UIC - I - 8

EPA FALL-OFF TEST PLAN

(WDW-1)

DATE:

2008 - Present

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, March 02, 2012 7:25 AM
To: 'Ken Davis'
Cc: David C. Shaw (dcshaw@nitecