Nickel	0.05274	0.0050	0.05	0.001801	102	80-120	0.0514	2.57	15	
Potassium	37.91	0.20	5	33.6	86.2	80-120	37.47	1.17	15	O
'enium	0.05345	0.0050	0.05	0.0008471	105	80-120	0.05219	2.39	15	
;r	0.05051	0.0050	0.05	-0.0001762	101	80-120	0.04987	1.28	15	
Sodium	50.87	0.20	5	47.13	74.8	80-120	51	0.255	15	SO
Vanadium	0.05487	0.0050	0.05	0.004668	100	80-120	0.05334	2.83	15	
Zinc	0.07832	0.0050	0.05	0.02639	104	80-120	0.07856	0.306	15	

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50340** Instrument ID **ICPMS03** Method: **SW6020**

DUP Sample ID: **1102716-01DDUP** Units: **mg/L** Analysis Date: **2/25/2011 04:14 PM**

Client ID: Run ID: **ICPMS03_110225A** SeqNo: **2290834** Prep Date: **2/25/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.274	0.010	0	0	0	0-0	1.317	3.32	25	
Arsenic	0.00439	0.0050	0	0	0	0-0	0.004552	0	25	J
Barium	0.1384	0.0050	0	0	0	0-0	0.1391	0.505	25	
Beryllium	ND	0.0020	0	0	0	0-0	0.0002062	0	25	
Boron	0.1168	0.050	0	0	0	0-0	0.1208	3.37	25	
Cadmium	ND	0.0020	0	0	0	0-0	0.00001532	0	25	
Calcium	22.29	0.50	0	0	0	0-0	22.66	1.65	25	
Chromium	0.003164	0.0050	0	0	0	0-0	0.003365	0	25	J
Cobalt	ND	0.0050	0	0	0	0-0	0.0003329	0	25	
Copper	0.004629	0.0050	0	0	0	0-0	0.004448	0	25	J
Iron	0.9153	0.20	0	0	0	0-0	0.9871	7.55	25	
Lead	0.003715	0.0050	0	0	0	0-0	0.003855	0	25	J
Magnesium	2.779	0.20	0	0	0	0-0	2.835	2	25	
Manganese	0.03395	0.0050	0	0	0	0-0	0.03486	2.64	25	
Molybdenum	0.00302	0.0050	0	0	0	0-0	0.002954	0	25	J
Nickel	0.00147	0.0050	0	0	0	0-0	0.001801	0	25	J
Potassium	33.35	0.20	0	0	0	0-0	33.6	0.747	25	
'enium	ND	0.0050	0	0	0	0-0	0.0008471	0	25	
:r	ND	0.0050	0	0	0	0-0	-0.0001762	0	25	
Sodium	46.96	0.20	0	0	0	0-0	47.13	0.361	25	
Vanadium	0.00459	0.0050	0	0	0	0-0	0.004668	0	25	J
Zinc	0.02171	0.0050	0	0	0	0-0	0.02639	19.5	25	

The following samples were analyzed in this batch: 1102690-01B

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50423** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW2-030111-50423** Units: **mg/L** Analysis Date: **3/1/2011 03:09 PM**
Client ID: Run ID: **MERCURY_110301A** SeqNo: **2294808** Prep Date: **3/1/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW2-030111-50423** Units: **mg/L** Analysis Date: **3/1/2011 03:11 PM**
Client ID: Run ID: **MERCURY_110301A** SeqNo: **2294810** Prep Date: **3/1/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00509	0.00020	0.005	0	102	85-115	0			

MS Sample ID: **1102798-02CMS** Units: **mg/L** Analysis Date: **3/1/2011 03:17 PM**
Client ID: Run ID: **MERCURY_110301A** SeqNo: **2294815** Prep Date: **3/1/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0051	0.00020	0.005	-0.000004	102	85-115	0			

MSD Sample ID: **1102798-02CMSD** Units: **mg/L** Analysis Date: **3/1/2011 03:19 PM**
Client ID: Run ID: **MERCURY_110301A** SeqNo: **2294817** Prep Date: **3/1/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00512	0.00020	0.005	-0.000004	102	85-115	0.0051	0.391	20	

DUP Sample ID: **1102798-02CDUP** Units: **mg/L** Analysis Date: **3/1/2011 03:15 PM**
Client ID: Run ID: **MERCURY_110301A** SeqNo: **2294813** Prep Date: **3/1/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	-0.000004	0	20	

The following samples were analyzed in this batch: 1102690-01B

Qual: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50327** Instrument ID **SV-3** Method: **SW8270**

MBLK Sample ID: **SBLKW2-110224-50327** Units: **µg/L** Analysis Date: **2/25/2011 10:32 AM**
Client ID: Run ID: **SV-3_110225C** SeqNo: **2291908** Prep Date: **2/24/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzidine	ND	5.0								
achloroethane	ND	5.0								
eno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Surr: 2,4,6-Tribromophenol	*81.73*	5.0	*100*	0	*81.7*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*73.83*	5.0	*100*	0	*73.8*	*48-120*	0			
Surr: 2-Fluorophenol	*60.73*	5.0	*100*	0	*60.7*	*20-120*	0			
Surr: 4-Terphenyl-d14	*73.03*	5.0	*100*	0	*73*	*51-135*	0			
Surr: Nitrobenzene-d5	*74.66*	5.0	*100*	0	*74.7*	*41-120*	0			
Surr: Phenol-d6	*59.28*	5.0	*100*	0	*59.3*	*20-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50327** Instrument ID **SV-3** Method: **SW8270**

LCS Sample ID: **SLCSW2-110224-50327** Units: **µg/L** Analysis Date: **2/25/2011 10:54 AM**
Client ID: Run ID: **SV-3_110225C** SeqNo: **2291909** Prep Date: **2/24/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.79	5.0	50	0	89.6	50-120	0			
2,4,5-Trichlorophenol	84.75	5.0	100	0	84.7	50-120	0			
2,4,6-Trichlorophenol	85.29	5.0	100	0	85.3	50-120	0			
2-Methylnaphthalene	41.56	5.0	50	0	83.1	55-120	0			
2-Methylphenol	68.6	5.0	100	0	68.6	50-120	0			
2-Nitroaniline	52.28	5.0	50	0	105	55-120	0			
2-Nitrophenol	82.98	5.0	100	0	83	55-120	0			
3&4-Methylphenol	96.02	5.0	150	0	64	55-120	0			
3-Nitroaniline	30	5.0	50	0	60	40-120	0			
4-Nitroaniline	40.02	5.0	50	0	80	50-120	0			
4-Nitrophenol	89.22	5.0	100	0	89.2	45-120	0			
Acenaphthene	45.48	5.0	50	0	91	55-120	0			
Acenaphthylene	46.5	5.0	50	0	93	55-120	0			
Aniline	27.95	5.0	50	0	55.9	30-120	0			
Anthracene	48.71	5.0	50	0	97.4	55-120	0			
Benz(a)anthracene	47.13	5.0	50	0	94.3	55-120	0			
Benzidine	16.98	5.0	50	0	34	10-120	0			
xachloroethane	40.36	5.0	50	0	80.7	55-120	0			
no(1,2,3-cd)pyrene	45.46	5.0	50	0	90.9	55-120	0			
isophorone	39.57	5.0	50	0	79.1	55-120	0			
Naphthalene	44.72	5.0	50	0	89.4	55-120	0			
Nitrobenzene	42.54	5.0	50	0	85.1	55-120	0			
N-Nitrosodimethylamine	39.75	5.0	50	0	79.5	45-120	0			
N-Nitrosodi-n-propylamine	33.44	5.0	50	0	66.9	50-120	0			
N-Nitrosodiphenylamine	46.83	5.0	50	0	93.7	55-120	0			
Pentachlorophenol	84.94	5.0	100	0	84.9	55-120	0			
Phenanthrene	48.94	5.0	50	0	97.9	55-120	0			
Phenol	68.93	5.0	100	0	68.9	50-120	0			
Pyrene	47.24	5.0	50	0	94.5	55-120	0			
Surr: 2,4,6-Tribromophenol	*81.04*	5.0	*100*	0	*81*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*89.76*	5.0	*100*	0	*89.8*	*48-120*	0			
Surr: 2-Fluorophenol	*77.84*	5.0	*100*	0	*77.8*	*20-120*	0			
Surr: 4-Terphenyl-d14	*79.75*	5.0	*100*	0	*79.7*	*51-135*	0			
Surr: Nitrobenzene-d5	*79.22*	5.0	*100*	0	*79.2*	*41-120*	0			
Surr: Phenol-d6	*67.25*	5.0	*100*	0	*67.3*	*20-120*	0			

Qualifiers: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **50327** Instrument ID **SV-3** Method: **SW8270**

LCSD Sample ID: **SLCSDW2-110224-50327** Units: **µg/L** Analysis Date: **2/25/2011 11:16 AM**
Client ID: Run ID: **SV-3_110225C** SeqNo: **2291910** Prep Date: **2/24/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	41.51	5.0	50	0	83	50-120	44.79	7.6	20	
2,4,5-Trichlorophenol	82.32	5.0	100	0	82.3	50-120	84.75	2.91	20	
2,4,6-Trichlorophenol	80.71	5.0	100	0	80.7	50-120	85.29	5.52	20	
2-Methylnaphthalene	42.23	5.0	50	0	84.5	55-120	41.56	1.59	20	
2-Methylphenol	78.54	5.0	100	0	78.5	50-120	68.6	13.5	20	
2-Nitroaniline	50.52	5.0	50	0	101	55-120	52.28	3.41	20	
2-Nitrophenol	80.36	5.0	100	0	80.4	55-120	82.98	3.22	20	
3&4-Methylphenol	112.7	5.0	150	0	75.1	55-120	96.02	16	20	
3-Nitroaniline	29.25	5.0	50	0	58.5	40-120	30	2.51	20	
4-Nitroaniline	39.11	5.0	50	0	78.2	50-120	40.02	2.3	20	
4-Nitrophenol	86.48	5.0	100	0	86.5	45-120	89.22	3.12	20	
Acenaphthene	43.56	5.0	50	0	87.1	55-120	45.48	4.32	20	
Acenaphthylene	43.76	5.0	50	0	87.5	55-120	46.5	6.07	20	
Aniline	31.63	5.0	50	0	63.3	30-120	27.95	12.3	20	
Anthracene	47.13	5.0	50	0	94.3	55-120	48.71	3.29	20	
Benz(a)anthracene	44.23	5.0	50	0	88.5	55-120	47.13	6.35	20	
Benzidine	19.98	5.0	50	0	40	10-120	16.98	16.2	20	
achloroethane	39.19	5.0	50	0	78.4	55-120	40.36	2.95	20	
no(1,2,3-cd)pyrene	44.35	5.0	50	0	88.7	55-120	45.46	2.46	20	
isophorone	40.56	5.0	50	0	81.1	55-120	39.57	2.47	20	
Naphthalene	42.6	5.0	50	0	85.2	55-120	44.72	4.85	20	
Nitrobenzene	39.59	5.0	50	0	79.2	55-120	42.54	7.18	20	
N-Nitrosodimethylamine	36.14	5.0	50	0	72.3	45-120	39.75	9.5	20	
N-Nitrosodi-n-propylamine	38.81	5.0	50	0	77.6	50-120	33.44	14.9	20	
N-Nitrosodiphenylamine	43.82	5.0	50	0	87.6	55-120	46.83	6.63	20	
Pentachlorophenol	83.9	5.0	100	0	83.9	55-120	84.94	1.24	20	
Phenanthrene	45.45	5.0	50	0	90.9	55-120	48.94	7.38	20	
Phenol	75.63	5.0	100	0	75.6	50-120	68.93	9.27	20	
Pyrene	46.15	5.0	50	0	92.3	55-120	47.24	2.33	20	
Surr: 2,4,6-Tribromophenol	*81.86*	5.0	*100*	0	*81.9*	*42-124*	81.04	*1*	*20*	
Surr: 2-Fluorobiphenyl	*80.35*	5.0	*100*	0	*80.3*	*48-120*	89.76	*11.1*	*20*	
Surr: 2-Fluorophenol	*78.92*	5.0	*100*	0	*78.9*	*20-120*	77.84	*1.38*	*20*	
Surr: 4-Terphenyl-d14	*78.76*	5.0	*100*	0	*78.8*	*51-135*	79.75	*1.25*	*20*	
Surr: Nitrobenzene-d5	*75.41*	5.0	*100*	0	*75.4*	*41-120*	79.22	*4.93*	*20*	
Surr: Phenol-d6	*73.58*	5.0	*100*	0	*73.6*	*20-120*	67.25	*8.99*	*20*	

The following samples were analyzed in this batch: 1102690-01F

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R105900** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-022411-R105900** Units: **µg/L** Analysis Date: **2/24/2011 11:47 AM**

Client ID: Run ID: **VOA1_110224B** SeqNo: **2290447** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
·lorobenzene	ND	5.0								
ıroethane	ND	5.0								
ↄnloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	0.5954	10								J
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	*49.97*	5.0	*50*	0	*99.9*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*48.32*	5.0	*50*	0	*96.6*	*72-125*	0			
Surr: Dibromofluoromethane	*48.9*	5.0	*50*	0	*97.8*	*71-125*	0			
Surr: Toluene-d8	*50.18*	5.0	*50*	0	*100*	*75-125*	0			

Qualifiers: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R105900** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-022411-R105900** Units: **µg/L** Analysis Date: **2/24/2011 10:56 AM**
Client ID: Run ID: **VOA1_110224B** SeqNo: **2290445** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	46.14	5.0	50	0	92.3	80-120	0			
1,1,2,2-Tetrachloroethane	52.1	5.0	50	0	104	72-120	0			
1,1,2-Trichloroethane	44.96	5.0	50	0	89.9	80-120	0			
1,1-Dichloroethane	47.54	5.0	50	0	95.1	76-120	0			
1,1-Dichloroethene	47.56	5.0	50	0	95.1	73-124	0			
1,2-Dichloroethane	51.36	5.0	50	0	103	78-120	0			
2-Butanone	95.28	10	100	0	95.3	58-132	0			
2-Chloroethyl vinyl ether	112.4	10	100	0	112	74-120	0			
2-Hexanone	108.8	10	100	0	109	61-130	0			
4-Methyl-2-pentanone	103.5	10	100	0	104	65-127	0			
Acetone	99.99	10	100	0	100	59-137	0			
Benzene	51.93	5.0	50	0	104	73-121	0			
Bromodichloromethane	53.26	5.0	50	0	107	80-120	0			
Bromoform	49.92	5.0	50	0	99.8	79-120	0			
Bromomethane	61.91	5.0	50	0	124	66-137	0			
Carbon disulfide	96.68	10	100	0	96.7	68-141	0			
Carbon tetrachloride	49.7	5.0	50	0	99.4	75-124	0			
'orobenzene	46	5.0	50	0	92	80-120	0			
ɹroethane	39.82	5.0	50	0	79.6	76-121	0			
Chloroform	48.93	5.0	50	0	97.9	80-120	0			
Chloromethane	39.52	5.0	50	0	79	67-123	0			
cis-1,3-Dichloropropene	52.54	5.0	50	0	105	80-120	0			
Dibromochloromethane	46.26	5.0	50	0	92.5	80-120	0			
Ethylbenzene	46.88	5.0	50	0	93.8	80-120	0			
m,p-Xylene	92.51	10	100	0	92.5	78-121	0			
Methylene chloride	48.62	10	50	0	97.2	65-133	0			
Styrene	43.05	5.0	50	0	86.1	80-120	0			
Tetrachloroethene	47.77	5.0	50	0	95.5	79-120	0			
Toluene	43.26	5.0	50	0	86.5	80-120	0			
trans-1,3-Dichloropropene	54.52	5.0	50	0	109	80-120	0			
Trichloroethene	54.74	5.0	50	0	109	80-120	0			
Vinyl acetate	93.83	10	100	0	93.8	67-139	0			
Vinyl chloride	43.29	2.0	50	0	86.6	70-127	0			
Xylenes, Total	136.1	15	150	0	90.7	80-120	0			
Surr: 1,2-Dichloroethane-d4	*45.82*	5.0	*50*	0	*91.6*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*45.9*	5.0	*50*	0	*91.8*	*72-125*	0			
Surr: Dibromofluoromethane	*47.55*	5.0	*50*	0	*95.1*	*71-125*	0			
Surr: Toluene-d8	*46.36*	5.0	*50*	0	*92.7*	*75-125*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R105900** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1102658-01ZMS** Units: **µg/L** Analysis Date: **2/24/2011 01:28 PM**
Client ID: Run ID: **VOA1_110224B** SeqNo: **2290458** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	46.53	5.0	50	0	93.1	80-120	0			
1,1,2,2-Tetrachloroethane	50.16	5.0	50	0	100	72-120	0			
1,1,2-Trichloroethane	47.43	5.0	50	0	94.9	80-120	0			
1,1-Dichloroethane	49.87	5.0	50	0	99.7	76-120	0			
1,1-Dichloroethene	44.61	5.0	50	0	89.2	73-124	0			
1,2-Dichloroethane	49.5	5.0	50	0	99	78-120	0			
2-Butanone	107	10	100	0	107	58-132	0			
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0			S
2-Hexanone	102.8	10	100	0	103	61-130	0			
4-Methyl-2-pentanone	110	10	100	0	110	65-127	0			
Acetone	96.87	10	100	0	96.9	59-137	0			
Benzene	48.06	5.0	50	0	96.1	73-121	0			
Bromodichloromethane	52.89	5.0	50	0	106	80-120	0			
Bromoform	51.47	5.0	50	0	103	79-120	0			
Bromomethane	63.72	5.0	50	0	127	66-137	0			
Carbon disulfide	88.75	10	100	0	88.7	68-141	0			
Carbon tetrachloride	44.55	5.0	50	0	89.1	75-124	0			
`robenzene	47.07	5.0	50	0	94.1	80-120	0			
roethane	39.38	5.0	50	0	78.8	76-121	0			
Chloroform	49.87	5.0	50	0	99.7	80-120	0			
Chloromethane	40.61	5.0	50	0	81.2	67-123	0			
cis-1,3-Dichloropropene	51.17	5.0	50	0	102	80-120	0			
Dibromochloromethane	48.96	5.0	50	0	97.9	80-120	0			
Ethylbenzene	45.76	5.0	50	0	91.5	80-120	0			
m,p-Xylene	91.18	10	100	0	91.2	78-121	0			
Methylene chloride	48.76	10	50	0	97.5	65-133	0			
Styrene	43.63	5.0	50	0	87.3	80-120	0			
Tetrachloroethene	43.42	5.0	50	0	86.8	79-120	0			
Toluene	43.11	5.0	50	0	86.2	80-120	0			
trans-1,3-Dichloropropene	52.96	5.0	50	0	106	80-120	0			
Trichloroethene	51.89	5.0	50	0	104	80-120	0			
Vinyl acetate	97.23	10	100	0	97.2	67-139	0			
Vinyl chloride	39.73	2.0	50	0	79.5	70-127	0			
Xylenes, Total	136	15	150	0	90.7	80-120	0			
Surr: 1,2-Dichloroethane-d4	*48.17*	5.0	*50*	0	*96.3*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*50.33*	5.0	*50*	0	*101*	*72-125*	0			
Surr: Dibromofluoromethane	*48.7*	5.0	*50*	0	*97.4*	*71-125*	0			
Surr: Toluene-d8	*47.29*	5.0	*50*	0	*94.6*	*75-125*	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R105900** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1102658-01ZMSD** Units: **µg/L** Analysis Date: **2/24/2011 01:54 PM**
Client ID: Run ID: **VOA1_110224B** SeqNo: **2290459** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	45.91	5.0	50	0	91.8	80-120	46.53	1.34	20	
1,1,2,2-Tetrachloroethane	52.15	5.0	50	0	104	72-120	50.16	3.88	20	
1,1,2-Trichloroethane	47.7	5.0	50	0	95.4	80-120	47.43	0.585	20	
1,1-Dichloroethane	47.86	5.0	50	0	95.7	76-120	49.87	4.1	20	
1,1-Dichloroethene	44.92	5.0	50	0	89.8	73-124	44.61	0.7	20	
1,2-Dichloroethane	47.81	5.0	50	0	95.6	78-120	49.5	3.47	20	
2-Butanone	107.5	10	100	0	108	58-132	107	0.476	20	
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S
2-Hexanone	117	10	100	0	117	61-130	102.8	12.9	20	
4-Methyl-2-pentanone	116.1	10	100	0	116	65-127	110	5.39	20	
Acetone	100.8	10	100	0	101	59-137	96.87	4	20	
Benzene	46.51	5.0	50	0	93	73-121	48.06	3.28	20	
Bromodichloromethane	49.1	5.0	50	0	98.2	80-120	52.89	7.44	20	
Bromoform	51.63	5.0	50	0	103	79-120	51.47	0.311	20	
Bromomethane	64.13	5.0	50	0	128	66-137	63.72	0.639	20	
Carbon disulfide	88.45	10	100	0	88.4	68-141	88.75	0.334	20	
Carbon tetrachloride	42.34	5.0	50	0	84.7	75-124	44.55	5.07	20	
`orobenzene	46.98	5.0	50	0	94	80-120	47.07	0.191	20	
`roethane	40.26	5.0	50	0	80.5	76-121	39.38	2.23	20	
Chloroform	48.96	5.0	50	0	97.9	80-120	49.87	1.86	20	
Chloromethane	37.91	5.0	50	0	75.8	67-123	40.61	6.85	20	
cis-1,3-Dichloropropene	49.94	5.0	50	0	99.9	80-120	51.17	2.44	20	
Dibromochloromethane	51.34	5.0	50	0	103	80-120	48.96	4.75	20	
Ethylbenzene	47.87	5.0	50	0	95.7	80-120	45.76	4.53	20	
m,p-Xylene	94.72	10	100	0	94.7	78-121	91.18	3.81	20	
Methylene chloride	51.97	10	50	0	104	65-133	48.76	6.37	20	
Styrene	46.67	5.0	50	0	93.3	80-120	43.63	6.72	20	
Tetrachloroethene	44.16	5.0	50	0	88.3	79-120	43.42	1.68	20	
Toluene	47.88	5.0	50	0	95.8	80-120	43.11	10.5	20	
trans-1,3-Dichloropropene	51.45	5.0	50	0	103	80-120	52.96	2.9	20	
Trichloroethene	51	5.0	50	0	102	80-120	51.89	1.73	20	
Vinyl acetate	90.65	10	100	0	90.6	67-139	97.23	7.01	20	
Vinyl chloride	39.63	2.0	50	0	79.3	70-127	39.73	0.243	20	
Xylenes, Total	143.8	15	150	0	95.9	80-120	136	5.55	20	
Surr: 1,2-Dichloroethane-d4	*47.15*	5.0	*50*	0	*94.3*	*70-125*	48.17	*2.14*	*20*	
Surr: 4-Bromofluorobenzene	*52.08*	5.0	*50*	0	*104*	*72-125*	50.33	*3.41*	*20*	
Surr: Dibromofluoromethane	*49.5*	5.0	*50*	0	*99*	*71-125*	48.7	*1.64*	*20*	
Surr: Toluene-d8	*48.69*	5.0	*50*	0	*97.4*	*75-125*	47.29	*2.92*	*20*	

The following samples were analyzed in this batch: 1102690-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106075** Instrument ID **ICS3K2** Method: **E300**

MBLK Sample ID: **WBLKW1-022511-R106075** Units: **mg/L** Analysis Date: **2/25/2011 12:05 PM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295380** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								
Surr: Selenate (surr)	*4.932*	0.10	*5*	0	*98.6*	*85-115*	0			

LCS Sample ID: **WLCSW1-022511-R106075** Units: **mg/L** Analysis Date: **2/25/2011 12:27 PM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295381** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.96	0.50	20	0	99.8	90-110	0			
Sulfate	18.83	0.50	20	0	94.2	90-110	0			
Surr: Selenate (surr)	*5.106*	0.10	*5*	0	*102*	*85-115*	0			

LCSD Sample ID: **WLCSDW1-022511-R106075** Units: **mg/L** Analysis Date: **2/25/2011 12:48 PM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295382** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
›ride	19.95	0.50	20	0	99.7	90-110	19.96	0.0601	20	
‹ate	18.8	0.50	20	0	94	90-110	18.83	0.175	20	
Surr: Selenate (surr)	*5.09*	0.10	*5*	0	*102*	*85-115*	5.106	*0.314*	*20*	

MS Sample ID: **1102742-01DMS** Units: **mg/L** Analysis Date: **2/25/2011 01:32 PM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295384** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3390	0.50	10	3462	-715	80-120	0			SEO
Sulfate	183	0.50	10	180.3	26.6	80-120	0			SEO
Surr: Selenate (surr)	*5.55*	0.10	*5*	0	*111*	*85-115*	0			

MS Sample ID: **1102725-01BMS** Units: **mg/L** Analysis Date: **2/26/2011 02:11 AM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295419** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	366.4	0.50	10	365.1	13.4	80-120	0			SEO
Sulfate	1706	0.50	10	1733	-260	80-120	0			SEO
Surr: Selenate (surr)	*5.403*	0.10	*5*	0	*108*	*85-115*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106075** Instrument ID **ICS3K2** Method: **E300**

MSD Sample ID: **1102742-01DMSD** Units: **mg/L** Analysis Date: **2/25/2011 01:54 PM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295385** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3382	0.50	10	3462	-803	80-120	3390	0.26	20	SEO
Sulfate	187.4	0.50	10	180.3	70.3	80-120	183	2.36	20	SEO
Surr: Selenate (surr)	*5.459*	0.10	*5*	0	*109*	*85-115*	5.55	*1.65*	*20*	

MSD Sample ID: **1102725-01BMSD** Units: **mg/L** Analysis Date: **2/26/2011 02:33 AM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295420** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	365.8	0.50	10	365.1	7.41	80-120	366.4	0.165	20	SEO
Sulfate	1703	0.50	10	1733	-292	80-120	1706	0.185	20	SEO
Surr: Selenate (surr)	*5.193*	0.10	*5*	0	*104*	*85-115*	5.403	*3.96*	*20*	

MSD Sample ID: **1102703-11AZMS** Units: **mg/L** Analysis Date: **2/26/2011 07:15 AM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295435** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
oride	1472	50	1000	468	100	80-120	0			
ate	1186	50	1000	160.5	103	80-120	0			
Surr: Selenate (surr)	*477.4*	10	*500*	0	*95.5*	*85-115*	0			

MSD Sample ID: **1102703-11AZMSD** Units: **mg/L** Analysis Date: **2/26/2011 01:00 PM**
Client ID: Run ID: **ICS3K2_110225A** SeqNo: **2295437** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1474	50	1000	468	101	80-120	1472	0.109	20	
Sulfate	1261	50	1000	160.5	110	80-120	1186	6.16	20	
Surr: Selenate (surr)	*509.7*	10	*500*	0	*102*	*85-115*	*477.4*	*6.55*	*20*	

The following samples were analyzed in this batch: 1102690-01E

Qual: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106123** Instrument ID **WetChem** Method: **E150.1**

LCS Sample ID: **WLCSW1-030211-R106123** Units: **pH units** Analysis Date: **3/2/2011 01:00 PM**
Client ID: Run ID: **WETCHEM_110302C** SeqNo: **2296106** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.06	0.10	6	0	101	90-110	0			

DUP Sample ID: **1102682-01DDUP** Units: **pH units** Analysis Date: **3/2/2011 01:00 PM**
Client ID: Run ID: **WETCHEM_110302C** SeqNo: **2296134** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.8	0.10	0	0	0	0-0	7.75	0.643	20	H

The following samples were analyzed in this batch: 1102690-01D

Qual: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106143** Instrument ID **Balance1** Method: **M2540C**

MBLK Sample ID: **BLANK-R106143** Units: **mg/L** Analysis Date: **3/1/2011 03:00 PM**
Client ID: Run ID: **BALANCE1_110301H** SeqNo: **2296281** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **LCS-R106143** Units: **mg/L** Analysis Date: **3/1/2011 03:00 PM**
Client ID: Run ID: **BALANCE1_110301H** SeqNo: **2296282** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1080	10	1000	0	108	85-115	0			

DUP Sample ID: **1102690-01EDUP** Units: **mg/L** Analysis Date: **3/1/2011 03:00 PM**
Client ID: **Effluent** Run ID: **BALANCE1_110301H** SeqNo: **2296271** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	3592	10	0	0	0	0-0	3312	8.11	20	

The following samples were analyzed in this batch: 1102690-01E

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106268** Instrument ID **WetChem** Method: **SW1010**

LCS Sample ID: **LCS-030411-R106268** Units: **°F** Analysis Date: **3/4/2011 10:00 AM**
Client ID: Run ID: **WETCHEM_110304A** SeqNo: **2298963** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	0			

LCSD Sample ID: **LCSD-030411-R106268** Units: **°F** Analysis Date: **3/4/2011 10:00 AM**
Client ID: Run ID: **WETCHEM_110304A** SeqNo: **2298965** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	83	0	25	

DUP Sample ID: **1103077-01ADUP** Units: **°F** Analysis Date: **3/4/2011 10:00 AM**
Client ID: Run ID: **WETCHEM_110304A** SeqNo: **2298968** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	116	50	0	0	0	0-0	114	1.74	25	

The following samples were analyzed in this batch: 1102690-01D

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R106313** Instrument ID **WetChem** Method: **SM2320B**

MBLK Sample ID: **WBLKW1-030411-R106313** Units: **mg/L** Analysis Date: **3/4/2011 09:30 AM**
Client ID: Run ID: **WETCHEM_110304G** SeqNo: **2300322** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: **WLCSW1-030411-R106313** Units: **mg/L** Analysis Date: **3/4/2011 09:30 AM**
Client ID: Run ID: **WETCHEM_110304G** SeqNo: **2300323** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	1015	5.0	1000	0	102	80-120	0			
Alkalinity, Total (As CaCO3)	1015	5.0	1000	0	102	80-120	0			

DUP Sample ID: **1102638-10BDUP** Units: **mg/L** Analysis Date: **3/4/2011 09:30 AM**
Client ID: Run ID: **WETCHEM_110304G** SeqNo: **2300340** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
linity, Bicarbonate (As CaCO3)	616.2	5.0	0	0	0	0-0	615.2	0.166	20	
alinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	616.2	5.0	0	0	0	0-0	615.2	0.166	20	

The following samples were analyzed in this batch: 1102690-01E

Qual: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1102690
Project: Injection Well Quarterly

QC BATCH REPORT

atch ID: **R106351** Instrument ID **WetChem** Method: **M2510 B**

MBLK Sample ID: **WBLKW1-030711-R106351** Units: **µmhos/cm** Analysis Date: **3/7/2011 09:00 AM**
Client ID: Run ID: **WETCHEM_110307A** SeqNo: **2300764** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **WLCSW1-030711-R106351** Units: **µmhos/cm** Analysis Date: **3/7/2011 09:00 AM**
Client ID: Run ID: **WETCHEM_110307A** SeqNo: **2300765** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1380	1.0	1413	0	97.7	80-120	0			

DUP Sample ID: **1102690-01EDUP** Units: **µmhos/cm** Analysis Date: **3/7/2011 09:00 AM**
Client ID: **Effluent** Run ID: **WETCHEM_110307A** SeqNo: **2300776** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	6260	1.0	0	0	0		6270	0.16	20	

The following samples were analyzed in this batch: 1102690-01E

: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1102690

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
°F	Farenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

☑ ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Chain of Custody Form

Page 1 of 1

☐ ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424-9263
Tel: +1 616 399 6070
Fax: +1 616 399 6185

ALS Project Manager: | ALS Work Order #: 1107690

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(575) 748-6733	Phone	(575) 748-6733	H	Conductivity
Fax	(575) 746-5421	Fax	(575) 746-5421	I	TDS
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Effluent	2-23-11	0850	L	Y		X	X	X	X	X	X	X	X	X		
2	Trip Blank																
3	Temp Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
Aaron Strange	2-23-11	1615		10 Day TAT.
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID / Cooler Temp.
			[illegible] 2/24/11 0850	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP CheckList
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other / EDD

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.
2. Unless otherwise agreed in a formal contract, services provided by ALS Laboratory Group are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **24-Feb-11 08:50**

Work Order: **1102690** Received by: **RDH**

Checklist completed by Salvador A. Yanez (eSignature) 24-Feb-11 (Date) Reviewed by: Jay Lynn F Thibault (eSignature) 24-Feb-11 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.9c	002	
Cooler(s)/Kit(s):	1948		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

1102690

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 2-23-11 Time: 1615
Name: Aaron Z[illegible] Faang &
Company: Naval[illegible] Rd Fairing Co

Seal Broken by: [illegible]
Date: 2/24/11

ALS Group USA, Corp

Date: 01-Mar-11

Client: ALS Environmental
Project: 1102690
Work Order: **1102577**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1102577-01	1102690-01C	Water		2/23/2011 08:50	2/25/2011 14:45	☐

ALS Group USA, Corp

Date: 01-Mar-11

Client: ALS Environmental
Project: 1102690
WorkOrder: 1102577

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: *01-Mar-11*

Client: ALS Environmental
Project: 1102690
Sample ID: 1102690-01C
Collection Date: 2/23/2011 08:50 AM

Work Order: 1102577
Lab ID: 1102577-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **NZ**
Cyanide, Reactive	ND		40.0	mg/Kg	1	2/28/2011 10:00 AM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **NZ**
Sulfide, Reactive	ND		40.0	mg/Kg	1	2/28/2011 10:00 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 01-Mar-11

Client: ALS Environmental

ork Order: 1102577

oject: 1102690

QC BATCH REPORT

Batch ID: **R87453** Instrument ID **WETCHEM** Method: **SW7.3.4.2**

MBLK Sample ID: **WBLKW1-110228-R87453** Units: **mg/Kg** Analysis Date: **2/28/2011 10:00 AM**

Client ID: Run ID: **WETCHEM_110228M** SeqNo: **1566858** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch: 1102577-01A

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ALS Environmental
Work Order: 1102577
Project: 1102690

QC BATCH REPORT

Batch ID: **R87454** Instrument ID **WETCHEM** Method: **SW7.3.3.2**

MBLK Sample ID: **WBLKW1-110228-R87454** Units: **mg/Kg** Analysis Date: **2/28/2011 10:00 AM**
Client ID: Run ID: **WETCHEM_110228N** SeqNo: **1566874** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS Sample ID: **WLCSW1-110228-R87454** Units: **mg/Kg** Analysis Date: **2/28/2011 10:00 AM**
Client ID: Run ID: **WETCHEM_110228N** SeqNo: **1566875** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	0			

LCSD Sample ID: **WLCSDW1-110228-R87454** Units: **mg/Kg** Analysis Date: **2/28/2011 10:00 AM**
Client ID: Run ID: **WETCHEM_110228N** SeqNo: **1566883** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	249.6	0	35	

MS Sample ID: **1102577-01A MS** Units: **mg/Kg** Analysis Date: **2/28/2011 10:00 AM**
Client ID: **1102690-01C** Run ID: **WETCHEM_110228N** SeqNo: **1566881** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	0			

MSD Sample ID: **1102577-01A MSD** Units: **mg/Kg** Analysis Date: **2/28/2011 10:00 AM**
Client ID: **1102690-01C** Run ID: **WETCHEM_110228N** SeqNo: **1566882** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	249.6	0	35	

The following samples were analyzed in this batch: 1102577-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

WO# 110257

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 24-Feb-11
COC ID: 10101
Due Date 04-Mar-11

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	10-2120271	Project Name	1102690	A	Reactive Cyanide (SW-846)
Work Order		Project Number		B	Reactive Sulfide (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C	
Send Report To	JayLynn F Thibault	Inv Attn	Accounts Payable	D	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E	
				F	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G	
Phone	(281) 530-5656	Phone	(281) 530-5656	H	
Fax	(281) 530-5887	Fax	(281) 530-5887	I	
eMail Address	jaylynn.thibault@alsenviro.com	eMail CC		J	

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1102690-01C (Effluent)	Water	23/Feb/2011 8:50	(1) 1LPNEAT	X	X								

Comments:
Please analyze for RCI. CC:glenda.ramos@alsglobal.com & mary.knowles@alsglobal.com

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
	2/24/11 FedEx		2/25/11 1445		Std
Relinquished by:	Date/Time	Received by:	Date/Time		

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ALS - HOUSTON** Date/Time Received: **25-Feb-11 14:45**

Work Order: **1102577** Received by: **KRW**

Checklist completed by *Keith Werenga* 25-Feb-11 Reviewed by: *Bill Carey* 28-Feb-11
eSignature Date eSignature Date

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.2 C		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

FedEx.

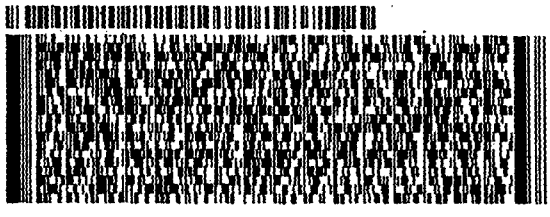
ORIGIN ID: JGQA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 24FEB11
ACTWGT: 23.8 LB
CAD: 300130/CAFE2472

BILL SENDER

TO **LES ARNOLD**
ALS ENVIRONMENTAL
3352 128TH AVE.

HOLLAND MI 49424
(281) 530-5656
REF: SUBCONTRACT



FedEx
Express

J10101000101124

FRI - 25 FEB A4
PRIORITY OVERNIGHT

TRK# 0201 **4340 2163 6119**

NI GRRA

49424
MI-US
GRR

505C1/82C8/DA47

Part # 156149-434 NRIT V3 03-09

ALS Environmental

08-Jun-2011

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly Work Order: **1105823**

Dear Aaron,

ALS Environmental received 2 samples on 25-May-2011 09:15 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 37.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Chris Bryson

Electronically approved by: Mary K. Knowles

Chris Bryson
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: T104704231-09A-TX

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: **1105823**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1105823-01	Effluent	Water		5/24/2011 10:50	5/25/2011 09:15	☐
1105823-02	Trip Blank	Water		5/24/2011	5/25/2011 09:15	☐

ALS Environmental *Date: 08-Jun-11*

Client:	Navajo Refining Company
Project:	Injection Well Quarterly
Work Order:	1105823

Case Narrative

As the pH analyses were performed in the laboratory, the results are H-flagged as appropriate.

Batch 52874, Metals, Sample 1105925-04 : MS/MSD is for an unrelated sample.

Batch 52774, Semivolatile Organics : LCSD RPD was above the control limits for Benzidine. The individual recoveries were in control.

Batch R110726, Volatile Organics, Sample 1105756-46 : MS/MSD is for an unrelated sample.

Batch R110849, Anions, Sample 1106102-02 : MSD is for an unrelated sample.

The analysis for Reactive Cyanide and Reactive Sulfide was subcontracted to ALS Laboratory Group in Holland, MI.

ALS Environmental

Date: *08-Jun-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1105823
Sample ID: Effluent
Lab ID: 1105823-01
Collection Date: 5/24/2011 10:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **5/31/2011**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	5/31/2011 05:01 PM
METALS			**SW6020**		Prep Date: **6/2/2011**	Analyst: **ALR**
Aluminum	**0.438**		**0.0200**	**mg/L**	2	6/6/2011 07:26 PM
Arsenic	**0.0198**	*	**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
Barium	**0.0541**		**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
Boron	**0.353**		**0.100**	**mg/L**	2	6/6/2011 07:26 PM
Cadmium	ND		0.00200	mg/L	1	6/3/2011 11:34 PM
Chromium	ND		0.00500	mg/L	1	6/3/2011 11:34 PM
Copper	**0.00715**		**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
Lead	ND		0.00500	mg/L	1	6/3/2011 11:34 PM
Manganese	**0.0239**		**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
Molybdenum	**0.168**		**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
Nickel	**0.00605**		**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
Selenium	**0.646**	*	**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
Silver	ND		0.00500	mg/L	1	6/3/2011 11:34 PM
Zinc	**0.0884**		**0.00500**	**mg/L**	1	6/3/2011 11:34 PM
SEMIVOLATILES			**SW8270**		Prep Date: **5/26/2011**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Methylphenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Nitroaniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
2-Nitrophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
3-Nitroaniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
4-Nitroaniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
4-Nitrophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Acenaphthene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Acenaphthylene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Aniline	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Anthracene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Benzidine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Hexachloroethane	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *08-Jun-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1105823
Sample ID: Effluent
Lab ID: 1105823-01
Collection Date: 5/24/2011 10:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isophorone	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Naphthalene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Nitrobenzene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Pentachlorophenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Phenanthrene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Phenol	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Pyrene	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Pyridine	ND		0.0050	mg/L	1	6/1/2011 01:51 PM
Surr: 2,4,6-Tribromophenol	*67.9*		*42-124*	*%REC*	1	6/1/2011 01:51 PM
Surr: 2-Fluorobiphenyl	*57.5*		*48-120*	*%REC*	1	6/1/2011 01:51 PM
Surr: 2-Fluorophenol	*47.5*		*20-120*	*%REC*	1	6/1/2011 01:51 PM
Surr: 4-Terphenyl-d14	*63.3*		*51-135*	*%REC*	1	6/1/2011 01:51 PM
Surr: Nitrobenzene-d5	*53.6*		*41-120*	*%REC*	1	6/1/2011 01:51 PM
Surr: Phenol-d6	*53.9*		*20-120*	*%REC*	1	6/1/2011 01:51 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
2-Butanone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	6/1/2011 03:42 PM
2-Hexanone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Acetone	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Benzene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Bromodichloromethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Bromoform	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Bromomethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Carbon disulfide	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chlorobenzene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chloroethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chloroform	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Chloromethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *08-Jun-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Effluent
Collection Date: 5/24/2011 10:50 AM

Work Order: 1105823
Lab ID: 1105823-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Ethylbenzene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
m,p-Xylene	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Methylene chloride	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Styrene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Tetrachloroethene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Toluene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Trichloroethene	ND		0.0050	mg/L	1	6/1/2011 03:42 PM
Vinyl acetate	ND		0.010	mg/L	1	6/1/2011 03:42 PM
Vinyl chloride	ND		0.0020	mg/L	1	6/1/2011 03:42 PM
Xylenes, Total	ND		0.015	mg/L	1	6/1/2011 03:42 PM
Surr: 1,2-Dichloroethane-d4	*98.2*		*70-125*	*%REC*	1	6/1/2011 03:42 PM
Surr: 4-Bromofluorobenzene	*95.1*		*72-125*	*%REC*	1	6/1/2011 03:42 PM
Surr: Dibromofluoromethane	*107*		*71-125*	*%REC*	1	6/1/2011 03:42 PM
Surr: Toluene-d8	*92.3*		*75-125*	*%REC*	1	6/1/2011 03:42 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **SUB**
Reactive Cyanide	ND		40.0	mg/Kg	1	5/27/2011 12:30 PM
REACTIVE SULFIDE			**SW-846**			Analyst: **SUB**
Reactive Sulfide	ND		40.0	mg/Kg	1	5/27/2011 12:30 PM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **TDW**
Chloride	**213**		**5.00**	**mg/L**	10	6/3/2011 03:19 PM
Sulfate	**2,240**		**25.0**	**mg/L**	50	6/6/2011 04:33 PM
Surr: Selenate (surr)	*103*		*85-115*	*%REC*	10	6/3/2011 03:19 PM
Surr: Selenate (surr)	*98.5*		*85-115*	*%REC*	50	6/6/2011 04:33 PM
ALKALINITY			**SM2320B**			Analyst: **DM**
Alkalinity, Bicarbonate (As CaCO3)	**243**		**5.00**	**mg/L**	1	5/31/2011 02:30 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	5/31/2011 02:30 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	5/31/2011 02:30 PM
Alkalinity, Total (As CaCO3)	**243**		**5.00**	**mg/L**	1	5/31/2011 02:30 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **DM**
Specific Conductivity	**4,680**		**1.00**	**µmhos/cm**	1	5/26/2011 10:15 AM
IGNITIBILITY			**SW1010**			Analyst: **KAH**
Ignitability	*> 212*		50.0	°F	1	6/3/2011 03:00 PM
PH			**SW9040**			Analyst: **DM**
pH	**7.85**	H	**0.100**	**pH units**	1	5/26/2011 11:30 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *08-Jun-11*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1105823
Sample ID: Effluent
Lab ID: 1105823-01
Collection Date: 5/24/2011 10:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **JKP**
Total Dissolved Solids (Residue, Filterable)	**3,400**		**10.0**	**mg/L**	1	5/31/2011 10:35 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company

ork Order: 1105823

oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **52816** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW2-053111-52816** Units: **mg/L** Analysis Date: **5/31/2011 04:27 PM**

Client ID: Run ID: **MERCURY_110531A** SeqNo: **2407056** Prep Date: **5/31/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW2-053111-52816** Units: **mg/L** Analysis Date: **5/31/2011 04:29 PM**

Client ID: Run ID: **MERCURY_110531A** SeqNo: **2407060** Prep Date: **5/31/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00538	0.00020	0.005	0	108	85-115	0			

MS Sample ID: **1105864-08CMS** Units: **mg/L** Analysis Date: **5/31/2011 04:35 PM**

Client ID: Run ID: **MERCURY_110531A** SeqNo: **2407068** Prep Date: **5/31/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.00020	0.005	-0.000003	100	85-115	0			

MSD Sample ID: **1105864-08CMSD** Units: **mg/L** Analysis Date: **5/31/2011 04:37 PM**

nt ID: Run ID: **MERCURY_110531A** SeqNo: **2407069** Prep Date: **5/31/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00505	0.00020	0.005	-0.000003	101	85-115	0.00502	0.596	20	

DUP Sample ID: **1105864-08CDUP** Units: **mg/L** Analysis Date: **5/31/2011 04:33 PM**

Client ID: Run ID: **MERCURY_110531A** SeqNo: **2407067** Prep Date: **5/31/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	-0.000003	0	20	

The following samples were analyzed in this batch: 1105823-01F

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **52874** Instrument ID **ICPMS03** Method: **SW6020**

MBLK Sample ID: **MBLKW2-060211-52874** Units: **mg/L** Analysis Date: **6/6/2011 03:12 PM**
Client ID: Run ID: **ICPMS03_110606A** SeqNo: **2413608** Prep Date: **6/2/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Boron	0.02016	0.050								J
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	0.002082	0.0050								J
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.0050								

LCS Sample ID: **MLCSW2-060211-52874** Units: **mg/L** Analysis Date: **6/6/2011 03:04 PM**
Client ID: Run ID: **ICPMS03_110606A** SeqNo: **2413607** Prep Date: **6/2/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09684	0.010	0.1	0	96.8	80-120	0			
Arsenic	0.05093	0.0050	0.05	0	102	80-120	0			
Barium	0.04904	0.0050	0.05	0	98.1	80-120	0			
Boron	0.4566	0.050	0.5	0	91.3	80-120	0			
Cadmium	0.04988	0.0020	0.05	0	99.8	80-120	0			
Chromium	0.04946	0.0050	0.05	0	98.9	80-120	0			
Copper	0.04973	0.0050	0.05	0	99.5	80-120	0			
Lead	0.04928	0.0050	0.05	0	98.6	80-120	0			
Manganese	0.05148	0.0050	0.05	0	103	80-120	0			
Molybdenum	0.04824	0.0050	0.05	0	96.5	80-120	0			
Nickel	0.04964	0.0050	0.05	0	99.3	80-120	0			
Selenium	0.05265	0.0050	0.05	0	105	80-120	0			
Silver	0.04987	0.0050	0.05	0	99.7	80-120	0			
Zinc	0.05136	0.0050	0.05	0	103	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **52874** Instrument ID **ICPMS03** Method: **SW6020**

MS Sample ID: **1105925-04AMS** Units: **mg/L** Analysis Date: **6/6/2011 04:48 PM**
Client ID: Run ID: **ICPMS03_110606A** SeqNo: **2413951** Prep Date: **6/2/2011** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2092	0.050	0.1	0.08945	120	80-120	0			
Arsenic	0.0607	0.025	0.05	0.008105	105	80-120	0			
Barium	0.1019	0.025	0.05	0.0517	100	80-120	0			
Boron	4.238	0.25	0.5	3.702	107	80-120	0			O
Cadmium	0.0509	0.010	0.05	0.00186	98.1	80-120	0			
Chromium	0.0521	0.025	0.05	0.0007795	103	80-120	0			
Copper	0.04693	0.025	0.05	-0.001476	96.8	80-120	0			
Lead	0.05195	0.025	0.05	0.000925	102	80-120	0			
Manganese	10.75	0.025	0.05	10.65	200	80-120	0			SEO
Molybdenum	0.09915	0.025	0.05	0.04766	103	80-120	0			
Nickel	0.0923	0.025	0.05	0.04406	96.5	80-120	0			
Selenium	0.06155	0.025	0.05	0.005515	112	80-120	0			
Silver	0.04716	0.025	0.05	0.0004823	93.3	80-120	0			
Zinc	0.053	0.025	0.05	0.00974	86.5	80-120	0			

MSD Sample ID: **1105925-04AMSD** Units: **mg/L** Analysis Date: **6/6/2011 04:53 PM**
Client ID: Run ID: **ICPMS03_110606A** SeqNo: **2413952** Prep Date: **6/2/2011** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.2022	0.050	0.1	0.08945	113	80-120	0.2092	3.38	15	
Arsenic	0.06255	0.025	0.05	0.008105	109	80-120	0.0607	3	15	
Barium	0.1041	0.025	0.05	0.0517	105	80-120	0.1019	2.14	15	
Boron	4.362	0.25	0.5	3.702	132	80-120	4.238	2.88	15	SO
Cadmium	0.0504	0.010	0.05	0.00186	97.1	80-120	0.0509	0.987	15	
Chromium	0.0537	0.025	0.05	0.0007795	106	80-120	0.0521	3.02	15	
Copper	0.04882	0.025	0.05	-0.001476	101	80-120	0.04693	3.96	15	
Lead	0.05245	0.025	0.05	0.000925	103	80-120	0.05195	0.958	15	
Manganese	11.08	0.025	0.05	10.65	860	80-120	10.75	3.02	15	SEO
Molybdenum	0.09665	0.025	0.05	0.04766	98	80-120	0.09915	2.55	15	
Nickel	0.09645	0.025	0.05	0.04406	105	80-120	0.0923	4.4	15	
Selenium	0.0611	0.025	0.05	0.005515	111	80-120	0.06155	0.734	15	
Silver	0.04754	0.025	0.05	0.0004823	94.1	80-120	0.04716	0.813	15	
Zinc	0.0673	0.025	0.05	0.00974	115	80-120	0.053	23.8	15	R

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **52874** Instrument ID **ICPMS03** Method: **SW6020**

DUP Sample ID: **1105925-04ADUP** Units: **mg/L** Analysis Date: **6/6/2011 04:25 PM**
Client ID: Run ID: **ICPMS03_110606A** SeqNo: **2413947** Prep Date: **6/2/2011** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09685	0.050	0	0	0	0-0	0.08945	7.94	25	
Arsenic	0.007515	0.025	0	0	0	0-0	0.008105	0	25	J
Barium	0.05165	0.025	0	0	0	0-0	0.0517	0.0968	25	
Boron	3.873	0.25	0	0	0	0-0	3.702	4.5	25	
Cadmium	ND	0.010	0	0	0	0-0	0.00186	0	25	
Chromium	ND	0.025	0	0	0	0-0	0.0007795	0	25	
Copper	ND	0.025	0	0	0	0-0	-0.001476	0	25	
Lead	ND	0.025	0	0	0	0-0	0.000925	0	25	
Molybdenum	0.04683	0.025	0	0	0	0-0	0.04766	1.77	25	
Nickel	0.04412	0.025	0	0	0	0-0	0.04406	0.147	25	
Selenium	ND	0.025	0	0	0	0-0	0.005515	0	25	
Silver	ND	0.025	0	0	0	0-0	0.0004823	0	25	
Zinc	ND	0.025	0	0	0	0-0	0.00974	0	25	

DUP Sample ID: **1105925-04ADUP** Units: **mg/L** Analysis Date: **6/6/2011 09:06 PM**
Client ID: Run ID: **ICPMS03_110606A** SeqNo: **2414081** Prep Date: **6/2/2011** DF: **100**

lyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
anganese	10.25	0.50	0	0	0	0-0	10.75	4.76	25	

The following samples were analyzed in this batch: 1105823-01F

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
oject: Injection Well Quarterly

QC BATCH REPORT

atch ID: **52774** Instrument ID **SV-5** Method: **SW8270**

MBLK Sample ID: **SBLKW1-110526-52774** Units: **µg/L** Analysis Date: **5/27/2011 01:09 PM**

Client ID: Run ID: **SV-5_110527B** SeqNo: **2406655** Prep Date: **5/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
nzidine	ND	5.0								
achlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	*75.9*	5.0	*100*	0	*75.9*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*68.71*	5.0	*100*	0	*68.7*	*48-120*	0			
Surr: 2-Fluorophenol	*58.32*	5.0	*100*	0	*58.3*	*20-120*	0			
Surr: 4-Terphenyl-d14	*71.17*	5.0	*100*	0	*71.2*	*51-135*	0			
Surr: Nitrobenzene-d5	*73.03*	5.0	*100*	0	*73*	*41-120*	0			
Surr: Phenol-d6	*64.89*	5.0	*100*	0	*64.9*	*20-120*	0			

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **52774** Instrument ID **SV-5** Method: **SW8270**

LCS Sample ID: **SLCSW1-110526-52774** Units: **µg/L** Analysis Date: **5/27/2011 03:09 PM**
Client ID: Run ID: **SV-5_110527B** SeqNo: **2406657** Prep Date: **5/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.5	5.0	50	0	87	50-120	0			
2,4,5-Trichlorophenol	81.63	5.0	100	0	81.6	50-120	0			
2,4,6-Trichlorophenol	81.96	5.0	100	0	82	50-120	0			
2,4-Dinitrotoluene	40.7	5.0	50	0	81.4	50-120	0			
2-Methylnaphthalene	45.07	5.0	50	0	90.1	55-120	0			
2-Methylphenol	80.62	5.0	100	0	80.6	50-120	0			
2-Nitroaniline	40.84	5.0	50	0	81.7	55-120	0			
2-Nitrophenol	82.91	5.0	100	0	82.9	55-120	0			
3&4-Methylphenol	116.7	5.0	150	0	77.8	55-120	0			
3-Nitroaniline	30	5.0	50	0	60	40-120	0			
4-Nitroaniline	30.99	5.0	50	0	62	50-120	0			
4-Nitrophenol	75.64	5.0	100	0	75.6	45-120	0			
Acenaphthene	42.84	5.0	50	0	85.7	55-120	0			
Acenaphthylene	42.77	5.0	50	0	85.5	55-120	0			
Aniline	25.15	5.0	50	0	50.3	30-120	0			
Anthracene	44.26	5.0	50	0	88.5	55-120	0			
Benz(a)anthracene	43.32	5.0	50	0	86.6	55-120	0			
nzidine	11.34	5.0	50	0	22.7	10-120	0			
achlorobenzene	43.74	5.0	50	0	87.5	55-120	0			
Hexachloroethane	42.54	5.0	50	0	85.1	55-120	0			
Indeno(1,2,3-cd)pyrene	39.68	5.0	50	0	79.4	55-120	0			
Isophorone	41.64	5.0	50	0	83.3	55-120	0			
N-Nitrosodi-n-propylamine	40.56	5.0	50	0	81.1	50-120	0			
N-Nitrosodimethylamine	39.61	5.0	50	0	79.2	45-120	0			
N-Nitrosodiphenylamine	44.49	5.0	50	0	89	55-120	0			
Naphthalene	44.11	5.0	50	0	88.2	55-120	0			
Nitrobenzene	44.13	5.0	50	0	88.3	55-120	0			
Pentachlorophenol	78.73	5.0	100	0	78.7	55-120	0			
Phenanthrene	42.58	5.0	50	0	85.2	55-120	0			
Phenol	79.27	5.0	100	0	79.3	50-120	0			
Pyrene	44.26	5.0	50	0	88.5	55-120	0			
Pyridine	32.5	5.0	50	0	65	35-120	0			
Surr: 2,4,6-Tribromophenol	*71.11*	5.0	*100*	0	*71.1*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*81.91*	5.0	*100*	0	*81.9*	*48-120*	0			
Surr: 2-Fluorophenol	*80.91*	5.0	*100*	0	*80.9*	*20-120*	0			
Surr: 4-Terphenyl-d14	*75.75*	5.0	*100*	0	*75.8*	*51-135*	0			
Surr: Nitrobenzene-d5	*83.44*	5.0	*100*	0	*83.4*	*41-120*	0			
Surr: Phenol-d6	*76.63*	5.0	*100*	0	*76.6*	*20-120*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **52774** Instrument ID **SV-5** Method: **SW8270**

LCSD Sample ID: **SLCSDW1-110526-52774** Units: **µg/L** Analysis Date: **5/27/2011 02:42 PM**
Client ID: Run ID: **SV-5_110527B** SeqNo: **2406656** Prep Date: **5/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.11	5.0	50	0	86.2	50-120	43.5	0.886	20	
2,4,5-Trichlorophenol	82.74	5.0	100	0	82.7	50-120	81.63	1.35	20	
2,4,6-Trichlorophenol	81.32	5.0	100	0	81.3	50-120	81.96	0.794	20	
2,4-Dinitrotoluene	44.91	5.0	50	0	89.8	50-120	40.7	9.83	20	
2-Methylnaphthalene	46.29	5.0	50	0	92.6	55-120	45.07	2.66	20	
2-Methylphenol	88.25	5.0	100	0	88.3	50-120	80.62	9.04	20	
2-Nitroaniline	42.59	5.0	50	0	85.2	55-120	40.84	4.2	20	
2-Nitrophenol	83.45	5.0	100	0	83.4	55-120	82.91	0.643	20	
3&4-Methylphenol	129.5	5.0	150	0	86.3	55-120	116.7	10.4	20	
3-Nitroaniline	33.43	5.0	50	0	66.9	40-120	30	10.8	20	
4-Nitroaniline	34.54	5.0	50	0	69.1	50-120	30.99	10.8	20	
4-Nitrophenol	86.06	5.0	100	0	86.1	45-120	75.64	12.9	20	
Acenaphthene	42.95	5.0	50	0	85.9	55-120	42.84	0.26	20	
Acenaphthylene	42.16	5.0	50	0	84.3	55-120	42.77	1.44	20	
Aniline	30.09	5.0	50	0	60.2	30-120	25.15	17.9	20	
Anthracene	44.46	5.0	50	0	88.9	55-120	44.26	0.444	20	
Benz(a)anthracene	43.49	5.0	50	0	87	55-120	43.32	0.386	20	
nzidine	14.28	5.0	50	0	28.6	10-120	11.34	23	20	R
achlorobenzene	42.72	5.0	50	0	85.4	55-120	43.74	2.35	20	
nexachloroethane	42.43	5.0	50	0	84.9	55-120	42.54	0.266	20	
Indeno(1,2,3-cd)pyrene	41.89	5.0	50	0	83.8	55-120	39.68	5.42	20	
Isophorone	43.64	5.0	50	0	87.3	55-120	41.64	4.7	20	
N-Nitrosodi-n-propylamine	45.05	5.0	50	0	90.1	50-120	40.56	10.5	20	
N-Nitrosodimethylamine	38.15	5.0	50	0	76.3	45-120	39.61	3.75	20	
N-Nitrosodiphenylamine	43.77	5.0	50	0	87.5	55-120	44.49	1.61	20	
Naphthalene	43.88	5.0	50	0	87.8	55-120	44.11	0.518	20	
Nitrobenzene	43.66	5.0	50	0	87.3	55-120	44.13	1.06	20	
Pentachlorophenol	80.87	5.0	100	0	80.9	55-120	78.73	2.68	20	
Phenanthrene	42.64	5.0	50	0	85.3	55-120	42.58	0.159	20	
Phenol	85.22	5.0	100	0	85.2	50-120	79.27	7.24	20	
Pyrene	44.62	5.0	50	0	89.2	55-120	44.26	0.811	20	
Pyridine	30.24	5.0	50	0	60.5	35-120	32.5	7.19	20	
Surr: 2,4,6-Tribromophenol	*77.59*	5.0	*100*	0	*77.6*	*42-124*	71.11	*8.71*	*20*	
Surr: 2-Fluorobiphenyl	*77.13*	5.0	*100*	0	*77.1*	*48-120*	81.91	*6.02*	*20*	
Surr: 2-Fluorophenol	*83.93*	5.0	*100*	0	*83.9*	*20-120*	80.91	*3.66*	*20*	
Surr: 4-Terphenyl-d14	*74.68*	5.0	*100*	0	*74.7*	*51-135*	75.75	*1.43*	*20*	
Surr: Nitrobenzene-d5	*83.15*	5.0	*100*	0	*83.1*	*41-120*	83.44	*0.35*	*20*	
Surr: Phenol-d6	*83.82*	5.0	*100*	0	*83.8*	*20-120*	76.63	*8.96*	*20*	

The following samples were analyzed in this batch: 1105823-01E

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110726** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-060111-R110726** Units: **µg/L** Analysis Date: **6/1/2011 11:22 AM**

Client ID: Run ID: **VOA1_110601A** SeqNo: **2408605** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
'orobenzene	ND	5.0								
roethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	*46.27*	5.0	*50*	0	*92.5*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*48.66*	5.0	*50*	0	*97.3*	*72-125*	0			
Surr: Dibromofluoromethane	*47.13*	5.0	*50*	0	*94.3*	*71-125*	0			
Surr: Toluene-d8	*44.65*	5.0	*50*	0	*89.3*	*75-125*	0			

Qualifiers: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110726** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-060111-R110726** Units: **µg/L** Analysis Date: **6/1/2011 10:06 AM**

Client ID: Run ID: **VOA1_110601A** SeqNo: **2408604** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	51.23	5.0	50	0	102	80-120	0			
1,1,2,2-Tetrachloroethane	46.09	5.0	50	0	92.2	72-120	0			
1,1,2-Trichloroethane	46.38	5.0	50	0	92.8	80-120	0			
1,1-Dichloroethane	48.29	5.0	50	0	96.6	76-120	0			
1,1-Dichloroethene	48.17	5.0	50	0	96.3	73-124	0			
1,2-Dichloroethane	46.01	5.0	50	0	92	78-120	0			
2-Butanone	82.85	10	100	0	82.8	58-132	0			
2-Chloroethyl vinyl ether	96.39	10	100	0	96.4	74-120	0			
2-Hexanone	85.87	10	100	0	85.9	61-130	0			
4-Methyl-2-pentanone	87.75	10	100	0	87.8	65-127	0			
Acetone	82.96	10	100	0	83	59-137	0			
Benzene	47.73	5.0	50	0	95.5	73-121	0			
Bromodichloromethane	48.55	5.0	50	0	97.1	80-120	0			
Bromoform	46.63	5.0	50	0	93.3	79-120	0			
Bromomethane	56.86	5.0	50	0	114	66-137	0			
Carbon disulfide	100.4	10	100	0	100	68-141	0			
Carbon tetrachloride	51.48	5.0	50	0	103	75-124	0			
'orobenzene	49.26	5.0	50	0	98.5	80-120	0			
ɔroethane	54.15	5.0	50	0	108	76-121	0			
Chloroform	48.53	5.0	50	0	97.1	80-120	0			
Chloromethane	44.93	5.0	50	0	89.9	67-123	0			
cis-1,3-Dichloropropene	53.96	5.0	50	0	108	80-120	0			
Dibromochloromethane	51.48	5.0	50	0	103	80-120	0			
Ethylbenzene	50.43	5.0	50	0	101	80-120	0			
m,p-Xylene	100.5	10	100	0	101	78-121	0			
Methylene chloride	50.35	10	50	0	101	65-133	0			
Styrene	51.18	5.0	50	0	102	80-120	0			
Tetrachloroethene	46.53	5.0	50	0	93.1	79-120	0			
Toluene	46.05	5.0	50	0	92.1	80-120	0			
trans-1,3-Dichloropropene	52.76	5.0	50	0	106	80-120	0			
Trichloroethene	50.91	5.0	50	0	102	80-120	0			
Vinyl acetate	98.15	10	100	0	98.2	67-139	0			
Vinyl chloride	52.04	2.0	50	0	104	70-127	0			
Xylenes, Total	151.8	15	150	0	101	80-120	0			
Surr: 1,2-Dichloroethane-d4	*46.3*	5.0	*50*	0	*92.6*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*47*	5.0	*50*	0	*94*	*72-125*	0			
Surr: Dibromofluoromethane	*48.56*	5.0	*50*	0	*97.1*	*71-125*	0			
Surr: Toluene-d8	*46.07*	5.0	*50*	0	*92.1*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110726** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1105756-46AMS** Units: **µg/L** Analysis Date: **6/1/2011 01:30 PM**
Client ID: Run ID: **VOA1_110601A** SeqNo: **2408609** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	252.9	25	250	0	101	80-120	0			
1,1,2,2-Tetrachloroethane	240.3	25	250	0	96.1	72-120	0			
1,1,2-Trichloroethane	246.2	25	250	0	98.5	80-120	0			
1,1-Dichloroethane	249.2	25	250	0	99.7	76-120	0			
1,1-Dichloroethene	237.8	25	250	0	95.1	73-124	0			
1,2-Dichloroethane	268	25	250	0	107	78-120	0			
2-Butanone	464.3	50	500	0	92.9	58-132	0			
2-Chloroethyl vinyl ether	37.14	50	500	0	7.43	74-120	0			JS
2-Hexanone	481.3	50	500	0	96.3	61-130	0			
4-Methyl-2-pentanone	492.4	50	500	0	98.5	65-127	0			
Acetone	445.7	50	500	0	89.1	59-137	0			
Benzene	269.4	25	250	0	108	73-121	0			
Bromodichloromethane	287.1	25	250	0	115	80-120	0			
Bromoform	242.4	25	250	0	96.9	79-120	0			
Bromomethane	190.6	25	250	0	76.2	66-137	0			
Carbon disulfide	509.7	50	500	0	102	68-141	0			
Carbon tetrachloride	255	25	250	0	102	75-124	0			
`>robenzene	247.6	25	250	0	99.1	80-120	0			
roethane	260.1	25	250	0	104	76-121	0			
Chloroform	247.8	25	250	0	99.1	80-120	0			
Chloromethane	206.9	25	250	0	82.8	67-123	0			
cis-1,3-Dichloropropene	275	25	250	0	110	80-120	0			
Dibromochloromethane	264.5	25	250	0	106	80-120	0			
Ethylbenzene	265.7	25	250	29.08	94.6	80-120	0			
m,p-Xylene	484.1	50	500	0	96.8	78-121	0			
Methylene chloride	246.8	50	250	0	98.7	65-133	0			
Styrene	250.9	25	250	0	100	80-120	0			
Tetrachloroethene	237.9	25	250	0	95.2	79-120	0			
Toluene	245.7	25	250	0	98.3	80-120	0			
trans-1,3-Dichloropropene	297.7	25	250	0	119	80-120	0			
Trichloroethene	271.3	25	250	0	109	80-120	0			
Vinyl acetate	502.3	50	500	0	100	67-139	0			
Vinyl chloride	234.6	10	250	0	93.9	70-127	0			
Xylenes, Total	734.8	75	750	0	98	80-120	0			
Surr: 1,2-Dichloroethane-d4	*237.3*	25	*250*	0	*94.9*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*247.4*	25	*250*	0	*99*	*72-125*	0			
Surr: Dibromofluoromethane	*246.8*	25	*250*	0	*98.7*	*71-125*	0			
Surr: Toluene-d8	*235.9*	25	*250*	0	*94.3*	*75-125*	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110726** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1105756-46AMSD** Units: **µg/L** Analysis Date: **6/1/2011 01:56 PM**

Client ID: Run ID: **VOA1_110601A** SeqNo: **2408610** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	239.8	25	250	0	95.9	80-120	252.9	5.33	20	
1,1,2,2-Tetrachloroethane	222.1	25	250	0	88.8	72-120	240.3	7.86	20	
1,1,2-Trichloroethane	252.6	25	250	0	101	80-120	246.2	2.58	20	
1,1-Dichloroethane	244	25	250	0	97.6	76-120	249.2	2.09	20	
1,1-Dichloroethene	237.5	25	250	0	95	73-124	237.8	0.151	20	
1,2-Dichloroethane	249	25	250	0	99.6	78-120	268	7.32	20	
2-Butanone	480.4	50	500	0	96.1	58-132	464.3	3.4	20	
2-Chloroethyl vinyl ether	ND	50	500	0	0	74-120	37.14	0	20	S
2-Hexanone	473.4	50	500	0	94.7	61-130	481.3	1.66	20	
4-Methyl-2-pentanone	440.6	50	500	0	88.1	65-127	492.4	11.1	20	
Acetone	433	50	500	0	86.6	59-137	445.7	2.9	20	
Benzene	252.3	25	250	0	101	73-121	269.4	6.57	20	
Bromodichloromethane	248.6	25	250	0	99.4	80-120	287.1	14.4	20	
Bromoform	233.7	25	250	0	93.5	79-120	242.4	3.64	20	
Bromomethane	228.8	25	250	0	91.5	66-137	190.6	18.2	20	
Carbon disulfide	484.7	50	500	0	96.9	68-141	509.7	5.04	20	
Carbon tetrachloride	235.1	25	250	0	94	75-124	255	8.13	20	
'orobenzene	243.1	25	250	0	97.2	80-120	247.6	1.86	20	
roethane	230.6	25	250	0	92.2	76-121	260.1	12	20	
Chloroform	247.3	25	250	0	98.9	80-120	247.8	0.204	20	
Chloromethane	192.2	25	250	0	76.9	67-123	206.9	7.34	20	
cis-1,3-Dichloropropene	263.9	25	250	0	106	80-120	275	4.12	20	
Dibromochloromethane	256.8	25	250	0	103	80-120	264.5	2.95	20	
Ethylbenzene	244.9	25	250	29.08	86.3	80-120	265.7	8.15	20	
m,p-Xylene	466.8	50	500	0	93.4	78-121	484.1	3.65	20	
Methylene chloride	239.2	50	250	0	95.7	65-133	246.8	3.11	20	
Styrene	242	25	250	0	96.8	80-120	250.9	3.63	20	
Tetrachloroethene	227.1	25	250	0	90.8	79-120	237.9	4.66	20	
Toluene	237	25	250	0	94.8	80-120	245.7	3.58	20	
trans-1,3-Dichloropropene	262.2	25	250	0	105	80-120	297.7	12.7	20	
Trichloroethene	256.2	25	250	0	102	80-120	271.3	5.74	20	
Vinyl acetate	491.2	50	500	0	98.2	67-139	502.3	2.24	20	
Vinyl chloride	233.5	10	250	0	93.4	70-127	234.6	0.461	20	
Xylenes, Total	712.5	75	750	0	95	80-120	734.8	3.09	20	
Surr: 1,2-Dichloroethane-d4	*244.5*	25	*250*	0	*97.8*	*70-125*	237.3	*2.97*	*20*	
Surr: 4-Bromofluorobenzene	*230*	25	*250*	0	*92*	*72-125*	247.4	*7.32*	*20*	
Surr: Dibromofluoromethane	*250.1*	25	*250*	0	*100*	*71-125*	246.8	*1.33*	*20*	
Surr: Toluene-d8	*233.7*	25	*250*	0	*93.5*	*75-125*	235.9	*0.921*	*20*	

The following samples were analyzed in this batch: 1105823-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110566** Instrument ID **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-052611-R110566** Units: **pH units** Analysis Date: **5/26/2011 11:30 AM**
Client ID: Run ID: **WETCHEM_110526G** SeqNo: **2404273** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.1	0.10	6	0	102	90-110	0			

DUP Sample ID: **1105823-01BDUP** Units: **pH units** Analysis Date: **5/26/2011 11:30 AM**
Client ID: **Effluent** Run ID: **WETCHEM_110526G** SeqNo: **2404275** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.93	0.10	0	0	0	0-0	7.85	1.01	20	H

The following samples were analyzed in this batch: 1105823-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110567** Instrument ID **WetChem** Method: **M2510 B**

MBLK Sample ID: **WBLKW1-052611-R110567** Units: **µmhos/cm** Analysis Date: **5/26/2011 10:15 AM**
Client ID: Run ID: **WETCHEM_110526H** SeqNo: **2404278** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **WLCSW1-052611-R110567** Units: **µmhos/cm** Analysis Date: **5/26/2011 10:15 AM**
Client ID: Run ID: **WETCHEM_110526H** SeqNo: **2404279** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1400	1.0	1413	0	99.1	80-120	0			

DUP Sample ID: **1105823-01BDUP** Units: **µmhos/cm** Analysis Date: **5/26/2011 10:15 AM**
Client ID: **Effluent** Run ID: **WETCHEM_110526H** SeqNo: **2404281** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	4670	1.0	0	0	0		4680	0.214	20	

The following samples were analyzed in this batch: 1105823-01B

Qualifiers: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110694** Instrument ID **WetChem** Method: **SM2320B**

MBLK Sample ID: **WBLKW1-053111-R110694** Units: **mg/L** Analysis Date: **5/31/2011 02:30 PM**
Client ID: Run ID: **WETCHEM_110531I** SeqNo: **2407693** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: **WLCSW1-053111-R110694** Units: **mg/L** Analysis Date: **5/31/2011 02:30 PM**
Client ID: Run ID: **WETCHEM_110531I** SeqNo: **2407694** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	989.7	5.0	1000	0	99	80-120	0			
Alkalinity, Total (As CaCO3)	989.7	5.0	1000	0	99	80-120	0			

DUP Sample ID: **1105705-10CDUP** Units: **mg/L** Analysis Date: **5/31/2011 02:30 PM**
Client ID: Run ID: **WETCHEM_110531I** SeqNo: **2407713** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
ılinity, Bicarbonate (As CaCO3)	200.9	5.0	0	0	0	0-0	201.9	0.492	20	
alinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	200.9	5.0	0	0	0	0-0	201.9	0.492	20	

The following samples were analyzed in this batch: 1105823-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110702** Instrument ID **Balance1** Method: **M2540C**

MBLK Sample ID: **BLANK-R110702** Units: **mg/L** Analysis Date: **5/31/2011 10:35 AM**
Client ID: Run ID: **BALANCE1_110531F** SeqNo: **2408003** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **LCS-R110702** Units: **mg/L** Analysis Date: **5/31/2011 10:35 AM**
Client ID: Run ID: **BALANCE1_110531F** SeqNo: **2408004** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1064	10	1000	0	106	85-115	0			

DUP Sample ID: **1105756-34EDUP** Units: **mg/L** Analysis Date: **5/31/2011 10:35 AM**
Client ID: Run ID: **BALANCE1_110531F** SeqNo: **2407982** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	2410	10	0	0	0	0-0	2412	0.083	20	

DUP Sample ID: **1105756-46EDUP** Units: **mg/L** Analysis Date: **5/31/2011 10:35 AM**
Client ID: Run ID: **BALANCE1_110531F** SeqNo: **2407991** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1222	10	0	0	0	0-0	1170	4.35	20	

The following samples were analyzed in this batch: 1105823-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110849** Instrument ID **ICS2100** Method: **E300**

MBLK Sample ID: **WBLKW3-060211-R110849** Units: **mg/L** Analysis Date: **6/3/2011 10:57 AM**
Client ID: Run ID: **ICS2100_110603A** SeqNo: **2411502** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.35	0.50								J
Surr: Selenate (surr)	*5.178*	0.10	*5*	0	*104*	*85-115*	0			

LCS Sample ID: **WLCSW3-060211-R110849** Units: **mg/L** Analysis Date: **6/3/2011 11:11 AM**
Client ID: Run ID: **ICS2100_110603A** SeqNo: **2411503** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.82	0.50	20	0	104	90-110	0			
Surr: Selenate (surr)	*4.901*	0.10	*5*	0	*98*	*85-115*	0			

LCSD Sample ID: **WLCSDW3-060211-R110849** Units: **mg/L** Analysis Date: **6/3/2011 11:26 AM**
Client ID: Run ID: **ICS2100_110603A** SeqNo: **2411504** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.49	0.50	20	0	107	90-110	20.82	3.19	20	
Surr: Selenate (surr)	*5.025*	0.10	*5*	0	*100*	*85-115*	4.901	*2.5*	*20*	

Sample ID: **1105704-06BMS** Units: **mg/L** Analysis Date: **6/3/2011 12:09 PM**
Client ID: Run ID: **ICS2100_110603A** SeqNo: **2411507** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	125.4	0.50	10	117	84	80-120	0			EO
Surr: Selenate (surr)	*4.953*	0.10	*5*	0	*99.1*	*85-115*	0			

MS Sample ID: **1106102-02CMS** Units: **mg/L** Analysis Date: **6/3/2011 05:27 PM**
Client ID: Run ID: **ICS2100_110603A** SeqNo: **2412453** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	138500	50	1000	137600	90.4	80-120	0			EO
Surr: Selenate (surr)	*507.4*	10	*500*	0	*101*	*85-115*	0			

MSD Sample ID: **1105704-06BMSD** Units: **mg/L** Analysis Date: **6/3/2011 12:24 PM**
Client ID: Run ID: **ICS2100_110603A** SeqNo: **2411508** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	125.1	0.50	10	117	80.7	80-120	125.4	0.263	20	EO
Surr: Selenate (surr)	*4.965*	0.10	*5*	0	*99.3*	*85-115*	4.953	*0.242*	*20*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110849** Instrument ID **ICS2100** Method: **E300**

MSD Sample ID: **1106102-02CMSD** Units: **mg/L** Analysis Date: **6/3/2011 05:41 PM**
Client ID: Run ID: **ICS2100_110603A** SeqNo: **2412454** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	126500	50	1000	137600	-1110	80-120	138500	9.07	20	SEO
Surr: Selenate (surr)	*462.8*	10	*500*	0	*92.6*	*85-115*	507.4	*9.2*	*20*	

The following samples were analyzed in this batch: 1105823-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110875** Instrument ID **WetChem** Method: **SW1010**

LCS Sample ID: **WLCS-060311-R110875** Units: **°F** Analysis Date: **6/3/2011 03:00 PM**
Client ID: Run ID: **WETCHEM_110603H** SeqNo: **2411828** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	84	50	83	0	101	80-120	0			

LCSD Sample ID: **WLCSD-060311-R110875** Units: **°F** Analysis Date: **6/3/2011 03:00 PM**
Client ID: Run ID: **WETCHEM_110603H** SeqNo: **2411829** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	84	1.2	25	

DUP Sample ID: **1106074-07FDUP** Units: **°F** Analysis Date: **6/3/2011 03:00 PM**
Client ID: Run ID: **WETCHEM_110603H** SeqNo: **2411825** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	ND	50	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch: 1105823-01C

te: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110987** Instrument ID **ICS3000** Method: **E300**

MBLK Sample ID: **WBLKW1-060611-R110987** Units: **mg/L** Analysis Date: **6/6/2011 06:25 PM**
Client ID: Run ID: **ICS3000_110606A** SeqNo: **2414849** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	ND	0.50								
Surr: Selenate (surr)	*4.522*	0.10	*5*	0	*90.4*	*85-115*	0			

LCS Sample ID: **WLCSW1-060611-R110987** Units: **mg/L** Analysis Date: **6/6/2011 06:46 PM**
Client ID: Run ID: **ICS3000_110606A** SeqNo: **2414850** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	20.9	0.50	20	0	104	90-110	0			
Surr: Selenate (surr)	*5.095*	0.10	*5*	0	*102*	*85-115*	0			

LCSD Sample ID: **WLCSDW1-060611-R110987** Units: **mg/L** Analysis Date: **6/6/2011 07:07 PM**
Client ID: Run ID: **ICS3000_110606A** SeqNo: **2414852** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	20.85	0.50	20	0	104	90-110	20.9	0.216	20	
Surr: Selenate (surr)	*5.061*	0.10	*5*	0	*101*	*85-115*	5.095	*0.67*	*20*	

Sample ID: **1105899-40IMS** Units: **mg/L** Analysis Date: **6/7/2011 12:44 AM**
Client ID: Run ID: **ICS3000_110606A** SeqNo: **2414887** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	57.42	2.5	50	7.255	100	80-120	0			
Surr: Selenate (surr)	*23.66*	0.50	*25*	0	*94.6*	*85-115*	0			

MS Sample ID: **1105899-39IMS** Units: **mg/L** Analysis Date: **6/7/2011 10:21 AM**
Client ID: Run ID: **ICS3000_110606A** SeqNo: **2414891** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	55.45	2.5	50	0	111	80-120	0			
Surr: Selenate (surr)	*24.38*	0.50	*25*	0	*97.5*	*85-115*	0			

MSD Sample ID: **1105899-40IMS** Units: **mg/L** Analysis Date: **6/7/2011 01:48 AM**
Client ID: Run ID: **ICS3000_110606A** SeqNo: **2414890** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	57.64	2.5	50	7.255	101	80-120	57.42	0.391	20	
Surr: Selenate (surr)	*23.65*	0.50	*25*	0	*94.6*	*85-115*	23.66	*0.0211*	*20*	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1105823
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R110987** Instrument ID **ICS3000** Method: **E300**

MSD Sample ID: **1105899-39IMS** Units: **mg/L** Analysis Date: **6/7/2011 10:42 AM**
Client ID: Run ID: **ICS3000_110606A** SeqNo: **2414892** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfate	55.91	2.5	50	0	112	80-120	55.45	0.826	20	
Surr: Selenate (surr)	*24.66*	0.50	*25*	0	*98.6*	*85-115*	24.38	*1.14*	*20*	

The following samples were analyzed in this batch: 1105823-01B

Qual: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 08-Jun-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1105823

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
°F	Farenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

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Chain of Custody Form

Page 1 of 1

COC ID: 33684

1105823

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly

ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020/7000) Select
Send Report To	Aaron Strange	Invoice Attn	Aaron Strange	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(575) 748-~~0793~~ 3311	Phone	(575) 748-~~0793~~ 3311	H	Conductivity
Fax	(575) 746-~~6421~~ 5451	Fax	(575) 746-~~6421~~ 5451	I	TDS
e-Mail Address		e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Effluent	5-24-11	10:50	L	Y	9	X	X	X	X	X	X	X	X	X		
2	Trip blank																
3	Temp blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☑ Std 10 WK Days ☐ 5 WK Days ☐ Other ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

Relinquished by: Aaron Strange Date: 5-24-11 Time: 1615

Received by: [signature] Date: 5/25/11 Time: 0915

Relinquished by: Date: Time:

Received by (Laboratory): Date: Time:

Logged by (Laboratory): Date: Time:

Checked by (Laboratory):

Notes: 10 Day TAT.

Cooler ID | Cooler Temp.

QC Package: (Check One Box Below)
☑ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other / EDD

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and
3. The Chain of Custody is a legal

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ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **25-May-11 09:15**

Work Order: **1105823** Received by: **DWH**

Checklist completed by David Hightower (eSignature) 25-May-11 (Date) Reviewed by: Chris Bryson (eSignature) 29-May-11 (Date)

Matrices: water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.0c	002	
Cooler(s)/Kit(s):	3401		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Group USA, Corp

Date: 27-May-11

Client: ALS Environmental
Project: 1105823
Work Order: **1105675**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1105675-01	1105823-01D	Water		5/24/2011 10:50	5/27/2011 09:45	☐

ALS Group USA, Corp

Date: 27-May-11

Client: ALS Environmental
Project: 1105823
WorkOrder: **1105675**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: *27-May-11*

Client: ALS Environmental
Project: 1105823
Work Order: 1105675
Sample ID: 1105823-01D
Lab ID: 1105675-01
Collection Date: 5/24/2011 10:50 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **CV**
Cyanide, Reactive	ND		40.0	mg/Kg	1	5/27/2011 12:30 PM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **CV**
Sulfide, Reactive	ND		40.0	mg/Kg	1	5/27/2011 12:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 27-May-11

Client: ALS Environmental

ork Order: 1105675

oject: 1105823

QC BATCH REPORT

Batch ID: **R90393** Instrument ID **WETCHEM** Method: **SW7.3.3.2**

MBLK Sample ID: **WBLKW1-110524-R90393** Units: **mg/Kg** Analysis Date: **5/24/2011 10:00 AM**

Client ID: Run ID: **WETCHEM_110524C** SeqNo: **1633537** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS Sample ID: **WLCSW1-110524-R90393** Units: **mg/Kg** Analysis Date: **5/24/2011 10:00 AM**

Client ID: Run ID: **WETCHEM_110524C** SeqNo: **1633538** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	0			

LCSD Sample ID: **WLCSDW1-110524-R90393** Units: **mg/Kg** Analysis Date: **5/24/2011 10:00 AM**

Client ID: Run ID: **WETCHEM_110524C** SeqNo: **1633542** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	249.6	0	35	

MS Sample ID: **1105504-02A MS** Units: **mg/Kg** Analysis Date: **5/25/2011 01:00 PM**

ent ID: Run ID: **WETCHEM_110524C** SeqNo: **1634710** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	278.9	40	250	0	112	50-150	0			

MSD Sample ID: **1105504-02A MSD** Units: **mg/Kg** Analysis Date: **5/25/2011 01:00 PM**

Client ID: Run ID: **WETCHEM_110524C** SeqNo: **1634711** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	278.9	11.1	35	

The following samples were analyzed in this batch: 1105675-01A

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ALS Environmental
Work Order: 1105675
Project: 1105823

QC BATCH REPORT

Batch ID: **R90528** Instrument ID **WETCHEM** Method: **SW7.3.4.2**

MBLK Sample ID: **WBLKW1-110527-R90528** Units: **mg/Kg** Analysis Date: **5/27/2011 12:30 PM**

Client ID: Run ID: **WETCHEM_110527D** SeqNo: **1636809** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch: 1105675-01A

Qualifiers: See Qualifiers Page for a list of Qualifiers and their explanation.

11 5675

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424
TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Date: 25-May-11
COC ID: 10516
Due Date: 07-Jun-11

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	1105823	A	Reactive Cyanide (SW-846)
Work Order		Project Number		B	Reactive Sulfide (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C	
Send Report To	JayLynn F Thibault	Inv Attn	Accounts Payable	D	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E	
				F	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G	
Phone	(281) 530-5656	Phone	(281) 530-5656	H	
Fax	(281) 530-5887	Fax	(281) 530-5887	I	
eMail Address	jaylynn.thibault@alsenviro.com	eMail CC		J	

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1105823-01D (Effluent)	Water	24/May/2011 10:50	(1) 1LPNEAT	X	X								

Comments:

Please analyze for Reactive Cyanide & Sulfide cc:glenda.ramos@alsglobal.com mary.knowles@alsglobal.com

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		
			5/27/11 0945		

4.0c

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ALS - HOUSTON** Date/Time Received: **27-May-11 09:45**

Work Order: **1105675** Received by: **DS**

Checklist completed by *Diane Shaw* (eSignature) 27-May-11 (Date) Reviewed by: *Bill Carey* (eSignature) 27-May-11 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.0 c		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental

06-Sep-2011

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly Work Order: **1108743**

Dear Aaron,

ALS Environmental received 2 samples on 24-Aug-2011 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 38.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Chris Bryson

Electronically approved by: Makenzie L. Henderson

Chris Bryson
Project Manager

Accredited in accordance with nelac

Certificate No: T104704231-09A-TX

ALS Environmental

Date: 06-Sep-11

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: **1108743**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1108743-01	Injection Well Effluent	Liquid		8/23/2011 09:10	8/24/2011 09:20	☐
1108743-02	Trip Blank	Water		8/23/2011	8/24/2011 09:20	☑

Client:	Navajo Refining Company
oject:	Injection Well Quarterly
Work Order:	1108743

Case Narrative

PH, Sample Injection Well Effluent : Analytical results are flagged with an H qualifier for pH.

Batch 54977, Metals, Sample 1108727-01 : MS/MSD is for an unrelated sample.

Batch 54917, Semivolatile Organics : LCSD RPD was above the control limits for 3&4-Methylphenol, Benzidine, and Pyridine. The individual recoveries were in control.

Batch R115435, Volatile Organics, Sample 1108733-07 : MS/MSD is for an unrelated sample.

Batch R115163, pH, Sample Injection Well Effluent : Duplicate result is flagged with an H qualifier for pH.

The analysis for Reactive Cyanide and Reactive Sulfide was subcontracted to ALS Laboratory Group in Holland, MI.

ALS Environmental

Date: *06-Sep-11*

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY		**SW7470**		Prep: **SW7470 8/26/11**			Analyst: **JCJ**
Mercury	ND	0		0.000200	mg/L	1	8/26/2011 13:54
METALS		**SW6020**		Prep: **SW3010A 8/26/11**			Analyst: **ALR**
Aluminum	0.625	0		0.0100	mg/L	1	8/26/2011 19:05
Arsenic	0.0207	0		0.00500	mg/L	1	8/26/2011 19:05
Barium	0.0796	0		0.00500	mg/L	1	8/26/2011 19:05
Boron	0.276	0		0.0500	mg/L	1	8/30/2011 14:01
Cadmium	ND	0		0.00200	mg/L	1	8/26/2011 19:05
Chromium	ND	0		0.00500	mg/L	1	8/26/2011 19:05
Copper	0.00709	0		0.00500	mg/L	1	8/26/2011 19:05
Lead	ND	0		0.00500	mg/L	1	8/26/2011 19:05
Manganese	0.0559	0		0.00500	mg/L	1	8/26/2011 19:05
Molybdenum	0.145	0		0.00500	mg/L	1	8/26/2011 19:05
Nickel	0.00767	0		0.00500	mg/L	1	8/26/2011 19:05
Selenium	0.465	0		0.00500	mg/L	1	8/26/2011 19:05
Silver	ND	0		0.00500	mg/L	1	8/26/2011 19:05
Zinc	0.0983	0		0.00500	mg/L	1	8/26/2011 19:05
SEMIVOLATILES - SW8270D		**SW8270**		Prep: **SW3510 8/24/11**			Analyst: **JLJ**
1,2,4-Trichlorobenzene	ND	0		0.050	mg/L	10	8/25/2011 22:54
2,4,5-Trichlorophenol	ND	0.4		0.050	mg/L	10	8/25/2011 22:54
2,4,6-Trichlorophenol	ND	0.002		0.050	mg/L	10	8/25/2011 22:54
2,4-Dinitrotoluene	ND	0.00013		0.050	mg/L	10	8/25/2011 22:54
2-Methylnaphthalene	ND	0		0.050	mg/L	10	8/25/2011 22:54
2-Methylphenol	ND	0.2		0.050	mg/L	10	8/25/2011 22:54
2-Nitroaniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
2-Nitrophenol	ND	0		0.050	mg/L	10	8/25/2011 22:54
3&4-Methylphenol	ND	0.2		0.050	mg/L	10	8/25/2011 22:54
3-Nitroaniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
4-Nitroaniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
4-Nitrophenol	ND	0		0.050	mg/L	10	8/25/2011 22:54
Acenaphthene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Acenaphthylene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Aniline	ND	0		0.050	mg/L	10	8/25/2011 22:54
Anthracene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Benz(a)anthracene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Benzidine	ND	0		0.050	mg/L	10	8/25/2011 22:54
Hexachlorobenzene	ND	0.00013		0.050	mg/L	10	8/25/2011 22:54
Hexachloroethane	ND	0		0.050	mg/L	10	8/25/2011 22:54
Indeno(1,2,3-cd)pyrene	ND	0		0.050	mg/L	10	8/25/2011 22:54

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *06-Sep-11*

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isophorone	ND	0		0.050	mg/L	10	8/25/2011 22:54
Naphthalene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Nitrobenzene	ND	0.002		0.050	mg/L	10	8/25/2011 22:54
N-Nitrosodimethylamine	ND	0		0.050	mg/L	10	8/25/2011 22:54
N-Nitrosodi-n-propylamine	ND	0		0.050	mg/L	10	8/25/2011 22:54
N-Nitrosodiphenylamine	ND	0		0.050	mg/L	10	8/25/2011 22:54
Pentachlorophenol	ND	0.1		0.050	mg/L	10	8/25/2011 22:54
Phenanthrene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Phenol	ND	0		0.050	mg/L	10	8/25/2011 22:54
Pyrene	ND	0		0.050	mg/L	10	8/25/2011 22:54
Pyridine	ND	0.005		0.050	mg/L	10	8/25/2011 22:54
Surr: 2,4,6-Tribromophenol	78.3	0		42-124	%REC	10	8/25/2011 22:54
Surr: 2-Fluorobiphenyl	75.3	0		48-120	%REC	10	8/25/2011 22:54
Surr: 2-Fluorophenol	55.3	0		20-120	%REC	10	8/25/2011 22:54
Surr: 4-Terphenyl-d14	73.1	0		51-135	%REC	10	8/25/2011 22:54
Surr: Nitrobenzene-d5	70.5	0		41-120	%REC	10	8/25/2011 22:54
Surr: Phenol-d6	61.6	0		20-120	%REC	10	8/25/2011 22:54
VOLATILES		**SW8260**		Prep:			Analyst: **PC**
1,1,1-Trichloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1,2,2-Tetrachloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1,2-Trichloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1-Dichloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
1,1-Dichloroethene	ND	0.0007		0.0050	mg/L	1	8/31/2011 16:22
1,2-Dichloroethane	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
2-Butanone	ND	0		0.010	mg/L	1	8/31/2011 16:22
2-Chloroethyl vinyl ether	ND	0		0.010	mg/L	1	8/31/2011 16:22
2-Hexanone	ND	0		0.010	mg/L	1	8/31/2011 16:22
4-Methyl-2-pentanone	ND	0		0.010	mg/L	1	8/31/2011 16:22
Acetone	ND	0		0.010	mg/L	1	8/31/2011 16:22
Benzene	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
Bromodichloromethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Bromoform	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Bromomethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Carbon disulfide	ND	0		0.010	mg/L	1	8/31/2011 16:22
Carbon tetrachloride	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
Chlorobenzene	ND	0.1		0.0050	mg/L	1	8/31/2011 16:22
Chloroethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Chloroform	ND	0.006		0.0050	mg/L	1	8/31/2011 16:22
Chloromethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
cis-1,3-Dichloropropene	ND	0		0.0050	mg/L	1	8/31/2011 16:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *06-Sep-11*

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Ethylbenzene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
m,p-Xylene	ND	0		0.010	mg/L	1	8/31/2011 16:22
Methylene chloride	ND	0		0.010	mg/L	1	8/31/2011 16:22
Styrene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Tetrachloroethene	ND	0.0007		0.0050	mg/L	1	8/31/2011 16:22
Toluene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
trans-1,3-Dichloropropene	ND	0		0.0050	mg/L	1	8/31/2011 16:22
Trichloroethene	ND	0.0005		0.0050	mg/L	1	8/31/2011 16:22
Vinyl acetate	ND	0		0.010	mg/L	1	8/31/2011 16:22
Vinyl chloride	ND	0.0002		0.0020	mg/L	1	8/31/2011 16:22
Xylenes, Total	ND	0		0.015	mg/L	1	8/31/2011 16:22
Surr: 1,2-Dichloroethane-d4	99.5	0		70-125	%REC	1	8/31/2011 16:22
Surr: 4-Bromofluorobenzene	98.0	0		72-125	%REC	1	8/31/2011 16:22
Surr: Dibromofluoromethane	99.3	0		71-125	%REC	1	8/31/2011 16:22
Surr: Toluene-d8	95.0	0		75-125	%REC	1	8/31/2011 16:22
REACTIVE CYANIDE		**SW-846**		Prep:			Analyst: **HN**
Reactive Cyanide	ND	0		40.0	mg/Kg	1	9/1/2011 12:00
REACTIVE SULFIDE		**SW-846**		Prep:			Analyst: **HN**
Reactive Sulfide	ND	0		40.0	mg/Kg	1	9/1/2011 12:00
ANIONS - EPA 300.0 (1993)		**E300**		Prep:			Analyst: **JBA**
Chloride	404	0		5.00	mg/L	10	8/30/2011 13:08
Sulfate	2,290	0		50.0	mg/L	100	8/30/2011 15:18
Surr: Selenate (surr)	113	0		85-115	%REC	10	8/30/2011 13:08
Surr: Selenate (surr)	113	0		85-115	%REC	100	8/30/2011 15:18
ALKALINITY		**SM2320B**		Prep:			Analyst: **DM**
Alkalinity, Bicarbonate (As CaCO3)	302	0		5.00	mg/L	1	8/29/2011 11:35
Alkalinity, Carbonate (As CaCO3)	ND	0		5.00	mg/L	1	8/29/2011 11:35
Alkalinity, Hydroxide (As CaCO3)	ND	0		5.00	mg/L	1	8/29/2011 11:35
Alkalinity, Total (As CaCO3)	302	0		5.00	mg/L	1	8/29/2011 11:35
SPECIFIC CONDUCTIVITY		**M2510 B**		Prep:			Analyst: **TDW**
Specific Conductivity	7,380	0		1.00	µmhos/cm	1	8/26/2011 14:00
IGNITIBILITY		**SW1010**		Prep:			Analyst: **KAH**
Ignitability	> 212	0		50.0	°F	1	8/30/2011 16:00
PH		**SW9040**		Prep:			Analyst: **TDW**
pH	8.11	0	H	0.100	pH units	1	8/24/2011 14:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *06-Sep-11*

CLIENT: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 8/23/2011 9:10:00 AM

Work Order: 1108743
Lab ID: 1108743-01
Matrix: LIQUID

Analyses	Result	Reg Limit	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL DISSOLVED SOLIDS			**M2540C**	Prep:			Analyst: **JBA**
Total Dissolved Solids (Residue, Filterable)	4,320	0		10.0	mg/L	1	8/30/2011 08:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 06-Sep-11

Client: Navajo Refining Company

ork Order: 1108743

oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **54972** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW1-082611-54972** Units: **mg/L** Analysis Date: **8/26/2011 01:25 PM**

Client ID: Run ID: **MERCURY_110826A** SeqNo: **2507300** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW1-082611-54972** Units: **mg/L** Analysis Date: **8/26/2011 01:27 PM**

Client ID: Run ID: **MERCURY_110826A** SeqNo: **2507301** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0048	0.00020	0.005	0	96	85-115	0			

MS Sample ID: **1108786-01DMS** Units: **mg/L** Analysis Date: **8/26/2011 01:36 PM**

Client ID: Run ID: **MERCURY_110826A** SeqNo: **2507304** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00483	0.00020	0.005	0.000008	96.4	85-115	0			

SD Sample ID: **1108786-01DMSD** Units: **mg/L** Analysis Date: **8/26/2011 01:38 PM**

nt ID: Run ID: **MERCURY_110826A** SeqNo: **2507305** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00483	0.00020	0.005	0.000008	96.4	85-115	0.00483	0	20	

DUP Sample ID: **1108786-01DDUP** Units: **mg/L** Analysis Date: **8/26/2011 01:34 PM**

Client ID: Run ID: **MERCURY_110826A** SeqNo: **2507303** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	0.000008	0	20	

The following samples were analyzed in this batch: 1108743-01B

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **54977** Instrument ID **ICPMS03** Method: **SW6020**

MBLK Sample ID: **MBLKW2-082611-54977** Units: **mg/L** Analysis Date: **8/26/2011 03:30 PM**
Client ID: Run ID: **ICPMS03_110826A** SeqNo: **2507441** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.004147	0.010								J
Arsenic	ND	0.0050								
Barium	0.0009094	0.0050								J
Boron	ND	0.050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	0.001994	0.0050								J
Selenium	0.001283	0.0050								J
Silver	ND	0.0050								
Zinc	ND	0.0050								

LCS Sample ID: **MLCSW2-082611-54977** Units: **mg/L** Analysis Date: **8/26/2011 03:36 PM**
Client ID: Run ID: **ICPMS03_110826A** SeqNo: **2507442** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.04712	0.0050	0.05	0	94.2	80-120	0			
Barium	0.04682	0.0050	0.05	0	93.6	80-120	0			
Boron	0.4576	0.050	0.5	0	91.5	80-120	0			
Cadmium	0.04684	0.0020	0.05	0	93.7	80-120	0			
Chromium	0.04563	0.0050	0.05	0	91.3	80-120	0			
Copper	0.04509	0.0050	0.05	0	90.2	80-120	0			
Lead	0.04609	0.0050	0.05	0	92.2	80-120	0			
Manganese	0.04654	0.0050	0.05	0	93.1	80-120	0			
Molybdenum	0.04699	0.0050	0.05	0	94	80-120	0			
Nickel	0.04664	0.0050	0.05	0	93.3	80-120	0			
Selenium	0.04814	0.0050	0.05	0	96.3	80-120	0			
Silver	0.04666	0.0050	0.05	0	93.3	80-120	0			
Zinc	0.04991	0.0050	0.05	0	99.8	80-120	0			

LCS Sample ID: **MLCSW2-082611-54977** Units: **mg/L** Analysis Date: **8/29/2011 02:50 PM**
Client ID: Run ID: **ICPMS03_110829A** SeqNo: **2508554** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1175	0.010	0.1	0	118	80-120	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **54977** Instrument ID **ICPMS03** Method: **SW6020**

MS Sample ID: **1108727-01CMS** Units: **mg/L** Analysis Date: **8/26/2011 04:22 PM**
Client ID: Run ID: **ICPMS03_110826A** SeqNo: **2507645** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05876	0.0050	0.05	0.009833	97.9	80-120	0			
Barium	0.1335	0.0050	0.05	0.09031	86.4	80-120	0			
Boron	0.6128	0.050	0.5	0.1211	98.3	80-120	0			
Cadmium	0.04577	0.0020	0.05	0.00007921	91.4	80-120	0			
Chromium	0.04331	0.0050	0.05	0.0001978	86.2	80-120	0			
Copper	0.04711	0.0050	0.05	0.005449	83.3	80-120	0			
Lead	0.04507	0.0050	0.05	0.0006013	88.9	80-120	0			
Manganese	1.393	0.0050	0.05	1.378	30	80-120	0			SO
Molybdenum	0.04858	0.0050	0.05	0.005414	86.3	80-120	0			
Nickel	0.04488	0.0050	0.05	0.002782	84.2	80-120	0			
Selenium	0.04823	0.0050	0.05	0.001377	93.7	80-120	0			
Silver	0.04221	0.0050	0.05	-0.00008971	84.6	80-120	0			
Zinc	0.06132	0.0050	0.05	0.008454	106	80-120	0			

MS Sample ID: **1108727-01CMS** Units: **mg/L** Analysis Date: **8/29/2011 03:13 PM**
Client ID: Run ID: **ICPMS03_110829A** SeqNo: **2508561** Prep Date: **8/26/2011** DF: **1**

lyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1348	0.010	0.1	0.02636	108	80-120	0			

MSD Sample ID: **1108727-01CMSD** Units: **mg/L** Analysis Date: **8/26/2011 04:28 PM**
Client ID: Run ID: **ICPMS03_110826A** SeqNo: **2507646** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05957	0.0050	0.05	0.009833	99.5	80-120	0.05876	1.37	15	
Barium	0.1364	0.0050	0.05	0.09031	92.2	80-120	0.1335	2.15	15	
Boron	0.6309	0.050	0.5	0.1211	102	80-120	0.6128	2.91	15	
Cadmium	0.04648	0.0020	0.05	0.00007921	92.8	80-120	0.04577	1.54	15	
Chromium	0.04247	0.0050	0.05	0.0001978	84.5	80-120	0.04331	1.96	15	
Copper	0.04633	0.0050	0.05	0.005449	81.8	80-120	0.04711	1.67	15	
Lead	0.04511	0.0050	0.05	0.0006013	89	80-120	0.04507	0.0887	15	
Manganese	1.406	0.0050	0.05	1.378	56	80-120	1.393	0.929	15	SO
Molybdenum	0.04953	0.0050	0.05	0.005414	88.2	80-120	0.04858	1.94	15	
Nickel	0.04487	0.0050	0.05	0.002782	84.2	80-120	0.04488	0.0223	15	
Selenium	0.0496	0.0050	0.05	0.001377	96.4	80-120	0.04823	2.8	15	
Silver	0.04211	0.0050	0.05	-0.00008971	84.4	80-120	0.04221	0.237	15	
Zinc	0.05756	0.0050	0.05	0.008454	98.2	80-120	0.06132	6.33	15	

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **54977** Instrument ID **ICPMS03** Method: **SW6020**

MSD Sample ID: **1108727-01CMSD** Units: **mg/L** Analysis Date: **8/29/2011 03:19 PM**
Client ID: Run ID: **ICPMS03_110829A** SeqNo: **2508562** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.133	0.010	0.1	0.02636	107	80-120	0.1348	1.34	15	

DUP Sample ID: **1108727-01CDUP** Units: **mg/L** Analysis Date: **8/26/2011 04:10 PM**
Client ID: Run ID: **ICPMS03_110826A** SeqNo: **2507639** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.009563	0.0050	0	0	0	0-0	0.009833	2.78	25	
Barium	0.08918	0.0050	0	0	0	0-0	0.09031	1.26	25	
Boron	0.1225	0.050	0	0	0	0-0	0.1211	1.15	25	
Cadmium	ND	0.0020	0	0	0	0-0	0.00007921	0	25	
Chromium	ND	0.0050	0	0	0	0-0	0.0001978	0	25	
Copper	0.005595	0.0050	0	0	0	0-0	0.005449	2.64	25	
Lead	ND	0.0050	0	0	0	0-0	0.0006013	0	25	
Manganese	1.379	0.0050	0	0	0	0-0	1.378	0.0725	25	
Molybdenum	0.004876	0.0050	0	0	0	0-0	0.005414	0	25	J
Nickel	0.002957	0.0050	0	0	0	0-0	0.002782	0	25	J
[illegible]enium	0.001136	0.0050	0	0	0	0-0	0.001377	0	25	J
[illegible]r	ND	0.0050	0	0	0	0-0	-0.00008971	0	25	
[illegible]nc	0.01054	0.0050	0	0	0	0-0	0.008454	22	25	

DUP Sample ID: **1108727-01CDUP** Units: **mg/L** Analysis Date: **8/29/2011 03:02 PM**
Client ID: Run ID: **ICPMS03_110829A** SeqNo: **2508557** Prep Date: **8/26/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.02433	0.010	0	0	0	0-0	0.02636	8.01	25	

The following samples were analyzed in this batch: 1108743-01B

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **54917** Instrument ID **SV-5** Method: **SW8270**

MBLK Sample ID: **SBLKW1-110824-54917** Units: **µg/L** Analysis Date: **8/25/2011 08:13 PM**

Client ID: Run ID: **SV-5_110825A** SeqNo: **2507391** Prep Date: **8/24/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
ɲzidine	ND	5.0								
achlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	*81.41*	5.0	*100*	0	*81.4*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*86.14*	5.0	*100*	0	*86.1*	*48-120*	0			
Surr: 2-Fluorophenol	*75.63*	5.0	*100*	0	*75.6*	*20-120*	0			
Surr: 4-Terphenyl-d14	*80.92*	5.0	*100*	0	*80.9*	*51-135*	0			
Surr: Nitrobenzene-d5	*86.09*	5.0	*100*	0	*86.1*	*41-120*	0			
Surr: Phenol-d6	*66.83*	5.0	*100*	0	*66.8*	*20-120*	0			

:: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **54917** Instrument ID **SV-5** Method: **SW8270**

LCS Sample ID: **SLCSW1-110824-54917** Units: **µg/L** Analysis Date: **8/26/2011 11:23 AM**
Client ID: Run ID: **SV-5_110825A** SeqNo: **2507393** Prep Date: **8/24/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.43	5.0	50	0	88.9	50-120	0			
2,4,5-Trichlorophenol	103.1	5.0	100	0	103	50-120	0			
2,4,6-Trichlorophenol	95.38	5.0	100	0	95.4	50-120	0			
2,4-Dinitrotoluene	47.64	5.0	50	0	95.3	50-120	0			
2-Methylnaphthalene	47.6	5.0	50	0	95.2	55-120	0			
2-Methylphenol	96.63	5.0	100	0	96.6	50-120	0			
2-Nitroaniline	47.77	5.0	50	0	95.5	55-120	0			
2-Nitrophenol	88.99	5.0	100	0	89	55-120	0			
3&4-Methylphenol	147.8	5.0	150	0	98.5	55-120	0			
3-Nitroaniline	29.09	5.0	50	0	58.2	40-120	0			
4-Nitroaniline	41.65	5.0	50	0	83.3	50-120	0			
4-Nitrophenol	94.78	5.0	100	0	94.8	45-120	0			
Acenaphthene	47.46	5.0	50	0	94.9	55-120	0			
Acenaphthylene	46.79	5.0	50	0	93.6	55-120	0			
Aniline	28.98	5.0	50	0	58	30-120	0			
Anthracene	48.55	5.0	50	0	97.1	55-120	0			
Benz(a)anthracene	48.27	5.0	50	0	96.5	55-120	0			
›zidine	10.72	5.0	50	0	21.4	10-120	0			
.achlorobenzene	49.57	5.0	50	0	99.1	55-120	0			
Hexachloroethane	43.51	5.0	50	0	87	55-120	0			
Indeno(1,2,3-cd)pyrene	48.15	5.0	50	0	96.3	55-120	0			
Isophorone	47.42	5.0	50	0	94.8	55-120	0			
Naphthalene	47.18	5.0	50	0	94.4	55-120	0			
Nitrobenzene	45.6	5.0	50	0	91.2	55-120	0			
N-Nitrosodimethylamine	41.32	5.0	50	0	82.6	45-120	0			
N-Nitrosodi-n-propylamine	50.59	5.0	50	0	101	50-120	0			
N-Nitrosodiphenylamine	46.67	5.0	50	0	93.3	55-120	0			
Pentachlorophenol	98.83	5.0	100	0	98.8	55-120	0			
Phenanthrene	47.55	5.0	50	0	95.1	55-120	0			
Phenol	100.6	5.0	100	0	101	50-120	0			
Pyrene	50.35	5.0	50	0	101	55-120	0			
Pyridine	31.8	5.0	50	0	63.6	35-120	0			
Surr: 2,4,6-Tribromophenol	*93.17*	5.0	*100*	0	*93.2*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*85.96*	5.0	*100*	0	*86*	*48-120*	0			
Surr: 2-Fluorophenol	*84.74*	5.0	*100*	0	*84.7*	*20-120*	0			
Surr: 4-Terphenyl-d14	*79.69*	5.0	*100*	0	*79.7*	*51-135*	0			
Surr: Nitrobenzene-d5	*80.18*	5.0	*100*	0	*80.2*	*41-120*	0			
Surr: Phenol-d6	*87.86*	5.0	*100*	0	*87.9*	*20-120*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **54917** Instrument ID **SV-5** Method: **SW8270**

LCSD Sample ID: **SLCSDW1-110824-54917** Units: **µg/L** Analysis Date: **8/25/2011 05:08 PM**
Client ID: Run ID: **SV-5_110825A** SeqNo: **2507390** Prep Date: **8/24/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	47.65	5.0	50	0	95.3	50-120	44.43	7	20	
2,4,5-Trichlorophenol	101.2	5.0	100	0	101	50-120	103.1	1.85	20	
2,4,6-Trichlorophenol	94.98	5.0	100	0	95	50-120	95.38	0.415	20	
2,4-Dinitrotoluene	49.49	5.0	50	0	99	50-120	47.64	3.8	20	
2-Methylnaphthalene	45.87	5.0	50	0	91.7	55-120	47.6	3.7	20	
2-Methylphenol	80.73	5.0	100	0	80.7	50-120	96.63	17.9	20	
2-Nitroaniline	49.54	5.0	50	0	99.1	55-120	47.77	3.64	20	
2-Nitrophenol	89.09	5.0	100	0	89.1	55-120	88.99	0.116	20	
3&4-Methylphenol	116.3	5.0	150	0	77.5	55-120	147.8	23.9	20	R
3-Nitroaniline	34.99	5.0	50	0	70	40-120	29.09	18.4	20	
4-Nitroaniline	41.35	5.0	50	0	82.7	50-120	41.65	0.718	20	
4-Nitrophenol	90.42	5.0	100	0	90.4	45-120	94.78	4.71	20	
Acenaphthene	49.38	5.0	50	0	98.8	55-120	47.46	3.96	20	
Acenaphthylene	49.06	5.0	50	0	98.1	55-120	46.79	4.74	20	
Aniline	30.1	5.0	50	0	60.2	30-120	28.98	3.79	20	
Anthracene	49.62	5.0	50	0	99.2	55-120	48.55	2.18	20	
Benz(a)anthracene	48.91	5.0	50	0	97.8	55-120	48.27	1.33	20	
ʼzidine	6.897	5.0	50	0	13.8	10-120	10.72	43.4	20	R
ʻachlorobenzene	50.03	5.0	50	0	100	55-120	49.57	0.931	20	
Hexachloroethane	44.94	5.0	50	0	89.9	55-120	43.51	3.23	20	
Indeno(1,2,3-cd)pyrene	46.95	5.0	50	0	93.9	55-120	48.15	2.53	20	
Isophorone	47.07	5.0	50	0	94.1	55-120	47.42	0.742	20	
Naphthalene	48.95	5.0	50	0	97.9	55-120	47.18	3.69	20	
Nitrobenzene	49.55	5.0	50	0	99.1	55-120	45.6	8.29	20	
N-Nitrosodimethylamine	47.19	5.0	50	0	94.4	45-120	41.32	13.3	20	
N-Nitrosodi-n-propylamine	42.37	5.0	50	0	84.7	50-120	50.59	17.7	20	
N-Nitrosodiphenylamine	49.64	5.0	50	0	99.3	55-120	46.67	6.16	20	
Pentachlorophenol	99.84	5.0	100	0	99.8	55-120	98.83	1.02	20	
Phenanthrene	50.21	5.0	50	0	100	55-120	47.55	5.44	20	
Phenol	88.36	5.0	100	0	88.4	50-120	100.6	12.9	20	
Pyrene	49.35	5.0	50	0	98.7	55-120	50.35	2	20	
Pyridine	41.38	5.0	50	0	82.8	35-120	31.8	26.2	20	R
Surr: 2,4,6-Tribromophenol	*91.11*	5.0	*100*	0	*91.1*	*42-124*	93.17	*2.23*	*20*	
Surr: 2-Fluorobiphenyl	*91.19*	5.0	*100*	0	*91.2*	*48-120*	85.96	*5.9*	*20*	
Surr: 2-Fluorophenol	*83.72*	5.0	*100*	0	*83.7*	*20-120*	84.74	*1.21*	*20*	
Surr: 4-Terphenyl-d14	*79.96*	5.0	*100*	0	*80*	*51-135*	79.69	*0.335*	*20*	
Surr: Nitrobenzene-d5	*88.06*	5.0	*100*	0	*88.1*	*41-120*	80.18	*9.37*	*20*	
Surr: Phenol-d6	*76.78*	5.0	*100*	0	*76.8*	*20-120*	87.86	*13.5*	*20*	

The following samples were analyzed in this batch: 1108743-01E

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115435** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-083111-R115435** Units: **µg/L** Analysis Date: **8/31/2011 11:55 AM**

Client ID: Run ID: **VOA1_110831A** SeqNo: **2511258** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
ɔrobenzene	ND	5.0								
.oroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	*49.66*	5.0	*50*	0	*99.3*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*51.53*	5.0	*50*	0	*103*	*72-125*	0			
Surr: Dibromofluoromethane	*49.76*	5.0	*50*	0	*99.5*	*71-125*	0			
Surr: Toluene-d8	*48.97*	5.0	*50*	0	*97.9*	*75-125*	0			

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115435** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-083111-R115435** Units: **µg/L** Analysis Date: **8/31/2011 11:02 AM**

Client ID: Run ID: **VOA1_110831A** SeqNo: **2511257** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	50.29	5.0	50	0	101	80-120	0			
1,1,2,2-Tetrachloroethane	50.77	5.0	50	0	102	72-120	0			
1,1,2-Trichloroethane	47.32	5.0	50	0	94.6	80-120	0			
1,1-Dichloroethane	51.27	5.0	50	0	103	76-120	0			
1,1-Dichloroethene	49.48	5.0	50	0	99	73-124	0			
1,2-Dichloroethane	49.42	5.0	50	0	98.8	78-120	0			
2-Butanone	99.25	10	100	0	99.3	58-132	0			
2-Chloroethyl vinyl ether	101.8	10	100	0	102	74-120	0			
2-Hexanone	98.83	10	100	0	98.8	61-130	0			
4-Methyl-2-pentanone	97.05	10	100	0	97.1	65-127	0			
Acetone	100.5	10	100	0	100	59-137	0			
Benzene	49.07	5.0	50	0	98.1	73-121	0			
Bromodichloromethane	50.6	5.0	50	0	101	80-120	0			
Bromoform	50.03	5.0	50	0	100	79-120	0			
Bromomethane	48.42	5.0	50	0	96.8	66-137	0			
Carbon disulfide	100.6	10	100	0	101	68-141	0			
Carbon tetrachloride	51.76	5.0	50	0	104	75-124	0			
ɔrobenzene	45.9	5.0	50	0	91.8	80-120	0			
ɔroethane	49.36	5.0	50	0	98.7	76-121	0			
Chloroform	49.13	5.0	50	0	98.3	80-120	0			
Chloromethane	46.69	5.0	50	0	93.4	67-123	0			
cis-1,3-Dichloropropene	47.26	5.0	50	0	94.5	80-120	0			
Dibromochloromethane	49.16	5.0	50	0	98.3	80-120	0			
Ethylbenzene	48.96	5.0	50	0	97.9	80-120	0			
m,p-Xylene	100.2	10	100	0	100	78-121	0			
Methylene chloride	48.86	10	50	0	97.7	65-133	0			
Styrene	49.79	5.0	50	0	99.6	80-120	0			
Tetrachloroethene	48.61	5.0	50	0	97.2	79-120	0			
Toluene	42.94	5.0	50	0	85.9	80-120	0			
trans-1,3-Dichloropropene	50.83	5.0	50	0	102	80-120	0			
Trichloroethene	51.23	5.0	50	0	102	80-120	0			
Vinyl acetate	99.99	10	100	0	100	67-139	0			
Vinyl chloride	51.01	2.0	50	0	102	70-127	0			
Xylenes, Total	149.9	15	150	0	99.9	80-120	0			
Surr: 1,2-Dichloroethane-d4	*49.58*	5.0	*50*	0	*99.2*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*46.4*	5.0	*50*	0	*92.8*	*72-125*	0			
Surr: Dibromofluoromethane	*47.97*	5.0	*50*	0	*95.9*	*71-125*	0			
Surr: Toluene-d8	*46.03*	5.0	*50*	0	*92.1*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115435** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1108733-07ZMS** Units: **µg/L** Analysis Date: **8/31/2011 01:41 PM**

Client ID: Run ID: **VOA1_110831A** SeqNo: **2511356** Prep Date: DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	10350	1,200	12500	0	82.8	80-120	0			
1,1,2,2-Tetrachloroethane	11540	1,200	12500	0	92.3	72-120	0			
1,1,2-Trichloroethane	11530	1,200	12500	0	92.2	80-120	0			
1,1-Dichloroethane	11850	1,200	12500	0	94.8	76-120	0			
1,1-Dichloroethene	10740	1,200	12500	129.3	84.9	73-124	0			
1,2-Dichloroethane	11230	1,200	12500	0	89.8	78-120	0			
2-Butanone	23340	2,500	25000	0	93.4	58-132	0			
2-Chloroethyl vinyl ether	22640	2,500	25000	0	90.6	74-120	0			
2-Hexanone	22960	2,500	25000	0	91.8	61-130	0			
4-Methyl-2-pentanone	24610	2,500	25000	0	98.4	65-127	0			
Acetone	20670	2,500	25000	0	82.7	59-137	0			
Benzene	10760	1,200	12500	0	86.1	73-121	0			
Bromodichloromethane	12320	1,200	12500	0	98.6	80-120	0			
Bromoform	11740	1,200	12500	0	93.9	79-120	0			
Bromomethane	10690	1,200	12500	0	85.5	66-137	0			
Carbon disulfide	21650	2,500	25000	0	86.6	68-141	0			
Carbon tetrachloride	9519	1,200	12500	0	76.2	75-124	0			
ɔrobenzene	11330	1,200	12500	0	90.6	80-120	0			
ɔroethane	10940	1,200	12500	0	87.5	76-121	0			
Chloroform	11500	1,200	12500	0	92	80-120	0			
Chloromethane	11120	1,200	12500	0	88.9	67-123	0			
cis-1,3-Dichloropropene	11670	1,200	12500	0	93.4	80-120	0			
Dibromochloromethane	11790	1,200	12500	0	94.3	80-120	0			
Ethylbenzene	10260	1,200	12500	0	82.1	80-120	0			
m,p-Xylene	20570	2,500	25000	0	82.3	78-121	0			
Methylene chloride	12060	2,500	12500	148.4	95.3	65-133	0			
Styrene	11800	1,200	12500	0	94.4	80-120	0			
Tetrachloroethene	9166	1,200	12500	0	73.3	79-120	0			S
Toluene	10770	1,200	12500	0	86.1	80-120	0			
trans-1,3-Dichloropropene	13010	1,200	12500	0	104	80-120	0			
Trichloroethene	12350	1,200	12500	2002	82.8	80-120	0			
Vinyl acetate	23950	2,500	25000	0	95.8	67-139	0			
Vinyl chloride	11670	500	12500	1420	82	70-127	0			
Xylenes, Total	31960	3,800	37500	0	85.2	80-120	0			
Surr: 1,2-Dichloroethane-d4	*12640*	1,200	*12500*	0	*101*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*12160*	1,200	*12500*	0	*97.3*	*72-125*	0			
Surr: Dibromofluoromethane	*12860*	1,200	*12500*	0	*103*	*71-125*	0			
Surr: Toluene-d8	*11680*	1,200	*12500*	0	*93.4*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

oatch ID: **R115435** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1108733-07ZMSD** Units: **µg/L** Analysis Date: **8/31/2011 02:08 PM**

Client ID: Run ID: **VOA1_110831A** SeqNo: **2511357** Prep Date: DF: **250**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	10030	1,200	12500	0	80.2	80-120	10350	3.13	20	
1,1,2,2-Tetrachloroethane	11960	1,200	12500	0	95.7	72-120	11540	3.6	20	
1,1,2-Trichloroethane	12060	1,200	12500	0	96.4	80-120	11530	4.48	20	
1,1-Dichloroethane	11630	1,200	12500	0	93.1	76-120	11850	1.85	20	
1,1-Dichloroethene	10730	1,200	12500	129.3	84.8	73-124	10740	0.125	20	
1,2-Dichloroethane	12510	1,200	12500	0	100	78-120	11230	10.8	20	
2-Butanone	24010	2,500	25000	0	96.1	58-132	23340	2.84	20	
2-Chloroethyl vinyl ether	22350	2,500	25000	0	89.4	74-120	22640	1.3	20	
2-Hexanone	23170	2,500	25000	0	92.7	61-130	22960	0.89	20	
4-Methyl-2-pentanone	24240	2,500	25000	0	97	65-127	24610	1.51	20	
Acetone	20860	2,500	25000	0	83.4	59-137	20670	0.909	20	
Benzene	11760	1,200	12500	0	94.1	73-121	10760	8.94	20	
Bromodichloromethane	12820	1,200	12500	0	103	80-120	12320	3.96	20	
Bromoform	12670	1,200	12500	0	101	79-120	11740	7.59	20	
Bromomethane	11950	1,200	12500	0	95.6	66-137	10690	11.1	20	
Carbon disulfide	20600	2,500	25000	0	82.4	68-141	21650	4.97	20	
Carbon tetrachloride	9831	1,200	12500	0	78.6	75-124	9519	3.22	20	
'orobenzene	11170	1,200	12500	0	89.3	80-120	11330	1.43	20	
.oroethane	11590	1,200	12500	0	92.7	76-121	10940	5.73	20	
Chloroform	11770	1,200	12500	0	94.2	80-120	11500	2.37	20	
Chloromethane	11680	1,200	12500	0	93.4	67-123	11120	4.91	20	
cis-1,3-Dichloropropene	13270	1,200	12500	0	106	80-120	11670	12.8	20	
Dibromochloromethane	12380	1,200	12500	0	99.1	80-120	11790	4.92	20	
Ethylbenzene	10850	1,200	12500	0	86.8	80-120	10260	5.57	20	
m,p-Xylene	21540	2,500	25000	0	86.2	78-121	20570	4.62	20	
Methylene chloride	11780	2,500	12500	148.4	93.1	65-133	12060	2.32	20	
Styrene	12190	1,200	12500	0	97.5	80-120	11800	3.23	20	
Tetrachloroethene	9624	1,200	12500	0	77	79-120	9166	4.88	20	S
Toluene	10860	1,200	12500	0	86.9	80-120	10770	0.907	20	
trans-1,3-Dichloropropene	12940	1,200	12500	0	103	80-120	13010	0.574	20	
Trichloroethene	13590	1,200	12500	2002	92.7	80-120	12350	9.54	20	
Vinyl acetate	24650	2,500	25000	0	98.6	67-139	23950	2.87	20	
Vinyl chloride	11990	500	12500	1420	84.6	70-127	11670	2.67	20	
Xylenes, Total	33470	3,800	37500	0	89.2	80-120	31960	4.62	20	
Surr: 1,2-Dichloroethane-d4	*12170*	1,200	*12500*	0	*97.3*	*70-125*	12640	*3.8*	*20*	
Surr: 4-Bromofluorobenzene	*12660*	1,200	*12500*	0	*101*	*72-125*	12160	*4.05*	*20*	
Surr: Dibromofluoromethane	*12040*	1,200	*12500*	0	*96.3*	*71-125*	12860	*6.59*	*20*	
Surr: Toluene-d8	*12010*	1,200	*12500*	0	*96.1*	*75-125*	11680	*2.85*	*20*	

The following samples were analyzed in this batch: 1108743-01A

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115163** Instrument ID **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-082411-R115163** Units: **pH units** Analysis Date: **8/24/2011 02:00 PM**
Client ID: Run ID: **WETCHEM_110824P** SeqNo: **2505871** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.02	0.10	6	0	100	90-110	0			

DUP Sample ID: **1108743-01DDUP** Units: **pH units** Analysis Date: **8/24/2011 02:00 PM**
Client ID: **Injection Well Effluent** Run ID: **WETCHEM_110824P** SeqNo: **2505873** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.15	0.10	0	0	0	0-0	8.11	0.492	20	H

The following samples were analyzed in this batch: 1108743-01D

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115248** Instrument ID **WetChem** Method: **M2510 B**

MBLK Sample ID: **WBLKW1-082611-R115248** Units: **µmhos/cm** Analysis Date: **8/26/2011 02:00 PM**
Client ID: Run ID: **WETCHEM_110826B** SeqNo: **2507383** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **WLCSW1-082611-R115248** Units: **µmhos/cm** Analysis Date: **8/26/2011 02:00 PM**
Client ID: Run ID: **WETCHEM_110826B** SeqNo: **2507384** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1460	1.0	1413	0	103	80-120	0			

DUP Sample ID: **1108743-01DDUP** Units: **µmhos/cm** Analysis Date: **8/26/2011 02:00 PM**
Client ID: **Injection Well Effluent** Run ID: **WETCHEM_110826B** SeqNo: **2507387** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	7410	1.0	0	0	0		7380	0.406	20	

The following samples were analyzed in this batch: 1108743-01D

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115296** Instrument ID **WetChem** Method: **SM2320B**

MBLK Sample ID: **WBLKW1-082911-R115296** Units: **mg/L** Analysis Date: **8/29/2011 11:35 AM**
Client ID: Run ID: **WETCHEM_110829B** SeqNo: **2508254** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: **WLCSW1-082911-R115296** Units: **mg/L** Analysis Date: **8/29/2011 11:35 AM**
Client ID: Run ID: **WETCHEM_110829B** SeqNo: **2508255** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	982.6	5.0	1000	0	98.3	80-120	0			

DUP Sample ID: **1108713-02BDUP** Units: **mg/L** Analysis Date: **8/29/2011 11:35 AM**
Client ID: Run ID: **WETCHEM_110829B** SeqNo: **2508277** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
alinity, Bicarbonate (As CaCO3)	61.86	5.0	0	0	0	0-0	61.29	0.926	20	
linity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
alinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	61.86	5.0	0	0	0	0-0	61.29	0.926	20	

The following samples were analyzed in this batch: 1108743-01C

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115381** Instrument ID **WetChem** Method: **SW1010**

LCS Sample ID: **WLCS-083011-R115381** Units: **°F** Analysis Date: **8/30/2011 04:00 PM**
Client ID: Run ID: **WETCHEM_110830F** SeqNo: **2509821** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	0			

LCSD Sample ID: **WLCSD-083011-R115381** Units: **°F** Analysis Date: **8/30/2011 04:00 PM**
Client ID: Run ID: **WETCHEM_110830F** SeqNo: **2509826** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	83	50	83	0	100	80-120	83	0	25	

DUP Sample ID: **1108774-03DDUP** Units: **°F** Analysis Date: **8/30/2011 04:00 PM**
Client ID: Run ID: **WETCHEM_110830F** SeqNo: **2509827** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	ND	50	0	0	0	0-0	0	0	25	

The following samples were analyzed in this batch: 1108743-01D

:: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115391** Instrument ID **ICS3000** Method: **E300**

MBLK Sample ID: **WBLKW1-083011-R115391** Units: **mg/L** Analysis Date: **8/30/2011 04:22 PM**
Client ID: Run ID: **ICS3000_110830A** SeqNo: **2510041** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								
Surr: Selenate (surr)	*5.229*	0.10	*5*	0	*105*	*85-115*	0			

LCS Sample ID: **WLCSW-083011-R115391** Units: **mg/L** Analysis Date: **8/30/2011 04:43 PM**
Client ID: Run ID: **ICS3000_110830A** SeqNo: **2510042** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.68	0.50	20	0	103	90-110	0			
Sulfate	18.54	0.50	20	0	92.7	90-110	0			
Surr: Selenate (surr)	*5.359*	0.10	*5*	0	*107*	*85-115*	0			

LCSD Sample ID: **WLCSDW-083011-R115391** Units: **mg/L** Analysis Date: **8/30/2011 05:29 PM**
Client ID: Run ID: **ICS3000_110830A** SeqNo: **2510321** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
ride	20.72	0.50	20	0	104	90-110	20.68	0.179	20	
ulfate	18.17	0.50	20	0	90.9	90-110	18.54	2.03	20	
Surr: Selenate (surr)	*5.359*	0.10	*5*	0	*107*	*85-115*	5.359	*0*	*20*	

MS Sample ID: **1108713-01BMS** Units: **mg/L** Analysis Date: **8/30/2011 07:28 PM**
Client ID: Run ID: **ICS3000_110830A** SeqNo: **2510322** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	11.79	0.50	10	1.702	101	80-120	0			
Sulfate	18.1	0.50	10	8.776	93.3	80-120	0			
Surr: Selenate (surr)	*5.721*	0.10	*5*	0	*114*	*85-115*	0			

MS Sample ID: **1108948-01AMS** Units: **mg/L** Analysis Date: **8/30/2011 09:27 PM**
Client ID: Run ID: **ICS3000_110830A** SeqNo: **2510327** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.5	0.50	10	8.106	104	80-120	0			
Sulfate	29.75	0.50	10	19.81	99.5	80-120	0			
Surr: Selenate (surr)	*5.659*	0.10	*5*	0	*113*	*85-115*	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115391** Instrument ID **ICS3000** Method: **E300**

MSD Sample ID: **1108713-01BMSD** Units: **mg/L** Analysis Date: **8/30/2011 07:49 PM**
Client ID: Run ID: **ICS3000_110830A** SeqNo: **2510323** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	12.07	0.50	10	1.702	104	80-120	11.79	2.36	20	
Sulfate	18.63	0.50	10	8.776	98.5	80-120	18.1	2.85	20	
Surr: Selenate (surr)	*5.568*	0.10	*5*	0	*111*	*85-115*	5.721	*2.71*	*20*	

MSD Sample ID: **1108948-01AMSD** Units: **mg/L** Analysis Date: **8/30/2011 09:48 PM**
Client ID: Run ID: **ICS3000_110830A** SeqNo: **2510328** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.38	0.50	10	8.106	103	80-120	18.5	0.634	20	
Sulfate	29.64	0.50	10	19.81	98.4	80-120	29.75	0.367	20	
Surr: Selenate (surr)	*5.619*	0.10	*5*	0	*112*	*85-115*	5.659	*0.709*	*20*	

The following samples were analyzed in this batch: 1108743-01C

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1108743
oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R115420** Instrument ID **Balance1** Method: **M2540C**

MBLK Sample ID: **BLANK-R115420** Units: **mg/L** Analysis Date: **8/30/2011 08:00 AM**
Client ID: Run ID: **BALANCE1_110830B** SeqNo: **2511071** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **LCS-R115420** Units: **mg/L** Analysis Date: **8/30/2011 08:00 AM**
Client ID: Run ID: **BALANCE1_110830B** SeqNo: **2511072** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1050	10	1000	0	105	85-115	0			

DUP Sample ID: **1108743-01CDUP** Units: **mg/L** Analysis Date: **8/30/2011 08:00 AM**
Client ID: **Injection Well Effluent** Run ID: **BALANCE1_110830B** SeqNo: **2511070** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	4180	10	0	0	0	0-0	4320	3.29	20	

The following samples were analyzed in this batch: 1108743-01C

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1108743

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
°F	Farenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

☑ ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of C ody Form

Page 1 of 1

1108743

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly

ALS Project Manager: Chris Bryson

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020 / 7000) Select
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange	D	R.C.I. Profile
Address	P. O. Box 159	Address	501 East Main	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	pH
Phone	(575) 748-3311	Phone	(575) 748-3311	H	Conductivity
Fax	(575) 746-5451	Fax	(575) 746-5451	I	TDS
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Injection Well Effluent	8/23/11	9:10	Liquid	Yes	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank																
3	Temperature Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Aaron Strange

Shipment Method: Federal Express

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by: Aaron Strange	Date: 8231	Time: 1015	Received by:	Notes:
Relinquished by:	Date:	Time:	Received by (Laboratory): 8-24-11 0925	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

- ☐ Level II: Standard QC
- ☐ Level III: Std QC + Raw Data
- ☐ Level IV: SW846 CLP-Like
- ☐ Other: _____
- ☐ TRRP-Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **24-Aug-11 09:20**

Work Order: **1108743** Received by: **PMG**

Checklist completed by Raymond N Gamboa (eSignature) 24-Aug-11 (Date) Reviewed by: Chris Bryson (eSignature) 24-Aug-11 (Date)

Matrices: Liquid
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
emperature(s)/Thermometer(s):	1.4c	002	
Cooler(s)/Kit(s):	3486		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

orrectiveAction:

W.O.# 1108743

ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date: 8/23/11 Time: 1620
Name: Ben Rhodes for Aaron Strange
Company: NAVAJO REFINING CO.

CUSTODY SEAL

Seal Broken By:

Date:

ORIGIN ID: ROWA
NAVAJO ARTESIA
501 E MAIN
ARTESIA , NM 882109440
UNITED STATES US

SHIP DATE: 23AUG11
ACTWGT: 60.0 LB MAN
CAD: 634483/CAFE2472

BILL RECIPIENT

TO CHRIS BRYSON
ALS LABORATORY GROUP
10450 STANCLIFF RD., SUITE 210
HOUSTON TX 77099
(281) 530-5656
INV:
PO:
REF:
DEPT:

FedEx Express

WED - 24 AUG A2
PRIORITY OVERNIGHT

TRK# 0201 4967 8855 7291

77099
TX-US
IAH

AB SGRA

905C1/EEE7/DA47

ALS Group USA, Corp

Date: 06-Sep-11

Client: ALS Environmental
Project: 1108743
Work Order: **1108786**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1108786-01	1108743-01F	Liquid		8/23/2011 09:10	8/25/2011 10:00	☐

ALS Group USA, Corp

Date: 06-Sep-11

Client: ALS Environmental
Project: 1108743
WorkOrder: **1108786**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: *06-Sep-11*

Client: ALS Environmental
Project: 1108743
Work Order: 1108786
Sample ID: 1108743-01F
Lab ID: 1108786-01
Collection Date: 8/23/2011 09:10 AM
Matrix: LIQUID

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **EE**
Cyanide, Reactive	ND		40.0	mg/Kg	1	9/1/2011 12:00 PM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **EE**
Sulfide, Reactive	ND		40.0	mg/Kg	1	9/1/2011 12:00 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 06-Sep-11

Client: ALS Environmental

ork Order: 1108786

oject: 1108743

QC BATCH REPORT

Batch ID: **R94168** Instrument ID **WETCHEM** Method: **SW7.3.4.2**

MBLK Sample ID: **WBLKW1-090111-R94168** Units: **mg/Kg** Analysis Date: **9/1/2011 12:00 PM**

Client ID: Run ID: **WETCHEM_110901E** SeqNo: **1723562** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch: 1108786-01A

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ALS Environmental
Work Order: 1108786
Project: 1108743

QC BATCH REPORT

Batch ID: **R94169** Instrument ID **WETCHEM** Method: **SW7.3.3.2**

MBLK Sample ID: **WBLKW1-090111-R94169** Units: **mg/Kg** Analysis Date: **9/1/2011 12:00 PM**
Client ID: Run ID: **WETCHEM_110901F** SeqNo: **1723570** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS Sample ID: **WLCSW1-090111-R94169** Units: **mg/Kg** Analysis Date: **9/1/2011 12:00 PM**
Client ID: Run ID: **WETCHEM_110901F** SeqNo: **1723571** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	75-125	0			

LCSD Sample ID: **WLCSDW1-090111-R94169** Units: **mg/Kg** Analysis Date: **9/1/2011 12:00 PM**
Client ID: Run ID: **WETCHEM_110901F** SeqNo: **1723579** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	75-125	234.9	0	35	

MS Sample ID: **1108786-01A MS** Units: **mg/Kg** Analysis Date: **9/1/2011 12:00 PM**
Client ID: **1108743-01F** Run ID: **WETCHEM_110901F** SeqNo: **1723575** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	50-150	0			

MSD Sample ID: **1108786-01A MSD** Units: **mg/Kg** Analysis Date: **9/1/2011 12:00 PM**
Client ID: **1108743-01F** Run ID: **WETCHEM_110901F** SeqNo: **1723576** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	234.9	40	250	0	94	50-150	234.9	0	35	

The following samples were analyzed in this batch: 1108786-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

8786

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 24-Aug-11
COC ID: 10871
Due Date: 06-Sep-11

Salesperson: Jeffrey L Croston

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order	10-*2121547	Project Name	1108743	A Reactive Cyanide (SW-846)
Work Order		Project Number		B Reactive Sulfide (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C
Send Report To	Chris Bryson	Inv Attn	Accounts Payable	D
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E
				F
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G
Phone	(281) 530-5656	Phone	(281) 530-5656	H
Fax	(281) 530-5887	Fax	(281) 530-5887	I
eMail Address	chris.bryson@alsglobal.com	eMail CC	mary.knowles@alsglobal.com	J

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1108743-01F (Injection Well Effluent)	Liquid	23/Aug/2011 9:10	(1) 1LPNEAT	X	X								

Comments:

Please analyze for Reactive Cyanide and Reactive Sulfide. Report is due on 9/6/11. Send report to Chris Bryson, chris.bryson@alsglobal.com, and CC: results to Glenda Ramos, glenda.ramos@alsglobal.com and Mary Knowles, mary.knowles@alsglobal.com

MJC

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
	8/24/11	FedEx	8/25/11 1000		Std
Relinquished by:	Date/Time	Received by:	Date/Time		

2.6c

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 24AUG11
ACTWGT: 18.2 LB
CAD: 3001130/CAFE2507

BILL SENDER

TO LES ARNOLD
ALS ENVIRONMENTAL
3352 128TH

HOLLAND MI
(281) 530-5666
REF: SUB-CONTRACT

FedEx Express

J6 A4

THU - 25 AUGNIGHT
PRIORITY OVER

TRK# 0201 4340 2166 2609

49424
US GRR

NI GRRA

MI-

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 24AUG11
ACCT: 19.2 LB
CAD: 3001307CAFE2507

BILL SENDER

TO LES ARNOLD
ALS ENVIRONMENTAL
3352 128TH

HOLLAND MI
(281) 530-5656
REF: SUB-CONTRACT

FedEx
Express

J0 A4

THU - 25 AIRNIGHT

TRK# 0201 4340 2166 2609

PRIORITY OVER

49424
US GRR

NI GRRA

MI-

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ALS - HOUSTON** Date/Time Received: **25-Aug-11 10:00**

Work Order: **1108786** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 25-Aug-11 (Date) Reviewed by: Bill Carey (eSignature) 26-Aug-11 (Date)

Matrices: Liquid
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.6 c		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Environmental

19-Jan-2012

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly Work Order: **1111583**

Dear Aaron,

ALS Environmental received 2 samples on 17-Nov-2011 09:20 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Patricia L. Lynch

Electronically approved by: Hector Coronado

Patricia L. Lynch
Project Manager

ACCREDITED IN ACCORDANCE WITH nelac

Certificate No: T104704231-09A-TX

ient: Navajo Refining Company
roject: Injection Well Quarterly
Work Order: **1111583**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1111583-01	Wastewater Effluent	Water		11/16/2011 09:55	11/17/2011 09:20	☐
1111583-02	Trip Blank - 081911-19	Water		11/16/2011	11/17/2011 09:20	☐

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1111583

Case Narrative

As the pH analyses were performed in the laboratory, the results are H-flagged as appropriate.

Batch 57057, Metals, Sample 1111390-08 : MS/MSD is for an unrelated sample.

Batch 57057, Metals, Sample 1111390-08 : Duplicate RPD is for an unrelated sample.

Batch R119531, Volatile Organics, Sample 1111486-07 : MS/MSD is for an unrelated sample.

Batch R119835, Anions, Sample 1010159-05 : MS/MSD is for an unrelated sample.

ALS Environmental

Date: *19-Jan-12*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1111583
Sample ID: Wastewater Effluent
Lab ID: 1111583-01
Collection Date: 11/16/2011 09:55 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
MERCURY			**SW7470**				Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	11/21/2011	11/21/2011 04:27 PM
METALS			**SW6020**				Analyst: **ALR**
Aluminum	**0.752**		**0.0100**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
Arsenic	**0.0365**		**0.00500**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
Barium	**0.0182**		**0.00500**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
Boron	**0.243**		**0.0500**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
Cadmium	ND		0.00200	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Chromium	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Copper	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Lead	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Manganese	**0.0213**		**0.00500**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
Molybdenum	**0.0443**		**0.00500**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
Nickel	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Selenium	**0.990**		**0.00500**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
Silver	ND		0.00500	mg/L	1	11/18/2011	11/22/2011 12:18 PM
Zinc	**0.0120**		**0.00500**	**mg/L**	1	11/18/2011	11/22/2011 12:18 PM
MIVOLATILES - SW8270D			**SW8270**				Analyst: **JLJ**
,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2-Methylnaphthalene	**0.040**		**0.0050**	**mg/L**	1	11/22/2011	11/26/2011 05:52 PM
2-Methylphenol	**0.29**		**0.050**	**mg/L**	10	11/22/2011	11/28/2011 02:41 PM
2-Nitroaniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
2-Nitrophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
3&4-Methylphenol	**0.52**		**0.050**	**mg/L**	10	11/22/2011	11/28/2011 02:41 PM
3-Nitroaniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
4-Nitroaniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
4-Nitrophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Acenaphthene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Acenaphthylene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Aniline	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Anthracene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Benzidine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Hexachloroethane	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly **Work Order:** 1111583
Sample ID: Wastewater Effluent **Lab ID:** 1111583-01
Collection Date: 11/16/2011 09:55 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Isophorone	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Naphthalene	**0.038**		**0.0050**	**mg/L**	1	11/22/2011	11/26/2011 05:52 PM
Nitrobenzene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Pentachlorophenol	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Phenanthrene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Phenol	**0.99**		**0.050**	**mg/L**	10	11/22/2011	11/28/2011 02:41 PM
Pyrene	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Pyridine	ND		0.0050	mg/L	1	11/22/2011	11/26/2011 05:52 PM
Surr: 2,4,6-Tribromophenol	*67.3*		*42-124*	*%REC*	1	11/22/2011	11/26/2011 05:52 PM
Surr: 2,4,6-Tribromophenol	*71.1*		*42-124*	*%REC*	10	11/22/2011	11/28/2011 02:41 PM
Surr: 2-Fluorobiphenyl	*81.2*		*48-120*	*%REC*	10	11/22/2011	11/28/2011 02:41 PM
Surr: 2-Fluorobiphenyl	*61.3*		*48-120*	*%REC*	1	11/22/2011	11/26/2011 05:52 PM
Surr: 2-Fluorophenol	*64.9*		*20-120*	*%REC*	10	11/22/2011	11/28/2011 02:41 PM
Surr: 2-Fluorophenol	*60.3*		*20-120*	*%REC*	1	11/22/2011	11/26/2011 05:52 PM
Surr: 4-Terphenyl-d14	*62.6*		*51-135*	*%REC*	1	11/22/2011	11/26/2011 05:52 PM
Surr: 4-Terphenyl-d14	*84.7*		*51-135*	*%REC*	10	11/22/2011	11/28/2011 02:41 PM
Surr: Nitrobenzene-d5	*78.1*		*41-120*	*%REC*	10	11/22/2011	11/28/2011 02:41 PM
Surr: Nitrobenzene-d5	*69.3*		*41-120*	*%REC*	1	11/22/2011	11/26/2011 05:52 PM
Surr: Phenol-d6	*64.0*		*20-120*	*%REC*	1	11/22/2011	11/26/2011 05:52 PM
Surr: Phenol-d6	*73.8*		*20-120*	*%REC*	10	11/22/2011	11/28/2011 02:41 PM
VOLATILES			**SW8260**				Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
2-Butanone	**0.010**		**0.010**	**mg/L**	1		11/18/2011 04:11 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1		11/18/2011 04:11 PM
2-Hexanone	ND		0.010	mg/L	1		11/18/2011 04:11 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1		11/18/2011 04:11 PM
Acetone	**0.20**		**0.010**	**mg/L**	1		11/18/2011 04:11 PM
Benzene	**0.20**		**0.0050**	**mg/L**	1		11/18/2011 04:11 PM
Bromodichloromethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Bromoform	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Bromomethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Carbon disulfide	ND		0.010	mg/L	1		11/18/2011 04:11 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly **Work Order:** 1111583
Sample ID: Wastewater Effluent **Lab ID:** 1111583-01
Collection Date: 11/16/2011 09:55 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Carbon tetrachloride	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chlorobenzene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chloroethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chloroform	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Chloromethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Dibromochloromethane	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Ethylbenzene	**0.19**		**0.025**	**mg/L**	5		11/20/2011 02:55 PM
m,p-Xylene	**0.36**		**0.050**	**mg/L**	5		11/20/2011 02:55 PM
Methylene chloride	ND		0.010	mg/L	1		11/18/2011 04:11 PM
Styrene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Tetrachloroethene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Toluene	**0.51**		**0.025**	**mg/L**	5		11/20/2011 02:55 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Trichloroethene	ND		0.0050	mg/L	1		11/18/2011 04:11 PM
Vinyl acetate	ND		0.010	mg/L	1		11/18/2011 04:11 PM
Vinyl chloride	ND		0.0020	mg/L	1		11/18/2011 04:11 PM
Xylenes, Total	**0.56**		**0.075**	**mg/L**	5		11/20/2011 02:55 PM
Surr: 1,2-Dichloroethane-d4	*98.9*		*70-125*	*%REC*	1		11/18/2011 04:11 PM
Surr: 1,2-Dichloroethane-d4	*105*		*70-125*	*%REC*	5		11/20/2011 02:55 PM
Surr: 4-Bromofluorobenzene	*99.2*		*72-125*	*%REC*	1		11/18/2011 04:11 PM
Surr: 4-Bromofluorobenzene	*104*		*72-125*	*%REC*	5		11/20/2011 02:55 PM
Surr: Dibromofluoromethane	*95.1*		*71-125*	*%REC*	1		11/18/2011 04:11 PM
Surr: Dibromofluoromethane	*96.3*		*71-125*	*%REC*	5		11/20/2011 02:55 PM
Surr: Toluene-d8	*104*		*75-125*	*%REC*	1		11/18/2011 04:11 PM
Surr: Toluene-d8	*96.6*		*75-125*	*%REC*	5		11/20/2011 02:55 PM
REACTIVE CYANIDE			**SW-846**				Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1		11/28/2011 11:00 AM
REACTIVE SULFIDE			**SW-846**				Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1		11/28/2011 11:00 AM
ANIONS - EPA 300.0 (1993)			**E300**				Analyst: **JKP**
Chloride	**332**		**5.00**	**mg/L**	10		11/26/2011 07:07 PM
Sulfate	**2,350**		**500**	**mg/L**	1000		11/26/2011 07:21 PM
Surr: Selenate (surr)	*101*		*85-115*	*%REC*	10		11/26/2011 07:07 PM
Surr: Selenate (surr)	*103*		*85-115*	*%REC*	1000		11/26/2011 07:21 PM
ALKALINITY			**SM2320B**				Analyst: **DM**
Alkalinity, Bicarbonate (As CaCO3	**217**		**5.00**	**mg/L**	1		11/23/2011 07:55 AM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1		11/23/2011 07:55 AM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1		11/23/2011 07:55 AM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Navajo Refining Company
Project: Injection Well Quarterly **Work Order:** 1111583
Sample ID: Wastewater Effluent **Lab ID:** 1111583-01
Collection Date: 11/16/2011 09:55 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Prep	Date Analyzed
Alkalinity, Total (As CaCO3)	**217**		**5.00**	**mg/L**	1		11/23/2011 07:55 AM
SPECIFIC CONDUCTIVITY			**M2510 B**				Analyst: **TDW**
Specific Conductivity	**5,430**		**1.00**	**µmhos/cm**	1		11/17/2011 11:00 AM
IGNITIBILITY			**SW1010**				Analyst: **KAH**
Ignitability	*> 212*		50.0	°F	1		11/22/2011 02:00 PM
PH			**SW9040**				Analyst: **TDW**
pH	**7.52**	H	**0.100**	**pH units**	1		11/17/2011 05:00 PM
TOTAL DISSOLVED SOLIDS			**M2540C**				Analyst: **TDW**
Total Dissolved Solids (Residue, Filterable)	**4,840**		**10.0**	**mg/L**	1		11/22/2011 01:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 19-Jan-12

Client: Navajo Refining Company
ork Order: 1111583
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **57057** Instrument ID **ICP7500** Method: **SW6020**

MBLK Sample ID: **MBLKW2-111811-57057** Units: **mg/L** Analysis Date: **11/22/2011 10:34 AM**

Client ID: Run ID: **ICP7500_111121A** SeqNo: **2605832** Prep Date: **11/18/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Boron	ND	0.050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.0050								

CS Sample ID: **MLCSW2-111811-57057** Units: **mg/L** Analysis Date: **11/22/2011 10:41 AM**

nt ID: Run ID: **ICP7500_111121A** SeqNo: **2605833** Prep Date: **11/18/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.08542	0.010	0.1	0	85.4	80-120	0			
Arsenic	0.04772	0.0050	0.05	0	95.4	80-120	0			
Barium	0.04664	0.0050	0.05	0	93.3	80-120	0			
Boron	0.4456	0.050	0.5	0	89.1	80-120	0			
Cadmium	0.04654	0.0020	0.05	0	93.1	80-120	0			
Chromium	0.04816	0.0050	0.05	0	96.3	80-120	0			
Copper	0.04947	0.0050	0.05	0	98.9	80-120	0			
Lead	0.04699	0.0050	0.05	0	94	80-120	0			
Manganese	0.04675	0.0050	0.05	0	93.5	80-120	0			
Molybdenum	0.04685	0.0050	0.05	0	93.7	80-120	0			
Nickel	0.04932	0.0050	0.05	0	98.6	80-120	0			
Selenium	0.04761	0.0050	0.05	0	95.2	80-120	0			
Silver	0.04781	0.0050	0.05	0	95.6	80-120	0			
Zinc	0.0496	0.0050	0.05	0	99.2	80-120	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **57057** Instrument ID **ICP7500** Method: **SW6020**

MS Sample ID: **1111390-08AMS** Units: **mg/L** Analysis Date: **11/22/2011 11:05 AM**
Client ID: Run ID: **ICP7500_111121A** SeqNo: **2605837** Prep Date: **11/18/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.244	0.010	0.1	0.9386	305	80-120	0			SO
Arsenic	0.04959	0.0050	0.05	0.0003986	98.4	80-120	0			
Barium	0.1512	0.0050	0.05	0.09717	108	80-120	0			
Boron	0.5634	0.050	0.5	0.0937	93.9	80-120	0			
Cadmium	0.0498	0.0020	0.05	-0.00005398	99.7	80-120	0			
Chromium	0.05153	0.0050	0.05	0.002447	98.2	80-120	0			
Copper	0.0508	0.0050	0.05	0.0001189	101	80-120	0			
Lead	0.05001	0.0050	0.05	0.0005021	99	80-120	0			
Manganese	0.07247	0.0050	0.05	0.02521	94.5	80-120	0			
Molybdenum	0.05705	0.0050	0.05	0.008842	96.4	80-120	0			
Nickel	0.05106	0.0050	0.05	0.001692	98.7	80-120	0			
Selenium	0.0478	0.0050	0.05	-0.0002051	96	80-120	0			
Silver	0.04711	0.0050	0.05	-0.00001074	94.2	80-120	0			
Zinc	0.07134	0.0050	0.05	0.0102	122	80-120	0			S

MSD Sample ID: **1111390-08AMSD** Units: **mg/L** Analysis Date: **11/22/2011 11:11 AM**
Client ID: Run ID: **ICP7500_111121A** SeqNo: **2605838** Prep Date: **11/18/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	1.257	0.010	0.1	0.9386	318	80-120	1.244	1.04	15	SO
Arsenic	0.04691	0.0050	0.05	0.0003986	93	80-120	0.04959	5.55	15	
Barium	0.1373	0.0050	0.05	0.09717	80.3	80-120	0.1512	9.64	15	
Boron	0.531	0.050	0.5	0.0937	87.5	80-120	0.5634	5.92	15	
Cadmium	0.04426	0.0020	0.05	-0.00005398	88.6	80-120	0.0498	11.8	15	
Chromium	0.04706	0.0050	0.05	0.002447	89.2	80-120	0.05153	9.07	15	
Copper	0.04582	0.0050	0.05	0.0001189	91.4	80-120	0.0508	10.3	15	
Lead	0.04571	0.0050	0.05	0.0005021	90.4	80-120	0.05001	8.98	15	
Manganese	0.06794	0.0050	0.05	0.02521	85.5	80-120	0.07247	6.45	15	
Molybdenum	0.05391	0.0050	0.05	0.008842	90.1	80-120	0.05705	5.66	15	
Nickel	0.04777	0.0050	0.05	0.001692	92.2	80-120	0.05106	6.66	15	
Selenium	0.04411	0.0050	0.05	-0.0002051	88.6	80-120	0.0478	8.03	15	
Silver	0.04425	0.0050	0.05	-0.00001074	88.5	80-120	0.04711	6.26	15	
Zinc	0.08208	0.0050	0.05	0.0102	144	80-120	0.07134	14	15	S

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **57057** Instrument ID **ICP7500** Method: **SW6020**

DUP Sample ID: **1111390-08ADUP** Units: **mg/L** Analysis Date: **11/22/2011 10:53 AM**
Client ID: Run ID: **ICP7500_111121A** SeqNo: **2605835** Prep Date: **11/18/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.8653	0.010	0	0	0	0-0	0.9386	8.13	25	
Arsenic	ND	0.0050	0	0	0	0-0	0.0003986	0	25	
Barium	0.09977	0.0050	0	0	0	0-0	0.09717	2.64	25	
Boron	0.09386	0.050	0	0	0	0-0	0.0937	0.171	25	
Cadmium	ND	0.0020	0	0	0	0-0	-0.00005398	0	25	
Chromium	0.001914	0.0050	0	0	0	0-0	0.002447	0	25	J
Copper	ND	0.0050	0	0	0	0-0	0.0001189	0	25	
Lead	ND	0.0050	0	0	0	0-0	0.0005021	0	25	
Manganese	0.02533	0.0050	0	0	0	0-0	0.02521	0.475	25	
Molybdenum	0.008869	0.0050	0	0	0	0-0	0.008842	0.305	25	
Nickel	0.001596	0.0050	0	0	0	0-0	0.001692	0	25	J
Selenium	ND	0.0050	0	0	0	0-0	-0.0002051	0	25	
Silver	ND	0.0050	0	0	0	0-0	-0.00001074	0	25	
Zinc	0.007601	0.0050	0	0	0	0-0	0.0102	29.2	25	R

The following samples were analyzed in this batch: 1111583-01B

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **57092** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW1-112111-57092** Units: **mg/L** Analysis Date: **11/21/2011 03:41 PM**
Client ID: Run ID: **MERCURY_111121A** SeqNo: **2604989** Prep Date: **11/21/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW1-112111-57092** Units: **mg/L** Analysis Date: **11/21/2011 03:43 PM**
Client ID: Run ID: **MERCURY_111121A** SeqNo: **2604990** Prep Date: **11/21/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.0051	0.00020	0.005	0	102	85-115	0			

MS Sample ID: **1111650-06CMS** Units: **mg/L** Analysis Date: **11/21/2011 03:52 PM**
Client ID: Run ID: **MERCURY_111121A** SeqNo: **2604993** Prep Date: **11/21/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00495	0.00020	0.005	0.000003	98.9	85-115	0			

MSD Sample ID: **1111650-06CMSD** Units: **mg/L** Analysis Date: **11/21/2011 03:54 PM**
Client ID: Run ID: **MERCURY_111121A** SeqNo: **2604994** Prep Date: **11/21/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00494	0.00020	0.005	0.000003	98.7	85-115	0.00495	0.202	20	

DUP Sample ID: **1111650-06CDUP** Units: **mg/L** Analysis Date: **11/21/2011 03:50 PM**
Client ID: Run ID: **MERCURY_111121A** SeqNo: **2604992** Prep Date: **11/21/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020	0	0	0	0-0	0.000003	0	20	

The following samples were analyzed in this batch: 1111583-01B

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **57144** Instrument ID **SV-3** Method: **SW8270**

MBLK Sample ID: **SBLKW2-111122-57144** Units: **µg/L** Analysis Date: **11/26/2011 12:20 PM**

Client ID: Run ID: **SV-3_111126A** SeqNo: **2610980** Prep Date: **11/22/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzidine	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Hexachlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	*63.24*	5.0	*100*	0	*63.2*	*42-124*		0		
Surr: 2-Fluorobiphenyl	*69.15*	5.0	*100*	0	*69.1*	*48-120*		0		
Surr: 2-Fluorophenol	*63.19*	5.0	*100*	0	*63.2*	*20-120*		0		
Surr: 4-Terphenyl-d14	*74.18*	5.0	*100*	0	*74.2*	*51-135*		0		
Surr: Nitrobenzene-d5	*79.25*	5.0	*100*	0	*79.2*	*41-120*		0		
Surr: Phenol-d6	*64.16*	5.0	*100*	0	*64.2*	*20-120*		0		

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **57144** Instrument ID **SV-3** Method: **SW8270**

LCS Sample ID: **SLCSW2-111122-57144** Units: **µg/L** Analysis Date: **11/26/2011 12:44 PM**
Client ID: Run ID: **SV-3_111126A** SeqNo: **2610981** Prep Date: **11/22/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.7	5.0	50	0	87.4	50-120	0			
2,4,5-Trichlorophenol	76.5	5.0	100	0	76.5	50-120	0			
2,4,6-Trichlorophenol	73.36	5.0	100	0	73.4	50-120	0			
2,4-Dinitrotoluene	44.89	5.0	50	0	89.8	50-120	0			
2-Methylnaphthalene	44.2	5.0	50	0	88.4	55-120	0			
2-Methylphenol	81.1	5.0	100	0	81.1	50-120	0			
2-Nitroaniline	48.86	5.0	50	0	97.7	55-120	0			
2-Nitrophenol	81.31	5.0	100	0	81.3	55-120	0			
3&4-Methylphenol	118.5	5.0	150	0	79	55-120	0			
3-Nitroaniline	35.31	5.0	50	0	70.6	40-120	0			
4-Nitroaniline	40.52	5.0	50	0	81	50-120	0			
4-Nitrophenol	107.2	5.0	100	0	107	45-120	0			
Acenaphthene	47.07	5.0	50	0	94.1	55-120	0			
Acenaphthylene	44.62	5.0	50	0	89.2	55-120	0			
Aniline	19.65	5.0	50	0	39.3	30-120	0			
Anthracene	49.81	5.0	50	0	99.6	55-120	0			
Benz(a)anthracene	45.96	5.0	50	0	91.9	55-120	0			
Benzidine	15.78	5.0	50	0	31.6	10-120	0			
Hexachlorobenzene	43.44	5.0	50	0	86.9	55-120	0			
Hexachloroethane	47.28	5.0	50	0	94.6	55-120	0			
Indeno(1,2,3-cd)pyrene	47.86	5.0	50	0	95.7	55-120	0			
Isophorone	46.51	5.0	50	0	93	55-120	0			
Naphthalene	45.36	5.0	50	0	90.7	55-120	0			
Nitrobenzene	48.59	5.0	50	0	97.2	55-120	0			
N-Nitrosodimethylamine	41.92	5.0	50	0	83.8	45-120	0			
N-Nitrosodi-n-propylamine	38.49	5.0	50	0	77	50-120	0			
N-Nitrosodiphenylamine	50.64	5.0	50	0	101	55-120	0			
Pentachlorophenol	75.27	5.0	100	0	75.3	55-120	0			
Phenanthrene	47.17	5.0	50	0	94.3	55-120	0			
Phenol	79.61	5.0	100	0	79.6	50-120	0			
Pyrene	48.99	5.0	50	0	98	55-120	0			
Pyridine	33.5	5.0	50	0	67	35-120	0			
Surr: 2,4,6-Tribromophenol	*65.97*	5.0	*100*	0	*66*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*73.06*	5.0	*100*	0	*73.1*	*48-120*	0			
Surr: 2-Fluorophenol	*80.4*	5.0	*100*	0	*80.4*	*20-120*	0			
Surr: 4-Terphenyl-d14	*69.78*	5.0	*100*	0	*69.8*	*51-135*	0			
Surr: Nitrobenzene-d5	*84.41*	5.0	*100*	0	*84.4*	*41-120*	0			
Surr: Phenol-d6	*75.11*	5.0	*100*	0	*75.1*	*20-120*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **57144** Instrument ID **SV-3** Method: **SW8270**

LCSD Sample ID: **SLCSDW2-111122-57144** Units: **µg/L** Analysis Date: **11/26/2011 01:55 PM**
Client ID: Run ID: **SV-3_111126A** SeqNo: **2610982** Prep Date: **11/22/2011** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.14	5.0	50	0	88.3	50-120	43.7	1.01	20	
2,4,5-Trichlorophenol	81.01	5.0	100	0	81	50-120	76.5	5.73	20	
2,4,6-Trichlorophenol	73.32	5.0	100	0	73.3	50-120	73.36	0.0553	20	
2,4-Dinitrotoluene	41.89	5.0	50	0	83.8	50-120	44.89	6.92	20	
2-Methylnaphthalene	43.62	5.0	50	0	87.2	55-120	44.2	1.33	20	
2-Methylphenol	80.35	5.0	100	0	80.4	50-120	81.1	0.932	20	
2-Nitroaniline	48	5.0	50	0	96	55-120	48.86	1.79	20	
2-Nitrophenol	80.26	5.0	100	0	80.3	55-120	81.31	1.29	20	
3&4-Methylphenol	115.5	5.0	150	0	77	55-120	118.5	2.57	20	
3-Nitroaniline	31.72	5.0	50	0	63.4	40-120	35.31	10.7	20	
4-Nitroaniline	39.87	5.0	50	0	79.7	50-120	40.52	1.63	20	
4-Nitrophenol	91.52	5.0	100	0	91.5	45-120	107.2	15.8	20	
Acenaphthene	46	5.0	50	0	92	55-120	47.07	2.28	20	
Acenaphthylene	43.81	5.0	50	0	87.6	55-120	44.62	1.84	20	
Aniline	20.19	5.0	50	0	40.4	30-120	19.65	2.7	20	
Anthracene	49.76	5.0	50	0	99.5	55-120	49.81	0.0999	20	
Benz(a)anthracene	44.47	5.0	50	0	88.9	55-120	45.96	3.31	20	
Benzidine	18.44	5.0	50	0	36.9	10-120	15.78	15.6	20	
Hexachlorobenzene	43.97	5.0	50	0	87.9	55-120	43.44	1.19	20	
Hexachloroethane	48.09	5.0	50	0	96.2	55-120	47.28	1.7	20	
Indeno(1,2,3-cd)pyrene	50.61	5.0	50	0	101	55-120	47.86	5.59	20	
Isophorone	45.94	5.0	50	0	91.9	55-120	46.51	1.23	20	
Naphthalene	45.79	5.0	50	0	91.6	55-120	45.36	0.941	20	
Nitrobenzene	48.04	5.0	50	0	96.1	55-120	48.59	1.13	20	
N-Nitrosodimethylamine	41.76	5.0	50	0	83.5	45-120	41.92	0.379	20	
N-Nitrosodi-n-propylamine	39.98	5.0	50	0	80	50-120	38.49	3.8	20	
N-Nitrosodiphenylamine	51.99	5.0	50	0	104	55-120	50.64	2.62	20	
Pentachlorophenol	75.11	5.0	100	0	75.1	55-120	75.27	0.209	20	
Phenanthrene	47.52	5.0	50	0	95	55-120	47.17	0.75	20	
Phenol	79.27	5.0	100	0	79.3	50-120	79.61	0.433	20	
Pyrene	44.21	5.0	50	0	88.4	55-120	48.99	10.3	20	
Pyridine	32.9	5.0	50	0	65.8	35-120	33.5	1.81	20	
Surr: 2,4,6-Tribromophenol	*63.56*	5.0	*100*	0	*63.6*	*42-124*	65.97	*3.72*	*20*	
Surr: 2-Fluorobiphenyl	*76.86*	5.0	*100*	0	*76.9*	*48-120*	73.06	*5.07*	*20*	
Surr: 2-Fluorophenol	*81.88*	5.0	*100*	0	*81.9*	*20-120*	80.4	*1.81*	*20*	
Surr: 4-Terphenyl-d14	*67.27*	5.0	*100*	0	*67.3*	*51-135*	69.78	*3.66*	*20*	
Surr: Nitrobenzene-d5	*83.57*	5.0	*100*	0	*83.6*	*41-120*	84.41	*0.997*	*20*	
Surr: Phenol-d6	*74.67*	5.0	*100*	0	*74.7*	*20-120*	75.11	*0.58*	*20*	

The following samples were analyzed in this batch: 1111583-01E

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119531** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-111811-R119531** Units: **µg/L** Analysis Date: **11/18/2011 11:30 AM**

Client ID: Run ID: **VOA1_111118A** SeqNo: **2603465** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Acetone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Surr: 1,2-Dichloroethane-d4	*52.89*	5.0	*50*	0	*106*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*47.57*	5.0	*50*	0	*95.1*	*72-125*	0			
Surr: Dibromofluoromethane	*49.37*	5.0	*50*	0	*98.7*	*71-125*	0			
Surr: Toluene-d8	*50.55*	5.0	*50*	0	*101*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119531** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-111811-R119531** Units: **µg/L** Analysis Date: **11/18/2011 10:39 AM**

Client ID: Run ID: **VOA1_111118A** SeqNo: **2603464** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	48.08	5.0	50	0	96.2	80-120	0			
1,1,2,2-Tetrachloroethane	47.11	5.0	50	0	94.2	72-120	0			
1,1,2-Trichloroethane	48.34	5.0	50	0	96.7	80-120	0			
1,1-Dichloroethane	52.07	5.0	50	0	104	76-120	0			
1,1-Dichloroethene	51.37	5.0	50	0	103	73-124	0			
1,2-Dichloroethane	49.44	5.0	50	0	98.9	78-120	0			
2-Butanone	94.48	10	100	0	94.5	58-132	0			
2-Chloroethyl vinyl ether	95.22	10	100	0	95.2	74-120	0			
2-Hexanone	90.38	10	100	0	90.4	61-130	0			
4-Methyl-2-pentanone	102.4	10	100	0	102	65-127	0			
Acetone	80.79	10	100	0	80.8	59-137	0			
Benzene	48.71	5.0	50	0	97.4	73-121	0			
Bromodichloromethane	49.34	5.0	50	0	98.7	80-120	0			
Bromoform	46.9	5.0	50	0	93.8	79-120	0			
Bromomethane	51.42	5.0	50	0	103	66-137	0			
Carbon disulfide	99.99	10	100	0	100	68-141	0			
Carbon tetrachloride	48.22	5.0	50	0	96.4	75-124	0			
Chlorobenzene	48.41	5.0	50	0	96.8	80-120	0			
Chloroethane	53.54	5.0	50	0	107	76-121	0			
Chloroform	51.08	5.0	50	0	102	80-120	0			
Chloromethane	45.6	5.0	50	0	91.2	67-123	0			
cis-1,3-Dichloropropene	52.66	5.0	50	0	105	80-120	0			
Dibromochloromethane	53.64	5.0	50	0	107	80-120	0			
Methylene chloride	44.96	10	50	0	89.9	65-133	0			
Styrene	50.95	5.0	50	0	102	80-120	0			
Tetrachloroethene	48.08	5.0	50	0	96.2	79-120	0			
trans-1,3-Dichloropropene	46.09	5.0	50	0	92.2	80-120	0			
Trichloroethene	49.24	5.0	50	0	98.5	80-120	0			
Vinyl acetate	97.51	10	100	0	97.5	67-139	0			
Vinyl chloride	47.95	2.0	50	0	95.9	70-127	0			
Surr: 1,2-Dichloroethane-d4	*48.56*	5.0	*50*	0	*97.1*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*49.45*	5.0	*50*	0	*98.9*	*72-125*	0			
Surr: Dibromofluoromethane	*49.06*	5.0	*50*	0	*98.1*	*71-125*	0			
Surr: Toluene-d8	*51.1*	5.0	*50*	0	*102*	*75-125*	0			

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119531** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1111486-07AMS** Units: **µg/L** Analysis Date: **11/18/2011 02:03 PM**
Client ID: Run ID: **VOA1_111118A** SeqNo: **2603470** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	45.49	5.0	50	0	91	80-120	0			
1,1,2,2-Tetrachloroethane	47.57	5.0	50	0	95.1	72-120	0			
1,1,2-Trichloroethane	51.12	5.0	50	0	102	80-120	0			
1,1-Dichloroethane	50.47	5.0	50	0	101	76-120	0			
1,1-Dichloroethene	43.64	5.0	50	0	87.3	73-124	0			
1,2-Dichloroethane	50.25	5.0	50	0	100	78-120	0			
2-Butanone	92.2	10	100	0	92.2	58-132	0			
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0			S
2-Hexanone	96.22	10	100	0	96.2	61-130	0			
4-Methyl-2-pentanone	110.5	10	100	0	110	65-127	0			
Acetone	70.04	10	100	0	70	59-137	0			
Benzene	49	5.0	50	0	98	73-121	0			
Bromodichloromethane	51.57	5.0	50	0	103	80-120	0			
Bromoform	47.36	5.0	50	0	94.7	79-120	0			
Bromomethane	38.91	5.0	50	0	77.8	66-137	0			
Carbon disulfide	90.98	10	100	0	91	68-141	0			
Carbon tetrachloride	43.95	5.0	50	0	87.9	75-124	0			
robenzene	46.83	5.0	50	0	93.7	80-120	0			
loroethane	45.49	5.0	50	0	91	76-121	0			
Chloroform	51.98	5.0	50	0	104	80-120	0			
Chloromethane	42.62	5.0	50	0	85.2	67-123	0			
cis-1,3-Dichloropropene	51.24	5.0	50	0	102	80-120	0			
Dibromochloromethane	52.88	5.0	50	0	106	80-120	0			
Methylene chloride	48.91	10	50	0	97.8	65-133	0			
Styrene	51.07	5.0	50	0	102	80-120	0			
Tetrachloroethene	45.21	5.0	50	0	90.4	79-120	0			
trans-1,3-Dichloropropene	45.32	5.0	50	0	90.6	80-120	0			
Trichloroethene	49.06	5.0	50	0	98.1	80-120	0			
Vinyl acetate	99.24	10	100	0	99.2	67-139	0			
Vinyl chloride	44.28	2.0	50	0	88.6	70-127	0			
Surr: 1,2-Dichloroethane-d4	*51.74*	5.0	*50*	0	*103*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*50.48*	5.0	*50*	0	*101*	*72-125*	0			
Surr: Dibromofluoromethane	*51.01*	5.0	*50*	0	*102*	*71-125*	0			
Surr: Toluene-d8	*48.63*	5.0	*50*	0	*97.3*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119531** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1111486-07AMSD** Units: **µg/L** Analysis Date: **11/18/2011 02:29 PM**

Client ID: Run ID: **VOA1_111118A** SeqNo: **2603471** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	48.74	5.0	50	0	97.5	80-120	45.49	6.88	20	
1,1,2,2-Tetrachloroethane	48.94	5.0	50	0	97.9	72-120	47.57	2.83	20	
1,1,2-Trichloroethane	51.1	5.0	50	0	102	80-120	51.12	0.0563	20	
1,1-Dichloroethane	53.13	5.0	50	0	106	76-120	50.47	5.12	20	
1,1-Dichloroethene	48.9	5.0	50	0	97.8	73-124	43.64	11.4	20	
1,2-Dichloroethane	50.75	5.0	50	0	102	78-120	50.25	1	20	
2-Butanone	89	10	100	0	89	58-132	92.2	3.53	20	
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S
2-Hexanone	95.51	10	100	0	95.5	61-130	96.22	0.74	20	
4-Methyl-2-pentanone	110.3	10	100	0	110	65-127	110.5	0.208	20	
Acetone	69.56	10	100	0	69.6	59-137	70.04	0.686	20	
Benzene	48.98	5.0	50	0	98	73-121	49	0.0449	20	
Bromodichloromethane	51.44	5.0	50	0	103	80-120	51.57	0.257	20	
Bromoform	47.7	5.0	50	0	95.4	79-120	47.36	0.719	20	
Bromomethane	47.39	5.0	50	0	94.8	66-137	38.91	19.7	20	
Carbon disulfide	98.16	10	100	0	98.2	68-141	90.98	7.59	20	
Carbon tetrachloride	47.55	5.0	50	0	95.1	75-124	43.95	7.87	20	
Chlorobenzene	50.29	5.0	50	0	101	80-120	46.83	7.14	20	
Chloroethane	50.05	5.0	50	0	100	76-121	45.49	9.54	20	
Chloroform	50.43	5.0	50	0	101	80-120	51.98	3.03	20	
Chloromethane	43.85	5.0	50	0	87.7	67-123	42.62	2.86	20	
cis-1,3-Dichloropropene	52.56	5.0	50	0	105	80-120	51.24	2.54	20	
Dibromochloromethane	53.58	5.0	50	0	107	80-120	52.88	1.31	20	
Methylene chloride	48.7	10	50	0	97.4	65-133	48.91	0.434	20	
Styrene	51.58	5.0	50	0	103	80-120	51.07	0.997	20	
Tetrachloroethene	48.19	5.0	50	0	96.4	79-120	45.21	6.38	20	
trans-1,3-Dichloropropene	48.66	5.0	50	0	97.3	80-120	45.32	7.1	20	
Trichloroethene	47.91	5.0	50	0	95.8	80-120	49.06	2.37	20	
Vinyl acetate	104.3	10	100	0	104	67-139	99.24	4.99	20	
Vinyl chloride	46.25	2.0	50	0	92.5	70-127	44.28	4.35	20	
Surr: 1,2-Dichloroethane-d4	*51.88*	5.0	*50*	0	*104*	*70-125*	51.74	*0.281*	*20*	
Surr: 4-Bromofluorobenzene	*50.71*	5.0	*50*	0	*101*	*72-125*	50.48	*0.461*	*20*	
Surr: Dibromofluoromethane	*51.28*	5.0	*50*	0	*103*	*71-125*	51.01	*0.514*	*20*	
Surr: Toluene-d8	*50.04*	5.0	*50*	0	*100*	*75-125*	48.63	*2.85*	*20*	

The following samples were analyzed in this batch: 1111583-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119544** Instrument ID **VOA6** Method: **SW8260**

MBLK Sample ID: **VBLKW-112011-R119544** Units: **µg/L** Analysis Date: **11/20/2011 12:42 PM**
Client ID: Run ID: **VOA6_111120A** SeqNo: **2603885** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
o-Xylene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	*54.48*	5.0	*50*	0	*109*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*52.03*	5.0	*50*	0	*104*	*72-125*	0			
Surr: Dibromofluoromethane	*49.01*	5.0	*50*	0	*98*	*71-125*	0			
Surr: Toluene-d8	*49.03*	5.0	*50*	0	*98.1*	*75-125*	0			

LCS Sample ID: **VLCSW-112011-R119544** Units: **µg/L** Analysis Date: **11/20/2011 11:50 AM**
Client ID: Run ID: **VOA6_111120A** SeqNo: **2603884** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	46.04	5.0	50	0	92.1	80-120	0			
m,p-Xylene	91.66	10	100	0	91.7	78-121	0			
Xylene	45.82	5.0	50	0	91.6	80-120	0			
luene	46.25	5.0	50	0	92.5	80-120	0			
Xylenes, Total	137.5	15	150	0	91.7	80-120	0			
Surr: 1,2-Dichloroethane-d4	*50.48*	5.0	*50*	0	*101*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*51.71*	5.0	*50*	0	*103*	*72-125*	0			
Surr: Dibromofluoromethane	*47.84*	5.0	*50*	0	*95.7*	*71-125*	0			
Surr: Toluene-d8	*48.55*	5.0	*50*	0	*97.1*	*75-125*	0			

MS Sample ID: **1111481-01ZMS** Units: **µg/L** Analysis Date: **11/20/2011 02:02 PM**
Client ID: Run ID: **VOA6_111120A** SeqNo: **2603888** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	44.88	5.0	50	0	89.8	80-120	0			
m,p-Xylene	90.2	10	100	0	90.2	78-121	0			
o-Xylene	45.02	5.0	50	0	90	80-120	0			
Toluene	45.08	5.0	50	0	90.2	80-120	0			
Xylenes, Total	135.2	15	150	0	90.1	80-120	0			
Surr: 1,2-Dichloroethane-d4	*51.1*	5.0	*50*	0	*102*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*51.96*	5.0	*50*	0	*104*	*72-125*	0			
Surr: Dibromofluoromethane	*47.94*	5.0	*50*	0	*95.9*	*71-125*	0			
Surr: Toluene-d8	*48.69*	5.0	*50*	0	*97.4*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119544** Instrument ID **VOA6** Method: **SW8260**

MSD Sample ID: **1111481-01ZMSD** Units: **µg/L** Analysis Date: **11/20/2011 02:28 PM**

Client ID: Run ID: **VOA6_111120A** SeqNo: **2603889** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethylbenzene	44.03	5.0	50	0	88.1	80-120	44.88	1.91	20	
m,p-Xylene	87.66	10	100	0	87.7	78-121	90.2	2.85	20	
o-Xylene	44.45	5.0	50	0	88.9	80-120	45.02	1.28	20	
Toluene	45	5.0	50	0	90	80-120	45.08	0.171	20	
Xylenes, Total	132.1	15	150	0	88.1	80-120	135.2	2.32	20	
Surr: 1,2-Dichloroethane-d4	*51.4*	5.0	*50*	0	*103*	*70-125*	51.1	*0.585*	*20*	
Surr: 4-Bromofluorobenzene	*51.23*	5.0	*50*	0	*102*	*72-125*	51.96	*1.4*	*20*	
Surr: Dibromofluoromethane	*48.14*	5.0	*50*	0	*96.3*	*71-125*	47.94	*0.414*	*20*	
Surr: Toluene-d8	*48.74*	5.0	*50*	0	*97.5*	*75-125*	48.69	*0.102*	*20*	

The following samples were analyzed in this batch: 1111583-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119462** Instrument ID **WetChem** Method: **M2510 B**

MBLK Sample ID: **WBLKW1-111711-R119462** Units: **µmhos/cm** Analysis Date: **11/17/2011 11:00 AM**
Client ID: Run ID: **WETCHEM_111117F** SeqNo: **2601279** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **WLCSW1-111711-R119462** Units: **µmhos/cm** Analysis Date: **11/17/2011 11:00 AM**
Client ID: Run ID: **WETCHEM_111117F** SeqNo: **2601280** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1450	1.0	1413	0	103	80-120	0			

DUP Sample ID: **1111560-01BDUP** Units: **µmhos/cm** Analysis Date: **11/17/2011 11:00 AM**
Client ID: Run ID: **WETCHEM_111117F** SeqNo: **2601306** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	624	1.0	0	0	0		616	1.29	20	

The following samples were analyzed in this batch: 1111583-01D

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119505** Instrument ID **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-111711-R119505** Units: **pH units** Analysis Date: **11/17/2011 05:00 PM**
Client ID: Run ID: **WETCHEM_111117I** SeqNo: **2602234** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.04	0.10	6	0	101	90-110	0			

DUP Sample ID: **1111611-01ADUPZ** Units: **pH units** Analysis Date: **11/17/2011 05:00 PM**
Client ID: Run ID: **WETCHEM_111117I** SeqNo: **2602239** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.36	0.10	0	0	0	0-0	8.43	0.834	20	H

The following samples were analyzed in this batch: 1111583-01D

Qualifiers: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119643** Instrument ID **WetChem** Method: **SW1010**

LCS Sample ID: **WLCS-112211-R119643** Units: **°F** Analysis Date: **11/22/2011 02:00 PM**
Client ID: Run ID: **WETCHEM_111122G** SeqNo: **2606058** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	86	50	83	0	104	80-120	0			

LCSD Sample ID: **WLCSD-112211-R119643** Units: **°F** Analysis Date: **11/22/2011 02:00 PM**
Client ID: Run ID: **WETCHEM_111122G** SeqNo: **2606066** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	85	50	83	0	102	80-120	86	1.17	25	

DUP Sample ID: **1111664-01DDUP** Units: **°F** Analysis Date: **11/22/2011 02:00 PM**
Client ID: Run ID: **WETCHEM_111122G** SeqNo: **2606067** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	123	50	0	0	0	0-0	124	0.81	25	

The following samples were analyzed in this batch: 1111583-01D

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119716** Instrument ID **WetChem** Method: **SM2320B**

MBLK Sample ID: **WBLKW1-112311-R119716** Units: **mg/L** Analysis Date: **11/23/2011 07:55 AM**
Client ID: Run ID: **WETCHEM_111123A** SeqNo: **2606956** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: **WLCSW1-112311-R119716** Units: **mg/L** Analysis Date: **11/23/2011 07:55 AM**
Client ID: Run ID: **WETCHEM_111123A** SeqNo: **2606957** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1046	5.0	1000	0	105	80-120	0			

DUP Sample ID: **1111583-01CDUP** Units: **mg/L** Analysis Date: **11/23/2011 07:55 AM**
Client ID: **Wastewater Effluent** Run ID: **WETCHEM_111123A** SeqNo: **2606981** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	223.8	5.0	0	0	0	0-0	217.2	3	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	223.8	5.0	0	0	0	0-0	217.2	3	20	

The following samples were analyzed in this batch: 1111583-01C

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119738** Instrument ID **Balance1** Method: **M2540C**

MBLK Sample ID: **BLANK-R119738** Units: **mg/L** Analysis Date: **11/22/2011 01:00 PM**
Client ID: Run ID: **BALANCE1_111122C** SeqNo: **2607823** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	ND	10								

LCS Sample ID: **LCS-R119738** Units: **mg/L** Analysis Date: **11/22/2011 01:00 PM**
Client ID: Run ID: **BALANCE1_111122C** SeqNo: **2607824** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1016	10	1000	0	102	85-115	0			

DUP Sample ID: **1111630-12ADUP** Units: **mg/L** Analysis Date: **11/22/2011 01:00 PM**
Client ID: Run ID: **BALANCE1_111122C** SeqNo: **2607806** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1396	10	0	0	0	0-0	1312	6.2	20	

DUP Sample ID: **1111679-01BDUP** Units: **mg/L** Analysis Date: **11/22/2011 01:00 PM**
Client ID: Run ID: **BALANCE1_111122C** SeqNo: **2607821** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filt	1230	10	0	0	0	0-0	1212	1.47	20	

The following samples were analyzed in this batch: 1111583-01C

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1111583
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R119835** Instrument ID **ICS2100** Method: **E300**

MBLK Sample ID: **WBLKS1-112611-R119835** Units: **mg/L** Analysis Date: **11/26/2011 04:12 PM**
Client ID: Run ID: **ICS2100_111126A** SeqNo: **2610644** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	0.50								
Sulfate	ND	0.50								
Surr: Selenate (surr)	*4.527*	0.10	*5*	0	*90.5*	*85-115*	0			

LCS Sample ID: **WLCSS1-112611-R119835** Units: **mg/L** Analysis Date: **11/26/2011 04:27 PM**
Client ID: Run ID: **ICS2100_111126A** SeqNo: **2610645** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.79	0.50	20	0	104	90-110	0			
Sulfate	21.22	0.50	20	0	106	90-110	0			
Surr: Selenate (surr)	*4.853*	0.10	*5*	0	*97.1*	*85-115*	0			

LCSD Sample ID: **WLCSDS1-112611-R119835** Units: **mg/L** Analysis Date: **11/26/2011 04:41 PM**
Client ID: Run ID: **ICS2100_111126A** SeqNo: **2610647** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
oride	20.68	0.50	20	0	103	90-110	20.79	0.535	20	
ulfate	21.28	0.50	20	0	106	90-110	21.22	0.268	20	
Surr: Selenate (surr)	*4.672*	0.10	*5*	0	*93.4*	*85-115*	4.853	*3.8*	*20*	

MS Sample ID: **1111407-01EMS** Units: **mg/L** Analysis Date: **11/26/2011 05:11 PM**
Client ID: Run ID: **ICS2100_111126A** SeqNo: **2610649** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	394.3	5.0	100	255	139	80-120	0			S
Sulfate	104.4	5.0	100	2.266	102	80-120	0			
Surr: Selenate (surr)	*48.02*	1.0	*50*	0	*96*	*85-115*	0			

MSD Sample ID: **1111407-01EMSD** Units: **mg/L** Analysis Date: **11/26/2011 05:25 PM**
Client ID: Run ID: **ICS2100_111126A** SeqNo: **2610650** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	395.4	5.0	100	255	140	80-120	394.3	0.273	20	S
Sulfate	104.5	5.0	100	2.266	102	80-120	104.4	0.0651	20	
Surr: Selenate (surr)	*49.57*	1.0	*50*	0	*99.1*	*85-115*	48.02	*3.19*	*20*	

The following samples were analyzed in this batch: 1111583-01C

s: See Qualifiers Page for a list of Qualifiers and their explanation.

QC Page: 19 of 19

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1111583

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
°F	Farenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Fo

Page 1 of 1

1111583

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly

ALS Project Manager: Chris Bryson

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020 / 7000) Select
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange	D	R.C.I. Profile
Address	P. O. Box 159	Address	501 East Main	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	pH
Phone	(575) 748-3311	Phone	(575) 748-3311	H	Conductivity
Fax	(575) 746-5451	Fax	(575) 746-5451	I	TDS
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Wastewater Effluent	11/16/11	9:55	Liquid	Yes	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank					2											
3	Temperature Blank					1											
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Aaron Strange

Shipment Method: Federal Express

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other: _____

Results Due Date:

	Date:	Time:		
Relinquished by: Aaron Strange	11-16-2011	16:15	Received by:	Notes:
Relinquished by:	Date:	Time:	Received by (Laboratory): 11/17/11 09:20	Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

- ☐ Level II: Standard QC
- ☐ Level III: Std QC + Raw Data
- ☐ Level IV: SW846 CLP-Like
- ☐ Other: _____
- ☐ TRRP-Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

Date:
Name:
Compa

CUSTODY SEAL

11-16-11 Time: 1620

Any: Glen Rhodes for A. Strange NAVAJO REFINING CO.

Seal Broken By:

Date: 11/17/11

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **17-Nov-11 09:20**

Work Order: **1111583** Received by: **RNG**

Checklist completed by Paresh M. Giga (eSignature) 17-Nov-11 (Date) Reviewed by: Mary K. Knowles (eSignature) 18-Nov-11 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.5	002	
Cooler(s)/Kit(s):	3897		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

SRC Page 1 of 1

ALS Environmental

08-Mar-2012

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 748-3311
Fax: (575) 746-5421

Re: Injection Well Quarterly

Work Order: **1202979**

Dear Aaron,

ALS Environmental received 2 samples on 29-Feb-2012 09:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 37.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Chris Bryson

Electronically approved by: Yvan K. Ty

Chris Bryson
Project Manager

Certificate No: T104704231-09A-TX

ALS Environmental

Date: 08-Mar-12

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: **1202979**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1202979-01	Injection Well Effluent	Water		2/28/2012 09:40	2/29/2012 09:10	☐
1202979-02	Trip Blank - 110711-11	Water		2/28/2012	2/29/2012 09:10	☑

ALS Environmental *Date: 08-Mar-12*

Client:	Navajo Refining Company
Project:	Injection Well Quarterly
Work Order:	1202979

Case Narrative

As the pH analyses were performed in the laboratory, the results are H-flagged as appropriate.

Sample was received outside of holding time for pH.

Batch 59229, Metals, Sample 1202950-04 : MS/MSD is for an unrelated sample.

Batch 59263, Semivolatile Organics, Insufficient sample to perform MS/MSD. LCS/LCSD provided as batch quality control.

Batch 59263, Semivolatile Organics : LCSD RPD was above the control limits for several analytes. The individual recoveries were in control.

Batch R124295, Volatile Organics, Sample 1202919-01 : MS/MSD is for an unrelated sample.

Batch R124295, Volatile Organics : CCV %D was above the control limits for Acetone. The associated sample results are Non Detect.

The analysis for Reactive Sulfide and Reactive Cyanide was subcontracted to ALS Laboratory Group, Inc. in Holland, MI.

ALS Environmental

Date: *26-Apr-12*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1202979
Sample ID: Injection Well Effluent
Lab ID: 1202979-01
Collection Date: 2/28/2012 09:40 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **3/2/2012**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	3/2/2012 02:14 PM
METALS			**SW6020**		Prep Date: **2/29/2012**	Analyst: **IGF**
Aluminum	**1.87**		**0.100**	**mg/L**	10	3/2/2012 12:04 AM
Arsenic	**0.141**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Barium	**0.0282**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Boron	**0.335**		**0.0500**	**mg/L**	1	3/1/2012 11:24 AM
Cadmium	ND		0.00200	mg/L	1	3/1/2012 11:24 AM
Chromium	**0.00598**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Copper	**0.0117**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Lead	ND		0.00500	mg/L	1	3/1/2012 11:24 AM
Manganese	**0.0555**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Molybdenum	**0.0987**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Nickel	**0.106**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Selenium	**0.312**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
Silver	ND		0.00500	mg/L	1	3/1/2012 11:24 AM
Zinc	**0.0746**		**0.00500**	**mg/L**	1	3/1/2012 11:24 AM
SEMIVOLATILES - SW8270D			**SW8270**		Prep Date: **3/2/2012**	Analyst: **JLJ**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2,4-Dinitrotoluene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Methylphenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Nitroaniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
2-Nitrophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
3-Nitroaniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
4-Nitroaniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
4-Nitrophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Acenaphthene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Acenaphthylene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Aniline	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Anthracene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Benz(a)anthracene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Benzidine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Hexachlorobenzene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Hexachloroethane	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *26-Apr-12*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 1202979
Sample ID: Injection Well Effluent
Lab ID: 1202979-01
Collection Date: 2/28/2012 09:40 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Isophorone	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Naphthalene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Nitrobenzene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Pentachlorophenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Phenanthrene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Phenol	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Pyrene	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Pyridine	ND		0.0050	mg/L	1	3/3/2012 06:22 PM
Surr: 2,4,6-Tribromophenol	*80.7*		*42-124*	*%REC*	1	3/3/2012 06:22 PM
Surr: 2-Fluorobiphenyl	*71.4*		*48-120*	*%REC*	1	3/3/2012 06:22 PM
Surr: 2-Fluorophenol	*56.2*		*20-120*	*%REC*	1	3/3/2012 06:22 PM
Surr: 4-Terphenyl-d14	*84.5*		*51-135*	*%REC*	1	3/3/2012 06:22 PM
Surr: Nitrobenzene-d5	*69.8*		*41-120*	*%REC*	1	3/3/2012 06:22 PM
Surr: Phenol-d6	*60.0*		*20-120*	*%REC*	1	3/3/2012 06:22 PM
VOLATILES			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1,2,2-Tetrachloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1,2-Trichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1-Dichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,1-Dichloroethene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
1,2-Dichloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
2-Butanone	ND		0.010	mg/L	1	3/2/2012 01:16 PM
2-Chloroethyl vinyl ether	ND		0.010	mg/L	1	3/2/2012 01:16 PM
2-Hexanone	ND		0.010	mg/L	1	3/2/2012 01:16 PM
4-Methyl-2-pentanone	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Acetone	**0.12**		**0.010**	**mg/L**	1	3/5/2012 08:40 PM
Benzene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Bromodichloromethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Bromoform	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Bromomethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Carbon disulfide	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Carbon tetrachloride	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chlorobenzene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chloroethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chloroform	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Chloromethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
cis-1,3-Dichloropropene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *26-Apr-12*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well Effluent
Collection Date: 2/28/2012 09:40 AM

Work Order: 1202979
Lab ID: 1202979-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dibromochloromethane	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Ethylbenzene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
m,p-Xylene	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Methylene chloride	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Styrene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Tetrachloroethene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Toluene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
trans-1,3-Dichloropropene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Trichloroethene	ND		0.0050	mg/L	1	3/2/2012 01:16 PM
Vinyl acetate	ND		0.010	mg/L	1	3/2/2012 01:16 PM
Vinyl chloride	ND		0.0020	mg/L	1	3/2/2012 01:16 PM
Xylenes, Total	ND		0.015	mg/L	1	3/2/2012 01:16 PM
Surr: 1,2-Dichloroethane-d4	*91.8*		*70-125*	*%REC*	1	3/2/2012 01:16 PM
Surr: 1,2-Dichloroethane-d4	*94.6*		*70-125*	*%REC*	1	3/5/2012 08:40 PM
Surr: 4-Bromofluorobenzene	*97.9*		*72-125*	*%REC*	1	3/2/2012 01:16 PM
Surr: 4-Bromofluorobenzene	*101*		*72-125*	*%REC*	1	3/5/2012 08:40 PM
Surr: Dibromofluoromethane	*95.8*		*71-125*	*%REC*	1	3/2/2012 01:16 PM
Surr: Dibromofluoromethane	*97.3*		*71-125*	*%REC*	1	3/5/2012 08:40 PM
Surr: Toluene-d8	*99.5*		*75-125*	*%REC*	1	3/2/2012 01:16 PM
Surr: Toluene-d8	*106*		*75-125*	*%REC*	1	3/5/2012 08:40 PM
REACTIVE CYANIDE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM
REACTIVE SULFIDE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM
ANIONS - EPA 300.0 (1993)			**E300**			Analyst: **JKP**
Chloride	**519**		**50.0**	**mg/L**	100	3/6/2012 06:51 AM
Sulfate	**1,870**		**50.0**	**mg/L**	100	3/6/2012 06:51 AM
Surr: Selenate (surr)	*110*		*85-115*	*%REC*	100	3/6/2012 06:51 AM
ALKALINITY			**SM2320B**			Analyst: **DM**
Alkalinity, Bicarbonate (As CaCO3)	**466**		**5.00**	**mg/L**	1	3/6/2012 04:36 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	3/6/2012 04:36 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	3/6/2012 04:36 PM
Alkalinity, Total (As CaCO3)	**466**		**5.00**	**mg/L**	1	3/6/2012 04:36 PM
SPECIFIC CONDUCTIVITY			**M2510 B**			Analyst: **TDW**
Specific Conductivity	**5,990**		**1.00**	**µmhos/cm**	1	2/29/2012 04:00 PM
IGNITIBILITY			**SW1010**			Analyst: **KAH**
Ignitability	*> 212*		50.0	°F	1	3/6/2012 05:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: *26-Apr-12*

Client:	Navajo Refining Company		
Project:	Injection Well Quarterly	**Work Order:**	1202979
Sample ID:	Injection Well Effluent	**Lab ID:**	1202979-01
Collection Date:	2/28/2012 09:40 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
PH			**SW9040**			Analyst: **TDW**
pH	**7.30**	HHH	**0.100**	**pH units**	1	2/29/2012 03:00 PM
TOTAL DISSOLVED SOLIDS			**M2540C**			Analyst: **KAH**
Total Dissolved Solids (Residue, Filterable)	**3,890**		**10.0**	**mg/L**	1	3/5/2012 07:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-12

Client: Navajo Refining Company

Work Order: 1202979

Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **59229** Instrument ID **ICPMS04** Method: **SW6020**

MBLK Sample ID: **MBLKW2-022912-59229** Units: **mg/L** Analysis Date: **3/1/2012 05:17 AM**

Client ID: Run ID: **ICPMS04_120229A** SeqNo: **2704057** Prep Date: **2/29/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	ND	0.050								

MBLK Sample ID: **MBLKW2-022912-59229** Units: **mg/L** Analysis Date: **3/1/2012 03:20 PM**

Client ID: Run ID: **ICPMS04_120229A** SeqNo: **2704747** Prep Date: **2/29/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.010								
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	ND	0.0050								

LCS Sample ID: **MLCSW2-022912-59229** Units: **mg/L** Analysis Date: **3/1/2012 05:24 AM**

Client ID: Run ID: **ICPMS04_120229A** SeqNo: **2704058** Prep Date: **2/29/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.0488	0.0050	0.05	0	97.6	80-120	0			
Barium	0.05138	0.0050	0.05	0	103	80-120	0			
Boron	0.4962	0.050	0.5	0	99.2	80-120	0			
Cadmium	0.0483	0.0020	0.05	0	96.6	80-120	0			
Chromium	0.04778	0.0050	0.05	0	95.6	80-120	0			
Copper	0.04836	0.0050	0.05	0	96.7	80-120	0			
Lead	0.048	0.0050	0.05	0	96	80-120	0			
Manganese	0.04857	0.0050	0.05	0	97.1	80-120	0			
Molybdenum	0.04679	0.0050	0.05	0	93.6	80-120	0			
Selenium	0.04774	0.0050	0.05	0	95.5	80-120	0			
Silver	0.04807	0.0050	0.05	0	96.1	80-120	0			
Zinc	0.05356	0.0050	0.05	0	107	80-120	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **59229** Instrument ID **ICPMS04** Method: **SW6020**

LCS Sample ID: **MLCSW2-022912-59229** Units: **mg/L** Analysis Date: **3/1/2012 06:13 PM**
Client ID: Run ID: **ICPMS04_120229A** SeqNo: **2705146** Prep Date: **2/29/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1038	0.010	0.1	0	104	80-120	0			
Nickel	0.04988	0.0050	0.05	0	99.8	80-120	0			

MS Sample ID: **1202950-04DMS** Units: **mg/L** Analysis Date: **3/2/2012 05:51 PM**
Client ID: Run ID: **ICPMS04_120302A** SeqNo: **2706306** Prep Date: **2/29/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09861	0.050	0.1	0.002997	95.6	80-120	0			
Arsenic	0.05556	0.025	0.05	0.001822	107	80-120	0			
Barium	0.1618	0.025	0.05	0.104	116	80-120	0			
Boron	3.21	0.25	0.5	2.517	138	80-120	0			SO
Cadmium	0.05037	0.010	0.05	0.000047	101	80-120	0			
Chromium	0.04882	0.025	0.05	0.000132	97.4	80-120	0			
Copper	0.04803	0.025	0.05	0.000783	94.5	80-120	0			
Lead	0.05087	0.025	0.05	0.000348	101	80-120	0			
Manganese	2.699	0.025	0.05	2.628	143	80-120	0			SO
lybdenum	0.05442	0.025	0.05	0.005527	97.8	80-120	0			
kel	0.06232	0.025	0.05	0.017	90.6	80-120	0			
Selenium	0.0567	0.025	0.05	0.001873	110	80-120	0			
Silver	0.04727	0.025	0.05	-0.000916	96.4	80-120	0			
Zinc	0.0523	0.025	0.05	0.01637	71.9	80-120	0			S

MSD Sample ID: **1202950-04DMSD** Units: **mg/L** Analysis Date: **3/2/2012 05:58 PM**
Client ID: Run ID: **ICPMS04_120302A** SeqNo: **2706307** Prep Date: **2/29/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09298	0.050	0.1	0.002997	90	80-120	0.09861	5.88	15	
Arsenic	0.05498	0.025	0.05	0.001822	106	80-120	0.05556	1.05	15	
Barium	0.153	0.025	0.05	0.104	97.9	80-120	0.1618	5.63	15	
Boron	3.068	0.25	0.5	2.517	110	80-120	3.21	4.5	15	O
Cadmium	0.04955	0.010	0.05	0.000047	99	80-120	0.05037	1.64	15	
Chromium	0.047	0.025	0.05	0.000132	93.7	80-120	0.04882	3.8	15	
Copper	0.04538	0.025	0.05	0.000783	89.2	80-120	0.04803	5.67	15	
Lead	0.0477	0.025	0.05	0.000348	94.7	80-120	0.05087	6.43	15	
Manganese	2.5	0.025	0.05	2.628	-255	80-120	2.699	7.66	15	SO
Molybdenum	0.05147	0.025	0.05	0.005527	91.9	80-120	0.05442	5.56	15	
Nickel	0.05891	0.025	0.05	0.017	83.8	80-120	0.06232	5.62	15	
Selenium	0.05922	0.025	0.05	0.001873	115	80-120	0.0567	4.34	15	
Silver	0.04563	0.025	0.05	-0.000916	93.1	80-120	0.04727	3.54	15	
Zinc	0.04801	0.025	0.05	0.01637	63.3	80-120	0.0523	8.55	15	S

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **59229** Instrument ID **ICPMS04** Method: **SW6020**

DUP Sample ID: **1202950-04DDUP** Units: **mg/L** Analysis Date: **3/2/2012 05:38 PM**

Client ID: Run ID: **ICPMS04_120302A** SeqNo: **2706299** Prep Date: **2/29/2012** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	ND	0.050	0	0	0	0-0	0.002997	0	25	
Arsenic	ND	0.025	0	0	0	0-0	0.001822	0	25	
Barium	0.09946	0.025	0	0	0	0-0	0.104	4.51	25	
Boron	2.473	0.25	0	0	0	0-0	2.517	1.79	25	
Cadmium	ND	0.010	0	0	0	0-0	0.000047	0	25	
Chromium	ND	0.025	0	0	0	0-0	0.000132	0	25	
Copper	ND	0.025	0	0	0	0-0	0.000783	0	25	
Lead	ND	0.025	0	0	0	0-0	0.000348	0	25	
Manganese	2.536	0.025	0	0	0	0-0	2.628	3.54	25	
Molybdenum	ND	0.025	0	0	0	0-0	0.005527	0	25	
Nickel	0.01368	0.025	0	0	0	0-0	0.017	0	25	J
Selenium	ND	0.025	0	0	0	0-0	0.001873	0	25	
Silver	ND	0.025	0	0	0	0-0	-0.000916	0	25	
Zinc	ND	0.025	0	0	0	0-0	0.01637	0	25	

The following samples were analyzed in this batch: 1202979-01B

:: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **59276** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW1-030212-59276** Units: **mg/L** Analysis Date: **3/2/2012 01:33 PM**
Client ID: Run ID: **MERCURY_120302A** SeqNo: **2706040** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	0.00020								

LCS Sample ID: **GLCSW1-030212-59276** Units: **mg/L** Analysis Date: **3/2/2012 01:39 PM**
Client ID: Run ID: **MERCURY_120302A** SeqNo: **2706041** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00502	0.00020	0.005	0	100	85-115	0			

MS Sample ID: **12021005-01BMS** Units: **mg/L** Analysis Date: **3/2/2012 01:47 PM**
Client ID: Run ID: **MERCURY_120302A** SeqNo: **2706044** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00486	0.00020	0.005	0.000152	94.2	85-115	0			

MSD Sample ID: **12021005-01BMSD** Units: **mg/L** Analysis Date: **3/2/2012 01:49 PM**
~lient ID: Run ID: **MERCURY_120302A** SeqNo: **2706045** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00488	0.00020	0.005	0.000152	94.6	85-115	0.00486	0.411	20	

DUP Sample ID: **12021005-01BDUP** Units: **mg/L** Analysis Date: **3/2/2012 01:45 PM**
Client ID: Run ID: **MERCURY_120302A** SeqNo: **2706043** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.000152	0.00020	0	0	0	0-0	0.000152	0	20	J

The following samples were analyzed in this batch: 1202979-01B

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **59263** Instrument ID **SV-5** Method: **SW8270**

MBLK Sample ID: **SBLKW1-120302-59263** Units: **µg/L** Analysis Date: **3/2/2012 06:03 PM**
Client ID: Run ID: **SV-5_120302B** SeqNo: **2706512** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	ND	5.0								
2,4,5-Trichlorophenol	ND	5.0								
2,4,6-Trichlorophenol	ND	5.0								
2,4-Dinitrotoluene	ND	5.0								
2-Methylnaphthalene	ND	5.0								
2-Methylphenol	ND	5.0								
2-Nitroaniline	ND	5.0								
2-Nitrophenol	ND	5.0								
3&4-Methylphenol	ND	5.0								
3-Nitroaniline	ND	5.0								
4-Nitroaniline	ND	5.0								
4-Nitrophenol	ND	5.0								
Acenaphthene	ND	5.0								
Acenaphthylene	ND	5.0								
Aniline	ND	5.0								
Anthracene	ND	5.0								
Benz(a)anthracene	ND	5.0								
Benzidine	ND	5.0								
Benzo(a)pyrene	ND	5.0								
Hexachlorobenzene	ND	5.0								
Hexachloroethane	ND	5.0								
Indeno(1,2,3-cd)pyrene	ND	5.0								
Isophorone	ND	5.0								
Naphthalene	ND	5.0								
Nitrobenzene	ND	5.0								
N-Nitrosodimethylamine	ND	5.0								
N-Nitrosodi-n-propylamine	ND	5.0								
N-Nitrosodiphenylamine	ND	5.0								
Pentachlorophenol	ND	5.0								
Phenanthrene	ND	5.0								
Phenol	ND	5.0								
Pyrene	ND	5.0								
Pyridine	ND	5.0								
Surr: 2,4,6-Tribromophenol	*87.1*	5.0	*100*	0	*87.1*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*92.22*	5.0	*100*	0	*92.2*	*48-120*	0			
Surr: 2-Fluorophenol	*83.39*	5.0	*100*	0	*83.4*	*20-120*	0			
Surr: 4-Terphenyl-d14	*97.18*	5.0	*100*	0	*97.2*	*51-135*	0			
Surr: Nitrobenzene-d5	*99.51*	5.0	*100*	0	*99.5*	*41-120*	0			
Surr: Phenol-d6	*88.38*	5.0	*100*	0	*88.4*	*20-120*	0			

:: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **59263** Instrument ID **SV-5** Method: **SW8270**

LCS Sample ID: **SLCSW1-120302-59263** Units: **µg/L** Analysis Date: **3/3/2012 03:21 PM**
Client ID: Run ID: **SV-5_120302B** SeqNo: **2706514** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	45.27	5.0	50	0	90.5	50-120	0			
2,4,5-Trichlorophenol	92.16	5.0	100	0	92.2	50-120	0			
2,4,6-Trichlorophenol	90.96	5.0	100	0	91	50-120	0			
2,4-Dinitrotoluene	38.29	5.0	50	0	76.6	50-120	0			
2-Methylnaphthalene	39.61	5.0	50	0	79.2	55-120	0			
2-Methylphenol	74.26	5.0	100	0	74.3	50-120	0			
2-Nitroaniline	52.63	5.0	50	0	105	55-120	0			
2-Nitrophenol	87.28	5.0	100	0	87.3	55-120	0			
3&4-Methylphenol	105.2	5.0	150	0	70.1	55-120	0			
3-Nitroaniline	27.71	5.0	50	0	55.4	40-120	0			
4-Nitroaniline	36.86	5.0	50	0	73.7	50-120	0			
4-Nitrophenol	84.36	5.0	100	0	84.4	45-120	0			
Acenaphthene	44.06	5.0	50	0	88.1	55-120	0			
Acenaphthylene	45.54	5.0	50	0	91.1	55-120	0			
Aniline	26.29	5.0	50	0	52.6	30-120	0			
Anthracene	40.62	5.0	50	0	81.2	55-120	0			
Benz(a)anthracene	43.63	5.0	50	0	87.3	55-120	0			
zidine	11.44	5.0	50	0	22.9	10-120	0			
exachlorobenzene	39.92	5.0	50	0	79.8	55-120	0			
Hexachloroethane	39.99	5.0	50	0	80	55-120	0			
Indeno(1,2,3-cd)pyrene	47.75	5.0	50	0	95.5	55-120	0			
Isophorone	42.35	5.0	50	0	84.7	55-120	0			
Naphthalene	43.74	5.0	50	0	87.5	55-120	0			
Nitrobenzene	42.17	5.0	50	0	84.3	55-120	0			
N-Nitrosodimethylamine	41.7	5.0	50	0	83.4	45-120	0			
N-Nitrosodi-n-propylamine	32.06	5.0	50	0	64.1	50-120	0			
N-Nitrosodiphenylamine	40.45	5.0	50	0	80.9	55-120	0			
Pentachlorophenol	87.63	5.0	100	0	87.6	55-120	0			
Phenanthrene	40.23	5.0	50	0	80.5	55-120	0			
Phenol	74.23	5.0	100	0	74.2	50-120	0			
Pyrene	46.04	5.0	50	0	92.1	55-120	0			
Pyridine	34.85	5.0	50	0	69.7	35-120	0			
Surr: 2,4,6-Tribromophenol	*84.73*	5.0	*100*	0	*84.7*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*99.43*	5.0	*100*	0	*99.4*	*48-120*	0			
Surr: 2-Fluorophenol	*85.9*	5.0	*100*	0	*85.9*	*20-120*	0			
Surr: 4-Terphenyl-d14	*103.1*	5.0	*100*	0	*103*	*51-135*	0			
Surr: Nitrobenzene-d5	*88.42*	5.0	*100*	0	*88.4*	*41-120*	0			
Surr: Phenol-d6	*74.58*	5.0	*100*	0	*74.6*	*20-120*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
:oject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **59263** Instrument ID **SV-5** Method: **SW8270**

LCSD Sample ID: **SLCSDW1-120302-59263** Units: **µg/L** Analysis Date: **3/2/2012 06:49 PM**
Client ID: Run ID: **SV-5_120302B** SeqNo: **2706513** Prep Date: **3/2/2012** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	41.89	5.0	50	0	83.8	50-120	45.27	7.76	20	
2,4,5-Trichlorophenol	80.69	5.0	100	0	80.7	50-120	92.16	13.3	20	
2,4,6-Trichlorophenol	77.47	5.0	100	0	77.5	50-120	90.96	16	20	
2,4-Dinitrotoluene	42.66	5.0	50	0	85.3	50-120	38.29	10.8	20	
2-Methylnaphthalene	42.33	5.0	50	0	84.7	55-120	39.61	6.65	20	
2-Methylphenol	91.95	5.0	100	0	91.9	50-120	74.26	21.3	20	R
2-Nitroaniline	56.76	5.0	50	0	114	55-120	52.63	7.54	20	
2-Nitrophenol	84.86	5.0	100	0	84.9	55-120	87.28	2.81	20	
3&4-Methylphenol	138.1	5.0	150	0	92.1	55-120	105.2	27	20	R
3-Nitroaniline	44.32	5.0	50	0	88.6	40-120	27.71	46.1	20	R
4-Nitroaniline	37.54	5.0	50	0	75.1	50-120	36.86	1.83	20	
4-Nitrophenol	86.49	5.0	100	0	86.5	45-120	84.36	2.49	20	
Acenaphthene	42.96	5.0	50	0	85.9	55-120	44.06	2.52	20	
Acenaphthylene	44.33	5.0	50	0	88.7	55-120	45.54	2.69	20	
Aniline	30.73	5.0	50	0	61.5	30-120	26.29	15.5	20	
Anthracene	43.85	5.0	50	0	87.7	55-120	40.62	7.64	20	
`nz(a)anthracene	43.62	5.0	50	0	87.2	55-120	43.63	0.00412	20	
ızidine	17.59	5.0	50	0	35.2	10-120	11.44	42.4	20	R
ıexachlorobenzene	40.72	5.0	50	0	81.4	55-120	39.92	1.98	20	
Hexachloroethane	43.3	5.0	50	0	86.6	55-120	39.99	7.95	20	
Indeno(1,2,3-cd)pyrene	39.89	5.0	50	0	79.8	55-120	47.75	17.9	20	
Isophorone	46.75	5.0	50	0	93.5	55-120	42.35	9.88	20	
Naphthalene	41.93	5.0	50	0	83.9	55-120	43.74	4.22	20	
Nitrobenzene	44.79	5.0	50	0	89.6	55-120	42.17	6.04	20	
N-Nitrosodimethylamine	41.58	5.0	50	0	83.2	45-120	41.7	0.296	20	
N-Nitrosodi-n-propylamine	42.78	5.0	50	0	85.6	50-120	32.06	28.6	20	R
N-Nitrosodiphenylamine	42.93	5.0	50	0	85.9	55-120	40.45	5.95	20	
Pentachlorophenol	82.5	5.0	100	0	82.5	55-120	87.63	6.04	20	
Phenanthrene	42.58	5.0	50	0	85.2	55-120	40.23	5.69	20	
Phenol	94.54	5.0	100	0	94.5	50-120	74.23	24.1	20	R
Pyrene	46.57	5.0	50	0	93.1	55-120	46.04	1.14	20	
Pyridine	31.79	5.0	50	0	63.6	35-120	34.85	9.19	20	
Surr: 2,4,6-Tribromophenol	*75.93*	5.0	*100*	0	*75.9*	*42-124*	84.73	*11*	*20*	
Surr: 2-Fluorobiphenyl	*83.5*	5.0	*100*	0	*83.5*	*48-120*	99.43	*17.4*	*20*	
Surr: 2-Fluorophenol	*88.37*	5.0	*100*	0	*88.4*	*20-120*	85.9	*2.83*	*20*	
Surr: 4-Terphenyl-d14	*90.74*	5.0	*100*	0	*90.7*	*51-135*	103.1	*12.8*	*20*	
Surr: Nitrobenzene-d5	*87.53*	5.0	*100*	0	*87.5*	*41-120*	88.42	*1.01*	*20*	
Surr: Phenol-d6	*93.3*	5.0	*100*	0	*93.3*	*20-120*	74.58	*22.3*	*20*	*R*

The following samples were analyzed in this batch: 1202979-01E

:e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124295** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-030212-R124295** Units: **µg/L** Analysis Date: **3/2/2012 11:05 AM**

Client ID: Run ID: **VOA1_120302A** SeqNo: **2706973** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
2-Butanone	ND	10								
2-Chloroethyl vinyl ether	ND	10								
2-Hexanone	ND	10								
4-Methyl-2-pentanone	ND	10								
Benzene	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	10								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
loroethane	ND	5.0								
nloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								
Dibromochloromethane	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
Methylene chloride	ND	10								
Styrene	ND	5.0								
Tetrachloroethene	ND	5.0								
Toluene	ND	5.0								
trans-1,3-Dichloropropene	ND	5.0								
Trichloroethene	ND	5.0								
Vinyl acetate	ND	10								
Vinyl chloride	ND	2.0								
Xylenes, Total	ND	15								
Surr: 1,2-Dichloroethane-d4	*45.76*	5.0	*50*	0	*91.5*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*45.65*	5.0	*50*	0	*91.3*	*72-125*	0			
Surr: Dibromofluoromethane	*49.47*	5.0	*50*	0	*98.9*	*71-125*	0			
Surr: Toluene-d8	*50.92*	5.0	*50*	0	*102*	*75-125*	0			

e: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124295** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-030212-R124295** Units: **µg/L** Analysis Date: **3/2/2012 11:31 AM**
Client ID: Run ID: **VOA1_120302A** SeqNo: **2706974** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	48.34	5.0	50	0	96.7	80-120	0			
1,1,2,2-Tetrachloroethane	47.47	5.0	50	0	94.9	72-120	0			
1,1,2-Trichloroethane	50.06	5.0	50	0	100	80-120	0			
1,1-Dichloroethane	46.7	5.0	50	0	93.4	76-120	0			
1,1-Dichloroethene	48.45	5.0	50	0	96.9	73-124	0			
1,2-Dichloroethane	48.43	5.0	50	0	96.9	78-120	0			
2-Butanone	115.5	10	100	0	116	58-132	0			
2-Chloroethyl vinyl ether	100.3	10	100	0	100	74-120	0			
2-Hexanone	104.3	10	100	0	104	61-130	0			
4-Methyl-2-pentanone	104.3	10	100	0	104	65-127	0			
Benzene	49.34	5.0	50	0	98.7	73-121	0			
Bromodichloromethane	49.78	5.0	50	0	99.6	80-120	0			
Bromoform	51.85	5.0	50	0	104	79-120	0			
Bromomethane	46.68	5.0	50	0	93.4	66-137	0			
Carbon disulfide	91.46	10	100	0	91.5	68-141	0			
Carbon tetrachloride	49.44	5.0	50	0	98.9	75-124	0			
Chlorobenzene	48.66	5.0	50	0	97.3	80-120	0			
roethane	48.59	5.0	50	0	97.2	76-121	0			
loroform	46.27	5.0	50	0	92.5	80-120	0			
Chloromethane	42.5	5.0	50	0	85	67-123	0			
cis-1,3-Dichloropropene	49.7	5.0	50	0	99.4	80-120	0			
Dibromochloromethane	50.25	5.0	50	0	100	80-120	0			
Ethylbenzene	50.31	5.0	50	0	101	80-120	0			
m,p-Xylene	106.4	10	100	0	106	78-121	0			
Methylene chloride	46.29	10	50	0	92.6	65-133	0			
Styrene	50.6	5.0	50	0	101	80-120	0			
Tetrachloroethene	53.03	5.0	50	0	106	79-120	0			
Toluene	51.14	5.0	50	0	102	80-120	0			
trans-1,3-Dichloropropene	47.71	5.0	50	0	95.4	80-120	0			
Trichloroethene	50.72	5.0	50	0	101	80-120	0			
Vinyl acetate	96.6	10	100	0	96.6	67-139	0			
Vinyl chloride	48.68	2.0	50	0	97.4	70-127	0			
Xylenes, Total	157.5	15	150	0	105	80-120	0			
Surr: 1,2-Dichloroethane-d4	*46.36*	5.0	*50*	0	*92.7*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*45.51*	5.0	*50*	0	*91*	*72-125*	0			
Surr: Dibromofluoromethane	*48.29*	5.0	*50*	0	*96.6*	*71-125*	0			
Surr: Toluene-d8	*50.53*	5.0	*50*	0	*101*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124295** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **1202919-01AMS** Units: **µg/L** Analysis Date: **3/2/2012 05:40 PM**

Client ID: Run ID: **VOA1_120302A** SeqNo: **2706987** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	245.2	25	250	0	98.1	80-120	0			
1,1,2,2-Tetrachloroethane	235.7	25	250	0	94.3	72-120	0			
1,1,2-Trichloroethane	252.6	25	250	0	101	80-120	0			
1,1-Dichloroethane	247.9	25	250	0	99.2	76-120	0			
1,1-Dichloroethene	247.7	25	250	0	99.1	73-124	0			
1,2-Dichloroethane	229.1	25	250	0	91.7	78-120	0			
2-Butanone	491.1	50	500	0	98.2	58-132	0			
2-Chloroethyl vinyl ether	13.89	50	500	0	2.78	74-120	0			JS
2-Hexanone	503.1	50	500	0	101	61-130	0			
4-Methyl-2-pentanone	546.8	50	500	0	109	65-127	0			
Benzene	231.6	25	250	0	92.6	73-121	0			
Bromodichloromethane	245.5	25	250	0	98.2	80-120	0			
Bromoform	256	25	250	0	102	79-120	0			
Bromomethane	233.1	25	250	0	93.2	66-137	0			
Carbon disulfide	469.2	50	500	0	93.8	68-141	0			
Carbon tetrachloride	232.8	25	250	0	93.1	75-124	0			
Chlorobenzene	235.7	25	250	0	94.3	80-120	0			
roethane	244.7	25	250	0	97.9	76-121	0			
loroform	235.3	25	250	0	94.1	80-120	0			
Chloromethane	236.2	25	250	0	94.5	67-123	0			
cis-1,3-Dichloropropene	250.5	25	250	0	100	80-120	0			
Dibromochloromethane	244	25	250	0	97.6	80-120	0			
Ethylbenzene	270.4	25	250	0	108	80-120	0			
m,p-Xylene	509.1	50	500	0	102	78-121	0			
Methylene chloride	239.2	50	250	0	95.7	65-133	0			
Styrene	251.4	25	250	0	101	80-120	0			
Tetrachloroethene	257.9	25	250	0	103	79-120	0			
Toluene	249.8	25	250	0	99.9	80-120	0			
trans-1,3-Dichloropropene	249.9	25	250	0	100	80-120	0			
Trichloroethene	266	25	250	19.06	98.8	80-120	0			
Vinyl acetate	504.2	50	500	0	101	67-139	0			
Vinyl chloride	311.6	10	250	63.38	99.3	70-127	0			
Xylenes, Total	765.9	75	750	0	102	80-120	0			
Surr: 1,2-Dichloroethane-d4	*236.9*	25	*250*	0	*94.8*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*243.9*	25	*250*	0	*97.6*	*72-125*	0			
Surr: Dibromofluoromethane	*254.3*	25	*250*	0	*102*	*71-125*	0			
Surr: Toluene-d8	*245*	25	*250*	0	*98*	*75-125*	0			

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124295** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **1202919-01AMSD** Units: **µg/L** Analysis Date: **3/2/2012 06:06 PM**

Client ID: Run ID: **VOA1_120302A** SeqNo: **2706988** Prep Date: DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	209	25	250	0	83.6	80-120	245.2	15.9	20	
1,1,2,2-Tetrachloroethane	238.7	25	250	0	95.5	72-120	235.7	1.3	20	
1,1,2-Trichloroethane	234.6	25	250	0	93.8	80-120	252.6	7.41	20	
1,1-Dichloroethane	242.7	25	250	0	97.1	76-120	247.9	2.12	20	
1,1-Dichloroethene	242.5	25	250	0	97	73-124	247.7	2.13	20	
1,2-Dichloroethane	217.3	25	250	0	86.9	78-120	229.1	5.31	20	
2-Butanone	500.3	50	500	0	100	58-132	491.1	1.86	20	
2-Chloroethyl vinyl ether	ND	50	500	0	0	74-120	13.89	0	20	S
2-Hexanone	493.5	50	500	0	98.7	61-130	503.1	1.93	20	
4-Methyl-2-pentanone	553	50	500	0	111	65-127	546.8	1.14	20	
Benzene	223.9	25	250	0	89.6	73-121	231.6	3.37	20	
Bromodichloromethane	227	25	250	0	90.8	80-120	245.5	7.83	20	
Bromoform	244.1	25	250	0	97.6	79-120	256	4.74	20	
Bromomethane	243.7	25	250	0	97.5	66-137	233.1	4.47	20	
Carbon disulfide	437	50	500	0	87.4	68-141	469.2	7.11	20	
Carbon tetrachloride	207	25	250	0	82.8	75-124	232.8	11.8	20	
Chlorobenzene	223.4	25	250	0	89.4	80-120	235.7	5.35	20	
oroethane	230.6	25	250	0	92.2	76-121	244.7	5.96	20	
loroform	218.6	25	250	0	87.4	80-120	235.3	7.39	20	
Chloromethane	212.5	25	250	0	85	67-123	236.2	10.6	20	
cis-1,3-Dichloropropene	227	25	250	0	90.8	80-120	250.5	9.84	20	
Dibromochloromethane	241.5	25	250	0	96.6	80-120	244	1.03	20	
Ethylbenzene	229.4	25	250	0	91.7	80-120	270.4	16.4	20	
m,p-Xylene	471.2	50	500	0	94.2	78-121	509.1	7.74	20	
Methylene chloride	228.2	50	250	0	91.3	65-133	239.2	4.71	20	
Styrene	221.8	25	250	0	88.7	80-120	251.4	12.5	20	
Tetrachloroethene	227.9	25	250	0	91.2	79-120	257.9	12.4	20	
Toluene	235.5	25	250	0	94.2	80-120	249.8	5.9	20	
trans-1,3-Dichloropropene	215.2	25	250	0	86.1	80-120	249.9	14.9	20	
Trichloroethene	255.9	25	250	19.06	94.7	80-120	266	3.85	20	
Vinyl acetate	489.3	50	500	0	97.9	67-139	504.2	3	20	
Vinyl chloride	291.3	10	250	63.38	91.2	70-127	311.6	6.72	20	
Xylenes, Total	705.9	75	750	0	94.1	80-120	765.9	8.15	20	
Surr: 1,2-Dichloroethane-d4	*229*	25	*250*	0	*91.6*	*70-125*	236.9	*3.42*	*20*	
Surr: 4-Bromofluorobenzene	*233.3*	25	*250*	0	*93.3*	*72-125*	243.9	*4.47*	*20*	
Surr: Dibromofluoromethane	*237.5*	25	*250*	0	*95*	*71-125*	254.3	*6.83*	*20*	
Surr: Toluene-d8	*246*	25	*250*	0	*98.4*	*75-125*	245	*0.431*	*20*	

The following samples were analyzed in this batch: 1202979-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124374** Instrument ID **VOA6** Method: **SW8260**

MBLK Sample ID: **VBLKW-030512-R124374** Units: **µg/L** Analysis Date: **3/5/2012 01:12 PM**
Client ID: Run ID: **VOA6_120305A** SeqNo: **2708657** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	ND	10								
Surr: 1,2-Dichloroethane-d4	*46.97*	5.0	*50*	0	*93.9*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*49.1*	5.0	*50*	0	*98.2*	*72-125*	0			
Surr: Dibromofluoromethane	*47.94*	5.0	*50*	0	*95.9*	*71-125*	0			
Surr: Toluene-d8	*51.92*	5.0	*50*	0	*104*	*75-125*	0			

LCS Sample ID: **VLCSW-030512-R124374** Units: **µg/L** Analysis Date: **3/5/2012 01:38 PM**
Client ID: Run ID: **VOA6_120305A** SeqNo: **2708660** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	89.15	10	100	0	89.2	59-137	0			
Surr: 1,2-Dichloroethane-d4	*45.74*	5.0	*50*	0	*91.5*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*51.35*	5.0	*50*	0	*103*	*72-125*	0			
Surr: Dibromofluoromethane	*48.18*	5.0	*50*	0	*96.4*	*71-125*	0			
Surr: Toluene-d8	*50.13*	5.0	*50*	0	*100*	*75-125*	0			

MS Sample ID: **1203095-01AMS** Units: **µg/L** Analysis Date: **3/5/2012 03:24 PM**
Client ID: Run ID: **VOA6_120305A** SeqNo: **2708667** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	65.81	10	100	0	65.8	59-137	0			
Surr: 1,2-Dichloroethane-d4	*45.57*	5.0	*50*	0	*91.1*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*51.48*	5.0	*50*	0	*103*	*72-125*	0			
Surr: Dibromofluoromethane	*48.3*	5.0	*50*	0	*96.6*	*71-125*	0			
Surr: Toluene-d8	*50.11*	5.0	*50*	0	*100*	*75-125*	0			

MSD Sample ID: **1203095-01AMSD** Units: **µg/L** Analysis Date: **3/5/2012 03:50 PM**
Client ID: Run ID: **VOA6_120305A** SeqNo: **2708669** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetone	62.66	10	100	0	62.7	59-137	65.81	4.9	20	
Surr: 1,2-Dichloroethane-d4	*44.77*	5.0	*50*	0	*89.5*	*70-125*	45.57	*1.78*	*20*	
Surr: 4-Bromofluorobenzene	*51.89*	5.0	*50*	0	*104*	*72-125*	51.48	*0.796*	*20*	
Surr: Dibromofluoromethane	*47.44*	5.0	*50*	0	*94.9*	*71-125*	48.3	*1.81*	*20*	
Surr: Toluene-d8	*50.58*	5.0	*50*	0	*101*	*75-125*	50.11	*0.945*	*20*	

The following samples were analyzed in this batch: 1202979-01A

See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124101** Instrument ID **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-120229-R124101** Units: **pH units** Analysis Date: **2/29/2012 03:00 PM**
Client ID: Run ID: **WETCHEM_120229I** SeqNo: **2703606** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6	0.10	6	0	100	90-110	0			

DUP Sample ID: **1202991-04A dup** Units: **pH units** Analysis Date: **2/29/2012 03:00 PM**
Client ID: Run ID: **WETCHEM_120229I** SeqNo: **2703776** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.29	0.10	0	0	0	0-0	6.28	0.159	20	H

The following samples were analyzed in this batch: 1202979-01D

:: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124103** Instrument ID **WetChem** Method: **M2510 B**

MBLK Sample ID: **WBLKW1-120229-R124103** Units: **µmhos/cm** Analysis Date: **2/29/2012 04:00 PM**
Client ID: Run ID: **WETCHEM_120229J** SeqNo: **2703614** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	ND	1.0								

LCS Sample ID: **WLCSW1-120229-R124103** Units: **µmhos/cm** Analysis Date: **2/29/2012 04:00 PM**
Client ID: Run ID: **WETCHEM_120229J** SeqNo: **2703615** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	1420	1.0	1413	0	100	80-120	0			

DUP Sample ID: **1202979-01DDUP** Units: **µmhos/cm** Analysis Date: **2/29/2012 04:00 PM**
Client ID: **Injection Well Effluent** Run ID: **WETCHEM_120229J** SeqNo: **2703645** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductivity	6030	1.0	0	0	0		5990	0.666	20	

The following samples were analyzed in this batch: 1202979-01D

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
roject: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124408** Instrument ID **Balance1** Method: **M2540C**

MBLK Sample ID: **WBLK-030512-R124408** Units: **mg/L** Analysis Date: **3/5/2012 07:30 PM**
Client ID: Run ID: **BALANCE1_120305E** SeqNo: **2709353** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	ND	10								

LCS Sample ID: **WLCS-030512-R124408** Units: **mg/L** Analysis Date: **3/5/2012 07:30 PM**
Client ID: Run ID: **BALANCE1_120305E** SeqNo: **2709354** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	984	10	1000	0	98.4	85-115	0			

DUP Sample ID: **12021002-09DDUP** Units: **mg/L** Analysis Date: **3/5/2012 07:30 PM**
Client ID: Run ID: **BALANCE1_120305E** SeqNo: **2709332** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	4040	10	0	0	0	0-0	4020	0.496	20	

DUP Sample ID: **1203052-04DDUP** Units: **mg/L** Analysis Date: **3/5/2012 07:30 PM**
Client ID: Run ID: **BALANCE1_120305E** SeqNo: **2709378** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Fil	1692	10	0	0	0	0-0	1720	1.64	20	

The following samples were analyzed in this batch: 1202979-01C

:: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124409** Instrument ID **ICS3K2** Method: **E300**

MBLK Sample ID: **WBLKW1-030512-R124409** Units: **mg/L** Analysis Date: **3/5/2012 06:53 PM**
Client ID: Run ID: **ICS3K2_120305A** SeqNo: **2709381** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.4	0.50								J
Sulfate	0.301	0.50								J
Surr: Selenate (surr)	*5.473*	0.10	*5*	0	*109*	*85-115*	0			

LCS Sample ID: **WLCSW1-030512-R124409** Units: **mg/L** Analysis Date: **3/5/2012 07:15 PM**
Client ID: Run ID: **ICS3K2_120305A** SeqNo: **2709355** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	18.32	0.50	20	0	91.6	90-110	0			
Sulfate	18.76	0.50	20	0	93.8	90-110	0			
Surr: Selenate (surr)	*5.392*	0.10	*5*	0	*108*	*85-115*	0			

LCSD Sample ID: **WLCSDW1-030512-R124409** Units: **mg/L** Analysis Date: **3/5/2012 07:37 PM**
Client ID: Run ID: **ICS3K2_120305A** SeqNo: **2709356** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
oride	18.37	0.50	20	0	91.9	90-110	18.32	0.311	20	
ulfate	18.76	0.50	20	0	93.8	90-110	18.76	0.016	20	
Surr: Selenate (surr)	*5.368*	0.10	*5*	0	*107*	*85-115*	5.392	*0.446*	*20*	

MS Sample ID: **1202769-01EMS** Units: **mg/L** Analysis Date: **3/6/2012 02:52 AM**
Client ID: Run ID: **ICS3K2_120305A** SeqNo: **2709371** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	235.4	5.0	100	135.3	100	80-120	0			
Sulfate	117.7	5.0	100	22.67	95	80-120	0			
Surr: Selenate (surr)	*54.24*	1.0	*50*	0	*108*	*85-115*	0			

MSD Sample ID: **1202769-01EMSD** Units: **mg/L** Analysis Date: **3/6/2012 03:14 AM**
Client ID: Run ID: **ICS3K2_120305A** SeqNo: **2709373** Prep Date: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	232.1	5.0	100	135.3	96.8	80-120	235.4	1.4	20	
Sulfate	115.5	5.0	100	22.67	92.8	80-120	117.7	1.87	20	
Surr: Selenate (surr)	*53.19*	1.0	*50*	0	*106*	*85-115*	54.24	*1.95*	*20*	

The following samples were analyzed in this batch: 1202979-01C

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124418** Instrument ID **WetChem** Method: **SW1010**

LCS	Sample ID: **WLCS-030612-R124418**				Units: °F			Analysis Date: **3/6/2012 05:00 PM**			
Client ID:	Run ID: **WETCHEM_120306G**			SeqNo: **2709537**		Prep Date:		DF: **1**			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	84	50	83	0	101	80-120	0			

LCSD	Sample ID: **WLCSD-030612-R124418**				Units: °F			Analysis Date: **3/6/2012 05:00 PM**			
Client ID:	Run ID: **WETCHEM_120306G**			SeqNo: **2709547**		Prep Date:		DF: **1**			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	86	50	83	0	104	80-120	84	2.35	25	

DUP	Sample ID: **1202958-01ADUP**				Units: °F			Analysis Date: **3/6/2012 05:00 PM**			
Client ID:	Run ID: **WETCHEM_120306G**			SeqNo: **2709548**		Prep Date:		DF: **1**			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ignitability	78	50	0	0	0	0-0	78	0	25	

The following samples were analyzed in this batch: 1202979-01D

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Navajo Refining Company
Work Order: 1202979
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R124421** Instrument ID **WetChem** Method: **SM2320B**

MBLK Sample ID: **WBLKW1-030612-R124421** Units: **mg/L** Analysis Date: **3/6/2012 04:36 PM**
Client ID: Run ID: **WETCHEM_120306H** SeqNo: **2709574** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.0								
Alkalinity, Carbonate (As CaCO3)	ND	5.0								
Alkalinity, Hydroxide (As CaCO3)	ND	5.0								
Alkalinity, Total (As CaCO3)	ND	5.0								

LCS Sample ID: **WLCSW1-030612-R124421** Units: **mg/L** Analysis Date: **3/6/2012 04:36 PM**
Client ID: Run ID: **WETCHEM_120306H** SeqNo: **2709575** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Total (As CaCO3)	1056	5.0	1000	0	106	80-120	0			

DUP Sample ID: **1202769-01EDUP** Units: **mg/L** Analysis Date: **3/6/2012 04:36 PM**
Client ID: Run ID: **WETCHEM_120306H** SeqNo: **2709587** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Alkalinity, Bicarbonate (As CaCO3)	191	5.0	0	0	0	0-0	190.4	0.315	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	20	
Alkalinity, Total (As CaCO3)	191	5.0	0	0	0	0-0	190.4	0.315	20	

The following samples were analyzed in this batch: 1202979-01C

: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 08-Mar-12

Client: Navajo Refining Company
Project: Injection Well Quarterly
WorkOrder: 1202979

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Units Reported	Description
°F	Farenheit degrees
µmhos/cm	
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
pH units	

ALS Environmental

Sample Receipt Checklist

Client Name: **NAVAJO REFINING** Date/Time Received: **29-Feb-12 09:10**

Work Order: **1202979** Received by: **RNG**

Checklist completed by Sarah M. Gioga (eSignature) 29-Feb-12 (Date) Reviewed by: Mary K. Knowles (eSignature) 29-Feb-12 (Date)

Matrices: Water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.2	002	
Cooler(s)/Kit(s):	4246		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

orrectiveAction:

☑ ALS Laboratory Group
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

1202979

NAVAJO REFINING: Navajo Refining Company

Project: Injection Well Quarterly

ALS Project Manager: Chris Bryson

Customer Information		Project Information			
Purchase Order		Project Name	Injection Well Quarterly	A	VOC (8260) Select
Work Order		Project Number		B	SVOC (8270) Select
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals (6020 / 7000) Select
Send Report To	Aaron Strange	Invoice Attn.	Aaron Strange	D	R.C.I. Profile
Address	P. O. Box 159	Address	501 East Main	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, New Mexico 88211-0159	City/State/Zip	Artesia, New Mexico 88210	G	pH
Phone	(575) 748-3311	Phone	(575) 748-3311	H	Conductivity
Fax	(575) 746-5451	Fax	(575) 746-5451	I	TDS
e-Mail Address	A.Strange@hollyfrontier.com	e-Mail Address	A.Strange@hollyfrontier.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Injection Well Effluent	2/28/11	0940	Liquid	Yes	9	X	X	X	X	X	X	X	X	X		
2	Trip Blank																
3	Temperature Blank																
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign
Aaron Strange

Shipment Method: Federal Express

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes:
[signature]	2-29-12	16:15		
Relinquished by:	Date:	Time:	Received by (Laboratory): [signature] 2/29/12 09:10	Cooler Temp.
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

- ☐ Level II: Standard QC
- ☐ Level III: Std QC + Raw Data
- ☐ Level IV: SW846 CLP-Like
- ☐ Other: _____
- ☐ TRRP-Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS Environmental
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 2-28-12 Time: 1615
Name: Aaron Efaw
Company: Navajo Refining Co

Seal Broken By: AMG
Date: 2/29/12

ALS Group USA, Corp

Date: 06-Mar-12

Client: ALS Environmental
Project: 1202979
Work Order: **1203018**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1203018-01	1202979-01F	Water		2/28/2012 09:40	3/1/2012 10:30	☐

ALS Group USA, Corp

Date: 06-Mar-12

Client: ALS Environmental
Project: 1202979
WorkOrder: 1203018

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
SD	Serial Dilution
TDL	Target Detection Limit

Units Reported	Description
mg/Kg	Milligrams per Kilogram

ALS Group USA, Corp

Date: *06-Mar-12*

Client: ALS Environmental
Project: 1202979
Work Order: 1203018
Sample ID: 1202979-01F
Lab ID: 1203018-01
Collection Date: 2/28/2012 09:40 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**SW7.3.3.2**			Analyst: **NZ**
Cyanide, Reactive	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM
SULFIDE, REACTIVE			**SW7.3.4.2**			Analyst: **NZ**
Sulfide, Reactive	ND		40.0	mg/Kg	1	3/2/2012 11:30 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 06-Mar-12

Client: ALS Environmental

Work Order: 1203018

Project: 1202979

QC BATCH REPORT

Batch ID: **R101907** Instrument ID **WETCHEM** Method: **SW7.3.4.2**

MBLK Sample ID: **MB-R101907-R101907** Units: **mg/Kg** Analysis Date: **3/2/2012 11:30 AM**

Client ID: Run ID: **WETCHEM_120302F** SeqNo: **1913904** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide, Reactive	ND	40								

The following samples were analyzed in this batch: 1203018-01A

: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: ALS Environmental
Work Order: 1203018
roject: 1202979

QC BATCH REPORT

Batch ID: **R101909** Instrument ID **WETCHEM** Method: **SW7.3.3.2**

MBLK Sample ID: **WBLKW1-120301-R101909** Units: **mg/Kg** Analysis Date: **3/2/2012 11:30 AM**
Client ID: Run ID: **WETCHEM_120302G** SeqNo: **1913931** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	ND	40								

LCS Sample ID: **WLCSW1-120301-R101909** Units: **mg/Kg** Analysis Date: **3/2/2012 11:30 AM**
Client ID: Run ID: **WETCHEM_120302G** SeqNo: **1913946** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	0			

LCSD Sample ID: **WLCSDW1-120301-R101909** Units: **mg/Kg** Analysis Date: **3/2/2012 11:30 AM**
Client ID: Run ID: **WETCHEM_120302G** SeqNo: **1913958** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	75-125	249.6	0	35	

MS Sample ID: **1202727-01A MS** Units: **mg/Kg** Analysis Date: **3/2/2012 11:30 AM**
Client ID: Run ID: **WETCHEM_120302G** SeqNo: **1913948** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	0			

MSD Sample ID: **1202727-01A MSD** Units: **mg/Kg** Analysis Date: **3/2/2012 11:30 AM**
Client ID: Run ID: **WETCHEM_120302G** SeqNo: **1913949** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	249.6	40	250	0	99.8	50-150	249.6	0	35	

The following samples were analyzed in this batch: 1203018-01A

: See Qualifiers Page for a list of Qualifiers and their explanation.

120 218

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 29-Feb-12
COC ID: 11546
Due Date: 06-Mar-12

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424
TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

Salesperson: Jeffrey L Croston

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	1202979	A	Reactive Cyanide (SW-846)
Work Order		Project Number		B	Reactive Sulfide (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C	
Send Report To	Patricia L. Lynch	Inv Attn	Accounts Payable	D	
Address	10450 Stancliff Rd, Suite 210	Address	10450 Stancliff Rd, Suite 210	E	
				F	
City/State/Zip	Houston, Texas 77099-4338	City/State/Zip	Houston, Texas 77099-4338	G	
Phone	(281) 530-5656	Phone	(281) 530-5656	H	
Fax	(281) 530-5887	Fax	(281) 530-5887	I	
eMail Address	pat.lynch@alsglobal.com	eMail CC		J	

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
1202979-01F (Injection Well Effluent)	Water	28/Feb/2012 9:40	(1) 1LPNEAT	X	X								

Comments:
Please analyze for reactive cyanide & reactive sulfide. cc Mary.knowles & Yvan.ty@alsglobal.com

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
	2/29/12	Jessica Bacon	3/1/12 1030	4.2°C	Std
Relinquished by:	Date/Time	Received by:	Date/Time		

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **ALS - HOUSTON** Date/Time Received: **01-Mar-12 10:30**

Work Order: **1203018** Received by: **JB**

Checklist completed by Jessica Bacon (eSignature) 01-Mar-12 (Date) Reviewed by: Bill Carey (eSignature) 01-Mar-12 (Date)

Matrices: water
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.2 C		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

orrectiveAction:

ORIGIN ID: SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US

SHIP DATE: 29FEB12
ACTWGT: 15.5 LB
CAD: 300130/CAFE2511

BILL SENDER

TO JEFF GLASER
ALS ENVIRONMENTAL
3352 128TH AVE.

HOLLAND MI 49424
(281) 530-5656
REF: (SUBCONTRACT) PMG

FedEx Express

THU - 01 MAR A4
PRIORITY OVERNIGHT

TRK# 0201 4340 2168 6113

NK GRRA

49424
MI-US GRR

APPENDIX E

FLUIDS AND PRESSURE CALCULATIONS

APPENDIX E-1

HISTORICAL INJECTION RATE AND SURFACE INJECTION PRESSURE

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/22/00	247.39	301.38	133.21	340.57			
12/23/00	247.39	301.38	133.21	340.57			
12/24/00	245.43	298.88	132.60	343.28			
12/25/00	216.37	244.75	118.89	293.54			
12/26/00	205.09	268.31	119.17	314.73			
12/27/00	246.65	339.95	218.50	394.81			
12/28/00	284.01	412.33	302.08	397.96			
12/29/00	269.25	373.63	159.25	374.19			
12/30/00	237.31	317.49	147.29	333.14			
12/31/00	245.52	319.49	146.88	338.87			
01/01/01	208.64	252.54	126.59	303.59			
01/02/01	190.40	220.50	118.58	265.76			
01/03/01	213.36	277.24	128.84	328.92			
01/04/01	229.65	303.23	124.63	332.92			
01/05/01	219.32	293.21	131.58	346.80			
01/06/01	207.76	258.86	124.20	309.94			
01/07/01	220.15	280.53	129.51	335.89			
01/08/01	221.79	294.05	129.79	350.21			
01/09/01	217.30	287.62	125.50	344.64			
01/10/01	225.57	305.26	131.11	362.87			
01/11/01	220.17	290.04	127.76	346.24			
01/12/01	084.91	118.56	144.46	441.50			
01/13/01	110.59	099.81	104.37	327.97			
01/14/01	218.03	162.39	050.45	156.08			
01/15/01	148.39	086.36	129.68	374.57			
01/16/01	317.66	194.30	105.15	260.97			
01/17/01	297.76	164.24	101.80	232.42			
01/18/01	257.36	127.62	083.25	170.04			
01/19/01	292.31	145.25	000.88	000.65			
01/20/01	235.38	146.03	071.80	242.69			
01/21/01	287.67	187.20	094.63	246.83			
01/22/01	272.21	154.15	074.36	194.41			
01/23/01	246.76	132.72	066.83	184.09			
01/24/01	268.03	188.38	078.78	248.18			
01/25/01	218.40	138.08	059.42	184.75			
01/26/01	239.49	165.40	070.51	215.64			
01/27/01	223.67	099.14	050.16	130.13			
01/28/01	260.83	165.56	006.20	015.37			
01/29/01	249.94	179.21	058.82	199.34			
01/30/01	257.02	163.88	066.15	223.54			
01/31/01	295.61	227.47	035.00	130.09			
02/01/01	258.84	183.56	078.10	077.46			
02/02/01	285.62	206.51	122.20	134.60			
02/03/01	256.49	226.72	000.72	000.01			
02/04/01	252.78	186.67	054.59	060.14			
02/05/01	208.59	116.73	145.70	140.57			
02/06/01	273.39	233.95	050.66	060.05			
02/07/01	234.12	164.45	064.57	056.09			
02/08/01	255.61	201.51	057.40	059.25			
02/09/01	290.26	265.23	000.43	000.00			
02/10/01	261.31	246.48	000.63	000.00			
02/11/01	283.16	246.65	000.51	000.01			
02/12/01	293.91	277.74	000.47	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/30/00	247.39	301.38	133.21	340.57			
10/31/00	247.39	301.38	133.21	340.57			
11/01/00	247.39	301.38	133.21	340.57			
11/02/00	247.39	301.38	133.21	340.57			
11/03/00	247.39	301.38	133.21	340.57			
11/04/00	247.39	301.38	133.21	340.57			
11/05/00	247.39	301.38	133.21	340.57			
11/06/00	247.39	301.38	133.21	340.57			
11/07/00	247.39	301.38	133.21	340.57			
11/08/00	247.39	301.38	133.21	340.57			
11/09/00	247.39	301.38	133.21	340.57			
11/10/00	247.39	301.38	133.21	340.57			
11/11/00	247.39	301.38	133.21	340.57			
11/12/00	247.39	301.38	133.21	340.57			
11/13/00	247.39	301.38	133.21	340.57			
11/14/00	247.39	301.38	133.21	340.57			
11/15/00	247.39	301.38	133.21	340.57			
11/16/00	247.39	301.38	133.21	340.57			
11/17/00	247.39	301.38	133.21	340.57			
11/18/00	247.39	301.38	133.21	340.57			
11/19/00	247.39	301.38	133.21	340.57			
11/20/00	247.39	301.38	133.21	340.57			
11/21/00	247.39	301.38	133.21	340.57			
11/22/00	247.39	301.38	133.21	340.57			
11/23/00	247.39	301.38	133.21	340.57			
11/24/00	247.39	301.38	133.21	340.57			
11/25/00	247.39	301.38	133.21	340.57			
11/26/00	247.39	301.38	133.21	340.57			
11/27/00	247.39	301.38	133.21	340.57			
11/28/00	247.39	301.38	133.21	340.57			
11/29/00	247.39	301.38	133.21	340.57			
11/30/00	247.39	301.38	133.21	340.57			
12/01/00	247.39	301.38	133.21	340.57			
12/02/00	247.39	301.38	133.21	340.57			
12/03/00	247.39	301.38	133.21	340.57			
12/04/00	247.39	301.38	133.21	340.57			
12/05/00	247.39	301.38	133.21	340.57			
12/06/00	247.39	301.38	133.21	340.57			
12/07/00	247.39	301.38	133.21	340.57			
12/08/00	247.39	301.38	133.21	340.57			
12/09/00	247.39	301.38	133.21	340.57			
12/10/00	247.39	301.38	133.21	340.57			
12/11/00	247.39	301.38	133.21	340.57			
12/12/00	247.39	301.38	133.21	340.57			
12/13/00	247.39	301.38	133.21	340.57			
12/14/00	247.39	301.38	133.21	340.57			
12/15/00	247.39	301.38	133.21	340.57			
12/16/00	247.39	301.38	133.21	340.57			
12/17/00	247.39	301.38	133.21	340.57			
12/18/00	247.39	301.38	133.21	340.57			
12/19/00	247.39	301.38	133.21	340.57			
12/20/00	247.39	301.38	133.21	340.57			
12/21/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/07/00	247.39	301.38	133.21	340.57			
09/08/00	247.39	301.38	133.21	340.57			
09/09/00	247.39	301.38	133.21	340.57			
09/10/00	247.39	301.38	133.21	340.57			
09/11/00	247.39	301.38	133.21	340.57			
09/12/00	247.39	301.38	133.21	340.57			
09/13/00	247.39	301.38	133.21	340.57			
09/14/00	247.39	301.38	133.21	340.57			
09/15/00	247.39	301.38	133.21	340.57			
09/16/00	247.39	301.38	133.21	340.57			
09/17/00	247.39	301.38	133.21	340.57			
09/18/00	247.39	301.38	133.21	340.57			
09/19/00	247.39	301.38	133.21	340.57			
09/20/00	247.39	301.38	133.21	340.57			
09/21/00	247.39	301.38	133.21	340.57			
09/22/00	247.39	301.38	133.21	340.57			
09/23/00	247.39	301.38	133.21	340.57			
09/24/00	247.39	301.38	133.21	340.57			
09/25/00	247.39	301.38	133.21	340.57			
09/26/00	247.39	301.38	133.21	340.57			
09/27/00	247.39	301.38	133.21	340.57			
09/28/00	247.39	301.38	133.21	340.57			
09/29/00	247.39	301.38	133.21	340.57			
09/30/00	247.39	301.38	133.21	340.57			
10/01/00	247.39	301.38	133.21	340.57			
10/02/00	247.39	301.38	133.21	340.57			
10/03/00	247.39	301.38	133.21	340.57			
10/04/00	247.39	301.38	133.21	340.57			
10/05/00	247.39	301.38	133.21	340.57			
10/06/00	247.39	301.38	133.21	340.57			
10/07/00	247.39	301.38	133.21	340.57			
10/08/00	247.39	301.38	133.21	340.57			
10/09/00	247.39	301.38	133.21	340.57			
10/10/00	247.39	301.38	133.21	340.57			
10/11/00	247.39	301.38	133.21	340.57			
10/12/00	247.39	301.38	133.21	340.57			
10/13/00	247.39	301.38	133.21	340.57			
10/14/00	247.39	301.38	133.21	340.57			
10/15/00	247.39	301.38	133.21	340.57			
10/16/00	247.39	301.38	133.21	340.57			
10/17/00	247.39	301.38	133.21	340.57			
10/18/00	247.39	301.38	133.21	340.57			
10/19/00	247.39	301.38	133.21	340.57			
10/20/00	247.39	301.38	133.21	340.57			
10/21/00	247.39	301.38	133.21	340.57			
10/22/00	247.39	301.38	133.21	340.57			
10/23/00	247.39	301.38	133.21	340.57			
10/24/00	247.39	301.38	133.21	340.57			
10/25/00	247.39	301.38	133.21	340.57			
10/26/00	247.39	301.38	133.21	340.57			
10/27/00	247.39	301.38	133.21	340.57			
10/28/00	247.39	301.38	133.21	340.57			
10/29/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/16/00	247.39	301.38	133.21	340.57			
07/17/00	247.39	301.38	133.21	340.57			
07/18/00	247.39	301.38	133.21	340.57			
07/19/00	247.39	301.38	133.21	340.57			
07/20/00	247.39	301.38	133.21	340.57			
07/21/00	247.39	301.38	133.21	340.57			
07/22/00	247.39	301.38	133.21	340.57			
07/23/00	247.39	301.38	133.21	340.57			
07/24/00	247.39	301.38	133.21	340.57			
07/25/00	247.39	301.38	133.21	340.57			
07/26/00	247.39	301.38	133.21	340.57			
07/27/00	247.39	301.38	133.21	340.57			
07/28/00	247.39	301.38	133.21	340.57			
07/29/00	247.39	301.38	133.21	340.57			
07/30/00	247.39	301.38	133.21	340.57			
07/31/00	247.39	301.38	133.21	340.57			
08/01/00	247.39	301.38	133.21	340.57			
08/02/00	247.39	301.38	133.21	340.57			
08/03/00	247.39	301.38	133.21	340.57			
08/04/00	247.39	301.38	133.21	340.57			
08/05/00	247.39	301.38	133.21	340.57			
08/06/00	247.39	301.38	133.21	340.57			
08/07/00	247.39	301.38	133.21	340.57			
08/08/00	247.39	301.38	133.21	340.57			
08/09/00	247.39	301.38	133.21	340.57			
08/10/00	247.39	301.38	133.21	340.57			
08/11/00	247.39	301.38	133.21	340.57			
08/12/00	247.39	301.38	133.21	340.57			
08/13/00	247.39	301.38	133.21	340.57			
08/14/00	247.39	301.38	133.21	340.57			
08/15/00	247.39	301.38	133.21	340.57			
08/16/00	247.39	301.38	133.21	340.57			
08/17/00	247.39	301.38	133.21	340.57			
08/18/00	247.39	301.38	133.21	340.57			
08/19/00	247.39	301.38	133.21	340.57			
08/20/00	247.39	301.38	133.21	340.57			
08/21/00	247.39	301.38	133.21	340.57			
08/22/00	247.39	301.38	133.21	340.57			
08/23/00	247.39	301.38	133.21	340.57			
08/24/00	247.39	301.38	133.21	340.57			
08/25/00	247.39	301.38	133.21	340.57			
08/26/00	247.39	301.38	133.21	340.57			
08/27/00	247.39	301.38	133.21	340.57			
08/28/00	247.39	301.38	133.21	340.57			
08/29/00	247.39	301.38	133.21	340.57			
08/30/00	247.39	301.38	133.21	340.57			
08/31/00	247.39	301.38	133.21	340.57			
09/01/00	247.39	301.38	133.21	340.57			
09/02/00	247.39	301.38	133.21	340.57			
09/03/00	247.39	301.38	133.21	340.57			
09/04/00	247.39	301.38	133.21	340.57			
09/05/00	247.39	301.38	133.21	340.57			
09/06/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/24/00	247.39	301.38	133.21	340.57			
05/25/00	247.39	301.38	133.21	340.57			
05/26/00	247.39	301.38	133.21	340.57			
05/27/00	247.39	301.38	133.21	340.57			
05/28/00	247.39	301.38	133.21	340.57			
05/29/00	247.39	301.38	133.21	340.57			
05/30/00	247.39	301.38	133.21	340.57			
05/31/00	247.39	301.38	133.21	340.57			
06/01/00	247.39	301.38	133.21	340.57			
06/02/00	247.39	301.38	133.21	340.57			
06/03/00	247.39	301.38	133.21	340.57			
06/04/00	247.39	301.38	133.21	340.57			
06/05/00	247.39	301.38	133.21	340.57			
06/06/00	247.39	301.38	133.21	340.57			
06/07/00	247.39	301.38	133.21	340.57			
06/08/00	247.39	301.38	133.21	340.57			
06/09/00	247.39	301.38	133.21	340.57			
06/10/00	247.39	301.38	133.21	340.57			
06/11/00	247.39	301.38	133.21	340.57			
06/12/00	247.39	301.38	133.21	340.57			
06/13/00	247.39	301.38	133.21	340.57			
06/14/00	247.39	301.38	133.21	340.57			
06/15/00	247.39	301.38	133.21	340.57			
06/16/00	247.39	301.38	133.21	340.57			
06/17/00	247.39	301.38	133.21	340.57			
06/18/00	247.39	301.38	133.21	340.57			
06/19/00	247.39	301.38	133.21	340.57			
06/20/00	247.39	301.38	133.21	340.57			
06/21/00	247.39	301.38	133.21	340.57			
06/22/00	247.39	301.38	133.21	340.57			
06/23/00	247.39	301.38	133.21	340.57			
06/24/00	247.39	301.38	133.21	340.57			
06/25/00	247.39	301.38	133.21	340.57			
06/26/00	247.39	301.38	133.21	340.57			
06/27/00	247.39	301.38	133.21	340.57			
06/28/00	247.39	301.38	133.21	340.57			
06/29/00	247.39	301.38	133.21	340.57			
06/30/00	247.39	301.38	133.21	340.57			
07/01/00	247.39	301.38	133.21	340.57			
07/02/00	247.39	301.38	133.21	340.57			
07/03/00	247.39	301.38	133.21	340.57			
07/04/00	247.39	301.38	133.21	340.57			
07/05/00	247.39	301.38	133.21	340.57			
07/06/00	247.39	301.38	133.21	340.57			
07/07/00	247.39	301.38	133.21	340.57			
07/08/00	247.39	301.38	133.21	340.57			
07/09/00	247.39	301.38	133.21	340.57			
07/10/00	247.39	301.38	133.21	340.57			
07/11/00	247.39	301.38	133.21	340.57			
07/12/00	247.39	301.38	133.21	340.57			
07/13/00	247.39	301.38	133.21	340.57			
07/14/00	247.39	301.38	133.21	340.57			
07/15/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/01/00	247.39	301.38	133.21	340.57			
04/02/00	247.39	301.38	133.21	340.57			
04/03/00	247.39	301.38	133.21	340.57			
04/04/00	247.39	301.38	133.21	340.57			
04/05/00	247.39	301.38	133.21	340.57			
04/06/00	247.39	301.38	133.21	340.57			
04/07/00	247.39	301.38	133.21	340.57			
04/08/00	247.39	301.38	133.21	340.57			
04/09/00	247.39	301.38	133.21	340.57			
04/10/00	247.39	301.38	133.21	340.57			
04/11/00	247.39	301.38	133.21	340.57			
04/12/00	247.39	301.38	133.21	340.57			
04/13/00	247.39	301.38	133.21	340.57			
04/14/00	247.39	301.38	133.21	340.57			
04/15/00	247.39	301.38	133.21	340.57			
04/16/00	247.39	301.38	133.21	340.57			
04/17/00	247.39	301.38	133.21	340.57			
04/18/00	247.39	301.38	133.21	340.57			
04/19/00	247.39	301.38	133.21	340.57			
04/20/00	247.39	301.38	133.21	340.57			
04/21/00	247.39	301.38	133.21	340.57			
04/22/00	247.39	301.38	133.21	340.57			
04/23/00	247.39	301.38	133.21	340.57			
04/24/00	247.39	301.38	133.21	340.57			
04/25/00	247.39	301.38	133.21	340.57			
04/26/00	247.39	301.38	133.21	340.57			
04/27/00	247.39	301.38	133.21	340.57			
04/28/00	247.39	301.38	133.21	340.57			
04/29/00	247.39	301.38	133.21	340.57			
04/30/00	247.39	301.38	133.21	340.57			
05/01/00	247.39	301.38	133.21	340.57			
05/02/00	247.39	301.38	133.21	340.57			
05/03/00	247.39	301.38	133.21	340.57			
05/04/00	247.39	301.38	133.21	340.57			
05/05/00	247.39	301.38	133.21	340.57			
05/06/00	247.39	301.38	133.21	340.57			
05/07/00	247.39	301.38	133.21	340.57			
05/08/00	247.39	301.38	133.21	340.57			
05/09/00	247.39	301.38	133.21	340.57			
05/10/00	247.39	301.38	133.21	340.57			
05/11/00	247.39	301.38	133.21	340.57			
05/12/00	247.39	301.38	133.21	340.57			
05/13/00	247.39	301.38	133.21	340.57			
05/14/00	247.39	301.38	133.21	340.57			
05/15/00	247.39	301.38	133.21	340.57			
05/16/00	247.39	301.38	133.21	340.57			
05/17/00	247.39	301.38	133.21	340.57			
05/18/00	247.39	301.38	133.21	340.57			
05/19/00	247.39	301.38	133.21	340.57			
05/20/00	247.39	301.38	133.21	340.57			
05/21/00	247.39	301.38	133.21	340.57			
05/22/00	247.39	301.38	133.21	340.57			
05/23/00	247.39	301.38	133.21	340.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/13/01	250.72	177.73	139.56	170.14			
02/14/01	246.00	179.86	152.98	193.68			
02/15/01	222.58	153.33	176.46	189.72			
02/16/01	207.06	142.05	163.06	175.16			
02/17/01	232.05	172.86	095.93	114.48			
02/18/01	271.89	294.57	000.30	000.00			
02/19/01	249.28	249.01	000.42	000.00			
02/20/01	283.89	297.82	000.38	000.02			
02/21/01	263.62	258.16	000.33	000.05			
02/22/01	270.52	239.51	000.36	000.04			
02/23/01	247.20	211.70	000.29	000.07			
02/24/01	276.57	288.67	000.35	000.06			
02/25/01	260.10	271.37	000.23	000.08			
02/26/01	283.43	292.77	000.27	000.05			
02/27/01	289.80	282.94	000.21	000.08			
02/28/01	292.19	290.97	000.24	000.06			
03/01/01	260.34	198.19	113.76	152.48			
03/02/01	223.39	153.02	139.22	161.24			
03/03/01	261.12	219.34	071.16	082.20			
03/04/01	284.43	264.53	000.46	000.00			
03/05/01	290.66	291.97	000.41	000.00			
03/06/01	270.16	267.50	000.50	000.00			
03/07/01	272.28	276.84	000.44	000.00			
03/08/01	281.18	287.93	007.09	008.98			
03/09/01	218.86	140.38	171.96	190.35			
03/10/01	201.34	130.85	165.72	178.13			
03/11/01	279.93	282.07	031.72	035.16			
03/12/01	235.91	195.27	000.48	000.00			
03/13/01	225.04	170.99	000.60	000.01			
03/14/01	281.18	292.66	000.52	000.00			
03/15/01	248.54	236.45	000.58	000.00			
03/16/01	268.93	270.18	000.58	000.00			
03/17/01	252.53	211.38	000.55	000.01			
03/18/01	236.25	200.19	000.64	000.00			
03/19/01	247.16	222.54	000.62	000.00			
03/20/01	223.04	176.78	000.54	000.00			
03/21/01	229.29	172.86	000.54	000.00			
03/22/01	214.62	148.81	000.40	000.00			
03/23/01	248.56	226.23	000.09	000.00			
03/24/01	261.44	253.57	000.14	000.00			
03/25/01	232.89	224.83	000.23	000.00			
03/26/01	214.79	154.48	000.18	000.00			
03/27/01	192.47	104.77	000.19	000.00			
03/28/01	214.73	184.36	000.19	000.00			
03/29/01	220.44	173.66	000.21	000.00			
03/30/01	230.92	210.87	000.17	000.00			
03/31/01	226.26	177.12	000.11	000.00			
04/01/01	188.74	139.94	000.15	000.00			
04/02/01	231.66	210.76	000.12	000.00			
04/03/01	227.31	207.72	000.15	000.00			
04/04/01	234.71	264.45	000.16	000.00			
04/05/01	258.22	298.35	000.11	000.00			
04/06/01	257.11	264.45	000.16	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/07/01	251.26	254.50	000.19	000.00			
04/08/01	265.43	301.80	000.17	000.00			
04/09/01	258.45	266.39	040.59	052.90			
04/10/01	145.18	063.74	138.99	091.92			
04/11/01	200.51	192.68	090.48	103.12			
04/12/01	272.27	302.27	000.54	000.00			
04/13/01	196.07	157.76	131.83	127.81			
04/14/01	245.89	246.22	062.38	073.22			
04/15/01	207.32	191.68	000.84	000.00			
04/16/01	214.61	206.11	000.98	000.00			
04/17/01	245.94	274.21	000.70	000.00			
04/18/01	248.23	282.57	000.43	000.00			
04/19/01	264.78	313.33	000.40	000.00			
04/20/01	218.01	224.87	000.50	000.00			
04/21/01	250.72	262.75	000.52	000.00			
04/22/01	255.07	284.21	000.28	000.00			
04/23/01	233.33	234.61	000.15	000.00			
04/24/01	219.61	219.61	000.18	000.00			
04/25/01	256.39	307.97	000.18	000.00			
04/26/01	261.07	318.71	000.14	000.00			
04/27/01	257.23	295.76	000.19	000.00			
04/28/01	240.87	265.02	000.21	000.00			
04/29/01	257.61	299.68	000.27	000.00			
04/30/01	246.12	267.95	039.50	045.49			
05/01/01	237.32	271.48	087.81	111.95			
05/02/01	206.29	188.03	139.84	153.55			
05/03/01	205.22	160.97	130.25	163.06			
05/04/01	195.11	172.99	147.63	163.78			
05/05/01	230.46	247.15	057.78	074.81			
05/06/01	251.73	304.30	000.69	000.00			
05/07/01	177.12	162.26	084.94	108.02			
05/08/01	244.91	290.15	031.15	044.86			
05/09/01	222.80	238.54	149.48	205.58			
05/10/01	239.53	275.78	000.60	000.00			
05/11/01	222.65	247.98	063.70	061.96			
05/12/01	171.34	136.86	156.85	179.94			
05/13/01	193.09	193.36	169.94	242.32			
05/14/01	163.36	117.80	154.83	160.80			
05/15/01	200.72	210.83	079.56	102.38			
05/16/01	246.26	294.90	000.85	000.17			
05/17/01	100.34	121.34	124.32	217.28			
05/18/01	149.54	189.21	090.98	159.32			
05/19/01	188.30	189.06	086.40	092.52			
05/20/01	199.50	181.00	184.21	249.74			
05/21/01	195.03	201.07	179.45	245.88			
05/22/01	176.62	168.13	168.10	214.98			
05/23/01	163.30	162.22	142.05	179.28			
05/24/01	223.72	297.06	077.18	119.70			
05/25/01	193.46	205.52	170.76	236.87			
05/26/01	172.38	177.51	164.76	218.27			
05/27/01	199.15	224.41	142.03	221.85			
05/28/01	173.76	173.51	166.94	223.32			
05/29/01	142.96	114.97	142.59	154.26			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/30/01	164.45	155.54	154.34	190.94			
05/31/01	129.92	136.51	123.13	147.57			
06/01/01	133.24	122.92	130.35	151.61			
06/02/01	164.83	167.05	158.65	201.13			
06/03/01	159.56	151.29	154.06	181.32			
06/04/01	142.08	122.29	139.33	149.34			
06/05/01	132.99	131.47	133.49	154.71			
06/06/01	176.68	204.43	163.10	232.96			
06/07/01	176.46	211.39	160.96	236.68			
06/08/01	189.41	232.77	166.04	254.31			
06/09/01	167.15	209.30	103.72	153.67			
06/10/01	177.24	192.29	161.86	231.62			
06/11/01	177.50	193.55	163.49	232.61			
06/12/01	163.38	159.17	152.84	196.56			
06/13/01	223.92	308.65	035.01	037.39			
06/14/01	177.68	188.54	152.31	222.31			
06/15/01	162.71	144.23	152.49	183.30			
06/16/01	162.87	157.03	151.91	194.86			
06/17/01	191.71	213.16	168.02	258.21			
06/18/01	177.97	187.05	146.54	205.30			
06/19/01	168.96	157.62	152.26	195.06			
06/20/01	145.46	130.39	137.64	161.05			
06/21/01	119.45	082.00	113.14	097.02			
06/22/01	154.83	155.40	139.12	167.38			
06/23/01	129.85	104.16	118.80	124.37			
06/24/01	159.47	163.20	143.47	186.57			
06/25/01	162.47	191.31	141.67	209.81			
06/26/01	148.19	141.51	133.10	159.96			
06/27/01	151.74	160.78	145.16	192.61			
06/28/01	162.29	183.26	156.10	223.46			
06/29/01	174.30	232.68	033.99	046.82			
06/30/01	233.64	338.07	000.68	000.00			
07/01/01	236.84	332.45	044.15	069.43			
07/02/01	182.12	210.17	163.92	244.73			
07/03/01	178.09	212.84	149.10	228.00			
07/04/01	192.39	228.46	170.32	266.81			
07/05/01	208.80	295.45	041.53	043.31			
07/06/01	221.15	292.34	073.86	130.29			
07/07/01	212.38	285.64	044.57	065.49			
07/08/01	218.45	305.08	045.36	075.23			
07/09/01	240.83	348.64	000.91	000.00			
07/10/01	226.36	335.37	000.84	000.00			
07/11/01	162.10	190.82	127.20	204.21			
07/12/01	173.73	200.81	133.30	217.06			
07/13/01	226.99	329.08	000.86	000.00			
07/14/01	199.17	247.50	135.75	207.88			
07/15/01	194.30	237.39	171.51	275.45			
07/16/01	194.83	236.24	172.53	275.09			
07/17/01	174.03	211.59	160.68	247.80			
07/18/01	179.46	214.83	165.15	254.63			
07/19/01	201.73	259.13	172.07	279.61			
07/20/01	181.00	225.52	171.68	272.37			
07/21/01	164.43	178.61	157.09	221.80			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/22/01	195.09	255.17	074.30	103.08			
07/23/01	201.71	265.19	000.74	000.00			
07/24/01	193.29	233.04	000.93	000.00			
07/25/01	240.17	349.68	000.96	000.00			
07/26/01	205.53	260.66	083.01	124.15			
07/27/01	200.58	232.79	097.78	138.47			
07/28/01	214.40	295.98	075.19	131.41			
07/29/01	183.44	210.03	135.08	206.41			
07/30/01	179.86	213.92	100.75	146.85			
07/31/01	215.35	309.62	000.15	000.00			
08/01/01	220.28	308.54	075.02	136.09			
08/02/01	217.29	312.60	029.83	032.24			
08/03/01	250.09	375.93	000.39	000.00			
08/04/01	248.94	373.39	000.27	000.00			
08/05/01	214.15	277.18	090.29	154.50			
08/06/01	152.06	147.30	135.72	185.78			
08/07/01	218.67	305.36	015.65	014.50			
08/08/01	229.17	330.86	000.18	000.00			
08/09/01	214.39	278.82	115.49	211.74			
08/10/01	211.01	274.90	120.51	176.65			
08/11/01	186.61	247.18	165.42	297.05			
08/12/01	169.17	204.03	152.96	255.70			
08/13/01	210.21	312.10	058.88	114.14			
08/14/01	218.87	319.20	011.16	020.12			
08/15/01	218.22	296.37	162.82	308.11			
08/16/01	227.98	353.60	187.78	379.39			
08/17/01	249.32	419.40	204.15	423.82			
08/18/01	228.68	348.42	181.19	362.94			
08/19/01	197.29	244.29	166.70	287.04			
08/20/01	168.45	177.54	103.72	130.38			
08/21/01	214.79	276.81	000.19	000.00			
08/22/01	208.04	259.24	056.82	090.51			
08/23/01	180.82	214.28	155.62	249.07			
08/24/01	195.70	256.89	168.29	293.63			
08/25/01	188.80	247.38	162.43	284.32			
08/26/01	176.47	234.97	149.45	269.86			
08/27/01	206.16	286.25	145.21	281.10			
08/28/01	119.33	150.53	149.12	292.99			
08/29/01	060.98	077.56	091.51	182.93			
08/30/01	122.81	149.54	031.88	067.36			
08/31/01	123.75	051.06	092.12	181.61			
09/01/01	171.86	117.21	172.83	294.73			
09/02/01	262.47	182.88	153.36	237.62			
09/03/01	220.24	158.02	128.00	184.89			
09/04/01	239.48	154.88	043.03	062.46			
09/05/01	268.04	208.25	000.19	000.01			
09/06/01	256.06	212.04	000.14	000.01			
09/07/01	290.11	237.35	000.24	000.04			
09/08/01	218.59	146.76	078.86	097.13			
09/09/01	252.38	178.59	055.69	079.50			
09/10/01	272.81	205.50	000.17	000.00			
09/11/01	286.01	228.38	000.20	000.00			
09/12/01	276.33	218.14	000.17	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/13/01	295.88	246.95	000.20	000.00			
09/14/01	256.43	203.26	000.17	000.00			
09/15/01	279.35	228.75	000.16	000.00			
09/16/01	257.19	200.56	000.14	000.00			
09/17/01	270.73	229.18	000.12	000.00			
09/18/01	263.80	207.66	000.12	000.01			
09/19/01	263.89	206.07	000.18	000.02			
09/20/01	283.32	240.89	000.18	000.03			
09/21/01	271.43	224.52	000.17	000.02			
09/22/01	261.69	186.69	087.67	139.65			
09/23/01	286.85	242.24	000.20	000.00			
09/24/01	243.15	182.54	000.13	000.00			
09/25/01	272.09	227.65	000.29	000.00			
09/26/01	250.31	191.31	072.23	103.47			
09/27/01	158.59	107.80	098.53	134.89			
09/28/01	270.46	211.72	061.39	093.90			
09/29/01	282.02	255.77	000.28	000.00			
09/30/01	285.37	265.64	000.30	000.00			
10/01/01	297.68	276.25	000.18	000.00			
10/02/01	264.63	199.94	078.61	121.91			
10/03/01	240.71	165.20	136.95	207.54			
10/04/01	206.22	144.60	127.18	178.84			
10/05/01	262.25	220.10	047.55	065.70			
10/06/01	282.99	245.60	000.17	000.02			
10/07/01	255.76	217.22	040.44	063.17			
10/08/01	249.72	186.33	074.72	117.67			
10/09/01	263.39	239.15	000.23	000.00			
10/10/01	245.11	187.01	077.96	115.02			
10/11/01	193.77	148.21	138.74	211.11			
10/12/01	240.90	190.33	147.08	238.09			
10/13/01	270.95	245.84	071.57	122.68			
10/14/01	268.43	237.68	082.75	145.84			
10/15/01	249.18	201.30	084.00	143.40			
10/16/01	289.41	292.69	000.14	000.00			
10/17/01	274.07	268.16	000.17	000.00			
10/18/01	259.25	242.97	000.16	000.00			
10/19/01	261.69	257.21	000.13	000.00			
10/20/01	290.44	293.75	000.17	000.00			
10/21/01	267.88	266.71	000.16	000.00			
10/22/01	291.53	301.48	000.13	000.00			
10/23/01	277.98	272.10	000.15	000.00			
10/24/01	272.66	260.93	000.22	000.00			
10/25/01	282.89	285.21	000.18	000.00			
10/26/01	290.73	307.42	000.15	000.00			
10/27/01	285.46	293.39	000.16	000.00			
10/28/01	231.61	178.43	100.66	164.56			
10/29/01	295.08	300.43	000.17	000.00			
10/30/01	259.65	239.24	000.15	000.00			
10/31/01	241.40	233.84	041.47	072.61			
11/01/01	243.69	200.71	141.48	243.98			
11/02/01	241.29	202.57	151.29	251.05			
11/03/01	231.46	183.62	146.16	234.28			
11/04/01	212.15	175.52	109.53	170.90			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/05/01	283.58	305.59	000.12	000.00			
11/06/01	245.35	240.51	000.15	000.00			
11/07/01	265.57	270.84	000.21	000.00			
11/08/01	254.88	269.18	000.19	000.00			
11/09/01	268.20	303.54	000.17	000.00			
11/10/01	270.91	306.33	000.21	000.00			
11/11/01	253.44	269.88	000.09	000.00			
11/12/01	277.64	308.74	000.20	000.00			
11/13/01	269.76	304.80	000.14	000.00			
11/14/01	270.91	306.08	000.18	000.00			
11/15/01	218.47	212.15	145.68	258.73			
11/16/01	211.27	198.43	139.02	245.07			
11/17/01	185.13	163.06	118.67	192.59			
11/18/01	229.29	229.84	046.16	088.18			
11/19/01	266.12	302.63	000.20	000.00			
11/20/01	254.99	277.02	000.21	000.00			
11/21/01	241.74	281.52	000.17	000.00			
11/22/01	269.11	305.22	020.62	039.02			
11/23/01	170.91	150.26	117.52	189.05			
11/24/01	164.88	142.42	109.27	168.30			
11/25/01	223.35	222.19	122.14	216.95			
11/26/01	188.48	184.72	122.94	216.10			
11/27/01	230.15	244.12	094.09	174.95			
11/28/01	210.95	218.71	143.04	272.64			
11/29/01	071.29	066.04	038.18	071.54			
11/30/01	026.75	049.12	000.00	019.40			
12/01/01	049.27	090.38	000.00	035.57			
12/02/01	071.80	131.64	000.00	051.74			
12/03/01	094.32	172.91	000.00	067.91			
12/04/01	116.85	214.17	000.00	084.08			
12/05/01	139.37	255.43	000.00	100.25			
12/06/01	161.90	296.70	000.00	116.42			
12/07/01	184.42	337.96	000.00	132.59			
12/08/01	206.95	379.23	000.00	148.76			
12/09/01	229.47	420.49	000.00	164.93			
12/10/01	252.00	461.75	000.00	181.10			
12/11/01	254.08	496.16	011.32	217.05			
12/12/01	189.09	499.86	118.00	387.70			
12/13/01	205.27	499.86	137.00	440.25			
12/14/01	213.31	499.86	143.72	457.50			
12/15/01	214.67	499.86	128.72	424.48			
12/16/01	223.28	499.86	137.23	441.90			
12/17/01	212.74	499.86	139.03	440.08			
12/18/01	213.03	499.86	153.50	474.93			
12/19/01	210.56	499.86	133.39	437.32			
12/20/01	203.53	499.86	132.11	430.24			
12/21/01	241.52	499.86	155.14	463.95			
12/22/01	244.45	499.86	168.38	489.21			
12/23/01	229.74	499.86	166.31	479.50			
12/24/01	218.10	499.86	158.52	469.50			
12/25/01	223.52	499.86	162.10	473.16			
12/26/01	203.23	499.86	217.02	470.23			
12/27/01	188.56	499.86	144.21	451.04			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/28/01	221.47	499.86	159.13	471.84			
12/29/01	226.86	499.86	160.73	474.25			
12/30/01	225.64	499.86	159.74	476.04			
12/31/01	228.19	499.86	162.33	484.57			
01/01/02	333.38	499.86	145.08	484.92			
01/02/02	207.39	499.86	143.74	454.84			
01/03/02	226.39	499.86	155.76	481.56			
01/04/02	227.09	499.86	143.62	468.48			
01/05/02	211.99	499.86	147.46	462.33			
01/06/02	228.97	499.86	159.83	484.14			
01/07/02	226.49	499.86	158.69	480.87			
01/08/02	223.51	499.86	154.33	475.56			
01/09/02	222.67	499.86	152.35	476.65			
01/10/02	221.09	499.86	151.58	472.51			
01/11/02	210.97	499.86	144.82	463.16			
01/12/02	229.85	499.86	157.02	484.28			
01/13/02	227.71	499.86	156.80	481.54			
01/14/02	211.20	499.86	149.40	463.49			
01/15/02	220.14	499.86	151.26	471.75			
01/16/02	220.07	499.86	152.19	478.42			
01/17/02	212.07	499.86	133.49	447.68			
01/18/02	210.48	499.86	147.62	474.40			
01/19/02	212.15	499.86	146.61	468.50			
01/20/02	223.70	499.86	154.47	484.98			
01/21/02	200.01	499.86	139.02	450.31			
01/22/02	206.71	499.86	145.73	469.24			
01/23/02	169.97	499.86	121.37	424.07			
01/24/02	215.93	499.86	151.08	479.88			
01/25/02	199.39	499.86	138.40	465.24			
01/26/02	195.86	499.86	134.08	447.67			
01/27/02	209.42	499.86	146.70	466.74			
01/28/02	204.02	499.86	140.33	461.57			
02/01/02	257.80	310.10	041.53	092.91			
02/02/02	210.13	245.38	111.43	244.19			
02/03/02	249.93	285.78	145.88	324.11			
02/04/02	262.40	330.63	154.12	368.77			
02/05/02	258.69	319.26	148.14	357.58			
02/06/02	259.67	326.96	152.38	366.86			
02/07/02	267.47	358.46	136.73	333.39			
02/08/02	304.60	424.89	093.27	229.56			
02/09/02	310.54	426.79	176.71	427.88			
02/10/02	296.15	391.45	168.07	400.22			
02/11/02	260.62	349.09	148.41	341.78			
02/12/02	239.12	339.64	123.86	280.32			
02/13/02	200.23	179.34	099.38	247.80			
02/14/02	245.91	146.19	045.73	000.46			
02/15/02	196.24	003.16	092.96	003.81			
02/16/02	344.50	006.80	094.11	008.19			
02/17/02	387.41	010.45	095.25	012.57			
02/18/02	370.93	014.09	096.40	016.95			
02/19/02	339.26	017.73	097.54	021.32			
02/20/02	291.34	021.37	098.69	025.70			
02/21/02	236.58	025.01	099.84	030.08			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/22/02	238.61	028.65	100.98	034.46			
02/23/02	206.46	032.29	102.13	038.84			
02/24/02	224.62	035.93	103.28	043.22			
02/25/02	216.36	039.58	104.42	047.59			
02/26/02	199.50	043.22	105.57	051.97			
02/27/02	246.02	046.86	106.71	056.35			
02/28/02	352.61	050.50	107.86	060.73			
03/01/02	357.34	054.14	109.01	065.11			
03/02/02	351.61	057.78	110.15	069.49			
03/03/02	370.63	061.42	111.30	073.86			
03/04/02	329.05	065.06	112.45	078.24			
03/05/02	297.14	068.71	113.59	082.62			
03/06/02	254.39	072.35	114.74	087.00			
03/07/02	256.84	075.99	115.88	091.38			
03/08/02	258.40	079.63	117.03	095.76			
03/09/02	309.84	083.27	118.18	100.14			
03/10/02	308.87	086.91	119.32	104.51			
03/11/02	250.75	090.55	120.47	108.89			
03/12/02	259.87	094.19	121.62	113.27			
03/13/02	318.62	097.84	122.76	117.65			
03/14/02	266.33	101.48	123.91	122.03			
03/15/02	260.40	105.12	125.05	126.41			
03/16/02	223.02	108.76	126.20	130.78			
03/17/02	264.38	112.40	127.35	135.16			
03/18/02	210.99	116.04	128.49	139.54			
03/19/02	184.90	119.68	129.64	143.92			
03/20/02	221.73	123.32	130.78	148.30			
03/21/02	268.11	126.97	131.93	152.68			
03/22/02	223.07	130.61	133.08	157.05			
03/23/02	184.58	134.25	134.22	161.43			
03/24/02	227.72	137.89	135.37	165.81			
03/25/02	262.80	141.53	136.52	170.19			
03/26/02	184.75	145.17	137.66	174.57			
03/27/02	188.34	148.81	138.81	178.95			
03/28/02	205.80	152.45	139.95	183.33			
03/29/02	245.05	156.10	141.10	187.70			
03/30/02	235.80	159.74	142.25	192.08			
03/31/02	242.48	163.38	143.39	196.46			
04/01/02	273.07	167.02	144.54	200.84			
04/02/02	203.40	170.66	145.69	205.22			
04/03/02	211.11	174.30	146.83	209.60			
04/04/02	231.56	177.94	147.98	213.97			
04/05/02	177.92	181.01	148.94	217.66			
06/04/02	120.40	314.95	122.46	146.22			
06/05/02	181.96	499.86	109.48	107.25			
06/06/02	220.53	499.86	062.43	061.51			
06/07/02	275.03	499.86	000.57	000.04			
06/08/02	243.12	499.86	081.86	106.61			
06/09/02	242.65	499.86	146.63	236.60			
06/10/02	209.91	499.86	136.68	182.41			
06/11/02	241.80	499.86	149.20	225.49			
06/12/02	223.58	499.86	141.12	194.49			
06/13/02	229.94	486.81	140.34	201.91			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
06/14/02	244.62	499.86	146.83	218.09			
06/15/02	220.90	499.86	119.95	174.84			
06/16/02	248.92	499.86	158.43	257.14			
06/17/02	249.44	499.86	151.25	251.53			
06/18/02	219.68	499.86	137.70	193.19			
06/19/02	206.75	499.86	121.65	140.38			
06/20/02	226.99	357.63	133.16	173.36			
06/21/02	283.76	266.44	060.00	091.55			
06/22/02	263.02	205.94	148.76	245.09			
06/23/02	229.46	132.50	094.70	137.24			
06/24/02	350.43	059.06	067.82	106.79			
06/25/02	404.59	003.40	003.90	006.14			
06/26/02	391.67	000.00	000.00	000.00			
06/27/02	355.36	000.00	000.00	000.00			
06/28/02	397.00	000.00	000.00	000.00			
06/29/02	400.70	000.00	000.00	000.00			
06/30/02	321.32	000.00	000.00	000.00			
07/01/02	287.03	000.00	000.00	000.00			
07/02/02	276.47	018.40	000.29	000.46			
07/03/02	269.87	000.00	000.00	000.00			
07/04/02	226.30	240.73	072.58	110.78			
07/05/02	230.23	499.86	161.08	272.13			
07/06/02	226.77	499.86	153.31	253.27			
07/07/02	193.64	499.86	131.26	200.46			
07/08/02	173.61	499.86	115.42	165.13			
07/09/02	199.34	499.86	133.01	196.85			
07/10/02	177.99	499.86	117.31	173.79			
07/11/02	201.03	499.86	131.19	195.17			
07/12/02	192.99	499.86	127.16	205.59			
07/13/02	218.05	499.86	140.60	220.71			
07/14/02	203.75	499.86	132.31	202.14			
07/15/02	167.22	499.86	109.86	137.87			
07/16/02	186.50	499.86	119.84	166.62			
07/17/02	198.82	499.86	131.43	198.89			
07/18/02	222.52	499.86	142.18	226.33			
07/19/02	204.57	499.86	132.12	203.61			
07/20/02	207.04	499.86	130.54	210.92			
07/21/02	209.08	499.86	134.52	215.74			
07/22/02	196.62	499.86	125.67	187.36			
07/23/02	189.65	499.86	121.68	197.53			
07/24/02	199.80	499.86	128.47	197.30			
07/25/02	227.32	499.86	134.38	231.29			
07/26/02	198.91	499.86	132.40	203.66			
07/27/02	181.64	499.86	116.23	162.83			
07/28/02	186.28	499.86	119.69	166.22			
07/29/02	169.99	499.86	105.79	142.25			
07/30/02	163.51	499.86	108.15	132.76			
07/31/02	177.07	499.86	112.74	151.65			
08/01/02	231.55	499.86	147.10	250.45			
08/02/02	231.55	499.86	129.15	203.36			
08/03/02	231.55	499.86	145.77	251.43			
08/04/02	231.55	499.86	122.12	182.22			
08/05/02	231.55	499.86	110.11	141.27			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/06/02	231.55	499.86	104.00	136.35			
08/07/02	222.00	393.84	075.68	111.99			
08/08/02	214.13	272.45	057.62	103.66			
08/09/02	165.07	156.74	126.19	192.11			
08/10/02	184.41	202.99	142.78	239.70			
08/11/02	180.06	202.51	140.09	248.75			
08/12/02	213.28	269.55	159.61	303.19			
08/13/02	222.72	288.13	085.37	166.61			
08/14/02	202.12	250.25	078.09	122.09			
08/15/02	181.86	218.38	141.09	247.02			
08/16/02	194.09	227.97	150.83	258.91			
08/17/02	202.65	235.58	154.70	267.57			
08/18/02	175.61	197.64	136.22	226.82			
08/19/02	203.11	258.47	154.65	290.97			
08/20/02	231.85	306.33	135.59	268.84			
08/21/02	168.71	193.92	132.24	229.52			
08/22/02	186.38	232.21	148.27	269.91			
08/23/02	198.06	253.95	155.24	293.57			
08/24/02	174.17	205.54	139.89	241.94			
08/25/02	182.04	203.19	145.00	242.45			
08/26/02	166.76	178.51	131.71	216.85			
08/27/02	178.11	193.61	141.34	233.82			
08/28/02	161.66	166.30	131.84	204.35			
08/29/02	166.81	175.84	132.94	215.70			
08/30/02	149.10	159.99	122.43	197.21			
09/01/02	159.27	166.72	125.52	190.35			
09/02/02	138.55	147.59	110.93	171.56			
09/03/02	152.14	148.81	121.59	178.10			
09/04/02	158.92	157.41	125.00	187.52			
09/05/02	133.83	121.69	106.50	149.02			
09/06/02	149.71	180.81	119.84	212.96			
09/07/02	139.92	155.30	113.20	186.54			
09/08/02	116.63	097.22	094.00	127.85			
09/09/02	161.35	181.81	123.70	203.43			
09/10/02	176.80	217.38	129.22	227.13			
09/11/02	197.50	251.43	153.74	287.15			
09/12/02	191.03	235.37	148.57	271.41			
09/13/02	172.97	217.64	135.13	250.25			
09/14/02	187.53	236.52	145.46	271.21			
09/15/02	177.88	216.01	140.98	250.89			
09/16/02	175.84	213.93	139.77	249.41			
09/17/02	171.75	205.54	134.86	240.32			
09/18/02	168.51	197.35	134.56	232.87			
09/19/02	164.04	203.95	132.27	237.34			
09/20/02	172.75	206.06	136.48	244.66			
09/21/02	193.26	245.27	153.37	287.34			
09/22/02	165.82	200.82	131.66	236.82			
09/23/02	163.04	188.82	117.47	196.88			
09/24/02	151.30	177.60	120.95	210.70			
09/25/02	176.13	215.27	138.16	248.12			
09/26/02	198.59	261.16	139.19	264.97			
09/27/02	164.22	206.99	127.32	237.20			
09/28/02	176.13	227.13	134.68	259.23			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/29/02	180.01	220.22	137.74	255.56			
09/30/02	184.70	232.26	141.63	268.79			
10/01/02	182.59	235.65	140.59	272.79			
10/02/02	176.35	232.83	135.03	268.51			
10/03/02	179.99	233.41	137.11	271.39			
10/04/02	193.13	251.94	147.60	293.72			
10/05/02	163.65	199.72	126.01	237.88			
10/06/02	164.12	197.91	127.69	238.11			
10/07/02	155.94	176.18	112.95	186.07			
10/08/02	197.62	307.39	132.37	289.75			
10/09/02	234.88	386.00	177.90	419.91			
10/10/02	190.31	255.12	051.74	095.38			
10/11/02	200.63	287.07	010.42	021.18			
10/12/02	222.04	314.73	108.23	215.00			
10/13/02	212.47	292.22	159.60	326.04			
10/14/02	177.96	229.47	133.92	259.94			
10/15/02	185.44	249.55	138.08	278.11			
10/16/02	169.82	218.48	127.65	246.31			
10/17/02	175.19	234.27	133.59	263.92			
10/18/02	170.99	222.12	127.47	249.85			
10/19/02	187.58	246.84	131.17	252.00			
10/20/02	149.86	179.66	114.41	208.94			
10/21/02	139.44	164.21	106.50	191.95			
10/22/02	139.70	137.58	107.25	169.00			
10/23/02	113.21	115.33	088.08	140.96			
10/24/02	140.40	142.63	102.42	219.38			
10/25/02	222.14	206.05	021.89	032.00			
10/26/02	240.35	199.16	169.77	233.24			
10/27/02	213.67	179.26	153.10	206.74			
10/27/02	234.62	189.73	164.08	221.24			
10/28/02	229.61	213.23	105.50	137.93			
10/29/02	196.02	137.00	145.95	177.66			
10/30/02	158.86	099.43	124.21	133.72			
10/31/02	163.10	099.26	125.90	136.05			
11/01/02	179.21	120.51	132.25	147.21			
11/02/02	189.18	134.08	087.24	089.43			
11/03/02	201.63	134.12	000.00	000.03			
11/04/02	217.34	167.04	000.00	000.07			
11/05/02	242.22	218.55	000.00	000.07			
11/06/02	224.19	207.47	000.00	000.08			
11/07/02	237.87	230.61	000.00	000.07			
11/08/02	256.96	252.25	000.00	000.05			
11/09/02	265.46	259.42	000.00	000.04			
11/10/02	219.11	205.87	000.00	000.06			
11/11/02	264.03	278.43	000.00	000.06			
11/12/02	266.14	277.44	000.00	000.10			
11/13/02	250.29	247.83	000.00	000.10			
11/14/02	193.72	155.86	114.97	148.76			
11/15/02	207.76	162.63	150.26	198.27			
11/16/02	183.11	131.19	139.30	169.14			
11/17/02	153.36	077.86	115.92	114.23			
11/18/02	146.88	078.55	114.35	112.64			
11/19/02	156.27	126.02	073.42	092.08			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/20/02	195.62	149.07	147.11	189.45			
11/21/02	169.03	100.53	129.68	141.22			
11/22/02	143.39	080.35	114.79	115.52			
11/23/02	141.21	076.74	113.94	112.27			
11/24/02	164.19	085.76	125.57	129.18			
11/25/02	173.49	122.15	133.10	164.12			
11/26/02	164.25	131.51	127.05	169.78			
11/27/02	169.27	135.39	123.79	163.28			
11/28/02	175.53	151.50	144.27	187.80			
11/29/02	191.14	144.34	142.40	181.40			
11/30/02	181.72	140.55	134.78	175.53			
12/01/02	163.82	125.28	124.09	157.71			
12/02/02	163.78	125.29	124.07	157.66			
12/03/02	166.11	125.31	126.39	157.69			
12/04/02		129.18		167.55			
12/05/02		135.69		202.50			
12/06/02		145.84		204.79			
12/07/02	190.47	179.23	137.49	205.66			
12/08/02	206.39	193.91	144.37	211.20			
12/09/02	195.76	183.60	137.51	199.90			
12/10/02	200.85	195.71	149.73	233.26			
12/11/02	184.02	157.37	139.88	198.52			
12/12/02	183.30	140.47	133.38	171.60			
12/13/02	148.65	097.02	117.02	128.59			
12/14/02	197.92	179.14	150.35	215.41			
12/15/02	195.45	182.58	146.01	220.74			
12/16/02	177.49	130.06	134.41	169.66			
12/17/02	148.81	100.70	116.98	134.18			
12/18/02	174.74	130.29	135.32	168.73			
12/19/02	169.39	134.15	129.04	170.98			
12/20/02	175.36	120.94	133.95	161.62			
12/21/02	200.98	177.47	151.22	219.50			
12/22/02	193.99	166.34	132.57	183.77			
12/23/02	176.86	149.24	132.56	182.37			
12/24/02	155.74	158.30	135.47	192.87			
12/25/02	077.79	177.36	145.54	214.18			
12/26/02	115.55	147.03	123.72	168.50			
12/27/02	159.98	196.62	131.09	199.48			
12/28/02	199.86	184.00	149.35	224.04			
12/29/02	193.27	175.49	144.30	214.32			
12/30/02	204.02	178.21	148.38	220.06			
12/31/02	176.97	139.65	130.94	177.39			
01/01/03	196.08	167.65	144.89	207.67			
01/02/03	165.87	128.86	122.09	164.20			
01/03/03	175.45	152.79	071.82	092.65			
01/04/03	209.31	189.74	152.98	227.18			
01/05/03	200.95	169.93	145.75	207.20			
01/06/03	184.01	164.81	135.66	197.52			
01/07/03	168.71	142.06	121.06	172.43			
01/08/03	211.29	200.15	116.77	162.87			
01/09/03	224.38	230.89	087.80	136.29			
01/10/03	176.94	154.01	131.67	187.80			
01/11/03	181.39	159.83	133.41	196.24			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/12/03	195.84	179.40	138.04	200.47			
01/13/03	185.59	154.20	132.31	179.97			
01/14/03	232.68	131.45	118.54	155.90			
01/15/03	200.04	178.39	143.58	209.42			
01/16/03	171.11	153.13	122.61	181.02			
01/17/03	197.96	183.26	140.93	214.91			
01/18/03	181.78	161.60	109.30	158.86			
01/19/03	109.77	421.75	129.97	203.18			
01/20/03	172.85	499.86	139.79	213.50			
01/21/03	184.45	499.86	136.15	205.41			
01/22/03	161.74	499.86	120.23	181.85			
01/23/03	188.02	287.35	145.18	208.18			
01/24/03	127.97	451.81	163.91	279.23			
01/25/03	142.35	499.86	159.83	244.40			
01/26/03	177.38	499.86	175.22	277.14			
01/27/03	223.03	499.86	168.03	252.60			
01/28/03	216.79	499.86	161.54	237.79			
01/29/03	217.94	499.86	170.05	259.44			
01/30/03	204.90	498.13	162.68	236.74			
01/31/03	210.48	499.86	164.48	250.40			
02/01/03	220.72	499.86	174.36	274.56			
02/02/03	194.46	499.86	157.72	229.34			
02/03/03	206.26	499.86	159.99	231.45			
02/04/03	205.28	499.86	155.94	226.10			
02/05/03	197.23	499.86	155.59	213.93			
02/06/03	232.15	499.86	145.51	220.28			
02/07/03	190.83	499.86	166.26	258.73			
02/08/03	124.15	499.86	161.61	248.89			
02/09/03	142.52	499.86	172.77	283.43			
02/10/03	233.18	499.86	175.57	280.12			
02/11/03	211.91	499.86	189.36	347.92			
02/12/03	280.02	499.86	199.49	387.53			
02/13/03	217.93	499.86	150.01	231.94			
02/14/03	268.41	499.86	197.67	381.79			
02/15/03	227.29	499.86	167.93	294.89			
02/16/03	219.71	499.86	161.00	262.58			
02/17/03	208.67	499.86	132.64	186.50			
02/18/03	212.49	365.06	161.63	246.74			
02/19/03	202.61	186.10	157.32	228.36			
02/20/03	209.41	204.63	144.16	205.72			
02/21/03	221.99	226.86	163.90	259.85			
02/22/03	230.95	239.65	169.90	273.15			
02/23/03	202.67	188.94	152.43	218.58			
02/24/03	214.02	208.75	158.49	237.20			
02/25/03	119.88	189.56	185.52	224.40			
02/26/03	059.07	200.79	328.71	415.86			
02/27/03	147.99	264.54	160.16	499.86			
02/28/03	214.97	242.01	161.93	434.48			
03/01/03	092.51	103.91	069.78	186.88			
03/02/03	228.47	239.90	175.29	499.86			
03/03/03	241.04	271.01	172.10	499.86			
03/04/03	310.08	414.59	153.21	499.86			
03/05/03	210.46	210.64	161.03	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
03/06/03	241.35	298.09	178.78	499.86			
03/07/03	272.99	373.78	199.83	499.86			
03/08/03	198.11	212.81	150.46	499.86			
03/09/03	181.32	150.55	144.27	499.86			
03/10/03	178.38	152.58	142.42	499.86			
03/11/03	191.78	174.68	150.11	499.86			
03/12/03	214.66	225.46	166.65	499.86			
03/13/03	201.93	209.70	157.69	499.86			
03/14/03	206.91	209.86	160.55	387.46			
03/15/03	204.10	204.03	159.85	250.42			
03/16/03	194.28	189.51	152.17	230.89			
03/17/03	186.49	176.73	147.74	220.05			
03/18/03	188.89	187.95	148.75	229.81			
03/19/03	191.82	190.89	143.37	209.62			
03/20/03	195.13	195.38	142.92	206.84			
03/21/03	203.15	209.81	149.47	225.41			
03/22/03	219.72	242.83	155.77	258.02			
03/23/03	211.24	232.42	159.96	263.89			
03/24/03	211.39	220.39	160.29	254.04			
03/25/03	208.17	221.45	094.71	098.84			
03/26/03	133.23	116.05	084.72	089.54			
03/27/03	132.69	129.67	112.91	133.78			
03/28/03	240.23	295.07	112.30	160.39			
03/29/03	263.07	354.59	193.59	392.77			
03/30/03	256.89	359.18	184.84	390.75			
03/31/03	199.88	200.31	154.81	236.56			
04/01/03	196.36	187.51	151.94	224.95			
04/02/03	197.40	181.08	153.19	219.52			
04/03/03	179.87	151.36	143.78	191.27			
04/04/03	199.02	192.28	156.54	235.90			
04/05/03	165.79	122.91	135.12	163.79			
04/06/03	163.75	120.69	132.43	159.63			
04/07/03	188.99	173.21	149.16	216.16			
04/08/03	198.89	199.22	155.75	245.00			
04/09/03	207.70	219.74	156.36	242.93			
04/10/03	189.67	181.16	142.25	199.23			
04/11/03	177.65	173.38	135.27	190.74			
04/12/03	215.44	232.92	160.97	255.97			
04/13/03	168.86	145.56	131.70	167.01			
04/14/03	161.39	128.31	127.53	151.03			
04/15/03	177.58	158.83	138.07	182.84			
04/16/03	176.70	162.58	129.96	167.98			
04/17/03	157.62	122.85	131.14	165.11			
04/18/03	211.40	228.12	164.20	285.32			
04/19/03	184.50	180.76	147.79	227.42			
04/20/03	188.39	192.93	155.83	239.15			
04/21/03	175.70	167.69	148.93	213.90			
04/22/03	160.02	136.88	138.55	180.05			
04/23/03	172.09	151.90	146.65	198.90			
04/24/03	169.91	149.17	144.84	195.71			
04/25/03	200.30	216.12	159.90	248.02			
04/26/03	175.19	161.90	143.29	190.66			
04/27/03	171.32	146.98	140.86	176.63			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/28/03	151.75	113.19	128.85	140.46			
04/29/03	202.64	227.33	083.04	058.52			
04/30/03	142.95	094.35	125.56	125.81			
05/01/03	137.25	086.57	122.11	118.32			
05/02/03	141.93	089.22	124.18	123.21			
05/03/03	128.31	067.73	116.14	099.52			
05/04/03	142.49	089.61	124.42	124.29			
05/05/03	143.27	098.41	125.26	131.17			
05/06/03	129.96	104.54	115.20	129.40			
05/07/03	187.13	194.60	153.67	230.38			
05/08/03	210.62	234.60	167.43	271.46			
05/09/03	190.07	201.25	134.72	186.76			
05/10/03	163.78	149.70	128.57	158.53			
05/11/03	194.62	197.30	147.67	218.57			
05/12/03	165.03	137.53	142.12	179.35			
05/13/03	144.43	098.00	128.97	135.97			
05/14/03	157.67	130.08	110.69	102.88			
05/15/03	195.11	199.45	159.88	238.00			
05/16/03	169.57	156.69	137.02	169.24			
05/17/03	176.15	170.30	150.26	211.24			
05/18/03	200.17	218.02	150.26	217.38			
05/19/03	203.93	227.56	156.23	237.12			
05/20/03	193.48	206.27	158.14	241.63			
05/21/03	180.03	186.02	146.52	210.32			
05/22/03	203.56	223.17	132.45	188.31			
05/23/03	166.22	160.61	143.63	203.47			
05/24/03	171.94	176.44	146.04	213.49			
05/25/03	202.51	220.49	152.24	230.08			
05/26/03	202.31	228.71	161.08	261.94			
05/27/03	189.21	205.91	152.65	235.98			
05/28/03	163.06	143.79	131.94	166.07			
05/29/03	172.42	174.95	144.64	208.74			
05/30/03	178.75	187.39	148.71	219.92			
05/31/03	192.79	205.67	154.31	238.31			
06/01/03	169.69	177.00	140.42	201.60			
06/02/03	191.14	212.77	150.15	228.98			
06/03/03	183.93	197.20	141.55	201.85			
06/04/03	176.18	182.49	148.01	218.76			
06/05/03	181.95	190.20	143.72	208.83			
06/06/03	182.53	197.61	151.68	232.51			
06/07/03	198.55	225.17	161.13	267.10			
06/08/03	185.05	203.24	150.72	232.51			
06/09/03	192.18	219.93	146.65	235.77			
06/10/03	199.16	222.89	154.71	251.03			
06/11/03	189.58	207.19	156.10	248.98			
06/12/03	163.07	163.07	138.40	195.14			
06/13/03	171.61	159.99	141.73	196.02			
06/14/03	190.69	213.48	101.10	106.44			
06/15/03	194.40	214.16	130.02	185.68			
06/16/03	153.84	134.64	132.77	169.09			
06/17/03	162.23	149.05	137.79	186.19			
06/18/03	148.06	149.97	140.15	203.88			
06/19/03	181.26	188.29	149.06	228.90			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
06/20/03	189.92	218.37	141.85	213.41			
06/21/03	177.60	176.14	146.87	212.21			
06/22/03	126.49	092.75	116.69	120.70			
06/23/03	144.91	119.41	125.38	146.66			
06/24/03	168.50	169.98	130.17	169.89			
06/25/03	167.25	165.45	140.91	199.45			
06/26/03	196.09	230.58	158.94	267.19			
06/27/03	167.51	177.09	137.85	198.44			
06/28/03	178.49	189.99	140.74	207.99			
06/29/03	199.58	249.08	086.02	127.54			
06/30/03	232.97	317.41	000.00	000.05			
07/01/03	190.91	224.42	104.03	132.79			
07/02/03	162.97	150.18	131.13	166.32			
07/03/03	154.90	141.20	132.88	173.41			
07/04/03	192.42	226.18	153.01	248.99			
07/05/03	170.74	189.35	141.35	210.91			
07/06/03	182.88	207.64	146.51	225.56			
07/07/03	158.36	159.03	133.97	182.29			
07/08/03	173.14	177.24	145.10	212.56			
07/09/03	151.87	134.82	132.35	169.57			
07/10/03	149.92	137.28	134.92	182.28			
07/11/03	151.06	131.05	128.79	154.17			
07/12/03	168.15	173.38	134.30	181.54			
07/13/03	179.57	187.96	140.78	193.00			
07/14/03	173.29	179.47	144.60	210.71			
07/15/03	171.43	188.29	127.66	171.10			
07/16/03	189.32	209.43	125.27	156.67			
07/17/03	217.08	273.62	120.78	146.54			
07/18/03	207.68	252.89	145.92	223.59			
07/19/03	191.64	223.79	126.09	182.02			
07/20/03	194.34	229.51	159.72	265.62			
07/21/03	157.91	154.03	135.23	182.68			
07/22/03	168.34	178.41	137.25	192.44			
07/23/03	173.84	185.63	140.53	198.22			
07/24/03	167.10	170.34	141.97	201.48			
07/25/03	132.44	155.54	150.24	242.48			
07/26/03	178.25	197.46	140.23	202.87			
07/27/03	181.10	208.17	133.20	185.82			
07/28/03	210.92	268.84	131.32	198.04			
07/29/03	201.58	246.25	159.71	276.66			
07/30/03	162.86	174.27	134.45	187.38			
07/31/03	170.47	189.53	143.98	223.44			
08/01/03	202.36	249.41	154.26	257.29			
08/02/03	183.50	210.38	151.53	241.27			
08/03/03	187.67	215.93	143.02	219.10			
08/04/03	120.83	085.06	112.16	113.44			
08/05/03	153.82	145.60	132.21	178.44			
08/06/03	177.57	195.95	142.55	218.49			
08/07/03	101.66	063.25	148.33	239.66			
08/08/03	221.32	181.83	120.89	145.05			
08/09/03	191.15	126.58	122.93	095.90			
08/10/03	159.98	074.17	129.28	105.33			
08/11/03	145.69	055.60	120.01	077.84			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/12/03	145.61	051.93	115.93	071.63			
08/13/03	150.11	066.13	120.76	081.93			
08/14/03	178.47	116.08	139.10	134.09			
08/15/03	181.41	125.63	138.15	141.51			
08/16/03	195.94	146.86	144.54	158.72			
08/17/03	176.38	147.58	107.22	096.89			
08/18/03	204.47	166.93	157.25	195.98			
08/19/03	232.53	204.23	145.61	186.41			
08/20/03	208.00	174.54	162.53	210.51			
08/21/03	238.18	215.12	167.53	230.11			
08/22/03	210.78	181.13	167.88	231.93			
08/23/03	192.78	162.09	155.36	196.17			
08/24/03	210.50	184.75	164.07	220.39			
08/25/03	185.60	149.16	149.10	183.31			
08/26/03	204.49	166.78	080.46	095.12			
08/27/03	114.16	076.03	122.83	221.75			
08/28/03	156.89	158.62	109.96	219.85			
08/29/03	244.59	251.30	083.67	130.68			
08/30/03	237.86	229.56	172.34	261.36			
08/31/03	236.67	227.61	174.35	273.77			
09/01/03	234.66	224.52	173.49	270.02			
09/02/03	223.91	215.52	164.52	249.38			
09/03/03	238.77	240.60	174.40	277.71			
09/04/03	226.79	219.59	168.47	258.99			
09/05/03	257.00	303.93	184.75	329.66			
09/06/03	283.98	352.58	202.94	389.48			
09/07/03	258.40	319.19	189.92	356.80			
09/08/03	228.46	262.33	175.46	302.75			
09/09/03	110.09	203.01	043.34	056.55			
09/10/03	222.36	208.45	162.21	228.79			
09/11/03	214.76	217.63	165.48	250.85			
09/12/03	207.36	213.28	163.19	243.09			
09/13/03	173.79	148.62	142.23	175.62			
09/14/03	160.02	113.29	131.57	139.39			
09/15/03	176.39	136.61	140.72	164.07			
09/16/03	169.59	129.73	135.30	151.46			
09/17/03	178.51	150.10	137.86	168.02			
09/18/03	213.98	201.09	156.43	221.26			
09/19/03	206.15	190.29	156.55	221.61			
09/20/03	183.86	159.35	149.04	193.97			
09/21/03	184.19	147.14	146.42	182.57			
09/22/03	171.24	144.40	140.40	174.22			
09/23/03	151.50	113.69	122.12	137.82			
09/24/03	178.27	144.80	136.14	162.98			
09/25/03	180.58	143.98	147.43	180.86			
09/26/03	211.78	208.30	168.27	251.37			
09/27/03	186.81	152.73	152.41	198.61			
09/28/03	171.43	142.58	147.00	185.03			
09/29/03	175.04	138.95	147.19	184.03			
09/30/03	171.84	139.64	141.95	170.50			
10/01/03	195.82	168.31	151.54	192.21			
10/02/03	185.78	180.50	151.39	204.63			
10/03/03	218.48	228.64	169.22	258.25			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/04/03	216.49	236.54	168.89	266.37			
10/05/03	221.86	240.07	170.31	269.95			
10/06/03	232.55	249.71	173.64	280.89			
10/07/03	223.36	239.73	161.65	251.98			
10/08/03	248.67	293.22	184.98	332.44			
10/09/03	290.68	391.82	205.56	417.62			
10/10/03	283.09	380.46	204.31	403.55			
10/11/03	311.02	414.15	209.72	431.38			
10/12/03	263.88	351.21	200.33	402.51			
10/13/03	197.68	199.31	158.42	245.52			
10/14/03	157.34	109.65	132.39	154.84			
10/15/03	171.11	128.06	140.92	175.61			
10/16/03	138.84	097.49	122.53	135.58			
10/17/03	151.59	101.88	132.71	145.20			
10/18/03	137.87	074.60	124.11	119.52			
10/19/03	162.15	114.19	137.88	164.28			
10/20/03	160.43	130.41	141.02	179.03			
10/21/03	180.30	163.83	150.91	216.68			
10/22/03	156.13	143.43	141.37	190.98			
10/23/03	183.32	158.06	149.41	197.16			
10/24/03	218.47	222.62	164.59	249.35			
10/25/03	207.49	209.48	159.72	240.09			
10/26/03	175.32	151.45	144.58	183.03			
10/27/03	165.27	136.01	138.44	167.15			
10/28/03	181.56	148.95	145.52	183.97			
10/29/03	174.42	133.79	141.34	169.63			
10/30/03	177.95	152.72	145.41	187.06			
10/31/03	161.14	123.43	136.52	157.22			
11/01/03	169.08	134.01	135.44	155.85			
11/02/03	169.61	148.58	141.35	180.60			
11/03/03	213.93	226.57	167.72	265.46			
11/04/03	176.43	169.39	148.14	204.86			
11/05/03	197.21	190.54	158.44	230.89			
11/06/03	190.52	187.10	156.30	227.49			
11/07/03	184.54	173.15	149.82	199.78			
11/08/03	153.22	109.85	126.17	128.49			
11/09/03	148.29	108.83	126.65	129.98			
11/10/03	153.47	130.62	130.78	152.30			
11/11/03	183.26	171.72	144.41	193.65			
11/12/03	170.28	157.33	147.29	202.70			
11/13/03	158.35	141.36	141.78	184.04			
11/14/03	211.21	219.87	170.90	277.84			
11/15/03	191.63	189.80	154.12	224.78			
11/16/03	186.41	186.66	150.33	213.77			
11/17/03	159.35	142.71	135.98	170.34			
11/18/03	177.23	167.57	144.92	198.44			
11/19/03	199.41	208.23	158.02	240.62			
11/20/03	224.56	260.59	174.32	299.35			
11/21/03	222.93	291.52	072.01	056.51			
11/22/03	179.02	248.98	029.87	000.00			
11/23/03	085.62	119.08	014.29	000.00			
11/24/03	121.08	146.07	088.14	160.10			
11/25/03	162.48	195.62	108.74	201.78			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/26/03	226.92	292.95	177.98	330.00			
11/27/03	309.87	472.08	225.23	499.86			
11/28/03	243.27	350.69	180.75	359.35			
11/29/03	152.28	291.98	121.97	328.96			
11/30/03	205.66	225.99	159.37	263.21			
12/01/03	116.16	058.40	109.98	096.19			
12/02/03	092.81	030.35	094.10	063.89			
12/03/03	118.69	053.93	110.85	102.50			
12/04/03	187.12	192.31	139.11	206.87			
12/05/03	188.23	187.24	136.56	198.48			
12/06/03	187.54	186.90	133.91	199.13			
12/07/03	202.31	236.85	121.51	271.77			
12/08/03	198.65	219.00	144.12	255.89			
12/09/03	197.73	222.87	140.32	257.13			
12/10/03	197.33	212.94	130.18	220.29			
12/11/03	182.08	188.23	130.57	210.26			
12/12/03	145.18	202.28	105.43	228.02			
12/13/03	149.81	139.22	118.70	175.00			
12/14/03	096.15	142.68	093.27	173.68			
12/15/03	169.21	172.76	119.68	200.52			
12/16/03	162.15	168.94	113.43	197.90			
12/17/03	128.87	236.11	093.56	289.99			
12/18/03	140.61	285.69	095.81	330.91			
12/19/03	219.10	287.06	137.52	305.85			
12/20/03	184.62	285.29	123.55	327.40			
12/21/03	171.90	291.67	113.14	335.63			
12/22/03	197.35	264.73	133.40	304.19			
12/23/03	216.67	289.28	145.85	332.10			
12/24/03	233.15	404.93	137.30	419.49			
12/25/03	280.29	458.49	175.27	459.51			
12/26/03	279.16	453.49	152.68	453.83			
12/27/03	274.43	441.15	166.94	441.76			
12/28/03	259.98	446.23	161.17	439.49			
12/29/03	133.80	439.43	083.53	451.86			
12/30/03	202.44	404.63	110.09	499.86			
12/31/03	196.45	441.96	110.84	499.86			
01/01/04	248.08	434.47	137.69	499.86			
01/02/04	280.59	394.42	150.86	499.86			
01/03/04	290.73	417.59	160.30	499.86			
01/04/04	285.63	406.41	155.95	499.86			
01/05/04	289.11	409.00	156.15	499.86			
01/06/04	183.30	395.70	113.00	499.86			
01/07/04	164.53	414.19	113.23	499.86			
01/08/04	298.33	450.62	165.82	499.86			
01/09/04	273.02	399.27	141.07	499.86			
01/10/04	301.66	457.29	162.27	499.86			
01/11/04	302.05	460.29	162.46	499.86			
01/12/04	307.13	474.61	167.81	499.86			
01/13/04	275.75	407.15	142.20	499.86			
01/14/04	296.12	443.48	152.59	499.86			
01/15/04	299.39	453.69	162.71	499.86			
01/16/04	280.01	410.61	148.42	499.86			
01/17/04	288.11	430.32	155.01	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/18/04	262.94	378.74	136.54	499.86			
01/19/04	291.41	451.88	157.73	499.86			
01/20/04	262.75	383.61	133.82	499.86			
01/21/04	246.20	347.42	121.45	499.86			
01/22/04	298.43	465.09	160.69	499.86			
01/23/04	270.66	398.79	134.96	499.86			
01/24/04	280.16	421.33	142.36	499.86			
01/25/04	212.04	257.95	098.23	499.86			
01/26/04	203.82	240.69	093.69	499.86			
01/27/04	255.68	373.48	129.53	499.86			
01/28/04	279.85	425.21	141.44	468.33			
01/29/04	321.72	482.99	166.52	275.57			
01/30/04	267.35	407.84	138.95	053.26			
01/31/04	274.69	423.19	144.21	000.00			
02/01/04	280.07	425.53	144.92	000.00			
02/02/04	264.78	395.87	135.45	000.00			
02/03/04	261.82	392.92	133.00	000.00			
02/04/04	254.66	368.98	119.59	000.00			
02/05/04	240.85	329.99	127.30	000.00			
02/06/04	257.55	372.91	134.15	000.00			
02/07/04	262.69	346.20	137.28	042.06			
02/08/04	288.54	248.13	159.06	270.64			
02/09/04	250.81	247.91	130.26	219.35			
02/10/04	246.77	247.89	124.62	206.41			
02/11/04	196.72	247.88	091.20	128.86			
02/12/04	227.57	247.92	118.27	165.37			
02/13/04	148.61	247.55	126.29	289.01			
02/14/04	279.39	247.79	134.60	451.81			
02/15/04	162.95	247.80	249.24	348.26			
02/16/04	297.28	248.01	166.62	278.97			
02/17/04	290.86	248.03	162.39	271.08			
02/18/04	298.75	247.98	166.90	279.73			
02/19/04	287.30	248.20	158.13	263.99			
02/20/04	291.24	191.13	162.40	268.20			
02/21/04	251.68	159.89	131.81	260.61			
02/22/04	271.14	427.06	146.90	428.31			
02/23/04	235.56	361.73	119.77	364.54			
02/24/04	251.98	396.81	133.56	399.69			
02/25/04	266.58	420.40	144.83	421.77			
02/26/04	252.03	395.00	134.24	397.56			
02/27/04	246.55	377.26	124.51	379.48			
02/28/04	236.52	351.11	103.88	326.16			
02/29/04	240.50	386.37	125.52	389.55			
03/01/04	239.96	373.39	124.97	375.03			
03/02/04	255.89	420.61	135.84	429.74			
03/03/04	263.43	463.08	103.94	370.83			
03/04/04	253.55	433.05	135.65	463.66			
03/05/04	252.04	431.87	134.46	463.68			
03/06/04	243.28	412.37	127.09	441.95			
03/07/04	239.43	405.98	124.38	434.52			
03/08/04	203.46	330.11	096.25	354.41			
03/09/04	232.83	386.71	119.88	417.07			
03/10/04	237.16	397.85	123.58	429.74			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
03/11/04	262.23	452.46	139.99	477.43			
03/12/04	212.98	351.02	102.05	370.42			
03/13/04	232.02	388.96	116.67	412.18			
03/14/04	233.99	396.08	118.38	419.49			
03/15/04	256.60	441.50	135.80	468.94			
03/16/04	222.90	356.35	099.92	355.55			
03/17/04	250.56	427.49	132.32	454.43			
03/18/04	239.78	404.54	123.24	429.72			
03/19/04	225.69	262.85	112.13	280.94			
03/20/04	237.64	188.87	118.06	195.04			
03/21/04	242.18	193.25	125.43	206.05			
03/22/04	238.84	191.80	122.76	204.36			
03/23/04	226.97	179.78	112.44	191.08			
03/24/04	244.27	196.32	127.82	210.22			
03/25/04	123.12	044.69	000.00	000.00			
03/26/04	101.41	016.90	012.90	018.82			
03/27/04	293.61	266.82	170.46	290.35			
03/28/04	272.25	243.77	150.58	258.55			
03/29/04	260.28	229.92	138.57	235.51			
03/30/04	251.30	217.01	136.13	232.23			
03/31/04	227.09	176.98	117.59	191.05			
04/01/04	184.37	112.18	088.06	123.95			
04/02/04	195.97	125.37	101.00	138.82			
04/03/04	192.17	121.63	090.89	127.15			
04/04/04	203.55	139.06	112.27	164.17			
04/05/04	289.54	272.31	160.56	277.62			
04/06/04	257.59	228.29	141.16	243.06			
04/07/04	285.93	265.50	160.86	275.69			
04/08/04	277.68	253.71	154.84	263.06			
04/09/04	256.25	225.92	137.30	234.24			
04/10/04	212.41	163.64	106.47	177.74			
04/11/04	221.11	174.22	114.99	190.68			
04/12/04	208.97	160.81	104.80	176.26			
04/13/04	187.66	124.22	089.23	138.22			
04/14/04	166.34	091.65	074.13	104.13			
04/15/04	195.82	127.79	101.55	143.93			
04/16/04	216.18	153.20	120.73	171.67			
04/17/04	208.22	143.56	108.80	154.81			
04/18/04	213.69	155.69	118.87	171.38			
04/19/04	208.52	154.20	115.63	169.80			
04/20/04	209.61	160.73	117.86	175.88			
04/21/04	208.87	158.78	117.76	174.72			
04/22/04	201.74	149.26	111.35	165.06			
04/23/04	225.35	186.73	126.80	204.12			
04/24/04	270.15	250.51	154.74	271.54			
04/25/04	242.71	214.02	131.76	225.60			
04/26/04	231.53	194.71	122.77	205.12			
04/27/04	208.51	152.31	108.00	164.69			
04/28/04	171.73	102.13	078.69	111.81			
04/29/04	208.97	147.57	112.64	161.89			
04/30/04	203.12	142.17	108.47	155.96			
05/01/04	200.57	141.31	099.89	145.74			
05/02/04	211.04	154.95	117.14	171.60			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/03/04	212.77	159.30	118.84	175.86			
05/04/04	208.72	154.91	116.04	170.42			
05/05/04	213.38	161.22	121.22	177.49			
05/06/04	212.17	158.21	120.82	177.00			
05/07/04	220.05	170.41	123.25	178.92			
05/08/04	237.40	210.17	123.59	211.06			
05/09/04	257.12	233.18	144.97	249.84			
05/10/04	246.23	219.72	133.92	233.37			
05/11/04	224.55	188.71	114.92	197.42			
05/12/04	197.93	139.50	099.15	150.78			
05/13/04	187.47	122.51	094.27	135.85			
05/14/04	188.99	125.94	092.07	133.46			
05/15/04	186.92	124.76	094.13	137.61			
05/16/04	197.22	139.84	103.49	153.77			
05/17/04	197.18	141.67	104.22	155.34			
05/18/04	207.93	154.01	113.30	168.86			
05/19/04	197.23	137.97	105.19	152.45			
05/20/04	183.25	119.37	090.61	132.27			
05/21/04	202.01	143.75	108.98	160.06			
05/22/04	205.43	139.18	112.30	166.23			
05/23/04	191.48	129.45	099.47	145.71			
05/24/04	200.77	141.16	109.72	161.03			
05/25/04	206.34	150.60	109.55	161.50			
05/26/04	191.43	110.24	112.31	168.88			
05/27/04	238.41	141.83	064.68	091.22			
05/28/04	215.75	116.93	118.67	133.98			
05/29/04	218.95	121.70	119.62	135.39			
05/30/04	198.96	103.75	106.86	116.68			
05/31/04	202.64	109.75	110.87	122.92			
06/01/04	180.40	088.55	092.80	099.96			
06/02/04	186.15	091.42	100.78	104.18			
06/03/04	186.14	096.45	098.10	107.67			
06/04/04	206.66	120.64	117.61	133.55			
06/05/04	190.20	100.27	104.71	112.71			
06/06/04	183.82	093.06	099.41	104.94			
06/07/04	191.50	103.69	108.22	118.02			
06/08/04	198.43	114.33	111.56	128.37			
06/09/04	198.43	114.33	012.42	014.49			
06/10/04	214.31	129.52	127.10	147.93			
06/11/04	216.39	133.44	128.71	149.69			
06/12/04	207.62	126.96	116.50	134.99			
06/13/04	214.55	135.30	127.61	153.71			
06/14/04	202.17	120.08	120.69	139.13			
06/15/04	207.81	129.94	120.17	140.06			
06/16/04	207.81	129.94	120.96	158.43			
06/17/04	187.75	108.40	111.05	133.82			
06/18/04	244.66	186.48	144.46	198.08			
06/19/04	280.77	235.72	174.34	251.22			
06/20/04	257.39	211.03	151.09	219.48			
06/21/04	241.82	190.03	139.91	203.36			
06/22/04	178.63	098.82	104.96	121.48			
06/23/04	201.13	129.32	118.57	139.81			
06/24/04	184.13	107.21	101.01	114.89			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
06/25/04	205.57	131.99	121.09	141.92			
06/26/04	196.67	120.41	109.31	127.45			
06/27/04	214.18	140.45	130.97	159.51			
06/28/04	194.08	117.86	114.95	139.33			
06/29/04	200.89	124.40	117.08	138.64			
06/30/04	160.80	077.85	078.75	086.75			
07/01/04	205.39	127.96	119.30	139.81			
07/02/04	207.07	127.98	121.40	138.99			
07/03/04	210.75	134.37	124.11	140.94			
07/04/04	211.70	138.55	131.39	152.79			
07/05/04	211.13	136.99	131.96	152.46			
07/06/04	207.55	135.09	129.94	150.66			
07/07/04	190.68	113.60	113.63	129.05			
07/08/04	197.40	125.68	115.15	136.98			
07/09/04	193.04	117.67	118.75	134.99			
07/10/04	183.85	109.93	107.02	120.62			
07/11/04	193.71	123.46	114.30	132.90			
07/12/04	202.47	135.96	125.80	146.78			
07/13/04	172.11	101.65	094.61	110.23			
07/14/04	203.24	135.91	128.09	146.29			
07/15/04	204.90	139.93	141.17	167.83			
07/16/04	176.79	104.89	106.43	124.53			
07/17/04	199.66	135.89	134.11	161.34			
07/18/04	197.62	134.02	127.59	148.42			
07/19/04	188.92	124.02	113.97	132.61			
07/20/04	196.72	135.24	128.92	147.26			
07/21/04	175.40	107.40	105.19	118.37			
07/22/04	197.12	137.07	119.17	139.99			
07/23/04	204.57	145.68	126.66	150.87			
07/24/04	204.62	145.67	135.30	162.12			
07/25/04	208.53	152.88	141.72	171.20			
07/26/04	208.40	157.53	129.71	173.00			
07/27/04	258.32	225.64	152.45	219.85			
07/28/04	257.27	225.27	149.11	215.57			
07/29/04	259.47	230.25	154.54	227.56			
07/30/04	263.11	237.79	169.19	252.82			
07/31/04	237.40	206.86	132.85	199.70			
08/01/04	203.71	150.71	132.26	170.79			
08/02/04	195.24	145.54	122.27	158.93			
08/03/04	184.61	133.47	113.99	146.42			
08/04/04	196.55	148.87	119.64	154.55			
08/05/04	202.68	159.49	131.31	171.92			
08/06/04	195.10	148.67	118.54	154.59			
08/07/04	213.46	174.06	134.95	185.07			
08/08/04	259.62	238.31	165.55	246.84			
08/09/04	251.58	220.85	169.24	245.47			
08/10/04	213.15	163.73	128.90	171.36			
08/11/04	212.51	164.13	126.11	171.05			
08/12/04	229.15	194.96	129.36	195.02			
08/13/04	244.22	215.36	153.19	235.81			
08/14/04	245.90	220.95	149.92	230.85			
08/15/04	259.05	242.29	162.21	254.63			
08/16/04	233.24	207.60	147.93	229.49			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/17/04	244.10	219.69	141.28	219.35			
08/18/04	223.28	189.87	128.31	197.92			
08/19/04	242.36	214.40	149.83	229.19			
08/20/04	124.22	051.45	031.55	047.42			
08/21/04	235.04	204.74	134.30	202.53			
08/22/04	268.95	250.10	176.30	265.76			
08/23/04	189.05	140.23	095.64	139.24			
08/24/04	242.25	214.07	134.55	198.70			
08/25/04	209.45	162.37	115.22	158.63			
08/26/04	182.52	120.36	112.65	137.70			
08/27/04	203.93	150.18	128.09	159.82			
08/28/04	189.87	131.73	117.38	146.10			
08/29/04	200.98	147.66	127.54	160.13			
08/30/04	198.05	145.77	128.43	163.80			
08/31/04	206.77	158.28	140.00	177.64			
09/01/04	178.42	122.34	109.16	137.95			
09/02/04	190.96	137.70	124.78	156.23			
09/03/04	179.69	122.60	112.49	139.22			
09/04/04	189.66	135.50	121.68	151.73			
09/05/04	201.07	150.97	132.75	167.19			
09/06/04	191.51	136.96	125.77	153.49			
09/07/04	193.01	140.59	122.80	149.84			
09/08/04	198.41	147.99	127.79	159.09			
09/09/04	197.26	144.28	127.13	155.28			
09/10/04	178.57	121.16	105.13	128.80			
09/11/04	200.93	153.97	134.28	169.53			
09/12/04	185.62	133.35	120.18	149.96			
09/13/04	175.10	119.57	106.05	130.90			
09/14/04	184.99	131.92	120.29	148.64			
09/15/04	183.25	128.11	118.13	147.01			
09/16/04	188.70	136.94	124.57	155.67			
09/17/04	196.89	147.14	127.25	158.40			
09/18/04	195.35	144.73	122.15	153.18			
09/19/04	196.45	146.80	130.11	165.22			
09/20/04	195.44	145.21	126.64	159.53			
09/21/04	195.34	145.83	126.74	161.32			
09/22/04	196.80	145.48	128.65	161.34			
09/23/04	189.75	136.52	116.10	145.12			
09/24/04	194.43	144.54	128.76	162.25			
09/25/04	190.36	141.26	122.90	153.26			
09/26/04	183.63	134.28	114.17	142.01			
09/27/04	187.17	141.98	103.02	129.74			
09/28/04	190.28	147.87	125.09	162.49			
09/29/04	191.18	147.10	121.90	156.08			
09/30/04	175.10	126.16	107.99	138.63			
10/01/04	239.12	219.10	140.00	199.06			
10/02/04	249.66	229.25	163.07	241.30			
10/03/04	251.77	230.07	151.69	227.77			
10/04/04	195.47	142.33	120.99	158.57			
10/05/04	187.70	128.20	107.36	132.94			
10/06/04	214.78	165.16	140.80	183.09			
10/07/04	257.95	242.37	153.09	234.87			
10/08/04	253.49	241.02	151.77	238.24			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/09/04	256.17	247.12	152.03	244.35			
10/10/04	234.14	218.18	141.79	229.22			
10/11/04	195.55	148.36	122.48	168.50			
10/12/04	193.74	149.63	120.69	167.85			
10/13/04	190.39	145.33	110.84	152.26			
10/14/04	193.13	150.86	114.96	160.97			
10/15/04	186.24	141.68	102.75	144.99			
10/16/04	191.34	148.88	115.86	162.88			
10/17/04	183.51	138.57	107.49	152.46			
10/18/04	169.92	120.14	096.19	133.37			
10/19/04	190.69	149.80	119.50	166.13			
10/20/04	171.31	123.44	099.96	138.26			
10/21/04	182.07	137.26	109.79	153.48			
10/22/04	190.37	148.91	119.15	166.22			
10/23/04	193.59	154.86	121.36	171.71			
10/24/04	189.65	151.54	110.91	156.53			
10/25/04	198.79	165.08	118.97	169.23			
10/26/04	193.36	157.35	118.39	168.51			
10/27/04	190.23	152.15	116.39	166.48			
10/28/04	189.10	150.80	117.21	165.36			
10/29/04	193.41	158.63	121.08	173.06			
10/30/04	196.16	163.55	124.40	178.32			
10/31/04	188.54	154.50	114.81	167.31			
11/01/04	196.03	165.38	122.27	178.50			
11/02/04	194.34	163.82	119.54	176.27			
11/03/04	190.30	159.45	115.06	171.63			
11/04/04	190.58	158.09	115.59	170.82			
11/05/04	240.55	241.61	152.09	256.53			
11/06/04	254.53	263.68	137.15	239.73			
11/07/04	280.69	301.79	160.14	280.12			
11/08/04	260.81	273.69	165.64	290.75			
11/09/04	228.47	225.58	137.21	241.07			
11/10/04	187.49	147.81	111.72	163.38			
11/11/04	193.41	159.25	118.29	174.77			
11/12/04	198.05	170.91	122.43	186.63			
11/13/04	197.13	169.48	120.13	184.79			
11/14/04	213.33	203.86	126.94	218.63			
11/15/04	242.47	254.03	147.27	271.19			
11/16/04	261.03	283.63	163.07	301.96			
11/17/04	263.41	288.84	163.29	305.64			
11/18/04	252.78	271.64	154.30	289.23			
11/19/04	246.89	264.79	148.51	281.10			
11/20/04	259.06	282.52	158.77	300.80			
11/21/04	257.73	279.40	156.77	297.46			
11/22/04	257.57	280.21	155.34	297.75			
11/23/04	236.52	250.52	137.77	266.06			
11/24/04	236.40	248.59	137.02	265.21			
11/25/04	215.00	209.96	122.04	225.44			
11/26/04	185.82	150.61	103.51	165.49			
11/27/04	177.02	140.14	093.38	150.50			
11/28/04	187.51	158.70	101.61	165.97			
11/29/04	183.13	151.86	097.77	160.27			
11/30/04	188.07	160.69	102.84	171.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/01/04	164.96	170.10	104.39	251.78			
12/02/04	154.07	280.89	150.81	341.34			
12/03/04	174.98	228.23	125.26	244.83			
12/04/04	182.86	273.64	136.33	290.11			
12/05/04	252.44	265.58	143.53	281.59			
12/06/04	252.28	268.03	145.14	283.62			
12/07/04	218.46	211.17	115.02	223.26			
12/08/04	255.20	269.72	147.71	284.29			
12/09/04	246.25	254.93	140.52	268.17			
12/10/04	243.72	249.39	137.28	261.93			
12/11/04	240.12	245.62	134.21	258.34			
12/12/04	215.86	200.03	115.90	212.07			
12/13/04	189.11	147.30	099.45	159.49			
12/14/04	187.05	148.79	098.39	160.62			
12/15/04	154.88	148.78	096.28	160.25			
12/16/04	166.33	211.48	123.19	223.63			
12/17/04	250.17	269.50	144.26	283.94			
12/18/04	202.94	273.41	149.91	287.46			
12/19/04	188.93	271.25	150.45	284.90			
12/20/04	220.87	287.18	160.30	301.52			
12/21/04	218.78	218.79	110.11	208.67			
12/22/04	256.25	279.27	155.07	295.83			
12/23/04	092.05	228.87	126.67	272.13			
12/24/04	000.02	277.06	138.73	499.86			
12/25/04	071.82	410.06	414.47	426.07			
12/26/04	109.92	319.66	312.02	365.48			
12/27/04	195.98	296.84	157.13	267.62			
12/28/04	293.06	267.38	142.71	279.29			
12/29/04	304.27	291.13	155.50	304.60			
12/30/04	308.22	300.62	160.33	314.89			
12/31/04	305.67	294.79	157.54	308.25			
01/01/05	297.28	277.11	147.58	289.00			
01/02/05	298.75	279.72	149.27	291.24			
01/03/05	284.89	250.45	132.44	259.69			
01/04/05	275.04	229.14	121.97	238.73			
01/05/05	281.83	243.74	131.24	254.19			
01/06/05	283.29	251.11	132.01	261.23			
01/07/05	286.79	258.65	136.01	269.61			
01/08/05	266.32	212.15	111.81	221.44			
01/09/05	254.79	184.79	101.88	193.63			
01/10/05	259.89	195.97	105.00	203.82			
01/11/05	256.94	186.21	102.41	198.72			
01/12/05	272.43	223.52	125.69	241.49			
01/13/05	258.65	195.94	105.11	198.73			
01/14/05	205.68	206.83	112.37	221.67			
01/15/05	229.96	202.12	109.00	215.03			
01/16/05	241.79	222.55	124.16	238.93			
01/17/05	132.32	156.66	099.50	209.71			
01/18/05	145.70	164.86	104.95	182.01			
01/19/05	158.94	159.56	102.38	188.96			
01/20/05	227.30	263.95	147.36	285.55			
01/21/05	233.56	228.25	123.81	243.98			
01/22/05	236.62	231.47	124.79	247.49			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/23/05	230.09	217.94	122.90	235.51			
01/24/05	192.09	148.06	093.24	162.86			
01/25/05	202.75	166.96	103.58	182.21			
01/26/05	202.76	168.29	104.33	185.19			
01/27/05	233.64	233.64	123.72	250.87			
01/28/05	252.49	265.95	140.08	284.97			
01/29/05	249.23	258.81	135.97	276.27			
01/30/05	246.66	255.76	132.30	272.67			
01/31/05	240.99	247.80	127.54	264.31			
02/01/05	191.76	160.00	081.93	170.47			
02/02/05	249.79	265.90	133.88	279.24			
02/03/05	251.86	268.11	132.95	275.74			
02/04/05	182.53	230.09	114.25	257.01			
02/05/05	253.03	238.36	118.31	245.71			
02/06/05	241.33	214.61	106.35	221.34			
02/07/05	233.58	194.85	104.55	202.90			
02/08/05	248.80	228.45	108.39	221.97			
02/09/05	255.77	240.92	123.48	255.66			
02/10/05	261.49	251.63	127.51	264.24			
02/11/05	248.17	225.41	115.99	237.30			
02/12/05	255.53	240.23	123.23	253.24			
02/13/05	243.20	215.85	111.01	227.77			
02/14/05	232.61	195.34	099.82	205.63			
02/15/05	230.16	187.71	097.44	198.45			
02/16/05	228.88	186.87	095.06	197.38			
02/17/05	264.96	261.94	132.27	276.60			
02/18/05	253.88	239.50	119.66	250.91			
02/19/05	237.32	207.43	102.38	215.21			
02/20/05	226.68	183.40	092.77	191.63			
02/21/05	237.45	202.09	105.28	211.96			
02/22/05	245.44	220.61	112.65	231.50			
02/23/05	246.30	222.05	114.09	234.04			
02/24/05	244.92	222.56	113.79	235.32			
02/25/05	260.05	258.54	134.08	274.20			
02/26/05	250.84	236.92	122.29	251.65			
02/27/05	257.16	250.51	130.94	266.71			
02/28/05	251.28	239.15	124.78	253.82			
03/01/05	257.16	250.17	131.40	267.93			
03/02/05	236.16	207.22	110.16	222.90			
03/03/05	196.02	126.81	067.38	136.64			
03/04/05	254.12	247.14	123.91	252.43			
03/05/05	237.32	208.37	106.87	216.67			
03/06/05	226.27	186.32	097.17	195.63			
03/07/05	243.24	221.01	112.70	232.62			
03/08/05	231.79	198.26	100.98	209.14			
03/09/05	195.97	122.10	062.35	129.43			
03/10/05	237.69	210.57	106.58	220.06			
03/11/05	271.83	277.41	138.32	281.46			
03/12/05	236.95	207.92	105.45	214.14			
03/13/05	253.47	239.13	122.60	247.23			
03/14/05	234.25	200.27	104.33	207.90			
03/15/05	213.13	160.00	083.60	166.38			
03/16/05	257.86	250.23	129.74	261.18			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
03/17/05	241.78	219.41	112.16	244.33			
03/18/05	227.70	190.82	098.03	199.60			
03/19/05	239.76	212.61	110.24	223.12			
03/20/05	246.34	224.09	116.95	235.70			
03/21/05	232.54	197.53	103.13	209.04			
03/22/05	233.59	201.68	088.59	180.25			
03/23/05	224.58	183.54	095.02	192.15			
03/24/05	250.75	238.95	109.38	224.58			
03/25/05	239.99	218.64	112.11	230.29			
03/26/05	244.43	229.56	113.21	230.22			
03/27/05	245.81	240.40	123.00	249.05			
03/28/05	252.89	251.79	119.02	242.64			
03/29/05	232.33	210.10	099.92	202.43			
03/30/05	247.91	244.71	127.47	256.81			
04/01/05	245.58	242.23	127.05	261.61			
04/02/05	262.05	283.02	142.19	294.01			
04/03/05	256.33	267.11	134.67	276.76			
04/04/05	256.77	270.85	132.74	271.23			
04/05/05	220.63	189.94	091.65	185.29			
04/06/05	243.68	247.35	109.43	224.03			
04/07/05	254.21	279.50	136.24	283.64			
04/08/05	229.15	227.00	104.11	216.61			
04/09/05	261.07	297.66	093.86	202.74			
04/10/05	245.45	276.45	141.66	298.66			
04/11/05	219.35	212.40	103.20	218.88			
04/12/05	206.71	178.74	088.07	184.77			
04/13/05	227.06	232.06	112.93	235.44			
04/14/05	227.84	233.98	118.24	244.98			
04/15/05	231.10	240.49	107.41	225.16			
04/16/05	220.51	215.08	103.26	217.99			
04/17/05	213.56	197.98	096.08	200.41			
04/18/05	231.91	240.45	119.84	247.54			
04/19/05	238.42	250.12	124.44	255.95			
04/20/05	238.78	244.79	123.64	253.33			
04/21/05	253.01	273.23	140.43	287.08			
04/22/05	248.86	260.70	135.75	271.02			
04/23/05	253.44	269.31	128.03	260.13			
04/24/05	249.36	257.22	134.81	273.83			
04/25/05	262.57	287.06	147.53	299.23			
04/26/05	267.19	293.73	152.54	309.07			
04/27/05	262.42	284.16	144.13	291.59			
04/28/05	271.95	304.67	155.37	312.48			
04/29/05	278.14	313.53	162.25	324.83			
04/30/05	269.53	291.30	148.88	299.67			
05/01/05	276.92	310.32	163.35	332.69			
05/02/05	269.85	291.58	153.66	310.47			
05/03/05	268.63	290.68	152.24	309.70			
05/04/05	256.75	265.51	138.79	282.70			
05/05/05	249.84	244.65	128.65	260.70			
05/06/05	267.13	279.34	147.57	296.44			
05/07/05	232.62	204.54	108.36	217.64			
05/08/05	265.47	270.42	144.89	288.22			
05/09/05	246.60	232.16	123.18	246.13			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/10/05	253.19	243.28	129.57	258.33			
05/11/05	273.79	285.08	153.83	303.36			
05/12/05	261.91	261.64	138.64	277.15			
05/13/05	260.49	259.01	136.50	273.92			
05/14/05	254.37	245.86	129.81	260.68			
05/15/05	246.28	230.65	125.49	245.08			
05/16/05	272.27	285.72	149.22	302.91			
05/17/05	274.17	287.29	147.43	296.96			
05/18/05	275.16	288.62	147.39	297.39			
05/19/05	253.01	241.38	125.25	250.40			
05/20/05	276.71	289.40	143.95	289.09			
05/21/05	266.26	265.22	140.12	281.19			
05/22/05	261.92	256.19	136.42	272.80			
05/23/05	259.76	251.06	133.12	268.69			
05/24/05	264.50	257.73	136.20	275.24			
05/25/05	271.98	275.44	142.84	289.59			
05/26/05	277.11	285.39	144.26	293.20			
05/27/05	277.60	285.86	145.03	296.76			
05/28/05	270.04	269.23	136.39	280.09			
05/29/05	278.07	284.55	144.60	296.56			
05/30/05	271.02	269.87	136.88	281.40			
05/31/05	259.99	246.11	124.15	256.99			
06/01/05	267.34	257.99	122.06	252.54			
06/02/05	273.79	267.43	136.19	284.44			
06/03/05	262.21	241.09	113.33	235.29			
06/04/05	263.30	244.66	126.58	261.82			
06/05/05	209.26	140.69	073.08	151.92			
06/06/05	283.13	282.83	147.31	304.96			
06/07/05	276.90	273.94	138.98	289.95			
06/08/05	279.08	270.53	197.60	288.12			
06/09/05	276.36	254.86	129.59	272.92			
06/10/05	265.46	251.60	128.93	270.83			
06/11/05	269.62	257.95	127.47	267.73			
06/12/05	283.51	284.68	145.89	305.13			
06/13/05	279.70	277.23	140.24	290.77			
06/14/05	285.37	289.07	143.47	298.52			
06/15/05	282.59	281.92	140.50	292.01			
06/16/05	283.25	282.01	138.36	288.94			
06/17/05	274.25	265.07	138.18	289.39			
06/18/05	288.78	291.10	147.65	305.56			
06/19/05	279.94	271.64	136.95	281.94			
06/20/05	288.09	285.68	144.13	297.08			
06/21/05	282.06	274.30	138.69	287.05			
06/22/05	277.88	263.70	131.73	271.19			
06/23/05	291.92	289.08	147.73	309.21			
06/24/05	307.06	319.50	159.03	335.44			
06/25/05	303.95	312.31	152.80	322.36			
06/26/05	300.63	304.49	152.21	323.12			
06/27/05	302.87	309.29	153.60	329.02			
06/28/05	273.82	255.14	125.60	272.25			
06/29/05	297.40	296.90	146.27	314.40			
06/30/05	294.69	292.51	145.71	312.59			
07/01/05	283.89	271.33	136.28	291.57			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/02/05	274.89	254.62	128.22	269.38			
07/03/05	269.09	248.49	124.06	257.99			
07/04/05	277.77	260.45	134.81	272.58			
07/05/05	241.63	195.55	101.44	209.06			
07/06/05	281.76	264.66	136.56	281.00			
07/07/05	252.60	213.82	105.11	217.42			
07/08/05	279.90	258.71	133.30	276.10			
07/09/05	255.93	219.04	111.53	233.80			
07/10/05	270.18	242.57	122.60	260.39			
07/11/05	233.88	200.20	112.55	241.83			
07/12/05	282.93	266.41	134.11	289.14			
07/13/05	283.06	267.48	132.77	285.01			
07/14/05	260.15	227.34	109.92	236.37			
07/15/05	280.03	262.79	127.91	276.15			
07/16/05	254.35	217.46	106.15	230.44			
07/17/05	263.35	235.12	120.27	263.57			
07/18/05	263.28	233.68	109.53	242.05			
07/19/05	280.79	264.17	125.92	270.54			
07/20/05	262.08	214.23	116.19	241.07			
07/21/05	267.47	236.55	125.01	258.66			
07/22/05	267.70	236.38	124.28	258.45			
07/23/05	272.35	244.46	128.31	265.69			
07/24/05	240.94	190.33	131.87	272.41			
07/25/05	275.94	250.75	127.87	263.41			
07/26/05	257.61	218.60	109.56	226.70			
07/27/05	278.54	261.38	127.09	260.24			
07/28/05	278.65	253.93	132.09	272.24			
07/29/05	272.98	244.04	126.74	260.28			
07/30/05	280.23	256.24	129.98	266.60			
07/31/05	264.06	225.38	115.83	238.07			
08/01/05	282.05	257.16	131.47	272.27			
08/02/05	280.58	253.35	130.36	269.70			
08/03/05	234.15	172.11	102.26	212.40			
08/04/05	263.01	218.13	131.27	270.19			
08/05/05	269.04	225.38	117.72	238.62			
08/06/05	250.36	209.17	113.06	236.26			
08/07/05	298.44	275.94	123.37	259.36			
08/08/05	249.22	193.93	102.09	211.70			
08/09/05	246.92	189.98	096.87	200.08			
08/10/05	199.07	108.34	059.65	118.80			
08/11/05	278.47	234.41	124.99	253.60			
08/12/05	274.56	226.93	121.77	245.06			
08/13/05	289.73	252.58	131.80	265.00			
08/14/05	266.51	214.51	114.21	226.71			
08/15/05	274.95	225.47	123.35	241.51			
08/16/05	271.92	220.64	123.04	238.70			
08/17/05	254.00	192.48	101.94	197.45			
08/18/05	277.03	227.28	129.73	242.20			
08/19/05	230.29	162.88	103.18	192.72			
08/20/05	233.37	167.64	101.36	180.37			
08/21/05	245.57	172.84	106.01	193.20			
08/22/05	261.06	198.10	119.34	218.27			
08/23/05	260.02	197.67	118.40	215.59			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/24/05	249.86	183.21	108.88	194.34			
08/25/05	246.11	175.77	108.13	187.43			
08/26/05	275.45	221.87	132.10	239.52			
08/27/05	257.45	191.12	109.56	198.63			
08/28/05	253.39	185.25	112.55	203.44			
08/29/05	276.89	224.44	134.39	245.91			
08/30/05	270.39	216.73	129.82	237.23			
08/31/05	280.99	233.35	134.78	245.86			
09/01/05	273.93	222.29	129.31	234.66			
09/02/05	283.28	240.10	140.50	256.45			
09/03/05	284.10	241.57	136.32	249.15			
09/04/05	275.77	228.06	136.12	250.16			
09/05/05	276.45	228.91	137.33	252.29			
09/06/05	232.94	159.81	095.37	176.21			
09/07/05	282.40	236.83	138.32	252.53			
09/08/05	235.99	163.07	096.04	176.09			
09/09/05	237.22	163.26	097.74	174.94			
09/10/05	259.82	198.85	117.44	213.60			
09/11/05	238.79	167.44	101.00	183.67			
09/12/05	243.80	173.90	105.44	187.78			
09/13/05	231.27	152.19	096.19	164.01			
09/14/05	244.65	174.31	105.48	187.68			
09/15/05	232.14	157.17	092.22	170.21			
09/16/05	238.78	168.32	102.70	179.02			
09/17/05	219.42	137.34	082.06	138.77			
09/18/05	235.61	163.41	103.64	179.35			
09/19/05	217.95	133.29	083.48	146.18			
09/20/05	235.29	159.72	099.94	174.60			
09/21/05	253.42	163.20	102.30	177.84			
09/22/05	229.08	145.32	091.38	158.03			
09/23/05	243.78	171.52	109.98	186.59			
09/24/05	240.43	167.79	098.71	170.77			
09/25/05	235.01	153.06	097.14	168.78			
09/26/05	237.81	143.76	088.18	159.01			
09/27/05	238.53	155.64	098.87	172.05			
09/28/05	232.92	156.37	099.84	172.57			
09/29/05	240.20	166.50	105.11	184.30			
09/30/05	232.60	146.47	094.96	165.30			
10/01/05	259.26	197.97	125.67	215.57			
10/02/05	249.39	183.44	111.53	193.49			
10/03/05	238.98	170.20	101.47	181.22			
10/04/05	237.33	165.06	101.47	178.59			
10/05/05	238.09	169.14	104.53	183.71			
10/06/05	230.93	157.86	096.60	172.02			
10/07/05	229.42	159.82	097.80	175.28			
10/08/05	253.74	192.05	115.99	204.45			
10/09/05	236.75	165.74	104.21	176.71			
10/10/05	255.79	195.81	119.30	204.61			
10/11/05	235.90	169.87	103.38	181.28			
10/12/05	223.24	144.81	093.12	159.98			
10/13/05	218.91	137.49	084.06	146.55			
10/14/05	264.60	210.65	122.17	214.92			
10/15/05	243.23	177.67	107.54	184.81			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/16/05	226.18	154.50	098.01	170.79			
10/17/05	229.55	160.76	103.73	180.05			
10/18/05	233.95	168.35	104.51	184.33			
10/19/05	229.55	160.28	096.54	172.16			
10/20/05	244.02	186.09	115.50	201.03			
10/21/05	247.12	186.18	113.89	200.98			
10/22/05	246.49	181.22	109.10	196.09			
10/23/05	248.11	192.17	119.59	208.53			
10/24/05	240.14	182.07	111.42	198.26			
10/25/05	229.34	162.92	098.67	177.26			
10/26/05	253.59	195.40	119.11	212.82			
10/27/05	250.78	193.83	119.03	211.23			
10/28/05	254.16	202.10	123.03	219.04			
10/29/05	253.06	199.70	126.63	223.78			
10/30/05	259.55	210.89	127.63	223.59			
10/30/05	253.94	199.93	122.63	214.72			
11/01/05	244.29	188.27	120.95	213.29			
11/02/05	234.60	172.99	109.44	191.51			
11/03/05	230.36	167.93	102.39	179.46			
11/04/05	250.67	201.58	122.75	216.61			
11/05/05	241.55	188.65	114.25	202.09			
11/06/05	253.94	207.56	112.29	196.95			
11/07/05	231.19	173.20	104.42	188.12			
11/08/05	239.21	189.60	110.28	197.95			
11/09/05	244.73	191.26	116.50	207.99			
11/10/05	246.83	198.06	123.35	217.38			
11/11/05	240.54	190.33	118.64	211.01			
11/12/05	241.07	189.64	111.58	197.41			
11/13/05	237.52	188.41	118.18	213.33			
11/14/05	239.72	192.58	114.19	207.19			
11/15/05	237.96	185.90	107.48	196.90			
11/16/05	234.58	186.04	111.78	203.71			
11/17/05	232.79	179.27	110.63	201.79			
11/18/05	234.74	180.81	111.38	205.04			
11/19/05	248.54	210.55	124.48	228.03			
11/20/05	237.69	190.65	107.16	197.43			
11/21/05	234.81	183.16	104.07	192.16			
11/22/05	237.10	189.67	107.34	198.63			
11/23/05	234.09	191.87	114.59	211.01			
11/24/05	266.41	244.19	128.97	245.19			
11/25/05	263.52	234.51	120.28	232.55			
11/26/05	275.06	257.78	136.00	265.29			
11/27/05	266.49	238.69	128.42	250.21			
11/28/05	213.64	195.95	131.84	255.99			
11/29/05	262.11	238.63	126.29	244.39			
11/30/05	219.20	258.02	136.18	236.46			
12/01/05	227.74	231.10	115.98	222.26			
12/02/05	210.36	207.51	085.94	172.49			
12/03/05	266.03	281.41	104.48	217.86			
12/04/05	236.37	249.87	130.28	255.35			
12/05/05	222.71	248.68	121.93	238.95			
12/06/05	234.36	259.14	125.71	235.51			
12/07/05	156.35	302.96	131.18	359.35			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/08/05	183.09	370.13	165.65	476.81			
12/09/05	302.51	367.05	312.98	499.86			
12/10/05	304.82	345.28	091.07	499.86			
12/11/05	271.53	292.10	137.59	499.86			
12/12/05	268.42	283.79	134.08	499.86			
12/13/05	259.64	258.44	121.27	499.86			
12/14/05	267.90	275.24	129.35	499.86			
12/15/05	269.46	282.98	143.72	499.86			
12/16/05	243.90	269.71	088.11	499.86			
12/17/05	244.25	264.03	041.90	499.86			
12/18/05	255.59	287.29	123.18	499.86			
12/19/05	222.16	253.05	098.32	499.86			
12/20/05	181.08	145.24	056.51	499.86			
12/21/05	242.25	287.78	120.61	499.86			
12/22/05	212.77	248.39	094.82	499.86			
12/23/05	233.33	253.40	119.02	499.86			
12/24/05	223.25	221.18	098.73	499.86			
12/25/05	232.03	234.00	113.40	499.86			
12/26/05	227.66	221.17	111.83	499.86			
12/27/05	224.12	208.90	106.36	499.86			
12/28/05	235.83	226.72	111.01	499.86			
12/29/05	228.30	212.05	103.48	499.86			
12/30/05	231.05	213.14	106.25	499.86			
12/31/05	230.21	209.31	105.69	499.86			
01/01/06	237.34	220.12	113.08	499.86			
01/02/06	204.91	170.58	100.72	499.86			
01/03/06	229.63	199.97	104.02	499.86			
01/04/06	241.01	215.53	114.44	499.86			
01/05/06	235.89	205.65	108.62	499.86			
01/06/06	221.09	181.27	095.18	499.86			
01/07/06	227.39	185.94	093.72	499.86			
01/08/06	238.51	200.14	109.59	499.86			
01/09/06	236.80	194.88	107.18	499.86			
01/10/06	231.37	187.84	110.61	499.86			
01/11/06	247.14	234.90	105.06	499.86			
01/12/06	243.24	200.89	106.82	499.86			
01/13/06	259.79	235.04	123.44	499.86			
01/14/06	254.61	226.95	118.09	499.86			
01/15/06	254.22	217.00	121.98	499.86			
01/16/06	263.65	232.50	131.94	499.86			
01/17/06	272.46	248.79	141.59	499.86			
01/18/06	280.75	253.84	144.70	499.86			
01/19/06	280.66	229.88	141.31	499.86			
01/20/06	273.72	212.96	133.58	499.86			
01/21/06	268.96	206.87	129.24	499.86			
01/22/06	285.31	239.09	144.49	499.86			
01/23/06	286.48	240.12	143.89	499.86			
01/24/06	288.53	245.08	143.10	499.86			
01/25/06	281.69	229.21	136.75	499.86			
01/26/06	273.06	213.87	128.45	499.86			
01/27/06	270.41	208.28	135.96	499.86			
01/28/06	270.98	214.25	126.73	499.86			
01/29/06	278.64	231.64	126.94	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/30/06	276.49	235.44	140.96	499.86			
01/31/06	260.72	214.46	118.37	499.86			
02/01/06	255.36	214.67	121.56	499.86			
02/02/06	251.59	210.32	128.80	499.86			
02/03/06	264.37	237.98	129.42	499.86			
02/04/06	265.17	248.65	140.01	391.84			
02/05/06	262.90	243.46	137.10	260.61			
02/06/06	258.93	233.16	131.21	248.93			
02/07/06	263.07	245.63	133.07	263.00			
02/08/06	230.62	192.44	099.17	193.81			
02/09/06	266.53	253.36	130.22	264.54			
02/10/06	256.75	236.51	124.01	241.46			
02/11/06	205.16	141.94	072.15	142.52			
02/12/06	227.15	185.07	099.76	184.01			
02/13/06	200.02	228.85	093.31	099.45			
02/14/06	240.13	210.11	112.61	218.96			
02/15/06	224.41	178.78	097.58	189.15			
02/16/06	237.00	196.52	106.08	201.58			
02/17/06	223.66	174.20	095.51	180.57			
02/18/06	210.89	158.64	087.56	138.75			
02/19/06	218.14	171.36	091.31	144.41			
02/20/06	231.93	196.14	110.13	305.10			
02/21/06	240.72	203.65	112.26	210.82			
02/22/06	206.32	140.17	080.20	151.60			
02/23/06	229.52	179.72	101.70	190.52			
02/24/06	244.93	205.81	117.57	219.77			
02/25/06	232.41	181.75	105.75	196.85			
02/26/06	218.13	157.82	087.13	161.45			
02/27/06	212.21	148.45	084.85	156.29			
02/28/06	228.94	173.55	096.84	178.49			
03/01/06	214.00	146.29	080.57	147.64			
03/02/06	216.53	150.74	089.19	162.93			
03/03/06	213.92	149.05	092.03	170.75			
03/04/06	219.52	160.79	095.94	178.78			
03/05/06	232.71	182.98	106.63	197.36			
03/06/06	242.14	196.40	113.48	208.21			
03/07/06	221.31	157.57	090.02	164.89			
03/08/06	216.46	153.24	090.45	158.37			
03/09/06	224.88	163.28	100.45	181.61			
03/10/06	247.90	203.49	116.11	210.76			
03/11/06	211.67	140.20	079.37	144.26			
03/12/06	217.31	147.45	089.80	161.54			
03/13/06	225.31	160.94	096.36	173.32			
03/14/06	237.56	180.81	114.27	203.32			
03/15/06	199.55	119.98	071.50	128.94			
03/16/06	264.64	221.22	133.54	239.00			
03/17/06	263.41	218.42	131.77	235.17			
03/18/06	260.50	214.18	129.13	230.46			
03/19/06	236.70	176.23	106.27	190.93			
03/20/06	250.24	197.08	119.66	214.92			
03/21/06	221.93	154.13	093.80	169.58			
03/22/06	242.61	187.83	108.28	217.51			
03/23/06	223.91	159.18	092.26	166.23			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
03/24/06	245.29	187.66	110.09	234.85			
03/25/06	247.25	190.67	115.26	207.53			
03/26/06	242.95	182.45	106.20	189.80			
03/27/06	251.77	194.80	118.89	212.55			
03/28/06	235.25	168.62	104.10	186.61			
03/29/06	256.61	201.97	118.28	210.93			
03/30/06	243.80	182.59	107.34	192.32			
03/31/06	254.33	196.98	116.61	206.91			
04/01/06	244.92	183.71	108.06	191.34			
04/02/06	255.31	198.84	117.97	210.53			
04/03/06	259.64	205.18	126.30	227.24			
04/04/06	233.20	164.21	039.34	071.26			
04/05/06	162.69	057.49	118.76	235.20			
04/06/06	225.50	159.64	102.32	201.95			
04/07/06	282.14	243.71	056.89	101.17			
04/08/06	266.62	216.21	131.53	235.30			
04/09/06	246.24	183.81	112.48	199.87			
04/10/06	269.45	220.40	135.71	242.98			
04/11/06	275.61	231.72	134.55	239.58			
04/12/06	251.92	193.26	112.04	200.15			
04/13/06	245.43	181.63	105.65	189.12			
04/14/06	238.99	167.11	102.90	180.89			
04/15/06	246.88	181.44	111.88	198.00			
04/16/06	263.70	211.77	129.30	228.00			
04/17/06	271.47	227.44	134.95	243.54			
04/18/06	276.60	236.97	138.34	249.83			
04/19/06	263.09	214.62	124.13	223.24			
04/20/06	268.62	226.05	129.52	235.76			
04/21/06	266.05	221.92	126.40	231.40			
04/22/06	246.21	188.31	108.21	196.72			
04/23/06	241.85	182.30	104.54	190.60			
04/24/06	259.79	208.76	120.71	217.55			
04/25/06	261.63	212.24	124.78	227.37			
04/26/06	252.54	202.58	118.83	217.86			
04/27/06	244.39	188.83	110.24	203.42			
04/28/06	243.48	184.85	107.38	199.22			
04/29/06	249.27	195.08	115.81	213.98			
05/01/06	246.60	188.89	111.64	201.86			
05/02/06	244.64	184.77	110.29	199.08			
05/03/06	267.34	220.32	129.34	236.17			
05/04/06	266.65	222.06	130.28	239.30			
05/05/06	248.71	194.28	114.86	211.87			
05/06/06	259.16	214.06	127.67	235.49			
05/07/06	253.39	207.28	119.41	221.19			
05/08/06	268.37	231.62	134.17	247.64			
05/09/06	261.37	217.59	125.88	231.34			
05/10/06	266.19	226.63	130.21	238.08			
05/11/06	263.75	224.43	129.48	238.04			
05/12/06	263.46	226.16	128.79	237.50			
05/13/06	259.42	217.63	124.38	227.45			
05/14/06	264.72	226.83	133.38	243.95			
05/15/06	260.38	221.56	133.21	246.23			
05/16/06	299.70	295.00	156.29	305.35			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/17/06	266.64	234.06	116.79	227.82			
05/18/06	297.39	296.38	147.22	291.75			
05/19/06	285.14	278.70	136.38	270.72			
05/20/06	280.64	281.47	141.21	282.88			
05/21/06	284.45	298.32	132.86	269.47			
05/22/06	249.65	227.50	116.99	235.56			
05/23/06	284.50	311.66	149.12	305.93			
05/24/06	265.92	271.44	116.04	238.47			
05/25/06	252.86	272.69	133.64	275.70			
05/26/06	263.61	261.57	135.95	274.31			
05/27/06	267.81	268.13	126.98	255.76			
05/28/06	278.45	286.03	139.90	281.41			
05/29/06	263.40	255.80	131.60	264.57			
05/30/06	268.88	266.24	139.56	279.84			
05/31/06	270.19	260.34	135.79	270.98			
06/01/06	263.67	251.66	132.42	266.65			
06/02/06	284.00	285.84	151.20	304.51			
06/03/06	262.06	243.45	123.99	253.88			
06/04/06	264.72	245.63	126.04	257.91			
06/05/06	268.76	252.55	129.36	265.75			
06/06/06	266.02	240.94	124.01	254.85			
06/07/06	270.22	246.31	128.11	261.24			
06/08/06	287.97	281.17	145.68	297.39			
06/09/06	255.80	221.09	114.96	235.16			
06/10/06	275.71	252.90	132.38	269.18			
06/11/06	250.45	209.97	109.53	223.81			
06/12/06	252.93	208.51	109.80	224.64			
06/13/06	220.05	152.81	086.91	169.42			
06/14/06	231.57	173.94	095.19	184.41			
06/15/06	227.41	167.59	088.30	173.33			
06/16/06	281.81	261.43	130.09	269.95			
06/17/06	281.40	260.90	130.40	269.79			
06/18/06	258.14	221.72	111.11	231.98			
06/19/06	275.43	250.15	125.95	260.23			
06/20/06	270.92	240.47	120.31	249.86			
06/21/06	273.59	247.41	123.17	257.40			
06/22/06	248.16	202.23	099.01	209.19			
06/23/06	282.29	268.82	136.14	286.05			
06/24/06	263.98	241.60	118.48	252.51			
06/25/06	276.96	265.30	128.56	274.03			
06/26/06	271.33	261.40	125.10	268.39			
06/27/06	303.63	326.30	160.18	345.40			
06/28/06	306.92	332.60	159.52	341.44			
06/29/06	311.30	338.63	164.31	350.49			
06/30/06	295.94	314.19	148.20	320.32			
07/01/06	253.08	234.94	136.46	293.87			
07/02/06	280.52	280.22	134.34	290.80			
07/03/06	304.15	325.00	138.93	300.15			
07/04/06	248.67	223.03	102.90	226.06			
07/05/06	277.08	275.54	133.41	286.92			
07/06/06	256.23	232.87	108.11	233.95			
07/07/06	219.13	162.37	077.77	175.02			
07/08/06	264.72	243.25	116.49	248.28			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/09/06	256.11	228.87	112.65	239.04			
07/10/06	279.66	268.92	128.97	272.94			
07/11/06	250.24	215.09	108.44	232.49			
07/12/06	267.88	248.20	126.09	267.14			
07/13/06	253.19	221.27	105.67	225.85			
07/14/06	259.54	234.44	117.25	257.71			
07/15/06	257.01	229.61	113.62	243.71			
07/16/06	270.40	251.37	121.37	260.77			
07/17/06	264.25	241.96	118.68	258.00			
07/18/06	253.40	220.30	108.80	236.24			
07/19/06	249.12	215.07	108.08	235.23			
07/20/06	225.11	170.28	095.65	208.44			
07/21/06	217.94	156.28	115.03	249.07			
07/22/06	274.99	257.03	125.28	268.95			
07/23/06	252.38	217.35	104.62	227.43			
07/24/06	279.97	267.82	127.86	277.23			
07/25/06	261.50	234.78	111.84	244.08			
07/26/06	263.43	239.48	113.45	248.19			
07/27/06	244.35	202.63	097.64	214.09			
07/28/06	280.64	272.33	131.36	287.27			
07/29/06	258.19	230.68	107.79	236.62			
07/30/06	224.29	173.04	110.36	243.09			
07/31/06	274.93	258.81	127.14	279.87			
08/01/06	251.50	218.45	119.86	263.48			
08/02/06	271.34	248.96	109.74	241.57			
08/03/06	299.50	295.64	117.96	258.56			
08/04/06	193.82	101.60	106.25	231.97			
08/05/06	226.52	142.71	097.46	213.54			
08/06/06	265.74	216.23	116.79	253.72			
08/07/06	235.75	172.93	093.90	205.26			
08/08/06	244.53	189.89	095.24	207.64			
08/09/06	231.53	172.23	086.45	189.39			
08/10/06	243.52	192.37	096.67	210.29			
08/11/06	265.84	231.08	115.82	249.74			
08/12/06	255.18	216.29	095.63	209.25			
08/13/06	263.54	234.46	113.90	250.19			
08/14/06	216.47	156.17	089.07	199.70			
08/15/06	263.08	240.17	110.74	246.24			
08/16/06	249.14	212.76	099.84	222.42			
08/17/06	234.02	183.13	111.33	246.88			
08/18/06	272.00	242.66	127.99	281.40			
08/19/06	279.22	263.56	117.10	256.12			
08/20/06	292.69	282.06	088.20	198.87			
08/21/06	293.08	284.93	101.90	224.17			
08/22/06	281.68	268.79	115.77	254.14			
08/23/06	311.93	328.09	123.92	272.38			
08/24/06	251.54	223.89	106.06	234.17			
08/25/06	196.88	280.70	000.00	005.45			
08/26/06	133.04	040.35	000.05	004.83			
08/27/06	294.62	289.86	140.65	307.38			
08/28/06	298.19	298.42	123.37	277.40			
08/29/06	270.85	248.79	106.29	233.65			
08/30/06	279.46	261.74	131.04	286.27			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/31/06	240.92	191.26	099.00	215.60			
09/01/06	216.94	151.42	064.19	145.13			
09/02/06	249.61	207.46	106.49	233.99			
09/03/06	235.17	188.09	095.18	210.84			
09/04/06	264.57	241.72	118.49	193.92			
09/05/06	284.42	274.70	145.31	217.45			
09/06/06	279.13	264.26	130.54	181.33			
09/07/06	266.70	243.77	118.04	126.86			
09/08/06	255.18	224.98	108.96	362.30			
09/09/06	229.68	177.57	088.39	410.17			
09/10/06	209.98	142.86	070.79	313.82			
09/11/06	232.03	180.56	088.46	230.67			
09/12/06	230.95	181.03	084.28	258.25			
09/13/06	257.06	228.54	110.65	446.89			
09/14/06	163.68	061.32	030.83	489.92			
09/15/06	177.27	084.65	042.54	495.31			
09/16/06	287.19	293.05	148.53	490.24			
09/17/06	299.65	308.41	153.00	496.41			
09/18/06	277.67	274.39	116.03	458.31			
09/19/06	286.07	287.09	109.42	479.11			
09/20/06	261.41	240.85	078.61	499.86			
09/21/06	250.99	221.86	083.75	496.54			
09/22/06	243.76	205.82	099.29	496.05			
09/23/06	251.43	222.16	098.07	471.75			
09/24/06	242.51	208.06	079.42	371.03			
09/25/06	237.10	197.60	091.02	408.91			
09/26/06	240.76	204.99	099.64	439.61			
09/27/06	142.17	058.92	000.00	383.97			
09/28/06	129.68	001.94	000.00	427.75			
09/29/06	204.27	141.27	066.78	427.61			
09/30/06	300.50	319.08	163.28	495.38			
10/01/06	264.95	251.29	127.05	460.32			
10/02/06	260.06	243.80	123.13	446.81			
10/03/06	272.31	267.63	121.17	434.67			
10/04/06	267.33	255.31	114.27	397.36			
10/05/06	248.90	223.87	092.00	357.89			
10/06/06	248.27	220.14	104.17	421.38			
10/07/06	229.62	185.05	086.74	439.16			
10/08/06	223.27	179.30	080.85	480.98			
10/09/06	216.58	172.26	083.04	494.70			
10/10/06	211.06	167.54	075.19	492.56			
10/11/06	217.93	180.65	071.84	499.86			
10/12/06	212.05	172.33	071.41	499.86			
10/13/06	144.22	104.77	000.00	487.31			
10/14/06	125.29	006.93	000.00	499.86			
10/15/06	144.19	034.45	011.99	499.86			
10/16/06	312.33	351.90	134.13	499.86			
10/17/06	302.86	338.32	150.49	499.86			
10/18/06	248.57	232.80	096.38	499.86			
10/19/06	309.11	352.81	130.06	499.86			
10/20/06	286.49	313.75	130.76	499.86			
10/21/06	296.21	335.37	135.64	499.86			
10/22/06	291.61	326.80	132.68	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/23/06	271.49	292.69	126.22	499.86			
10/24/06	256.74	263.30	108.88	499.86			
10/25/06	282.51	316.14	110.04	499.86			
10/26/06	263.17	276.31	106.62	499.86			
10/27/06	256.35	264.22	102.07	499.86			
10/28/06	229.30	217.90	089.75	499.86			
10/29/06	211.33	192.33	080.65	499.86			
10/29/06	207.49	189.28	066.69	499.86			
10/30/06	202.59	176.00	063.01	499.86			
11/01/06	177.82	119.78	016.06	499.28			
11/02/06	161.62	076.97	032.66	446.85			
11/03/06	298.11	361.88	154.31	497.94			
11/04/06	273.04	309.73	130.69	474.35			
11/05/06	282.65	336.20	146.90	499.86			
11/06/06	279.09	329.10	135.05	499.86			
11/07/06	268.90	311.81	130.00	499.86			
11/08/06	262.36	296.63	124.44	499.86			
11/09/06	266.85	304.58	123.18	499.86			
11/10/06	263.44	297.77	106.75	499.86			
11/11/06	248.30	267.16	108.46	499.86			
11/12/06	249.19	271.22	112.14	499.86			
11/13/06	245.34	261.63	108.31	499.86			
11/14/06	247.11	267.07	111.64	499.86			
11/15/06	133.75	068.31	000.00	499.86			
11/16/06	122.17	035.59	000.00	499.86			
11/17/06	286.97	358.63	143.70	499.86			
11/18/06	285.26	359.65	141.22	499.86			
11/19/06	285.31	368.03	152.99	499.86			
11/20/06	266.19	329.39	132.20	499.86			
11/21/06	273.55	351.24	140.01	499.86			
11/22/06	271.81	346.30	125.56	499.86			
11/23/06	271.96	354.24	119.23	499.86			
11/24/06	253.29	307.76	120.19	499.86			
11/25/06	257.22	314.72	122.24	499.86			
11/26/06	247.83	296.70	110.90	499.86			
11/27/06	237.79	269.17	103.52	499.86			
11/28/06	240.38	274.77	103.70	499.86			
11/29/06	236.63	267.39	103.55	499.86			
11/30/06	235.40	271.22	108.85	482.94			
12/01/06	341.61	322.34	069.48	205.12			
12/02/06	155.97	365.23	109.52	300.35			
12/03/06	211.07	313.94	118.16	441.47			
12/04/06	128.93	350.03	114.31	423.53			
12/05/06	147.83	372.01	120.98	483.94			
12/06/06	148.58	294.21	103.71	496.74			
12/07/06	270.33	372.64	139.79	499.86			
12/08/06	269.50	383.96	134.00	499.86			
12/09/06	193.23	402.19	137.65	322.78			
12/10/06	263.46	379.12	138.71	499.86			
12/11/06	264.73	383.11	139.97	499.86			
12/12/06	256.55	362.65	122.80	499.86			
12/13/06	257.22	365.29	129.00	499.86			
12/14/06	259.28	364.77	126.85	499.86			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/15/06	257.90	357.16	130.00	499.86			
12/16/06	251.99	333.35	115.54	499.86			
12/17/06	241.69	311.56	110.02	499.86			
12/18/06	254.77	341.08	117.58	499.86			
12/19/06	235.53	305.19	108.33	499.86			
12/20/06	231.40	297.08	106.92	499.86			
12/21/06	157.35	310.90	112.35	240.73			
12/22/06	236.51	302.72	112.60	499.84			
12/23/06	253.45	339.93	123.64	318.65			
12/24/06	191.94	347.12	122.49	484.91			
12/25/06	203.64	370.17	136.91	300.86			
12/26/06	257.11	359.39	125.72	213.70			
12/27/06	264.78	375.95	137.70	264.53			
12/28/06	250.14	336.11	123.86	265.16			
12/29/06	263.63	370.83	137.73	269.36			
12/30/06	253.81	351.17	129.28	265.08			
12/31/06	258.61	363.77	134.37	289.45			
01/01/07	188.73	362.06	128.23	151.73			
01/02/07	182.94	359.51	123.77	118.76			
01/03/07	253.59	356.37	124.61	227.00			
01/04/07	245.54	339.68	119.66	270.01			
01/05/07	243.25	355.94	117.53	336.75			
01/06/07	245.77	358.30	120.48	404.30			
01/07/07	246.15	364.40	117.24	369.12			
01/08/07	243.64	362.76	122.72	218.35			
01/09/07	230.33	363.63	119.53	219.77			
01/10/07	233.00	338.65	108.71	272.00			
01/11/07	242.48	358.15	119.78	360.48			
01/12/07	253.90	386.59	124.21	425.33			
01/13/07	235.82	339.19	114.82	352.86			
01/14/07	243.02	364.12	116.33	455.03			
01/15/07	132.56	364.99	111.72	418.53			
01/16/07	104.44	345.25	112.74	109.28			
01/17/07	067.68	380.62	116.72	074.54			
01/18/07	070.51	373.17	128.77	052.04			
01/19/07	149.15	369.62	116.87	173.96			
01/20/07	192.86	387.55	128.29	333.06			
01/21/07	242.76	377.43	125.71	129.85			
01/22/07	243.31	379.52	128.07	164.99			
01/23/07	039.95	381.21	120.31	074.74			
01/24/07	135.07	389.95	125.25	027.67			
01/25/07	149.08	417.28	112.91	153.33			
01/26/07	179.38	403.77	125.34	145.37			
01/27/07	262.54	414.49	110.74	212.17			
01/28/07	254.18	410.62	123.83	166.78			
01/29/07	236.64	400.20	115.49	142.30			
01/30/07	175.81	388.86	104.50	191.22			
01/31/07	243.45	385.18	113.10	158.56			
02/01/07	178.50	378.08	112.13	319.97			
02/02/07	200.27	257.90	080.94	295.48			
02/03/07	199.98	340.85	089.80	255.48			
02/04/07	223.82	388.10	128.08	184.86			
02/05/07	249.69	379.76	123.65	207.38			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/06/07	253.22	370.01	121.87	288.46			
02/07/07	216.47	223.86	074.56	385.48			
02/08/07	350.92	361.59	078.82	499.86			
02/09/07	296.82	295.59	157.80	499.86			
02/10/07	298.90	317.37	150.24	499.86			
02/11/07	296.91	325.04	114.41	499.86			
02/12/07	269.01	273.13	127.86	499.86			
02/13/07	294.63	315.77	125.56	499.86			
02/14/07	247.16	232.32	113.82	499.86			
02/15/07	016.92	263.00	114.42	182.48			
02/16/07	122.05	264.30	115.68	259.07			
02/17/07	180.64	255.28	133.36	333.12			
02/18/07	296.55	304.63	144.03	382.82			
02/19/07	299.00	302.98	157.41	213.60			
02/20/07	293.82	279.76	140.51	345.14			
02/21/07	283.49	255.95	132.76	499.86			
02/22/07	279.50	249.18	121.42	495.80			
02/23/07	283.47	252.77	126.79	468.39			
02/24/07	293.67	269.17	124.08	192.56			
02/25/07	280.34	253.39	134.52	000.00			
02/26/07	269.98	239.72	134.58	000.00			
02/27/07	271.03	242.84	137.89	000.00			
02/28/07	255.76	222.20	128.29	000.00			
03/01/07	260.84	231.04	123.60	012.25			
03/02/07	283.68	271.46	154.78	021.01			
03/03/07	264.20	243.55	130.93	046.06			
03/04/07	253.27	277.72	141.14	109.51			
03/05/07	233.89	229.31	169.73	049.34			
03/06/07	245.43	221.18	155.34	111.97			
03/07/07	266.24	249.79	145.25	001.90			
03/08/07	277.19	265.38	147.24	011.41			
03/09/07	275.66	267.65	149.65	048.76			
03/10/07	294.62	294.82	158.44	002.03			
03/11/07	276.38	271.57	149.34	010.34			
03/12/07	273.40	265.81	148.91	011.62			
03/13/07	278.39	275.61	153.17	031.54			
03/14/07	275.07	271.09	144.21	034.23			
03/15/07	262.91	249.70	151.26	164.04			
03/16/07	289.25	294.09	133.99	075.11			
03/17/07	283.98	290.75	147.17	187.59			
03/18/07	285.18	293.80	154.59	132.71			
03/19/07	277.62	287.41	147.56	019.49			
03/20/07	283.09	301.29	143.56	000.00			
03/21/07	278.74	293.27	149.09	000.00			
03/22/07	275.25	290.51	141.72	000.00			
03/23/07	271.56	299.95	149.99	000.00			
03/24/07	285.10	335.14	160.06	000.06			
03/25/07	288.97	339.82	133.70	000.04			
03/26/07	277.22	318.46	138.55	000.21			
03/27/07	290.36	335.37	160.72	003.49			
03/28/07	283.86	328.67	159.75	006.18			
03/29/07	282.56	321.90	166.55	000.01			
03/30/07	273.04	300.02	147.06	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/01/07	271.84	288.46	120.97	010.05			
04/02/07	260.49	266.37	095.03	027.78			
04/03/07	203.87	175.17	058.64	006.05			
04/04/07	201.30	171.55	049.34	070.51			
04/05/07	199.33	174.07	042.34	467.18			
04/06/07	288.21	313.50	154.39	499.86			
04/07/07	290.65	313.88	160.35	499.86			
04/08/07	188.75	297.39	148.83	499.86			
04/09/07	161.56	303.92	152.87	422.79			
04/10/07	279.55	296.15	152.50	499.86			
04/11/07	283.88	299.04	146.31	499.86			
04/12/07	290.53	310.22	146.09	499.86			
04/13/07	278.67	286.56	150.45	499.86			
04/14/07	273.98	279.11	147.96	499.86			
04/15/07	282.67	292.78	144.56	499.86			
04/16/07	265.10	262.17	138.89	499.85			
04/17/07	274.42	275.34	139.25	345.20			
04/18/07	282.17	291.69	125.67	266.86			
04/19/07	287.68	297.54	153.67	321.01			
04/20/07	261.83	259.44	128.27	274.28			
04/21/07	258.18	250.19	121.44	262.66			
04/22/07	249.80	250.63	135.45	294.63			
04/23/07	272.24	281.15	123.18	275.67			
04/24/07	255.54	254.04	104.61	234.37			
04/25/07	258.24	257.81	126.26	273.43			
04/26/07	253.78	249.58	123.08	261.93			
04/27/07	223.20	197.97	101.43	210.30			
04/28/07	214.19	183.08	097.30	201.65			
04/29/07	228.45	207.29	110.50	229.22			
04/30/07	292.33	325.84	135.91	301.19			
05/01/07	282.54	302.78	150.38	321.47			
05/02/07	285.39	521.69	149.28	538.99			
05/03/07	276.18	604.57	164.10	705.19			
05/04/07	239.78	499.77	156.90	679.50			
05/05/07	298.54	681.63	169.23	721.01			
05/06/07	283.07	637.76	153.14	670.21			
05/07/07	288.14	653.07	155.80	679.91			
05/08/07	268.95	596.83	138.13	621.78			
05/09/07	285.52	645.71	162.18	714.35			
05/10/07	280.38	633.49	144.66	650.60			
05/11/07	299.86	687.11	153.91	684.31			
05/12/07	296.78	687.20	153.22	675.48			
05/13/07	273.11	620.97	143.07	644.35			
05/14/07	273.80	616.87	140.43	635.70			
05/15/07	275.63	629.87	143.27	655.46			
05/16/07	279.87	646.66	128.56	602.34			
05/17/07	280.97	660.95	147.80	679.25			
05/18/07	285.29	675.51	154.07	696.67			
05/19/07	272.53	637.11	142.10	654.47			
05/20/07	278.69	650.65	141.29	652.63			
05/21/07	273.97	638.89	141.41	655.33			
05/22/07	271.35	629.95	135.38	642.18			
05/23/07	277.08	655.28	147.29	689.38			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/24/07	272.06	637.50	143.17	673.13			
05/25/07	271.56	641.67	144.13	682.31			
05/26/07	272.01	646.96	146.03	693.50			
05/27/07	273.69	653.88	139.67	663.51			
05/28/07	271.87	643.32	143.42	678.61			
05/29/07	274.38	648.94	143.79	681.44			
05/30/07	275.03	645.60	153.85	720.18			
05/31/07	278.57	656.12	148.66	696.91			
06/01/07	273.74	640.95	142.89	676.15			
06/02/07	281.21	664.08	148.12	693.92			
06/03/07	293.47	704.21	162.60	746.23			
06/04/07	286.06	684.75	155.94	724.62			
06/05/07	270.94	640.80	142.20	673.70			
06/06/07	111.54	158.11	000.00	148.86			
06/07/07	127.00	216.02	032.91	275.66			
06/08/07	295.22	722.86	168.13	721.02			
06/09/07	291.54	721.80	176.86	744.45			
06/10/07	293.63	726.19	180.95	761.72			
06/11/07	286.50	711.34	175.68	745.10			
06/12/07	279.57	684.68	178.53	750.63			
06/13/07	296.56	738.33	156.01	690.86			
06/14/07	277.86	676.76	148.53	648.14			
06/15/07	242.95	558.59	157.01	683.56			
06/16/07	249.40	580.34	139.31	617.21			
06/17/07	245.27	567.38	124.55	572.82			
06/18/07	264.41	627.10	146.28	648.44			
06/19/07	259.64	612.65	136.70	620.93			
06/20/07	256.11	604.39	124.83	597.74			
06/21/07	257.58	617.51	144.01	649.99			
06/22/07	264.15	643.23	156.40	689.88			
06/23/07	244.28	580.46	131.30	610.39			
06/24/07	284.09	717.84	137.12	643.35			
06/25/07	284.23	723.29	147.55	676.07			
06/26/07	257.97	639.35	157.18	696.66			
06/27/07	271.58	688.83	158.22	696.33			
06/28/07	275.46	713.13	153.98	684.82			
06/29/07	276.98	724.00	129.84	617.61			
06/30/07	274.05	712.08	167.27	710.10			
07/01/07	274.62	717.95	163.72	698.40			
07/02/07	258.91	657.44	163.12	699.21			
07/03/07	260.68	665.49	162.23	694.03			
07/04/07	255.88	647.11	151.52	656.90			
07/05/07	264.36	676.82	166.52	706.76			
07/06/07	261.44	663.22	154.80	668.58			
07/07/07	247.77	612.01	152.43	665.07			
07/08/07	269.83	684.86	169.86	718.20			
07/09/07	257.68	643.49	150.32	655.85			
07/10/07	260.92	645.52	152.11	667.19			
07/11/07	264.01	667.38	166.00	723.45			
07/12/07	267.07	681.93	139.12	630.36			
07/13/07	263.38	663.34	150.71	677.54			
07/14/07	252.45	616.68	142.69	646.59			
07/15/07	264.20	658.52	153.59	684.88			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/16/07	256.60	627.28	143.43	646.80			
07/17/07	272.03	683.32	159.93	703.67			
07/18/07	255.13	584.39	138.96	588.94			
07/19/07	281.04	355.87	162.68	354.99			
07/20/07	267.71	330.30	153.42	344.86			
07/21/07	264.52	322.69	144.02	332.16			
07/22/07	272.71	342.75	150.87	356.39			
07/23/07	267.34	332.67	138.91	335.97			
07/24/07	275.47	345.25	127.62	313.40			
07/25/07	264.35	322.70	146.73	355.42			
07/26/07	272.85	336.71	147.18	351.95			
07/27/07	268.73	332.17	144.20	348.66			
07/28/07	265.54	320.49	141.25	343.21			
07/29/07	265.41	326.12	137.11	338.53			
07/30/07	254.41	307.17	128.48	322.50			
07/31/07	230.51	261.97	100.99	264.60			
08/01/07	265.10	329.52	111.05	303.65			
08/02/07	257.51	309.87	111.35	287.57			
08/03/07	222.26	241.79	098.34	256.31			
08/04/07	265.96	328.65	134.85	339.29			
08/05/07	266.30	327.75	118.18	300.78			
08/06/07	254.03	305.70	132.29	338.98			
08/07/07	270.03	335.90	131.20	337.74			
08/08/07	279.64	322.76	127.24	328.03			
08/09/07	261.30	321.77	131.92	339.90			
08/10/07	255.69	306.02	124.76	320.62			
08/11/07	274.70	348.20	146.14	372.60			
08/12/07	258.49	316.84	121.62	315.35			
08/13/07	268.18	333.67	138.15	352.93			
08/14/07	256.89	312.41	106.60	296.01			
08/15/07	251.84	302.93	119.52	315.17			
08/16/07	234.73	265.87	123.71	323.34			
08/17/07	245.82	289.91	113.51	297.06			
08/18/07	239.04	279.63	109.46	288.07			
08/19/07	237.18	273.87	109.09	287.19			
08/20/07	239.96	277.31	109.38	288.56			
08/21/07	246.32	291.87	092.25	266.58			
08/22/07	248.47	294.56	079.69	247.41			
08/23/07	242.40	287.68	108.02	303.73			
08/24/07	252.46	306.06	115.61	319.22			
08/25/07	245.63	296.29	111.92	310.69			
08/26/07	254.45	314.57	117.74	324.31			
08/27/07	253.16	313.37	119.31	326.50			
08/28/07	244.06	295.90	115.35	319.28			
08/29/07	251.44	302.76	125.76	337.82			
08/30/07	227.93	260.21	100.23	290.05			
08/31/07	247.34	299.81	113.13	313.58			
09/01/07	256.72	316.43	123.77	328.49			
09/02/07	261.70	326.95	131.63	341.54			
09/03/07	255.09	315.43	129.02	330.66			
09/04/07	249.80	305.29	124.19	318.51			
09/05/07	269.03	344.89	141.63	357.53			
09/06/07	258.65	321.42	135.13	341.90			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/07/07	257.23	322.25	135.31	340.53			
09/08/07	269.88	345.78	149.93	370.65			
09/09/07	254.62	318.21	135.17	338.77			
09/10/07	256.30	322.50	142.04	355.92			
09/11/07	252.19	317.34	131.32	332.31			
09/12/07	282.13	388.43	048.17	238.66			
09/13/07	285.45	387.19	066.64	246.29			
09/14/07	277.05	358.03	111.08	282.68			
09/15/07	109.01	072.98	019.04	071.66			
09/16/07	082.60	062.24	020.77	075.79			
09/17/07	270.69	351.97	128.67	330.66			
09/18/07	266.04	342.59	153.98	381.41			
09/19/07	274.02	362.66	156.31	384.44			
09/20/07	268.82	351.37	139.16	345.36			
09/21/07	274.13	363.54	140.80	358.02			
09/22/07	270.43	423.41	149.80	372.66			
09/23/07	272.83	493.34	154.10	382.75			
09/24/07	267.75	431.17	146.37	364.34			
09/25/07	258.18	396.94	138.98	347.13			
09/26/07	258.69	324.06	135.74	338.10			
09/27/07	267.64	338.45	143.89	355.03			
09/28/07	265.37	304.90	134.97	334.09			
09/29/07	271.64	289.12	132.92	327.67			
09/30/07	259.88	256.93	131.69	325.66			
10/01/07	282.86	289.12	143.95	353.59			
10/02/07	297.88	242.65	128.73	320.27			
10/03/07	282.73	163.13	086.79	226.28			
10/04/07	301.34	266.36	135.38	333.73			
10/05/07	304.36	289.81	131.07	326.91			
10/06/07	303.10	285.49	132.06	325.15			
10/07/07	292.99	270.37	136.04	336.44			
10/08/07	301.91	306.99	127.43	320.84			
10/09/07	291.79	296.94	130.25	329.32			
10/10/07	300.97	296.87	135.29	341.58			
10/11/07	295.16	296.03	132.93	334.20			
10/12/07	291.39	283.36	124.61	320.11			
10/13/07	196.75	068.47	032.53	108.89			
10/14/07	161.68	001.36	000.00	029.99			
10/15/07	288.57	288.46	142.83	367.34			
10/16/07	284.52	297.65	155.85	399.30			
10/17/07	285.12	300.67	149.32	381.91			
10/18/07	287.26	302.41	159.52	405.81			
10/19/07	280.31	287.32	153.03	390.41			
10/20/07	286.71	296.65	155.89	394.36			
10/21/07	291.36	305.32	147.09	370.46			
10/22/07	287.09	314.15	155.28	397.80			
10/23/07	272.99	292.14	143.08	374.37			
10/24/07	285.12	316.17	152.25	392.01			
10/25/07	281.14	308.45	149.04	374.62			
10/26/07	277.98	304.41	149.90	385.89			
10/27/07	281.16	277.49	148.11	380.04			
10/28/07	274.41	291.04	142.64	369.81			
10/29/07	276.90	305.38	142.49	370.85			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/30/07	280.28	309.67	142.62	372.67			
10/31/07	276.22	295.91	144.00	370.03			
11/01/07	278.66	300.59	141.37	371.35			
11/02/07	271.98	285.68	142.03	371.98			
11/03/07	273.30	279.87	136.26	357.48			
11/04/07	278.18	303.15	139.21	367.49			
11/04/07	266.88	281.20	137.01	365.66			
11/05/07	188.02	114.00	039.48	167.16			
11/06/07	170.43	086.91	036.09	120.77			
11/07/07	270.43	297.79	151.20	380.31			
11/08/07	277.47	303.84	156.27	388.14			
11/09/07	279.92	318.35	146.15	366.99			
11/10/07	270.21	294.73	166.43	401.43			
11/11/07	269.82	286.05	136.20	324.12			
11/12/07	274.94	305.81	159.81	368.08			
11/13/07	270.24	303.05	163.62	377.41			
11/14/07	263.36	287.21	157.11	364.91			
11/15/07	258.50	285.24	154.71	358.25			
11/16/07	256.52	272.78	151.09	348.81			
11/17/07	261.37	274.65	150.68	346.33			
11/18/07	259.03	278.22	148.63	342.22			
11/19/07	259.32	288.96	151.35	350.95			
11/20/07	252.44	270.06	135.68	315.78			
11/21/07	242.62	264.45	130.45	306.60			
11/22/07	212.31	316.66	144.77	340.31			
11/23/07	063.71	322.01	140.97	333.50			
11/24/07	155.65	324.61	139.61	329.25			
11/25/07	201.17	381.87	171.82	390.68			
11/26/07	181.09	385.81	176.11	399.84			
11/27/07	257.57	382.99	173.83	395.80			
11/28/07	237.20	331.14	156.19	360.27			
11/29/07	257.87	375.30	175.27	397.49			
12/01/07	257.77	443.82	178.03	400.90			
12/02/07	263.54	467.88	175.25	394.46			
12/03/07	260.79	397.92	179.59	402.28			
12/04/07	257.82	409.43	177.42	399.94			
12/05/07	256.40	418.26	181.08	406.99			
12/06/07	256.65	416.11	180.38	406.50			
12/07/07	253.44	386.25	169.02	382.17			
12/08/07	261.73	389.84	152.89	366.54			
12/09/07	259.47	386.72	172.92	390.83			
12/10/07	252.84	396.01	182.93	414.51			
12/11/07	246.73	377.39	172.84	392.81			
12/12/07	244.65	376.83	172.23	388.18			
12/13/07	252.30	400.42	183.59	411.56			
12/14/07	255.98	397.10	179.53	402.34			
12/15/07	255.32	395.23	181.71	408.53			
12/16/07	252.33	389.25	180.68	408.95			
12/17/07	194.58	374.81	168.88	408.84			
12/18/07	236.34	391.93	178.87	421.71			
12/19/07	250.33	369.86	168.11	400.31			
12/20/07	254.18	385.52	176.44	419.70			
12/21/07	247.12	370.24	167.68	404.49			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/22/07	253.54	387.13	177.72	423.43			
12/23/07	245.90	381.10	169.49	410.58			
12/24/07	172.03	390.45	176.56	434.17			
12/25/07	190.04	368.15	162.36	396.50			
12/26/07	247.12	395.37	175.84	424.29			
12/27/07	246.28	399.43	178.61	432.49			
12/28/07	198.47	401.05	181.96	440.90			
12/29/07	145.84	396.00	187.49	442.83			
12/30/07	166.79	399.24	175.22	435.32			
12/31/07	184.65	398.10	172.83	430.78			
01/01/08	000.00	000.00	000.00	000.00			
01/02/08	000.00	000.00	000.00	000.00			
01/03/08	000.00	000.00	000.00	000.00			
01/04/08	000.00	000.00	000.00	000.00			
01/05/08	000.00	000.00	000.00	000.00			
01/06/08	000.00	000.00	000.00	000.00			
01/07/08	000.00	000.00	000.00	000.00			
01/08/08	000.00	000.00	000.00	000.00			
01/09/08	000.00	000.00	000.00	000.00			
01/10/08	000.00	000.00	000.00	000.00			
01/11/08	000.00	000.00	000.00	000.00			
01/12/08	000.00	000.00	000.00	000.00			
01/13/08	000.00	000.00	000.00	000.00			
01/14/08	000.00	000.00	000.00	000.00			
01/15/08	000.00	000.00	000.00	000.00			
01/16/08	000.00	000.00	000.00	000.00			
01/17/08	000.00	000.00	000.00	000.00			
01/18/08	000.00	000.00	000.00	000.00			
01/19/08	000.00	000.00	000.00	000.00			
01/20/08	000.00	000.00	000.00	000.00			
01/21/08	000.00	000.00	000.00	000.00			
01/22/08	000.00	000.00	000.00	000.00			
01/23/08	000.00	000.00	000.00	000.00			
01/24/08	000.00	000.00	000.00	000.00			
01/25/08	000.00	000.00	000.00	000.00			
01/26/08	000.00	000.00	000.00	000.00			
01/27/08	000.00	000.00	000.00	000.00			
01/28/08	000.00	000.00	000.00	000.00			
01/29/08	000.00	000.00	000.00	000.00			
01/30/08	000.00	000.00	000.00	000.00			
01/31/08	000.00	000.00	000.00	000.00			
02/01/08	000.00	000.00	000.00	000.00			
02/02/08	000.00	000.00	000.00	000.00			
02/03/08	000.00	000.00	000.00	000.00			
02/04/08	000.00	000.00	000.00	000.00			
02/05/08	000.00	000.00	000.00	000.00			
02/06/08	000.00	000.00	000.00	000.00			
02/07/08	000.00	000.00	000.00	000.00			
02/08/08	000.00	000.00	000.00	000.00			
02/09/08	000.00	000.00	000.00	000.00			
02/10/08	000.00	000.00	000.00	000.00			
02/11/08	000.00	000.00	000.00	000.00			
02/12/08	000.00	000.00	000.00	000.00			

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/13/08	000.00	000.00	000.00	000.00			
02/14/08	000.00	000.00	000.00	000.00			
02/15/08	000.00	000.00	000.00	000.00			
02/16/08	000.00	000.00	000.00	000.00			
02/17/08	000.00	000.00	000.00	000.00			
02/18/08	000.00	000.00	000.00	000.00			
02/19/08	000.00	000.00	000.00	000.00			
02/20/08	000.00	000.00	000.00	000.00			
02/21/08	000.00	000.00	000.00	000.00			
02/22/08	000.00	000.00	000.00	000.00			
02/23/08	000.00	000.00	000.00	000.00			
02/24/08	000.00	000.00	000.00	000.00			
02/25/08	000.00	000.00	000.00	000.00			
02/26/08	000.00	000.00	000.00	000.00			
02/27/08	000.00	000.00	000.00	000.00			
02/28/08	000.00	000.00	000.00	000.00			
02/29/08	000.00	000.00	000.00	000.00			
03/01/08	387.36	900.00	403.00	900.00	03/01/08	234.84	474.53
03/02/08	387.36	900.00	403.00	900.00	03/02/08	222.24	456.35
03/03/08	387.36	900.00	403.00	900.00	03/03/08	217.86	451.64
03/04/08	387.36	900.00	403.00	900.00	03/04/08	247.86	539.51
03/05/08	387.36	900.00	403.00	900.00	03/05/08	000.00	963.15
03/06/08	387.36	900.00	403.00	900.00	03/06/08	000.00	923.70
03/07/08	387.36	900.00	403.00	900.00	03/07/08	000.00	617.52
03/08/08	387.36	900.00	403.00	900.00	03/08/08	000.00	-00.25
03/09/08	387.36	900.00	403.00	900.00	03/09/08	000.00	-00.25
03/10/08	387.36	900.00	403.00	900.00	03/10/08	207.23	437.11
03/11/08	387.36	900.00	403.00	900.00	03/11/08	243.49	518.87
03/12/08	387.36	900.00	403.00	900.00	03/12/08	243.46	517.82
03/13/08	387.36	900.00	403.00	900.00	03/13/08	253.93	550.06
03/14/08	387.36	900.00	403.00	900.00	03/14/08	242.72	524.60
03/15/08	387.36	900.00	403.00	900.00	03/15/08	249.02	540.51
03/16/08	387.36	900.00	403.00	900.00	03/16/08	239.09	520.02
03/17/08	387.36	900.00	403.00	900.00	03/17/08	214.73	487.14
03/18/08	387.36	900.00	403.00	900.00	03/18/08	234.25	524.16
03/19/08	387.36	900.00	403.00	900.00	03/19/08	233.53	519.07
03/20/08	387.36	900.00	403.00	900.00	03/20/08	238.37	528.92
03/21/08	387.36	900.00	403.00	900.00	03/21/08	220.59	502.07
03/22/08	387.36	900.00	403.00	900.00	03/22/08	223.71	521.65
03/23/08	387.36	900.00	403.00	900.00	03/23/08	206.37	494.71
03/24/08	387.36	900.00	403.00	900.00	03/24/08	210.57	505.25
03/25/08	387.36	900.00	403.00	900.00	03/25/08	214.73	513.23
03/26/08	387.36	900.00	403.00	900.00	03/26/08	218.62	522.07
03/27/08	387.36	900.00	403.00	900.00	03/27/08	219.06	521.16
03/28/08	387.36	900.00	403.00	900.00	03/28/08	224.73	556.69
03/29/08	387.36	900.00	403.00	900.00	03/29/08	230.70	567.91
03/30/08	387.36	900.00	403.00	900.00	03/30/08	228.17	576.81
03/31/08	387.36	900.00	403.00	900.00	03/31/08	265.80	655.15
04/01/08	387.36	900.00	403.00	900.00	04/01/08	274.81	664.59
04/02/08	387.36	900.00	403.00	900.00	04/02/08	233.28	583.11
04/03/08	387.36	900.00	403.00	900.00	04/03/08	232.77	588.41
04/04/08	387.36	900.00	403.00	900.00	04/04/08	236.15	584.76
04/05/08	387.36	900.00	403.00	900.00	04/05/08	227.10	561.65

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/06/08	387.36	900.00	403.00	900.00	04/06/08	219.39	557.37
04/07/08	387.36	900.00	403.00	900.00	04/07/08	222.21	569.98
04/08/08	387.36	900.00	403.00	900.00	04/08/08	216.18	559.99
04/09/08	387.36	900.00	403.00	900.00	04/09/08	206.88	551.09
04/10/08	387.36	900.00	403.00	900.00	04/10/08	212.74	587.18
04/11/08	387.36	900.00	403.00	900.00	04/11/08	188.94	525.84
04/12/08	387.36	900.00	403.00	900.00	04/12/08	186.90	523.31
04/13/08	387.36	900.00	403.00	900.00	04/13/08	189.58	527.80
04/14/08	387.36	900.00	403.00	900.00	04/14/08	186.29	514.22
04/15/08	387.36	900.00	403.00	900.00	04/15/08	188.28	521.77
04/16/08	387.36	900.00	403.00	900.00	04/16/08	168.74	501.83
04/17/08	387.36	900.00	403.00	900.00	04/17/08	142.21	477.47
04/18/08	387.36	900.00	403.00	900.00	04/18/08	134.07	457.47
04/19/08	387.36	900.00	403.00	900.00	04/19/08	120.74	422.19
04/20/08	387.36	900.00	403.00	900.00	04/20/08	119.57	425.81
04/21/08	387.36	900.00	403.00	900.00	04/21/08	096.61	404.17
04/22/08	387.36	900.00	403.00	900.00	04/22/08	105.09	434.05
04/23/08	387.36	900.00	403.00	900.00	04/23/08	105.15	437.94
04/24/08	387.36	900.00	403.00	900.00	04/24/08	101.80	439.32
04/25/08	387.36	900.00	403.00	900.00	04/25/08	099.19	438.39
04/26/08	387.36	900.00	403.00	900.00	04/26/08	097.45	440.96
04/27/08	387.36	900.00	403.00	900.00	04/27/08	093.86	442.06
04/28/08	387.36	900.00	403.00	900.00	04/28/08	088.71	443.01
04/29/08	387.36	900.00	403.00	900.00	04/29/08	094.19	444.61
04/30/08	387.36	900.00	403.00	900.00	04/30/08	094.53	444.74
05/01/08	387.36	900.00	403.00	900.00	05/01/08	137.72	551.80
05/02/08	387.36	900.00	403.00	900.00	05/02/08	171.72	621.77
05/03/08	387.36	900.00	403.00	900.00	05/03/08	150.47	551.13
05/04/08	387.36	900.00	403.00	900.00	05/04/08	166.71	591.50
05/05/08	387.36	900.00	403.00	900.00	05/05/08	168.48	588.22
05/06/08	387.36	900.00	403.00	900.00	05/06/08	164.38	569.63
05/07/08	387.36	900.00	403.00	900.00	05/07/08	155.77	543.75
05/08/08	387.36	900.00	403.00	900.00	05/08/08	175.83	583.84
05/09/08	387.36	900.00	403.00	900.00	05/09/08	183.81	571.93
05/10/08	387.36	900.00	403.00	900.00	05/10/08	174.36	535.60
05/11/08	387.36	900.00	403.00	900.00	05/11/08	177.54	562.95
05/12/08	387.36	900.00	403.00	900.00	05/12/08	155.53	508.32
05/13/08	387.36	900.00	403.00	900.00	05/13/08	170.48	541.86
05/14/08	387.36	900.00	403.00	900.00	05/14/08	173.33	545.59
05/15/08	387.36	900.00	403.00	900.00	05/15/08	162.32	518.41
05/16/08	387.36	900.00	403.00	900.00	05/16/08	167.82	532.09
05/17/08	387.36	900.00	403.00	900.00	05/17/08	138.34	477.91
05/18/08	387.36	900.00	403.00	900.00	05/18/08	162.39	537.82
05/19/08	387.36	900.00	403.00	900.00	05/19/08	138.87	464.83
05/20/08	387.36	900.00	403.00	900.00	05/20/08	128.20	436.78
05/21/08	387.36	900.00	403.00	900.00	05/21/08	156.46	513.30
05/22/08	387.36	900.00	403.00	900.00	05/22/08	126.11	415.97
05/23/08	387.36	900.00	403.00	900.00	05/23/08	155.47	485.80
05/24/08	387.36	900.00	403.00	900.00	05/24/08	190.60	567.16
05/25/08	387.36	900.00	403.00	900.00	05/25/08	170.22	501.02
05/26/08	387.36	900.00	403.00	900.00	05/26/08	174.53	514.30
05/27/08	387.36	900.00	403.00	900.00	05/27/08	153.93	458.44
05/28/08	387.36	900.00	403.00	900.00	05/28/08	172.96	516.52

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
05/29/08	387.36	900.00	403.00	900.00	05/29/08	157.67	470.49
05/30/08	387.36	900.00	403.00	900.00	05/30/08	162.98	487.18
05/31/08	387.36	900.00	403.00	900.00	05/31/08	157.63	482.24
06/01/08	387.36	900.00	403.00	900.00	06/01/08	163.22	503.48
06/02/08	387.36	900.00	403.00	900.00	06/02/08	163.87	522.37
06/03/08	387.36	900.00	403.00	900.00	06/03/08	175.12	562.02
06/04/08	387.36	900.00	403.00	900.00	06/04/08	178.16	583.21
06/05/08	387.36	900.00	403.00	900.00	06/05/08	185.85	615.26
06/06/08	387.36	900.00	403.00	900.00	06/06/08	190.67	638.14
06/07/08	387.36	900.00	403.00	900.00	06/07/08	191.39	640.12
06/08/08	387.36	900.00	403.00	900.00	06/08/08	191.46	641.68
06/09/08	387.36	900.00	403.00	900.00	06/09/08	191.40	642.08
06/10/08	387.36	900.00	403.00	900.00	06/10/08	192.87	630.58
06/11/08	387.36	900.00	403.00	900.00	06/11/08	191.21	618.20
06/12/08	387.36	900.00	403.00	900.00	06/12/08	193.23	626.26
06/13/08	387.36	900.00	403.00	900.00	06/13/08	191.60	603.51
06/14/08	387.36	900.00	403.00	900.00	06/14/08	190.97	587.48
06/15/08	387.36	900.00	403.00	900.00	06/15/08	178.52	549.31
06/16/08	387.36	900.00	403.00	900.00	06/16/08	175.07	542.84
06/17/08	387.36	900.00	403.00	900.00	06/17/08	181.45	564.11
06/18/08	387.36	900.00	403.00	900.00	06/18/08	190.80	585.52
06/19/08	387.36	900.00	403.00	900.00	06/19/08	191.64	581.62
06/20/08	387.36	900.00	403.00	900.00	06/20/08	191.21	592.87
06/21/08	387.36	900.00	403.00	900.00	06/21/08	193.10	598.58
06/22/08	387.36	900.00	403.00	900.00	06/22/08	172.24	528.93
06/23/08	387.36	900.00	403.00	900.00	06/23/08	177.64	547.04
06/24/08	387.36	900.00	403.00	900.00	06/24/08	154.49	483.87
06/25/08	387.36	900.00	403.00	900.00	06/25/08	149.30	476.99
06/26/08	387.36	900.00	403.00	900.00	06/26/08	165.10	523.40
06/27/08	387.36	900.00	403.00	900.00	06/27/08	184.48	582.00
06/28/08	387.36	900.00	403.00	900.00	06/28/08	190.63	603.39
06/29/08	387.36	900.00	403.00	900.00	06/29/08	188.21	604.16
06/30/08	387.36	900.00	403.00	900.00	06/30/08	193.49	600.79
07/01/08	387.36	900.00	403.00	900.00	07/01/08	195.85	616.04
07/02/08	387.36	900.00	403.00	900.00	07/02/08	197.33	617.94
07/03/08	387.36	900.00	403.00	900.00	07/03/08	196.35	622.85
07/04/08	387.36	900.00	403.00	900.00	07/04/08	197.18	620.78
07/05/08	387.36	900.00	403.00	900.00	07/05/08	193.06	619.51
07/06/08	387.36	900.00	403.00	900.00	07/06/08	195.85	618.42
07/07/08	387.36	900.00	403.00	900.00	07/07/08	189.20	602.41
07/08/08	387.36	900.00	403.00	900.00	07/08/08	174.28	557.94
07/09/08	387.36	900.00	403.00	900.00	07/09/08	177.19	555.44
07/10/08	387.36	900.00	403.00	900.00	07/10/08	197.83	620.43
07/11/08	387.36	900.00	403.00	900.00	07/11/08	196.31	617.70
07/12/08	387.36	900.00	403.00	900.00	07/12/08	199.22	621.26
07/13/08	387.36	900.00	403.00	900.00	07/13/08	196.93	619.60
07/14/08	387.36	900.00	403.00	900.00	07/14/08	195.69	617.34
07/15/08	387.36	900.00	403.00	900.00	07/15/08	192.96	609.10
07/16/08	387.36	900.00	403.00	900.00	07/16/08	186.27	580.92
07/17/08	387.36	900.00	403.00	900.00	07/17/08	168.04	522.77
07/18/08	387.36	900.00	403.00	900.00	07/18/08	173.96	542.80
07/19/08	387.36	900.00	403.00	900.00	07/19/08	174.62	546.85
07/20/08	387.36	900.00	403.00	900.00	07/20/08	161.58	506.02

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/21/08	387.36	900.00	403.00	900.00	07/21/08	154.71	489.81
07/22/08	387.36	900.00	403.00	900.00	07/22/08	153.42	490.66
07/23/08	387.36	900.00	403.00	900.00	07/23/08	170.78	545.81
07/24/08	387.36	900.00	403.00	900.00	07/24/08	156.90	508.50
07/25/08	387.36	900.00	403.00	900.00	07/25/08	163.32	536.57
07/26/08	387.36	900.00	403.00	900.00	07/26/08	173.36	568.01
07/27/08	387.36	900.00	403.00	900.00	07/27/08	186.16	605.63
07/28/08	387.36	900.00	403.00	900.00	07/28/08	190.93	605.84
07/29/08	387.36	900.00	403.00	900.00	07/29/08	192.22	601.83
07/30/08	387.36	900.00	403.00	900.00	07/30/08	194.33	611.02
07/31/08	387.36	900.00	403.00	900.00	07/31/08	192.91	603.78
08/01/08	387.36	900.00	403.00	900.00	08/01/08	190.27	601.44
08/02/08	387.36	900.00	403.00	900.00	08/02/08	197.77	626.68
08/03/08	387.36	900.00	403.00	900.00	08/03/08	195.86	623.31
08/04/08	387.36	900.00	403.00	900.00	08/04/08	194.97	610.46
08/05/08	387.36	900.00	403.00	900.00	08/05/08	192.91	600.97
08/06/08	387.36	900.00	403.00	900.00	08/06/08	188.47	596.50
08/07/08	387.36	900.00	403.00	900.00	08/07/08	193.73	609.30
08/08/08	387.36	900.00	403.00	900.00	08/08/08	191.54	596.26
08/09/08	387.36	900.00	403.00	900.00	08/09/08	196.95	613.82
08/10/08	387.36	900.00	403.00	900.00	08/10/08	189.52	604.11
08/11/08	387.36	900.00	403.00	900.00	08/11/08	190.06	609.04
08/12/08	387.36	900.00	403.00	900.00	08/12/08	199.08	636.22
08/13/08	387.36	900.00	403.00	900.00	08/13/08	197.82	630.79
08/14/08	387.36	900.00	403.00	900.00	08/14/08	208.02	664.70
08/15/08	387.36	900.00	403.00	900.00	08/15/08	213.38	674.51
08/16/08	387.36	900.00	403.00	900.00	08/16/08	212.87	675.54
08/17/08	387.36	900.00	403.00	900.00	08/17/08	208.88	668.74
08/18/08	387.36	900.00	403.00	900.00	08/18/08	211.92	676.86
08/19/08	387.36	900.00	403.00	900.00	08/19/08	209.19	665.37
08/20/08	387.36	900.00	403.00	900.00	08/20/08	218.50	686.97
08/21/08	387.36	900.00	403.00	900.00	08/21/08	221.04	682.85
08/22/08	387.36	900.00	403.00	900.00	08/22/08	222.72	683.78
08/23/08	387.36	900.00	403.00	900.00	08/23/08	218.88	676.51
08/24/08	387.36	900.00	403.00	900.00	08/24/08	216.42	675.93
08/25/08	387.36	900.00	403.00	900.00	08/25/08	213.83	672.70
08/26/08	387.36	900.00	403.00	900.00	08/26/08	205.19	642.78
08/27/08	387.36	900.00	403.00	900.00	08/27/08	211.45	663.04
08/28/08	387.36	900.00	403.00	900.00	08/28/08	218.52	678.19
08/29/08	387.36	900.00	403.00	900.00	08/29/08	200.02	654.82
08/30/08	387.36	900.00	403.00	900.00	08/30/08	213.31	688.09
08/31/08	387.36	900.00	403.00	900.00	08/31/08	212.16	687.97
09/01/08	387.36	900.00	403.00	900.00	09/01/08	210.66	691.01
09/02/08	387.36	900.00	403.00	900.00	09/02/08	212.67	691.39
09/03/08	387.36	900.00	403.00	900.00	09/03/08	215.06	685.65
09/04/08	387.36	900.00	403.00	900.00	09/04/08	216.43	691.88
09/05/08	387.36	900.00	403.00	900.00	09/05/08	215.41	682.56
09/06/08	387.36	900.00	403.00	900.00	09/06/08	218.15	690.45
09/07/08	387.36	900.00	403.00	900.00	09/07/08	216.96	696.14
09/08/08	387.36	900.00	403.00	900.00	09/08/08	209.87	673.23
09/09/08	387.36	900.00	403.00	900.00	09/09/08	211.47	689.42
09/10/08	387.36	900.00	403.00	900.00	09/10/08	207.61	676.03
09/11/08	387.36	900.00	403.00	900.00	09/11/08	211.20	690.40

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/12/08	387.36	900.00	403.00	900.00	09/12/08	207.06	680.22
09/13/08	387.36	900.00	403.00	900.00	09/13/08	210.71	695.46
09/14/08	387.36	900.00	403.00	900.00	09/14/08	211.69	691.14
09/15/08	387.36	900.00	403.00	900.00	09/15/08	206.04	691.48
09/16/08	387.36	900.00	403.00	900.00	09/16/08	202.49	672.49
09/17/08	387.36	900.00	403.00	900.00	09/17/08	204.92	671.83
09/18/08	312.66	879.23	326.00	887.59	09/18/08	211.64	695.50
09/19/08	190.10	672.34	204.53	704.83	09/19/08	212.08	697.96
09/20/08	187.55	667.53	203.89	706.75	09/20/08	212.33	705.54
09/21/08	184.48	661.74	203.63	714.81	09/21/08	211.27	705.94
09/22/08	189.52	662.67	203.16	712.20	09/22/08	209.25	696.60
09/23/08	181.54	687.65	207.80	715.94	09/23/08	202.34	676.26
09/24/08	188.92	669.28	197.69	683.67	09/24/08	201.48	669.35
09/25/08	139.37	607.60	169.06	686.91	09/25/08	205.76	671.60
09/26/08	122.14	641.18	130.39	680.98	09/26/08	208.74	670.62
09/27/08	126.92	648.82	129.25	676.97	09/27/08	204.69	664.17
09/28/08	124.33	632.00	131.54	687.02	09/28/08	202.16	656.12
09/29/08	112.11	591.71	132.25	698.03	09/29/08	209.45	678.67
09/30/08	076.00	440.28	097.16	508.50	09/30/08	142.78	491.96
10/01/08	114.50	574.55	121.88	643.17	10/01/08	189.29	626.08
10/02/08	135.70	682.57	132.35	684.54	10/02/08	201.80	670.10
10/03/08	136.54	688.22	133.15	691.44	10/03/08	198.64	671.26
10/04/08	136.52	689.75	134.40	693.48	10/04/08	199.69	674.67
10/05/08	133.65	691.41	132.96	696.49	10/05/08	197.71	677.19
10/06/08	131.22	682.90	130.71	688.07	10/06/08	204.32	689.43
10/07/08	130.85	685.51	130.58	690.65	10/07/08	206.42	688.17
10/08/08	131.67	688.61	130.76	692.33	10/08/08	205.70	687.25
10/09/08	131.75	690.39	130.39	691.39	10/09/08	205.09	687.71
10/10/08	132.16	691.20	130.49	691.45	10/10/08	205.46	689.21
10/11/08	130.77	692.65	129.36	692.43	10/11/08	206.30	691.00
10/12/08	128.99	687.79	129.24	697.12	10/12/08	212.90	685.25
10/13/08	127.99	687.72	124.82	674.27	10/13/08	210.56	685.60
10/14/08	122.89	682.33	130.61	709.15	10/14/08	209.27	680.39
10/15/08	123.80	685.24	129.71	708.29	10/15/08	206.27	681.43
10/16/08	123.31	686.65	129.36	706.09	10/16/08	205.57	683.31
10/17/08	123.43	683.15	127.90	698.20	10/17/08	208.59	700.28
10/18/08	122.23	683.62	124.75	683.73	10/18/08	207.80	704.04
10/19/08	121.82	688.18	122.74	677.49	10/19/08	208.12	704.77
10/20/08	119.53	672.40	120.20	664.16	10/20/08	211.93	701.03
10/21/08	116.87	670.39	127.21	693.86	10/21/08	209.77	691.70
10/22/08	107.86	637.64	124.95	678.78	10/22/08	203.70	672.32
10/23/08	108.48	641.70	122.26	662.51	10/23/08	203.98	674.21
10/24/08	113.12	635.99	124.39	661.08	10/24/08	200.89	659.36
10/25/08	104.74	601.41	119.15	638.67	10/25/08	189.93	623.35
10/26/08	107.84	618.58	118.50	631.86	10/26/08	186.03	613.01
10/27/08	096.43	575.64	111.37	602.22	10/27/08	181.70	603.59
10/28/08	103.04	598.65	119.25	641.01	10/28/08	195.78	644.12
10/29/08	115.00	648.51	125.58	669.60	10/29/08	201.88	676.45
10/30/08	120.30	689.40	122.57	666.42	10/30/08	215.37	714.36
10/31/08	124.79	704.45	087.50	525.94	10/31/08	227.43	750.00
11/01/08	116.88	654.14	129.09	713.61	11/01/08	213.04	702.81
11/02/08	119.88	685.11	126.64	698.68	11/02/08	211.48	699.19
11/03/08	118.04	672.31	126.56	695.23	11/03/08	213.17	706.29

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/04/08	116.51	670.11	109.15	625.92	11/04/08	219.17	726.89
11/05/08	118.23	671.42	109.95	622.42	11/05/08	215.12	710.08
11/06/08	119.58	695.16	104.71	602.05	11/06/08	209.01	693.19
11/07/08	112.98	651.41	123.67	676.70	11/07/08	214.25	691.83
11/08/08	116.38	663.62	125.99	686.37	11/08/08	197.71	650.81
11/09/08	113.75	651.88	125.70	685.43	11/09/08	204.19	666.95
11/10/08	111.13	624.32	123.93	664.32	11/10/08	204.92	665.28
11/11/08	114.78	658.39	123.80	674.36	11/11/08	206.15	676.80
11/12/08	112.95	651.81	122.70	677.74	11/12/08	207.21	682.92
11/13/08	111.37	638.49	125.09	687.53	11/13/08	204.26	670.48
11/14/08	111.64	649.03	123.63	682.11	11/14/08	204.79	674.85
11/15/08	115.19	679.31	125.74	703.60	11/15/08	208.67	698.11
11/16/08	114.86	665.52	125.68	700.19	11/16/08	206.75	699.36
11/17/08	117.13	670.28	126.56	706.37	11/17/08	206.14	692.37
11/18/08	114.93	661.09	125.95	700.17	11/18/08	210.12	703.75
11/19/08	117.53	666.77	127.12	703.38	11/19/08	205.81	694.20
11/20/08	111.66	652.81	126.19	704.88	11/20/08	208.92	701.21
11/21/08	113.35	655.59	127.78	705.43	11/21/08	193.20	679.57
11/22/08	116.71	674.23	127.83	704.91	11/22/08	198.15	696.45
11/23/08	118.26	667.11	127.77	710.52	11/23/08	193.91	693.82
11/24/08	119.60	686.22	123.82	710.54	11/24/08	192.23	693.57
11/25/08	118.59	680.02	125.96	727.08	11/25/08	196.56	700.43
11/26/08	120.97	684.68	125.25	720.94	11/26/08	198.47	699.69
11/27/08	119.23	682.28	124.57	720.90	11/27/08	197.81	698.90
11/28/08	117.34	670.92	123.80	717.91	11/28/08	194.72	701.99
11/29/08	120.60	694.06	124.99	725.66	11/29/08	189.62	695.24
11/30/08	119.91	674.87	125.91	721.94	11/30/08	188.05	692.63
12/01/08	120.10	688.58	123.88	722.41	12/01/08	195.89	712.40
12/02/08	120.45	672.50	126.29	723.56	12/02/08	196.57	715.55
12/03/08	117.73	685.89	126.02	738.18	12/03/08	194.31	728.56
12/04/08	114.21	684.45	123.82	736.48	12/04/08	193.21	728.48
12/05/08	115.02	688.28	122.78	764.27	12/05/08	192.80	728.45
12/06/08	118.22	694.63	123.60	736.88	12/06/08	188.99	721.64
12/07/08	119.87	690.65	121.71	727.06	12/07/08	172.53	680.80
12/08/08	120.00	675.64	116.98	695.04	12/08/08	180.38	701.67
12/09/08	111.95	655.19	110.03	665.00	12/09/08	171.89	677.43
12/10/08	110.82	652.47	109.03	791.13	12/10/08	177.81	700.38
12/11/08	119.33	685.41	113.34	682.43	12/11/08	183.08	708.19
12/12/08	118.20	675.64	117.46	709.08	12/12/08	180.85	701.15
12/13/08	119.81	688.91	115.83	701.47	12/13/08	183.43	708.27
12/14/08	120.40	682.95	112.63	678.01	12/14/08	188.95	716.66
12/15/08	117.83	687.51	112.73	699.65	12/15/08	183.56	713.08
12/16/08	218.36	707.61	110.43	803.78	12/16/08	190.36	729.56
12/17/08	123.67	705.07	117.35	720.21	12/17/08	194.92	732.46
12/18/08	123.57	696.69	118.13	723.36	12/18/08	192.01	722.51
12/19/08	121.81	707.22	113.64	712.05	12/19/08	199.55	742.68
12/20/08	121.77	697.10	113.55	702.89	12/20/08	196.37	732.23
12/21/08	118.44	708.79	112.23	717.28	12/21/08	196.50	739.14
12/22/08	253.98	754.98	111.44	824.84	12/22/08	197.21	752.04
12/23/08	118.22	691.29	116.01	723.78	12/23/08	201.13	746.72
12/24/08	121.57	711.22	117.00	732.20	12/24/08	198.10	740.74
12/25/08	124.08	713.03	117.33	723.30	12/25/08	195.33	729.00
12/26/08	126.23	716.47	117.39	720.00	12/26/08	177.95	683.05

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
12/27/08	121.27	715.32	119.41	749.70	12/27/08	187.03	720.52
12/28/08	117.74	691.13	120.33	750.12	12/28/08	189.26	719.43
12/29/08	119.82	698.99	121.57	747.66	12/29/08	194.08	731.09
12/30/08	121.21	685.61	120.97	729.48	12/30/08	194.08	713.71
12/31/08	123.23	691.30	119.85	721.60	12/31/08	198.66	710.36
01/01/09	124.34	679.71	191.45	686.92	01/01/09	191.45	686.92
01/02/09	120.60	658.22	194.89	701.11	01/02/09	194.89	701.11
01/03/09	126.04	674.33	192.34	686.89	01/03/09	192.34	686.89
01/04/09	124.89	666.88	184.17	673.65	01/04/09	184.17	673.65
01/05/09	124.11	690.66	196.44	712.76	01/05/09	196.44	712.76
01/06/09	127.49	695.87	206.70	731.51	01/06/09	206.70	731.51
01/07/09	128.10	694.80	203.38	729.35	01/07/09	203.38	729.35
01/08/09	129.02	699.49	204.30	730.31	01/08/09	204.30	730.31
01/09/09	125.80	682.99	198.12	726.64	01/09/09	198.12	726.64
01/10/09	125.23	695.40	198.65	730.63	01/10/09	198.65	730.63
01/11/09	122.76	691.30	200.84	737.44	01/11/09	200.84	737.44
01/12/09	122.12	692.82	199.05	723.59	01/12/09	199.05	723.59
01/13/09	123.49	706.75	195.89	730.18	01/13/09	195.89	730.18
01/14/09	121.96	694.39	196.74	731.74	01/14/09	196.74	731.74
01/15/09	120.61	697.49	196.67	732.34	01/15/09	196.67	732.34
01/16/09	121.40	702.64	197.41	725.19	01/16/09	197.41	725.19
01/17/09	118.87	688.63	200.42	733.18	01/17/09	200.42	733.18
01/18/09	121.74	696.50	195.07	715.74	01/18/09	195.07	715.74
01/19/09	121.76	701.24	193.63	713.20	01/19/09	193.63	713.20
01/20/09	121.98	688.98	202.38	718.06	01/20/09	202.38	718.06
01/21/09	124.09	679.03	204.88	719.52	01/21/09	204.88	719.52
01/22/09	122.82	679.73	207.40	723.71	01/22/09	207.40	723.71
01/23/09	126.51	705.60	207.09	733.84	01/23/09	207.09	733.84
01/24/09	126.51	706.43	203.48	728.56	01/24/09	203.48	728.56
01/25/09	125.67	703.88	199.96	725.86	01/25/09	199.96	725.86
01/26/09	121.93	697.35	207.27	749.60	01/26/09	207.27	749.60
01/27/09	121.81	705.74	200.07	738.32	01/27/09	200.07	738.32
01/28/09	108.74	704.46	195.93	724.61	01/28/09	195.93	724.61
01/29/09	120.68	698.98	198.03	720.52	01/29/09	198.03	720.52
01/30/09	120.50	693.19	199.45	718.33	01/30/09	199.45	718.33
01/31/09	119.41	688.45	204.35	716.84	01/31/09	204.35	716.84
02/01/09	116.18	672.15	203.44	697.82	02/01/09	203.44	697.82
02/02/09	088.65	543.03	167.98	579.19	02/02/09	167.98	579.19
02/03/09	069.04	458.07	128.67	476.96	02/03/09	128.67	476.96
02/04/09	059.54	407.63	100.91	421.16	02/04/09	100.91	421.16
02/05/09	063.61	438.22	114.19	464.48	02/05/09	114.19	464.48
02/06/09	062.92	438.99	108.70	445.76	02/06/09	108.70	445.76
02/07/09	064.30	449.58	115.87	468.04	02/07/09	115.87	468.04
02/08/09	063.44	460.16	113.54	475.30	02/08/09	113.54	475.30
02/09/09	059.75	457.46	115.59	487.09	02/09/09	115.59	487.09
02/10/09	053.23	455.17	106.12	469.57	02/10/09	106.12	469.57
02/11/09	110.23	676.70	207.18	716.52	02/11/09	207.18	716.52
02/12/09	102.38	641.47	196.93	667.80	02/12/09	196.93	667.80
02/13/09	099.94	609.97	178.02	624.53	02/13/09	178.02	624.53
02/14/09	074.74	478.62	137.49	522.98	02/14/09	137.49	522.98
02/15/09	061.38	412.85	105.19	446.69	02/15/09	105.19	446.69
02/16/09	057.80	414.39	106.69	442.36	02/16/09	106.69	442.36
02/17/09	064.89	441.09	111.92	460.96	02/17/09	111.92	460.96

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/18/09	071.11	483.56	126.26	504.53	02/18/09	126.26	504.53
02/19/09	104.07	657.08	186.72	676.43	02/19/09	186.72	676.43
02/20/09	091.78	581.93	160.03	595.51	02/20/09	160.03	595.51
02/21/09	102.12	645.01	190.83	679.64	02/21/09	190.83	679.64
02/22/09	100.60	629.53	181.28	641.86	02/22/09	181.28	641.86
02/23/09	109.78	652.03	200.41	701.49	02/23/09	200.41	701.49
02/24/09	112.04	652.59	197.16	688.00	02/24/09	197.16	688.00
02/25/09	115.09	671.50	197.50	693.38	02/25/09	197.50	693.38
02/26/09	110.07	630.78	185.08	656.14	02/26/09	185.08	656.14
02/27/09	104.44	603.90	174.06	630.96	02/27/09	174.06	630.96
02/28/09	098.51	585.44	161.47	612.92	02/28/09	161.47	612.92
03/01/09	114.12	671.42	188.91	694.23	03/01/09	188.91	694.23
03/02/09	111.67	645.99	186.04	685.34	03/02/09	186.04	685.34
03/03/09	109.36	627.33	175.03	667.13	03/03/09	175.03	667.13
03/04/09	109.97	628.26	172.08	654.33	03/04/09	172.08	654.33
03/05/09	111.02	638.29	178.58	667.41	03/05/09	178.58	667.41
03/06/09	115.04	645.00	179.22	668.40	03/06/09	179.22	668.40
03/07/09	103.37	584.20	154.72	602.17	03/07/09	154.72	602.17
03/08/09	103.26	615.60	166.08	631.91	03/08/09	166.08	631.91
03/09/09	110.22	659.06	179.89	673.22	03/09/09	179.89	673.22
03/10/09	107.37	640.14	176.58	659.77	03/10/09	176.58	659.77
03/11/09	117.59	695.81	183.82	704.56	03/11/09	183.82	704.56
03/12/09	116.50	676.95	183.37	701.82	03/12/09	183.37	701.82
03/13/09	119.58	698.68	192.15	712.69	03/13/09	192.15	712.69
03/14/09	122.52	687.50	191.99	712.08	03/14/09	191.99	712.08
03/15/09	132.36	694.42	196.19	722.93	03/15/09	196.19	722.93
03/16/09	125.29	699.97	198.87	723.21	03/16/09	198.87	723.21
03/17/09	118.25	703.58	201.49	729.61	03/17/09	201.49	729.61
03/18/09	118.67	704.09	202.80	727.37	03/18/09	202.80	727.37
03/19/09	117.45	706.50	207.72	736.49	03/19/09	207.72	736.49
03/20/09	117.88	711.50	202.30	718.08	03/20/09	202.30	718.08
03/21/09	117.48	710.20	207.60	727.21	03/21/09	207.60	727.21
03/22/09	117.87	722.27	198.11	704.54	03/22/09	198.11	704.54
03/23/09	116.03	701.52	209.23	744.50	03/23/09	209.23	744.50
03/24/09	119.06	724.72	195.80	704.72	03/24/09	195.80	704.72
03/25/09	117.07	704.90	206.74	735.42	03/25/09	206.74	735.42
03/26/09	119.12	704.59	205.27	730.91	03/26/09	205.27	730.91
03/27/09	114.22	726.96	208.31	738.60	03/27/09	208.31	738.60
03/28/09	139.06	704.83	207.01	746.32	03/28/09	207.01	746.32
03/29/09	127.97	717.82	203.10	726.08	03/29/09	203.10	726.08
03/30/09	116.10	704.74	204.93	740.87	03/30/09	204.93	740.87
03/31/09	125.60	713.16	199.13	732.67	03/31/09	199.13	732.67
04/01/09	116.07	708.52	201.16	746.01	04/01/09	201.16	746.01
04/02/09	120.68	726.16	198.97	757.56	04/02/09	198.97	757.56
04/03/09	117.23	730.80	195.66	753.25	04/03/09	195.66	753.25
04/04/09	114.56	712.63	191.36	743.08	04/04/09	191.36	743.08
04/05/09	127.78	737.05	191.58	758.60	04/05/09	191.58	758.60
04/06/09	133.58	723.50	187.79	746.17	04/06/09	187.79	746.17
04/07/09	143.80	732.16	189.72	758.33	04/07/09	189.72	758.33
04/08/09	112.54	712.56	188.14	750.53	04/08/09	188.14	750.53
04/09/09	114.29	728.54	191.95	754.90	04/09/09	191.95	754.90
04/10/09	110.30	717.40	193.98	767.12	04/10/09	193.98	767.12
04/11/09	112.93	735.34	196.35	769.26	04/11/09	196.35	769.26

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/12/09	112.62	732.84	190.30	756.04	04/12/09	190.30	756.04
04/13/09	113.18	732.75	191.36	759.89	04/13/09	191.36	759.89
04/14/09	113.98	734.13	196.81	759.56	04/14/09	196.81	759.56
04/15/09	116.05	729.66	195.73	750.45	04/15/09	195.73	750.45
04/16/09	111.85	715.60	184.00	718.13	04/16/09	184.00	718.13
04/17/09	112.92	709.99	182.42	702.30	04/17/09	182.42	702.30
04/18/09	113.25	713.19	196.80	746.65	04/18/09	196.80	746.65
04/19/09	113.75	725.51	198.84	747.93	04/19/09	198.84	747.93
04/20/09	113.22	716.52	202.94	754.53	04/20/09	202.94	754.53
04/21/09	110.57	700.88	195.94	723.58	04/21/09	195.94	723.58
04/22/09	109.52	669.12	177.98	655.25	04/22/09	177.98	655.25
04/23/09	110.55	688.09	189.60	713.45	04/23/09	189.60	713.45
04/24/09	109.98	690.62	186.07	704.32	04/24/09	186.07	704.32
04/25/09	109.20	692.28	190.62	727.09	04/25/09	190.62	727.09
04/26/09	109.16	714.76	181.65	704.70	04/26/09	181.65	704.70
04/27/09	107.51	711.92	189.47	724.99	04/27/09	189.47	724.99
04/28/09	107.80	705.74	191.59	735.08	04/28/09	191.59	735.08
04/29/09	109.31	711.95	189.67	732.28	04/29/09	189.67	732.28
04/30/09	111.64	715.31	194.32	748.36	04/30/09	194.32	748.36
05/01/09	111.13	723.84	196.53	763.07	05/01/09	196.53	763.07
05/02/09	109.41	718.65	198.61	753.28	05/02/09	198.61	753.28
05/03/09	108.91	720.48	195.84	748.41	05/03/09	195.84	748.41
05/04/09	109.08	734.13	195.29	735.64	05/04/09	195.29	735.64
05/05/09	111.07	739.70	201.25	765.62	05/05/09	201.25	765.62
05/06/09	110.39	735.54	199.78	770.77	05/06/09	199.78	770.77
05/07/09	112.08	749.27	198.90	766.42	05/07/09	198.90	766.42
05/08/09	110.92	741.56	200.17	785.66	05/08/09	200.17	785.66
05/09/09	108.23	755.80	197.22	782.59	05/09/09	197.22	782.59
05/10/09	106.94	739.68	196.44	783.35	05/10/09	196.44	783.35
05/11/09	107.19	750.72	193.35	767.86	05/11/09	193.35	767.86
05/12/09	107.92	732.40	195.61	765.49	05/12/09	195.61	765.49
05/13/09	111.77	738.84	195.18	745.91	05/13/09	195.18	745.91
05/14/09	110.10	730.64	202.52	760.63	05/14/09	202.52	760.63
05/15/09	111.09	736.00	201.44	752.56	05/15/09	201.44	752.56
05/16/09	107.68	727.54	199.49	754.30	05/16/09	199.49	754.30
05/17/09	107.45	711.42	204.55	765.77	05/17/09	204.55	765.77
05/18/09	107.89	740.14	197.89	759.96	05/18/09	197.89	759.96
05/19/09	107.25	741.88	197.94	766.21	05/19/09	197.94	766.21
05/20/09	106.14	734.73	198.26	779.33	05/20/09	198.26	779.33
05/21/09	103.55	728.61	193.61	782.23	05/21/09	193.61	782.23
05/22/09	104.20	699.00	186.37	773.20	05/22/09	186.37	773.20
05/23/09	109.30	612.01	183.02	765.32	05/23/09	183.02	765.32
05/24/09	109.30	454.61	186.04	775.27	05/24/09	186.04	775.27
05/25/09	109.30	298.28	189.04	785.16	05/25/09	189.04	785.16
05/26/09	109.30	139.83	192.08	795.18	05/26/09	192.08	795.18
05/27/09	108.49	012.14	188.30	775.50	05/27/09	188.30	775.50
05/28/09	104.74	000.52	189.36	788.75	05/28/09	189.36	788.75
05/29/09	107.48	-00.05	190.42	778.35	05/29/09	190.42	778.35
05/30/09	105.32	000.03	191.99	779.71	05/30/09	191.99	779.71
05/31/09	106.05	000.08	191.67	768.42	05/31/09	191.67	768.42
06/01/09	109.86	000.18	194.27	776.42	06/01/09	194.27	776.42
06/02/09	094.27	000.04	202.92	806.78	06/02/09	202.92	806.78
06/03/09	197.98	-00.03	168.99	660.13	06/03/09	168.99	660.13

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
06/04/09	199.68	-00.25	106.98	625.00	06/04/09	106.98	625.00
06/05/09	169.64	000.02	195.09	471.83	06/05/09	195.09	471.83
06/06/09	186.84	-00.25	150.64	380.32	06/06/09	150.64	380.32
06/07/09	140.40	-00.25	183.88	421.65	06/07/09	183.88	421.65
06/08/09	134.02	-00.25	178.30	409.33	06/08/09	178.30	409.33
06/09/09	133.01	-00.25	176.08	403.13	06/09/09	176.08	403.13
06/10/09	150.37	-00.25	192.14	449.98	06/10/09	192.14	449.98
06/11/09	161.69	-00.25	202.33	472.90	06/11/09	202.33	472.90
06/12/09	158.36	-00.25	202.83	477.61	06/12/09	202.83	477.61
06/13/09	163.71	-00.25	196.33	465.09	06/13/09	196.33	465.09
06/14/09	160.94	-00.25	201.21	490.31	06/14/09	201.21	490.31
06/15/09	159.11	-00.25	200.13	490.52	06/15/09	200.13	490.52
06/16/09	160.21	-00.11	196.38	485.58	06/16/09	196.38	485.58
06/17/09	162.21	-00.25	201.25	502.57	06/17/09	201.25	502.57
06/18/09	167.14	-00.25	193.78	476.84	06/18/09	193.78	476.84
06/19/09	162.67	-00.25	206.02	510.51	06/19/09	206.02	510.51
06/20/09	163.01	001.87	210.91	522.18	06/20/09	210.91	522.18
06/21/09	167.24	-00.24	206.42	509.87	06/21/09	206.42	509.87
06/22/09	165.74	021.07	203.88	503.36	06/22/09	203.88	503.36
06/23/09	162.70	019.39	207.20	523.95	06/23/09	207.20	523.95
06/24/09	160.27	058.25	207.11	513.05	06/24/09	207.11	513.05
06/25/09	163.33	116.21	202.61	503.57	06/25/09	202.61	503.57
06/26/09	164.54	146.58	203.27	505.69	06/26/09	203.27	505.69
06/27/09	159.55	-00.19	204.98	513.03	06/27/09	204.98	513.03
06/28/09	148.60	000.48	195.10	493.77	06/28/09	195.10	493.77
06/29/09	156.07	-00.25	197.45	507.51	06/29/09	197.45	507.51
06/30/09	162.08	007.81	201.08	518.97	06/30/09	201.08	518.97
07/01/09	161.35	-00.24	195.55	514.82	07/01/09	195.55	514.82
07/02/09	160.91	-00.23	192.92	511.42	07/02/09	192.92	511.42
07/03/09	157.51	-00.25	197.92	526.16	07/03/09	197.92	526.16
07/04/09	154.33	-00.25	197.03	531.31	07/04/09	197.03	531.31
07/05/09	153.75	032.79	199.43	527.90	07/05/09	199.43	527.90
07/06/09	157.22	-00.25	199.95	528.57	07/06/09	199.95	528.57
07/07/09	160.74	-00.25	196.86	523.91	07/07/09	196.86	523.91
07/08/09	168.24	-00.25	190.03	490.75	07/08/09	190.03	490.75
07/09/09	163.66	106.16	197.78	518.91	07/09/09	197.78	518.91
07/10/09	165.40	-00.25	192.60	498.77	07/10/09	192.60	498.77
07/11/09	160.72	260.77	199.06	526.95	07/11/09	199.06	526.95
07/12/09	160.34	005.40	195.09	517.60	07/12/09	195.09	517.60
07/13/09	150.85	000.30	179.88	467.55	07/13/09	179.88	467.55
07/14/09	157.88	-00.25	193.18	506.58	07/14/09	193.18	506.58
07/15/09	151.79	-00.25	199.41	494.00	07/15/09	199.41	494.00
07/16/09	146.00	-00.25	206.15	481.43	07/16/09	206.15	481.43
07/17/09	155.25	078.63	175.84	429.36	07/17/09	175.84	429.36
07/18/09	147.04	002.26	205.49	474.75	07/18/09	205.49	474.75
07/19/09	144.99	-00.25	206.43	468.37	07/19/09	206.43	468.37
07/20/09	141.21	-00.25	204.34	460.00	07/20/09	204.34	460.00
07/21/09	141.40	-00.25	206.32	465.94	07/21/09	206.32	465.94
07/22/09	130.28	-00.25	198.73	456.22	07/22/09	198.73	456.22
07/23/09	145.88	-00.25	208.96	482.74	07/23/09	208.96	482.74
07/24/09	147.93	-00.25	204.78	480.78	07/24/09	204.78	480.78
07/25/09	151.12	-00.25	207.32	485.28	07/25/09	207.32	485.28
07/26/09	152.10	003.01	210.24	488.91	07/26/09	210.24	488.91

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
07/27/09	157.37	001.55	219.01	519.99	07/27/09	219.01	519.99
07/28/09	156.83	000.00	209.93	501.22	07/28/09	209.93	501.22
07/29/09	155.09	-00.24	215.13	513.58	07/29/09	215.13	513.58
07/30/09	155.74	-00.25	213.06	521.28	07/30/09	213.06	521.28
07/31/09	153.42	-00.07	209.09	514.31	07/31/09	209.09	514.31
08/01/09	149.63	-00.25	202.33	499.81	08/01/09	202.33	499.81
08/02/09	147.97	001.28	200.39	496.73	08/02/09	200.39	496.73
08/03/09	148.24	-00.18	208.62	517.12	08/03/09	208.62	517.12
08/04/09	139.99	-00.25	193.44	471.00	08/04/09	193.44	471.00
08/05/09	125.77	172.69	196.49	486.38	08/05/09	196.49	486.38
08/06/09	134.84	432.01	194.75	484.30	08/06/09	194.75	484.30
08/07/09	131.95	425.95	189.46	471.63	08/07/09	189.46	471.63
08/08/09	134.81	433.82	191.40	473.89	08/08/09	191.40	473.89
08/09/09	138.55	442.32	194.13	479.21	08/09/09	194.13	479.21
08/10/09	139.70	448.17	201.34	498.55	08/10/09	201.34	498.55
08/11/09	142.87	460.86	206.15	509.63	08/11/09	206.15	509.63
08/12/09	137.34	444.87	196.62	483.51	08/12/09	196.62	483.51
08/13/09	141.81	459.29	199.67	493.71	08/13/09	199.67	493.71
08/14/09	143.43	467.87	204.48	508.15	08/14/09	204.48	508.15
08/15/09	144.07	472.46	199.00	499.77	08/15/09	199.00	499.77
08/16/09	145.01	475.61	197.93	493.87	08/16/09	197.93	493.87
08/17/09	141.75	467.98	201.40	506.22	08/17/09	201.40	506.22
08/18/09	149.10	495.41	205.09	515.66	08/18/09	205.09	515.66
08/19/09	144.92	476.21	205.71	502.31	08/19/09	205.71	502.31
08/20/09	142.07	466.29	206.04	501.16	08/20/09	206.04	501.16
08/21/09	140.13	463.84	205.39	508.74	08/21/09	205.39	508.74
08/22/09	136.34	461.66	189.71	478.30	08/22/09	189.71	478.30
08/23/09	121.88	423.49	178.88	453.51	08/23/09	178.88	453.51
08/24/09	051.49	267.35	240.89	637.95	08/24/09	240.89	637.95
08/25/09	000.11	149.15	309.54	828.71	08/25/09	309.54	828.71
08/26/09	000.26	147.54	310.70	832.28	08/26/09	310.70	832.28
08/27/09	000.18	146.91	306.21	825.09	08/27/09	306.21	825.09
08/28/09	000.23	145.18	000.00	166.04	08/28/09	000.00	166.04
08/29/09	000.09	141.98	000.00	162.04	08/29/09	000.00	162.04
08/30/09	000.26	654.47	264.94	640.01	08/30/09	264.94	640.01
08/31/09	049.94	624.36	248.34	594.54	08/31/09	248.34	594.54
09/01/09	124.32	492.24	222.53	514.75	09/01/09	222.53	514.75
09/02/09	140.52	485.32	216.34	504.56	09/02/09	216.34	504.56
09/03/09	141.71	486.51	210.88	496.80	09/03/09	210.88	496.80
09/04/09	135.26	472.14	206.59	493.52	09/04/09	206.59	493.52
09/05/09	146.73	495.80	182.64	440.27	09/05/09	182.64	440.27
09/06/09	146.47	496.44	180.08	426.60	09/06/09	180.08	426.60
09/07/09	141.08	486.22	196.41	473.41	09/07/09	196.41	473.41
09/08/09	145.23	491.27	197.98	470.72	09/08/09	197.98	470.72
09/09/09	136.58	480.40	212.67	502.90	09/09/09	212.67	502.90
09/10/09	138.19	481.73	208.81	493.67	09/10/09	208.81	493.67
09/11/09	131.51	465.18	217.39	516.77	09/11/09	217.39	516.77
09/12/09	132.07	474.89	218.27	518.73	09/12/09	218.27	518.73
09/13/09	133.66	484.93	207.39	497.49	09/13/09	207.39	497.49
09/14/09	127.14	474.87	217.98	530.26	09/14/09	217.98	530.26
09/15/09	125.07	477.54	211.00	508.37	09/15/09	211.00	508.37
09/16/09	123.20	469.30	206.44	501.10	09/16/09	206.44	501.10
09/17/09	118.71	463.17	211.98	514.57	09/17/09	211.98	514.57

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/18/09	122.17	463.78	202.93	491.99	09/18/09	202.93	491.99
09/19/09	123.15	477.20	202.03	494.87	09/19/09	202.03	494.87
09/20/09	125.71	486.81	210.97	515.68	09/20/09	210.97	515.68
09/21/09	124.17	476.32	214.96	531.50	09/21/09	214.96	531.50
09/22/09	127.96	490.62	217.57	529.05	09/22/09	217.57	529.05
09/23/09	129.00	494.01	198.83	503.01	09/23/09	198.83	503.01
09/24/09	127.74	490.11	209.48	516.58	09/24/09	209.48	516.58
09/25/09	128.26	490.90	213.62	520.92	09/25/09	213.62	520.92
09/26/09	128.14	490.31	213.14	519.64	09/26/09	213.14	519.64
09/27/09	125.94	480.54	207.61	504.79	09/27/09	207.61	504.79
09/28/09	041.82	265.07	066.51	286.36	09/28/09	066.51	286.36
09/29/09	000.14	155.63	000.00	177.14	09/29/09	000.00	177.14
09/30/09	000.28	153.59	000.00	176.51	09/30/09	000.00	176.51
10/01/09	000.05	152.31	000.00	256.05	10/01/09	000.00	256.05
10/02/09	000.10	151.88	000.00	095.57	10/02/09	000.00	095.57
10/03/09	000.10	149.24	000.00	007.58	10/03/09	000.00	007.58
10/04/09	124.10	460.04	215.49	492.48	10/04/09	215.49	492.48
10/05/09	133.54	498.44	226.31	524.91	10/05/09	226.31	524.91
10/06/09	129.80	487.01	225.52	520.40	10/06/09	225.52	520.40
10/07/09	130.70	490.49	221.09	511.06	10/07/09	221.09	511.06
10/08/09	132.16	491.60	223.17	511.52	10/08/09	223.17	511.52
10/09/09	132.51	492.70	213.27	495.36	10/09/09	213.27	495.36
10/10/09	129.46	488.23	219.28	504.12	10/10/09	219.28	504.12
10/11/09	130.44	488.67	212.68	494.39	10/11/09	212.68	494.39
10/12/09	130.48	487.04	220.36	503.81	10/12/09	220.36	503.81
10/13/09	129.33	479.80	219.42	506.46	10/13/09	219.42	506.46
10/14/09	128.75	484.61	220.17	507.81	10/14/09	220.17	507.81
10/15/09	128.35	482.90	218.55	506.07	10/15/09	218.55	506.07
10/16/09	127.25	492.26	218.50	515.87	10/16/09	218.50	515.87
10/17/09	133.55	519.06	202.37	498.95	10/17/09	202.37	498.95
10/18/09	126.08	494.09	216.25	527.31	10/18/09	216.25	527.31
10/19/09	120.12	490.37	216.35	532.62	10/19/09	216.35	532.62
10/20/09	118.72	490.28	213.79	538.52	10/20/09	213.79	538.52
10/21/09	119.65	494.63	210.87	529.44	10/21/09	210.87	529.44
10/22/09	122.39	506.21	205.89	534.27	10/22/09	205.89	534.27
10/23/09	199.58	775.37	060.20	285.44	10/23/09	060.20	285.44
10/24/09	242.52	899.03	000.00	181.47	10/24/09	000.00	181.47
10/25/09	243.79	900.12	000.00	180.94	10/25/09	000.00	180.94
10/26/09	160.56	648.95	000.00	120.12	10/26/09	000.00	120.12
10/27/09	126.56	547.45	000.01	173.92	10/27/09	000.00	218.87
10/28/09	000.03	157.04	000.00	176.49	10/28/09	000.00	211.79
10/29/09	000.13	155.62	000.01	175.72	10/29/09	000.00	206.63
10/30/09	035.89	238.39	032.39	276.91	10/30/09	050.37	224.83
10/31/09	132.31	475.97	109.24	510.30	10/31/09	190.41	461.66
11/01/09	140.72	500.77	117.18	538.53	11/01/09	205.37	551.41
11/01/09	132.85	477.59	117.72	539.48	11/01/09	211.42	529.82
11/02/09	130.43	485.28	114.43	536.76	11/02/09	197.88	464.39
11/03/09	132.20	494.36	114.42	539.10	11/03/09	204.54	401.72
11/04/09	132.12	496.05	101.41	491.94	11/04/09	207.25	334.13
11/05/09	121.55	472.17	104.29	505.05	11/05/09	220.09	320.44
11/06/09	133.08	504.51	092.98	475.72	11/06/09	213.35	294.11
11/07/09	133.40	499.46	101.59	498.55	11/07/09	218.71	323.65
11/08/09	128.23	490.67	103.22	501.46	11/08/09	201.34	330.62

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/09/09	123.98	477.21	106.46	509.92	11/09/09	210.76	369.66
11/10/09	133.30	507.45	098.55	485.84	11/10/09	202.19	359.85
11/11/09	118.70	468.95	101.69	499.17	11/11/09	194.65	308.37
11/12/09	128.28	500.85	106.01	515.35	11/12/09	195.71	268.09
11/13/09	124.05	486.52	109.83	528.45	11/13/09	209.18	273.82
11/14/09	125.14	495.98	100.55	499.21	11/14/09	186.07	274.62
11/15/09	122.32	493.09	079.54	436.06	11/15/09	189.88	294.28
11/16/09	116.76	475.83	082.04	446.37	11/16/09	172.10	252.15
11/17/09	122.72	491.20	081.03	457.52	11/17/09	182.04	248.17
11/18/09	114.15	461.05	073.73	443.35	11/18/09	223.93	260.45
11/19/09	110.08	444.99	119.12	583.64	11/19/09	243.53	274.48
11/20/09	115.81	475.77	111.04	550.32	11/20/09	212.69	281.28
11/21/09	129.34	518.25	099.90	504.19	11/21/09	202.05	269.10
11/22/09	124.21	503.42	097.55	498.89	11/22/09	213.96	296.24
11/23/09	134.12	539.56	077.82	446.95	11/23/09	223.81	340.82
11/24/09	135.95	543.94	093.78	488.69	11/24/09	213.40	320.02
11/25/09	127.97	520.75	126.46	495.43	11/25/09	201.39	270.70
11/26/09	133.51	533.52	157.21	551.48	11/26/09	208.39	265.36
11/27/09	125.98	513.20	161.11	568.86	11/27/09	211.72	270.56
11/28/09	128.52	523.83	161.24	569.52	11/28/09	209.87	296.03
11/29/09	130.43	536.63	157.18	552.24	11/29/09	199.02	323.35
11/30/09	131.69	541.18	158.94	566.02	11/30/09	203.91	287.14
12/01/09	124.07	526.43	155.90	571.55	12/01/09	210.16	249.64
12/02/09	266.90	538.78	265.20	611.00	12/02/09	206.69	248.92
12/03/09	065.27	607.52	350.57	872.94	12/03/09	211.87	245.75
12/04/09	369.83	519.27	241.48	790.84	12/04/09	205.02	242.57
12/05/09	147.83	243.50	144.08	501.55	12/05/09	218.72	257.13
12/06/09	148.64	543.56	155.19	541.86	12/06/09	214.25	278.54
12/07/09	148.85	553.83	153.74	538.55	12/07/09	212.49	334.64
12/08/09	151.60	562.90	147.75	504.49	12/08/09	208.17	313.19
12/09/09	149.41	559.44	160.53	577.83	12/09/09	206.95	281.83
12/10/09	143.04	539.44	154.85	550.36	12/10/09	194.19	277.95
12/11/09	148.79	569.62	156.11	562.22	12/11/09	212.64	287.20
12/12/09	147.75	566.88	157.26	603.67	12/12/09	211.68	384.76
12/13/09	146.49	564.21	157.51	584.22	12/13/09	212.20	432.36
12/14/09	144.68	557.23	159.45	597.58	12/14/09	211.91	421.51
12/15/09	145.76	563.96	157.15	579.24	12/15/09	211.93	497.36
12/16/09	145.86	562.04	159.19	593.45	12/16/09	209.25	499.23
12/17/09	158.06	610.25	155.24	574.11	12/17/09	183.30	441.01
12/18/09	149.88	561.38	157.53	578.78	12/18/09	212.25	418.23
12/19/09	146.97	552.75	156.28	580.15	12/19/09	208.31	399.25
12/20/09	153.29	583.78	152.95	569.56	12/20/09	204.16	391.55
12/21/09	154.60	587.14	150.90	557.35	12/21/09	210.98	356.83
12/22/09	149.93	571.41	153.71	577.47	12/22/09	211.48	377.74
12/23/09	148.08	568.30	153.11	580.03	12/23/09	211.99	370.92
12/24/09	144.08	552.49	153.62	586.07	12/24/09	199.68	240.73
12/25/09	134.00	581.26	153.40	593.17	12/25/09	211.82	208.40
12/26/09	147.21	593.42	150.78	585.81	12/26/09	204.79	221.48
12/27/09	143.19	579.13	152.63	612.78	12/27/09	201.83	233.98
12/28/09	142.56	583.43	151.32	608.99	12/28/09	204.83	237.32
12/29/09	143.06	582.78	152.58	613.34	12/29/09	205.02	219.06
12/30/09	143.17	583.14	151.34	606.88	12/30/09	204.91	246.86
12/31/09	142.47	580.88	149.99	603.60	12/31/09	208.07	241.68

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/01/10	145.23	595.56	151.13	617.84	01/01/10	204.22	224.98
01/02/10	143.94	591.30	150.44	618.17	01/02/10	201.96	265.95
01/03/10	142.52	585.24	150.42	621.79	01/03/10	201.80	281.25
01/04/10	141.06	581.49	147.79	601.50	01/04/10	196.61	261.44
01/05/10	146.31	600.39	147.32	599.68	01/05/10	204.48	241.45
01/06/10	144.42	584.62	145.76	583.26	01/06/10	196.25	243.86
01/07/10	145.11	593.55	148.29	608.56	01/07/10	200.92	225.18
01/08/10	191.70	578.58	151.28	624.96	01/08/10	198.18	229.63
01/09/10	332.01	686.62	149.91	614.48	01/09/10	200.13	233.67
01/10/10	131.37	571.53	147.31	591.79	01/10/10	189.54	256.11
01/11/10	142.26	600.69	148.91	607.52	01/11/10	198.25	272.05
01/12/10	143.08	597.63	150.30	618.56	01/12/10	197.82	258.13
01/13/10	140.62	587.53	149.22	610.03	01/13/10	195.82	251.01
01/14/10	139.62	578.76	148.61	595.23	01/14/10	194.23	271.26
01/15/10	140.46	585.03	151.69	613.95	01/15/10	200.14	322.25
01/16/10	145.22	612.49	149.82	601.32	01/16/10	194.13	330.55
01/17/10	137.79	572.97	153.32	624.95	01/17/10	201.82	366.89
01/18/10	142.06	592.75	151.61	607.51	01/18/10	201.45	300.03
01/19/10	144.54	602.49	153.23	619.75	01/19/10	197.99	252.11
01/20/10	141.11	587.52	149.45	589.21	01/20/10	182.76	257.03
01/21/10	144.08	605.24	151.36	607.72	01/21/10	200.05	246.39
01/22/10	141.63	593.69	151.37	607.66	01/22/10	190.78	264.16
01/23/10	140.17	595.92	151.34	610.68	01/23/10	196.95	277.83
01/24/10	142.03	607.97	149.94	605.87	01/24/10	201.72	236.02
01/25/10	138.66	590.19	152.20	623.23	01/25/10	202.56	251.05
01/26/10	141.21	605.01	148.44	598.50	01/26/10	204.66	241.34
01/27/10	141.61	606.66	148.37	598.90	01/27/10	205.49	247.04
01/28/10	142.29	615.31	147.76	600.42	01/28/10	206.70	247.09
01/29/10	130.13	604.85	144.38	578.66	01/29/10	199.62	235.40
01/30/10	138.82	603.79	141.98	557.03	01/30/10	204.83	261.45
01/31/10	138.25	603.51	147.89	603.28	01/31/10	202.82	271.11
02/01/10	140.32	608.04	146.61	584.94	02/01/10	201.59	327.25
02/02/10	139.22	596.68	145.44	576.56	02/02/10	194.64	348.65
02/03/10	142.04	617.64	139.22	530.74	02/03/10	208.58	294.26
02/04/10	143.45	621.43	145.55	574.80	02/04/10	201.04	261.87
02/05/10	143.64	620.16	147.38	581.47	02/05/10	201.58	340.35
02/06/10	143.04	613.14	148.02	587.93	02/06/10	203.01	346.22
02/07/10	138.83	596.79	147.01	577.57	02/07/10	197.23	331.95
02/08/10	123.60	517.38	134.14	480.52	02/08/10	158.68	284.62
02/09/10	134.45	583.48	146.93	580.74	02/09/10	206.95	306.01
02/10/10	142.70	619.43	141.41	536.38	02/10/10	199.87	251.19
02/11/10	142.39	618.81	147.45	576.05	02/11/10	191.95	252.79
02/12/10	138.63	598.49	146.80	572.57	02/12/10	200.44	256.96
02/13/10	139.94	603.31	146.05	563.67	02/13/10	201.50	294.51
02/14/10	134.31	578.93	148.83	585.45	02/14/10	200.22	315.94
02/15/10	121.54	512.66	140.09	521.59	02/15/10	172.83	299.54
02/16/10	116.82	480.07	132.38	458.15	02/16/10	137.02	325.44
02/17/10	121.35	516.24	143.18	542.65	02/17/10	168.07	289.07
02/18/10	138.10	604.53	147.72	586.86	02/18/10	207.79	331.14
02/19/10	138.31	608.52	148.07	590.85	02/19/10	198.65	360.87
02/20/10	110.24	442.49	131.99	457.68	02/20/10	116.64	368.86
02/21/10	130.34	563.06	145.68	568.54	02/21/10	192.70	336.40
02/22/10	134.06	602.29	147.90	599.90	02/22/10	210.24	362.14

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
02/23/10	126.82	611.45	148.52	615.20	02/23/10	208.67	293.02
02/24/10	126.84	580.05	148.44	626.11	02/24/10	211.53	277.91
02/25/10	128.51	581.51	146.18	597.74	02/25/10	193.72	292.83
02/26/10	133.78	601.54	148.49	615.49	02/26/10	211.45	350.77
02/27/10	133.24	607.00	146.08	604.60	02/27/10	212.46	390.38
02/28/10	133.12	601.29	147.96	614.33	02/28/10	205.13	404.56
03/01/10	130.28	595.74	147.97	614.79	03/01/10	206.80	399.81
03/02/10	130.07	587.90	146.52	600.47	03/02/10	208.59	396.63
03/03/10	134.60	609.75	148.21	608.43	03/03/10	208.78	397.34
03/04/10	132.72	598.64	148.64	616.51	03/04/10	209.50	391.81
03/05/10	135.34	612.00	147.14	616.95	03/05/10	207.94	391.90
03/06/10	135.74	622.25	152.66	649.71	03/06/10	185.14	394.32
03/07/10	133.90	615.45	146.02	605.52	03/07/10	210.06	419.68
03/08/10	134.53	620.94	147.83	624.05	03/08/10	199.78	408.12
03/09/10	130.22	602.80	146.02	617.08	03/09/10	208.66	356.56
03/10/10	129.50	602.25	145.48	615.47	03/10/10	210.99	362.91
03/11/10	128.11	596.75	144.72	622.96	03/11/10	211.76	352.61
03/12/10	129.80	605.87	144.41	619.09	03/12/10	212.70	317.90
03/13/10	130.35	609.00	143.85	616.92	03/13/10	212.88	317.42
03/15/10	130.76	609.96	144.00	616.30	03/15/10	213.70	308.78
03/16/10	127.71	600.02	145.34	635.80	03/16/10	215.16	298.54
03/17/10	131.40	622.17	144.25	627.24	03/17/10	214.25	238.88
03/18/10	129.76	585.46	144.32	625.11	03/18/10	201.05	246.67
03/19/10	133.61	627.53	144.26	630.50	03/19/10	213.96	290.61
03/20/10	130.50	581.51	144.34	636.34	03/20/10	217.28	342.56
03/21/10	132.63	631.06	144.81	648.61	03/21/10	210.63	351.49
03/22/10	132.74	627.23	144.22	647.89	03/22/10	205.46	338.04
03/23/10	128.40	589.74	143.93	647.35	03/23/10	210.69	355.08
03/24/10	131.49	608.84	141.93	634.79	03/24/10	203.28	390.56
03/25/10	131.25	597.16	142.06	634.12	03/25/10	210.73	420.85
03/26/10	127.80	603.25	161.74	640.93	03/26/10	197.55	406.84
03/27/10	128.83	587.60	165.44	650.16	03/27/10	215.02	389.79
03/28/10	128.37	602.79	160.31	648.54	03/28/10	213.60	436.85
03/29/10	123.15	569.04	155.18	646.92	03/29/10	213.48	466.57
03/30/10	133.15	628.71	150.05	645.30	03/30/10	209.39	496.49
03/31/10	131.19	600.18	144.92	643.68	03/31/10	211.32	517.02
04/01/10	133.76	611.73	140.58	632.78	04/01/10	212.31	530.94
04/02/10	128.18	588.40	142.58	635.66	04/02/10	217.33	542.96
04/03/10	130.02	598.35	143.80	632.23	04/03/10	210.42	491.97
04/04/10	126.15	595.74	142.57	625.24	04/04/10	203.74	433.27
04/05/10	121.57	554.77	145.79	642.85	04/05/10	207.54	401.59
04/06/10	123.84	588.94	144.27	631.35	04/06/10	217.81	444.11
04/07/10	124.56	586.35	140.64	606.34	04/07/10	212.13	442.50
04/08/10	116.88	561.78	137.94	582.20	04/08/10	183.17	411.83
04/09/10	126.61	590.54	141.68	616.01	04/09/10	186.24	291.16
04/10/10	131.02	650.63	144.92	638.41	04/10/10	211.68	311.76
04/11/10	129.27	614.78	145.73	642.36	04/11/10	212.56	332.55
04/12/10	131.77	638.58	144.99	638.85	04/12/10	210.60	351.00
04/13/10	132.13	619.25	144.59	642.19	04/13/10	209.51	391.40
04/14/10	131.48	637.89	144.92	646.93	04/14/10	204.78	435.40
04/15/10	128.94	621.71	145.07	655.60	04/15/10	206.15	441.30
04/16/10	112.27	512.88	128.69	501.85	04/16/10	129.56	323.20
04/17/10	130.30	651.11	142.02	647.26	04/17/10	204.78	379.65

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/18/10	128.98	615.94	142.48	639.15	04/18/10	198.65	343.19
04/19/10	131.38	673.03	142.63	638.84	04/19/10	207.01	334.22
04/20/10	128.92	602.21	143.29	642.78	04/20/10	200.56	328.64
04/21/10	132.71	637.06	142.97	640.50	04/21/10	209.31	306.56
04/22/10	133.42	617.87	143.35	650.87	04/22/10	206.76	313.15
04/23/10	129.65	605.90	143.20	656.36	04/23/10	202.30	298.19
04/24/10	124.15	602.18	138.12	609.85	04/24/10	166.89	271.86
04/25/10	115.30	569.77	135.53	563.32	04/25/10	148.27	290.62
04/26/10	122.65	544.26	137.44	591.75	04/26/10	174.27	309.92
04/27/10	129.83	591.98	142.20	644.36	04/27/10	193.08	372.62
04/28/10	129.91	636.55	144.90	674.43	04/28/10	193.59	380.50
04/29/10	118.80	590.42	133.17	554.48	04/29/10	156.65	380.88
04/30/10	133.00	620.97	139.92	618.10	04/30/10	180.28	354.85
05/01/10	133.81	622.12	140.10	638.74	05/01/10	186.65	426.04
05/02/10	135.02	645.48	138.48	626.63	05/02/10	187.87	407.87
05/03/10	132.79	642.27	139.83	659.93	05/03/10	181.61	343.37
05/04/10	118.63	593.64	131.45	557.87	05/04/10	141.25	315.20
05/05/10	118.38	528.37	132.66	558.62	05/05/10	149.17	327.78
05/06/10	130.96	627.96	138.15	623.39	05/06/10	194.35	444.50
05/07/10	133.52	634.69	139.16	641.91	05/07/10	193.52	413.38
05/08/10	135.22	611.72	138.40	649.13	05/08/10	190.48	389.57
05/09/10	132.94	594.90	137.98	657.41	05/09/10	188.19	353.27
05/10/10	134.20	659.15	137.99	645.30	05/10/10	188.56	256.53
05/11/10	131.16	600.72	137.21	622.94	05/11/10	193.80	261.25
05/12/10	130.94	593.69	139.11	809.78	05/12/10	178.57	267.29
05/13/10	120.75	358.16	127.64	712.45	05/13/10	120.66	259.01
05/14/10	123.31	550.61	130.55	687.28	05/14/10	153.36	319.28
05/15/10	130.54	566.24	131.74	744.47	05/15/10	168.11	298.66
05/16/10	133.72	620.99	127.80	699.88	05/16/10	178.50	280.58
05/17/10	128.86	628.66	131.95	724.25	05/17/10	148.64	274.34
05/18/10	139.00	652.40	133.13	874.26	05/18/10	139.76	347.60
05/19/10	137.69	668.23	134.71	909.85	05/19/10	151.80	303.29
05/20/10	110.45	486.97	123.29	612.22	05/20/10	086.78	281.96
05/21/10	137.81	621.52	138.13	634.36	05/21/10	160.87	398.94
05/22/10	128.98	440.82	125.87	513.90	05/22/10	136.45	330.53
05/23/10	117.73	493.13	129.19	549.48	05/23/10	136.48	286.18
05/24/10	125.07	524.49	133.57	609.88	05/24/10	151.93	319.59
05/25/10	133.82	603.41	138.13	673.53	05/25/10	170.51	332.74
05/26/10	122.85	449.00	133.46	604.65	05/26/10	149.56	301.71
05/27/10	133.36	465.31	139.34	651.10	05/27/10	166.78	338.11
05/28/10	137.19	510.74	135.82	613.53	05/28/10	173.76	340.59
05/29/10	137.43	486.52	138.76	632.15	05/29/10	173.97	334.18
05/30/10	137.46	372.07	141.81	660.40	05/30/10	172.38	310.85
05/31/10	137.99	410.92	140.35	642.84	05/31/10	174.68	308.84
06/01/10	136.83	387.83	137.92	630.47	06/01/10	177.47	306.36
06/02/10	132.42	371.00	137.61	616.92	06/02/10	179.12	298.81
06/03/10	132.54	567.66	139.65	627.15	06/03/10	181.52	311.22
06/04/10	126.94	481.74	136.11	589.56	06/04/10	154.57	286.53
06/05/10	126.79	508.83	136.55	589.18	06/05/10	162.56	321.74
06/06/10	127.60	533.19	136.66	593.55	06/06/10	160.23	363.79
06/07/10	135.73	626.34	134.21	583.27	06/07/10	179.65	440.57
06/08/10	133.07	578.90	140.49	643.06	06/08/10	184.66	431.66
06/09/10	135.37	601.02	142.40	661.79	06/09/10	181.81	416.92

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
06/10/10	135.33	596.69	142.66	665.91	06/10/10	182.06	399.61
06/11/10	133.37	551.43	141.55	662.22	06/11/10	185.25	355.12
06/12/10	131.83	556.90	140.82	665.25	06/12/10	184.27	317.00
06/13/10	131.40	525.45	139.62	662.66	06/13/10	185.97	359.27
06/14/10	129.47	517.32	138.54	666.26	06/14/10	183.20	363.67
06/15/10	132.07	597.01	139.14	663.93	06/15/10	184.61	306.95
06/16/10	131.58	602.04	138.97	666.00	06/16/10	183.89	278.06
06/17/10	131.33	512.66	138.86	666.33	06/17/10	182.57	265.99
06/18/10	130.94	511.79	138.92	666.79	06/18/10	183.07	251.85
06/19/10	129.64	594.90	137.27	652.99	06/19/10	175.07	257.01
06/20/10	131.06	566.55	137.55	655.73	06/20/10	178.63	349.43
06/21/10	132.60	550.85	135.91	644.87	06/21/10	183.43	359.07
06/22/10	131.93	612.23	134.98	641.26	06/22/10	184.32	376.13
06/23/10	128.00	521.61	137.56	662.82	06/23/10	185.26	401.19
06/24/10	130.22	415.23	136.67	654.03	06/24/10	176.93	373.84
06/25/10	130.71	619.13	137.74	666.10	06/25/10	183.58	301.78
06/26/10	131.27	458.68	137.35	667.43	06/26/10	182.74	292.12
06/27/10	130.32	459.89	137.00	667.19	06/27/10	179.35	297.93
06/28/10	126.24	283.94	136.35	657.13	06/28/10	175.25	320.47
06/29/10	123.47	360.69	138.05	669.01	06/29/10	176.58	325.42
06/30/10	125.83	346.68	137.35	652.40	06/30/10	178.83	306.59
07/01/10	126.81	300.94	136.70	642.09	07/01/10	173.18	393.60
07/02/10	128.77	365.78	137.50	650.79	07/02/10	180.50	329.51
07/03/10	127.66	375.96	137.45	655.25	07/03/10	175.49	361.35
07/04/10	127.05	462.25	137.59	657.43	07/04/10	174.83	413.66
07/05/10	125.79	658.40	137.59	652.77	07/05/10	179.73	455.84
07/06/10	125.00	696.96	136.64	647.68	07/06/10	176.87	453.66
07/07/10	129.04	631.81	135.76	637.92	07/07/10	167.20	406.13
07/08/10	096.27	465.79	115.57	402.12	07/08/10	051.94	128.07
07/09/10	135.08	423.03	142.19	669.89	07/09/10	152.49	291.99
07/10/10	130.42	567.31	141.36	656.26	07/10/10	180.13	352.54
07/11/10	130.45	639.28	140.93	657.30	07/11/10	179.40	394.12
07/12/10	130.19	675.05	140.44	653.25	07/12/10	180.52	338.95
07/13/10	130.69	677.09	140.02	653.89	07/13/10	181.70	299.81
07/14/10	136.35	761.10	126.72	520.46	07/14/10	188.50	288.84
07/15/10	131.70	761.78	138.24	661.99	07/15/10	179.04	284.12
07/16/10	130.23	718.72	138.59	654.57	07/16/10	181.59	315.57
07/17/10	130.15	715.29	138.88	658.91	07/17/10	182.74	310.30
07/18/10	129.33	684.87	139.74	669.57	07/18/10	181.98	303.60
07/19/10	129.23	669.19	139.98	672.46	07/19/10	183.08	297.69
07/20/10	130.12	664.20	139.76	668.20	07/20/10	178.70	285.64
07/21/10	129.85	645.00	139.23	662.41	07/21/10	180.37	270.20
07/22/10	130.76	605.78	138.86	664.60	07/22/10	178.69	267.33
07/23/10	128.98	640.22	139.47	666.40	07/23/10	180.95	278.72
07/24/10	129.21	611.87	139.27	672.83	07/24/10	178.94	300.17
07/25/10	129.17	457.63	138.18	669.76	07/25/10	176.35	309.95
07/26/10	129.34	502.84	139.60	677.40	07/26/10	175.48	304.01
07/27/10	129.47	620.21	139.77	678.65	07/27/10	178.11	324.26
07/28/10	131.07	667.27	132.83	614.96	07/28/10	182.99	347.72
07/29/10	130.49	631.56	135.62	628.54	07/29/10	182.08	366.91
07/30/10	129.03	636.88	138.96	668.34	07/30/10	177.72	330.44
07/31/10	128.66	688.96	140.40	679.89	07/31/10	179.51	320.90
08/01/10	129.37	729.05	139.29	668.12	08/01/10	180.12	298.13

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/02/10	131.19	754.44	137.87	659.05	08/02/10	177.96	285.21
08/03/10	129.44	771.93	140.36	679.14	08/03/10	179.81	283.86
08/04/10	130.23	720.74	139.06	670.56	08/04/10	182.37	294.49
08/05/10	127.30	707.12	139.85	674.85	08/05/10	181.07	247.34
08/06/10	125.04	675.79	140.63	690.07	08/06/10	181.45	208.06
08/07/10	129.80	653.99	140.00	680.34	08/07/10	177.98	195.23
08/08/10	128.91	666.16	139.07	672.68	08/08/10	179.53	216.00
08/09/10	125.96	629.80	140.71	688.97	08/09/10	179.81	253.65
08/10/10	126.74	576.53	140.06	684.28	08/10/10	178.08	272.30
08/11/10	129.82	614.23	139.38	679.47	08/11/10	178.82	263.49
08/12/10	129.00	662.84	138.73	675.66	08/12/10	180.03	265.11
08/13/10	129.29	671.82	138.57	672.57	08/13/10	180.18	286.44
08/14/10	129.01	692.96	138.67	674.28	08/14/10	175.43	318.16
08/15/10	129.67	691.17	140.27	692.96	08/15/10	181.59	348.30
08/16/10	129.93	660.66	140.58	693.33	08/16/10	180.45	368.92
08/17/10	132.42	643.63	139.47	687.41	08/17/10	178.40	384.77
08/18/10	131.60	662.32	139.63	690.00	08/18/10	178.42	395.07
08/19/10	132.23	667.43	140.22	697.09	08/19/10	177.29	410.75
08/20/10	132.71	614.66	140.43	703.92	08/20/10	173.93	398.46
08/21/10	131.93	670.14	139.94	694.83	08/21/10	179.85	390.93
08/22/10	130.65	596.31	139.16	687.96	08/22/10	180.56	396.80
08/23/10	131.12	541.08	138.35	683.09	08/23/10	180.21	370.21
08/24/10	129.13	533.67	138.82	688.68	08/24/10	180.62	377.45
08/25/10	127.87	365.20	140.37	707.98	08/25/10	180.33	368.56
08/26/10	130.06	424.14	139.89	705.76	08/26/10	177.54	306.30
08/27/10	127.07	389.43	138.87	695.47	08/27/10	179.69	243.96
08/28/10	128.89	410.31	140.09	706.05	08/28/10	178.16	209.93
08/29/10	128.96	424.14	138.52	693.57	08/29/10	178.71	249.73
08/30/10	132.66	536.42	139.11	693.73	08/30/10	177.53	268.46
08/31/10	129.06	355.84	140.37	710.37	08/31/10	181.01	277.47
09/01/10	131.19	458.14	139.20	691.55	09/01/10	177.73	259.40
09/02/10	132.49	629.57	141.17	700.81	09/02/10	179.83	260.08
09/03/10	133.04	509.57	140.56	692.06	09/03/10	179.96	220.60
09/04/10	130.44	375.02	140.24	699.16	09/04/10	177.46	186.90
09/05/10	130.77	430.01	140.64	703.25	09/05/10	167.48	214.42
09/06/10	128.60	533.61	137.47	669.63	09/06/10	181.48	256.01
09/07/10	129.13	564.98	139.35	688.34	09/07/10	179.49	324.78
09/08/10	129.66	596.34	143.84	732.29	09/08/10	180.43	346.19
09/09/10	130.19	627.70	138.55	680.42	09/09/10	179.36	345.46
09/10/10	130.72	659.07	140.34	700.04	09/10/10	176.71	292.40
09/11/10	130.81	686.32	140.16	698.30	09/11/10	177.26	261.56
09/12/10	130.12	691.50	139.67	697.27	09/12/10	174.29	258.19
09/13/10	128.85	693.41	138.04	681.37	09/13/10	178.49	256.55
09/14/10	130.47	702.68	140.89	707.78	09/14/10	180.04	290.53
09/15/10	132.32	711.33	140.91	705.74	09/15/10	180.59	305.47
09/16/10	132.78	706.91	134.37	638.58	09/16/10	184.04	322.98
09/17/10	123.93	685.33	140.13	704.32	09/17/10	180.71	328.56
09/18/10	124.65	667.08	139.10	698.06	09/18/10	181.51	278.63
09/19/10	133.47	648.33	141.94	718.04	09/19/10	180.59	272.74
09/20/10	142.29	629.58	140.42	701.98	09/20/10	179.66	298.86
09/21/10	151.11	610.83	140.12	700.77	09/21/10	177.28	324.78
09/22/10	142.69	650.74	135.05	654.14	09/22/10	172.20	328.05
09/23/10	130.62	688.72	130.70	604.22	09/23/10	135.62	317.11

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
09/24/10	125.42	643.26	139.35	702.14	09/24/10	189.29	292.80
09/25/10	119.18	591.19	140.33	714.90	09/25/10	181.41	335.29
09/26/10	112.94	539.11	121.50	504.18	09/26/10	090.75	262.36
09/27/10	106.70	487.03	124.95	537.65	09/27/10	117.88	191.53
09/28/10	100.46	434.96	130.16	599.08	09/28/10	144.82	402.74
09/29/10	094.21	382.88	139.62	700.82	09/29/10	188.46	428.01
09/30/10	087.97	330.80	147.35	773.79	09/30/10	114.85	322.44
10/01/10	080.45	283.06	155.20	846.84	10/01/10	000.00	009.38
10/02/10	076.24	270.97	101.97	275.20	10/02/10	000.00	009.84
10/03/10	122.86	593.72	132.13	589.46	10/03/10	145.31	122.00
10/04/10	125.12	667.01	139.81	677.69	10/04/10	182.78	341.38
10/05/10	127.61	682.38	139.13	673.85	10/05/10	191.23	344.54
10/06/10	126.28	669.69	139.85	677.03	10/06/10	186.34	271.43
10/07/10	125.72	668.81	139.20	676.37	10/07/10	192.54	246.36
10/08/10	125.01	667.56	140.93	700.75	10/08/10	190.75	278.35
10/09/10	125.16	668.13	140.94	701.29	10/09/10	190.93	250.50
10/10/10	125.47	669.80	141.17	702.09	10/10/10	190.38	216.36
10/11/10	125.48	671.80	141.19	705.65	10/11/10	188.29	197.71
10/12/10	125.93	674.63	140.65	699.01	10/12/10	184.91	202.52
10/13/10	124.31	660.22	139.42	683.14	10/13/10	183.63	201.10
10/14/10	126.96	679.65	140.11	693.82	10/14/10	190.26	251.65
10/15/10	127.57	682.88	137.70	670.38	10/15/10	181.97	276.06
10/16/10	128.34	688.25	140.59	699.32	10/16/10	189.44	701.31
10/17/10	128.34	688.96	140.59	699.32	10/17/10	189.44	701.31
10/18/10	128.34	688.96	140.40	701.15	10/18/10	189.44	701.31
10/19/10	127.21	679.85	139.36	689.58	10/19/10	188.06	686.87
10/20/10	127.55	683.61	139.53	695.29	10/20/10	188.06	686.08
10/21/10	126.06	679.13	139.80	697.20	10/21/10	188.06	697.66
10/22/10	126.06	679.13	138.66	686.04	10/22/10	191.89	709.87
10/23/10	125.20	675.66	140.64	708.34	10/23/10	189.41	702.11
10/24/10	126.42	679.67	141.20	712.25	10/24/10	186.89	692.12
10/25/10	126.42	679.67	140.78	706.71	10/25/10	189.66	707.05
10/26/10	124.82	672.38	140.50	704.62	10/26/10	191.06	706.83
10/27/10	124.82	672.38	140.37	704.94	10/27/10	190.67	706.53
10/28/10	136.98	747.95	116.76	325.51	10/28/10	206.81	764.10
10/29/10	142.08	779.16	098.65	127.84	10/29/10	206.81	790.72
10/30/10	142.08	779.16	114.37	442.85	10/30/10	186.82	684.11
10/31/10	142.08	779.16	137.98	685.08	10/31/10	186.82	684.11
11/01/10	127.47	683.61	136.92	655.68	11/01/10	189.92	698.40
11/02/10	127.78	685.13	137.19	689.79	11/02/10	188.75	689.02
11/03/10	126.62	679.63	136.17	672.94	11/03/10	188.02	675.21
11/04/10	126.71	686.33	136.67	682.73	11/04/10	188.34	697.97
11/05/10	128.22	693.80	136.04	686.60	11/05/10	186.68	688.60
11/06/10	128.14	689.26	135.07	675.34	11/06/10	191.15	700.47
11/07/10	126.80	686.13	137.48	692.62	11/07/10	189.05	688.56
11/08/10	127.21	690.89	137.64	705.88	11/08/10	185.42	683.14
11/09/10	125.48	674.54	136.87	692.13	11/09/10	186.32	682.83
11/10/10	125.25	678.07	135.01	518.14	11/10/10	192.49	720.95
11/11/10	000.00	281.64	000.00	289.22	11/11/10	202.09	751.23
11/12/10	000.00	279.95	000.00	279.72	11/12/10	000.00	284.15
11/13/10	121.86	632.69	137.46	563.91	11/13/10	190.76	696.47
11/14/10	128.04	681.42	137.46	661.87	11/14/10	182.25	681.42
11/15/10	128.04	686.36	137.46	554.05	11/15/10	182.03	666.80

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/16/10	128.04	676.66	137.46	676.66	11/16/10	186.62	691.29
11/17/10	124.90	676.66	137.46	661.87	11/17/10	186.62	691.29
11/18/10	128.04	671.73	137.46	607.96	11/18/10	186.62	691.04
11/19/10	124.90	671.73	137.46	691.29	11/19/10	190.98	686.36
11/20/10	127.88	671.48	137.46	686.60	11/20/10	186.62	686.36
11/21/10	128.04	666.80	137.46	701.15	11/21/10	186.83	681.67
11/22/10	128.04	656.94	134.32	578.54	11/22/10	182.25	681.42
11/23/10	121.86	652.17	137.46	661.87	11/23/10	177.89	681.42
11/24/10	124.90	671.73	134.32	666.80	11/24/10	182.25	686.36
11/25/10	124.90	671.73	134.32	652.17	11/25/10	177.89	676.66
11/26/10	121.86	681.42	137.46	607.96	11/26/10	177.89	671.48
11/27/10	118.72	671.73	134.32	622.75	11/27/10	182.25	671.73
11/28/10	118.72	671.73	134.32	607.96	11/28/10	177.89	676.66
11/29/10	118.72	666.80	134.32	671.73	11/29/10	182.25	681.42
11/30/10	118.72	676.66	134.32	632.20	11/30/10	173.52	666.80
12/01/10	115.58	656.94	134.32	666.80	12/01/10	178.11	671.73
12/02/10	118.72	676.66	131.18	652.17	12/02/10	177.89	666.80
12/03/10	071.82	298.39	096.84	284.33	12/03/10	000.00	289.26
12/04/10	118.72	666.80	134.32	578.54	12/04/10	190.98	691.53
12/05/10	103.12	666.80	137.46	622.75	12/05/10	186.62	681.42
12/06/10	118.72	666.80	134.32	676.66	12/06/10	190.98	691.29
12/07/10	118.72	666.80	131.18	652.17	12/07/10	186.62	691.29
12/08/10	118.72	671.73	134.32	671.73	12/08/10	190.76	691.29
12/09/10	118.72	676.66	134.32	666.80	12/09/10	190.98	695.97
12/10/10	118.72	675.41	131.18	583.47	12/10/10	182.25	681.19
12/11/10	121.86	676.66	140.60	632.45	12/11/10	182.25	671.73
12/12/10	118.72	681.42	137.46	681.42	12/12/10	177.89	661.87
12/13/10	118.72	671.73	134.32	622.75	12/13/10	186.62	696.22
12/14/10	121.86	686.36	121.86	568.67	12/14/10	186.62	706.08
12/15/10	114.17	658.75	134.32	647.24	12/15/10	182.25	671.73
12/16/10	106.16	607.96	134.32	534.49	12/16/10	169.31	622.75
12/17/10	109.30	632.45	137.46	573.61	12/17/10	173.52	637.38
12/18/10	143.79	824.50	106.16	294.20	12/18/10	000.00	289.26
12/19/10	068.78	294.20	106.16	284.33	12/19/10	000.00	289.26
12/20/10	071.82	279.57	103.27	294.20	12/20/10	000.00	284.33
12/21/10	121.71	676.90	137.46	563.91	12/21/10	195.13	695.97
12/22/10	118.72	676.66	140.60	603.03	12/22/10	186.62	661.87
12/23/10	115.58	656.94	140.60	588.40	12/23/10	190.98	686.36
12/24/10	115.42	661.87	140.60	681.42	12/24/10	186.83	691.29
12/25/10	118.72	691.29	134.32	627.52	12/25/10	190.98	686.36
12/26/10	118.72	686.36	140.60	637.38	12/26/10	190.98	681.42
12/27/10	118.72	681.42	140.60	647.24	12/27/10	186.83	691.29
12/28/10	112.44	666.80	140.60	593.33	12/28/10	190.76	696.22
12/29/10	118.53	676.66	140.60	676.66	12/29/10	195.35	691.29
12/30/10	117.11	681.42	140.60	681.42	12/30/10	190.98	696.22
12/31/10	115.58	673.03	137.46	666.80	12/31/10	190.98	696.22
01/01/11	000.00	725.64	140.60	725.64	01/01/11	182.25	686.36
01/02/11	118.72	671.73	140.60	656.94	01/02/11	182.25	676.66
01/03/11	118.72	691.29	137.46	671.73	01/03/11	186.62	701.15
01/04/11	118.72	691.29	137.46	661.87	01/04/11	190.98	701.15
01/05/11	118.72	686.36	140.60	696.22	01/05/11	190.98	696.22
01/06/11	124.90	686.36	140.60	701.15	01/06/11	190.98	696.22
01/07/11	121.86	686.36	140.60	691.29	01/07/11	195.35	691.29

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/08/11	118.72	691.29	140.60	686.36	01/08/11	182.25	676.66
01/09/11	118.72	681.42	140.60	691.29	01/09/11	195.35	706.08
01/10/11	118.56	676.66	140.60	701.15	01/10/11	195.35	706.08
01/11/11	112.44	681.42	137.46	593.33	01/11/11	195.13	691.29
01/12/11	106.16	666.80	140.60	607.96	01/12/11	190.98	696.22
01/13/11	115.58	671.73	137.46	652.17	01/13/11	186.62	696.22
01/14/11	115.58	696.22	137.46	632.45	01/14/11	190.98	706.08
01/15/11	115.58	696.22	137.46	632.45	01/15/11	190.98	706.08
01/16/11	116.27	696.22	134.32	652.17	01/16/11	190.76	706.08
01/17/11	115.58	701.15	140.60	607.96	01/17/11	186.62	681.42
01/18/11	114.96	691.29	143.64	647.24	01/18/11	190.98	701.15
01/19/11	115.58	691.29	137.46	652.17	01/19/11	190.98	701.15
01/20/11	115.58	691.29	137.46	656.94	01/20/11	190.98	701.15
01/21/11	112.44	686.36	137.62	642.31	01/21/11	186.62	701.15
01/22/11	112.44	681.42	137.46	588.40	01/22/11	190.98	696.22
01/23/11	112.44	686.60	137.46	603.03	01/23/11	186.62	701.15
01/24/11	112.44	666.80	137.46	701.15	01/24/11	190.98	710.85
01/25/11	112.44	691.29	134.48	612.89	01/25/11	186.62	696.22
01/26/11	068.78	437.11	103.12	357.97	01/26/11	000.00	304.06
01/27/11	115.58	710.85	140.60	612.89	01/27/11	173.52	656.94
01/28/11	112.44	686.36	137.77	529.56	01/28/11	190.98	706.08
01/29/11	112.44	686.36	140.60	558.73	01/29/11	186.62	706.08
01/30/11	112.44	691.29	140.60	652.17	01/30/11	195.35	706.08
01/31/11	109.30	686.36	137.46	632.45	01/31/11	190.98	710.85
02/01/11	637.08	1000.1	637.08	706.08	02/01/11	000.00	1000.1
02/02/11	527.77	1000.1	000.00	480.41	02/02/11	885.11	1000.1
02/03/11	309.16	1000.1	637.08	416.81	02/03/11	016.79	382.70
02/04/11	136.53	725.64	137.46	578.54	02/04/11	177.67	686.36
02/05/11	074.96	353.04	103.12	372.59	02/05/11	000.00	299.13
02/06/11	071.82	353.04	099.98	318.93	02/06/11	000.00	299.13
02/07/11	060.14	254.91	140.60	431.43	02/07/11	195.35	720.71
02/08/11	109.30	656.94	099.98	083.32	02/08/11	201.52	1000.1
02/09/11	174.94	1000.1	131.18	455.92	02/09/11	143.48	974.90
02/10/11	074.33	328.55	102.97	490.28	02/10/11	000.00	152.02
02/11/11	140.60	519.70	099.98	406.95	02/11/11	117.23	490.28
02/12/11	112.44	480.41	137.46	460.86	02/12/11	099.78	485.34
02/13/11	143.64	598.09	159.35	485.34	02/13/11	129.96	588.40
02/14/11	137.46	568.92	159.35	534.49	02/14/11	134.54	573.61
02/15/11	149.92	607.96	162.38	514.76	02/15/11	151.85	578.54
02/16/11	134.32	558.98	168.66	588.40	02/16/11	160.58	598.09
02/17/11	143.64	598.09	159.50	524.38	02/17/11	164.94	598.09
02/18/11	149.92	603.03	165.52	568.67	02/18/11	147.49	568.67
02/19/11	146.78	612.89	159.35	603.03	02/19/11	173.31	603.27
02/20/11	159.72	573.02	156.20	426.50	02/20/11	151.85	558.98
02/21/11	153.06	622.75	156.20	470.72	02/21/11	160.58	603.03
02/22/11	074.96	338.24	099.98	357.97	02/22/11	000.00	308.82
02/23/11	146.78	626.26	156.20	500.14	02/23/11	164.94	598.09
02/24/11	097.40	398.45	099.98	490.28	02/24/11	000.00	308.82
02/25/11	168.66	725.64	171.80	554.05	02/25/11	199.56	696.22
02/26/11	074.96	362.90	099.98	476.14	02/26/11	000.00	308.82
02/27/11	165.52	705.84	174.94	588.40	02/27/11	195.35	681.42
02/28/11	162.38	686.36	178.09	632.45	02/28/11	190.98	686.36
03/01/11	168.66	715.78	174.94	563.91	03/01/11	186.62	671.73

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
03/02/11	168.66	720.71	171.80	431.43	03/02/11	195.35	681.42
03/03/11	124.90	573.61	184.26	588.40	03/03/11	212.65	745.20
03/04/11	140.60	647.49	143.64	416.81	03/04/11	130.18	519.70
03/05/11	131.18	607.96	099.98	362.90	03/05/11	000.00	309.07
03/06/11	215.46	956.07	099.98	377.53	03/06/11	173.52	607.96
03/07/11	140.60	617.82	099.98	357.97	03/07/11	000.00	309.07
03/08/11	205.99	896.99	149.92	441.30	03/08/11	004.36	402.01
03/09/11	212.43	931.58	149.92	455.92	03/09/11	134.54	519.70
03/10/11	209.59	916.79	146.78	392.32	03/10/11	138.91	539.25
03/11/11	234.20	1000.1	134.32	446.23	03/11/11	104.14	470.97
03/12/11	106.00	490.28	099.98	392.81	03/12/11	000.00	318.68
03/13/11	218.60	995.36	134.32	451.16	03/13/11	130.18	500.14
03/14/11	221.74	1000.1	143.64	490.28	03/14/11	138.91	529.56
03/15/11	221.74	1000.1	146.78	573.61	03/15/11	125.81	500.14
03/16/11	203.00	902.16	159.35	519.70	03/16/11	173.52	622.75
03/17/11	118.72	558.98	156.20	509.83	03/17/11	161.02	568.92
03/18/11	146.78	681.42	162.38	455.92	03/18/11	190.98	642.31
03/19/11	215.46	990.43	140.60	509.83	03/19/11	134.54	514.76
03/20/11	115.58	529.56	106.16	509.83	03/20/11	000.00	352.79
03/21/11	209.29	975.63	149.92	539.25	03/21/11	151.85	549.12
03/22/11	209.29	965.69	168.66	534.49	03/22/11	195.35	676.66
03/23/11	212.43	980.56	149.92	549.12	03/23/11	160.58	568.67
03/24/11	212.11	965.69	099.98	509.83	03/24/11	000.00	308.82
03/25/11	212.58	995.36	156.20	544.19	03/25/11	186.62	642.31
03/26/11	212.27	990.43	153.06	519.70	03/26/11	169.31	583.47
03/27/11	209.29	970.70	159.35	524.63	03/27/11	177.89	612.89
03/28/11	209.29	970.70	099.98	500.14	03/28/11	000.00	279.57
03/29/11	209.29	975.88	162.38	519.70	03/29/11	186.62	627.52
03/30/11	215.46	1000.1	153.06	524.63	03/30/11	170.78	581.74
03/31/11	218.60	1000.1	159.35	524.63	03/31/11	169.31	588.40
04/01/11	228.03	1000.1	162.38	524.63	04/01/11	186.62	622.75
04/02/11	221.74	1000.1	159.35	490.28	04/02/11	177.89	607.96
04/04/11	215.46	1000.1	100.14	529.56	04/04/11	000.00	294.20
04/05/11	220.98	1000.1	156.20	485.34	04/05/11	173.52	603.03
04/06/11	209.29	1000.1	134.32	500.14	04/06/11	134.54	514.76
04/07/11	169.65	411.26	099.98	279.57	04/07/11	000.00	328.55
04/08/11	200.00	912.00	167.92	550.00	04/08/11	043.49	656.94
04/09/11	216.92	1002.2	160.00	581.00	04/09/11	129.00	615.00
04/10/11	218.00	1010.3	180.00	640.00	04/10/11	157.08	729.00
04/11/11	225.00	1050.0	164.00	506.92	04/11/11	143.00	652.00
04/12/11	221.92	1037.2	175.00	446.92	04/12/11	151.08	701.00
04/13/11	220.00	1034.2	170.00	568.00	04/13/11	148.00	681.92
04/14/11	218.00	1020.8	173.00	480.92	04/14/11	149.67	673.00
04/15/11	220.83	1034.3	167.08	599.00	04/15/11	139.92	647.00
04/16/11	135.00	629.00	162.00	489.00	04/16/11	136.92	635.00
04/17/11	200.00	932.92	128.08	553.00	04/17/11	075.92	469.00
04/18/11	222.08	1043.1	166.00	533.92	04/18/11	140.00	653.00
04/19/11	216.92	1023.9	164.08	517.00	04/19/11	140.00	652.00
04/20/11	111.08	540.08	102.00	512.00	04/20/11	000.00	347.00
04/21/11	108.00	532.00	101.00	461.00	04/21/11	218.83	988.75
04/22/11	080.00	377.00	101.00	525.08	04/22/11	000.00	348.00
04/23/11	140.00	663.00	162.92	568.00	04/23/11	136.00	644.00
04/24/11	135.08	649.00	158.00	572.00	04/24/11	129.08	623.00

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
04/25/11	153.08	727.00	176.00	562.00	04/25/11	148.00	694.00
04/26/11	115.00	564.00	145.00	551.08	04/26/11	102.08	536.00
04/27/11	147.92	707.00	171.92	540.00	04/27/11	145.08	676.00
04/28/11	153.00	731.00	175.00	509.00	04/28/11	151.00	699.00
04/29/11	153.92	731.00	174.08	611.00	04/29/11	152.08	694.00
04/30/11	145.08	695.08	173.00	594.00	04/30/11	148.17	693.00
05/01/11	150.00	718.00	176.00	566.00	05/01/11	155.00	710.00
05/02/11	077.00	507.50	099.00	567.08	05/02/11	000.00	358.17
05/03/11	150.00	724.00	175.00	584.08	05/03/11	151.00	706.00
05/04/11	150.92	722.00	175.00	556.00	05/04/11	151.00	702.00
05/05/11	149.00	716.00	173.00	580.00	05/05/11	156.00	722.00
05/06/11	079.00	443.25	101.00	533.00	05/06/11	000.00	353.00
05/07/11	149.00	722.00	179.00	606.00	05/07/11	149.00	694.00
05/08/11	145.92	701.00	174.00	574.00	05/08/11	145.00	678.00
05/09/11	147.00	713.00	176.92	560.08	05/09/11	152.08	712.00
05/10/11	151.08	736.00	176.00	581.00	05/10/11	149.00	704.00
05/11/11	140.00	686.00	165.00	638.00	05/11/11	140.00	666.00
05/12/11	153.08	742.00	173.00	570.00	05/12/11	148.83	693.00
05/13/11	149.00	725.00	176.00	573.00	05/13/11	152.08	715.00
05/14/11	145.08	659.92	164.00	590.00	05/14/11	141.92	658.92
05/15/11	147.00	718.00	171.00	558.00	05/15/11	157.00	724.00
05/16/11	151.17	735.00	176.00	621.00	05/16/11	150.08	697.00
05/17/11	150.00	719.00	173.00	578.00	05/17/11	147.08	686.00
05/18/11	146.92	709.00	175.00	590.00	05/18/11	152.83	706.00
05/19/11	146.92	707.00	172.92	606.08	05/19/11	152.17	714.00
05/20/11	146.08	710.00	171.92	605.00	05/20/11	154.00	715.00
05/21/11	146.92	710.00	171.00	533.00	05/21/11	152.08	714.00
05/22/11	146.00	711.00	171.08	593.00	05/22/11	151.08	715.00
05/23/11	146.92	712.00	172.00	608.00	05/23/11	152.00	713.00
05/24/11	146.08	713.00	172.00	549.00	05/24/11	151.92	712.00
05/25/11	147.00	715.00	172.00	583.08	05/25/11	151.08	714.00
05/26/11	146.92	713.00	171.00	558.00	05/26/11	153.08	711.00
05/27/11	146.92	711.00	175.46	616.00	05/27/11	149.92	706.00
05/28/11	148.92	724.00	175.00	535.08	05/28/11	144.92	692.00
05/29/11	145.00	709.00	172.00	562.00	05/29/11	148.17	701.00
05/30/11	144.00	708.00	172.00	573.00	05/30/11	149.17	701.00
05/31/11	142.92	708.00	171.00	549.92	05/31/11	148.00	701.00
06/01/11	144.00	705.00	171.08	570.00	06/01/11	149.08	697.00
06/02/11	145.00	705.00	171.08	560.00	06/02/11	147.92	692.00
06/03/11	145.08	703.92	170.00	505.00	06/03/11	152.00	697.92
06/04/11	163.92	759.00	179.08	621.00	06/04/11	163.08	755.00
06/05/11	159.00	782.00	178.00	685.00	06/05/11	163.00	755.00
06/06/11	157.00	773.00	183.08	681.00	06/06/11	163.00	765.00
06/07/11	157.08	775.08	182.92	690.92	06/07/11	163.08	766.00
06/08/11	150.92	742.00	174.00	682.92	06/08/11	152.75	722.00
06/09/11	164.08	807.00	182.00	666.00	06/09/11	167.83	791.00
06/10/11	150.08	735.00	175.00	543.00	06/10/11	152.92	719.00
06/11/11	137.00	682.00	164.92	581.00	06/11/11	138.00	671.00
06/12/11	148.00	730.00	173.92	526.00	06/12/11	152.92	726.00
06/13/11	174.08	677.83	168.00	575.92	06/13/11	146.17	678.83
06/14/11	149.92	736.92	176.00	580.08	06/14/11	152.92	715.00
06/15/11	151.00	741.00	175.92	539.08	06/15/11	149.00	710.00
06/16/11	149.00	735.00	174.00	596.00	06/16/11	152.92	722.92

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
06/17/11	151.92	731.00	172.57	608.56	06/17/11	147.08	712.00
06/18/11	152.00	736.00	176.08	563.00	06/18/11	147.92	714.00
06/19/11	153.00	735.00	174.00	582.00	06/19/11	150.00	721.00
06/20/11	151.00	740.00	175.00	619.00	06/20/11	150.08	726.00
06/21/11	149.08	739.00	174.00	587.00	06/21/11	149.92	724.00
06/22/11	150.08	739.08	175.00	604.00	06/22/11	150.92	724.08
06/23/11	149.58	737.71	175.71	613.11	06/23/11	150.02	721.71
06/24/11	149.92	737.00	175.00	583.24	06/24/11	149.83	721.92
06/25/11	150.00	738.00	175.00	601.00	06/25/11	150.00	721.08
06/26/11	150.00	735.92	175.92	589.00	06/26/11	150.92	719.00
06/27/11	148.00	732.00	176.00	596.00	06/27/11	148.00	717.00
06/28/11	082.00	413.08	102.00	589.00	06/28/11	000.00	369.00
06/29/11	150.92	746.00	174.00	594.00	06/29/11	147.08	714.08
06/30/11	082.00	418.08	102.00	582.08	06/30/11	000.00	372.00
07/01/11	159.00	787.00	102.00	466.00	07/01/11	155.92	742.00
07/02/11	148.00	735.00	174.00	557.00	07/02/11	148.83	713.00
07/03/11	081.00	397.00	102.00	564.00	07/03/11	000.00	371.00
07/04/11	149.00	740.00	174.00	556.00	07/04/11	149.00	723.00
07/05/11	149.92	740.00	173.92	572.00	07/05/11	148.00	724.00
07/06/11	081.00	406.08	101.00	568.08	07/06/11	000.00	371.00
07/07/11	130.92	658.00	159.00	588.08	07/07/11	120.00	623.00
07/08/11	149.00	741.00	174.00	578.00	07/08/11	148.92	730.00
07/09/11	148.00	732.00	173.00	592.08	07/09/11	148.00	721.00
07/10/11	147.00	731.00	172.00	592.00	07/10/11	147.00	720.00
07/11/11	147.00	728.00	171.08	567.00	07/11/11	147.08	718.00
07/12/11	145.92	728.00	171.08	598.00	07/12/11	146.08	721.00
07/13/11	145.92	729.00	170.00	606.00	07/13/11	148.08	723.00
07/14/11	145.00	729.00	166.92	577.00	07/14/11	148.17	726.92
07/15/11	080.00	447.17	101.00	592.00	07/15/11	000.00	380.00
07/16/11	146.00	735.92	172.92	598.00	07/16/11	145.08	722.92
07/17/11	181.17	671.42	165.92	588.92	07/17/11	136.75	655.50
07/18/11	146.00	741.00	172.00	608.00	07/18/11	141.00	707.00
07/19/11	080.00	410.08	102.00	604.08	07/19/11	000.00	378.00
07/20/11	144.92	730.00	172.92	583.00	07/20/11	146.00	724.00
07/21/11	146.08	746.00	173.08	601.00	07/21/11	141.00	706.00
07/22/11	148.00	744.00	173.08	618.00	07/22/11	139.17	696.00
07/23/11	145.00	738.00	171.00	612.00	07/23/11	145.00	723.00
07/24/11	144.92	740.00	171.08	634.08	07/24/11	146.08	721.00
07/25/11	145.92	744.00	171.00	637.92	07/25/11	143.00	713.00
07/26/11	146.08	747.00	171.00	622.00	07/26/11	139.92	706.00
07/27/11	145.08	739.00	168.17	620.00	07/27/11	144.00	726.00
07/28/11	145.08	744.00	170.92	617.00	07/28/11	145.92	729.00
07/29/11	176.25	683.67	165.92	602.92	07/29/11	134.08	670.67
07/30/11	080.00	416.08	100.08	564.00	07/30/11	000.00	388.00
07/31/11	146.00	749.00	169.00	582.00	07/31/11	142.92	722.00
08/01/11	145.00	744.00	170.92	595.00	08/01/11	143.92	728.00
08/02/11	080.00	442.17	102.00	602.00	08/02/11	000.00	392.00
08/03/11	143.00	742.00	172.00	575.00	08/03/11	144.00	730.00
08/04/11	143.00	745.00	170.00	608.00	08/04/11	143.00	727.00
08/05/11	144.00	736.00	171.00	603.00	08/05/11	145.92	731.00
08/06/11	140.92	732.00	171.92	610.00	08/06/11	146.17	734.00
08/07/11	170.75	644.00	164.75	624.00	08/07/11	130.33	651.17
08/08/11	143.00	752.00	169.08	606.00	08/08/11	145.75	737.00

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
08/09/11	142.92	752.00	169.00	595.00	08/09/11	144.92	736.00
08/10/11	143.00	751.00	169.00	581.00	08/10/11	145.83	735.00
08/11/11	143.00	753.00	169.00	578.00	08/11/11	145.92	736.00
08/12/11	143.00	749.08	167.92	582.00	08/12/11	145.08	732.00
08/13/11	143.00	751.00	168.00	598.00	08/13/11	144.83	733.00
08/14/11	143.00	750.00	168.08	604.00	08/14/11	142.17	731.00
08/15/11	079.00	518.33	101.00	604.00	08/15/11	000.00	404.00
08/16/11	143.00	754.00	167.92	603.00	08/16/11	141.92	731.00
08/17/11	143.00	759.92	167.00	605.00	08/17/11	143.92	730.00
08/18/11	141.08	748.00	170.92	650.00	08/18/11	143.08	737.00
08/19/11	141.00	749.00	171.00	634.00	08/19/11	143.00	738.00
08/20/11	141.00	751.00	171.00	621.00	08/20/11	145.92	740.00
08/21/11	142.00	748.00	171.00	596.00	08/21/11	144.17	738.00
08/22/11	141.08	748.00	171.00	630.00	08/22/11	144.08	739.00
08/23/11	141.00	747.00	170.92	627.00	08/23/11	143.92	737.00
08/24/11	079.00	430.08	102.00	606.00	08/24/11	000.00	401.00
08/25/11	154.08	721.92	168.00	618.00	08/25/11	139.00	713.92
08/26/11	138.00	738.92	172.00	651.00	08/26/11	143.83	736.00
08/27/11	142.00	758.00	170.00	659.00	08/27/11	144.00	742.00
08/28/11	142.92	762.00	169.00	669.00	08/28/11	142.00	738.00
08/29/11	142.00	760.00	170.08	688.00	08/29/11	143.08	745.00
08/30/11	139.00	742.00	171.92	712.08	08/30/11	145.92	748.00
08/31/11	142.92	760.00	171.00	713.00	08/31/11	144.00	740.00
09/01/11	142.00	759.00	169.08	681.08	09/01/11	144.00	743.00
09/02/11	142.08	761.92	169.00	666.00	09/02/11	143.83	739.00
09/03/11	142.08	763.00	169.08	675.00	09/03/11	142.08	732.00
09/04/11	140.00	757.08	168.00	654.00	09/04/11	146.92	749.00
09/05/11	139.92	757.00	166.08	627.00	09/05/11	141.08	749.00
09/06/11	139.00	755.00	167.00	632.00	09/06/11	144.08	748.00
09/07/11	139.92	762.00	170.92	651.00	09/07/11	143.83	740.00
09/08/11	140.00	761.00	170.00	688.00	09/08/11	144.00	738.00
09/09/11	140.00	761.00	171.92	679.00	09/09/11	141.08	733.00
09/10/11	138.00	753.92	169.92	672.08	09/10/11	145.08	750.92
09/11/11	137.00	751.00	164.42	657.00	09/11/11	146.92	751.08
09/12/11	136.08	745.08	170.00	669.00	09/12/11	144.17	752.00
09/13/11	140.00	762.92	169.08	630.00	09/13/11	144.00	747.00
09/14/11	140.92	764.00	169.00	634.00	09/14/11	142.00	748.00
09/15/11	140.00	762.00	168.00	589.00	09/15/11	145.00	746.00
09/16/11	141.08	758.00	167.00	582.00	09/16/11	144.00	740.92
09/17/11	080.00	430.00	099.00	562.00	09/17/11	000.00	405.00
09/18/11	078.00	503.25	099.00	496.00	09/18/11	158.08	816.00
09/19/11	149.08	806.00	179.00	602.00	09/19/11	152.83	787.08
09/20/11	150.92	809.00	179.08	654.00	09/20/11	151.92	780.00
09/21/11	140.00	763.92	172.92	681.00	09/21/11	136.17	729.92
09/22/11	135.00	740.00	171.00	692.00	09/22/11	142.08	754.00
09/23/11	135.00	746.00	170.00	665.00	09/23/11	142.92	754.00
09/24/11	140.00	767.00	169.92	683.00	09/24/11	143.92	750.00
09/25/11	137.00	751.00	167.00	662.00	09/25/11	137.00	734.92
09/26/11	139.00	768.00	169.00	660.08	09/26/11	142.00	749.00
09/27/11	139.00	770.00	169.00	648.00	09/27/11	139.17	749.00
09/28/11	140.92	772.00	170.00	689.00	09/28/11	143.75	751.00
09/29/11	079.00	448.00	099.08	631.00	09/29/11	000.00	415.00
09/30/11	139.92	771.00	169.00	656.08	09/30/11	142.08	746.00

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
10/01/11	139.00	772.00	169.00	631.08	10/01/11	138.00	746.00
10/02/11	140.00	770.00	169.08	645.00	10/02/11	141.00	747.00
10/03/11	140.00	771.00	169.92	631.00	10/03/11	140.92	743.00
10/04/11	090.00	536.00	122.00	649.00	10/04/11	056.83	512.00
10/05/11	140.08	774.00	169.00	650.00	10/05/11	139.17	740.00
10/06/11	078.92	546.25	122.00	649.00	10/06/11	059.00	528.17
10/07/11	138.00	766.00	167.00	662.00	10/07/11	143.00	755.00
10/08/11	077.00	545.33	118.00	632.00	10/08/11	036.25	510.00
10/09/11	119.00	686.00	155.08	627.00	10/09/11	122.00	687.00
10/10/11	134.00	754.00	168.00	621.00	10/10/11	140.08	760.00
10/11/11	133.08	755.00	166.00	647.00	10/11/11	141.08	759.00
10/12/11	138.08	776.00	169.92	643.00	10/12/11	135.17	751.00
10/13/11	138.00	777.00	169.00	647.00	10/13/11	136.17	752.00
10/14/11	138.00	778.00	169.00	658.08	10/14/11	138.00	752.00
10/15/11	138.08	780.00	169.00	669.08	10/15/11	137.08	750.00
10/16/11	138.08	782.00	170.00	667.08	10/16/11	134.08	746.00
10/17/11	139.00	781.00	169.00	685.00	10/17/11	134.92	747.00
10/18/11	137.92	778.00	167.92	646.08	10/18/11	139.92	764.00
10/19/11	138.00	780.08	166.08	646.08	10/19/11	134.08	761.00
10/20/11	079.00	447.00	186.00	661.00	10/20/11	000.00	420.00
10/21/11	080.36	445.59	175.88	760.44	10/21/11	000.00	418.72
10/22/11	080.47	443.69	099.85	580.52	10/22/11	001.06	416.11
10/23/11	138.25	753.73	126.88	575.14	10/23/11	130.77	737.62
10/24/11	137.01	760.47	166.96	678.85	10/24/11	136.60	746.27
10/25/11	135.01	751.98	164.82	710.04	10/25/11	131.21	737.02
10/26/11	140.51	774.15	169.17	732.78	10/26/11	138.23	759.25
10/27/11	135.45	753.99	165.16	704.11	10/27/11	131.20	739.46
10/28/11	140.09	772.96	168.42	585.51	10/28/11	138.25	758.90
10/29/11	136.08	752.47	164.13	635.38	10/29/11	125.23	738.33
10/30/11	140.65	767.77	166.86	676.53	10/30/11	134.90	754.11
10/30/11	136.08	751.06	164.11	705.62	10/30/11	126.12	737.49
10/31/11	145.54	793.96	168.72	725.93	10/31/11	140.81	771.77
11/01/11	144.15	792.62	165.81	771.90	11/01/11	139.78	770.18
11/02/11	143.85	790.85	168.40	711.49	11/02/11	142.39	769.78
11/03/11	138.59	769.46	166.17	682.79	11/03/11	140.45	750.02
11/04/11	138.30	771.23	165.88	725.32	11/04/11	211.00	750.60
11/05/11	142.86	796.40	169.41	741.36	11/05/11	176.92	773.23
11/06/11	136.17	768.11	165.59	740.54	11/06/11	130.85	743.30
11/07/11	140.50	785.24	168.93	747.08	11/07/11	134.27	755.50
11/08/11	129.90	736.01	158.25	701.07	11/08/11	122.72	727.90
11/09/11	125.45	716.21	153.26	684.72	11/09/11	113.05	706.86
11/10/11	141.19	793.09	128.85	622.25	11/10/11	062.27	585.68
11/11/11	148.29	826.36	098.28	470.88	11/11/11	000.00	427.66
11/12/11	082.46	454.29	099.13	517.42	11/12/11	000.00	425.67
11/13/11	099.44	540.92	157.22	627.29	11/13/11	115.52	711.30
11/14/11	141.69	784.86	168.71	705.94	11/14/11	139.08	769.44
11/15/11	154.00	848.00	179.00	672.00	11/15/11	146.58	832.00
11/16/11	113.08	652.00	143.00	670.00	11/16/11	140.92	635.00
11/17/11	155.00	850.00	180.92	638.00	11/17/11	174.25	835.00
11/18/11	151.08	834.00	177.00	630.00	11/18/11	174.75	820.00
11/19/11	152.00	841.00	179.00	706.00	11/19/11	249.33	830.00
11/20/11	083.25	655.08	140.25	728.00	11/20/11	065.08	635.08
11/21/11	152.08	849.00	180.00	694.08	11/21/11	152.17	836.08

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
11/22/11	101.00	618.92	137.00	684.00	11/22/11	084.75	602.08
11/23/11	147.00	851.00	180.00	689.00	11/23/11	145.92	838.92
11/24/11	136.00	777.00	167.00	706.00	11/24/11	189.58	768.00
11/25/11	089.00	560.00	120.08	740.00	11/25/11	038.33	543.00
11/26/11	136.00	785.00	166.92	683.00	11/26/11	131.08	770.00
11/27/11	119.00	710.00	151.00	641.00	11/27/11	104.92	695.00
11/28/11	136.92	786.00	166.00	679.00	11/28/11	130.92	771.00
11/29/11	105.00	611.92	132.00	697.08	11/29/11	066.92	593.08
11/30/11	153.00	851.00	177.00	682.00	11/30/11	147.75	834.00
12/01/11	126.00	726.92	154.00	718.00	12/01/11	115.92	708.00
12/02/11	122.08	786.00	161.00	563.00	12/02/11	130.00	769.00
12/03/11	139.00	858.00	174.00	595.00	12/03/11	145.00	837.00
12/04/11	129.00	757.92	157.00	604.00	12/04/11	118.92	740.92
12/05/11	126.00	790.00	161.00	638.00	12/05/11	129.17	769.00
12/06/11	653.00	780.00	157.00	773.92	12/06/11	129.08	1063.0
12/07/11	082.00	558.00	107.00	588.00	12/07/11	000.00	535.00
12/08/11	146.08	834.00	170.08	617.00	12/08/11	132.92	792.00
12/09/11	095.92	581.00	119.00	646.00	12/09/11	000.58	541.00
12/10/11	146.00	839.92	170.08	655.00	12/10/11	145.00	824.00
12/11/11	138.92	809.00	166.00	653.00	12/11/11	138.08	800.00
12/12/11	145.00	839.00	171.00	723.00	12/12/11	146.08	832.00
12/13/11	133.92	783.00	162.92	749.00	12/13/11	133.00	784.00
12/14/11	111.00	689.00	141.00	777.00	12/14/11	097.17	671.08
12/15/11	146.00	862.00	173.92	724.00	12/15/11	149.08	847.00
12/16/11	146.00	858.00	172.92	728.00	12/16/11	146.08	842.00
12/17/11	143.00	845.00	170.00	738.00	12/17/11	141.92	828.00
12/18/11	144.08	856.00	172.08	802.00	12/18/11	152.92	856.00
12/19/11	140.00	834.00	179.00	807.00	12/19/11	151.17	859.00
12/20/11	151.08	897.92	178.08	716.00	12/20/11	121.92	739.00
12/21/11	142.92	851.00	168.08	763.00	12/21/11	147.08	841.00
12/22/11	142.08	724.67	145.00	701.00	12/22/11	110.58	710.67
12/23/11	119.00	732.00	141.00	676.08	12/23/11	112.92	716.00
12/24/11	107.00	668.00	127.00	614.00	12/24/11	089.17	651.00
12/25/11	107.00	667.00	168.00	634.00	12/25/11	139.08	820.00
12/26/11	153.00	792.92	160.00	814.83	12/26/11	126.83	774.92
12/27/11	138.92	826.00	165.00	637.00	12/27/11	000.00	745.08
12/28/11	148.00	873.92	174.00	645.00	12/28/11	151.75	855.00
12/29/11	139.00	828.00	168.00	703.00	12/29/11	112.92	723.08
12/30/11	091.00	619.08	124.08	749.00	12/30/11	061.17	601.08
12/31/11	114.00	718.00	145.92	778.00	12/31/11	105.25	703.08
01/01/12	139.92	857.92	172.92	737.08	01/01/12	073.33	851.00
01/02/12	128.00	804.00	166.00	712.00	01/02/12	146.83	841.00
01/03/12	141.00	870.00	173.00	706.00	01/03/12	141.92	822.00
01/04/12	136.00	845.00	170.00	721.00	01/04/12	144.92	832.00
01/05/12	139.00	861.92	172.92	751.08	01/05/12	147.00	848.92
01/06/12	102.00	723.08	146.00	734.00	01/06/12	090.08	708.00
01/07/12	129.00	811.00	162.00	726.00	01/07/12	123.00	798.00
01/08/12	131.00	802.00	161.00	743.00	01/08/12	137.08	788.00
01/09/12	127.08	808.00	162.00	755.00	01/09/12	012.75	793.00
01/10/12	100.00	661.00	131.92	706.00	01/10/12	000.00	636.00
01/11/12	104.00	681.08	137.00	729.08	01/11/12	102.17	665.00
01/12/12	117.00	759.08	152.00	692.00	01/12/12	127.25	743.00
01/13/12	101.00	669.00	134.00	679.08	01/13/12	090.00	651.00

Historical Injection Rates and Surface Injection Pressures
Navajo Refining Company, L.L.C.
Artesia, New Mexico

	WDW-1		WDW-2			WDW-3	
Date	Rate	Pres	Rate	Pres	Date	Rate	Pres
01/14/12	128.00	812.00	162.00	707.00	01/14/12	128.83	797.00
01/15/12	085.83	697.25	138.00	710.00	01/15/12	094.25	679.17
01/16/12	117.00	753.08	152.00	740.00	01/16/12	106.75	737.00
01/17/12	131.00	804.92	162.00	714.08	01/17/12	135.17	788.92
01/18/12	123.08	796.00	159.00	635.00	01/18/12	131.00	780.00
01/19/12	127.00	811.00	161.00	691.92	01/19/12	155.25	793.00
01/20/12	129.00	807.00	161.00	670.00	01/20/12	133.83	787.00
01/21/12	126.00	810.00	162.92	679.00	01/21/12	041.25	786.00
01/22/12	101.08	671.08	135.00	692.00	01/22/12	115.50	644.92
01/23/12	096.00	646.00	128.92	614.00	01/23/12	134.50	617.00
01/24/12	097.00	646.00	129.92	625.00	01/24/12	211.83	618.00
01/25/12	079.00	489.00	094.00	516.00	01/25/12	052.75	678.00
01/26/12	079.00	488.00	093.00	459.00	01/26/12	000.00	461.00
01/27/12	079.00	487.00	094.00	485.00	01/27/12	000.00	459.00
01/28/12	128.00	802.00	162.00	603.00	01/28/12	134.00	788.00
01/29/12	130.00	798.00	161.00	586.00	01/29/12	131.00	783.00

APPENDIX E-2

HISTORICAL INJECTION VOLUME DATA

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
10/1 to 10/20	3,499,177	3,988,598	4,806,153
10/21/10	184,375	197,947	268,727
10/22/10	179,851	202,470	274,698
10/23/10	184,375	202,470	268,727
10/24/10	184,375	206,838	256,157
10/25/10	179,851	202,470	268,727
10/26/10	179,851	198,173	275,012
10/27/10	184,375	206,838	268,727
10/28/10	206,838	143,973	312,192
10/29/10	202,470	134,925	299,936
10/30/10	184,375	197,947	268,727
10/31/10	199,098	197,947	268,727
10/31/10	179,851	193,423	262,756
11/01/10	184,375	197,947	262,442
11/02/10	180,078	197,947	262,442
11/03/10	184,149	197,947	275,012
11/04/10	184,375	193,649	268,727
11/05/10	184,375	193,423	268,727
11/06/10	179,851	197,947	268,727
11/07/10	184,375	197,947	275,012
11/08/10	180,078	197,947	262,442
11/09/10	179,633	197,947	274,698
11/10/10	103,415	143,973	287,366
11/11/10	107,938	134,925	000,000
11/12/10	107,938	134,925	000,000
11/13/10	175,484	197,947	274,698
11/14/10	184,375	197,947	262,442
11/15/10	184,375	197,947	262,128
11/16/10	184,375	197,947	268,727
11/17/10	179,851	197,947	268,727
11/18/10	184,375	197,947	268,727
11/19/10	179,851	197,947	275,012
11/20/10	184,149	197,947	268,727
11/21/10	184,375	197,947	269,041
11/22/10	184,375	193,423	262,442
11/23/10	175,484	197,947	256,157
11/24/10	179,851	193,423	262,442
11/25/10	179,851	193,423	256,157
11/26/10	175,484	197,947	256,157
11/27/10	170,960	193,423	262,442
11/28/10	170,960	193,423	256,157
11/29/10	170,960	193,423	262,442
11/30/10	170,960	193,423	249,872
12/01/10	166,436	193,423	256,471
12/02/10	170,960	188,899	256,157
12/03/10	103,415	139,449	000,000
12/04/10	170,960	193,423	275,012
12/05/10	148,497	197,947	268,727
12/06/10	170,960	193,423	275,012
12/07/10	170,960	188,899	268,727

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
12/08/10	170,960	193,423	274,698
12/09/10	170,960	193,423	275,012
12/10/10	170,960	188,899	262,442
12/11/10	175,484	202,470	262,442
12/12/10	170,960	197,947	256,157
12/13/10	170,960	193,423	268,727
12/14/10	175,484	175,484	268,727
12/15/10	164,405	193,423	262,442
12/16/10	152,864	193,423	243,804
12/17/10	157,388	197,947	249,872
12/18/10	207,064	152,864	000,000
12/19/10	99,047	152,864	000,000
12/20/10	103,415	148,715	000,000
12/21/10	175,257	197,947	280,983
12/22/10	170,960	202,470	268,727
12/23/10	166,436	202,470	275,012
12/24/10	166,210	202,470	269,041
12/25/10	170,960	193,423	275,012
12/26/10	170,960	202,470	275,012
12/27/10	170,960	202,470	269,041
12/28/10	161,912	202,470	274,698
12/29/10	170,688	202,470	281,297
12/30/10	168,637	202,470	275,012
12/31/10	166,436	197,947	275,012
01/01/11	000,000	202,470	262,442
01/02/11	170,960	202,470	262,442
01/03/11	170,960	197,947	268,727
01/04/11	170,960	197,947	275,012
01/05/11	170,960	202,470	275,012
01/06/11	179,851	202,470	275,012
01/07/11	175,484	202,470	281,297
01/08/11	170,960	202,470	262,442
01/09/11	170,960	202,470	281,297
01/10/11	170,734	202,470	281,297
01/11/11	161,912	197,947	280,983
01/12/11	152,864	202,470	275,012
01/13/11	166,436	197,947	268,727
01/14/11	166,436	197,947	275,012
01/15/11	166,436	197,947	275,012
01/16/11	167,423	193,423	274,698
01/17/11	166,436	202,470	268,727
01/18/11	165,539	206,838	275,012
01/19/11	166,436	197,947	275,012
01/20/11	166,436	197,947	275,012
01/21/11	161,912	198,173	268,727
01/22/11	161,912	197,947	275,012
01/23/11	161,912	197,947	268,727
01/24/11	161,912	197,947	275,012
01/25/11	161,912	193,649	268,727
01/26/11	99,047	148,497	000,000

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
01/27/11	166,436	202,470	249,872
01/28/11	161,912	198,391	275,012
01/29/11	161,912	202,470	268,727
01/30/11	161,912	202,470	281,297
01/31/11	157,388	197,947	275,012
02/01/11	917,389	917,389	000,000
02/02/11	759,992	000,000	1,274,552
02/03/11	445,197	917,389	24,185
02/04/11	196,597	197,947	255,843
02/05/11	107,938	148,497	000,000
02/06/11	103,415	143,973	000,000
02/07/11	86,598	202,470	281,297
02/08/11	157,388	143,973	290,183
02/09/11	251,920	188,899	206,614
02/10/11	107,041	148,270	000,000
02/11/11	202,470	143,973	168,817
02/12/11	161,912	197,947	143,676
02/13/11	206,838	229,457	187,141
02/14/11	197,947	229,457	193,740
02/15/11	215,886	233,825	218,663
02/16/11	193,423	242,873	231,234
02/17/11	206,838	229,676	237,519
02/18/11	215,886	238,349	212,378
02/19/11	211,362	229,457	249,569
02/20/11	229,996	224,934	218,663
02/21/11	220,410	224,934	231,234
02/22/11	107,938	143,973	000,000
02/23/11	211,362	224,934	237,519
02/24/11	140,251	143,973	000,000
02/25/11	242,873	247,397	287,366
02/26/11	107,938	143,973	000,000
02/27/11	238,349	251,920	281,297
02/28/11	233,825	256,444	275,012
03/01/11	242,873	251,920	268,727
03/02/11	242,873	247,397	281,297
03/03/11	179,851	265,336	306,221
03/04/11	202,470	206,838	187,455
03/05/11	188,899	143,973	000,000
03/06/11	310,262	143,973	249,872
03/07/11	202,470	143,973	000,000
03/08/11	296,620	215,886	6,272
03/09/11	305,894	215,886	193,740
03/10/11	301,815	211,362	200,025
03/11/11	337,249	193,423	149,961
03/12/11	152,646	143,973	000,000
03/13/11	314,786	193,423	187,455
03/14/11	319,310	206,838	200,025
03/15/11	319,310	211,362	181,170
03/16/11	292,323	229,457	249,872
03/17/11	170,960	224,934	231,862

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
03/18/11	211,362	233,825	275,012
03/19/11	310,262	202,470	193,740
03/20/11	166,436	152,864	000,000
03/21/11	301,370	215,886	218,663
03/22/11	301,370	242,873	281,297
03/23/11	305,894	215,886	231,234
03/24/11	305,442	143,973	000,000
03/25/11	306,113	224,934	268,727
03/26/11	305,668	220,410	243,804
03/27/11	301,370	229,457	256,157
03/28/11	301,370	143,973	000,000
03/29/11	301,370	233,825	000,000
03/30/11	310,262	220,410	245,928
03/31/11	314,786	229,457	243,804
04/01/11	328,357	233,825	268,727
04/02/11	319,310	229,457	256,157
04/04/11	310,262	144,199	000,000
04/05/11	318,208	224,934	249,872
04/06/11	301,370	193,423	193,740
04/07/11	244,291	143,973	000,000
04/08/11	288,000	241,800	62,621
04/09/11	312,360	230,400	185,760
04/10/11	313,920	259,200	226,200
04/11/11	324,000	236,160	205,920
04/12/11	319,560	252,000	217,560
04/13/11	316,800	244,800	213,120
04/14/11	313,920	249,120	215,520
04/15/11	318,000	240,600	201,480
04/16/11	194,400	233,280	197,160
04/17/11	288,000	184,440	109,320
04/18/11	319,800	239,040	201,600
04/19/11	312,360	236,280	201,600
04/20/11	159,960	146,880	000,000
04/21/11	155,520	145,440	315,120
04/22/11	115,200	145,440	000,000
04/23/11	201,600	234,600	195,840
04/24/11	194,520	227,520	185,880
04/25/11	220,440	253,440	213,120
04/26/11	165,600	208,800	147,000
04/27/11	213,000	247,560	208,920
04/28/11	220,320	252,000	217,440
04/29/11	221,640	250,680	219,000
04/30/11	208,920	249,120	213,360
05/01/11	216,000	253,440	223,200
05/02/11	110,880	142,560	000,000
05/03/11	216,000	252,000	217,440
05/04/11	217,320	252,000	217,440
05/05/11	214,560	249,120	224,640
05/06/11	113,760	145,440	000,000
05/07/11	214,560	257,760	214,560

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
05/08/11	210,120	250,560	208,800
05/09/11	211,680	254,760	219,000
05/10/11	217,560	253,440	214,560
05/11/11	201,600	237,600	201,600
05/12/11	220,440	249,120	214,320
05/13/11	214,560	253,440	219,000
05/14/11	208,920	236,160	204,360
05/15/11	211,680	246,240	226,080
05/16/11	217,680	253,440	216,120
05/17/11	216,000	249,120	211,800
05/18/11	211,560	252,000	220,080
05/19/11	211,560	249,000	219,120
05/20/11	210,360	247,560	221,760
05/21/11	211,560	246,240	219,000
05/22/11	210,240	246,360	217,560
05/23/11	211,560	247,680	218,880
05/24/11	210,360	247,680	218,760
05/25/11	211,680	247,680	217,560
05/26/11	211,560	246,240	220,440
05/27/11	211,560	252,660	215,880
05/28/11	214,440	252,000	208,680
05/29/11	208,800	247,680	213,360
05/30/11	207,360	247,680	214,800
05/31/11	205,800	246,240	213,120
06/01/11	207,360	246,360	214,680
06/02/11	208,800	246,360	213,000
06/03/11	208,920	244,800	218,880
06/04/11	236,040	257,880	234,840
06/05/11	228,960	256,320	234,720
06/06/11	226,080	263,640	234,720
06/07/11	226,200	263,400	234,840
06/08/11	217,320	250,560	219,960
06/09/11	236,280	262,080	241,680
06/10/11	216,120	252,000	220,200
06/11/11	197,280	237,480	198,720
06/12/11	213,120	250,440	220,200
06/13/11	250,680	241,920	210,480
06/14/11	215,880	253,440	220,200
06/15/11	217,440	253,320	214,560
06/16/11	214,560	250,560	220,200
06/17/11	218,760	248,497	211,800
06/18/11	218,880	253,560	213,000
06/19/11	220,320	250,560	216,000
06/20/11	217,440	252,000	216,120
06/21/11	214,680	250,560	215,880
06/22/11	216,120	252,000	217,320
06/23/11	215,393	253,024	216,034
06/24/11	215,878	252,000	215,756
06/25/11	216,000	252,000	216,000
06/26/11	216,000	253,320	217,320

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
06/27/11	213,120	253,440	213,120
06/28/11	118,080	146,880	000,000
06/29/11	217,320	250,560	211,800
06/30/11	118,080	146,880	000,000
07/01/11	228,960	146,880	224,520
07/02/11	213,120	250,560	214,320
07/03/11	116,640	146,880	000,000
07/04/11	214,560	250,560	214,560
07/05/11	215,880	250,440	213,120
07/06/11	116,640	145,440	000,000
07/07/11	188,520	228,960	172,800
07/08/11	214,560	250,560	214,440
07/09/11	213,120	249,120	213,120
07/10/11	211,680	247,680	211,680
07/11/11	211,680	246,360	211,800
07/12/11	210,120	246,360	210,360
07/13/11	210,120	244,800	213,240
07/14/11	208,800	240,360	213,360
07/15/11	115,200	145,440	000,000
07/16/11	210,240	249,000	208,920
07/17/11	260,880	238,920	196,920
07/18/11	210,240	247,680	203,040
07/19/11	115,200	146,880	000,000
07/20/11	208,680	249,000	210,240
07/21/11	210,360	249,240	203,040
07/22/11	213,120	249,240	200,400
07/23/11	208,800	246,240	208,800
07/24/11	208,680	246,360	210,360
07/25/11	210,120	246,240	205,920
07/26/11	210,360	246,240	201,480
07/27/11	208,920	242,160	207,360
07/28/11	208,920	246,120	210,120
07/29/11	253,800	238,920	193,080
07/30/11	115,200	144,120	000,000
07/31/11	210,240	243,360	205,800
08/01/11	208,800	246,120	207,240
08/02/11	115,200	146,880	000,000
08/03/11	205,920	247,680	207,360
08/04/11	205,920	244,800	205,920
08/05/11	207,360	246,240	210,120
08/06/11	202,920	247,560	210,480
08/07/11	245,880	237,240	187,680
08/08/11	205,920	243,480	209,880
08/09/11	205,800	243,360	208,680
08/10/11	205,920	243,360	210,000
08/11/11	205,920	243,360	210,120
08/12/11	205,920	241,800	208,920
08/13/11	205,920	241,920	208,560
08/14/11	205,920	242,040	204,720
08/15/11	113,760	145,440	000,000

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
08/16/11	205,920	241,800	204,360
08/17/11	205,920	240,480	207,240
08/18/11	203,160	246,120	206,040
08/19/11	203,040	246,240	205,920
08/20/11	203,040	246,240	210,120
08/21/11	204,480	246,240	207,600
08/22/11	203,160	246,240	207,480
08/23/11	203,040	246,120	207,240
08/24/11	113,760	146,880	000,000
08/25/11	221,880	241,920	200,160
08/26/11	198,720	247,680	207,120
08/27/11	204,480	244,800	207,360
08/28/11	205,800	243,360	204,480
08/29/11	204,480	244,920	206,040
08/30/11	200,160	247,560	210,120
08/31/11	205,800	246,240	207,360
09/01/11	204,480	243,480	207,360
09/02/11	204,600	243,360	207,120
09/03/11	204,600	243,480	204,600
09/04/11	201,600	241,920	211,560
09/05/11	201,480	239,160	203,160
09/06/11	200,160	240,480	207,480
09/07/11	201,480	246,120	207,120
09/08/11	201,600	244,800	207,360
09/09/11	201,600	247,560	203,160
09/10/11	198,720	244,680	208,920
09/11/11	197,280	236,760	211,560
09/12/11	195,960	244,800	207,600
09/13/11	201,600	243,480	207,360
09/14/11	202,920	243,360	204,480
09/15/11	201,600	241,920	208,800
09/16/11	203,160	240,480	207,360
09/17/11	115,200	142,560	000,000
09/18/11	112,320	142,560	227,640
09/19/11	214,680	257,760	220,080
09/20/11	217,320	257,880	218,760
09/21/11	201,600	249,000	196,080
09/22/11	194,400	246,240	204,600
09/23/11	194,400	244,800	205,800
09/24/11	201,600	244,680	207,240
09/25/11	197,280	240,480	197,280
09/26/11	200,160	243,360	204,480
09/27/11	200,160	243,360	200,400
09/28/11	202,920	244,800	207,000
09/29/11	113,760	142,680	000,000
09/30/11	201,480	243,360	204,600
10/01/11	200,160	243,360	198,720
10/02/11	201,600	243,480	203,040
10/03/11	201,600	244,680	202,920
10/04/11	129,600	175,680	81,840

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
10/05/11	201,720	243,360	200,400
10/06/11	113,640	175,680	84,960
10/07/11	198,720	240,480	205,920
10/08/11	110,880	169,920	52,200
10/09/11	171,360	223,320	175,680
10/10/11	192,960	241,920	201,720
10/11/11	191,640	239,040	203,160
10/12/11	198,840	244,680	194,640
10/13/11	198,720	243,360	196,080
10/14/11	198,720	243,360	198,720
10/15/11	198,840	243,360	197,400
10/16/11	198,840	244,800	193,080
10/17/11	200,160	243,360	194,280
10/18/11	198,600	241,800	201,480
10/19/11	198,720	239,160	193,080
10/20/11	113,760	234,360	000,000
10/21/11	115,725	221,606	000,000
10/22/11	115,884	125,811	1,527
10/23/11	199,076	159,871	188,316
10/24/11	197,292	210,368	196,700
10/25/11	194,417	207,669	188,939
10/26/11	202,331	213,160	199,053
10/27/11	195,050	208,104	188,929
10/28/11	201,723	212,208	199,075
10/29/11	195,958	206,802	180,336
10/30/11	202,531	210,250	194,254
10/30/11	195,951	206,783	181,617
10/31/11	209,583	212,593	202,767
11/01/11	207,571	208,914	201,288
11/02/11	207,145	212,189	205,037
11/03/11	199,564	209,370	202,249
11/04/11	199,148	209,011	303,835
11/05/11	205,724	213,453	254,761
11/06/11	196,086	208,637	188,429
11/07/11	202,324	212,850	193,350
11/08/11	187,053	199,393	176,717
11/09/11	180,646	193,110	162,786
11/10/11	203,307	162,353	89,670
11/11/11	213,536	000,000	000,000
11/12/11	000,000	000,000	000,000
11/13/11	000,000	198,099	166,344
11/14/11	204,033	212,579	196,439
11/15/11	221,760	225,540	211,080
11/16/11	162,840	180,180	202,920
11/17/11	223,200	227,955	250,920
11/18/11	217,560	223,020	251,640
11/19/11	218,880	225,540	359,040
11/20/11	119,880	176,715	93,720
11/21/11	219,000	226,800	219,120
11/22/11	145,440	172,620	122,040

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date mm/dd/yy	WDW-1 (gallons)	WDW-2 (gallons)	WDW-3 (gallons)
11/23/11	211,680	226,800	210,120
11/24/11	195,840	210,420	705,000
11/25/11	128,160	151,305	55,200
11/26/11	195,840	210,315	188,760
11/27/11	171,360	190,260	151,080
11/28/11	197,160	209,160	188,520
11/29/11	151,200	166,320	96,360
11/30/11	220,320	223,020	212,760
12/01/11	181,440	194,040	166,920
12/02/11	175,800	202,860	187,200
12/03/11	200,160	219,240	208,800
12/04/11	185,760	197,820	171,240
12/05/11	181,440	202,860	186,000
12/06/11	940,320	197,820	185,880
12/07/11	118,080	134,820	000,000
12/08/11	210,360	214,305	191,400
12/09/11	138,120	149,940	840
12/10/11	210,240	214,305	208,800
12/11/11	200,040	209,160	198,840
12/12/11	208,800	215,460	210,360
12/13/11	192,840	205,275	191,520
12/14/11	159,840	177,660	139,920
12/15/11	210,240	219,135	214,680
12/16/11	210,240	217,875	210,360
12/17/11	205,920	214,200	204,360
12/18/11	207,480	216,825	220,200
12/19/11	201,600	225,540	217,680
12/20/11	217,560	224,385	175,560
12/21/11	205,800	211,785	211,800
12/22/11	204,600	182,700	159,240
12/23/11	171,360	177,660	162,600
12/24/11	154,080	160,020	128,400
12/25/11	154,080	211,680	200,280
12/26/11	940,320	201,600	182,640
12/27/11	200,040	207,900	000,000
12/28/11	213,120	219,240	218,520
12/29/11	200,160	211,680	162,600
12/30/11	131,040	156,345	88,080
12/31/11	164,160	183,855	151,560
01/01/12	201,480	217,875	105,600
01/02/12	184,320	209,160	211,440
01/03/12	203,040	217,980	204,360
01/04/12	195,840	214,200	208,680
01/05/12	200,160	217,875	211,680
01/06/12	146,880	183,960	129,720
01/07/12	185,760	204,120	177,120
01/08/12	188,640	202,860	197,400
01/09/12	183,000	204,120	18,360
01/10/12	144,000	166,215	000,000
01/11/12	149,760	172,620	147,120

Historical Volume Data
Navajo Refining Company, L.L.C.
Artesia, New Mexico

Date	WDW-1	WDW-2	WDW-3	
mm/dd/yy	(gallons)	(gallons)	(gallons)	
01/12/12	168,480	191,520	183,240	
01/13/12	145,440	168,840	129,600	
01/14/12	184,320	204,120	185,520	
01/15/12	123,600	173,880	135,720	
01/16/12	168,480	191,520	153,720	
01/17/12	188,640	204,120	194,640	
01/18/12	177,240	200,340	188,640	
01/19/12	182,880	202,860	223,560	
01/20/12	185,760	202,860	192,720	
01/21/12	181,440	205,275	59,400	
01/22/12	145,560	170,100	166,320	
01/23/12	138,240	162,435	193,680	
01/24/12	139,680	163,695	305,040	
01/25/12	113,760	118,440	75,960	
01/26/12	113,760	117,180	000,000	
01/27/12	113,760	118,440	000,000	
01/28/12	184,320	204,120	192,960	
01/29/12	187,200	202,860	188,640	
				Total Volume
Sub Totals (above)	97,707,317	104,096,353	97,505,713	299,309,384
Total before 9/30/10	1,326,473,337	732,996,868	257,757,772	2,317,227,977
Total Volumes	1,424,180,654	837,093,221	355,263,485	2,616,537,361

APPENDIX E-3

PredictW INFORMATION

PREDICTW - RESERVOIR PRESSURE INCREASE PROGRAM

The pressure response for radial flow of a slightly compressible fluid in a planar (porous) injection layer with spatially-constant properties is determined by the well-known diffusivity equation (Lee, 1982):

$$\frac{\partial^2 p}{\partial r^2} + \frac{1}{r}\frac{\partial p}{\partial r} = \frac{\phi \mu c_t}{0.000264k}\frac{\partial p}{\partial t}, \qquad \text{Equation 1}$$

where ϕ, μ, c_t, and k refer to porosity, viscosity (cp), compressibility (psi^{-1}), and permeability (md), respectively. The pressure, p, is expressed in psi; radial distance, r, is in feet; and time, t, is indicated in hours. For an infinite reservoir of thickness h (ft) with $p \rightarrow p_o$ (initial pressure) as $r \rightarrow \infty$, the transient pressure, p (r, t), for a single line source injector at r = 0 is determined from Equation 1 as (Muskat, 1937):

$$p\,(r,t) = p_o - \frac{70.6\,q\mu}{kh}\,Ei\left(\frac{-39.5\phi\mu c_t r^2}{kt}\right), \qquad \text{Equation 2}$$

where Ei represents the exponential integral defined by:

$$Ei\,(-x) = -\int_x^{\infty} \frac{e^{-\varepsilon}}{\varepsilon}\,d\varepsilon,$$

and q represents the (constant) injection rate in barrels per day (bbl/day). Time, t, in Equation 2 is expressed in days.

For the general case of multiple wells in a single layer, in which injection from each is represented by a succession of piece-wise constant flow rate intervals, the pressure response is readily obtained by superposition of elementary solutions given by Equation 1. In terms of Cartesian coordinates, the pressure transient at an arbitrary point (x, y) is given by:

$$p(x,y,t) = p_o + \sum_{j=1}^{N} \frac{70.6\,q_1^j\mu}{kh}\,Ei\left(\frac{-39.5\phi\mu c_t\left[(x-x_j)^2+(y-y_j)^2\right]}{kt}\right)$$

$$+ \sum_{j=1}^{N}\sum_{i=1}^{n_{j-1}} \frac{70.6\left[(q_{i+1}^j - q_i^j)\mu\right]}{kh}\,Ei\left(\frac{-39.5\phi\mu c_t\left[(x-x_j)^2+(y-y_j)^2\right]}{k(t-t_i^j)}\right)$$

Equation 3

for all $t_i^j < t$. In Equation 3, the following notation is employed:

N	=	number of wells injecting into the reservoir
n_j	=	number of constant flow rate increments for well j operative over time t
i	=	flow rate summation index ($1 < i < n_j$)
j	=	well number summation index ($1 < j < N$)
t_i^j	=	cumulative time corresponding to the end of injection rate interval i for well j
x_j, y_j	=	cartesian coordinates of well j
q_i^j	=	flow rate from well j during flow increment i

Equation 3 forms the basis for determining the cone of influence for a general multi-well system.

To determine shutin or flowing pressures at a generic wellbore location, Equation 3 is modified to include a dimensionless skin factor, s_b, which reflects the effects of altered properties in the near-wellbore region (Van Everdingen, 1953). The associated augmentation, Δp^b_{skin}, of the theoretical flowing pressure is assumed to be of the form:

$$\Delta p^b_{skin}\ (psi) = 141.2\ \frac{q_i^b \mu}{kh}\ s_b \qquad \text{Equation 4}$$

Incorporation of Equation 4 into Equation 3 and replacement of the quantity $[(x-x_b)^2 + (y-y_b)^2]$ in the Ei-function argument by $r^2_{w,b}$ (wellbore radius squared) leads to the following expression for the transient flowing pressure at a generic wellbore (b):

$$p^b_{wf}(x_b,y_b,t) = p_o + \sum_{j=1}^{N} \frac{70.6 q_1^j \mu}{kh} Ei\left(\frac{-39.5\phi\mu c_t[(x_b-x_j)^2 + (y_b-y_j)^2]}{kt}\right)$$

$$+ \sum_{j=1(j\neq b)}^{N} \sum_{i=1}^{n_{j-1}} \frac{70.6(q_{i+1}^j - q_i^j)\mu}{kh} Ei\left(\frac{-39.5\phi\mu c_t[(x_b-x_j)^2 + (y_b-y_j)^2]}{k(t-t_i^j)}\right)$$

$$+ \frac{70.6 q_1^b \mu}{kh}\left[Ei\left(\frac{-39.5\phi\mu c_t r^2_{w,b}}{kt}\right) - 2s_b\right]$$

$$+ \sum_{i=1}^{n_{j-1}} \frac{70.6(q_{i+1}^b - q_i^b)\mu}{kh}\left[Ei\left(\frac{-39.5\phi\mu c_t r^2_{w,b}}{k(t-t_i^b)}\right) - 2s_b\right]$$

Equation 5

where x_b, y_b denote the wellbore coordinates at well b where the pressure response is evaluated.

Application of Equations 3 and 5 to address actual operational conditions often requires inclusion of many wells (including image injectors), each having several hundred flow rate increments. Accordingly, a Visual Basic computer program, PREDICTW, was created to evaluate these equations. When isobaric contours at a given time in a given injection zone are desired, Equation 3, actually $p - p_o$, is evaluated at each node of a predefined uniform grid. The resulting Δp-x-y array is then input into a 3-D graphics routine, SURFER (® Golden Software, Inc.), to generate selected isobaric contours. When transient wellbore responses are desired to determine flowing pressures at a given well or to simulate pressure falloff tests, Equation 5 is utilized. The output for this case consists of a record of $\Delta p = p - p_o$ at a single well location over a specified time interval.

REFERENCES:

Lee, J., 1982, Well Testing: SPE Textbook Series, Vol. 1, Dallas, Texas.

Muskat, M., 1937, The Flow of Homogeneous Fluids Through Porous Media: McGraw Hill.

Van Everdingen, A. F., 1953, The Skin Effect and Its Influence on the Productive Capacity of a Well: SPE, Presented at the Petroleum Branch Fall Meeting, Fall 1953.

APPENDIX E-4

VISCOSITY OF FORMATION FLUID

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

September 16, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Prep Date: 09/02/98
Analysis Date: 09/11/98
Sampling Date: 07/31/98
Sample Condition: Intact & Cool
Sample Received by: MS
Project Name: NA

After 16 hours @ 130 F

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T103911	Upper Zone	120	152	215	4,470
T103912	Lower Zone	403	166	372	11,000
T103993	Upper Zone 2:1	92	111	175	2,960
T103994	Upper Zone 1:1	74	91	156	2,280
T103995	Upper Zone 1:2	55	70	170	1,630
T103996	Lower Zone 2:1	264	122	314	8,300
T103997	Lower Zone 1:1	203	98	272	6,230
T103998	Lower Zone 1:2	139	77	237	4,400
ICV		24	25	26	25
CCV		24	26	25	26
Reporting Limit		0.50	0.50	0.50	0.50
METHOD BLANK		<0.50	<0.50	<0.50	<0.50
RPD		2	1	1	5
% Extraction Accuracy		120	93	94	105
% Instrument Accuracy		99	102	104	104

METHODS: EPA 200.7.
CHEMIST: RR
SPIKE: 1,000 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

9-16-98
Date

TRACE ANALYSIS, INC.
6701 Aberdeen Avenue Lubbock, Texas 79424 806•794•1296 FAX 806•794•1298

September 16, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

ANALYTICAL RESULTS FOR
NAVAJO REFINING
Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Prep Date: 08/11/98
Analysis Date: 08/18/98
Sampling Date: 07/31/98
Sample Condition: Intact & Cool
Sample Received by: MS
Project Name: NA

ROOM TEMPERATURE

TA#	Field Code	POTASSIUM (mg/L)	MAGNESIUM (mg/L)	CALCIUM (mg/L)	SODIUM (mg/L)
T103911	Upper Zone	61	126	276	4,785
T103912	Lower Zone	213	143	390	12,770
T103993	Upper Zone 2:1	26	60	214	3,114
T103994	Upper Zone 1:1	18	65	282	2,491
T103995	Upper Zone 1:2	5.3	39	213	1,675
T103996	Lower Zone 2:1	138	99	384	8,920
T103997	Lower Zone 1:1	89	70	277	6,778
T103998	Lower Zone 1:2	54	43	291	4,547
ICV		25	25	25	26
CCV		25	25	25	26
Reporting Limit		0.50	0.50	0.50	0.59
METHOD BLANK		<0.50	<0.50	<0.50	<0.50
RPD		2*	0*	0*	0*
% Extraction Accuracy		96*	100*	104*	101*
% Instrument Accuracy		100	100	100	104

*NOTE: Used LCS for Extraction Accuracy and RPD due to high concentration in sample.
METHODS: EPA 200.7.
CHEMIST: RR
SPIKE: 100 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.
CV: 25 mg/L POTASSIUM, MAGNESIUM, CALCIUM, SODIUM.

Director, Dr. Blair Leftwich

9-16-98
Date

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR
NAVAJO REFINING

September 18, 1998
Receiving Data: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Data: 07/31/98
Sample Condition: I & C
Sample Received by: MS
Project Name: NA

ROOM TEMPERATURE

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103911	Upper Zone	<10	46	16,000	3.7	8,500	1,800
T103912	Lower Zone	<10	170	33,000	2.6	19,000	2,200
T103994	Upper Zone 1:1	<10	230	9,000	19	3,900	1,200
ICV		4.8	—	—	0.97	12	12
CCV		4.8	—	—	0.94	12	12
RPD		4	0	8	8	0	1
% Extraction Accuracy		95	—	—	104	96	99
% Instrument Accuracy		97	—	98	97	98	98
REPORTING LIMIT		10	—	—	0.1	0.5	0.5
PREP DATE		08/06/98	08/09/98	08/06/98	08/07/98	08/06/98	08/06/98
ANALYSIS DATE		08/06/98	08/09/98	08/06/98	08/07/98	08/06/98	08/06/98

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)
T103911	Upper Zone	1,400	<1.0	1.018	27,000	7.8
T103912	Lower Zone	1,000	<1.0	1.034	52,000	8.1
T103994	Upper Zone 1:1	410	8	1.006	13,000	8.5
ICV		1,100	1,100	—	1,396	7.0
CCV		1,130	1,080	—	1,387	7.0
RPD		1	1	0	1	0
% Extraction Accuracy		—	—	—	98	—
% Instrument Accuracy		91	91	—	99	100
REPORTING LIMIT		—	—	—	—	—
PREP DATE		08/11/98		08/06/98	08/07/98	08/09/98
ANALYSIS DATE		08/11/98		08/06/98	08/07/98	08/09/98

*NOTE: Out of holding time for NO3-N.
METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

NO3-N SPIKE: 125 mg/L NO3-N.
FLUORIDE SPIKE: 10 mg/L FLUORIDE.
CHLORIDE SPIKE: 312.5 mg/L CHLORIDE.
SULFATE SPIKE: 312.5 mg/L SULFATE.

NO3-N CV: 5.0 mg/L NO3-N.
FLUORIDE CV: 1.0 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

9-16-98
DATE

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ANALYTICAL RESULTS FOR
NAVAJO REFINING

September 16, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 07/31/98
Sample Condition: I & C
Sample Received by: MS
Project Name: NA

ROOM TEMPERATURE

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103993	Upper Zone 2:1	<10	560	11,000	14	5,000	1,400
ICV		4.8	—	—	0.97	11	12
CCV		4.8	—	—	0.94	11	12
RPD		4	0	8	6	5	1
% Extraction Accuracy		96	—	—	104	93	99
% Instrument Accuracy		97	—	98	97	93	98
REPORTING LIMIT		10	—	—	0.1	0.5	0.5
PREP DATE		08/06/98	08/09/98	08/06/98	08/07/98	08/10/98	08/06/98
ANALYSIS DATE		08/06/98	08/09/98	08/06/98	08/07/98	08/10/98	08/06/98

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)
T103992	Upper Zone 2:1	700	<1.0	1.010	16,000	8.2
ICV		1,100	1,100	—	1,396	7.0
CCV		1,130	1,060	—	1,387	7.0
RPD		1	1	0	1	0
% Extraction Accuracy		—	—	—	98	—
% Instrument Accuracy		91	91	—	99	100
REPORTING LIMIT		—	—	—	—	—
PREP DATE		08/11/98		08/06/98	08/07/98	08/09/98
ANALYSIS DATE		08/11/98		08/06/98	08/07/98	08/09/98

*NOTE: Out of holding time for NO3-N.

METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

NO3-N SPIKE: 125 mg/L NO3-N.
FLUORIDE SPIKE: 10 mg/L FLUORIDE.
CHLORIDE SPIKE: 1,260 mg/L CHLORIDE.
SULFATE SPIKE: 312.5 mg/L SULFATE.

NO3-N CV: 5.0 mg/L NO3-N.
FLUORIDE CV: 1.0 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

9-16-98
DATE

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR NAVAJO REFINING

September 16, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 07/31/98
Sample Condition: I & C
Sample Received by: MS
Project Name: NA

ROOM TEMPERATURE

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103995	Upper Zone 1:2	<10	320	8,000	24	2,600	960
T103996	Lower Zone 2:1	<10	530	23,000	13	14,000	1,700
T103997	Lower Zone 1:1	<10	430	18,000	20	12,000	1,500
T103998	Lower Zone 1:2	<10	230	13,000	23	13,000	1,100
ICV		4.8	—	—	0.97	12	12
CCV		4.8	—	—	0.94	12	12
RPD		1	0	8	8	1	4
% Extraction Accuracy		106	—	—	104	90	109
% Instrument Accuracy		97	—	98	97	97	97
REPORTING LIMIT		10	—	—	0.1	0.5	0.5
PREP DATE		08/06/98	08/09/98	08/06/98	08/07/98	08/06/98	08/06/98
ANALYSIS DATE		08/06/98	08/09/98	08/06/98	08/07/98	08/06/98	08/06/98

TA#	FIELD CODE	ALKALINITY (mg/L as CaCO3) HCO3	ALKALINITY (mg/L as CaCO3) CO3	SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)
T103995	Upper Zone 1:2	340	4	1.010	9,300	8.5
T103996	Lower Zone 2:1	570	<1.0	1.019	44,000	8.2
T103997	Lower Zone 1:1	540	2.0	1.023	34,000	8.4
T103998	Lower Zone 1:2	370	10	1.009	20,000	8.6
ICV		1,100	1,100	—	1,396	7.0
CCV		1,130	1,060	—	1,387	7.0
RPD		1	1	0	1	0
% Extraction Accuracy		—	—	—	98	—
% Instrument Accuracy		91	91	—	99	100
REPORTING LIMIT		—	—	—	—	—
PREP DATE		08/11/98		08/06/98	08/07/98	08/09/98
ANALYSIS DATE		08/11/98		08/06/98	08/07/98	08/09/98

*NOTE: Out of holding time for NO3-N.
METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

NO3-N SPIKE: 125 mg/L NO3-N.
FLUORIDE SPIKE: 10 mg/L FLUORIDE.
CHLORIDE SPIKE: 312.5 mg/L CHLORIDE.
SULFATE SPIKE: 312.5 mg/L SULFATE.

NO3-N CV: 5.0 mg/L NO3-N.
FLUORIDE CV: 1.0 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

9-16-98
DATE

TRACE ANALYSIS, INC.

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ANALYTICAL RESULTS FOR NAVAJO REFINING

September 16, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Westewater Wells - Artesia

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 07/31/98
Sample Condition: I & C
Sample Received by: MS
Project Name: NA

After 16 hours @ 130 °F

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103911	Upper Zone	<10	3,200	17,000	2.7	7,200	1,800
T103912	Lower Zone	<10	1,040	38,000	2.0	22,000	2,100
T103993	Upper Zone 2:1	<10	1,900	11,000	12	49,000	1,300
ICV		4.7	—	—	0.97	11	12
CCV		4.7	—	—	0.96	11	11
RPD		3	3	1	0	5	0
% Extraction Accuracy		105	—	—	100	93	110
% Instrument Accuracy		96	—	101	97	93	97
REPORTING LIMIT		10	—	—	0.1	0.5	0.5
PREP DATE		08/26/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98
ANALYSIS DATE		08/26/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)
T103911	Upper Zone	720	36	1.018	27,000	8.6
T103912	Lower Zone	570	8.0	1.036	68,000	8.4
T103993	Upper Zone 2:1	480	24	1.016	18,000	8.6
ICV		1,080	1,100	—	1,335	7.0
CCV		1,040	1,120	—	1,327	7.0
RPD		1	1	0	2	0
% Extraction Accuracy		—	—	—	94	—
% Instrument Accuracy		90	90	—	94	100
REPORTING LIMIT		—	—	—	—	—
PREP DATE		08/14/98		08/11/98	08/10/98	08/12/98
ANALYSIS DATE		08/14/98		08/11/98	08/10/98	08/12/98

*NOTE: Out of holding time for NO3-N.
METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

NO3-N SPIKE: 125 mg/L NO3-N.
FLUORIDE SPIKE: 10 mg/L FLUORIDE.
CHLORIDE SPIKE: 1,250 mg/L CHLORIDE.
SULFATE SPIKE: 1,250 mg/L SULFATE.

NO3-N CV: 5.0 mg/L NO3-N.
FLUORIDE CV: 1.0 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

9-16-98
DATE

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ANALYTICAL RESULTS FOR
NAVAJO REFINING

September 16, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 07/31/98
Sample Condition: I & C
Sample Received by: MS
Project Name: NA

After 16 hours @ 130 °F

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103994	Upper Zone 1:1	<10	370	8,700	17	3,500	1,100
T103995	Upper Zone 1:2	<10	300	8,600	24	2,400	880
T103996	Lower Zone 2:1	<10	300	27,000	12	14,000	1,800
ICV		4.7	—	—	0.97	11	11
CCV		4.7	—	—	0.98	11	11
RPD		3	3	1	0	2	2
% Extraction Accuracy		105	—	—	100	92**	95**
% Instrument Accuracy		98	—	101	97	93	95
REPORTING LIMIT		10	—	—	0.1	0.5	0.5
PREP DATE		08/26/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98
ANALYSIS DATE		08/26/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)
T103994	Upper Zone 1:1	520	58	1.012	14,000	8.7
T103995	Upper Zone 1:2	370	20	1.004	11,000	9.0
T103996	Lower Zone 2:1	430	8.0	1.021	48,000	8.5
ICV		1,080	1,100	—	1,335	7.0
CCV		1,040	1,120	—	1,327	7.0
RPD		1	1	0	2	0
% Extraction Accuracy		—	—	—	94	—
% Instrument Accuracy		90	90	—	94	100
REPORTING LIMIT		—	—	—	—	—
PREP DATE		08/14/98		08/11/98	08/10/98	08/12/98
ANALYSIS DATE		08/14/98		08/11/98	08/10/98	08/12/98

*NOTE: Out of holding time for NO3-N.
**NOTE: Chloride and Sulfate spikes % Extraction Accuracy low. LRB spikes % Extraction Accuracy used due to matrix difficulties. LRB spikes in range.
METHODS: EPA 150.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
CHEMIST: pH/TSS: BP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

NO3-N SPIKE: 125 mg/L NO3-N.
FLUORIDE SPIKE: 10 mg/L FLUORIDE.
CHLORIDE SPIKE: 312.5 mg/L CHLORIDE.
SULFATE SPIKE: 312.5 mg/L SULFATE.

NO3-N CV: 5.0 mg/L NO3-N.
FLUORIDE CV: 1.0 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

9-16-98
DATE

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E-Mail: lab@traceanalysis.com

ANALYTICAL RESULTS FOR
NAVAJO REFINING

September 16, 1998
Receiving Date: 08/01/98
Sample Type: Water
Project No: NA
Project Location: Wastewater Wells - Artesia

Attention: Darrell Moore
501 E. Main
Artesia, NM 88210

Sampling Date: 07/31/98
Sample Condition: I & C
Sample Received by: MS
Project Name: NA

After 16 hours @ 130 °F

TA#	FIELD CODE	NO3-N* (mg/L)	TSS (mg/L)	TDS (mg/L)	FLUORIDE (mg/L)	CHLORIDE (mg/L)	SULFATE (mg/L)
T103997	Lower Zone 1:1	<10	160	22,000	16	11,000	1,500
T103998	Lower Zone 1:2	<10	340	15,000	22	7,100	1,000
ICV		4.7	—	—	0.97	11	11
CCV		4.7	—	—	0.96	11	12
RPD		3	3	1	0	1	1
% Extraction Accuracy		105	—	—	100	91	93
% Instrument Accuracy		98	—	101	97	94	97
REPORTING LIMIT		10	—	—	0.1	0.5	0.5
PREP DATE		08/26/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98
ANALYSIS DATE		08/26/98	08/12/98	08/10/98	08/12/98	08/10/98	08/10/98

TA#	FIELD CODE	ALKALINITY (mg/L as CaCo3) HCO3	ALKALINITY (mg/L as CaCo3) CO3	SPECIFIC GRAVITY (g/mL)	SPECIFIC CONDUCTANCE (uMHOS/cm)	pH (s.u.)
T103997	Lower Zone 1:1	340	22	1.012	37,000	8.6
T103998	Lower Zone 1:2	300	16	1.009	26,000	8.6
ICV		1,080	1,100	—	1,335	7.0
CCV		1,040	1,120	—	1,327	7.0
RPD		1	1	0	2	0
% Extraction Accuracy		—	—	—	94	—
% Instrument Accuracy		90	90	—	94	100
REPORTING LIMIT		—	—	—	—	—
PREP DATE		08/14/98		08/11/98	08/10/98	08/12/98
ANALYSIS DATE		08/14/98		08/11/98	08/10/98	08/12/98

*NOTE: Out of holding time for NO3-N.

METHODS: EPA 160.1, 300.0, 160.2, 160.1, 340.2, 120.1, 310.1; ASTM D854-92.
CHEMIST: pH/TSS: SP NO3-N/FLUORIDE/CHLORIDE/SULFATE/SPECIFIC GRAVITY: JS
TDS/SPECIFIC CONDUCTANCE/ALKALINITY: RS

NO3-N SPIKE: 125 mg/L NO3-N.
FLUORIDE SPIKE: 10 mg/L FLUORIDE.
CHLORIDE SPIKE: 62.5 mg/L CHLORIDE.
SULFATE SPIKE: 62.5 mg/L SULFATE.

NO3-N CV: 5.0 mg/L NO3-N.
FLUORIDE CV: 1.0 mg/L FLUORIDE.
CHLORIDE CV: 12.5 mg/L CHLORIDE.
SULFATE CV: 12.5 mg/L SULFATE.

Director, Dr. Blair Leftwich

5-16-98
DATE

ANALYSYS INC.

4221 Freidrich Lane, Suite 190, Austin, TX 78744
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Client: Trace Analysis, Inc.
Attn: Nell Green
Address: 6701 Aberdeen Ave, Ste. 9
Lubbock, Tx 79424

Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92840 Report Date: 8/31/98
Project ID:
Sample Name: 103911
Sample Matrix: water
Date Received: 8/5/98 Time: 10:00:00
Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temperature - Upper Zone
Note: Could not run heated sample due to sulfide hazard.

This analytical report respectfully submitted by AnalySys, Inc. The enclosed results have been reviewed and to the best of my knowledge the analytical results are consistent with AnalySys, Inc.'s Quality Assurance/Quality Control Program.© Copyright 1998 AnalySys, Inc., Austin, Texas. All rights reserved. No part of this publication may be reproduced or transmit- ted in any form or by any means without the express written permission of AnalySys, Inc.

Respectfully Submitted,

Richard Lester

Richard Lester

1. Quality assurance data reported is for the lot analyzed which included this sample
2. Precision (Prec.) is the absolute value of the relative percent (%) difference between duplicate measurements.
3. Recovery (Recov.) is the percent (%) of analyte recovered from a spiked sample.
4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits, adjusted for any required dilution.

ANALYSYS INC.

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& 9320 Up River Road, Corpus Christi, TX 78409
(512) 444-5896 • FAX (512) 447-4766

Client: Trace Analysis, Inc.
Attn: Nell Green
Address: 6701 Aberdeen Ave, Ste. 9
Lubbock, Tx 79424

Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92841 Report Date: 8/31/98
Project ID:
Sample Name: 103912
Sample Matrix: water
Date Received: 8/5/98 Time: 10:00:00
Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.7	cps			8/26/98	Brookfield				

Room Temperature - Lower Zone
Note: Could not run heated sample due to sulfide hazard

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Respectfully Submitted,

Richard Laster

Richard Laster

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5. Reporting Quantitation Limit. The Practical Quantitation Limit (PQL) or the Method Detection Limit (MDL) reported for the analyte.
6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits, adjusted for any required dilution.

ANALYSYS INC.

4211 Freidrich Lane, Suite 108, Austin, TX 78744
& 9310 Up River Road, Corpus Christi, TX 78409
(512) 444-5896 • FAX (512) 447-4766

Client: Trace Analysis, Inc.
Attn: Neil Green
Address: 6701 Aberdeen Ave, Ste. 9
Lubbock, Tx 79424

Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92842 Report Date: 8/31/98
Project ID:
Sample Name: 103993
Sample Matrix: water
Date Received: 8/5/98 Time: 10:00:00
Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temp – Upper Zone 2:1

Note: Could not run heated sample due to sulfide Layered

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Lubbock, Tx 79424

Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92843 Report Date: 8/31/98
Project ID:
Sample Name: 103994
Sample Matrix: water
Date Received: 8/5/98 Time: 10:00:00
Date Sampled: Not specifie Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temperature - Upper Zone 1:1
Note: Could not run heated sample due to Sulfide hazard

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Richard Laster

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6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits, adjusted for any required dilution.

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Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92844 Report Date: 8/31/98
Project ID:
Sample Name: 103995
Sample Matrix: water
Date Received: 8/5/98 Time: 10:00:00
Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temperature - Upper Zone 1:2
Note: Could not run heated sample due to sulfide hazard

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Richard Laster

Richard Laster

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ANALYSYS Inc.

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Attn: Neil Green
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Lubbock, Tx 79424

Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92845 Report Date: 8/31/98
Project ID:
Sample Name: 103996
Sample Matrix: water
Date Received: 8/5/98 Time: 10:00:00
Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.1	cps			8/26/98	Brookfield				

Room Temperature – Lower Zone 2:1
Note: Could not run heated sample due to sulfide hazard

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Respectfully Submitted,

Richard Laster

Richard Laster

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6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits, adjusted for any required dilution.

ANALYSYS INC.

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Attn: Neil Green
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Lubbock, Tx 79424

Phone: (806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#: 92846 Report Date: 8/31/98
Project ID:
Sample Name: 103997
Sample Matrix: water
Date Received: 8/5/98 Time: 10:00:00
Date Sampled: Not specific Time: 00:00:00

REPORT OF ANALYSIS

QUALITY ASSURANCE DATA[1]

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.6	cps			8/26/98	Brookfield				

Room Temp - Lower Zone 1:1
Note: Could not run heated sample due to sulfide hazard

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Respectfully Submitted,

Richard Laster

Richard Laster

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Address:	6701 Aberdeen Ave, Ste. 9
	Lubbock, Tx 79424
Phone:	(806) 794-1296 FAX: (806) 794-1298

Report #/Lab ID#:	92847 **Report Date:** 8/31/98
Project ID:	
Sample Name:	103998
Sample Matrix:	water
Date Received:	8/5/98 **Time:** 10:00:00
Date Sampled:	Not specific **Time:** 00:00:00

REPORT OF ANALYSIS — **QUALITY ASSURANCE DATA[1]**

Parameter	Result	Units	RQL[5]	Blank	Date	Method	Prec.[2]	Recov.[3]	CCV[4]	LCS[4]
Viscosity	0.5	cps			8/26/98	Brookfield				

Room Temp - Lower Zone 1:2

Note: Could not run heated sample due to Sulfide Hazard

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Respectfully Submitted,

Richard Lester

Richard Lester

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4. Calibration Verification (CCV) and Lab Control Sample (LCS) results expressed as the percent (%) recovery of analyte from a known standard.
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6. Method numbers typically denote USEPA procedures. Less than ("<") values reflect nominal quantitation limits, adjusted for any required dilution.

APPENDIX E-5

COMPRESSIBILITY OF FORMATION FLUID

APPENDIX E-5

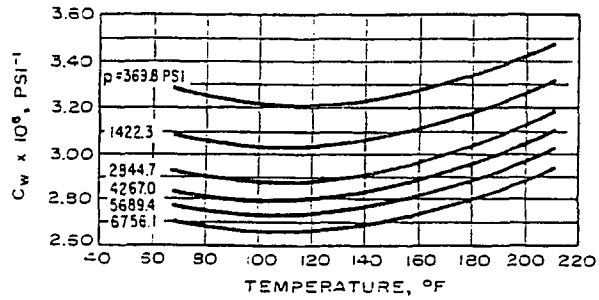

Fig. D.16 Average compressibility of distilled water. After Long and Chierici.[13]

Source: Earlougher, 1977, Advances in Well Test Analysis

COMPRESSIBILITY OF PORE VOLUME AND DISTILLED WATER

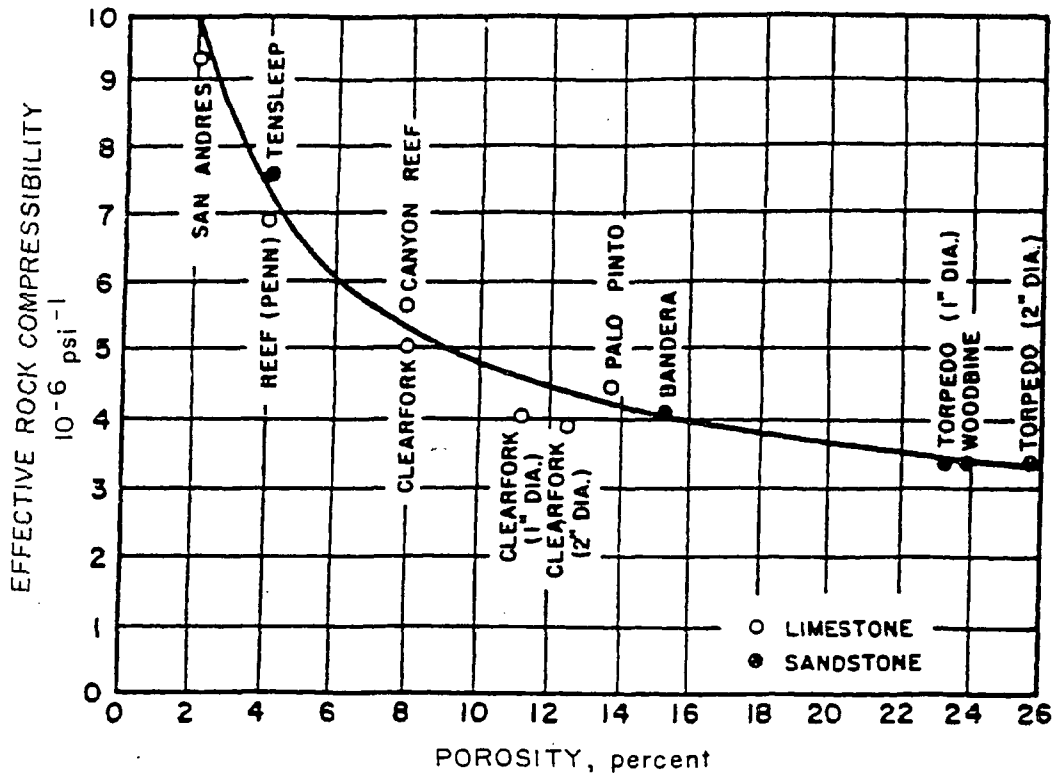

Fig. G.5 Effective formation (rock) compressibility. From Hall, *Trans.*, AIME (1953) **198**, 309.

Source: Matthews and Russell, 1967, Pressure Buildup and Flow Tests in Wells

APPENDIX E-6

PREDICTED BHP CALCULATIONS

APPENDIX E-6
Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1	400	gpm
Rate in Well No. 2	400	gpm
Rate in Well No. 3	0	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)
1-2

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Pressure Build at Well No 3 (psi)
4257	30.5	1	2/29/2012	3307.661
4287.5	61	2	3/29/2012	3339.688
4318	91.5	3	4/29/2012	3347.924
4348.5	122	4	5/29/2012	3352.776
4379	152.5	5	6/29/2012	3356.226
4409.5	183	6	7/29/2012	3358.907
4440	213.5	7	8/29/2012	3361.102
4470.5	244	8	9/29/2012	3362.964
4501	274.5	9	10/29/2012	3364.583
4531.5	305	10	11/29/2012	3366.017
4562	335.5	11	12/29/2012	3367.305
4592.5	366	12	1/29/2013	3368.476
4623	396.5	13	2/28/2013	3369.55
4653.5	427	14	3/29/2013	3370.544
4684	457.5	15	4/29/2013	3371.468
4714.5	488	16	5/29/2013	3372.333
4745	518.5	17	6/29/2013	3373.147
4775.5	549	18	7/29/2013	3373.915
4806	579.5	19	8/29/2013	3374.644
4836.5	610	20	9/29/2013	3375.337
4867	640.5	21	10/29/2013	3375.998
4897.5	671	22	11/29/2013	3376.63
4928	701.5	23	12/29/2013	3377.236

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	250	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
1-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
4257	30.5	1	2/29/2012	4212.419
4287.5	61	2	3/29/2012	4248.371
4318	91.5	3	4/29/2012	4256.676
4348.5	122	4	5/29/2012	4261.552
4379	152.5	5	6/29/2012	4265.013
4409.5	183	6	7/29/2012	4267.701
4440	213.5	7	8/29/2012	4269.901
4470.5	244	8	9/29/2012	4271.767
4501	274.5	9	10/29/2012	4273.388
4531.5	305	10	11/29/2012	4274.824
4562	335.5	11	12/29/2012	4276.114
4592.5	366	12	1/29/2013	4277.286
4623	396.5	13	2/28/2013	4278.362
4653.5	427	14	3/29/2013	4279.356
4684	457.5	15	4/29/2013	4280.281
4714.5	488	16	5/29/2013	4281.147
4745	518.5	17	6/29/2013	4281.961
4775.5	549	18	7/29/2013	4282.73
4806	579.5	19	8/29/2013	4283.459
4836.5	610	20	9/29/2013	4284.152
4867	640.5	21	10/29/2013	4284.814
4897.5	671	22	11/29/2013	4285.446
4928	701.5	23	12/29/2013	4286.053

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
2-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
4257	30.5	1	2/29/2012	4221.755
4287.5	61	2	3/29/2012	4270.71
4318	91.5	3	4/29/2012	4279.375
4348.5	122	4	5/29/2012	4284.376
4379	152.5	5	6/29/2012	4287.901
4409.5	183	6	7/29/2012	4290.626
4440	213.5	7	8/29/2012	4292.852
4470.5	244	8	9/29/2012	4294.736
4501	274.5	9	10/29/2012	4296.371
4531.5	305	10	11/29/2012	4297.818
4562	335.5	11	12/29/2012	4299.116
4592.5	366	12	1/29/2013	4300.295
4623	396.5	13	2/28/2013	4301.377
4653.5	427	14	3/29/2013	4302.376
4684	457.5	15	4/29/2013	4303.305
4714.5	488	16	5/29/2013	4304.175
4745	518.5	17	6/29/2013	4304.992
4775.5	549	18	7/29/2013	4305.764
4806	579.5	19	8/29/2013	4306.496
4836.5	610	20	9/29/2013	4307.191
4867	640.5	21	10/29/2013	4307.855
4897.5	671	22	11/29/2013	4308.489
4928	701.5	23	12/29/2013	4309.097

Rate in Well No. 1	267	gpm
Rate in Well No. 2	266	gpm
Rate in Well No. 3	267	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
All

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
4257	30.5	1	2/29/2012	3914.691
4287.5	61	2	3/29/2012	3953.662
4318	91.5	3	4/29/2012	3962.063
4348.5	122	4	5/29/2012	3966.973
4379	152.5	5	6/29/2012	3970.452
4409.5	183	6	7/29/2012	3973.15
4440	213.5	7	8/29/2012	3975.357
4470.5	244	8	9/29/2012	3977.227
4501	274.5	9	10/29/2012	3978.852
4531.5	305	10	11/29/2012	3980.291
4562	335.5	11	12/29/2012	3981.583
4592.5	366	12	1/29/2013	3982.757
4623	396.5	13	2/28/2013	3983.834
4653.5	427	14	3/29/2013	3984.83
4684	457.5	15	4/29/2013	3985.756
4714.5	488	16	5/29/2013	3986.623
4745	518.5	17	6/29/2013	3987.438
4775.5	549	18	7/29/2013	3988.208
4806	579.5	19	8/29/2013	3988.938
4836.5	610	20	9/29/2013	3989.632
4867	640.5	21	10/29/2013	3990.294
4897.5	671	22	11/29/2013	3990.927
4928	701.5	23	12/29/2013	3991.533

APPE. -6

Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1	400	gpm
Rate in Well No. 2	400	gpm
Rate in Well No. 3	0	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)
1-2

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Pressure Build at Well No 3 (psi)
4958.5	732	24	1/29/2014	3377.818
4989	762.5	25	2/28/2014	3378.379
5019.5	793	26	3/29/2014	3378.919
5050	823.5	27	4/29/2014	3379.441
5080.5	854	28	5/29/2014	3379.946
5111	884.5	29	6/29/2014	3380.435
5141.5	915	30	7/29/2014	3380.909
5172	945.5	31	8/29/2014	3381.369
5202.5	976	32	9/29/2014	3381.817
5233	1006.5	33	10/29/2014	3382.253
5263.5	1037	34	11/29/2014	3382.677
5294	1067.5	35	12/29/2014	3383.09
5324.5	1098	36	1/29/2015	3383.494
5355	1128.5	37	2/28/2015	3383.888
5385.5	1159	38	3/29/2015	3384.273
5416	1189.5	39	4/29/2015	3384.649
5446.5	1220	40	5/29/2015	3385.017
5477	1250.5	41	6/29/2015	3385.378
5507.5	1281	42	7/29/2015	3385.731
5538	1311.5	43	8/29/2015	3386.077
5568.5	1342	44	9/29/2015	3386.417
5599	1372.5	45	10/29/2015	3386.75
5629.5	1403	46	11/29/2015	3387.077

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	250	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
1-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
4958.5	732	24	1/29/2014	4286.635
4989	762.5	25	2/28/2014	4287.196
5019.5	793	26	3/29/2014	4287.736
5050	823.5	27	4/29/2014	4288.259
5080.5	854	28	5/29/2014	4288.764
5111	884.5	29	6/29/2014	4289.253
5141.5	915	30	7/29/2014	4289.727
5172	945.5	31	8/29/2014	4290.188
5202.5	976	32	9/29/2014	4290.636
5233	1006.5	33	10/29/2014	4291.071
5263.5	1037	34	11/29/2014	4291.496
5294	1067.5	35	12/29/2014	4291.91
5324.5	1098	36	1/29/2015	4292.313
5355	1128.5	37	2/28/2015	4292.707
5385.5	1159	38	3/29/2015	4293.092
5416	1189.5	39	4/29/2015	4293.469
5446.5	1220	40	5/29/2015	4293.837
5477	1250.5	41	6/29/2015	4294.198
5507.5	1281	42	7/29/2015	4294.551
5538	1311.5	43	8/29/2015	4294.897
5568.5	1342	44	9/29/2015	4295.237
5599	1372.5	45	10/29/2015	4295.57
5629.5	1403	46	11/29/2015	4295.897

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
2-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
4958.5	732	24	1/29/2014	4309.681
4989	762.5	25	2/28/2014	4310.243
5019.5	793	26	3/29/2014	4310.785
5050	823.5	27	4/29/2014	4311.308
5080.5	854	28	5/29/2014	4311.815
5111	884.5	29	6/29/2014	4312.305
5141.5	915	30	7/29/2014	4312.78
5172	945.5	31	8/29/2014	4313.242
5202.5	976	32	9/29/2014	4313.69
5233	1006.5	33	10/29/2014	4314.127
5263.5	1037	34	11/29/2014	4314.552
5294	1067.5	35	12/29/2014	4314.966
5324.5	1098	36	1/29/2015	4315.371
5355	1128.5	37	2/28/2015	4315.765
5385.5	1159	38	3/29/2015	4316.151
5416	1189.5	39	4/29/2015	4316.528
5446.5	1220	40	5/29/2015	4316.897
5477	1250.5	41	6/29/2015	4317.258
5507.5	1281	42	7/29/2015	4317.612
5538	1311.5	43	8/29/2015	4317.958
5568.5	1342	44	9/29/2015	4318.298
5599	1372.5	45	10/29/2015	4318.632
5629.5	1403	46	11/29/2015	4318.959

Rate in Well No. 1	267	gpm
Rate in Well No. 2	266	gpm
Rate in Well No. 3	267	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
All

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
4958.5	732	24	1/29/2014	3992.116
4989	762.5	25	2/28/2014	3992.677
5019.5	793	26	3/29/2014	3993.218
5050	823.5	27	4/29/2014	3993.741
5080.5	854	28	5/29/2014	3994.246
5111	884.5	29	6/29/2014	3994.736
5141.5	915	30	7/29/2014	3995.21
5172	945.5	31	8/29/2014	3995.671
5202.5	976	32	9/29/2014	3996.119
5233	1006.5	33	10/29/2014	3996.555
5263.5	1037	34	11/29/2014	3996.98
5294	1067.5	35	12/29/2014	3997.394
5324.5	1098	36	1/29/2015	3997.797
5355	1128.5	37	2/28/2015	3998.192
5385.5	1159	38	3/29/2015	3998.577
5416	1189.5	39	4/29/2015	3998.953
5446.5	1220	40	5/29/2015	3999.322
5477	1250.5	41	6/29/2015	3999.683
5507.5	1281	42	7/29/2015	4000.036
5538	1311.5	43	8/29/2015	4000.382
5568.5	1342	44	9/29/2015	4000.722
5599	1372.5	45	10/29/2015	4001.055
5629.5	1403	46	11/29/2015	4001.382

APPE. -6

Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1	400	gpm
Rate in Well No. 2	400	gpm
Rate in Well No. 3	0	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)

1-2

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Pressure Build at Well No 3 (psi)
5660	1433.5	47	12/29/2015	3387.398
5690.5	1464	48	1/29/2016	3387.713
5721	1494.5	49	2/29/2016	3388.023
5751.5	1525	50	3/29/2016	3388.328
5782	1555.5	51	4/29/2016	3388.628
5812.5	1586	52	5/29/2016	3388.923
5843	1616.5	53	6/29/2016	3389.213
5873.5	1647	54	7/29/2016	3389.499
5904	1677.5	55	8/29/2016	3389.78
5934.5	1708	56	9/29/2016	3390.058
5965	1738.5	57	10/29/2016	3390.331
5995.5	1769	58	11/29/2016	3390.6
6026	1799.5	59	12/29/2016	3390.866
6056.5	1830	60	1/29/2017	3391.128
6087	1860.5	61	2/28/2017	3391.387
6117.5	1891	62	3/29/2017	3391.642
6148	1921.5	63	4/29/2017	3391.894
6178.5	1952	64	5/29/2017	3392.142
6209	1982.5	65	6/29/2017	3392.387
6239.5	2013	66	7/29/2017	3392.63
6270	2043.5	67	8/29/2017	3392.869
6300.5	2074	68	9/29/2017	3393.106
6331	2104.5	69	10/29/2017	3393.339

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	250	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

1-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
5660	1433.5	47	12/29/2015	4296.218
5690.5	1464	48	1/29/2016	4296.533
5721	1494.5	49	2/29/2016	4296.843
5751.5	1525	50	3/29/2016	4297.148
5782	1555.5	51	4/29/2016	4297.448
5812.5	1586	52	5/29/2016	4297.743
5843	1616.5	53	6/29/2016	4298.033
5873.5	1647	54	7/29/2016	4298.319
5904	1677.5	55	8/29/2016	4298.601
5934.5	1708	56	9/29/2016	4298.878
5965	1738.5	57	10/29/2016	4299.152
5995.5	1769	58	11/29/2016	4299.421
6026	1799.5	59	12/29/2016	4299.687
6056.5	1830	60	1/29/2017	4299.949
6087	1860.5	61	2/28/2017	4300.208
6117.5	1891	62	3/29/2017	4300.463
6148	1921.5	63	4/29/2017	4300.715
6178.5	1952	64	5/29/2017	4300.963
6209	1982.5	65	6/29/2017	4301.209
6239.5	2013	66	7/29/2017	4301.451
6270	2043.5	67	8/29/2017	4301.69
6300.5	2074	68	9/29/2017	4301.927
6331	2104.5	69	10/29/2017	4302.161

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

2-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
5660	1433.5	47	12/29/2015	4319.281
5690.5	1464	48	1/29/2016	4319.596
5721	1494.5	49	2/29/2016	4319.907
5751.5	1525	50	3/29/2016	4320.212
5782	1555.5	51	4/29/2016	4320.512
5812.5	1586	52	5/29/2016	4320.807
5843	1616.5	53	6/29/2016	4321.098
5873.5	1647	54	7/29/2016	4321.384
5904	1677.5	55	8/29/2016	4321.666
5934.5	1708	56	9/29/2016	4321.944
5965	1738.5	57	10/29/2016	4322.218
5995.5	1769	58	11/29/2016	4322.487
6026	1799.5	59	12/29/2016	4322.753
6056.5	1830	60	1/29/2017	4323.016
6087	1860.5	61	2/28/2017	4323.274
6117.5	1891	62	3/29/2017	4323.53
6148	1921.5	63	4/29/2017	4323.782
6178.5	1952	64	5/29/2017	4324.03
6209	1982.5	65	6/29/2017	4324.276
6239.5	2013	66	7/29/2017	4324.519
6270	2043.5	67	8/29/2017	4324.758
6300.5	2074	68	9/29/2017	4324.995
6331	2104.5	69	10/29/2017	4325.229

Rate in Well No. 1	267	gpm
Rate in Well No. 2	266	gpm
Rate in Well No. 3	267	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

All

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
5660	1433.5	47	12/29/2015	4001.704
5690.5	1464	48	1/29/2016	4002.019
5721	1494.5	49	2/29/2016	4002.329
5751.5	1525	50	3/29/2016	4002.634
5782	1555.5	51	4/29/2016	4002.934
5812.5	1586	52	5/29/2016	4003.229
5843	1616.5	53	6/29/2016	4003.52
5873.5	1647	54	7/29/2016	4003.806
5904	1677.5	55	8/29/2016	4004.087
5934.5	1708	56	9/29/2016	4004.365
5965	1738.5	57	10/29/2016	4004.638
5995.5	1769	58	11/29/2016	4004.908
6026	1799.5	59	12/29/2016	4005.174
6056.5	1830	60	1/29/2017	4005.436
6087	1860.5	61	2/28/2017	4005.694
6117.5	1891	62	3/29/2017	4005.95
6148	1921.5	63	4/29/2017	4006.201
6178.5	1952	64	5/29/2017	4006.45
6209	1982.5	65	6/29/2017	4006.695
6239.5	2013	66	7/29/2017	4006.938
6270	2043.5	67	8/29/2017	4007.177
6300.5	2074	68	9/29/2017	4007.414
6331	2104.5	69	10/29/2017	4007.648

APPE .-6

Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1 400 gpm
Rate in Well No. 2 400 gpm
Rate in Well No. 3 0 gpm
Permeability 521 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi

Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)
1-2

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Pressure Build at Well No 3 (psi)
6361.5	2135	70	11/29/2017	3393.571
6392	2165.5	71	12/29/2017	3393.799
6422.5	2196	72	1/29/2018	3394.025
6453	2226.5	73	2/28/2018	3394.248
6483.5	2257	74	3/29/2018	3394.469
6514	2287.5	75	4/29/2018	3394.687
6544.5	2318	76	5/29/2018	3394.903
6575	2348.5	77	6/29/2018	3395.117
6605.5	2379	78	7/29/2018	3395.329
6636	2409.5	79	8/29/2018	3395.538
6666.5	2440	80	9/29/2018	3395.745
6697	2470.5	81	10/29/2018	3395.95
6727.5	2501	82	11/29/2018	3396.154
6758	2531.5	83	12/29/2018	3396.355
6788.5	2562	84	1/29/2019	3396.554
6819	2592.5	85	2/28/2019	3396.752
6849.5	2623	86	3/29/2019	3396.947
6880	2653.5	87	4/29/2019	3397.141
6910.5	2684	88	5/29/2019	3397.333
6941	2714.5	89	6/29/2019	3397.523
6971.5	2745	90	7/29/2019	3397.711
7002	2775.5	91	8/29/2019	3397.898
7032.5	2806	92	9/29/2019	3398.083

Rate in Well No. 1 400 gpm
Rate in Well No. 2 0 gpm
Rate in Well No. 3 400 gpm
Permeability 250 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
1-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
6361.5	2135	70	11/29/2017	4302.392
6392	2165.5	71	12/29/2017	4302.62
6422.5	2196	72	1/29/2018	4302.846
6453	2226.5	73	2/28/2018	4303.069
6483.5	2257	74	3/29/2018	4303.29
6514	2287.5	75	4/29/2018	4303.508
6544.5	2318	76	5/29/2018	4303.725
6575	2348.5	77	6/29/2018	4303.938
6605.5	2379	78	7/29/2018	4304.15
6636	2409.5	79	8/29/2018	4304.359
6666.5	2440	80	9/29/2018	4304.567
6697	2470.5	81	10/29/2018	4304.772
6727.5	2501	82	11/29/2018	4304.975
6758	2531.5	83	12/29/2018	4305.176
6788.5	2562	84	1/29/2019	4305.376
6819	2592.5	85	2/28/2019	4305.573
6849.5	2623	86	3/29/2019	4305.769
6880	2653.5	87	4/29/2019	4305.962
6910.5	2684	88	5/29/2019	4306.154
6941	2714.5	89	6/29/2019	4306.344
6971.5	2745	90	7/29/2019	4306.533
7002	2775.5	91	8/29/2019	4306.72
7032.5	2806	92	9/29/2019	4306.905

Rate in Well No. 1 400 gpm
Rate in Well No. 2 0 gpm
Rate in Well No. 3 400 gpm
Permeability 521 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
2-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
6361.5	2135	70	11/29/2017	4325.46
6392	2165.5	71	12/29/2017	4325.689
6422.5	2196	72	1/29/2018	4325.915
6453	2226.5	73	2/28/2018	4326.138
6483.5	2257	74	3/29/2018	4326.359
6514	2287.5	75	4/29/2018	4326.578
6544.5	2318	76	5/29/2018	4326.794
6575	2348.5	77	6/29/2018	4327.008
6605.5	2379	78	7/29/2018	4327.22
6636	2409.5	79	8/29/2018	4327.429
6666.5	2440	80	9/29/2018	4327.637
6697	2470.5	81	10/29/2018	4327.842
6727.5	2501	82	11/29/2018	4328.045
6758	2531.5	83	12/29/2018	4328.247
6788.5	2562	84	1/29/2019	4328.446
6819	2592.5	85	2/28/2019	4328.644
6849.5	2623	86	3/29/2019	4328.839
6880	2653.5	87	4/29/2019	4329.033
6910.5	2684	88	5/29/2019	4329.225
6941	2714.5	89	6/29/2019	4329.415
6971.5	2745	90	7/29/2019	4329.604
7002	2775.5	91	8/29/2019	4329.791
7032.5	2806	92	9/29/2019	4329.976

Rate in Well No. 1 267 gpm
Rate in Well No. 2 266 gpm
Rate in Well No. 3 267 gpm
Permeability 521 md
Prosoity 10%
Thickness 85 feet
Compressability 8.40E-06 /psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
All

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
6361.5	2135	70	11/29/2017	4007.879
6392	2165.5	71	12/29/2017	4008.107
6422.5	2196	72	1/29/2018	4008.333
6453	2226.5	73	2/28/2018	4008.557
6483.5	2257	74	3/29/2018	4008.777
6514	2287.5	75	4/29/2018	4008.996
6544.5	2318	76	5/29/2018	4009.212
6575	2348.5	77	6/29/2018	4009.426
6605.5	2379	78	7/29/2018	4009.638
6636	2409.5	79	8/29/2018	4009.847
6666.5	2440	80	9/29/2018	4010.054
6697	2470.5	81	10/29/2018	4010.26
6727.5	2501	82	11/29/2018	4010.463
6758	2531.5	83	12/29/2018	4010.664
6788.5	2562	84	1/29/2019	4010.863
6819	2592.5	85	2/28/2019	4011.061
6849.5	2623	86	3/29/2019	4011.256
6880	2653.5	87	4/29/2019	4011.45
6910.5	2684	88	5/29/2019	4011.642
6941	2714.5	89	6/29/2019	4011.832
6971.5	2745	90	7/29/2019	4012.021
7002	2775.5	91	8/29/2019	4012.208
7032.5	2806	92	9/29/2019	4012.393

APPENDIX E-6

Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1	400	gpm
Rate in Well No. 2	400	gpm
Rate in Well No. 3	0	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)
1-2

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Pressure Build at Well No 3 (psi)
7063	2836.5	93	10/29/2019	3398.267
7093.5	2867	94	11/29/2019	3398.449
7124	2897.5	95	12/29/2019	3398.629
7154.5	2928	96	1/29/2020	3398.808
7185	2958.5	97	2/29/2020	3398.985
7215.5	2989	98	3/29/2020	3399.161
7246	3019.5	99	4/29/2020	3399.336
7276.5	3050	100	5/29/2020	3399.509
7307	3080.5	101	6/29/2020	3399.681
7337.5	3111	102	7/29/2020	3399.851
7368	3141.5	103	8/29/2020	3400.02
7398.5	3172	104	9/29/2020	3400.188
7429	3202.5	105	10/29/2020	3400.354
7459.5	3233	106	11/29/2020	3400.519
7490	3263.5	107	12/29/2020	3400.683
7520.5	3294	108	1/29/2021	3400.846
7551	3324.5	109	2/28/2021	3401.007
7581.5	3355	110	3/29/2021	3401.168
7612	3385.5	111	4/29/2021	3401.327
7642.5	3416	112	5/29/2021	3401.485
7673	3446.5	113	6/29/2021	3401.641
7703.5	3477	114	7/29/2021	3401.797
7734	3507.5	115	8/29/2021	3401.952

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	250	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
1-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
7063	2836.5	93	10/29/2019	4307.088
7093.5	2867	94	11/29/2019	4307.27
7124	2897.5	95	12/29/2019	4307.451
7154.5	2928	96	1/29/2020	4307.63
7185	2958.5	97	2/29/2020	4307.807
7215.5	2989	98	3/29/2020	4307.983
7246	3019.5	99	4/29/2020	4308.158
7276.5	3050	100	5/29/2020	4308.331
7307	3080.5	101	6/29/2020	4308.502
7337.5	3111	102	7/29/2020	4308.673
7368	3141.5	103	8/29/2020	4308.842
7398.5	3172	104	9/29/2020	4309.01
7429	3202.5	105	10/29/2020	4309.176
7459.5	3233	106	11/29/2020	4309.341
7490	3263.5	107	12/29/2020	4309.505
7520.5	3294	108	1/29/2021	4309.668
7551	3324.5	109	2/28/2021	4309.829
7581.5	3355	110	3/29/2021	4309.989
7612	3385.5	111	4/29/2021	4310.149
7642.5	3416	112	5/29/2021	4310.307
7673	3446.5	113	6/29/2021	4310.463
7703.5	3477	114	7/29/2021	4310.619
7734	3507.5	115	8/29/2021	4310.774

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
2-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
7063	2836.5	93	10/29/2019	4330.16
7093.5	2867	94	11/29/2019	4330.342
7124	2897.5	95	12/29/2019	4330.522
7154.5	2928	96	1/29/2020	4330.701
7185	2958.5	97	2/29/2020	4330.879
7215.5	2989	98	3/29/2020	4331.055
7246	3019.5	99	4/29/2020	4331.229
7276.5	3050	100	5/29/2020	4331.403
7307	3080.5	101	6/29/2020	4331.574
7337.5	3111	102	7/29/2020	4331.745
7368	3141.5	103	8/29/2020	4331.914
7398.5	3172	104	9/29/2020	4332.082
7429	3202.5	105	10/29/2020	4332.248
7459.5	3233	106	11/29/2020	4332.413
7490	3263.5	107	12/29/2020	4332.577
7520.5	3294	108	1/29/2021	4332.74
7551	3324.5	109	2/28/2021	4332.902
7581.5	3355	110	3/29/2021	4333.062
7612	3385.5	111	4/29/2021	4333.221
7642.5	3416	112	5/29/2021	4333.379
7673	3446.5	113	6/29/2021	4333.536
7703.5	3477	114	7/29/2021	4333.692
7734	3507.5	115	8/29/2021	4333.847

Rate in Well No. 1	267	gpm
Rate in Well No. 2	266	gpm
Rate in Well No. 3	267	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)
All

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
7063	2836.5	93	10/29/2019	4012.576
7093.5	2867	94	11/29/2019	4012.758
7124	2897.5	95	12/29/2019	4012.939
7154.5	2928	96	1/29/2020	4013.118
7185	2958.5	97	2/29/2020	4013.295
7215.5	2989	98	3/29/2020	4013.471
7246	3019.5	99	4/29/2020	4013.646
7276.5	3050	100	5/29/2020	4013.819
7307	3080.5	101	6/29/2020	4013.991
7337.5	3111	102	7/29/2020	4014.161
7368	3141.5	103	8/29/2020	4014.33
7398.5	3172	104	9/29/2020	4014.498
7429	3202.5	105	10/29/2020	4014.664
7459.5	3233	106	11/29/2020	4014.829
7490	3263.5	107	12/29/2020	4014.993
7520.5	3294	108	1/29/2021	4015.156
7551	3324.5	109	2/28/2021	4015.318
7581.5	3355	110	3/29/2021	4015.478
7612	3385.5	111	4/29/2021	4015.637
7642.5	3416	112	5/29/2021	4015.795
7673	3446.5	113	6/29/2021	4015.952
7703.5	3477	114	7/29/2021	4016.107
7734	3507.5	115	8/29/2021	4016.262

APPE -6

Predicted Bottomhole Pressure Calculations
Navajo Refining Company, L.L.C.

Rate in Well No. 1	400	gpm
Rate in Well No. 2	400	gpm
Rate in Well No. 3	0	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. 3 (X= 0 feet, Y = 0 feet)

1-2

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Pressure Build at Well No 3 (psi)
7764.5	3538	116	9/29/2021	3402.105
7795	3568.5	117	10/29/2021	3402.258
7825.5	3599	118	11/29/2021	3402.409
7856	3629.5	119	12/29/2021	3402.559
7886.5	3660	120	1/29/2022	3402.709
7917	3690.5	121	2/28/2022	3402.857

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	250	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

1-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
7764.5	3538	116	9/29/2021	4310.927
7795	3568.5	117	10/29/2021	4311.08
7825.5	3599	118	11/29/2021	4311.231
7856	3629.5	119	12/29/2021	4311.382
7886.5	3660	120	1/29/2022	4311.531
7917	3690.5	121	2/28/2022	4311.679

Rate in Well No. 1	400	gpm
Rate in Well No. 2	0	gpm
Rate in Well No. 3	400	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

2-3

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
7764.5	3538	116	9/29/2021	4334
7795	3568.5	117	10/29/2021	4334.153
7825.5	3599	118	11/29/2021	4334.304
7856	3629.5	119	12/29/2021	4334.455
7886.5	3660	120	1/29/2022	4334.604
7917	3690.5	121	2/28/2022	4334.753

Rate in Well No. 1	267	gpm
Rate in Well No. 2	266	gpm
Rate in Well No. 3	267	gpm
Permeability	521	md
Prosoity	10%	
Thickness	85	feet
Compressability	8.40E-06	/psi

Pressure Buildup at Well No. (X= 0 feet, Y = 0 feet)

All

Time (hours)	Cum Time (hours)	Months	Date (mm/dd/yyyy)	Injection Pressure Build at Well No 3 (psi)
7764.5	3538	116	9/29/2021	4016.416
7795	3568.5	117	10/29/2021	4016.568
7825.5	3599	118	11/29/2021	4016.72
7856	3629.5	119	12/29/2021	4016.87
7886.5	3660	120	1/29/2022	4017.019
7917	3690.5	121	1/30/2022	4017.168

APPENDIX E-7

PLUME RADIUS EVALUATION

APPENDIX E-7
PLUME RADIUS EVALUATION

$r_c = [(0.1337 \, v \, t) / (0.8 \, \pi \, \theta \, h)]^{1/2}$

$r_d = 2.3 \, (C_d \, r_c)^{1/2} + r_c$

(r_c) Radius of Concentrated Plume	
(r_d) Radius of Dispersed Plume	
(v) volume of average annual injected volume in gallons	88,668,260
Factor to compensate for Immovable Connate Water	0.8
(θ) Formation Porosity	0.1
(h) Thickness of the Injection Reservior	85
(t) Years of Injection	10
(cd) Coefficient of Dispersion; for limestone = 65	65
Constant	2.3

The Mewbourne Well No. 1 is approximately 7,900 feet from Gaines Well No. 3, the test well. The Chukka Well No. 2 is approximately 3,130 feet from the Gaines Well No. 3.

Gaines Well Number 3

Time	Corrected Time	r_c	r_d
1	-3	745.1613	749.1058
2	-2	1053.817	1057.831
3	-1	1290.657	1294.712
4	0	1490.323	1494.406
5	1	1666.231	1670.338
6	*2*	*1825.265*	*1829.39*
7	3	1971.512	1975.653
8	4	2107.634	2111.789
9	5	2235.484	2239.651
10	6	2356.407	2360.585
11	7	2471.42	2475.609
12	8	2581.314	2585.512
13	9	2686.717	2690.923
14	10	2788.138	2792.352

$r_c = [(0.1337 \, v \, t) / (0.8 \, \pi \, \theta \, h)]^{1/2}$

$r_d = 2.3 \, (C_d \, r_c)^{1/2} + r_c$

(r_c) Radius of Concentrated Plume	
(r_d) Radius of Dispersed Plume	
(v) volume of average annual injected volume in gallons	70,030,453
Factor to compensate for Immovable Connate Water	0.8
(θ) Formation Porosity	0.1
(h) Thickness of the Injection Reservior	85
(t) Years of Injection	10
(cd) Coefficient of Dispersion; for limestone = 65	65
Constant	2.3

The Mewbourne Well No. 1 is approximately 7,900 feet from Gaines Well No. 3, the test well. The Chukka Well No. 2 is approximately 3,130 feet from the Gaines Well No. 3.

Chukka Well Number 2

Time	Corrected Time	r_c	r_d
1	-10.6667	662.2312	666.1525
2	-9.66667	936.5364	940.5262
3	-8.66667	1147.018	1151.049
4	-7.66667	1324.462	1328.522
5	-6.66667	1480.794	1484.876
6	*-5.66667*	*1622.129*	*1626.23*
7	-4.66667	1752.099	1756.216
8	-3.66667	1873.073	1877.203
9	-2.66667	1986.694	1990.836
10	-1.66667	2094.159	2098.313
11	-0.66667	2196.373	2200.536
11.6667	3.33E-05	2261.954	2266.123
12.66667	1	2356.898	2361.077
13.66667	2	2448.167	2452.353
14.66667	3	2536.153	2540.346
15.66667	4	2621.187	2625.387
16.66667	5	2703.548	2707.755
17.66667	6	2783.473	2787.686
18.66667	7	2861.166	2865.385
19.66667	8	2936.805	2941.029
20.66667	9	3010.543	3014.773
21.66667	10	3082.519	3086.753

APPENDIX E-7
PLUME RADIUS EVALUATION

$r_c = [(0.1337 \, v \, t) / (0.8 \, \pi \, \theta \, h)]^{1/2}$

$r_d = 2.3 \, (C_d \, r_c)^{1/2} + r_c$

(r_c) Radius of Concentrated Plume	
(r_d) Radius of Dispersed Plume	
(v) volume of average annual injected volume in gallons	121,555,892
Factor to compensate for Immovable Connate Water	0.8
(θ) Formation Porosity	0.1
(h) Thickness of the Injection Reservior	85
(t) Years of Injection	10
(cd) Coefficient of Dispersion; for limestone = 65	65
Constant	2.3

The Mewbourne Well No. 1 is approximately 7,900 feet from Gaines Well No. 3, the test well. The Chukka Well No. 2 is approximately 3,130 feet from the Gaines Well No. 3.

Mewbourne Well Number 1

Time	Corrected Time	r_c	r_d
1	-10.5833	872.4774	876.4531
2	-9.58333	1233.869	1237.915
3	-8.58333	1511.175	1515.262
4	-7.58333	1744.955	1749.071
5	-6.58333	1950.919	1955.058
6	-5.58333	2137.125	2141.282
7	-4.58333	2308.358	2312.532
8	-3.58333	2467.739	2471.927
9	-2.58333	2617.432	2621.633
10	-1.58333	2759.016	2763.227
11	-0.58333	2893.68	2897.902
11.58333	0	2969.416	2973.642
12.58333	1	3094.939	3099.174
13.58333	2	3215.566	3219.809
14.58333	3	3331.828	3336.079
15.58333	4	3444.168	3448.427
16.58333	5	3552.958	3557.223
17.58333	6	3658.515	3662.786
18.58333	7	3761.11	3765.387
19.58333	8	3860.98	3865.262
20.58333	9	3958.331	3962.619
21.58333	10	4053.344	4057.637

APPENDIX F

FORMATION FLUID ANALYTICAL DATA

APPENDIX F-1

FORMATION FLUID ANALYTICAL DATA
NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

Chemical	Mewbourne Well No. 1	Chukka Well No. 2	Gaines Well No. 3	Average
Date	July 31, 1998	June 14, 1999	Nov 8, 2006	
Fluoride (mg/l)	2.6	9.7	Not Detected	6.15
Chloride (mg/L)	19,000	15,000	10,447	14,815.67
NO3-N (mg/L)	<10	<10	--	<10
SO4 (mg/L)	2,200	2000	1,908	2,036
CaCO3 (mg/L)	1000	1210	--	1105
Specific Gravity (g/L)	1.034	1.0249	--	1.0295
TDS (mg/L)	33,000	20,000	--	26,500
Specific Conductance (uMHOs/cm)	52,000	43,000	--	47,500
Potassium (mg/L)	213	235	85.5	177.83
Magnesium (mg/L)	143	128	155	142
Calcium (mg/L)	390	609	393	464
Sodium (mg/L)	12,770	8,074	6,080	8,974.67
pH (s.u.)	8.1	7.2	--	7.65

The data in the above table was referenced from "Discharge Plan Application and Application for Authorization to Inject per Oil Conservation Division Form C-108, into Class I Wells WDW-1 and Proposed WDW-2 and WDW-3" and the "Discharge Permit Approval Conditions", "Reentry and Completion Report Waste Disposal Well No. 2", and "Reentry and Completion Report Waste Disposal Well No. 3".

APPENDIX G

PRESSURE FALL-OFF TEST RESULTS

SUBSURFACE

HOUSTON TX • BATON ROUGE LA • MACHELEN BE

Subsurface Technology, Inc | Report File: 2008_WDW-3.pan

PanSystem

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	WDW-3
Date	April 1 - 2, 2008
Test	Falloff
Gauge Depth	7660 feet
Injection Interval	7570 feet - 8399 feet
Completion Type	Perforated
Top of Fill	N/A
Last Stabilization	January 2008
Analyst	TWW
Subsurface Project No.	70G6142

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Reservoir Description

Fluid type : Water
Well orientation : Vertical
Number of wells : 1
Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3430.266493 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-3
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.1000 bbl/psi
Storage Amplitude	-100.000000 psi
Storage Time Constant	0.010000 hr
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	0.000000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.720 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

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Layer 1 Correlations
Not Used

Layer 1 Model Data
Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	1322.0700 md
Skin factor (Well 1)	107.0280

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-2071.863056	3457.960000	0.000000
-2047.863056	3457.960000	-812.914286
-2023.863056	3457.960000	-721.371429
-1999.863056	3457.960000	-2408.228572
-1975.863056	3457.960000	-4733.485715
-1951.863056	3457.960000	-5046.171429
-1927.863056	3457.960000	-4780.800001
-1903.863056	3457.960000	-4393.371429
-1879.863056	3457.960000	-4379.657143
-1855.863056	3457.960000	-4000.114286
-1831.863056	3457.960000	-3507.771429
-1807.863056	3457.960000	-4653.257143
-1783.863056	3457.960000	-3842.057143
-1759.863056	3457.960000	-4548.342858
-1735.863056	3457.960000	-5261.142858
-1711.863056	3457.960000	-7843.885715
-1687.863056	3457.960000	-5715.771429
-1663.863056	3457.960000	-4275.428572
-1639.863056	3457.960000	-5074.971429
-1615.863056	3457.960000	-5097.257143
-1591.863056	3457.960000	-5001.942858
-1567.863056	3457.960000	-5920.114286
-1543.863056	3457.960000	-5555.657144
-1519.863056	3457.960000	-5428.800001
-1495.863056	3457.960000	-5272.457144
-1471.863056	3457.960000	-4341.600001
-1447.863056	3457.960000	-3908.228572
-1423.863056	3457.960000	-3815.657143
-1399.863056	3457.960000	-5433.257144
-1375.863056	3457.960000	-4945.714286
-1351.863056	3457.960000	-5194.628572
-1327.863056	3457.960000	-4909.371429
-1303.863056	3457.960000	-3945.257143
-1279.863056	3457.960000	-3068.571429
-1255.863056	3457.960000	-2256.000000
-1231.863056	3457.960000	-3494.400000
-1207.863056	3457.960000	-3530.400000
-1183.863056	3457.960000	-3493.714286
-1159.863056	3457.960000	-3476.228572
-1135.863056	3457.960000	-3540.685715
-1111.863056	3457.960000	-3542.400000

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-1087.863056	3457.960000	-3397.371429
-1063.863056	3457.960000	-3492.685715
-1039.863056	3457.960000	-3396.685715
-1015.863056	3457.960000	-3473.142858
-991.863056	3457.960000	-3557.485715
-967.863056	3457.960000	-3493.028572
-943.863056	3457.960000	-3498.514286
-919.863056	3457.960000	-3541.028572
-895.863056	3457.960000	-3363.771429
-871.863056	3457.960000	-3350.057143
-847.863056	3457.960000	-3357.600000
-823.863056	3457.960000	-3362.057143
-799.863056	3457.960000	-3303.771429
-775.863056	3457.960000	-3346.971429
-751.863056	3457.960000	-3373.028572
-727.863056	3457.960000	-7593.257144
-703.863056	3457.960000	-7176.685715
-679.863056	3457.960000	-6956.228572
-655.863056	3457.960000	-5682.857144
-535.863056	3457.960000	0.000000
-511.863056	3457.960000	-3868.457143
-367.863056	3457.960000	-7889.142858
-343.863056	3457.960000	-6718.285715
-295.863056	3457.960000	-7427.314287
-271.863056	3457.960000	-8015.314287
-223.863056	3457.960000	-7303.542858
-127.863056	3457.960000	-6829.714287
-79.863056	3457.960000	-7286.057144
-79.513056	4026.630000	-7547.314287
-76.829722	3930.290000	-7812.342858
-76.363056	3556.080000	0.000000
-76.313056	3840.010000	-3903.428572
-76.229722	3952.690000	-6434.742858
-76.129722	3982.110000	-6957.600001
-76.079722	3987.520000	-7229.485715
-75.979722	4004.370000	-7408.114287
-75.846389	4012.010000	-7640.228572
-73.429722	4036.500000	-7787.657144
-71.463056	4036.500000	-7933.028572
-65.046389	4000.480000	-8104.114287
-63.596389	3977.630000	-6902.057144

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Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-60.679722	4031.570000	-7828.457144
-48.013056	4031.570000	-7582.971430
-38.263056	4036.500000	-7865.828572
-24.179722	4036.500000	-7445.485715
-22.213056	4099.720000	-7586.742858
-21.463056	4139.380000	-9244.457144
-20.346389	4144.320000	-9345.257144
-19.446389	4145.720000	-9936.000001
-14.229722	4164.040000	-1.0074e4
-9.932790	4154.180000	-9727.542858
1.131247	4014.179168	-9579.771430
2.203142	3919.189261	-9406.628573
28.919168	3440.498262	0.000000
29.230873	3859.753237	-9516.342858
30.766006	3859.753237	-8220.000001
34.536942	3850.008925	-7853.828572
39.470289	3850.629760	-7736.914287
47.336948	3851.055995	-7618.285715
50.903554	3850.454873	-7831.542858
53.762149	3851.623879	-8044.457144
57.829612	3855.226121	-8182.285715
59.164704	3851.989116	-7919.314287
61.269438	3848.212610	-7648.800001
63.226082	3843.379716	-7514.400001
71.135402	3866.884031	-7803.771430
75.392998	3866.683766	-7990.628572
102.920278	4009.300000	-7845.942858
106.036944	4023.540000	-7584.685715
107.386944	4036.500000	-7739.314287
112.136944	4036.500000	-7557.257144

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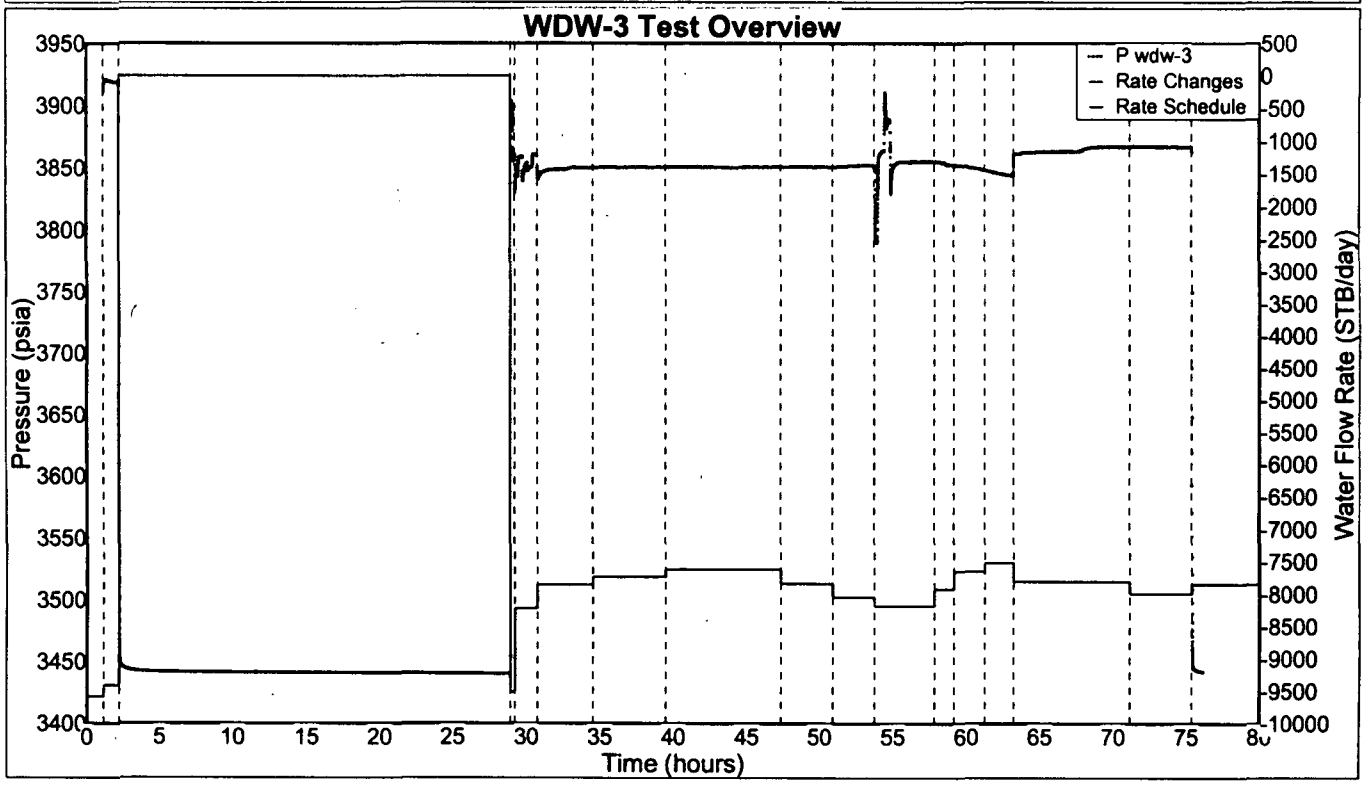
Well Test Analysis Report



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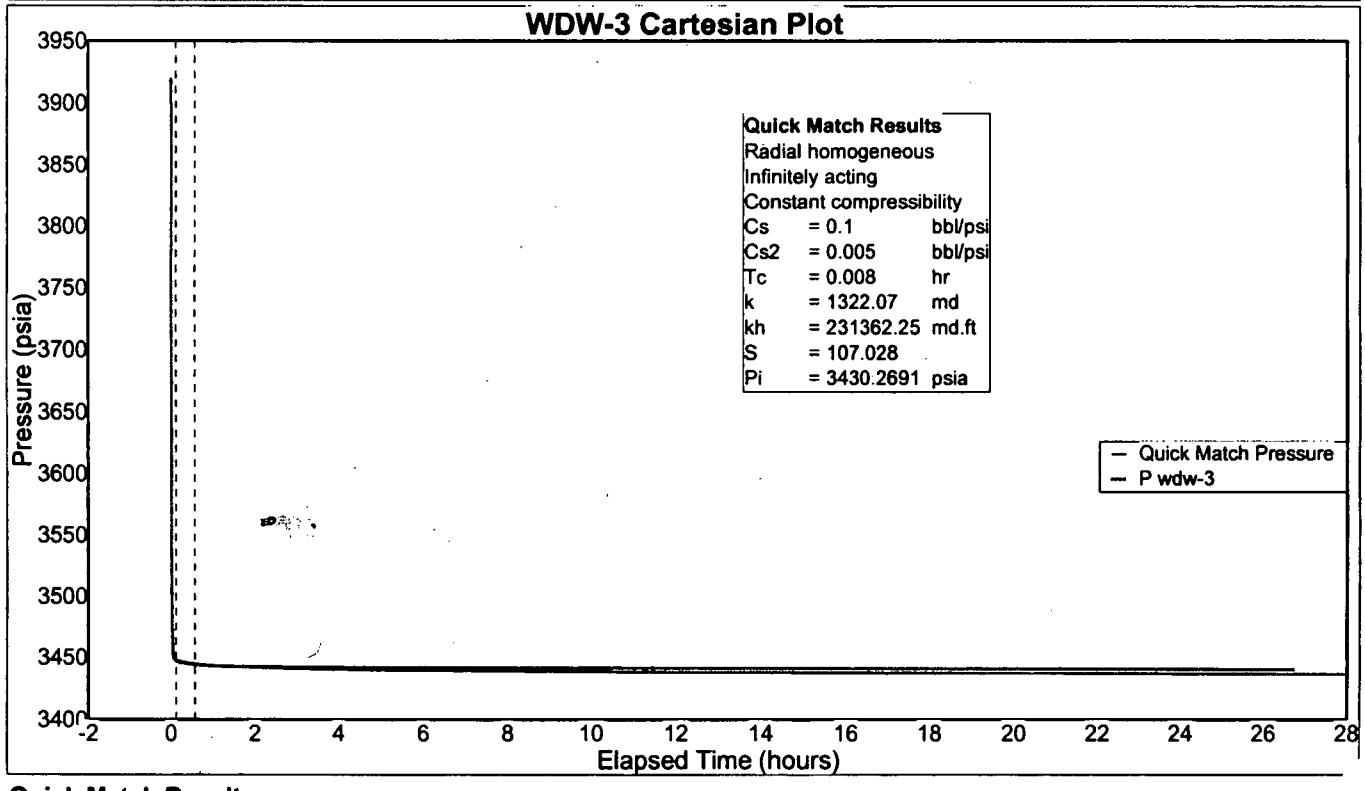

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

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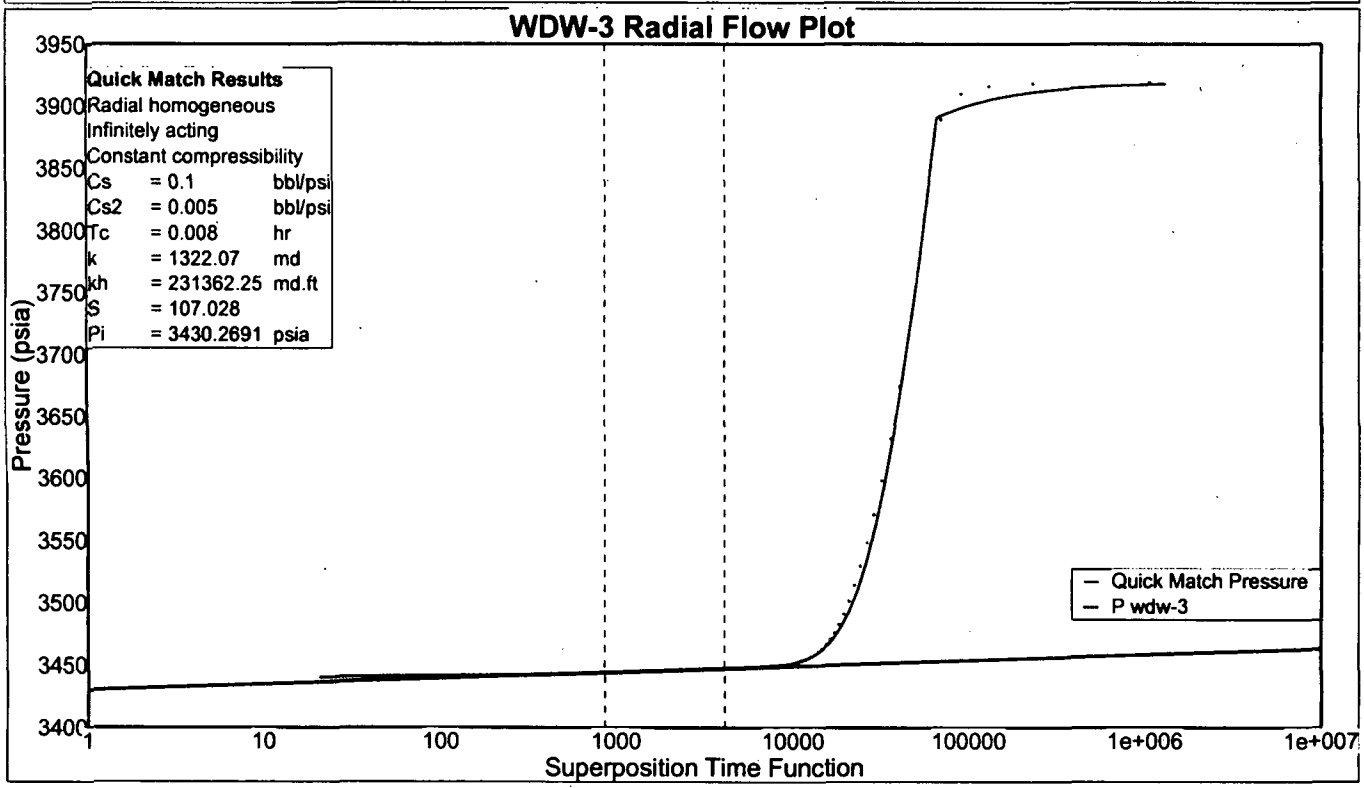
Well Test Analysis Report



WDW-3 Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Permeability	1322.071461 md
Permeability-thickness	2.3136e5 md.ft
Radius of investigation	7008.111172 ft
Flow efficiency	0.095170
dP skin (constant rate)	442.391874 psi
Skin factor	107.028375
Extrapolated pressure	3430.266493 psia

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Radial Flow Plot Line Details

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Line type : Radial flow
Slope : 4.75876
Intercept : 3430.27
Coefficient of Determination : 0.998783

	Radial flow
Extrapolated pressure	3430.266493 psia
Pressure at dt = 1 hour	3443.109169 psia

Number of Intersections = 0

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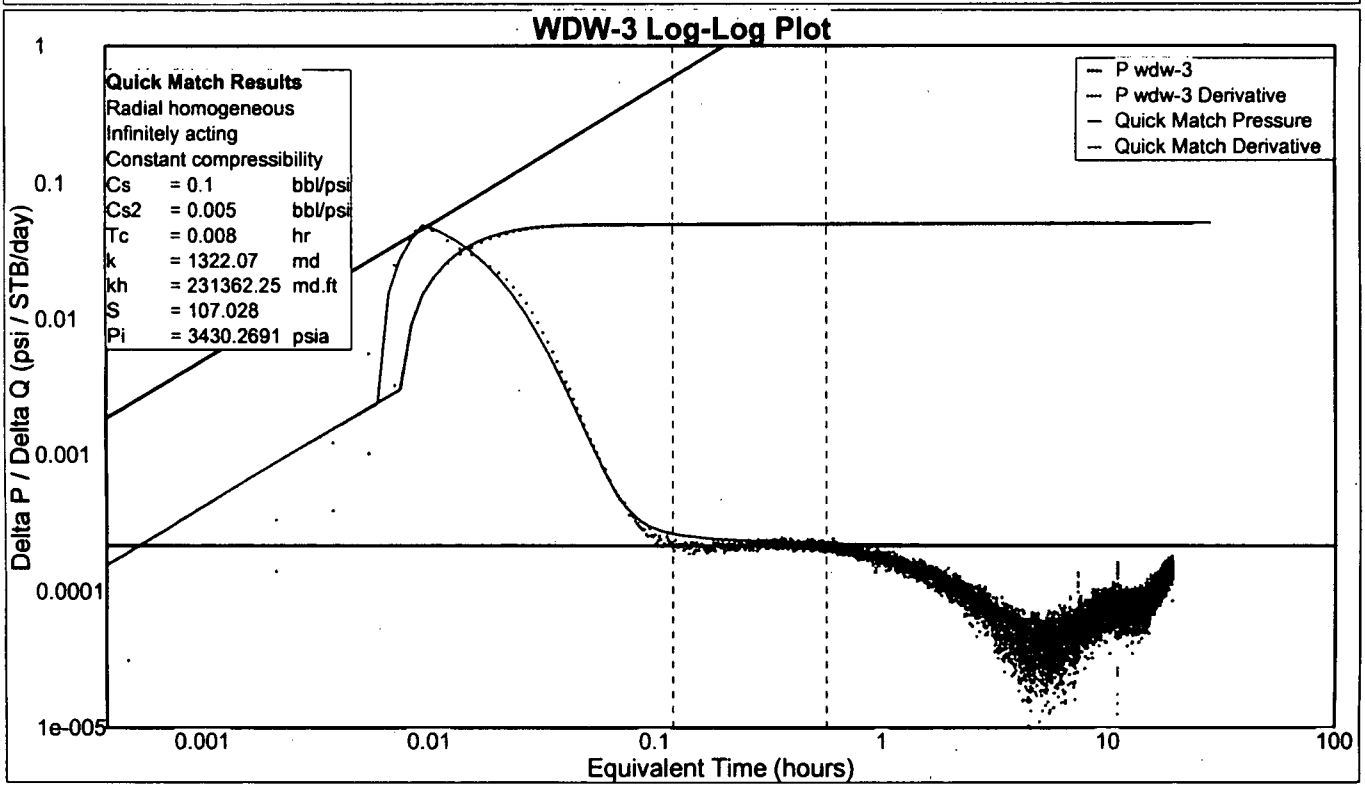
Well Test Analysis Report



WDW-3 Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	8.4899e-3 bbl/psi
Dimensionless wellbore storage	479.634571
Permeability	1326.624884 md
Permeability-thickness	2.3216e5 md.ft
Skin factor	107.421824

Quick Match Results
Radial homogeneous - Infinitely acting
Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Log-Log Plot Line Details
Line type : Radial flow
Slope : 0
Intercept : 0.000218953
Coefficient of Determination : Not Used

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Line type : Wellbore storage
Slope : 1
Intercept : 4.90779
Coefficient of Determination : Not Used
Number of Intersections = 0

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Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	WDW-3
Date	April 1 - 2, 2008
Test	Falloff
Gauge Depth	7660 feet
Injection Interval	7570 feet - 8399 feet
Completion Type	Perforated
Top of Fill	N/A
Last Stabilization	January 2008
Analyst	TWW
Subsurface Project No.	70G6142

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Reservoir Description

Fluid type : Water
Well orientation : Vertical
Number of wells : 1
Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3430.266493 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-3
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.1000 bbl/psi
Storage Amplitude	-100.000000 psi
Storage Time Constant	0.010000 hr
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	0.000000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.720 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

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Layer 1 Correlations
Not Used

Layer 1 Model Data
Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	1322.0700 md
Skin factor (Well 1)	107.0280

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-2071.863056	3457.960000	0.000000
-2047.863056	3457.960000	-812.914286
-2023.863056	3457.960000	-721.371429
-1999.863056	3457.960000	-2408.228572
-1975.863056	3457.960000	-4733.485715
-1951.863056	3457.960000	-5046.171429
-1927.863056	3457.960000	-4780.800001
-1903.863056	3457.960000	-4393.371429
-1879.863056	3457.960000	-4379.657143
-1855.863056	3457.960000	-4000.114286
-1831.863056	3457.960000	-3507.771429
-1807.863056	3457.960000	-4653.257143
-1783.863056	3457.960000	-3842.057143
-1759.863056	3457.960000	-4548.342858
-1735.863056	3457.960000	-5261.142858
-1711.863056	3457.960000	-7843.885715
-1687.863056	3457.960000	-5715.771429
-1663.863056	3457.960000	-4275.428572
-1639.863056	3457.960000	-5074.971429
-1615.863056	3457.960000	-5097.257143
-1591.863056	3457.960000	-5001.942858
-1567.863056	3457.960000	-5920.114286
-1543.863056	3457.960000	-5555.657144
-1519.863056	3457.960000	-5428.800001
-1495.863056	3457.960000	-5272.457144
-1471.863056	3457.960000	-4341.600001
-1447.863056	3457.960000	-3908.228572
-1423.863056	3457.960000	-3815.657143
-1399.863056	3457.960000	-5433.257144
-1375.863056	3457.960000	-4945.714286
-1351.863056	3457.960000	-5194.628572
-1327.863056	3457.960000	-4909.371429
-1303.863056	3457.960000	-3945.257143
-1279.863056	3457.960000	-3068.571429
-1255.863056	3457.960000	-2256.000000
-1231.863056	3457.960000	-3494.400000
-1207.863056	3457.960000	-3530.400000
-1183.863056	3457.960000	-3493.714286
-1159.863056	3457.960000	-3476.228572
-1135.863056	3457.960000	-3540.685715
-1111.863056	3457.960000	-3542.400000

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-1087.863056	3457.960000	-3397.371429
-1063.863056	3457.960000	-3492.685715
-1039.863056	3457.960000	-3396.685715
-1015.863056	3457.960000	-3473.142858
-991.863056	3457.960000	-3557.485715
-967.863056	3457.960000	-3493.028572
-943.863056	3457.960000	-3498.514286
-919.863056	3457.960000	-3541.028572
-895.863056	3457.960000	-3363.771429
-871.863056	3457.960000	-3350.057143
-847.863056	3457.960000	-3357.600000
-823.863056	3457.960000	-3362.057143
-799.863056	3457.960000	-3303.771429
-775.863056	3457.960000	-3346.971429
-751.863056	3457.960000	-3373.028572
-727.863056	3457.960000	-7593.257144
-703.863056	3457.960000	-7176.685715
-679.863056	3457.960000	-6956.228572
-655.863056	3457.960000	-5682.857144
-535.863056	3457.960000	0.000000
-511.863056	3457.960000	-3868.457143
-367.863056	3457.960000	-7889.142858
-343.863056	3457.960000	-6718.285715
-295.863056	3457.960000	-7427.314287
-271.863056	3457.960000	-8015.314287
-223.863056	3457.960000	-7303.542858
-127.863056	3457.960000	-6829.714287
-79.863056	3457.960000	-7286.057144
-79.513056	4026.630000	-7547.314287
-76.829722	3930.290000	-7812.342858
-76.363056	3556.080000	0.000000
-76.313056	3840.010000	-3903.428572
-76.229722	3952.690000	-6434.742858
-76.129722	3982.110000	-6957.600001
-76.079722	3987.520000	-7229.485715
-75.979722	4004.370000	-7408.114287
-75.846389	4012.010000	-7640.228572
-73.429722	4036.500000	-7787.657144
-71.463056	4036.500000	-7933.028572
-65.046389	4000.480000	-8104.114287
-63.596389	3977.630000	-6902.057144

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Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-60.679722	4031.570000	-7828.457144
-48.013056	4031.570000	-7582.971430
-38.263056	4036.500000	-7865.828572
-24.179722	4036.500000	-7445.485715
-22.213056	4099.720000	-7586.742858
-21.463056	4139.380000	-9244.457144
-20.346389	4144.320000	-9345.257144
-19.446389	4145.720000	-9936.000001
-14.229722	4164.040000	-1.0074e4
-9.932790	4154.180000	-9727.542858
1.131247	4014.179168	-9579.771430
2.203142	3919.189261	-9406.628573
28.919168	3440.498262	0.000000
29.230873	3859.753237	-9516.342858
30.766006	3859.753237	-8220.000001
34.536942	3850.008925	-7853.828572
39.470289	3850.629760	-7736.914287
47.336948	3851.055995	-7618.285715
50.903554	3850.454873	-7831.542858
53.762149	3851.623879	-8044.457144
57.829612	3855.226121	-8182.285715
59.164704	3851.989116	-7919.314287
61.269438	3848.212610	-7648.800001
63.226082	3843.379716	-7514.400001
71.135402	3866.884031	-7803.771430
75.392998	3866.683766	-7990.628572
102.920278	4009.300000	-7845.942858
106.036944	4023.540000	-7584.685715
107.386944	4036.500000	-7739.314287
112.136944	4036.500000	-7557.257144

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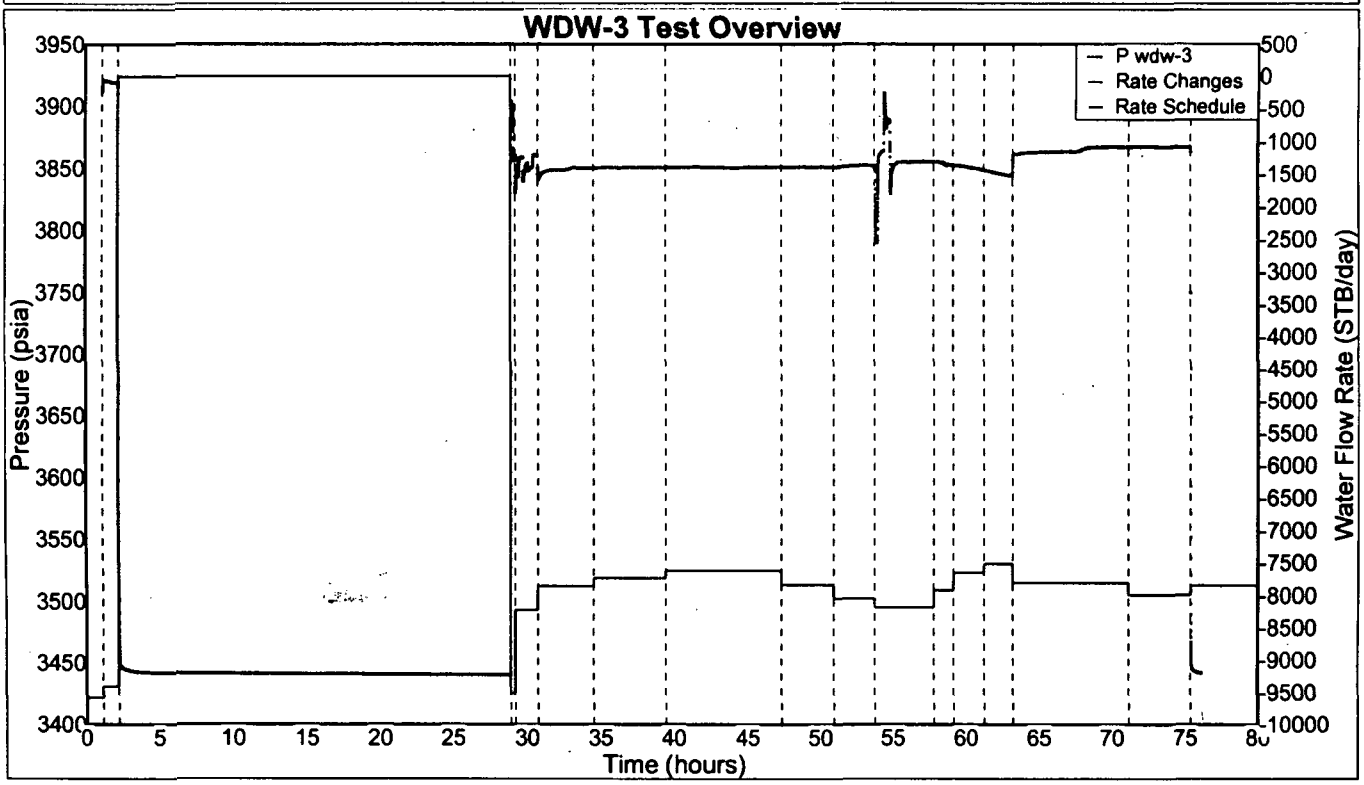

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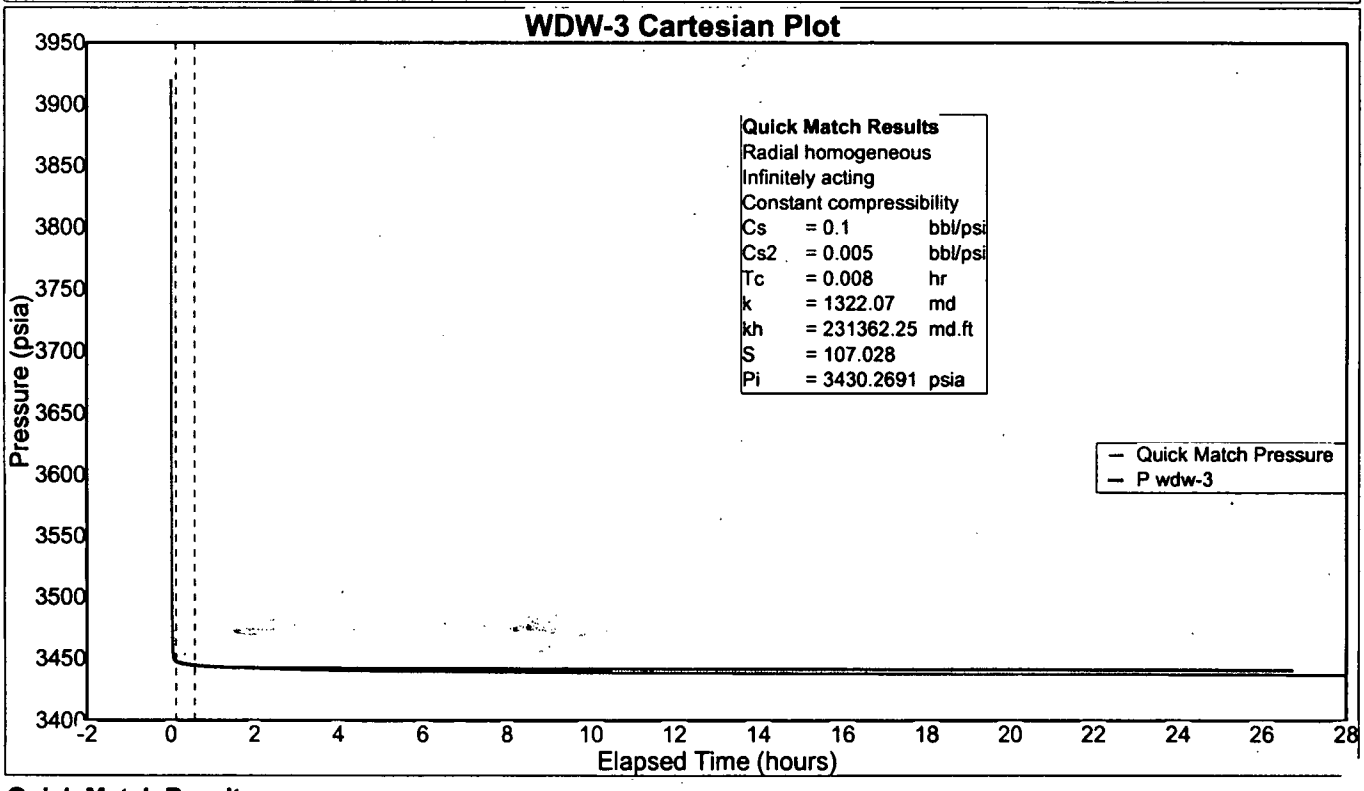

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

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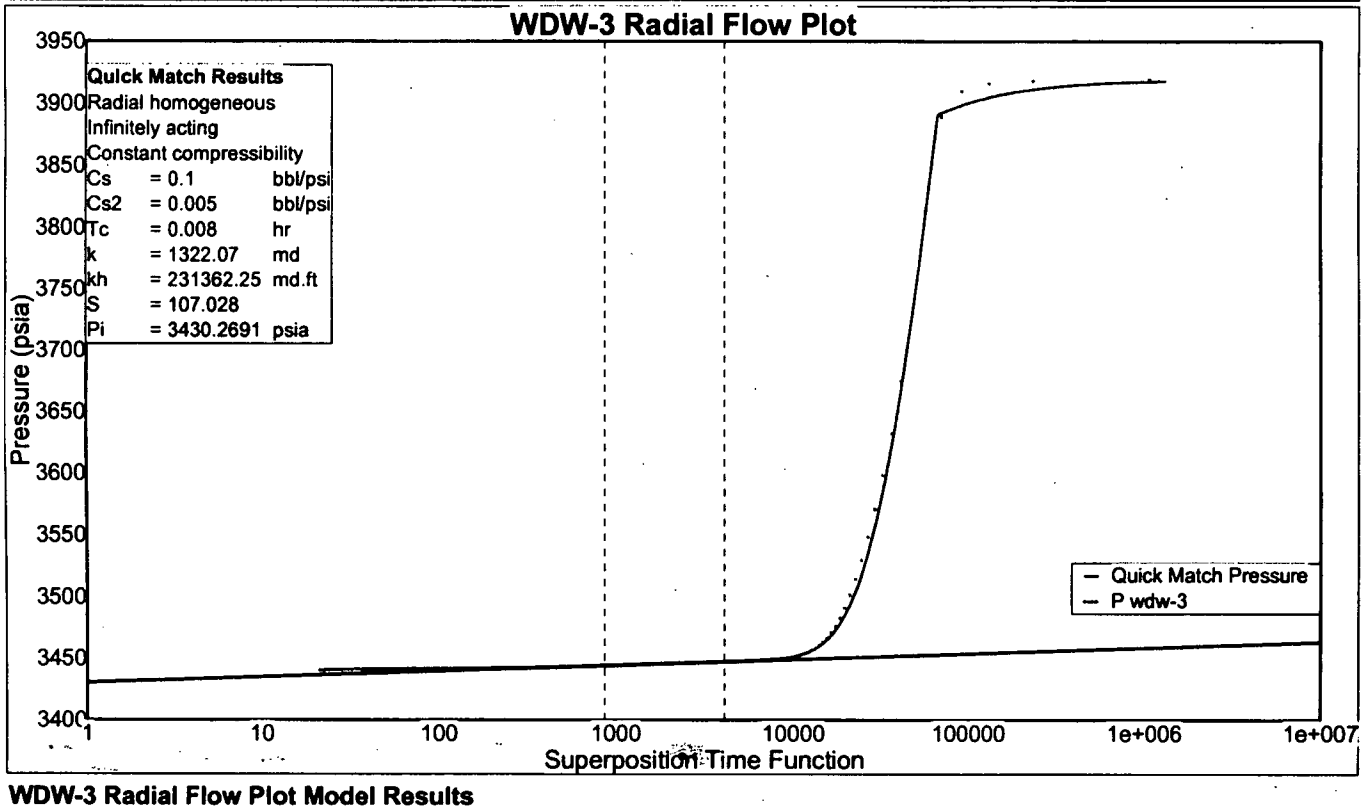
Well Test Analysis Report



WDW-3 Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Permeability	1322.071461 md
Permeability-thickness	2.3136e5 md.ft
Radius of investigation	7008.111172 ft
Flow efficiency	0.095170
dP skin (constant rate)	442.391874 psi
Skin factor	107.028375
Extrapolated pressure	3430.266493 psia

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Radial Flow Plot Line Details

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Line type : Radial flow
Slope : 4.75876
Intercept : 3430.27
Coefficient of Determination : 0.998783

	Radial flow
Extrapolated pressure	3430.266493 psia
Pressure at dt = 1 hour	3443.109169 psia

Number of Intersections = 0

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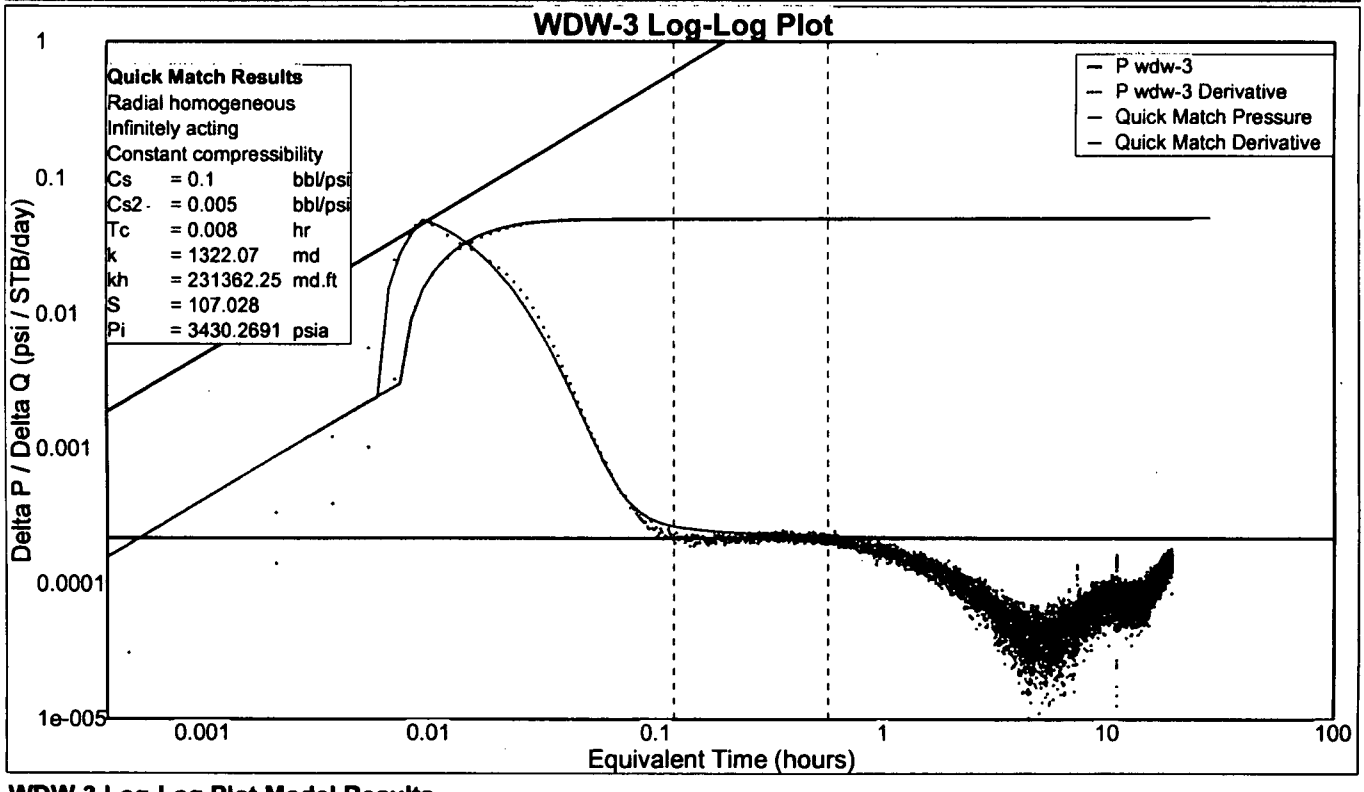
PanSystem

Well Test Analysis Report



WDW-3 Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	8.4899e-3 bbl/psi
Dimensionless wellbore storage	479.634571
Permeability	1326.624884 md
Permeability-thickness	2.3216e5 md.ft
Skin factor	107.421824

Quick Match Results
Radial homogeneous - Infinitely acting
Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.1000 bbl/psi
Second Wellbore Storage	5.0000e-3 bbl/psi
Time Change for Second Storage	8.0000e-3 hr
Permeability	1322.0700 md
Permeability-thickness	2.3136e5 md.ft
Skin factor	107.0280
Computed initial pressure	3430.269056 psia

WDW-3 Log-Log Plot Line Details
Line type : Radial flow
Slope : 0
Intercept : 0.000218953
Coefficient of Determination : Not Used

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Line type : Wellbore storage
Slope : 1
Intercept : 4.90779
Coefficient of Determination : Not Used
Number of Intersections = 0

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Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Gaines Well #3
Date	August 24 - 30, 2009
Test	Injection/Falloff
Gauge Type/Serial Number	Spartek.#80780
Gauge Depth	7,663 feet
Injection Interval	7,660 feet - 8,620 feet
Completion Type	Perforated
Top of Fill	8,986 feet
Analyst	LKM
Subsurface Project No.	70A6365

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Reservoir Description
Fluid type : Water
Well orientation : Vertical
Number of wells : 1
Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3475.675745 psia
Temperature	114.820000 deg F

Well Parameters Data

	Well 1
Well radius	0.3646 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.043509 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.035103 bbl/psi
Time Change for Second Storage	0.016000 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	3484.080000 psia
Check Temperature	114.820000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.540 cp

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Fluid Parameters Data (cont)

	Layer 1
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

Layer 1 Correlations
Not Used

Layer 1 Model Data
Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	718.830698 md
Skin factor (Well 1)	15.588053

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-925.483330	0.000000	-7006.000000
-901.483330	0.000000	-7073.940000
-877.483330	0.000000	-6813.490000
-853.483330	0.000000	-7164.460000
-829.483330	0.000000	-7021.020000
-805.483330	0.000000	-7107.950000
-781.483330	0.000000	-7208.180000
-757.483330	0.000000	-7508.980000
-733.483330	0.000000	-7197.630000
-709.483330	0.000000	-7375.970000
-685.483330	0.000000	-7304.950000
-661.483330	0.000000	-7168.640000
-637.483330	0.000000	-6937.170000
-613.483330	0.000000	-6870.560000
-589.483330	0.000000	-7152.810000
-565.483330	0.000000	-6632.390000
-541.483330	0.000000	-6736.960000
-517.483330	0.000000	-6677.310000
-493.483330	0.000000	-6495.640000
-469.483330	0.000000	-6562.180000
-445.483330	0.000000	-6656.030000
-421.483330	0.000000	-6903.070000
-397.483330	0.000000	-7067.910000
-373.483330	0.000000	-6741.210000
-349.483330	0.000000	-6845.950000
-325.483330	0.000000	-7010.790000
-301.483330	0.000000	-6822.860000
-277.483330	0.000000	-6786.210000
-253.483330	0.000000	-6905.040000

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-229.483330	0.000000	-7031.590000
-205.483330	0.000000	-7052.840000
-181.483330	0.000000	-7064.320000
-157.483330	0.000000	-7042.000000
-133.483330	0.000000	-6504.350000
-109.483330	0.000000	-6133.120000
-85.483330	0.000000	-8259.030000
-72.983330	0.000000	-1.0413e4
-61.483330	0.000000	-1.0585e4
-37.483330	0.000000	-1.0407e4
-13.483330	0.000000	-1.0446e4
0.000007	3641.573000	-1.0323e4
73.037550	3484.078000	0.000000

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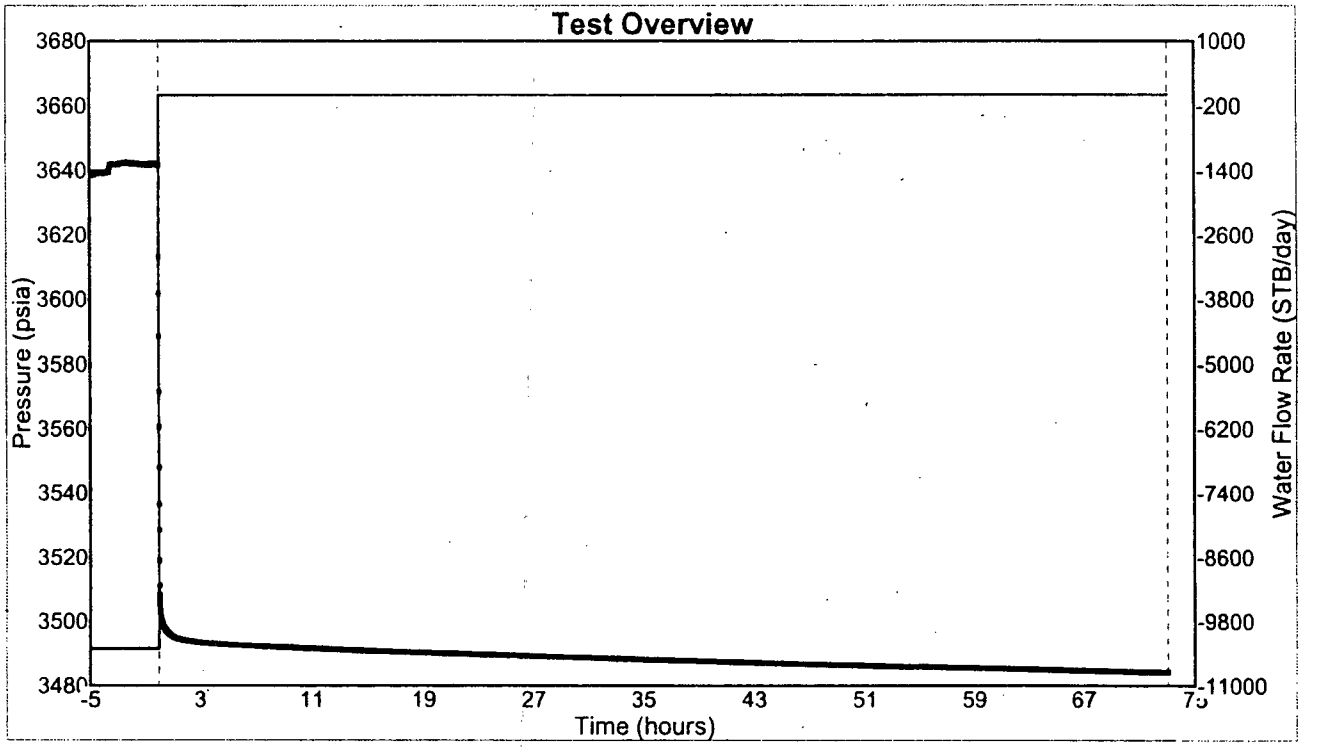

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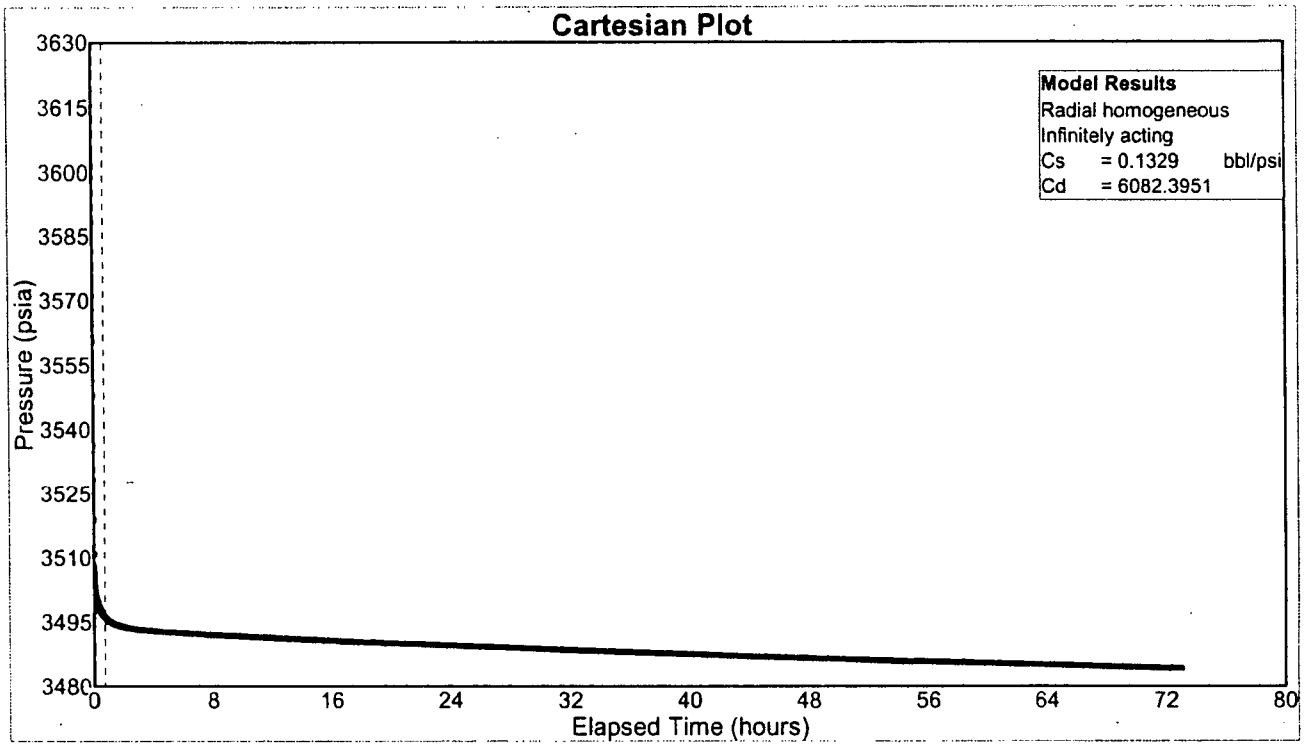

Cartesian Plot Model Results
Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Wellbore storage coefficient	0.13295 bbl/psi
Dimensionless wellbore storage	6082.395108

Cartesian Plot Line Details
Line type : Wellbore storage
Slope : -3235.16
Intercept : 3627.89
Coefficient of Determination : 0.994898

Number of Intersections = 0

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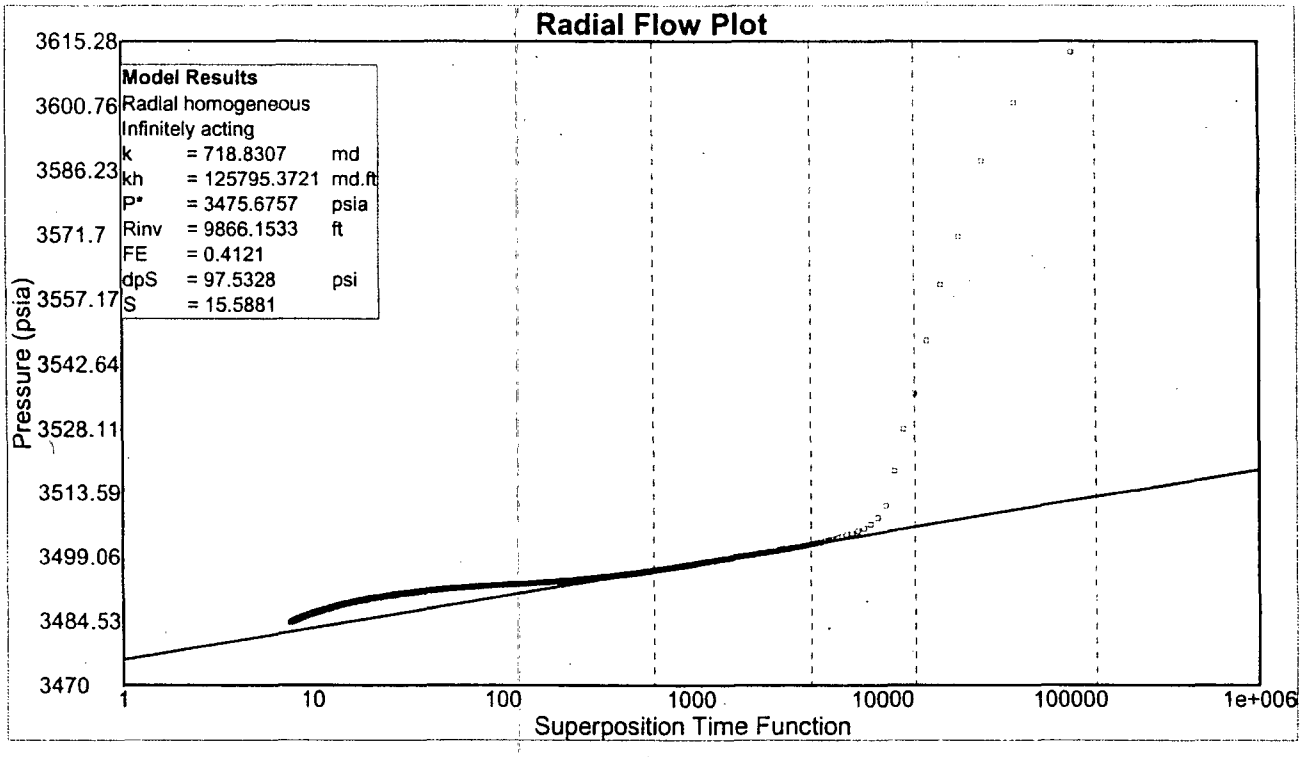

Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Permeability	718.830698 md
Permeability-thickness	1.2580e5 md.ft
Extrapolated pressure	3475.675745 psia
Radius of investigation	9866.153307 ft
Flow efficiency	0.412089
dP skin (constant rate)	97.532793 psi
Skin factor	15.588053

Radial Flow Plot Line Details
Line type : Radial flow
Slope : 7.20352
Intercept : 3475.68
Coefficient of Determination : 0.998862

	Radial flow
Extrapolated pressure	3475.675745 psia
Pressure at dt = 1 hour	3494.712188 psia

Number of Intersections = 0

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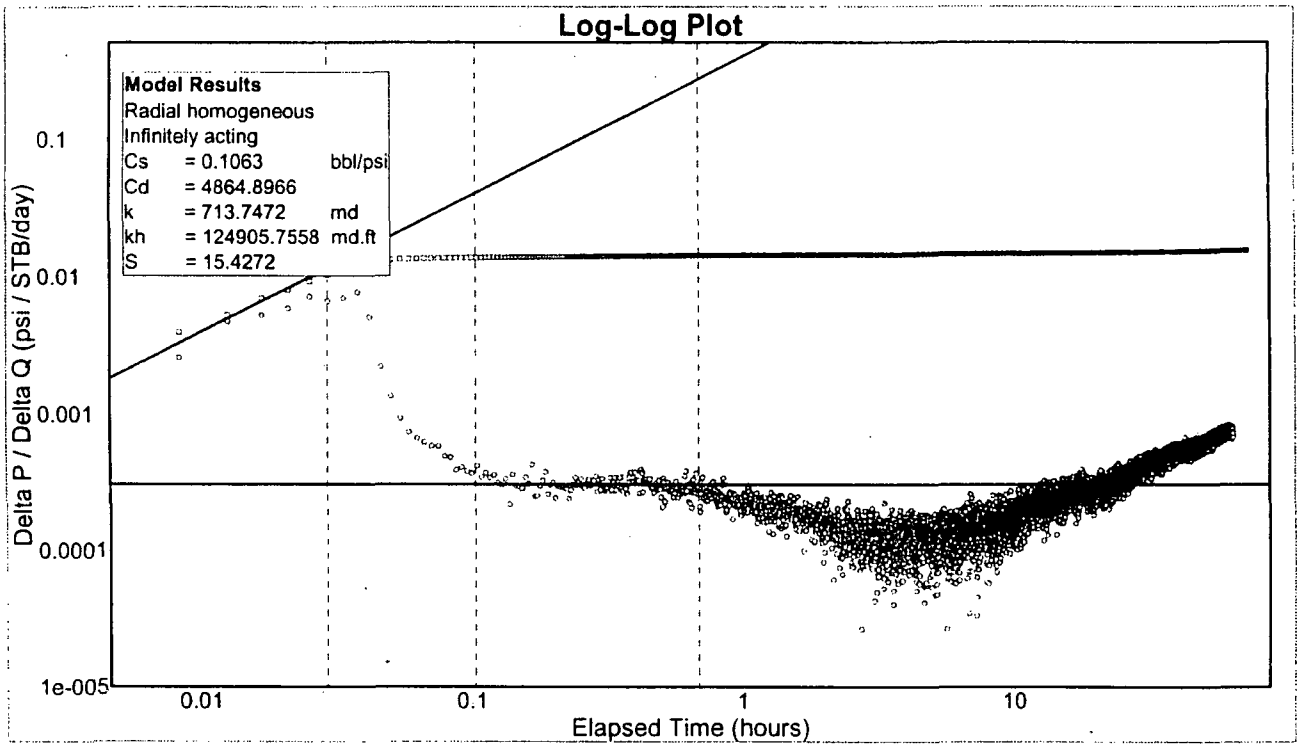

Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Wellbore storage coefficient	0.106338 bbl/psi
Dimensionless wellbore storage	4864.896562
Permeability	713.747176 md
Permeability-thickness	1.2491e5 md.ft
Skin factor	15.427202

Log-Log Plot Line Details
Line type : Wellbore storage
Slope : 1
Intercept : 0.391834
Coefficient of Determination : Not Used

Line type : Radial flow
Slope : 0
Intercept : 0.000305222
Coefficient of Determination : Not Used

Number of Intersections = 0

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Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Gaines Well No. 3
Date	November 8 - 13, 2010
Gauge Type / Serial Number	Spartek / Top No. 76585 & Bottom No. 76648
Guage Depth	7660 feet
Injection Interval	7660 feet to 8620 feet
Completion Type	Perforated
Top of Fill	8986 feet
Analyst	RLS
Subsurface Project No.	70A6516

Remarks:

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Reservoir Description
Fluid type : Water
Well orientation : Vertical
Number of wells : 1
Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3622.164936 psia
Temperature	0.000000 deg F

Well Parameters Data

	Well 1
Well radius	0.3246 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.040651 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.000000 bbl/psi
Time Change for Second Storage	0.000000 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	3622.870000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.570 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

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Layer 1 Correlations
Not Used

Layer Boundaries Data
Layer 1 Boundary Type : Infinitely acting

	Layer 1
L1	0.000000 ft
L2	0.000000 ft
L3	0.000000 ft
L4	0.000000 ft
Drainage area	0.000000 acres
Dietz shape factor	0.000000

Layer 1 Model Data
Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	567.835809 md
Skin factor (Well 1)	14.63743

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-896.530000	0.000000	-6556.478291
-800.530000	0.000000	-6601.295752
-752.530000	0.000000	-6527.197437
-680.530000	0.000000	-6455.564906
-560.530000	0.000000	-6495.140172
-488.530000	0.000000	-6447.882191
-416.530000	0.000000	-6579.061020
-392.530000	0.000000	-6494.151021
-368.530000	0.000000	-6407.507286
-344.530000	0.000000	-6502.572720
-320.530000	0.000000	-6550.762753
-296.530000	0.000000	-6537.209766
-272.530000	0.000000	-7090.581141
-224.530000	0.000000	-6405.124987
-176.530000	0.000000	-6511.595238
-152.530000	0.000000	-6457.245522
-80.530000	0.000000	-6400.552384
-56.530000	0.000000	-6553.585991
-32.530000	0.000000	-6481.716753
-8.530000	0.000000	-6357.386028
22.640735	3754.422743	-6388.006784
51.435332	3761.219618	-6599.617354
57.610353	3764.865451	-6928.849572
82.475272	3765.713641	-6857.001709
117.500343	3634.618056	0.000000

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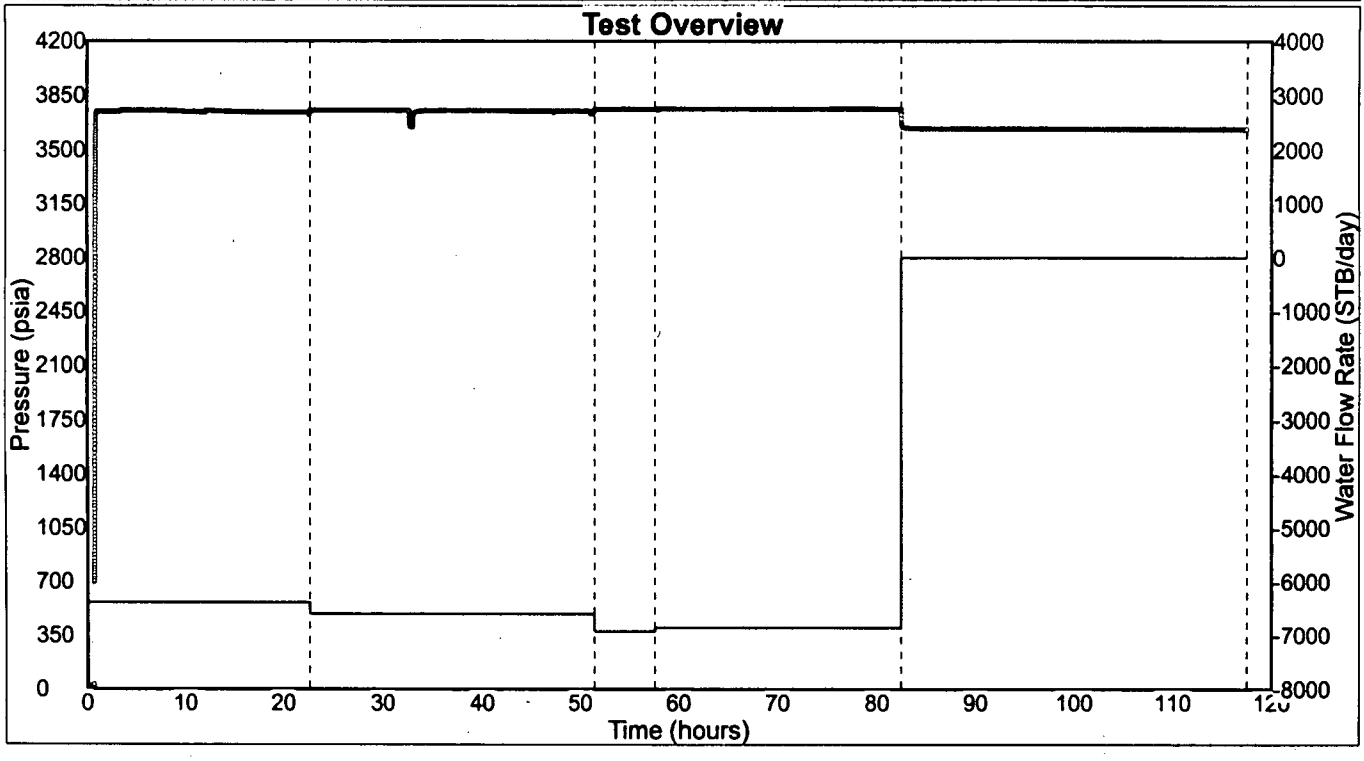

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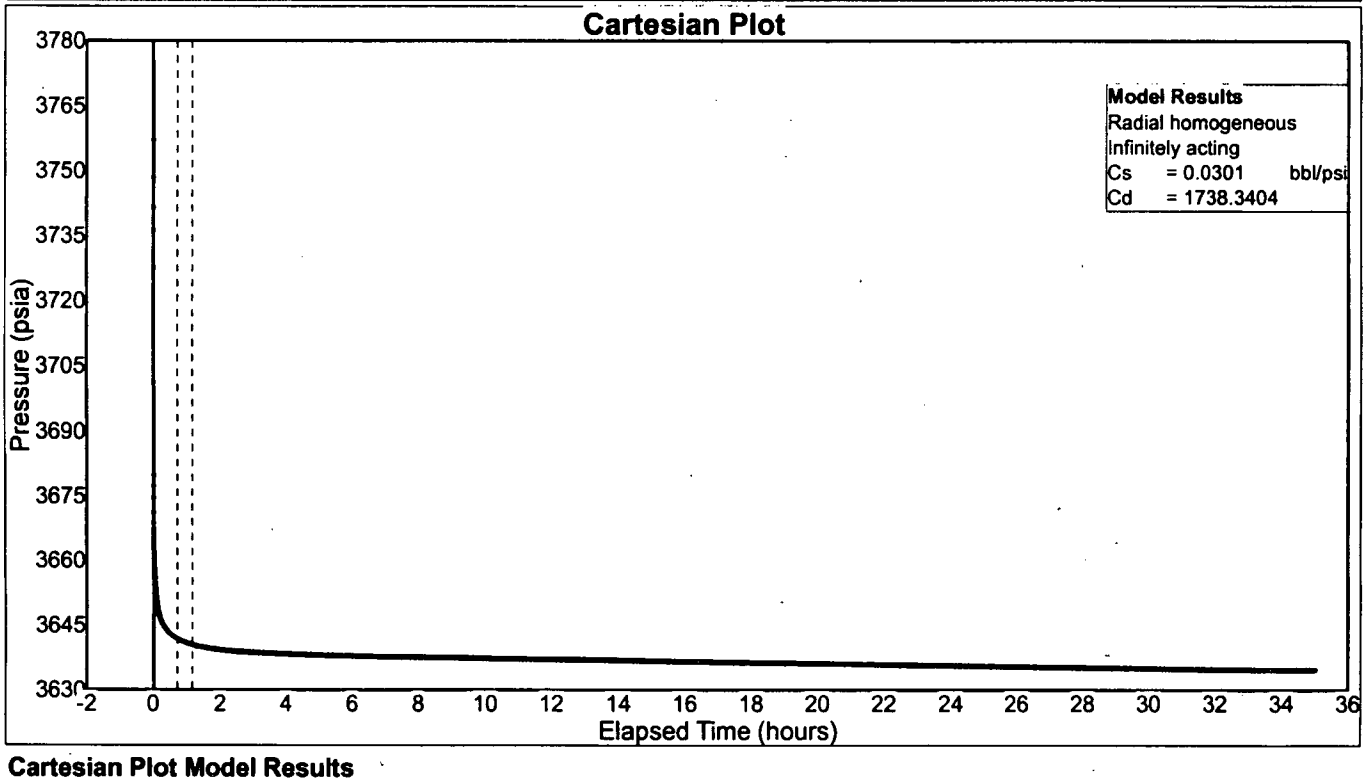

Cartesian Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.030117 bbl/psi
Dimensionless wellbore storage	1738.340434

Cartesian Plot Line Details
Line type : Wellbore storage
Slope : -9486.62
Intercept : 3780.53
Coefficient of Determination : 0.923237
Number of Intersections = 0

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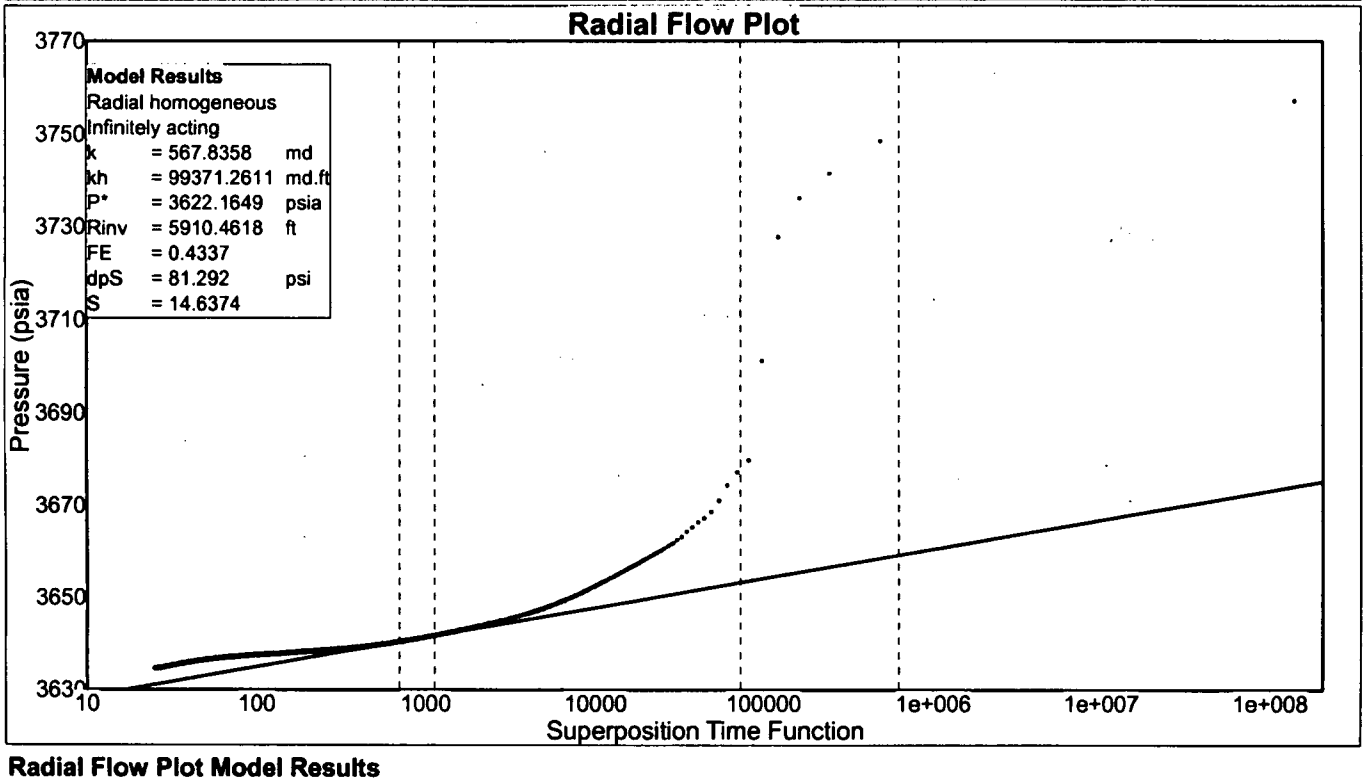

Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Permeability	567.835778 md
Permeability-thickness	9.9371e4 md.ft
Extrapolated pressure	3622.164936 psia
Radius of investigation	5910.461759 ft
Flow efficiency	0.433697
dP skin (constant rate)	81.291998 psi
Skin factor	14.637429

Radial Flow Plot Line Details
Line type : Radial flow
Slope : 6.39394
Intercept : 3622.16
Coefficient of Determination : Not Used

	Radial flow
Extrapolated pressure	3622.164936 psia
Pressure at dt = 1 hour	3640.793976 psia

Number of Intersections = 0

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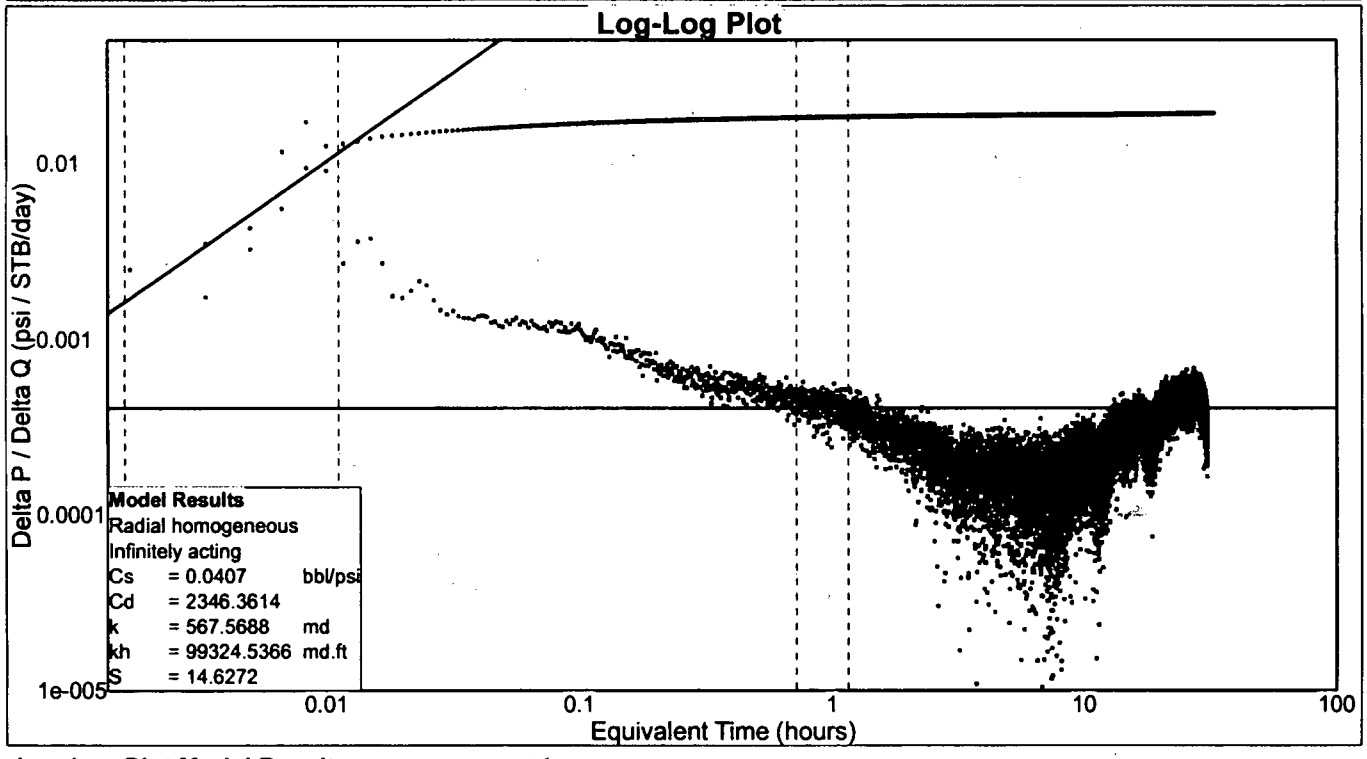

Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.040651 bbl/psi
Dimensionless wellbore storage	2346.361416
Permeability	567.56878 md
Permeability-thickness	9.9325e4 md.ft
Skin factor	14.627163

Log-Log Plot Line Details
Line type : Radial flow
Slope : 0
Intercept : 0.000405157
Coefficient of Determination : Not Used
Line type : Wellbore storage
Slope : 1
Intercept : 1.02498
Coefficient of Determination : Not Used
Number of Intersections = 0

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SUBSURFACE

HOUSTON, TX • BATON ROUGE, LA • SOUTH BEND, IN

Subsurface Technology, Inc Report File: 2011 Gaines Well-3 rev.pan

PanSystem Version 3.5

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Gaines Well No. 3
Date	January 21 - 28, 2012
Gauge Type / Serial Number	Spartek / Top No. 77120 & Bottom No. 76404
Guage Depth	7660 feet
Injection Interval	7660 feet to 8620 feet
Completion Type	Perforated
Top of Fill	8986 feet
Analyst	RLS
Subsurface Project No.	70A6645

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Reservoir Description

Fluid type : Water
Well orientation : Vertical
Number of wells : 1
Number of layers : 1

Layer Parameters Data

	Layer 1
Formation thickness	175.0000 ft
Average formation porosity	0.1000
Water saturation	0.0000
Gas saturation	0.0000
Formation compressibility	0.000000 psi-1
Total system compressibility	8.4000e-6 psi-1
Layer pressure	3622.164936 psia
Temperature	0.000000 deg F

Well Parameters Data

	Well 1
Well radius	0.3246 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.11809 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.000000 bbl/psi
Time Change for Second Storage	0.000000 hr
Well offset - x direction	0.0000 ft
Well offset - y direction	0.0000 ft

Fluid Parameters Data

	Layer 1
Oil gravity	0.000000 API
Gas gravity	0.000000 sp grav
Gas-oil ratio (produced)	0.000000 scf/STB
Water cut	0.000000
Water salinity	0.000000 ppm
Check Pressure	3622.870000 psia
Check Temperature	0.000000 deg F
Gas-oil ratio (solution)	0.000000 scf/STB
Bubble-point pressure	0.000000 psia
Oil density	0.000 lb/ft3
Oil viscosity	0.000 cp
Oil formation volume factor	0.000 RB/STB
Gas density	0.000 lb/ft3
Gas viscosity	0.0 cp
Gas formation volume factor	0.000 ft3/scf
Water density	0.000 lb/ft3
Water viscosity	0.570 cp
Water formation volume factor	1.000 RB/STB
Oil compressibility	0.000000 psi-1
Initial Gas compressibility	0.000000 psi-1
Water compressibility	0.000000 psi-1

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Layer 1 Correlations
Not Used

Layer 1 Model Data
Layer 1 Model Type : Radial homogeneous

	Layer 1
Permeability	596.528914 md
Skin factor (Well 1)	27.240663

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-11208.000000	0.000000	-6398.265381
-11184.000000	0.000000	-6398.265381
-11160.000000	0.000000	-6398.265381
-11136.000000	0.000000	-6547.910679
-11112.000000	0.000000	-6398.265381
-11088.000000	0.000000	-6398.265381
-11064.000000	0.000000	-6540.428467
-11040.000000	0.000000	-6398.265381
-11016.000000	0.000000	-6098.977400
-10992.000000	0.000000	-6398.265381
-10968.000000	0.000000	-6547.910679
-10944.000000	0.000000	-6398.265381
-10920.000000	0.000000	-7433.133022
-10896.000000	0.000000	-7141.325160
-10872.000000	0.000000	-6398.265381
-10848.000000	0.000000	-6398.265381
-10824.000000	0.000000	-6256.104911
-10800.000000	0.000000	-6248.622698
-10776.000000	0.000000	-6248.622698
-10752.000000	0.000000	-6547.910679
-10728.000000	0.000000	-6398.265381
-10704.000000	0.000000	-6398.265381
-10680.000000	0.000000	-6398.265381
-10656.000000	0.000000	-6547.910679
-10632.000000	0.000000	-6248.622698
-10608.000000	0.000000	-6540.428467
-10584.000000	0.000000	-6842.037179
-10560.000000	0.000000	0.000000
-10536.000000	0.000000	0.000000
-10512.000000	0.000000	-6540.428467
-10488.000000	0.000000	-6248.622698
-10464.000000	0.000000	-6241.140485
-10440.000000	0.000000	-6398.265381
-10416.000000	0.000000	-6398.265381
-10392.000000	0.000000	-6398.265381
-10368.000000	0.000000	-6547.910679
-10344.000000	0.000000	-6398.265381
-10320.000000	0.000000	-6405.747593
-10296.000000	0.000000	-6248.622698
-10272.000000	0.000000	-6098.977400
-10248.000000	0.000000	-6248.622698

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-10224.000000	0.000000	-6098.977400
-10200.000000	0.000000	-6098.977400
-10176.000000	0.000000	-6248.622698
-10152.000000	0.000000	-6098.977400
-10128.000000	0.000000	-6248.622698
-10104.000000	0.000000	-5949.334717
-10080.000000	0.000000	-6106.459612
-10056.000000	0.000000	-6098.977400
-10032.000000	0.000000	0.000000
-10008.000000	0.000000	-6547.910679
-9984.000000	0.000000	-6398.265381
-9960.000000	0.000000	-6547.910679
-9936.000000	0.000000	-6398.265381
-9912.000000	0.000000	-6540.428467
-9888.000000	0.000000	-6547.910679
-9864.000000	0.000000	-6248.622698
-9840.000000	0.000000	-6248.622698
-9816.000000	0.000000	-6098.977400
-9792.000000	0.000000	-6398.265381
-9768.000000	0.000000	-6398.265381
-9744.000000	0.000000	-6248.622698
-9720.000000	0.000000	-5804.850900
-9696.000000	0.000000	-5949.334717
-9672.000000	0.000000	0.000000
-9648.000000	0.000000	0.000000
-9624.000000	0.000000	0.000000
-9600.000000	0.000000	-6690.071150
-9576.000000	0.000000	-6398.265381
-9552.000000	0.000000	-6547.910679
-9528.000000	0.000000	-6405.747593
-9504.000000	0.000000	-6547.910679
-9480.000000	0.000000	-6547.910679
-9456.000000	0.000000	-6405.747593
-9432.000000	0.000000	-6540.428467
-9408.000000	0.000000	-6697.553362
-9384.000000	0.000000	-6547.910679
-9360.000000	0.000000	-6547.910679
-9336.000000	0.000000	-6248.622698
-9312.000000	0.000000	-6248.622698
-9288.000000	0.000000	-6398.265381
-9264.000000	0.000000	-6547.910679

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Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-9240.000000	0.000000	-6547.910679
-9216.000000	0.000000	-6547.910679
-9192.000000	0.000000	-6697.553362
-9168.000000	0.000000	-6248.622698
-9144.000000	0.000000	-6697.553362
-9120.000000	0.000000	-6697.553362
-9096.000000	0.000000	-6690.071150
-9072.000000	0.000000	-6547.910679
-9048.000000	0.000000	-6398.265381
-9024.000000	0.000000	-6547.910679
-9000.000000	0.000000	-6547.910679
-8976.000000	0.000000	-6540.428467
-8952.000000	0.000000	-6398.265381
-8928.000000	0.000000	-6547.910679
-8904.000000	0.000000	-6547.910679
-8880.000000	0.000000	-6547.910679
-8856.000000	0.000000	-6398.265381
-8832.000000	0.000000	-6547.910679
-8808.000000	0.000000	-6398.265381
-8784.000000	0.000000	-6547.910679
-8760.000000	0.000000	-6398.265381
-8736.000000	0.000000	0.000000
-8712.000000	0.000000	-5949.334717
-8688.000000	0.000000	-6547.910679
-8664.000000	0.000000	-6398.265381
-8640.000000	0.000000	-6697.553362
-8616.000000	0.000000	-6547.910679
-8592.000000	0.000000	0.000000
-8568.000000	0.000000	-3.0346e4
-8544.000000	0.000000	-575.822689
-8520.000000	0.000000	-6091.495187
-8496.000000	0.000000	0.000000
-8472.000000	0.000000	0.000000
-8448.000000	0.000000	-6697.553362
-8424.000000	0.000000	-6909.119176
-8400.000000	0.000000	-4919.370117
-8376.000000	0.000000	0.000000
-8352.000000	0.000000	-4019.441267
-8328.000000	0.000000	-3420.865566
-8304.000000	0.000000	-4455.730852
-8280.000000	0.000000	-4612.858364
-8256.000000	0.000000	-5206.272845
-8232.000000	0.000000	-5505.560826
-8208.000000	0.000000	-5655.205601
-8184.000000	0.000000	-5056.630162
-8160.000000	0.000000	-5942.110421
-8136.000000	0.000000	-5206.272845
-8112.000000	0.000000	-5505.560826
-8088.000000	0.000000	0.000000

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-8064.000000	0.000000	-5655.205601
-8040.000000	0.000000	0.000000
-8016.000000	0.000000	-6842.037179
-7992.000000	0.000000	0.000000
-7968.000000	0.000000	-6697.553362
-7944.000000	0.000000	-6547.910679
-7920.000000	0.000000	-6398.265381
-7896.000000	0.000000	-6697.553362
-7872.000000	0.000000	-7290.970459
-7848.000000	0.000000	-4463.213065
-7824.000000	0.000000	0.000000
-7800.000000	0.000000	-5949.334717
-7776.000000	0.000000	0.000000
-7752.000000	0.000000	-149.336406
-7728.000000	0.000000	-4612.858364
-7704.000000	0.000000	-4762.501046
-7680.000000	0.000000	-3570.508248
-7656.000000	0.000000	0.000000
-7632.000000	0.000000	-4463.213065
-7608.000000	0.000000	-4762.501046
-7584.000000	0.000000	-4313.570382
-7560.000000	0.000000	-5949.334717
-7536.000000	0.000000	-5520.525251
-7512.000000	0.000000	-6547.910679
-7488.000000	0.000000	-4612.858364
-7464.000000	0.000000	0.000000
-7440.000000	0.000000	-5206.272845
-7416.000000	0.000000	-6697.553362
-7392.000000	0.000000	-5505.560826
-7368.000000	0.000000	0.000000
-7344.000000	0.000000	-6398.265381
-7320.000000	0.000000	-5804.850900
-7296.000000	0.000000	-6098.977400
-7272.000000	0.000000	0.000000
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-7224.000000	0.000000	-5855.419922
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-7104.000000	0.000000	-5949.334717
-7080.000000	0.000000	-4612.858364
-7056.000000	0.000000	0.000000
-7032.000000	0.000000	-1490.971854
-7008.000000	0.000000	-4422.857143
-6984.000000	0.000000	-5385.714111
-6960.000000	0.000000	-4902.857143
-6936.000000	0.000000	-5179.999826
-6912.000000	0.000000	-5074.285714

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Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-6888.000000	0.000000	-5131.428746
-6864.000000	0.000000	-4797.143032
-6840.000000	0.000000	-4694.285889
-6816.000000	0.000000	-2602.857056
-6792.000000	0.000000	-4800.000000
-6768.000000	0.000000	-4800.000000
-6744.000000	0.000000	0.000000
-6720.000000	0.000000	-7502.856968
-6696.000000	0.000000	0.000000
-6672.000000	0.000000	-4662.857143
-6648.000000	0.000000	-4425.714111
-6624.000000	0.000000	-5074.285714
-6600.000000	0.000000	-3500.000087
-6576.000000	0.000000	-4974.285540
-6552.000000	0.000000	-5177.142857
-6528.000000	0.000000	-5214.285540
-6504.000000	0.000000	-5080.000174
-6480.000000	0.000000	-5314.285714
-6456.000000	0.000000	0.000000
-6432.000000	0.000000	-5177.142857
-6408.000000	0.000000	-5177.142857
-6384.000000	0.000000	-5348.571429
-6360.000000	0.000000	0.000000
-6336.000000	0.000000	-5108.571429
-6312.000000	0.000000	-4971.428571
-6288.000000	0.000000	-5214.285540
-6264.000000	0.000000	-5108.571429
-6240.000000	0.000000	-4800.000000
-6216.000000	0.000000	-5102.856968
-6192.000000	0.000000	-5214.285540
-6168.000000	0.000000	-4865.714460
-6144.000000	0.000000	-5382.857143
-6120.000000	0.000000	-5145.714111
-6096.000000	0.000000	-5042.856968
-6072.000000	0.000000	-5239.999826
-6048.000000	0.000000	-5217.143032
-6024.000000	0.000000	-5280.000000
-6000.000000	0.000000	-5214.285540
-5976.000000	0.000000	-5179.999826
-5952.000000	0.000000	-5211.428571
-5928.000000	0.000000	-5208.571603
-5904.000000	0.000000	-5179.999826
-5880.000000	0.000000	-5248.571254
-5856.000000	0.000000	-5140.000174
-5832.000000	0.000000	-4968.571603
-5808.000000	0.000000	-5080.000174
-5784.000000	0.000000	-5114.285889
-5760.000000	0.000000	-5074.285714
-5736.000000	0.000000	-5111.428397

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-5712.000000	0.000000	-5071.428746
-5688.000000	0.000000	-5211.428571
-5664.000000	0.000000	-5591.428397
-5640.000000	0.000000	-5588.571429
-5616.000000	0.000000	-5588.571429
-5592.000000	0.000000	-5591.428397
-5568.000000	0.000000	-5237.142857
-5544.000000	0.000000	-5754.285540
-5520.000000	0.000000	-5242.857317
-5496.000000	0.000000	-4731.428571
-5472.000000	0.000000	-5242.857317
-5448.000000	0.000000	-5011.428746
-5424.000000	0.000000	-5242.857317
-5400.000000	0.000000	-5108.571429
-5376.000000	0.000000	-5242.857317
-5352.000000	0.000000	-5042.856968
-5328.000000	0.000000	-5071.428746
-5304.000000	0.000000	-5142.857143
-5280.000000	0.000000	-5145.714111
-5256.000000	0.000000	-5140.000174
-5232.000000	0.000000	-5174.285889
-5208.000000	0.000000	-5143.661237
-5184.000000	0.000000	-5137.054269
-5160.000000	0.000000	-5142.857143
-5136.000000	0.000000	-5174.285889
-5112.000000	0.000000	-5074.285714
-5088.000000	0.000000	0.000000
-5064.000000	0.000000	-5042.856968
-5040.000000	0.000000	0.000000
-5016.000000	0.000000	-5345.714460
-4992.000000	0.000000	-5102.856968
-4968.000000	0.000000	0.000000
-4944.000000	0.000000	-5108.571429
-4920.000000	0.000000	-5074.285714
-4896.000000	0.000000	0.000000
-4872.000000	0.000000	-4114.285714
-4848.000000	0.000000	-5105.714460
-4824.000000	0.000000	-5074.285714
-4800.000000	0.000000	-5040.000000
-4776.000000	0.000000	-5042.856968
-4752.000000	0.000000	-5008.571254
-4728.000000	0.000000	-5077.142683
-4704.000000	0.000000	-5080.000174
-4680.000000	0.000000	0.000000
-4656.000000	0.000000	-4974.285540
-4632.000000	0.000000	-4688.571429
-4608.000000	0.000000	-4834.285714
-4584.000000	0.000000	0.000000
-4560.000000	0.000000	-5005.714286

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Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-4536.000000	0.000000	-4834.285714
-4512.000000	0.000000	-4771.428746
-4488.000000	0.000000	-4971.428571
-4464.000000	0.000000	-5008.571254
-4440.000000	0.000000	-4902.857143
-4416.000000	0.000000	-4797.143032
-4392.000000	0.000000	-4937.142857
-4368.000000	0.000000	-5002.857317
-4344.000000	0.000000	-4597.142683
-4320.000000	0.000000	0.000000
-4296.000000	0.000000	-4900.000174
-4272.000000	0.000000	-4934.285889
-4248.000000	0.000000	0.000000
-4224.000000	0.000000	-4937.142857
-4200.000000	0.000000	-4902.857143
-4176.000000	0.000000	-5002.857317
-4152.000000	0.000000	-5011.428746
-4128.000000	0.000000	-4468.571254
-4104.000000	0.000000	-4997.142857
-4080.000000	0.000000	-4968.571603
-4056.000000	0.000000	-4999.999826
-4032.000000	0.000000	-5002.857317
-4008.000000	0.000000	-4974.285540
-3984.000000	0.000000	-4965.714111
-3960.000000	0.000000	-4874.285889
-3936.000000	0.000000	0.000000
-3912.000000	0.000000	-4865.714460
-3888.000000	0.000000	-4934.285889
-3864.000000	0.000000	-4905.714111
-3840.000000	0.000000	-4902.857143
-3816.000000	0.000000	-5002.857317
-3792.000000	0.000000	-4942.857317
-3768.000000	0.000000	-4939.999826
-3744.000000	0.000000	-4934.285889
-3720.000000	0.000000	0.000000
-3696.000000	0.000000	-4765.714286
-3672.000000	0.000000	-4931.428397
-3648.000000	0.000000	-4937.142857
-3624.000000	0.000000	-4868.571429
-3600.000000	0.000000	-4905.714111
-3576.000000	0.000000	-5002.857317
-3552.000000	0.000000	-4937.142857
-3528.000000	0.000000	-4937.142857
-3504.000000	0.000000	-4931.428397
-3480.000000	0.000000	-4871.428397
-3456.000000	0.000000	-5037.143032
-3432.000000	0.000000	-4837.142683
-3408.000000	0.000000	-4939.999826
-3384.000000	0.000000	-4931.428397

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-3360.000000	0.000000	-4937.142857
-3336.000000	0.000000	-4837.142683
-3312.000000	0.000000	-4974.285540
-3288.000000	0.000000	-5037.143032
-3264.000000	0.000000	-4942.857317
-3240.000000	0.000000	-4937.142857
-3216.000000	0.000000	-4868.571429
-3192.000000	0.000000	-4971.428571
-3168.000000	0.000000	-4937.142857
-3144.000000	0.000000	0.000000
-3120.000000	0.000000	-5419.999826
-3096.000000	0.000000	-5239.999826
-3072.000000	0.000000	-5208.571603
-3048.000000	0.000000	-4668.571603
-3024.000000	0.000000	-4871.428397
-3000.000000	0.000000	-4900.000174
-2976.000000	0.000000	-4934.285889
-2952.000000	0.000000	-4697.142857
-2928.000000	0.000000	-4868.571429
-2904.000000	0.000000	-4771.428746
-2880.000000	0.000000	-4928.571429
-2856.000000	0.000000	0.000000
-2832.000000	0.000000	-4871.428397
-2808.000000	0.000000	-4731.428571
-2784.000000	0.000000	-4834.285714
-2760.000000	0.000000	-4831.428746
-2736.000000	0.000000	-1948.571385
-2712.000000	0.000000	-4771.428746
-2688.000000	0.000000	-2022.857143
-2664.000000	0.000000	-4902.857143
-2640.000000	0.000000	-1242.857143
-2616.000000	0.000000	-4182.857143
-2592.000000	0.000000	-4802.856968
-2568.000000	0.000000	-4837.142683
-2544.000000	0.000000	-4634.285889
-2520.000000	0.000000	-4668.571603
-2496.000000	0.000000	-4731.428571
-2472.000000	0.000000	-4699.999826
-2448.000000	0.000000	-4597.142683
-2424.000000	0.000000	-4625.714460
-2400.000000	0.000000	-4797.143032
-2376.000000	0.000000	-4597.142683
-2352.000000	0.000000	0.000000
-2328.000000	0.000000	0.000000
-2304.000000	0.000000	-36.357143
-2280.000000	0.000000	-4483.702381
-2256.000000	0.000000	-4683.331018
-2232.000000	0.000000	-4498.543981
-2208.000000	0.000000	-4739.353257

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Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-2184.000000	0.000000	-4498.311508
-2160.000000	0.000000	-4739.888558
-2136.000000	0.000000	-4293.713624
-2112.000000	0.000000	-4625.099950
-2088.000000	0.000000	-4324.223628
-2064.000000	0.000000	-4827.789104
-2040.000000	0.000000	-4792.579034
-2016.000000	0.000000	-4881.841105
-1992.000000	0.000000	-4815.456267
-1968.000000	0.000000	-7234.171048
-1944.000000	0.000000	-6065.735284
-1920.000000	0.000000	-4486.401207
-1896.000000	0.000000	-4603.563244
-1872.000000	0.000000	-4207.539683
-1848.000000	0.000000	-3875.855076
-1824.000000	0.000000	-2134.996280
-1800.000000	0.000000	0.000000
-1776.000000	0.000000	0.000000
-1752.000000	0.000000	-3960.563740
-1728.000000	0.000000	-4768.571254
-1704.000000	0.000000	-5025.714111
-1680.000000	0.000000	-4831.428746
-1656.000000	0.000000	-5974.285714
-1632.000000	0.000000	-5991.428571
-1608.000000	0.000000	-8548.571254
-1584.000000	0.000000	-2231.428659
-1560.000000	0.000000	-5217.143032
-1536.000000	0.000000	-2905.714286
-1512.000000	0.000000	-5002.857317
-1488.000000	0.000000	-1.6786e4
-1464.000000	0.000000	-1314.285671
-1440.000000	0.000000	-4494.285540
-1416.000000	0.000000	-3597.142770
-1392.000000	0.000000	-4488.571603
-1368.000000	0.000000	-2294.285627
-1344.000000	0.000000	-5065.714286
-1320.000000	0.000000	-3974.285627
-1296.000000	0.000000	-4457.142857
-1272.000000	0.000000	-4971.428571
-1248.000000	0.000000	-4077.142770
-1224.000000	0.000000	-4428.571603
-1200.000000	0.000000	-4425.714111
-1176.000000	0.000000	0.000000
-1152.000000	0.000000	-4557.143032
-1128.000000	0.000000	-19.999999
-1104.000000	0.000000	-4971.428571
-1080.000000	0.000000	-4734.285540
-1056.000000	0.000000	-5008.571254
-1032.000000	0.000000	-4560.000000

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
-1008.000000	0.000000	-3331.428484
-984.000000	0.000000	-5111.428397
-960.000000	0.000000	-5008.571254
-936.000000	0.000000	-4865.714460
-912.000000	0.000000	-5242.857317
-888.000000	0.000000	-5182.857317
-864.000000	0.000000	-4179.999913
-840.000000	0.000000	-5042.856968
-816.000000	0.000000	-3791.428659
-792.000000	0.000000	-3871.428484
-768.000000	0.000000	-3057.142770
-744.000000	0.000000	-4768.571254
-720.000000	0.000000	-4348.571516
-696.000000	0.000000	0.000000
-672.000000	0.000000	-5202.857143
-648.000000	0.000000	-3871.428484
-624.000000	0.000000	-2097.142901
-600.000000	0.000000	-3608.571429
-576.000000	0.000000	-2514.285801
-552.000000	0.000000	-5034.285540
-528.000000	0.000000	-4865.714460
-504.000000	0.000000	-4968.571603
-480.000000	0.000000	-5040.000000
-456.000000	0.000000	-3088.571516
-432.000000	0.000000	-4217.142857
-408.000000	0.000000	-4699.999826
-384.000000	0.000000	-437.142857
-360.000000	0.000000	0.000000
-336.000000	0.000000	-3502.857056
-312.000000	0.000000	-4362.857143
-288.000000	0.000000	-3085.714286
-264.000000	0.000000	-4417.142683
-240.000000	0.000000	-3231.428571
-216.000000	0.000000	-3660.000000
-192.000000	0.000000	-4634.285889
-168.000000	0.000000	-4491.428571
-144.000000	0.000000	-5322.857143
-120.000000	0.000000	-4588.571254
-96.000000	0.000000	-1414.285714
-76.289593	3841.764422	-3960.000000
-55.927602	3842.748942	-4611.428571
-30.569832	3852.797833	-7262.856968
0.000000	3853.883527	-1808.571429
37.273743	3800.553372	0.000000

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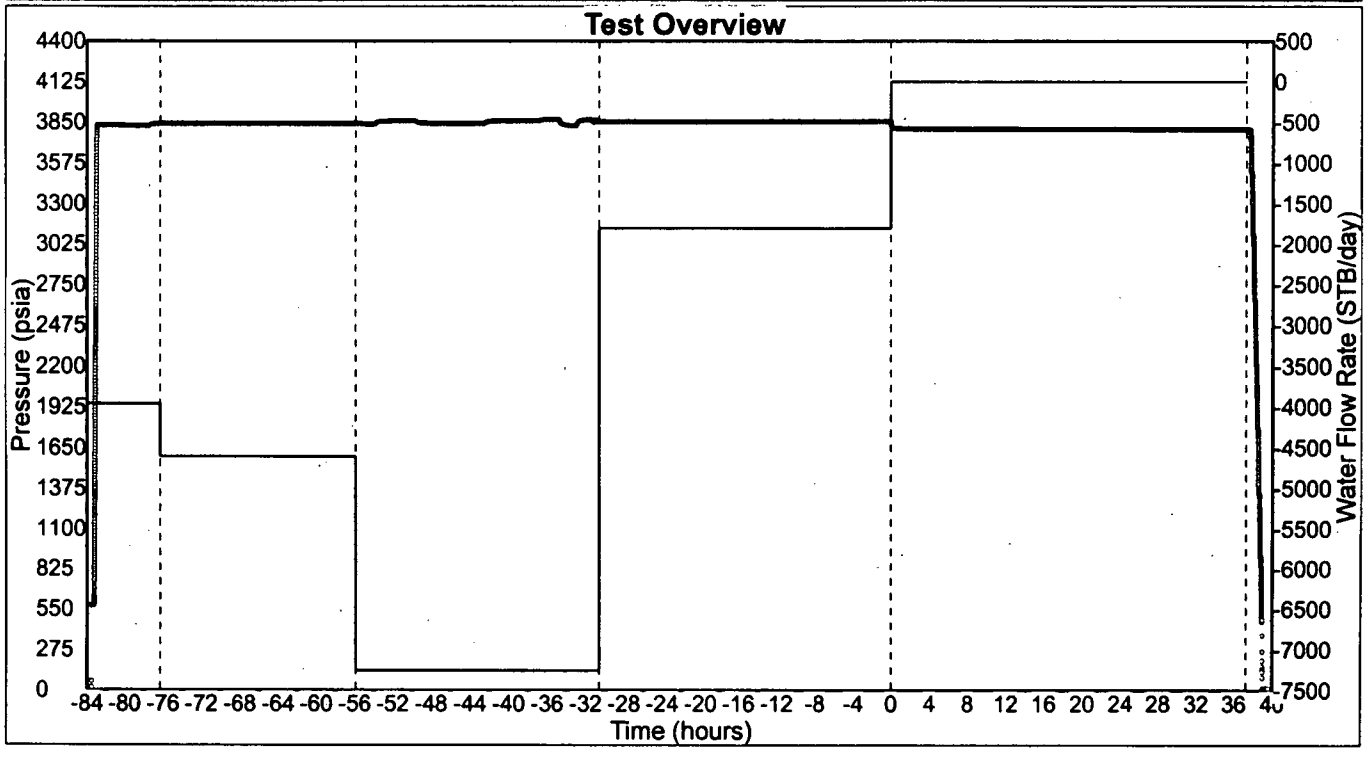

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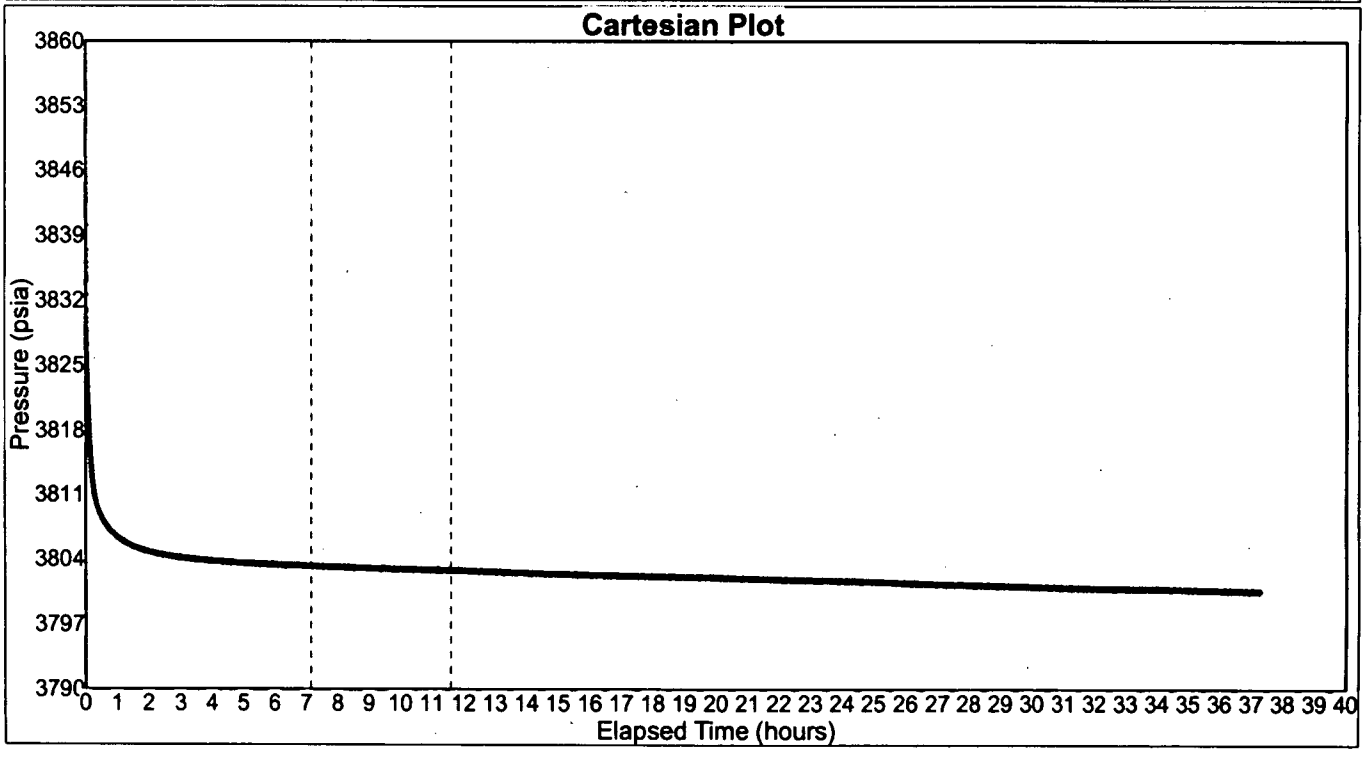
Subsurface Technology, Inc

PanSystem Version 3.5

Well Test Analysis Report

Report File: 2011 Gaines Well-3 rev.pan



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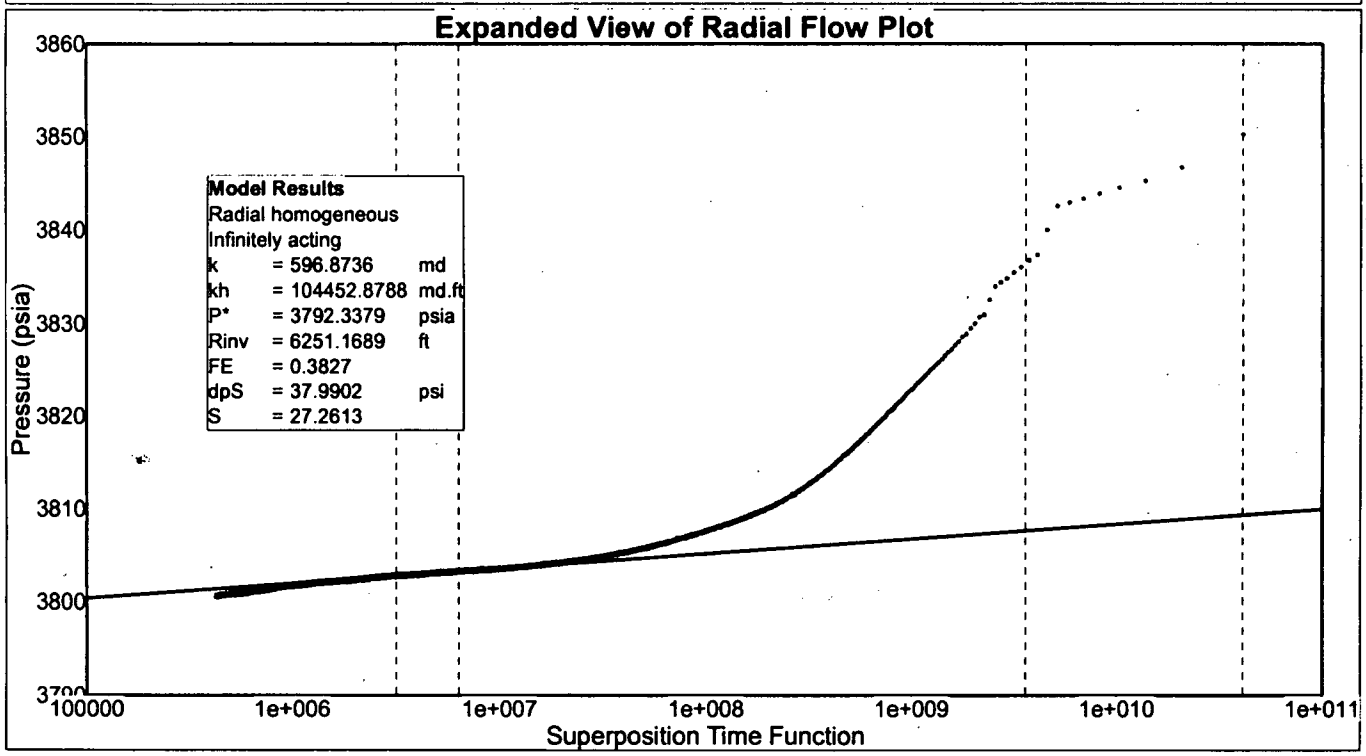

Expanded View of Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Permeability	596.873593 md
Permeability-thickness	1.0445e5 md.ft
Extrapolated pressure	3792.337923 psia
Radius of investigation	6251.168856 ft
Flow efficiency	0.382731
dP skin (constant rate)	37.990201 psi
Skin factor	27.261314

Expanded View of Radial Flow Plot Line Details
Line type : Radial flow
Slope : 1.60439
Intercept : 3792.34
Coefficient of Determination : 0.899916

	Radial flow
Extrapolated pressure	3792.337923 psia
Pressure at dt = 1 hour	3804.910506 psia

Number of Intersections = 0

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SUBSURFACE

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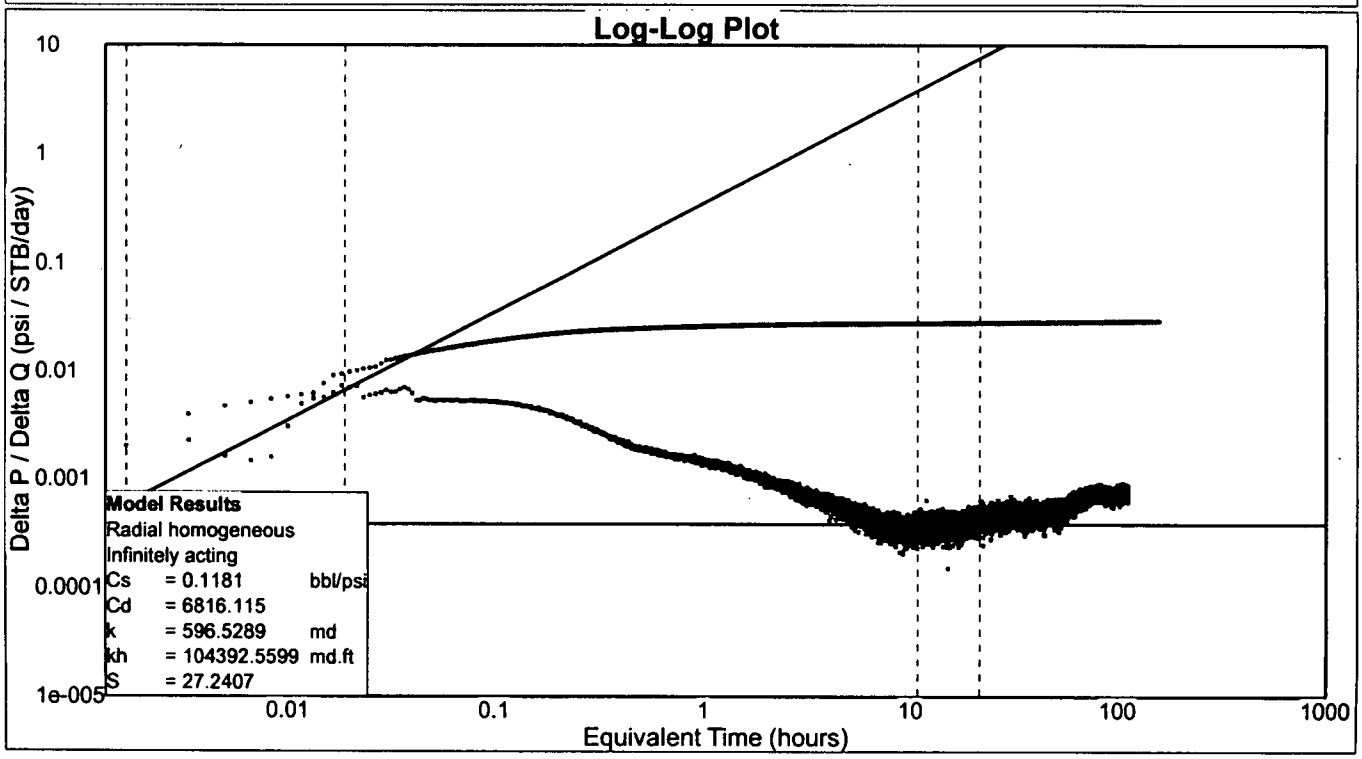
Subsurface Technology, Inc

PanSystem Version 3.5

Well Test Analysis Report

Report File: 2011 Gaines Well-3 rev.pan



Log-Log Plot Model Results

Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.11809 bbl/psi
Dimensionless wellbore storage	6816.114987
Permeability	596.528914 md
Permeability-thickness	1.0439e5 md.ft
Skin factor	27.240663

Log-Log Plot Line Details

Line type : Wellbore storage
Slope : 1
Intercept : 0.352838
Coefficient of Determination : Not Used

Line type : Radial flow
Slope : 0
Intercept : 0.000385487
Coefficient of Determination : Not Used

Number of Intersections = 0

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APPENDIX G

Comparison of Permeability, Transmissibility, Skin, False Extrapolated Pressure, and Fill Depth

Date of Test	Permeability (k)	Transmissibility (kh/u)	Skin (s)	False Extrapolated Pressure (p*)	Fill Depth
January 22 - 27, 2012	597 md	183,293 md-ft/cp	27.26	3792.34 psia	8,986 feet
November 10 - 13, 2010	568 md	174,376 md-ft/cp	14.64	3622.16 psia	8,986 feet
August 27 – 30, 2009	719 md	233,008 md-ft/cp	54.07	3,475.68 psia	8,986 feet
April 1 – 2, 2008	1,322 md	321,411 md-ft/cp	107	3,430.27 psia	N/A
Permit Parameters	250 md	40,094 md-ft-cp	N/A	N/A	N/A

APPENDIX H

WDW-3 CONSTRUCTION INFORMATION

SUBSURFACE

SUBSURFACE

RE-ENTRY AND COMPLETION REPORT
WASTE DISPOSAL WELL NO. 3

NAVAJO REFINING COMPANY
Artesia, New Mexico

SUBSURFACE PROJECT NO. 70F5826

December 2006

PREPARED BY

SUBSURFACE CONSTRUCTION CORP.
6925 Portwest Dr., Suite 110
Houston, Texas77024

SUBSURFACE

February 5, 2006

Mr. Darrell Moore
Navajo Refining Company
P.O. Box 159
Artesia, NM 88211

RE: Re-Entry and Completion Report Waste Disposal Well No. 3;
Subsurface Project No. 70F5826

Dear Darrell:

Enclosed are four (4) copies of the above-referenced report. Four copies have been included for your records and for the State of New Mexico Energy Minerals and Natural Resources Department, Oil Conservation Division.

If you should have any questions, please feel free to contact me at (713) 880-4640.

Very truly yours,

Rusty L. Smith
Project Engineer, EIT

RLS/bl

Enclosures

Moore1_Ltr

Subsurface Construction Corp.
6925 Portwest Drive Suite 110 Houston TX 77024
713/880-4640 Fax 713/880-3248 1-800-535-4105

TABLE OF CONTENTS

EXECUTIVE SUMMARY vii

1.0 INTRODUCTION 1

2.0 SUMMARY OF DAILY OPERATIONS 1

2.1 LOCATION CLEARING AND RIG MOBILIZATION 2

2.2 DRILLING OF CAST IRON BRIDGE PLUGS AND CEMENT SQUEEZING OF THE PERFORATIONS 3

2.3 LOGGING AND PERFORATING THE INJECTION INTERVAL 6

2.4 FORMATION SAMPLE COLLECTION AND INJECTION TESTING OF THE WELL 7

2.5 FINDING AND REPAIRING CASING LEAKS 8

2.6 RUNNING THE 4-1/2-INCH, 11.6 LB/FT TUBING AND SETTING THE PACKER 9

2.7 INSTALLATION OF THE WELLHEAD 9

2.8 PRESSURE BUILD UP AND FALLOFF TESTING 10

2.9 LOCATION CLEAN UP AND STATE REQUIRED TESTING 11

3.0 MECHANICAL INTEGRITY TESTING 12

3.1 CALIPER CASING INSPECTION LOG 12

3.2 CEMENT BOND LOG 12

3.3 CASING PRESSURE TESTING 13

3.4 ANNULUS PRESSURE TEST 14

3.5 RADIOACTIVE TRACER SURVEY 15

3.6 DIFFERENTIAL TEMPERATURE SURVEY 16

4.0 RESERVOIR EVALUATION 16

4.1 PRESSURE FALLOFF TEST 17

4.2 STATIC GRADIENT SURVEY 19

5.0 REGULATOR COMPLIANCE 20

5.1 SITING 20

5.2 CASING CEMENTING 20

5.3 TUBING AND PACKER 20

5.4 DIRECTIONAL SURVEYS 21

5.5 LOGGING PROGRAM 21

5.6 MECHANICAL INTEGRITY TESTING 22

5.7 PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE FORMATION FLUIDS 22

5.8 REGULATORY WITNESSING 23

6.0 FUTURE TESTING RECOMENDATIONS 23

TABLES

TABLE 2.0-1: Current Wellbore Casing Configuration

TABLE 2.1-1: Pipe Tally of the 2 7/8-inch Work String

TABLE 2.1-2: Casing Pressure Test Data

TABLE 2.4-1: Pump-in Injection Test Pressures and Rates Data

TABLE 2.7-1: Pipe Tally of the 4 1/2-inch Tubing

TABLE 2.8-1: Pump-in Pressure Build Up Pressures and Rates Data

TABLE 2.9-1: Annulus Pressure Test Data

TABLE 4.2-1: Static Gradient Results

FIGURES

FIGURE 2.0-1: Schematic of Current Wellbore Configuration

FIGURE 2.7-1: Superior Wellhead Schematic

FIGURE 2.9-1: Graph of Annulus Pressure Data

FIGURE 4.1-1: Plot of Pressure from Bottom Hole Pressure Gauge

FIGURE 4.1-2: Cartesian Plot of Pressure Falloff Data

FIGURE 4.1-3 Log-Log Diagnostic Plot

FIGURE 4.1-4: Horner Plot

FIGURE 4.1-5: Expanded Horner Plot

FIGURE 4.2-1: Static Gradient Plot

FIGURE 5.3-1: Kenco Schematic of Packer System

APPENDICES

APPENDIX 2.0-1: Chronology of Field Activities

APPENDIX 2.0-2: Well Location and Acreage Dedication Plat

APPENDIX 2.0-3: United States Department of Interior Bureau of Land Management Application for Permit to Drill or Re-enter June 29, 2006

APPENDIX 2.0-4: State of New Mexico Energy Minerals and Natural Resources Oil Conservation Division Application for Permit to Drill, Re-enter, Deepen, Plugback, or add a Zone Dated June 29, 2006

APPENDIX 2.0-5: United States Department of Interior Bureau of Land Management Sundry Notices and Reports on Wells Dated June 29, 2006

APPENDIX 2.0-6: State of New Mexico Energy Minerals and Natural Resources Oil Conservation Division Approval of Discharge Permit UIC-CIL-008-3 Dated June 23, 2004

APPENDIX 2.1-1: Halliburton Treatment Report for First Cement Squeeze

APPENDIX 2.1-2: Halliburton Treatment Report for Second Cement Squeeze

APPENDIX 2.1-3: Key Pumping Service Treatment Report for Third Cement Squeeze

APPENDIX 2.2-1: Cement Bond Log (CBL/VDL)

APPENDIX 2.2-2: Temperature Log

APPENDIX 2.2-3: Casing Inspection Log

APPENDIX 2.7-1: Circular Pressure Chart from 300 PSI for Annulus Pressure Test

APPENDIX 2.8-1: Petroplex Pumping Service Treatment Report

APPENDIX 2.9-1: Radioactivity Tracer Log

APPENDIX 3.4-1: Gauge Calibration Certificate

APPENDIX 3.5-1: Letter of Interpretation for Radioactive Tracer Test

APPENDIX 4.1-1: Pan System Output

APPENDIX 4.1-2: Raw Data from Bottom Hole Pressure Tool

APPENDIX 5.5-1 : Dual Induction Laterolog

APPENDIX 5.5-2: Spectral Density Dual Spaced Neutron Log

ATTACHMENTS

ATTACHMENT 1.0-1: Well Reentry Procedure

ATTACHMENT 3.2-1: Correspondence with State of New Mexico Energy Minerals and Natural Resources Oil Conservation Division

ATTACHMENT 5.4-1 State Record of Deviation Survey

EXECUTIVE SUMMARY

Navajo Refining Company (Navajo) contracted Subsurface Technology, Inc. (Subsurface), to prepare an Application for Permit and to Re-enter a Plugged and Abandoned (P&A) Oil and Gas Well. The Application for Permit to Drill or Re-enter and the Sundry Notices and Reports on Wells was submitted to the Department of the Interior, Bureau of Land Management (BLM), on June 29, 2006, and approved. The Application for Permit to Drill, Re-enter, Deepen, Plug Back, or add a Zone was submitted to the State of New Mexico Oil Conservation Commission (OCD) on June 29, 2006, and approved.

Subsurface prepared an engineering plan to re-enter the P&A' oil and gas well formally owned by Mewbourne Oil Company. The original well name was Caulk Bluff Federal No. 1 (API number 30-015-26575), and a Change of Operator application was submitted to the OCD on December 5, 2000, and approved under the well name of WDW-3. Under contract to Navajo, Subsurface commenced field operations on September 25, 2006. The existing location was cleared and prepared for re-entry operations. An earthen lined reserve pit was dug to catch returns. All depths, unless stated, are referenced to workover rig floor at six feet to seven feet above ground level. The rig floor was moved from six feet to seven feet after drilling out the cast iron bridge plugs.

A workover rig and reverse unit was placed on location and the existing wellhead was removed. The first cast iron bridge plug (CIBP) at 7010 feet was drilled and the perforated interval from 7050 feet to 7102 feet was squeezed off with neat cement and successfully pressured tested to six hundred eighty pounds per square inch gauge pressure (680 psig). The second and third CIBP at 7190 feet and 7279 feet was drilled. There appeared to be ten feet of cement on top of the third CIBP. The perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314 feet was squeezed with neat cement. The squeezed interval was pressure tested to 920 psig and would not hold. A second cement squeeze was performed across the perforated interval from 7262 feet to 7278 feet and from 7304 feet to 7314. The interval was pressured tested to 630 psig and continued to lose pressure at a rate of two pounds per square inch every thirty minutes (2 psi/30 min). The fourth CIBP at 7595 feet was drilled and at 7838 feet a cement plug was

encountered and drilled through. Cement was tagged twenty nine (29) feet above the top of the liner at 9022 feet. The hole was circulated clean and prepared for logging.

A Cement Bond Log (CBL), Variable Density Log (VDL), caliper log, and temperature survey were performed. The CBL/VDL showed that the top of the cement (TOC) behind the 7-inch casing was located 900 feet from the surface. The OCD was notified and approved the existing well condition. The casing was perforated from 7660 feet to 8450 feet and from 8540 feet to 8620 feet at 2-JSPF on sixty degree (60°) phasing.

A packer was set at 7546 feet with 2 7/8-inch PH-6 tubing, the well was swabbed back and samples of the formation fluid were recovered. It was estimated that two hundred twenty six barrels (226 bbls) of formation fluid was returned to the surface. A pressure test on the annulus between the 7-inch and 2-7/8-inch was performed at 660 psig with the annulus losing pressure at a rate of 8 psi/hr.

An injection test was performed on the well down the 2-7/8-inch tubing with the annulus open to the bottom of the well. The open annulus will allow for the calculation of the bottom hole pressure while pumping down the 2-7/8-inch tubing with out the influence of tubing friction pressure on the bottom hole calculations. The injection rates were from two barrels per minute (2 bpm) to ten barrels per minute (10 bpm). From the data collected during the injection test it appears that the well will be able to accept an injection rate up to 10 bpm at the permitted pressure of 1550 psig with 4-1/2-inch, 11.6 pound per foot (11.6 lb/ft) tubing in the wellbore.

At the request of the OCD, Subsurface went back into the wellbore with a retrievable bridge plug (RBP) to test the casing and isolate any leaks to within 1000 feet. The RBP was set at 7550 feet and the packer was set at 6985 feet to isolate the squeezed interval from 7050 feet to 7314 feet. The squeezed interval was pressure tested to 490 psig and the annulus to 632 psig. The squeezed interval was losing pressure at a rate of 6 psi/hr and the annulus was gaining pressure due to thermal affects. The RBP was moved up the wellbore to 1255 feet and casing pressure tested to 569 psig. The casing above 1255 feet was losing pressure at a rate of 2 psi/hr. The casing leaks were isolated to the squeezed interval from 7050 feet to 7314 feet and in the interval from surface to 1255 feet. The

OCD was called and approved the 300PSI sealing application to stop the casing leaks across the two intervals.

The 4-1/2-inch tubing was run into the wellbore and the Arrow X-1 packer was set at 7575.73 feet with 37,000 lbs of tension. Prior to running the 4-1/2-inch tubing a new Superior hanging spool was installed. Prior to setting the tubing packer, the annulus between the 4-1/2-inch tubing and the 7-inch casing was filled with inhibited brine, with the 300psi sealant across the squeezed perforations and across the upper section of the 7-inch casing. Once the packer was set and tubing hung off in the spool, a new Superior wellhead was installed and the P-seals were pressure tested to 3000 psig. After the wellhead was assembled the annulus was squeezed at 545 psig for four hours (4 hrs), as specified by the sealant manufacture representative on site. The annulus was then pressure tested to 480 psig overnight with no pressure loss. The workover rig was disassembled and moved off location with all associated equipment.

A 12-hr pump-in and falloff test was performed down the 4-1/2-inch tubing. To maintain a surface injection pressure that was below the permitted pressure of 1550 psi the injection rate was lowered to 9 bpm at the end of the pump-in procedure. The BHP gauge was placed at 8630 feet for 14 hrs to monitor BHP. When the gauge was pulled, five minute (5 min) gradient stops were made every 1000 feet with the first stop at 7000 feet. The equipment used to perform the falloff testing was moved off location to prepare for mechanical integrity testing (MIT).

The MIT consisted of an annulus pressure test and a radioactive tracer survey. The temperature survey was performed during the CBL/VDL logging event and will be used as a baseline for any future temperature surveys. The annulus pressure test was performed at 530 psia and lost 2.5 psi over a one-hour period, which was within the OCD requirements of five percent (5%) over a 30 minute time interval. The radioactive tracer survey showed no signs of fluid flow out of the permitted interval above 7650 feet. The OCD witnessed the annular pressure test and the first half of the radioactive tracer survey.

The annulus monitoring system will be installed and tested in March 2007. After the installation of the well annulus monitoring system, the well will be turned over to Navajo for injection.

1.0 INTRODUCTION

Navajo re-entered, tested, and completed WDW-3 for the injection of plant waste effluent. The well is located in Section 1, Township18 South, Range 27 East (S1-T18S-R27E) approximately 11.5 miles east-southeast of Artesia, New Mexico in Eddy County. A Well Location and Acreage Dedication plat of the well location is located in Appendix 2.0-2. The construction and testing of this well was performed in compliance with the provisions of the New Mexico Water Quality Control Commission Regulations (NMWOCCR) Subpart V, Section Nos. 5204 and 5205, New Mexico Oil Conservation Division Underground Injection Control (UIC) Program Manual, and the Environmental Protection Agency (EPA) Code of Federal Regulations 40 CFR 16.12, Subpart B.

Subsurface was contracted by Navajo to re-enter and test WDW-3. The construction and testing of this Non-Commercial Class I Nonhazardous Waste Disposal Well was permitted by the BLM and the OCD. All work associated with WDW-3 was completed in accordance with the provisions specified in the permit approved by the BLM and OCD.

The following report and contracted work on WDW-3 was designated as Subsurface Project No. 70F5826. The following report summarizes all work performed on the WDW-3 and includes the fillings of the necessary documents. The report is broken down into four parts Summary of Daily Activities, Mechanical Integrity Testing, Reservoir Evaluation, and Regulatory Compliance. For continuity this report is written in the same structure as the report completed on WDW-2. The well reentry procedure can be found in 1.0-1.

2.0 SUMMARY OF DAILY OPERATIONS

The reentry, testing, and completion operations for WDW-3 are presented in this section. Details of certain operations are referenced in the text and included as figures, exhibits, tables, and appendices. Appendix 2.0-1 contains a Chronology of Field Activities from the Field Activity Reports.

The original wellbore was designated as the Mewbourne Oil Company, Chalk Bluff Federal No. 1 (API No. 30-015-26575), installed March 7, 1991, as a producing oil & gas well. The wellbore was constructed with 13-3/8-inch, 54.5 lb/ft surface casing set to 400 feet in a 17-1/2-inch hole and was cemented to the surface. A 9-5/8-inch, 36 lb/ft intermediate casing was set at 2600 feet in a 12-1/4-inch hole and cemented to the surface. The 7-inch, 26 lb/ft and 29 lb/ft production casing was set at 9450 feet in an 8-3/4-inch hole and was cemented to 900 feet below ground level (GL). On March 7, 1991, the well was deepened to 10,119 feet and a 4-1/2-inch, 11.6 lb/ft liner was installed from 9051 feet to 10,119 feet and cemented in place with 175 sks of cement. The well was plugged and abandoned on August 14, 1995. The well was acquired by Navajo on November 27, 2000. The current well configuration is presented in Figure 2.0-1 and Table 2.0-1.

Navajo submitted the application to recomplete the well to both the BLM and the OCD on June 6, 2006, and received approval from the OCD on August 11, 2006, (Appendix 2.0-3 and Appendix 2.0-4). The Sundry Notices and Reports on New Wells notification was submitted to the BLM on June 6, 2006, (Appendix 2.0-5). The New Mexico Energy, Minerals and Natural Resources Department sent a letter of approval to discharge according to UIC-CLI-008-3 on June 23, 2004, which was later modified to raise the top of the injection interval from 7750 feet to 7650 feet (Appendix 2.0-6)

2.1 LOCATION CLEARING AND RIG MOBILIZATION

On September 27, 2006, Banta's roustabout crew arrived at the job site with two back holes and a three man crew. The location was cleared of all overgrowth and a thirty feet by thirty feet by five feet (30 ft x 30 ft x 5 ft) lined pit was dug to hold returns. An eight foot by seven foot by three foot (8 ft x 7 ft x 3 ft) cellar was dug around the wellhead in order to inspect the lower section of the wellhead for repairs. New valves and fittings were installed on the existing wellhead. Rig support equipment started to arrive at the job site.

On September 28, 2006, the roustabout crew framed in the cellar and the Basic workover rig arrived at the job site. The rig was spotted and the remaining support

equipment arrived at the job site. The derrick was erected and the rig crew repaired the sand line break and replaced the drilling line. The 2-7/8-inch work string was tallied at 9413.59 feet with a bottom hole assembly of 126.45 feet (See Table 2.1-1).

On September 29, 2006, the wellhead was inspected by a Superior Wellhead technician and was found to be an eleven inch, three thousand pound, by seven inch, five thousand pound (11^3 x 7^5) Cameron type spool. The Cameron type spool attached to the wellhead had been discontinued and Superior suggested that the spool be replaced. The remaining support equipment arrived at the job site and was rigged up for drilling. The annular blow out preventer (BOP) was attached up to the wellhead and the rig crew went into the wellbore with 2-7/8-inch, 7.9 lb/ft, PH-6 tubing, four 4-3/4-inch drill collars, 46.67 lb/ft, and a 6-1/8-inch Baker Hughes Rock bit. The rig crew tagged bottom at 7001 feet.

2.2 DRILLING OF CAST IRON BRIDGE PLUGS AND CEMENT SQUEEZING OF THE PERFORATIONS

On September 30, 2006, the sand line brake on the rig would not hold and operations were shut down until the brake was repaired. On October 1, 2006, first CIBP was drilled out with no show of cement or drilling mud. The second CIBP was tagged at 7190 feet. The well was circulated clean with brine water and an injection test was performed. The rig crew tripped out of the hole (TOOH) with the work string and tripped into the hole (TIH) with the work string excluding the bit and drill collars (open ended) to spot cement for squeeze operations.

On October 2, 2006, the first cement squeeze was executed across the perforations from 7050 feet to 7102 feet. Halliburton spotted eighty sacks (80 sks) of Premium Plus neat 14.8 ppg cement across the perforations. The rig crew pulled nine stands to get out of the cement and circulated out any excessive that was trapped in the work string. Halliburton was able to pump four barrels (4 bbls) of cement into the formation before reaching a squeeze pressure of 2000 psig. The well was shut-in over night with 680 psig left on the wellhead.

On October 3, 2006, the rig crew tagged cement at 6873 feet assuming the hole was full of cement to the CIBP. At 7190 feet there were 12.1 bbls of cement left in the wellbore. The total amount of cement spotted in the wellbore was 18.7 bbls leaving 6.6 bbls of cement either place in the formation or circulated out of the wellbore. It was estimated that 3.5 bbls were circulated out of the tubing during the clean out, leaving 3.1 bbls placed into the formation (Halliburton Report Appendix 2.1-1). The cement in the wellbore was drilled out to the top of CIBP at 7190 feet and the well was pressure tested to 578 psig. The well lost 123 psi over a thirteen and half hour period at 9.1 psi/hr (1.58%).

On October 4, 2006, the second CIBP was drilled out and the third CIBP was tagged at 7278.96 feet. It was estimated that there was 9 feet of cement on top of the third CIBP. The third CIBP was drilled out and the formation started to take fluid at a rate of 1.0 bpm to 1.25 bpm. It was estimated that during circulation 180 bbls of 8.7 ppg brine was lost to the formation. The fourth CIBP was tagged at 7591 feet. The hole was circulated clean to prepare for the second cement squeeze operation. A pump-in test was performed and the well would take fluid at a rate of 4.5 bpm at 710 psig. The rig crew TOOH with collars and bit and TIH open ended to spot cement for squeeze operations.

On October 5, 2006, the bottom of the work string was placed at 7321 feet. Halliburton pumped 100 sks of 14.8 ppg Premium Plus neat cement across the perforations. The rig crew pulled ten stands and Halliburton started to squeeze into the formation using a hesitation squeeze method. The cement was squeezed into the formation in seven stages 10 minutes apart with 1.5 bbls of cement pumped between each stage. After the first stage the wellhead pressure was 78 psig and after the seventh stage the wellhead pressure was 1973 psig. The well was shut-in with 1970 psig for 2 hours and then was bled off and an additional eight stands were pulled and the tubing was circulated to clear the tubing of any excessive cement (see Halliburton Report Appendix 2.1-2). The well was shut-in over night with 930 psig on the wellhead.

On October 6, 2006, the rig crew drilled through soft cement and tagged bottom at 7554 feet, which was 37 feet above the previous spot at 7591 feet. The well would

not hold pressure and squeeze perforation were taking fluid at 25 gpm with 920 psig on the wellhead. A second cement squeeze was required to seal off the perforations.

On October 7, 2006, Halliburton was not available to do the third squeeze job so Key Pumping Services was called and performed the third cement squeeze. Rig crew TOOH with collars and bit and TIH open ended (without collars and bit). The bottom of the work string was placed at 7290 feet. On October 8, 2006, Key Pumping Services placed 80 sks of 14.8 ppg Premium Plus neat cement across the perforations. The rig crew pulled eight stands of pipe and circulated the pipe free of excessive cement. Key Pumping Services pumped 6 bbls of cement into the formation at 750 psig. At a squeeze pressure of 1975 and additional 1.5 bbls was pumped into the formation. Key Pumping Service stopped pumping for 10 min to allow the pressure to fall then pumped another 1.5 bbls into the formation before the formation refused to take any addition fluid at 1940 psig (see Key's Report in Appendix 2.1-3). The well was shut-in for the night with 1830 psig on the wellhead.

On October 9, 2006, Rig crew tagged hard cement at 6981 feet and drilled hard cement to 7312 feet. The estimated amount of cement left in the pipe was 12.7 bbls out of a total of 18.8 bbls pumped with no sign of returned cement. The rig crew tagged bottom at 7559 feet and the wellbore was circulated clean. On October 10, 2006, the casing was pressure tested for twelve hours with a starting pressure 630 psig. At the end of the twelve hour period, the pressure was 568 psig. The wellhead pressure was recorded every thirty minutes and, after six hours the rate of pressure loss was maintaining 2 psi/ 30 minutes. The annulus valve between the 7-inch casing and the 9-5/8-inch casing was opened and contained pressure. A gauge was placed on the 7-inch by 9-5/8-inch annulus and monitored for 18 hours with no apparent increase in pressure (Table 2.1-2). The 7-inch by 9-5/8-inch annulus was initially bled off before the BOP was placed on the wellhead.

On October 11, 2006, rig crew drilled through the fourth CIBP at 7595 feet and while drilling though the plug the plug dropped to 7776 feet. At 7780 feet mud contaminated cement was encountered. At 7838 feet the rig crew had drilled though the cement plug and TIH to the top of the 4-1/2-inch liner (TOL). The rig crew

tagged bottom at 9022 feet 28 feet above the TOL. It appears that there is a 28 foot cement plug across the top of the liner at 9051 feet. The wellbore was circulated clean from 9022 feet to surface. On October 12, 2006 the rig crew TIH with a casing scraper and circulated the hole to prepare for logging. Wood Group Logging Services arrived at the job site and spotted equipment.

2.3 LOGGING AND PERFORATING THE INJECTION INTERVAL

On October 13, 2006, Wood Group ran a CBL/VDL log, temperature survey, and a caliper log. The CBL/VDL log showed top of cement behind the 7-inch casing at 900 feet below the ground level (Appendix 2.3-1). The temperature log showed no major anomalies throughout the wellbore (Appendix 2.3-2). The caliper log showed some minor ware in the casing wall below the top of the injection interval (Appendix 2.3-3).

The CBL/VDL log was difficult to evaluate due to the fast formation responses. It appears that there is cement behind the 7-inch casing from the packer at 7575 feet up to 1500 feet with areas that appear to have a micro annulus. Isolation from 1500 feet to 1000 feet is spotty with little or no cement. From 900 feet to the surface, the CBL and VDL show no cement behind the casing.

The temperature survey showed no anomalies in the temperature curve. The fluid level in the well was found at 296 feet. The static bottom hole temperature (BHT) at 7575 feet was 126° F, at 8140 feet the BHT was 132.5° F, and at 9020 feet the BHT was 142.6° F.

The caliper log showed 7-inch, 29 lb/ft casing and 7-inch, 26 lb/ft casing mixed throughout the casing string. A bad spot in the 7-inch casing string was discovered at 7604 feet. There appears to be some additional corrosion from 8662 feet to 8705 feet.

From October 14, 2006 through October 15, 2006, Wood Group perforated the intervals from 7660 feet to 8450 feet and from 8540 feet to 8620 feet. Perforating was done using a 40 foot steel hollow carrier gun that produced a 0.5-inch hole at

two shots per foot on 60° phasing. On the first day 12 perforating runs were made completing the interval from 8540 feet to 8620 feet and 400 feet of the interval from 8050 feet to 8450 feet. On the second day 10 perforating runs were made completing the interval from 7660 feet to 8050 feet. There were no misfires during both days and all perforating charges went off as planned.

2.4 FORMATION SAMPLE COLLECTION AND INJECTION TESTING OF THE WELL

On October 15, 2006, the well was swabbed back from 2400 feet to surface to collect formation samples. Four samples were collected at different volumes of returned fluid. The first sample was collected after twelve runs estimated volume at 151 bbls. The second sample was taken after fourteen runs estimated volume at 176 bbls. The third sample was taken after sixteen runs estimated volume at 201 bbls, and the fourth sample was taken after eighteen runs estimated volume of 226 bbls. Samples were delivered to the Navajo Refining Facility in Artesia, New Mexico. Between runs seven through nine hydrogen sulfide gas was encountered and all personnel not active in the swabbing process were moved off the location. The formation fluid sample lab results can be found in Appendix 2.4-1. A standard API water analysis of the formation water samples and brine water samples was completed by Texas Oil Tech Laboratories.

On October 18, 2006, Key Pumping services arrived at the job site to perform the injection test. Key Pumping services started the injection testing down 2-7/8-inch, PH-6 tubing. Key's pump truck broke down after pumping 80 bbls. Key Pumping services returned on October 19, 2006. The wellhead was shut-in with the bottom of the pipe left open ended. Pressure gauges were placed on the annulus and on the wellhead. Key Pumping services circulated the wellbore at 2 bpm and caught returns after 37 bbls. The test commenced starting at 2 bpm and increasing in 1 bpm increments to 10 bpm. Both the wellhead pressure and annulus pressure were monitored during the testing. The annulus pressure will allow for a calculation of the BHP with out the affect of the 2-7/8-inch pipe friction. The brine fluid weight that was pumped into the well was measured at 8.6 ppg.

Key pumping was able to reach 10 bpm for a short five minute period before the deck engine over heated and the pump shut down. The wellhead tubing pressure at 10 bpm was 5087 psig the annulus pressure was estimated at 660 psig. With a hydrostatic pressure of 3488.16 psi calculated to 7800 feet, the BHP is 4148 psi. The pressure gradient is 0.53 psi/ft, which is below the fracture gradient. According to the data collected from the annulus pressure gauge, it appears that it would be possible to pump into the well at 10 bpm and still stay below the fracture gradient and the permitted wellhead pressure of 1550 psig (Table 2.4-1).

2.5 FINDING AND REPAIRING CASING LEAKS

The State of New Mexico OCD requested that Navajo Refining try to find all the casing leaks to within 1000 feet. For two days from October 20, 2006 to October 22, 2006, a retrievable bridge plug (RBP) and packer were placed in the wellbore to isolate sections of the casing within 1000 foot intervals. The additional testing that was performed after each perforation cement squeeze revealed that there were two intervals that were suspect of casing leaks; the interval across the squeezed perforations and the interval from 1000 feet to surface.

The first suspected interval was across the squeezed perforations. The RBP was set at 7550 feet and the packer was set at 6985 feet. The isolated interval was pressure tested to 490 psig and the annulus between the 2-7/8-inch tubing to the packer was pressure tested to 632 psig. The pressure loss across the squeezed interval stabilized after two hours and was losing 6 psi/hr. The annulus gained pressure due to thermal affects and would not stabilize.

The next suspect interval in the casing was in the upper 1000 feet to surface interval. The RBP was set at 1255 feet and the entire casing interval form 1255 feet to surface was pressure tested to 570 psig. The pressure stabilized after two hours and maintained a pressure loss of 2 psi/hr over a twelve hour period. The two tested intervals accounted for the majority of the 7-inch casing leaks. The OCD was called and approved the pumping of a sealant treatment provided by 300 PSI, Inc. as a solution to sealing off the 7-inch casing leaks. The treatment would be pumped ahead of and be hind the inhibited packer fluid.

2.6 RUNNING THE 4 1/2-INCH 11.6 LB/FT TUBING AND SETTING THE PACKER

On October 23, 2006, Superior Wellhead replaced the existing Cameron spool with a new Superior Wellhead spool. The BOP was reseated and Allen's Casing Crews started into the hole with the Weatherford Arrow X-1 7-inch by 3-inch packer. The Packer would not go past 50 feet before getting hung up in the casing. The packer was pulled and examined, and it was discovered Weatherford had brought out the wrong packer. Kenco, out of Artesia, was called and they delivered a new Arrow X-1, 7-inch by 2-7/8-inch (Figure 2.6-1) packer to the location. The Weatherford packer was made with a 3-inch EUE thread and the Kenco packer had a 2-7/8-inch REG thread. As a result of the Weatherford cross over not threading up to Kenco's packer, Kenco had an integral cross over made and brought to the location.

On October 24, 2006, Allen's Casing crew started into the wellbore with 4-1/2-inch tubing and Arrow X-1 packer. The tubing was torqued to specifications at 1600 lbs. The bottom of the packer was set at 7575.73 feet with 37,000 lbs of tension on the packer. Before the packer was set the wellbore was circulated with approximately 240 bbls. 300PSI pumped 23.8 bbls of sealant followed by 95 bbls of 8.7 ppg inhibited brine (55 gals Baker Petrolite CRW 132 inhibitor fluid) and 14.29 bbls of sealant. At the end of the pumping the packer was set with 37,000 lbs of tension and the slips placed into the hanging spool. The BOP was removed and the wellhead installed.

2.7 INSTALLATION OF THE WELLHEAD

On October 25, 2006, the rig crew finished rigging up the wellhead. Superior arrived and pressure tested the P-seals to 3000 psig. The rig crew filled the annulus with 2.5 bbls of 8.7 ppg brine water and 300 psi applied 545 psig to the 4-1/2-inch by 7-inch annulus using nitrogen. The pressure was maintained for four hours. The pressure was bled off and the annulus was pressure tested to 490 psig with brine for one-hour and recorded on a circular chart (Appendix 2.7-1). The annulus was bled down and retested overnight to 480 psig with no pressure loss. From October 25,

2006 to October 28, 2006, the rig was demobilized and moved off location with all support equipment. Key Energy services started moving frac tanks onto the location for the pressure build up and falloff testing. The pipe tally for the 4-1/2-inch tubing can be found in Table 2.7-1. A schematic of the as-built wellhead can be located in Figure 2.7-1.

2.8 PRESSURE BUILD UP AND FALLOFF TESTING

On November 2, 2006, Key Energy services placed fourteen frac tanks on the location and were in the process of filling them. On November 3, 2006, Banta Roustabout service installed the pump-in flange on the wellhead. Six temperatures were taken at the mid-point in the frac tanks to determine the brine fluid temperature, so that the stress that would be applied to the packer, due to temperature changes in the wellbore could be calculated. The average water temperature of brine that would be used to perform the pump-in procedure portion of the pressure build up was 60.6° F. The shear pins in the packer were set at 80,000 lbs and the maximum amount of shear stress that would be applied to the packer was determined to be less than 60,000 lbs. All the brine located in the frac tanks were treated with biocide and the tanks were rolled with a Key vacuum truck.

On November 4, 2006, Petroplex Pumping service rigged up to the injection side of the wellhead and a Key Energy kill truck rigged up to the annulus side of the wellhead. The kill truck will maintain 700 psig on the annulus in order to help reduce tubing and packer stresses. Petroplex Pumping service started pumping at 3 bpm and after 28 bbls the well caught pressure at 162 psig. The rate was slowly increased to 10 bpm with a wellhead pressure of 1278 psig. The rate was maintained at 10 bpm until the wellhead pressure started to approach the 1400 psig mark and at that time the rate was decreased to 9 bpm at a wellhead pressure of 1170 psig. Based on strap measurements from the frac tanks it was estimated that 6700 bbls of 8.8 ppg brine were pumped into the well (Table 2.8-1 and Appendix 2.8-1).

Two hours prior to ending the pumping procedure, Schlumberger Slickline service lowered a bottom-hole pressure gauge into the well at 8630 feet. While lowering

the tool, the rate was decreased to 5 bpm in order to get the tool passed through the upper section of the wellbore. At 9:00 PM pumping was stopped with the BHP tool at 8630 feet, and the well was closed in with 50 psig on the annulus and no pressure on the wellhead. On November 5, 2006, at 10:20 a.m. Schlumberger Slickline service started out of the hole, with the BHP gauge taking gradient stops every 1000 feet, starting at 7000 feet. Once the BHP tool was out of the wellbore the annulus was bled down and the well shut-in (Appendix 4.1-2). All but one frac tank were removed from the location.

2.9 LOCATION CLEANUP AND STATE REQUIRED TESTING

On November 13, 2006, Banta Roustabout service cleared the location of debris, hauled off trash, filled in cellar with pea gravel, removed diesel contaminated soil around the location, and leveled the location. The well cuttings and contaminated soils were placed in the reserve pit. The returned solids that remain in the reserve pit will have to be profiled prior to disposal and cannot be disposed of under the oil field exemption. The cuttings and returned solids that remain in the reserve pit will be hauled off once the profile of the material is complete.

On November 14, 2006, Wood Group was unable to rig up to the wellhead due to high winds and the OCD delayed testing until November 15, 2006.

On November 15, 2006, Wood Group logging services, Petroplex Pumping services, and OCD inspectors arrived at the job site. Wood Group Logging services performed an annulus pressure test, and radioactive tracer survey. Petroplex Pumping services provided pumps for the annulus pressure test and the chase down portion of the radioactive tracer survey.

The 4-1/2-inch by 7-inch annulus was pressure tested to 530 psia over a one-hour period and lost 1.99 psi. This represents a 0.37% pressure loss which is well within the OCD requirement of 5% for 30 minutes at a minimum pressure of 300 psig. The annulus pressure test was witnessed by the OCD representatives. The radioactive tracer test was run without any sign of radioactive material being pumped out of the injection interval. The first part of the radioactive tracer survey was witnessed by

the OCD representatives (Appendix 2.8-1, Attachment 2.8-1, Table 2.8-1, Figure 2.8-1). At the end of the job the annulus was again pressure tested to 300 psig and held pressure for 1-1/2-hrs before being bled off.

3.0 MECHANICAL INTEGRITY TESTING

The demonstration of the mechanical integrity of WDW-3, required by New Mexico Water Quality Control Commission Regulations (NMWQCCR) Subpart V, Section 5204 (A) to (D) and Section 5205(A)(1)(a), included a casing caliper inspection on the 7-inch protective casing, pressure testing of the 7-inch protective casing, CBL/VDL of the 7-inch casing, a radioactive tracer survey, a differential temperature survey, and an annulus pressure test. Results of these tests demonstrated that the well had internal and external mechanical integrity.

3.1 CALIPER CASING INSPECTION LOG

On October 13, 2006, Wood Group Logging services ran a caliper log to determine the condition of the existing casing wall thickness and to check for anomalies (Appendix 2.2-3). Overall the 7-inch protective casing looked good. The caliper log revealed that there was 26 lb/ft and 29 lb/ft casing in the wellbore. There was one anomaly found that occurred at 7604 feet, which appeared to be a gouge in the casing wall. The upper section of the 7-inch casing string appeared to be in better condition than the lower section. There appeared to be some corrosion and scale build up in a section of the casing just above and below the 8700 feet. The data obtained from the caliper log may be used as a baseline for future comparisons.

3.2 CEMENT BOND LOGGING

On October 13, 2006, Wood Group Logging services ran a CBL/VDL log (Exhibit 2.2-1). The CBL/VDL revealed cement had not been circulated to the surface behind the 7-inch protective casing, as was indicated in the state records. The TOC behind the 7-inch protective casing was located at 900 feet and the cement bond quality was poor down to 1200 feet. There were indications on the log that a micro annulus may be present below the 1200 foot interval. The intervals above the

injection interval from 2662 feet to 2160 feet, from 4876 feet to 5372 feet, and from 6750 feet to 7600 feet indicated that there was good bonding between the 7-inch casing and the cement to isolate the injection interval. The OCD was called and they approved the existing wellbore for injection and did not request that any additional cement be placed behind the 7-inch casing (Attachment 3.2-1).

3.3 CASING PRESSURE TESTING

After performing each perforation squeeze, the wellbore was drilled out and the casing was pressure tested. The casing pressure test that was performed across the squeezed interval from 7050 feet to 7102 feet had a loss rate of 9.1 psi/hr with a starting pressure of 580 psig. The pressure was run for 13.5 hours with the final reading at 455 psig.

The second perforation squeeze was over the perforated interval from 7262 feet to 7278 feet and 7304 feet to 7314 feet. The second cement squeeze would not hold pressure. A third cement squeeze was performed across the interval and the casing was pressure tested to 630 psig for a period of 12 hours. The final casing pressure was 568 psig with a average pressure loss of 2 psi/hr.

The OCD was notified of the pressure losses on the casing pressure test and requested that Navajo attempt to isolate the leakoff in the casing to within 500 feet to 1000 feet. A 2-7/8-inch by 7-inch packer and an RBP were run into the wellbore to isolate the squeezed interval. The RBP was set at 7550 feet and the packer was set at 6985 feet. The annulus between the 2-7/8-inch work string and the 7-inch protective casing was pressure tested to 632 psig and appeared to gain pressure due to a thermal heating effect in the wellbore. The tubing was pressure tested to 490 psig with a loss rate of 6 psi/hr down the 2-7/8-inch tubing.

The 7-inch protection casing interval from 900 feet to the surface did not appear to have cement behind it, therefore, it was necessary to determine if that interval mechanically sound. The RPB was set at the shallowest point possible at 1255 feet and the casing was pressure tested to 570 psig. Over a 13 hour period the wellhead pressure dropped to 540 psig with a loss rate of 2 psi/hr.

The request by the OCD was completed. The intervals across the squeezed perforations and the interval from 1255 feet to surface both showed signs of a casing leak. The leak-off rate across both intervals was small and within the regulator requirements of 5%. Again the OCD was contacted and they requested that Navajo attempt to seal off the leaks. A casing sealant was pumped with the inhibited brine down the 4-1/2-inch by 7-inch annulus before setting the 2-7/8-inch by 7-inch Arrow X-1 injection packer. The sealant treatment was performed by 300PSI Inc. and approved by the OCD (Attachment 3.2-1). The packer was set and the sealant was squeezed. An annulus pressure test was recorded with the initial annulus pressure at 490 psig, after one-hour the annulus pressure maintained 490 psig, there was no measurable loss over the one-hour period. A copy of the chart is in Appendix 2.7-1.

3.4 ANNULUS PRESSURE TEST

The State of New Mexico required an annulus pressure test which was performed on November 15, 2006, in conjunction with a radioactive survey. The well was allowed to sit idle for 10 days to attain a thermal equilibrium in the wellbore prior to running the annulus pressure test. Wood Group Logging service monitored the annulus pressure and Petroplex Pumping Service provided the pressure pumping equipment. The OCD representatives were present to witness the annular pressure test.

The annulus was pressurized using a high pressure, low volume triplex pump isolated from the pressure source. The official annular pressure test began at 11:32:30 AM at a pressure of 530.94 psia. The tubing pressure was 0 psi. After one-hour, the pressure decreased to 528.95 psia. This represents a loss of 1.99 psi, or 0.37%, which complies with the OCD allowable of 5% per 30-minute test period at a minimum test pressure of 300 psi. The annulus pressure test data are presented as Table 2.9-1. The pressure gauge calibration certificate is presented as Appendix 3.4-1.

3.5 RADIOACTIVE TRACER SURVEY

A radioactive tracer survey was performed on the WDW-3 on November 15, 2006, following the annulus pressure test. The first part of the radioactive tracer survey was witnessed by the OCD representatives. The radioactive tracer survey consisted of running two statistical checks, two baseline gamma ray surveys, and injecting four slugs of radioactive material. Two (2) of the slugs were injected during the time-drive surveys and two were injected during the moving surveys. All tests were conducted while injecting nonhazardous brine water into the well. Wood Group Logging service performed the logging services and Petroplex Pumping service provided the pumping equipment.

The radioactive tracer tool was lowered to a total depth of 9,020 feet and a pre-survey baseline log was then run from 9,020 feet to 7,350 feet. Five-minute statistical surveys were conducted at 7,550 feet and at 7,640 feet.

The injection rate was set at 102 gallons per minute (gpm) and a slug of radioactive iodine was ejected at 7,375 feet. A total of seven passes were made during the first moving survey, until the slug dissipated into the permitted injection interval from 7,650 feet to 8,830 feet.

The radioactive tracer tool was repositioned at 7,375 feet and a second slug of radioactive iodine was ejected. The injection rate was 102 gpm. A total of five passes were made during the second moving survey, until the slug dissipated into the permitted injection interval from 7,650 feet to 8,894 feet.

The first stationary time-drive survey was performed with the lower detector at 7,640 feet with an injection rate of 102 gpm. A slug of radioactive iodine was ejected and monitored on time drive for 15 minutes.

The second stationary time-drive survey was performed with the lower detector at 7,640 feet. The injection of brine water was maintained at 102 gpm. A 2-second slug of radioactive iodine was ejected and monitored on time-drive for 15 minutes.

No upward fluid movement was observed during the two chase downs or the two time-drive surveys. There does not appear to be any upward movement of fluid out of the injection interval from 7,650 feet to 8,884 feet.

Injection into WDW-3 was terminated and a post-survey gamma ray log was run from 9,016 to 7,342 feet. The initial and post-survey gamma ray logs were comparable.

The radioactive tracer log is presented as Appendix 2.9-1. The corresponding letter of interpretation of the radioactive tracer log, dated November 27, 2006, by Wood Group is presented as Appendix 3.5-1.

3.6 DIFFERENTIAL TEMPERATURE SURVEY

A baseline differential temperature survey was performed on October 13, 2006, (Exhibit 2.2-2) after the CBL/VDL logging run. The baseline differential temperature survey will be used to evaluate future temperature surveys to confirm mechanical integrity of the well. No anomalies were observed during the differential temperature survey.

The temperature log was run from 9020 feet to the surface. The fluid level in the wellbore was at 296 feet with 8.6 ppg brine water in the wellbore. The wellbore temperature at 560 feet was 68.1° F, at 1000 feet the wellbore was temperature 74.6° F, at 7650 feet the temperature was 127° F, at 8850 feet the temperature was 140.2 ° F, and at 9020 feet the temperature was 142.9° F. The gradient from 7650 feet to 9020 feet was 1.16° F / 100 ft.

4.0 RESERVOIR EVALUATION

The bottom-hole pressure testing, which was conducted on the WDW-3 following the completion of the well, was designed to obtain the best estimate of the permeability and mobility-thickness in the reservoir. The pressure testing consisted of an injection falloff test and a gradient survey. Petroplex Pumping Service

provided the pumping equipment for the injection period of the testing and Schlumberger Slickline Services provided the BHP equipment.

The calculated value for the skin does not appear to correspond with the pump-in surface pressure values or the injection test valves. It is possible that the offset wells, WDW-1 and WDW-2, influenced the bottom hole pressure response of the bottom hole pressure gauge during the pressure falloff test. Historically, the calculation for the permeability appears to be in the range that was anticipated from previous falloff testing conducted on WDW-1 and WDW-2. WDW-1 and WDW-2 are completed in the same zone of interest.

Due to the proximity of WDW-3 to both the WDW-1 and the WDW-2 and the procedure used by Navajo for injecting into the wells, consideration needs to be given to monitoring the bottom hole pressure in the two offset wells while performing a fallout test the target well. This should allow for a better understanding of the pressure behavior in the reservoir.

4.1 PRESSURE FALLOFF TEST

Petroplex Pumping Services rigged up on WDW-3 on November 4, 2006. Injection into WDW-3 was initiated at 0919 hours at an injection rate of 126 gpm. The injection rate was gradually increased to 420 gpm. At 1800 hours, Schlumberger rigged up and the injection rate was decreased to 210 gpm in order to run the bottom-hole pressure gauges into the well. The tandem memory gauges were positioned at 8,630 feet below ground level and the injection rate was increased to 378 gpm.

At 2100 hours, the injection pumps began to lose suction and WDW-3 was subsequently shut in. The final injection rate was 189 gpm with a final injection pressure at 8,630 feet of 4,577.59 psia.

The pressure falloff test was terminated after 13.57 hours with a final shut-in pressure of 3,804.87 psia. Gradient stops were made at 1000-foot intervals while removing the pressure gauges from the well.

The pressure data obtained from the falloff test were analyzed with the assistance of the commercially available PanSystem pressure transient analysis software. The PanSystem output for the falloff analysis has been included as Appendix 4.1-1 and includes the input reservoir parameters used in the reservoir analysis. The pressure and temperature data recorded during the pressure falloff testing are included as Appendix 4.1-2.

Figure 4.1-1 shows the pressure response recorded by the bottom-hole pressure gauge from the time the tool was in place through the 13.57-hour shut in period. Figure 4.1-2 is a cartesian plot of the pressure falloff data. The superposition time function was used to account for the rate changes during the pressure build up portion of the testing. Figure 4.1-3 is a log-log diagnostic plot of the falloff data, showing change in pressure and pressure derivative versus equivalent shut in time.

The reservoir permeability was determined from the radial flow region of the superposition Horner plot, Figure 4.1-4. The radial flow regime occurs between Horner times of 486 and 196. Figure 4.1-5 shows an expanded view of the radial flow regime. The slope of the radial flow period was determined to be 0.473785 psi/cycle.

An estimate of mobility-thickness, kh/μ, for the reservoir was determined to be 2,223,895 md-ft/cp from the following equation:

$$\frac{kh}{\mu} = 162.6\frac{qB}{m}$$

where,

kh/μ	=	formation mobility-thickness, millidarcy-feet/centipoise
q	=	rate prior to shut in (6,480 bbl/day)
B	=	formation volume factor (1.0 reservoir bbl/surface bbl)
m	=	slope of the infinite acting radial flow period (0.473785 psi/cycle)

Substituting,

$$\frac{kh}{\mu} = 162.6\frac{(6,480)(1.0)}{0.473785}$$
$$= 2,223,895 \text{ md–ft/cp}$$

The permeability-thickness, kh, was determined to be 1,601,204 md-ft by multiplying the mobility-thickness by 0.72 centipoise, the viscosity of the reservoir fluid (μ res).

$$kh = \left(\frac{kh}{\mu}\right)\mu_{res}$$
$$= (2,223,895)(0.72)$$
$$= 1,601,204 \text{ md–ft}$$

The average reservoir permeability was determined to be 1,840 md using the total perforated interval thickness of 870 feet:

$$k = \frac{(kh)}{h}$$
$$= \frac{1,601,204}{870}$$
$$= 1,840 \text{ md}$$

4.2 STATIC GRADIENT SURVEY

On November 5, 2006, the pressure gauges were removed from WDW-3. Static gradient stops were made at 8,630 feet, 7,000 feet, 6,000 feet, 5,000 feet, 4,000 feet, 3,000 feet, 2,000 feet, 1,000 feet, and at the surface. The bottom-hole pressure and temperature after 13.57 hours of shut in at 8,630 feet were 3,804.87 psia and 135.88° F, respectively. The static fluid level was determined to be at 420 feet.

A summary of the static gradient survey results is provided in Table 4.2-1 and are graphically depicted in Figure 4.2-1.

5.0 Regulatory Compliance

The construction of WDW-3 was performed in accordance with the regulatory considerations and standards specified in the approved modification to the Discharge Plan UIC-CLI-008-3 Dated June 23, 2004; the OCD Permit, Dated June 29, 2006; the BLM Sundry Notices and Reports on Wells Dated June 29, 2006; NMWQCCR, Subpart V, Section Nos. 5204 and 5205; and the United States Environmental Protection Agency 40 CFR 146.12.

5.1 Siting

Navajo re-entered, tested, and completed a plugged and abandoned wellbore located in Section 1, T18S, R27E, Unit Letter N, approximately 11 miles east-southeast of Artesia, in Eddy County, New Mexico. The modification to Discharge Plan UIC-CLI-008-3 includes provisions for the location, depth of the injection interval, and specific reentry and completion requirements. The Navajo WDW-3 will inject plant effluent into a the Cisco and Brushy Canyon formations, which are beneath the lowermost formation contained within one quarter of a mile of the wellbore, with ground water having 10,000 mg/l total dissolved solids or less. A plat of the Navajo WDW-3 well location is shown in Appendix 2.0-2.

5.2 Casing Cementing

The existing casing and wellbore configuration was used and the only modifications to the wellbore were the removal of four existing CIBP's in the original wellbore configuration and the squeeze cementing of existing perforations. Table 2.0-1 and Figure 2.0-1 contain a detailed description of the current wellbore configuration.

5.3 Tubing and Packer

The Installation of the tubing and packer were in accordance with NMWQCCR Subpart V, Section 5205(B)(3).

The WDW-3 injection tubing is a 4-1/2-inch, 11.6 lb/ft, J-55, LTC 8rd connection, carbon steel pipe. The injection tubing was connected into the Arrow X-1, 2-7/8-inch by 7-inch packer via an integral 2-7/8-inch by 4-1/2-inch crossover. The packer was set with 37,000 lbs of tension in a competent area of the 7-inch casing with the bottom of the packer at 7575 feet, which is approximately 85 feet above the upper most perforation. The tubing was designed and selected based on its ability to withstand the chemical affect of the injectorate and its burst pressure, collapse pressure, and tensile stresses, which may be experienced during the operational life of the well. Table 2.0-1 is a detailed tubular list of the existing pipe and the installed pipe. Figure 5.3-1 is a schematic of the Kenco packer system, and Table 2.6-1 is an inspection tally of the tubing that was used. All the injection tubing that was placed in the well was inspected and threads cleaned prior to installation.

5.4 Directional Surveys

Deviation checks were obtained prior to re-entering WDW-3 and were based on prior deviation surveys obtained from state records, which were in accordance with NMWQCCR Subpart V, Section 5205 (A)(4)(a). Attachment 5.4-1 contains the deviation surveys that were obtained from the State of New Mexico record archives submitted to the OCD.

5.5 Logging Program

The logging program for WDW-3 was completed in accordance with the regulations specified in NMQCCR Subpart V, Section 5205(A)(4)(b).

Type of Log	Type of Hole Logged	Interval Logged (ft)	Document Reference
Dual Induction Laterolog	Open Hole	2595 – 9448	Appendix 5.5-1
Spectral Density Dual Spaced Neutron Log	Open Hole	0 – 9448	Appendix 5.5-2
Cement Bond Log (CBL/VDL)	Cased Hole	0 – 9020	Appendix 2.2-1
Temperature Log	Cased Hole	0 – 9020	Appendix 2.2-2
Casing Inspection Caliper Log	Cased Hole	0 – 9000	Appendix 2.2-3
Radioactive Tracer Survey	Cased Hole	7375 - 9008	Appendix 2.9-1

5.6 MECHANICAL INTEGRITY TESTING

The demonstration of the mechanical integrity of the WDW-3, required by NMWQCCR Subpart V, Section 5204 (A) to (D) and Section 5202 (A)(1)(a), is discussed in detail in Section 3.0 of this report. The associated logs and interpretation of the results obtained from the mechanical tests are also included in Section 3.0 of this report.

5.7 PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE FORMATION FLUIDS

In accordance with NMWQCCR Subpart V, Section 5202(A)(3)(h), an analysis describing the physical and chemical characteristics of the formation fluids, extracted from the Cisco and Upper Canyon Formation, is presented as Appendix 2.3-1.

The well materials used to construct WDW-3 were compatible with fluids which the material may be expected to come into contact. Well material would be deemed to have compatibility as long as the materials used in the construction of the well meet or exceed standards developed for such materials by the American Petroleum

Institute (API), The American Society for Testing Materials (ASTM), or comparable standards acceptable to the NMWQCCR.

5.8 REGULATORY WITNESSING

In accordance with NMWQCCR Subpart V, Section 5205(A)(5), notification prior to commencement of the reentry, cementing and casing, well logging, and mechanical integrity testing was communicated with the BLM, Carlsbad, New Mexico and the OCD, Artesia, New Mexico offices. The BLM and the OCD had an opportunity to witness all installations, logging, and testing as required in the Application for Permit to Drill, Re-enter, Deepen, Plugback, or Add a Zone and in NMWQCCR Section 5205(A)(5).

6.0 FUTURE TEST RECOMMENDATIONS

As stated earlier, due to the proximity of WDW-3 to both the WDW-1 and the WDW-2 and the procedure used by Navajo for injecting into the wells, consideration needs to be given to monitoring the bottom hole pressure in the two offset wells while performing a fallout test in the target well (WDW-3). This should allow for a better understanding of the pressure behavior in the reservoir. This may further enhance reservoir pressure forecast and increase Navajo's ability to proactively respond to reservoir and wellbore conditions.

A proposed procedure for falloff testing on the three injection wells, consist of placing BHP gauges in each well prior to starting injection into WDW-3. The injection period would consist of maintaining a constant injection rate into WDW-3 for a period 24 hours. At the end of the 24-hour injection period, shut-in WDW-3 and shift the waste injection stream to WDW-1. This would be in line with the current Navajo injection procedures. Continue injection into WDW-1 for 12 hours, and then shift the injection stream to WDW-2 for a period of 12 hours. At the end of the 12 hour injection period in WDW-2 shut down injection operations and remove the BHP tools from each wellbore. Once the BHP gauges have been removed from the wells, return to normal injection operations.

APPENDIX 2.0-1

CHRONOLOGY OF FIELD ACTIVITIES

SUBSURFACE

CHRONOLOGY OF FIELD ACTIVITIES

Tuesday, July 25, 2006

Rusty Smith, with Subsurface Construction, Inc. traveled to Artesia, New Mexico and met with David Alvarado, District Manager of Basic Energy, to inspect the two rigs that they will have available on August 7th. Only one rig was available; the other could not be released. The Cooper 500 with a 250K lb derrick was the rig that was inspected. The rig was well maintained, has no pipe racks, work string, and no power swivel. The rig is used mainly for workover operations. Inspected the well site where the workover rig unit will be located. Well site needs to be scraped clean and the barbed wire fence, which surrounds the area where the old tank used to be, needs to be removed. The wellhead needs some work. Pictures of the Basic rig and well location were taken.

Wednesday, July 26, 2006

Rusty Smith left Artesia, New Mexico and traveled to Farmington, New Mexico. The rig and well location inspection summary were completed and e-mailed to Subsurface personnel for review. Included in the inspection summary were photos of the rig and location.

Wednesday, August 30, 2006

Subsurface personnel traveled to Artesia, New Mexico to meet with David Alvarado, District Manager of Basic Energy, to develop a location layout for equipment and assist Joe Konicki. Talked with Julian Carrillo, the rig tool pusher, because David Alvarado was on vacation, and he informed Subsurface that the rig was no longer available because Yates Energy had changed its position and would not release it. Set up meetings with Darrel Moore and the new Project Engineer at the Navajo plant to discuss the current job situation and introduce Joe Konicki. Joe and I talked with Key Energy about the possibility of acquiring a rig.

Thursday, August 31, 2006

Rusty Smith measured the current WAMS units on Disposal Well No. 1 and Disposal Well No. 2 and acquired photos of Well No. 1 WAMS and the current well configuration. The well location inspection summary was completed. All photos, drawings, and the inspection summary were e-mailed to Subsurface personnel for review. Rusty Smith and Joe Konicki. left Artesia, New Mexico for Houston, Texas.

Monday, September 25, 2006

Rusty Smith traveled to Artesia, New Mexico to prepare the location for the reentry project on WDW–3, formally owned by Mewbourne Oil Company and known as Chalk Bluff Federal No. 1. The sundry notice to the BLM for the transfer of ownership was submitted on May 5, 2003. The OCD Change of Operator Notice was submitted on October 5, 2000.

Tuesday, September 26, 2006

Subsurface personnel called Knight Oil Tools & Rental and spoke with Francisco about work string and pipe. He wanted to know what type of crossovers, bit sub, safety clamp, and elevators would be needed. Spoke with Basic and they did not have any handling tools for the PH6 tubing and would need elevators and a safety valve. Knight said that they would provide elevators and a safety valve with the work string. Talked with Allen, of Key Fishing Tools, and he said that they would provide all the crossovers and bit subs. Basic was in agreement with the supplied tools.

Banta Oilfield Services will arrive tomorrow to clear the location and dig 30 foot x 30 foot x 3 foot pit. Key Energy Services will deliver tanks tomorrow and start filling them up. Portable toilets will arrive tomorrow from Sani-Tech Rentals. Young's Mobile Homes will deliver a small office trailer on Thursday. Knight Oil Tools will provide

work string, elevators, and the safety valve to be delivered September 27, 2006. Key Fishing Tools and Rental will provide reverse unit, subs, collars, bit, BOP (Allen), which are scheduled to arrive on Thursday, after noon. The rig is also scheduled to arrive on Thursday. Steve L., with Halliburton, has been notified and will need 48 hours notice. Contacted Aztec Rental about a fork lift and they will send account information to the office to be filled out by Subsurface's accountant. Once the account is approved, they will deliver a fork lift on September 27, 2006.

Wednesday, September 27, 2006

Subsurface personnel arrived at the job site at 7:00 a.m. MST. Banta's roustabout crew called and said that were having problems finding the location. Therefore, I met them at the ATOKA compressor station and led them to the location. Banta arrived with two backhoes and proceeded to clear the location of over growth and remove all fencing. Key Energy arrived at the job site with three frac tanks, two sets of pipe racks, catwalk, and Knight Oil Tools arrived with 150 joints of 2-7/8-inch PH-6 tubing. Knight Oil Tools will not charge for the pipe until the remaining 148 joints pipe and tools are delivered. Aztec Rental arrived on the job site with an extended boom fork lift. Julian, with Basic, called and said that they should be able to move onto the location by noon tomorrow.

The roustabout crew dug a 30 feet x 30 feet x 5 feet lined pit, cleared the location of over growth, removed the barbed wire fence, and dug out cell. The roustabout crew will return tomorrow to frame in the cellar. Key will start filling the frac tanks tomorrow and Knight Oil Tools will deliver the remaining pipe and handling tools. Subsurface left the jobsite at 6:30 p.m.

Thursday, September 28, 2006

Subsurface personnel arrived at the location at 7:20 a.m. MST. The roustabout crew arrived at 8:00 a.m. The roustabout crew completed the cellar. The Basic rig crew arrived on the location at 12:30 p.m. with a mechanic to repair the sand line brake. The

rig crew raised the derrick and replaced the drilling line. Rig mats had to be placed under the derrick for support. The rig mats were acquired from G&L Tools a division of Basic Energy Services. The rig crew completed repairs on the rig and left the location at 7:20 p.m. Key finished loading the frac tanks with water and brine. Key delivered the reverse unit and open top flow back tank, and the reverse unit operator will arrive tomorrow with BOP, collars, and handling tools.

Knight had problems getting the remaining work string delivered before nightfall. Knight will have the remaining pipe delivered in the morning. Young's delivered a 10 foot x 30 foot office trailer and Aztec delivered a light plant to the location. Superior Wellhead was notified and will have a man on the job site in the morning to inspect the hanger and wellhead before installing the BOP. The 150 joints of 2-7/8-inch PH-6 tubing were tallied at 4691.06 ft. Subsurface left the location at 7:45 p.m.

Friday, September 29, 2006

Subsurface personnel arrived on the jobsite at 6:45 a.m. MST. Basic rig crew arrived on location at 7:30 a.m. Subsurface and Basic crews spotted catwalk & pipe racks. The last load of pipe from Knight Tools arrived at the location with handling tools. The rig crew moved pipe and off-loaded pipe onto the pipe racks. The BOP from Key Energy arrived at the job site and was flanged up to the wellhead. The Superior wellhead technician arrived at the job and inspected the tubing hanger spool and found it to be 11_3 x 7_5 Cameron hanger and profile. The Superior wellhead technician suggested that the tubing hanger spool be replaced as the Cameron spool has been discontinued and is hard to find parts for. Key Energy's reverse unit operator arrived at the job site with 3-1/2-inch collars and handling tools.

The reverse unit (pump & tank) were rigged up to the wellhead. Portable toilets arrived at the job site. The rig crew tallied the top layer of PH-6 tubing, drill collars, bit, and started into the hole with the BHA at 1:30 p.m. The first plug was tagged at 7001 feet, at

7:10 p.m. The rig crew pulled a single joint of tubing from the wellbore, the well was shut in, and operations were shut down for the night.

Saturday, September 30, 2006

Subsurface personnel arrived on the jobsite at 7:20 a.m. MST. Basic rig crew arrived on location at 7:30 a.m. Basic rig crew and Key's reverse unit operator rigged up the swivel. At 10:30 a.m., Basic could not get the brake to hold on the sand line. Operations were shut down until Basic could repair the brake on the sand line and the reverse unit operator was put on stand by. Basic estimated that it will take all day to repair the brake. Basic finished repairing the brake at 7:00 p.m. Drilling operations will commence Sunday morning. Halliburton was notified to be ready to perform a perforation squeeze job on Monday. Pipe tally was checked and verified at 297 joints of 2-7/8-inch tubing for a total footage of 9413.59 feet, including the BHA at 126.45 feet. The well was shut in and operations were shut down for the night.

Sunday, October 1, 2006

Subsurface personnel arrived on the job site at 7:20 a.m. MST. Basic rig crew arrived on location at 7:30 a.m. At 8:00 a.m. Key's reverse unit operator started to drill out CIBP after circulating bottoms up (40 bbls) and there did not appear to be any cement on top of the plug. Current ROP is about 1 ft/hr while circulating returns to pit. The reverse unit operator will change over to tank once fluid cleans up. The returns appear to contain trace amounts of oil with no mud. RPM on the swivel is at 50 with a pump pressure between 250 psi to 300 psi with brine water. Drilled through plug at 9:45 a.m. and circulated hole clean. Rig crew started back into hole to tag second plug. Tagged second plug at 7190 feet, rig crew hooked up swivel to circulate hole and perform an injection test. The injection test revealed the following: 1 bpm at 300 psi, 1.5 bpm at 550 psi, and 2 bpm at 980 psi. After the pump-in test, the falloff went from ISIP of 950 psi to 200 psi in 22 minutes. Key Energy Service removed 250 bbls of water from earthen pit.

Rig crew tripped out of hole (TOOH) with pipe to prepare for cement squeeze job. Rig crew tripped in hole (TIH) open ended with tubing to spot cement for squeeze job, with bottom of the tubing at 7101.49 feet. Contacted Halliburton and ordered 80 sks of cement (cmt) for squeeze job into upper perforations.

Monday, October 2, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Halliburton was on the jobsite waiting on cement to arrive. Cement arrived at the location at 7:30 a.m. Halliburton rigged up their cement pump while waiting on a crossover for the PH-6 tubing. Halliburton did not bring a crossover to the PH-6 thread to 8rd, so Key Fishing Tools had one delivered.

Cement squeeze went well at 2000 psi squeeze pressure. Pressured up to 2001 psi. After 10 minutes, pressure fell to 1950 psi and re-pressured to 2007 psi. After one hour, pressure dropped to 1990 psi with 2.2 bbls, released pressure and recovered about 2 bbls. Re-pressured well to 2001 psi and held for 5 minutes at 1990 psi. The ring gasket began to leak around BOP. Halliburton released pressure and recovered 1.9 bbls. Halliburton rigged down and the rig crew TOOH with tubing. Hole remained full while tripping pipe. Rig crew tightened BOP flange head bolts. Key reverse unit operator pressured up well to 680 psi, with no apparent leaks, and the well was shut-in over night, while waiting on cement (WOC).

Tuesday, October 3, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and TIH with the collars and bit. Rig crew tagged cement at 6873 feet on joint No. 215 plus 20 feet. Assuming hole is full of cement to CIBP at 7190 feet, there are 12.1 bbls of cement in the hole and 6.6 bbls of cement were circulated out and/or squeezed into the formation. It was estimated that 3.5 bbls were circulated out leaving 3.1 bbls of cement having been squeezed into the near wellbore. Rig crew drilled out cement and

circulated hole clean at 4:00 p.m. The well was shut-in to prepare for a pressure test on the squeeze perforation for 12 hours at 500 psi.

Started 500 psi pressure test at 4:30 p.m. Pressured up well to 590 psi and after one hour pressure fell to 530 psi. Re-pressured well to 580 psi and after one hour pressure was at 578 psi. At 5:30 p.m. well was at 578 psi and holding. Shut down operations overnight.

Wednesday, October 4, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. At 7:00 a.m., the pressure on the well was 455 psi. The well lost 123 psi over 13.5 hour, for a 9.1 psi/hr (1.58%/hr) loss. Rig crew rigged up swivel and continued to drill out CIBPs at 7190 feet and (estimated third plug depth) at 7294 feet. While drilling through the second plug at 7190 feet metal cuttings were being retrieved across screen. Third CIBP was found at 7278.96 and it was estimated that there was 9 feet of cement on top of both plugs, which places the second plug at 7199 feet and third plug at 7287 feet. At 12:25 p.m., rig crew commenced drilling through third plug. At 3:00 p.m., driller punched through the third plug. The formation started taking fluid at a rate of 1.0 to 1.25 bpm while pumping, lost 180 bbls of 8.7 ppg brine water to the formation.

Rig crew TIH and tagged the forth CIBP at 7591 feet then pulled up 20 feet and reversed circulated the wellbore clean. The reverse unit operator completed the pump in test for the perforations from 7262 feet to 7278 feet and from 7304 feet to 7314 feet. The maximum rate was 4.5 bpm (max that the pump could deliver) at 710 psi with no pressure build up. The ISIP was about 580 psi and fell to 170 psi in 9 minutes. At 4:45 p.m., rig crew TOOH with collars and bit. Halliburton will be out tomorrow afternoon with 100 sks of Class C cement to squeeze off perforations. At 7:30 pm, the rig crew was out of the hole with the collars. The well was shutin and operations were shut down.

Thursday, October 5, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:20 a.m. and TIH open ended, placing the bottom of the work string at 7321 feet; 7 feet below the bottom perf at 7314 feet. Key filled fresh water and salt water tanks while we waited for a Halliburton pump truck to arrive. Halliburton arrived on the location at 11:30 a.m. At 12:44 p.m. Lines were pressure tested to 3000 psi. Halliburton broke circulation and caught returns with 6.3 bbls pumped. At 12:52 p.m., Halliburton started mixing cement and pumped 23.5 bbls of cement, followed by 35.5 bbls of fresh water. Rig crew pulled 10 stands (630 feet) and Halliburton started to squeeze the cement into the formation. The squeeze was performed in 7 stages, each 10 minutes apart, pumping approximately 1 to 1.5 bbls per stage.

After the first stage the wellhead pressure was 78 psi. After the 7th and last stage, the wellhead pressure had increased to 1973 psi. A total of 9 bbls were pumped during the squeeze job. The well was shut-in with 1970 psi on the wellhead. Subsurface allowed the well to remain shut-in for an additional 2 hours, after which the wellhead pressure was bled off and 8 stands (500 feet) of pipe were TOOH to insure that no cement remained around the pipe. The well was pressured up to 930 psi and shut-in overnight to WOC.

Friday, October 6, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and TOOH with work string. The wellhead pressure this morning, after 14 hours, was 850 psi. With a loss of 80 psi over a 14-hour period after the squeeze or 5.7 psi/hr. At 10:00 a.m., rig crew TIH with work string, collars, and a new bit. At 12:30 p.m., rig crew tagged soft cement at 7052 feet and quickly drilled through the cement. At 7092 feet, hard cement was encountered. Rig crew drilled through cement to 7338 feet and tagged bottom at 7554 feet (previous tag 7591 feet). Well would not hold pressure during test and reverse unit operator was able to pump into the well at ~20 to 25

gpm at 920 psi. A second cement squeeze on the second set of perforations will be required. Well was shut in over night.

Saturday, October 7, 2006

Subsurface personnel arrived at the location at 7:20 a.m. MST. Rig crew arrived at 7:30 a.m. and TOOH with work string, collars, and bit. A new Key reverse unit operator arrived at the location. Halliburton was called to confirm a third cement squeeze job. Halliburton informed Subsurface that they would not have a pump truck available until Wednesday. Key Pumping service was contacted and retained to provide the service on Sunday afternoon. Due to unavailability of cement pumping services to do the third cement squeeze, the estimated schedule has been pushed back 2 days.

At 10:50 AM the rig crew had collars and bit out of the hole and TIH with open ended work string to just above the bottom set of perforations at 7314'. The open ended work string was placed at 7290 feet, 24 feet above the bottom set of perforations (1 bbl of casing volume). The well was shut-in while waiting on a cement pump truck to arrive.

Sunday, October 8, 2006

Subsurface personnel arrived at the location at 10:10 a.m. MST. Rig crew arrived at 10:20 a.m. Key Pressure Pumping Services arrived at the location at 10:30 a.m. Key pumping crew rigged up pump and bulk truck. The mix water for the cement squeeze in the frac tank was contaminated with brine water and a load of city water was called in for mix water. At 2:00 p.m., fresh mixed water arrived on location. Key pumping pressure tested lines to 2500 psi and then circulated 12 bbls to fill the wellbore with fluid. At 3:04 p.m., Key started mixing cement and pumped 10 bbls of FW ahead followed by 18.5 bbls of 14.8 ppg cement. The cement was displaced with 35.5 bbls of FW. Rig crew TOOH with 8 stands (500 feet) and the well was reversed circulated with 40 bbls of FW. At 4:03 p.m., Key pumping started to squeeze the well with an initial rate of 0.5 bpm at

750 psi. After 6 bbls the rate was decreased to 0.3 bpm at 1890 psi. After 7.5 bbls at 1975 psi pumping was stopped to allow the pressure to fall.

At the end of 10 minutes, the wellhead pressure had fallen to 1063 psi and pumping was resumed. An additional 1.5 bbls was pumped before the pressure reached 1940 psi. The wellhead pressure fell to 1914 psi after 20 minutes and did not appear to fall any further. The well was shut-in and Key rigged down their pumps. After one hour, the wellhead pressure had fallen to 1860 psi. At 6:00 p.m., the well was shut-in for the night with 1830 psi on the wellhead to WOC.

Monday, October 9, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and TOOH with open ended work string. Rig crew TIH with work string, collars, and bit to drill out cement. The wellhead pressure this morning after the 80 sk cement squeeze job was 1825 psi. Reverse unit operator tagged cement at 6981 feet and found hard cement at about 7003 feet. At 4:43 p.m., driller broke through the cement at 7312 feet. The estimated cement plug length left in casing was 331 feet or 12.7 bbls out of 18.8 bbls of cement. Driller tagged bottom at 7559 feet, rig crew pulled up off bottom approximately 20 feet, and the reverse unit operator circulated the wellbore. The well was shut-in and pressure tested to 610 psi at 6:45 p.m. for a 12-hour test.

Tuesday, October 10, 2006

Subsurface arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. Wellhead pressure at the end of 13 hours was 480 psig, down from 610 psig; a pressure loss of 130 psi over the 13-hour period. The decision was made by Subsurface personnel to retest the casing after the squeeze for an additional 12 hours. At 8:03 a.m., the wellhead pressure was increased to 630 psig and monitored every thirty minutes. At 9:30 a.m., the 7-inch x 9-5/8-inch annulus valve was opened to see if it had any effect on the casing pressure. Casing pressure fell slightly faster from 2 psi/30 minutes to 5 psi/30

minutes. Once the annulus casing valve was closed, the pressure loss maintained a 2 psi/30 min loss.

When the casing valve was first opened it smelled like natural gas. The annulus casing valve was closed and a pressure gauge placed on the annulus and monitored. At 2:03 p.m., the wellhead pressure was falling at a rate of 2 psi/30 minutes with less than 5 psi on the casing annulus. At 5:03 p.m., wellhead pressure was maintaining a falloff rate of 2 psi/30 minutes. At 8:03 p.m., after 12 hours, the wellhead pressure was 568 psig.

Wednesday, October 11, 2006

Subsurface arrived at the location at 7:00 a.m. MST. The wellhead pressure was 523 psig. At 7:03 a.m., maintaining a 2 psi/30-minute pressure loss. Rig crew arrived at 7:30 a.m. and rigged up swivel and broke circulation. At 8:00 a.m., reverse unit operator tagged bottom and started to drill out plug at a circulation rate of 2 bpm, with 500 psi of pressure. At 9:30 a.m., reverse unit operator tagged the top of the plug at 7595 feet and started to drill through the plug. While drilling out the plug, the plug dropped to 7776 feet and, reverse unit operator continued to drill out the plug. Reverse unit operator drilled 2 feet through the plug and tagged mud contaminated cement at 7780 feet. Continued to drill through the cement.

At 2:00 p.m., reverse unit operator drilled through cement plug at 7838 feet, then circulated for 30 minutes before the rig crew TIH to tag the top of the liner (TOL). The well was taking fluid at a rate of about 1/2 bpm once the cement plug was drilled through. Rig crew tagged cement on TOL at 9022 feet and broke circulation. At 3:30 p.m., the reverse unit operator commenced circulating the hole clean to 9022 feet. Reverse unit operator circulated 347 bbls of 8.6 ppg brine water. At 5:30 p.m., the rig crew started TOOH with work string, bit, and collars. Tomorrow, the rig crew will TIH with casing scraper to prepare the well for logging operations.

Thursday, October 12, 2006

Subsurface arrived on location at 7:00 a.m. MST. Wood Group logging crew was at the job site spotting equipment. Rig crew arrived at the location at 7:30 a.m. and continued to TOOH with work string, collars, and bit. At 10:00 a.m., rig crew TIH with casing scraper to 9022 feet. At 12:30 p.m., rig crew TOOH with casing scraper. At 3:30 p.m., Wood Group Wireline Services rigged up to the wellhead to run the CBL/VDL into the wellbore. At 4:30 p.m., the well was shut-in for the night.

Friday, October 13, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Wood Group logging crew arrived at the job site at 7:10 a.m. Rig crew arrived at the location at 7:30 a.m. and Wood Group started into the wellbore with CBL/VDL logging tool. Fikes Truck Lines arrived at the location with 4-1/2-inch, 11.6 lb/ft, J-55, LTC tubing, from C&R Industries, and the rig crew unloaded 174 joints of tubing. Wood Group completed CBL/VDL logging and ran into the wellbore with the temperature logging tool. The temperature log was completed at 3:00 p.m. with no anomalies. At 3:15 p.m., Wood Group ran the caliper logging tool into the wellbore. The CBL/VDL log showed that the TOC was located at 900 feet with good to fair bonding to 9020 feet. The VDL indicated that cement was placed into the squeezed perforations.

At 6:40 p.m., Wood Group was out of the wellbore with the caliper log and there did not appear to be any major anomalies in the 7-inch casing from 9020 feet to surface. The well was shut-in for the night and Wood Group will be back tomorrow to perforate. The time needed to perforate well was estimated to be two days.

Saturday, October 14, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Wood Group logging crew arrived at the job site at 7:00 a.m. Rig crew arrived at the location at 7:30 a.m. and Wood Group started into the wellbore with a 40 foot perforating gun. Basic provided two men to assist Wood Group as needed with the rig. Wood Group made 12 perforating runs, completing the interval from 8540 feet to 8620 feet and 400 feet of the interval from 8050 feet to 8450 feet. Wood Group will complete the remaining 390 feet tomorrow from 7660 feet to 8050 feet. The well was shutin for the night.

Sunday, October 15, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Wood Group logging crew arrived at the job site at 7:00 a.m. Rig crew arrived at the location at 7:20 a.m. and Wood Group started into the wellbore with a 40 foot perforating gun. Basic provided two men to assist Wood Group as needed with the rig. Wood Group made 10 perforating runs, completing the interval from 7660 feet to 8050 feet. A total of 22 perforating runs were made and there were no misfires during any of the runs. All the retrieved hollow steel carrier guns shot 2-JSPF on a 60° phasing. The two man rig crew assisted Wood Group with rigging down the logging equipment. The well was shutin for the night.

Monday, October 16, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and started to lay down collars. Kenco packer and operator arrived at the job site at 8:30 a.m.. Kenco did not have the proper x-over for the PH-6 to 8rd and had to wait for a cross-over before the rig crew could run the packer. Cross-over arrived at the location and the rig crew TIH with the 7-inch x 2-7/8-inch packer. Packer was set at 7546 feet and the rig crew started to swab back the well. The first formation fluid sample was taken after 12 runs to 2400 feet (estimated 151 bbls), the second sample was taken

after 14 runs (estimated 176 bbls), the third sample taken after 16 runs (estimated 201 bbls), and fourth sample was taken after 18 runs (estimated 226 bbls). Had H_2S gas present between runs 7 through 9 (estimated at 88 and 113 bbls). Well was shutin over night.

Tuesday, October 17, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:20 a.m. Rig crew loaded collar and swivel onto Key's trailers. While waiting on Key's pump truck to arrive, reverse unit operator pressured up on 2.875-inch x 7-inch annulus with packer set at 7546 feet to perform an annulus pressure test. Initial pressure was 660 psi at 8:15 a.m. After 2 hours the pressure loss started to stabilize at about 4 psi/30 minutes. At 12:30 p.m., Key Pressure Pumping was called to verify that a pump truck was coming. Apparently there was a mix-up by the dispatcher and the pump was sent to another job. Key informed Subsurface that they will have a pump on the jobsite tomorrow afternoon.

At 1:30 p.m., the wind had picked up to a point that the rig crew could not TOOH with the packer and pipe. Therefore, the annulus pressure test will be continued for the remainder of the day. Rig crew worked on rig until 3:30 p.m. and then shut-in the well for the night. Subsurface monitored pressure until 6:30 p.m.

Wednesday, October 18, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:20 a.m.. Reverse unit operator arrived at 7:30 a.m. Subsurface delivered field copies of the logs to Navajo Refining and contacted Darrel Moore. Rusty Smith informed Darrel of the need to contact the State of New Mexico for approval to use the well, even though cement did not come all the way to the surface around the 7-inch x 9-5/8-inch casing annulus (900 feet from the surface). Darrel approved Subsurface's request to

contact the appropriate state officials for approval and to take necessary steps as the State of New Mexico directs.

At 10:30 a.m., the reverse unit operator pressured up the annulus between the tubing and the 7-inch casing to 700 psig for the injection test and left the location. Key Pumping Service arrived at the job site at 3:30 p.m. and started pumping down the 2-7/8-inch tubing at 4:20 p.m. with produced water in the wellbore and 650 psi on the annulus. The initial rate was 2.2 bpm (inline flow meter) at 300 psig on the tubing. After 43 bbls the pressure stabilized at 150 psi, with a total of 50 bbls pumped. The rate was increased to 4.1 bpm with an initial pressure of 830 psi. After 20 bbls, the tubing pressure stabilized at 900 psi. The pump broke down with a total of 80 bbls pumped (tubing volume 43 bbls). The ISIP was about 630 psi. Rig crew shut-in the well for the night and Key Pumping will return tomorrow morning to complete the job. (Note: pump wire harness fell into the drive shaft ripping it apart along with some hydraulic hoses)

Thursday, October 19, 2006

Subsurface personnel arrived at the location at 7:30 a.m. MST. Rig crew arrived at 9:00 a.m. Reverse unit operator arrived at 8:00 a.m.. At 9:00 a.m., Key pumping supervisor called and said that they were 45 minutes out and were given directions to the location. Subsurface released the down hole packer and will monitor both the backside and tubing pressure during the pump-in testing.

Key Pumping circulated the wellbore at 2 bpm to fill the wellbore with fluid & caught returns after 37 bbls. At 2 bpm tubing pressure (Pt) was 183 psig and backside pressure (Pa) was 28 psig. At 3 bpm, Pt was 638 psig & Pa was 148 psig. At 4 bpm, Pt was 1132 psig & Pa was 250 psig. At 5 bpm, Pt was 1678 psig & Pa was 320 psig. At 6 bpm, Pt was 2343 psig & Pa was 408 psig. At 7bpm, Pt was 3108 psig & Pa was 518 psig. At 8 bpm, Pt was 3748 psig and Pa was 535 and at 9 bpm, Pt was 4522 psig Pa was 590 psig. Key was able to reach 10 bpm but the engine over heated and was shut down. The Pt was 5087 psig at shut down and no Pa was recorded but estimated at 660 psig. Well went on

a vacuum once pumping had stopped. The best estimate for ISIP 230 psig total volume of brine water pumped was 280 bbls.

Rig crew started out of the wellbore with the packer and went back into the hole with RBP and packer to test casing below squeezed perforations. We first tested across squeezed perforations and then the annulus above the perforation. RBP was set at 7550 feet packer was set above the RBP and RBP was pressure tested for leaks and packer was released. At 6:00 p.m., 640 psig was left on the annulus with the well shut-in overnight.

Friday, October 20, 2006

Subsurface personnel arrived at the location at 6:45 a.m. MST. At 7:00 a.m., the wellhead had 770 psig from 640 psig over 13 hours, a net pressure build of 130 psi. Rig crew arrived at 7:20 a.m. Subsurface and Navajo Refining received approval from the State of New Mexico after they reviewed the revised procedure and CBL/VDL log to complete the well for injection without additional cementing. The State of New Mexico requested that we try to find the leak in the casing within 500 feet to 1000 feet of the leak. Rig crew pulled 8 stands and one joint of pipe and the packer was set at 6985 feet to isolate the cement squeezed perforated interval. The squeeze interval was initially pressure tested to 490 psig and the annulus was initially pressure tested to 632 psig. The pressure test ran for 5 hours and appeared to stabilize after 2 hours.

After 2 hours, the squeezed interval was losing 6 psi/hr while the annulus was gaining about 0.75 psi/hr due to thermal effects. The final pressure for the squeezed interval was 458 psig and the final pressure for the annulus was 640 psi. At 2:30 p.m., the rig crew picked up the RBP and TOOH to 1255 feet where the RBP was reset. At 5:30 p.m., the casing was pressure tested from surface to 1255 feet with an initial pressure of 570 psig. At 6:00 p.m., the well was shut-in over night with 569 psig on the casing.

Saturday, October 21, 2006

Subsurface personnel arrived at the location at 6:45 a.m. MST. At 7:00 a.m., the wellhead had 540 psig from 569 psig over a 13 hour period, a net pressure loss of 29 psi at a rate of 2 psi/hr with the RBP set at 1255 feet (48 bbl). Rig crew arrived at 7:30 a.m. Continued to monitor pressure to verify loss rate. At 7:30 a.m., pressure was 539 psig and at 8:00 a.m. pressure was 538 psi. Packer hand released RPB and rig crew TOOH with packer and RBP. Charlie's Services inspected the 4-1/2-inch tubing. Rig crew TIH and TOOH with work string and started laying down the work string as they came out of the hole. Charlie's inspection crew found two bad joints of 4-1/2-inch tubing as marked on their tally. Rig crew finished laying down the work string and loaded 4-1/2-inch tubing onto the pipe rack. Well was shut-in for the night.

Sunday, October 22, 2006

Pipe, location, and rig personnel are ready for casing crew. Wellhead, packer, and annulus fluid to arrive on Monday.

Monday, October 23, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew arrived at 7:30 a.m. and replaced the old Cameron 7-1/16-inch 5M x 11-inch 3M spool with a new Superior 7-1/16-inch 5M x 11-inch 3M spool. P-seals were pressure tested for 15 minutes to 3000 psi with no leakoff. BOP was reseated on the new spool to run the casing into the wellbore. At 12:00 p.m., casing crew started into the wellbore with packer and 4-1/2-inch tubing. Packer would not go past the 50-foot mark therefore, packer was pulled out of the hole and inspected.

Weatherford had brought to location, a packer for 7", 24 lb/foot casing. The casing in the wellbore was 7 inches, 29 lb/ft casing. Weather had to go back to Hobbs, New Mexico to

pick up the correct packer. Kenco was called, and they had an Arrow X-1 Packer in the shop. Kenco delivered a new 7-inch Arrow X-1 packer to the job site but brought out the wrong size cross-over. At 4:15 p.m., Weatherford brought out a rebuilt 29 lb/ft packer to replace the 24 lb/ft packer that was originally brought out to location. Kenco will have a cross-over on the job site in the morning and Weatherford was sent back to Hobbs. Kenco will install the packer. The well was shut in for the night.

Tuesday, October 24, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Rig crew and casing crew arrived at 7:30 a.m. The crews started running casing at 8:00 a.m. There were no problems getting Kenco's new Arrow Packer into the wellbore. Kenco also used an integral cross over rather than a sedge and casing collar for a cross. At 2:30 p.m., casing crew ran 7567 feet of casing into the hole and each joint was torqued to specifications at 1600 lbs. The wellbore was circulated full of fluid (240 bbls), then 300 PSI pumped 23.8 bbls of squeeze chemical. The reverse unit operator pumped 95 bbls of inhibited brine water followed by 14.29 bbls of squeeze chemical, leaving 7.23 bbls of brine in the bottom of the annulus. The weight of the brine circulated and the inhibited brine in the annulus was 8.7 ppg. The weight of the squeeze chemical was 10.2 ppg.

At 5:30 p.m., the bottom of the Arrow packer was set at 7575.73 feet with 37K lb in tension within 7 minutes after we stopped pumping with the well taking fluid at ~0.5 bpm. The length of the packer was 7.2 feet and the length of the cross over was 0.54 feet. Casing slips were set in the spool and the BOP was removed and a rough cut made on the casing. Once all equipment was removed from the area the 4-1/2-inch tubing was dressed off and the wellhead installed. At 7:00 p.m., the well was shut-in for the night.

Wednesday, October 25, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Superior Wellhead arrived at the job site at 7:20 a.m. and pressure tested the P-seals to 3000 psig. Rig crew

and casing crew arrived at 7:30 a.m. Rig crew started mobilizing the rig. The reverse unit operator pumped the annulus full with 2.5 bbls. At 10:00 a.m. 300 PSI arrived at the job site and performed a 545 psi squeeze for 4 hours with no pressure loss. At 3:00 p.m., an annulus pressure test was performed and recorded for one hour by 300 PSI, at a pressure of 490 psig on the chart. At 4:00 p.m., the annulus pressure test showed no pressure loss over the hour. Left 480 psig on the annulus (at 4:30 p.m.) overnight to watch for pressure leaks. At 6:00 p.m., annulus was maintaining 480 psig. Well was shut-in for the night.

Thursday, October 26, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. At 7:00 a.m., EL Farmer trucking was at the job site waiting on someone to load the 2-7/8-inch, PH-6 tubing onto the truck. At 7:15 a.m., Subsurface started loading tubing onto the EL Farmer truck. At 7:30 a.m., Renco Equipment arrived at the job site with a fork lift and completed loading up truck. The first truck picked up slips, stabbing tool, safety valve, and 150 joints of pipe. At 8:00 a.m., annulus was maintaining 480 psig and showed no signs of pressure loss over the 14-hour period. The second truck arrived at 8:05 p.m. and was loaded with 147 joints of pipe. At 8:30 a.m., two Key Fishing Tool trucks arrived at the job site to pick up pump, open top tank, pipe racks, BOP, and catwalk. Key Energy delivered 4 frac tanks to the job site and started to fill the tanks with fresh water and brine. At 4:30 p.m., G&L Tool Rental picked up rig mat boards. At 5:30 p.m., annulus was maintaining 480 psig and showed no signs of pressure loss over the 23.5-hour period. Well was shut-in for the night.

Friday, October 27, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Key will not have all 14 frac tanks spotted and filled by this Saturday therefore the pressure build up/falloff test will have to be postponed until Saturday, November 4th, due to the availability of pump trucks to perform the pressure build up portion of the test.

Trailer and light plant will remain on the job site for another week, as we will need the light plant for the 12 hours of pumping. At 10:00 a.m., Medina's Hot Shot service arrived at the job site and delivered a flange, ring gasket, and bolts from Superior Wellhead to cover the injection line valve. At 3:00 p.m., Key delivered one frac tank to the job site and repaired a leak around the bottom valve on one of the tanks that was delivered yesterday.

Saturday, October 28, 2006

Rusty Smith traveled to Houston and will return on Thursday, November 2, 2006 to oversee the pressure build up and falloff test.

Thursday, November 2, 2006

Rusty Smith traveled to Artesia, New, Mexico and arrived at the jobsite at 2:30 p.m. MST. Key had 14 frac tanks on the site and should have them filled by tomorrow afternoon. Tried to find a 1-13/16-inch hammer wrench for flange bolts and could not find any in Artesia. Contacted Banta to install side flange for pump-in test, Banta will have hammer wrenches for flange. Subsurface acquired fuel containers for light plant. Key will roll frac tanks tomorrow.

Friday, November 3, 2006

Subsurface personnel arrived at the location at 7:30 a.m. MST. Banta Roustabout Service arrived at the location at 8:15 a.m. and installed the injection side flange. Six temperatures were taken at midpoint in the frac tanks to determine the current water temperatures. The shear pin in the packer was set at 80K lbs, which is well above the stress being applied due to temperature changes. Petroplex treated all tanks with biocide and Key came out and rolled the tanks with a vacuum truck.

Alex, with Schlumberger Slickline, was on notice for tomorrow at 3:00 p.m. MST. After rolling the tanks, the average water temperature in the tanks was 60.6° F. Key left the job site at 5:30 p.m.

Saturday, November 4, 2006

Subsurface personnel arrived at the location at 6:20 a.m. MST. Petroplex Pumping Service arrived at the location at 7:10 a.m. and started to rig up their pumps. Key's kill truck arrived at 7:12 a.m. and rigged up to the annulus to hold pressure on the annulus. At 9:15 a.m., treating lines were pressure tested to 4400 psi. Started pumping at 9:19 a.m. at 3 bpm to fill hole and after 28 bbls we caught pressure with 162 psig on the wellhead and 535 psig on the annulus. At 9:42 a.m., with 50 bbls into the well, the rate was increased to 5 bpm at 385 psig and 463 psig on the annulus. At 9:55 a.m., the rate was 5 bpm with 525 psig on the wellhead and 118 bbls pumped. At 10:00 a.m., the second pump was brought on line and the first pump was taken out of service due to a leaking hydraulic hole. At 10:10 a.m., the rate was 5 bpm at 531 psig and 493 psig on the annulus. At 10:15 a.m., the rate was increased to 6.8 bpm at 700 psig on the wellhead with 215 bbls pumped. At 10:45 a.m., the rate was increased to 10 bpm at 1200 psig and 542 psig on the annulus with 438 bbls pumped. At 10:55 a.m., the rate was 10 bpm at 1220 psig with 532 bbls pumped and 730 psig on the annulus. At 1105 a.m., the rate was being maintained at 10 bpm at 1278 psig with 673 bbls pumped.

Petroplex is sending out another pump to the location. The backup Petroplex pump arrived at 12:10 p.m. and the crew rigged up two additional pumps in the treating line for backup. At 1:00 p.m., the rate was 10 bpm at 1185 psig with 1785 bbls pumped, annulus pressure was 775 psig. At 2:30 p.m., the rate was 10 bpm at 1387 psig with 713 psig on the annulus, 2307 bbls pumped. At 3:30 p.m., the rate was lowered to 9 bpm at 1209 psig with 725 psig on the annulus, 3028 bbls pumped. At 5:30 p.m., the rate was 9 bpm at 1171 psig with 719 psig on the annulus. At 6:00 p.m., Schlumberger arrived at the job site and rigged up the slickline unit. At 7:17 p.m., the rate was lowered to 5 bpm to allow the BHP memory tool into the wellbore. At 7:30 a.m., the rate was increased to 5 bpm at

344 psig. At 7:41 p.m., the rate was increased to 9 bpm at 1104 psig. At 9:00 p.m., the pumps started to lose suction pressure and the pumping job was ended (est. 6700 bbls). Well was closed in with 50 psig on the annulus and no pressure on the wellhead. Petroplex rigged down and left location at 11:00 p.m.

Sunday, November 5, 2006

Subsurface personnel arrived at the location at 8:30 a.m. MST, with 800 psig on the annulus. Schlumberger slickline crew arrived at the location at 10:20 a.m. and started out of the hole with memory tool at 8630 feet (10:35 a.m.), taking gradient stops every 1000 feet for 5 minutes. The length of the tool was 27 feet with the top of the tool placed at 8630 feet. First stop was at 7000 feet at 10:40 a.m.. At 12:35 p.m., Schlumberger completed the rig down process and left location at 1:00 p.m. The office trailer was cleaned out and disconnected from the light plant. The light plant was rigged down and made ready for pickup. The well annulus was bled down and left open and the wellhead shut-in. Schlumberger left their 4-1/2-inch 8rd EUE x 2-7/8-inch female 8rd tubing swedge in the top of the wellhead.

Monday, November 6, 2006

Subsurface personnel traveled to Houston and will return on Monday, November 13, 2006, to oversee the temperature survey, radioactive tracer survey, and annulus pressure test. Called Young's to pickup office trailer, Sani-Tech to pick up portable toilets, and Aztec to pickup light plant. Larry at Key was notified to leave one frac tank on location and pickup the remaining frac tanks. Banta was notified for waste removal of pit and location cleanup for the week of November 13th.

Sunday, November 12, 2006

Rusty Smith traveled to Artesia, New Mexico, and arrived at the job site at 5:00 p.m. MST. Key Energy emptied the frac tank bottoms and the tanks are ready to be

disconnected and picked up. Aztec and Sani-Tech still have not removed the equipment from the location. The equipment was taken off rental on November 6, 2006.

Monday, November 13, 2006

Subsurface arrived at the location at 7:30 a.m. MST. Banta roustabout service arrived at the job site at 8:15 a.m. to remove well cutting and clear location of debris, fill in cellar with gravel, and haul off trash. Navajo refining requires that that all produced cuttings and debris contained in the pit be profiled prior to disposal (cannot be disposed under oil field exemption). Key started to remove frac tanks from the location. The OCD pushed back the annulus pressure test, and radioactive tracer survey one day to November 15th. Wood Group Logging services will arrive tomorrow afternoon for testing on the 15th. Petroplex Pumping will provide a pump truck for the radioactive tracer test.

Tuesday, November 14, 2006

Subsurface personnel arrived at the location at 8:30 a.m. MST. Wayne, with the OCD, was emailed at 5:00 p.m. MST November 13, 2006, informing the OCD of the annulus pressure test and radioactive tracer survey set for November 15, 2006. Included in the email were directions to the well and a short testing procedure. Wood Group and Petroplex were contacted to verify the job for tomorrow. Key has filled one frac tank with one load of brine and three loads of fresh water to chase down the radioactive slug. Wind gusted up to 50 mph and Key could not haul any more frac tanks for the day, in accordance with DOT regulations. Because of the high wind speed Wood Group will rig up tomorrow. OCD called and said that they will arrive at 10:00 a.m. tomorrow morning.

Wednesday, November 15, 2006

Subsurface personnel arrived at the location at 7:00 a.m. MST. Petroplex was on location. At 7:50 a.m., Petroplex hooked up to the frac tank and started to circulate the tank and will circulate for +2 hours. Wood Group started to rig up at 8:30 a.m. and

completed the rig up at 10:00 a.m. OCD representatives arrived at the location to witness the annulus pressure test. The annulus was pressure tested to 530 psia and over a one hour period and lost 2.5 psi. According to the OCD, the well passed the annulus pressure test.

The radioactive survey was started and during the 5-minute check, the upper gamma ray sensor malfunctioned and the sensor had to be pulled and replaced. Once the sensor was replaced, the remainder of the survey went as planned and there did not appear to be any radioactive material above the packer or being pumped out of the injection interval.

There were some undocumented perforations below 8600 feet that were taking fluid. During the first chase down, additional RA material was released as a result of the well being on a vacuum. At the end of the job the annulus was pressure tested to 300 psig and held pressure for 1.5 hours and was then bled off and left open. Wood Group rigged down at 8:30 p.m.

Thursday, November 16, 2006

Subsurface personnel called Key to release frac tank and went to location to check well and sign invoices from Basic and G&L Tools in Artesia, NM. Subsurface personnel travel to Houston, Texas.

Subsurface personnel will return to Artesia in ± one month to install WAMS. Subsurface is waiting on the unit to be built.

APPENDIX I

INJECTION ZONE PERMEABILITY DATA

APPENDIX I
CALCULATION OF PERMEABILITY
FROM DST NO. 5
MEWBOURNE OIL COMPANY, CHALK BLUFF 31, STATE NO. 1

The permeability of the interval tested is calculated to be 597 md, as follows from test data in Attachment VIII-9:

$$k = 162 \frac{qB\mu}{mh}$$

where:

- k = permeaibility, md
- q = production rate (bbl/day)
- B = formation volume factor, (reservoir bbl)/(stock tank bbl)
- μ = viscosity, centipoise (cp)
- m = slope of Horner plot, psi/cycle
- h = reservoir thickness, feet

The production rate, q, is calculated from the total volume of fluid, 78.7 bbl, produced during DST No. 5, which lasted for 90 minutes (the sum of lengths of the first and second flow periods). Using these values, q is equal to 1259 bbl/day. The formation volume factor, B, is assumed to be 1. The viscosity, μ, of reservoir brine with 25,000 ppm chlorides (approximately 2% salinity) at a bottom-hole temperature of 130°F is 0.53 cp, taken from the charge in Attachment VI-7. The slope of the Horner plot, m, is taken form the Horner plot for the second flow period of DST no. 5, or 5.348 psi/cycle (page 22 of Attachment VIII-9). The reservoir thickness, h, is the thickness of the interval tested during DST No. 5, or 34 feet (7851 feet – 7817 feet). Substituting these values into the equation above gives:

$$k = 162 \frac{(1259)(1)(0.53)}{(34)(5.348)}$$

$$= 597 \text{ md}$$

APPENDIX J

INJECTED FLUID MONITORING PLAN

SUBSURFACE

INJECTED FLUID MONITORING PLAN

NAVAJO REFINING COMPANY, L.L.C.
ARTESIA, NEW MEXICO

SUBSURFACE PROJECT NO. 60A6781

SUBMITTED
JUNE 2012

SUBSURFACE TECHNOLOGY, INC.
HOUSTON, TEXAS

Subsurface Technology, Inc.
8212 Kelwood Ave., Baton Rouge, LA 70806
(225) 753-2561 / Fax (225) 925-2530 / e-mail: pfbr@subsurfacegroup.com

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 WASTE STREAM DESCRIPTION 1
3.0 INJECTED FLUID CHARACTERIZATION SAMPLING PROGRAM 1
3.1 Sampling Frequency 1
3.2 Sampling Location 2
3.3 Sample Collection Equipment 2
3.4 Sample Containers 2
3.5 Sampling Methodology 2
3.6. Sample Preservation 2
3.7 Field Measurements 3
3.8 Sampling Personnel 3
4.0 FIELD DOCUMENTATION 3
4.1 Water Sampling Log 3
4.2 Sample Container Label 3
4.3 Chain-of-Custody Form 4
4.4 Custody Seal 4
4.5 Field Equipment Calibration Log 4
5.0 QUALITY ASSURANCE/QUALITY CONTROL 4
6.0 SAMPLE CUSTODY AND TRANSPORT 4
7.0 WASTE STREAM ANALYTICAL PROGRAM 5
7.1 Laboratory Requirements 5
7.2 Analytical Parameters 5
8.0 REPORTING 6

1.0 INTRODUCTION

This injected fluid monitoring plan (plan) has been prepared per the requirements of 20.6.2.5207B NMAC. This plan allows for consistent characterization of the injected fluids that are being injected into the three nonhazardous waste injection wells operated by Navajo Refining Company, L.L.C. (Navajo) at their refinery in Artesia, New Mexico. The plan shall be updated as necessary to remain accurate and the analysis remains representative of the fluids being injected into the three nonhazardous waste injection wells.

2.0 INJECTED FLUID DESCRIPTION

The fluid injected into all three Navajo injection wells is comprised of exempt and nonexempt nonhazardous oilfield waste that is generated in the refining process. Waste waters from process units, cooling towers, boilers, streams from water purification units, desalting units, recovered and treated ground water, and general waste waters, all waters will be blended to form the injected fluid into the injection wells.

3.0 INJECTED FLUID CHARACTERIZATION SAMPLING PROGRAM

The following sampling program shall be used to collect a representative sample of the injected fluid for chemical analysis to demonstrate the consistency of the fluid composition.

3.1 Sampling Frequency

The injected fluid shall be sampled on a quarterly basis unless a change in the injected fluid composition occurs as a result of operating changes at the Navajo refinery. If the injected fluid composition does change, a representative sample of the waste stream shall be collected at that time and reported to OCD.

3.2 Sampling Location

A representative sample of the injected fluid shall be obtained from the discharge side of the wastewater transfer pump that sends wastewater to the wellheads. The sample port is located at the refinery's wastewater treatment unit.

3.3 Sample Collection Equipment

The fluid samples shall be collected directly from the sample port on the wastewater transfer line into appropriately prepared sample containers required for specific analyses.

3.4 Sample Containers

The injected fluid sample shall be collected in new and previously unused sample containers as provided by the off-site commercial laboratory performing the analyses.

3.5 Sampling Methodology

The injected fluid sample shall be poured directly into the new and previously unused sample containers provided by the off-site commercial laboratory performing the analyses.

3.6 Sample Preservation

EPA and/or ASTM sampling protocols shall be used, including provisions for preserving samples when required. Sampling personnel shall verify that appropriate preservatives are present in sample containers if required by analytical protocol.

3.7 Field Measurements

Field measurements of pH, specific conductance, and temperature shall be recorded on a representative sample of the injected fluid during each quarterly monitoring event.

3.8 Sampling Personnel

Navajo environmental staff or qualified contractor sampling personnel shall be responsible for collecting the injected fluid samples in accordance with the procedures presented in this plan.

4.0 FIELD DOCUMENTATION

The following procedures shall be implemented to properly document each injected fluid characterization sampling event as described in Section 3.0.

4.1 Water Sampling Log

A water sampling log shall be completed at the time the sample is collected. The type of information to be recorded on the water sampling log includes, but is not limited to, the following:

- Date and time of sampling
- Weather conditions
- Sampling location
- Sampling method
- Sample identification
- Field measurements
- Laboratory analyses
- Sampling personnel

4.2 Sample Container Label

Each laboratory provided sample container shall have a label adhered to the outside of the container providing pertinent information identifying the sample,

location and time the sample was collected, analytical parameters, preservatives, and sampler identification.

4.3 Chain-of-Custody Form

A chain-of-custody form shall be completed and accompany each shipment of samples to the off-site commercial laboratory. Each transfer of sample custody shall be signed by both parties on the chain-of-custody form.

4.4 Custody Seal

A custody seal shall be affixed over the opening of the ice chest used to store and transport samples to the receiving laboratory. The laboratory shall note in their Check-In Form that the seal is properly attached and has not been broken.

4.5 Field Equipment Calibration Log

Calibration and maintenance of field equipment (pH, specific conductance, turbidity, and temperature meters) shall be in compliance with the manufacturers' recommended calibration or maintenance procedures. Field logs shall be completed in the field to properly document all calibration and maintenance activities to field equipment.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

A trip blank will be prepared during each waste stream characterization sampling event as described in Section 3.0.

6.0 SAMPLE CUSTODY AND TRANSPORT

Injected fluid characterization samples shall be maintained in the custody of the sampling personnel until the samples are transported to the laboratory or transferred to a representative of the receiving laboratory. Upon transfer of custody, the chain-of-custody record shall be completed and signed by the sampling personnel. The signed chain-of-custody record shall be placed in a plastic bag inside the shipment cooler containing the properly labeled injected fluid

samples. A signed and dated custody seal shall be placed over the lid of the opening of the sample cooler to indicate if the cooler has been opened during delivery prior to receipt by the laboratory.

The chain-of-custody record shall be signed and returned by the laboratory no later than the date the analytical results are available. If the samples are delivered in person by the sampling personnel or picked up by a laboratory employee, the chain-of-custody record shall be signed by the laboratory representative immediately upon relinquishment of the samples by the sampling personnel. One of the copies shall be maintained by the sampling personnel and the remaining copies kept with the samples.

7.0 WASTE STREAM ANALYTICAL PROGRAM

The following describes the injected fluid characterization analytical program.

7.1 Laboratory Requirements

The laboratory performing the analytical services for this project shall be an accredited laboratory. The laboratory shall possess a quality control/ quality assurance (QA/QC) manual prepared in accordance with the requirements of the NELAC certification program. A current copy of the plan shall be sent by the laboratory to the project manager in charge. When the manual is updated by the laboratory the updated version of the manual shall be sent to the project manager. The previously issued copy of the manual must be archived by the project manager to insure traceability of the data generated using the applicable QA/QC manual.

Navajo is currently utilizing ALS Environmental, a commercial laboratory located in Houston, Texas. ALS is a NELAC accredited laboratory.

7.2 Analytical Parameters and Methods

The injected fluid samples are analyzed for the following listing of parameters that are representative of the injected fluid:

- VOC (EPA Method 8260)
- SVOC (EPA Method 8270)
- Total Metals (EPA Method 6020/7000)
- RCI
- Chloride
- Sulfate
- Alkalinity
- TDS
- pH
- Conductivity

The parameter listing shall be updated as necessary to remain accurate and the waste analysis remains representative of the injected fluid being injected.

8.0 REPORTING

The laboratory performing the injected fluid characterization analyses shall generate a report of the analytical results. These analytical results shall be compiled with the field measurement results and tabularized. The results of each waste stream characterization sampling event, including tabularization of analytical results, copies of laboratory reports, and copies of water sampling logs, shall be provided to OCD within 90 days following each sampling episode. The report shall document any obvious fluctuations in the injected fluid composition.

APPENDIX K

INJECTION WELL CLOSURE PLAN

APPENDIX K

INJECTION WELL CLOSURE PLAN
NAVAJO REFINING COMPANY, L.L.C.
(WDW-3)

Final Testing Program

After ceasing injection in the well and prior to commencing physical closure procedures of the injection well, a pressure falloff test will be conducted in order to determine if the transient pressure data have conformed with predicted values within the injection interval. The brine injected for the falloff test will be nonhazardous and will also act as a buffer between the injectate and the well. Appropriate mechanical integrity testing shall also be conducted to ensure the integrity of the long casing string and cement that will remain in the ground after closure. Notify the OCD of mechanical integrity and pressure falloff testing procedures of the long casing string and cement that will remain.

Mechanical Integrity Testing

An annular pressure test and radioactive tracer survey will be conducted prior to removing the injection tubing and packer. Subsequent to tubing and packer removal, a casing inspection and a cement bond/variable density log will be conducted from total depth to the surface.

Pressure Falloff Testing

A wireline unit with pressure control equipment will be rigged up to run in the hole with a surface recording bottom-hole pressure transducer with temperature capabilities to position the transducer at the top of the injection interval. The transducer will be stabilized prior to injecting brine.

Two thousand barrels of brine will be injected at a constant rate. The brine will be compatible with the injection zone reservoir fluid as determined by compatibility testing. The pressure buildup will be recorded. After pumping is ceased, the pressure falloff will be recorded for a minimum of 24 hours after shut in. The pressure derivative curve to will be monitored confirm the test has investigated beyond the wellbore storage effect.

Regulatory Notification

Navajo will notify OCD at least 60 days before commencing plugging and abandonment procedures on any waste disposal well.

Plug and Abandonment Procedures

The balance plug method will be employed to plug and abandon this well. This technique involves displacing the cement through a work string which has been run into the casing. The cement slurry is pumped down the work string and up the annulus to a calculated height which would balance the cement inside and outside the work string. The work string is then slowly pulled out of the cement leaving a solid, uniform plug.

Heavy drilling mud is placed between the cement plugs. This mud establishes a hydrostatic gradient that will exceed the static bottom-hole pressure at the time of plugging and any anticipated pressures which would result from future injection activity in these particular formations.

Finally, after all cement plugs are set, the well casings will be cut off 3 feet below grade and capped by welding a ½ inch steel plate to the outermost casing string.

The plugging and abandonment procedures for a typical well are described as follows:

1. Prepare the well and location for plugging. Remove the well monitoring equipment and wellhead injection piping.
2. Notify the OCD of the MIT schedule. Conduct an annulus pressure test and a radioactive tracer survey to satisfy OCD mechanical integrity requirements.
3. Move in and rig up the frac tanks and pump for the pressure falloff test. Fill frac tanks with 2,000 barrels of brine.
4. Rig up the wireline unit with pressure control equipment. Run into the hole with a surface recording bottom-hole pressure transducer with temperature capabilities and position the transducer at the top of the perforated injection interval. Allow the transducer to stabilize prior to injecting brine.

5. Commence injecting 2,000 barrels of brine at a constant rate. The brine will be compatible with the injection zone reservoir fluid, as determined by compatibility testing. Record the pressure buildup. Cease pumping and record the pressure falloff. Measure the pressure falloff for a minimum of 24 hours after shut in. Monitor the pressure derivative curve to confirm the test has investigated beyond the wellbore storage effect.

6. Rig down the wireline unit.

7. Move in and rig up the well service unit with BOP equipment and a 2 7/8 inch work string.

8. Remove the wellhead and install the BOP equipment and stripper head.

9. Unseat the seal assembly from the packer and displace the annular fluid by flushing with 200 bbls of brine. Trip out of the hole laying down the 4 ½ -inch injection tubing.

10. Rig up the wireline unit and run a casing inspection log and a cement bond/variable density log from total depth to the surface. Pick up and run a wireline set cement retainer at 9,022 feet. Rig down the wireline unit.

11. Rig up cement service equipment. Cement shall be Class "A" (or comparable), weighing 15.6 pounds/gallon. Pressure test the surface lines as required.

12. Run in the well with the work string and sting into the cement retainer at 9,022 feet. Establish a pump-in rate into the injection perforations and pump 100 sx of Class "A" cement below the retainer. Pull out of the retainer and spot sufficient Class "A" (or comparable) cement slurry to develop a 100-foot plug above the cement retainer. Pull the tubing up above the top of cement and reverse out excess cement. Catch a sample of cement to check curing time and compressive strength. Allow the cement to set overnight (8-hour minimum) before tagging top of plug to confirm proper setup and location. Pressure test the plug to the pressure recommended by the OCD.

13. Set a balanced cement plug using Class "A" cement from the top of cement at approximately 9,022 feet to the surface.

14. Cut casing strings ±3 feet below ground level.

15. Weld a ½ inch steel plate across the 13-3/8-inch casing. Inscribe on plate, in a permanent manner, the following information: (1) operator name, (2) closure date, and (3) UIC permit number.

16. Release all equipment and clean up the location.

17. Submit closure data to the TCEQ.

Once closure operations are complete and the well is officially plugged and abandoned, a closure report certifying that the well or wells were closed in accordance with applicable requirements, will be submitted to the OCD within 30 days. The report will include any newly constructed or discovered wells or information, including proposed well data, within the area of review. When plugging and abandonment is complete, Navajo will submit certification to the OCD that the injection well has been closed in accordance with applicable OCD regulations.

APPENDIX L

FINANCIAL ASSURANCE DOCUMENTATION

Form C & G-1
Adopted 6-17-77
Revised 1-1-89

STATE OF NEW MEXICO

ONE-WELL PLUGGING BOND

For CHAVES, EDDY, LEA, MCKINLEY, RIO ARRIBA, ROOSEVELT, SANDOVAL, AND SAN JUAN COUNTIES ONLY

BOND NO. 6186995
AMOUNT OF BOND $25,000
COUNTY Eddy

NOTE: For wells less than 5,000 feet deep, the minimum bond is $5,000.00*
For wells 5,000 to 10,000 feet deep, the minimum bond is $7,500.00*
For wells more than 10,000 feet deep, the minimum bond is $10,000.00

*Under certain conditions, a well being drilled under a $5,000.00 or $7,500.00 bond may be permitted to be drilled as much as 500 feet deeper than the normal maximum depth, e.g., a well being drilled under a $5,000.00 bond may be permitted to go to 5,500 feet and a well being drilled under a $7,500.00 bond may be permitted to go to 10,500 feet. (See Rule 101)

File with Oil Conservation Division, 1220 South Saint Francis, Santa Fe, NM 87505

KNOW ALL MEN BY THESE PRESENTS:

That Navajo Refining Company (an individual) (a general partnership) (a corporation, limited liability company or limited partnership organized in the State of Delaware and authorized to do business in the State of New Mexico), as PRINCIPAL, and Safeco Insurance Co of America a corporation organized and existing under the laws of the State of New Mexico and authorized to do business in the State of New Mexico, as SURETY, are firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Division of the Energy, Minerals and Natural Resources Department (or successor agency) (the DIVISION), pursuant to NMSA 1978, Section 70-2-14, as amended, in the sum of Ninety-five thousand for the payment of which the PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents,

The conditions of this obligation are such that:

WHEREAS, the PRINCIPAL has commenced or may commence the drilling of one well to a depth not to exceed 5,000 feet, to prospect for and/or produce oil or gas, carbon dioxide gas, helium gas or brine minerals, or does own or operate, or may acquire, own or operate such well, the identification and location of said well being:

WDW #3, Unit N (Name of well), located 790 feet from the S (North/South) line and 2250 feet from the W (East/West) line of Section 1, Township 18 (North) (South), Range 27 (East) (West), NMPM, Eddy County, New Mexico.

NOW, THEREFORE, if the PRINCIPAL and SURETY or either of them, or their successors or assigns or any of them, shall cause said well to be properly plugged and abandoned when dry or when no longer productive or made for other beneficial purpose, in accordance with the rules and orders of the DIVISION, including but not limited to Rules 101 [19.15.3.101 NMAC] and 202 [19.15.4.202 NMAC], as such rules now exist or may hereafter be amended;

THEN AND IN THAT EVENT, this obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

Navajo Refining Company
PRINCIPAL
100 Crescent Court Ste 1600
Dallas, Texas 75201-6927
Address

By: [signature]
Signature

Vice President
Title

If PRINCIPAL is a corporation, affix corporate seal here.

Safeco Insurance Co of America
SURETY
Adams Bldg, ADM-3, 4634 154th PL NE
Redmond, Washington 98052
Address

S. Gary Sims, Attorney-In-Fact

Corporate surety affix corporate seal here.

RECEIVED
1995 JUL 13 PM 3
WASHINGTON

Form C-A & C-B-1

ACKNOWLEDGMENT FORM FOR INDIVIDUAL

STATE OF _____)
ss.
COUNTY OF _____)

This instrument was acknowledged before me on _____ 20__ by _____
(Name of individual)

_____
Notary Public

SEAL

_____
My Commission Expires

ACKNOWLEDGMENT FORM FOR PARTNERSHIP, CORPORATION OR LIMITED LIABILITY COMPANY

STATE OF Texas)
ss.
COUNTY OF Dallas)

This instrument was acknowledged before me on 5th 2004 by Scott C. Surplus
(Name of Person Signing Instrument)
as Vice President of Navajo Refining
(Name of partnership, corporation or limited liability company)

PATTY SENDERLING
MY COMMISSION EXPIRES
November 18, 2004

Patty Senderling
Notary Public

_____
My Commission Expires

ACKNOWLEDGMENT FORM FOR CORPORATE SURETY

STATE OF New Mexico)
ss.
COUNTY OF Eddy)

This instrument was acknowledged before me on 4-1 2004 by S. Gary Sims
(Name of Attorney in fact)

OFFICIAL SEAL
Susan E. Lopez
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 8-6-2007

Attorney-in-Fact for Safeco Insurance Co of America
(Name of corporate surety)

Susan E. Lopez
Notary Public

8-6-2007
My Commission Expires

Corporate Surety must have Power of Attorney

APPROVED BY:

OIL CONSERVATION DIVISION OF NEW MEXICO

By _____

Date _____

SAFECO

POWER OF ATTORNEY

SAFECO INSURANCE COMPANY OF AMERICA
GENERAL INSURANCE COMPANY OF AMERICA
HOME OFFICE: SAFECO PLAZA
SEATTLE, WASHINGTON 98185

No. 10152

KNOW ALL BY THESE PRESENTS:

That SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA, each a Washington corporation, does each hereby appoint

S. GARY SIMS; CHARLENE M. WARD; Artesia, New Mexico

its true and lawful attorney(s)-in-fact, with full authority to execute on its behalf fidelity and surety bonds or undertakings and other documents of a similar character issued in the course of its business, and to bind the respective company thereby.

IN WITNESS WHEREOF, SAFECO INSURANCE COMPANY OF AMERICA and GENERAL INSURANCE COMPANY OF AMERICA have each executed and attested these presents

this 1st day of April, 2004.

cBmead

CHRISTINE MEAD, SECRETARY

Mike McGavick

MIKE MCGAVICK, PRESIDENT

CERTIFICATE

Extract from the By-Laws of SAFECO INSURANCE COMPANY OF AMERICA
and of GENERAL INSURANCE COMPANY OF AMERICA:

"Article V, Section 13. - FIDELITY AND SURETY BONDS ... the President, any Vice President, the Secretary, and any Assistant Vice President appointed for that purpose by the officer in charge of surety operations, shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the company in the course of its business... On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

Extract from a Resolution of the Board of Directors of SAFECO INSURANCE COMPANY OF AMERICA
and of GENERAL INSURANCE COMPANY OF AMERICA adopted July 28, 1970.

"On any certificate executed by the Secretary or an assistant secretary of the Company setting out,

(i) The provisions of Article V, Section 13 of the By-Laws, and
(ii) A copy of the power-of-attorney appointment, executed pursuant thereto, and
(iii) Certifying that said power-of-attorney appointment is in full force and effect,

the signature of the certifying officer may be by facsimile, and the seal of the Company may be a facsimile thereof."

I, Christine Mead, Secretary of SAFECO INSURANCE COMPANY OF AMERICA and of GENERAL INSURANCE COMPANY OF AMERICA, do hereby certify that the foregoing extracts of the By-Laws and of a Resolution of the Board of Directors of these corporations, and of a Power of Attorney issued pursuant thereto, are true and correct, and that both the By-Laws, the Resolution and the Power of Attorney are still in full force and effect.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the facsimile seal of said corporation

this 1st day of April, 2004.

SAFECO INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1953 STATE OF WASHINGTON

GENERAL INSURANCE COMPANY OF AMERICA CORPORATE SEAL 1926 STATE OF WASHINGTON

cBmead

CHRISTINE MEAD, SECRETARY

S-0974/BAEP 2/01

® A registered trademark of SAFECO Corporation

04/01/2004 PDF

APPENDIX M

WDW-3 OPEN-HOLE LOG

SUBSURFACE

APPENDIX O

DRAFT PUBLIC NOTICE

APPENDIX O

PUBLIC NOTICE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

In accordance with the laws of the State of New Mexico and the particular reference to the provisions of Subsection F in 20.6.2.3108 NMAC, Navajo Refining Company, L.L.C. is applying to renew a discharge permit to operate a Class I nonhazardous injection well located approximately 14 miles east of the refinery in the Empire Oil Field. The petroleum refinery is located at 501 East Main in Artesia, New Mexico 88210. The nonhazardous injection well is designated WDW-3.

The Navajo refinery is a 100,000 barrel per day oil refinery that refines Permian Basin crude oil that is gathered in West Texas and Southeast New Mexico. The fluid injected into WDW-3 is comprised of exempt and nonexempt nonhazardous oilfield waste water that is generated in the refining process.

WDW-3 is one of three nonhazardous injection wells at the Navajo refinery that are permitted to inject at a maximum composite rate of 800 gallons per minute. Subsurface disposal at WDW-3 occurs within a permitted injection zone from approximately 7,303 feet to 8,894 feet below land surface. The total dissolved solid concentration of the permitted injection zone is in excess of 10,000 milligrams per liter and is not considered to be a source of drinking water.

The Oil Conservation Division will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices. Interested parties may obtain information, submit comments, and request to be placed on a facility-specific mailing list by contacting the OCD at the following address:

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
Environmental Bureau
1220 South St. Francis Drive
Santa Fe, NM 87505
(505) 476-3440

When corresponding, please reference the name of the applicant and the well name.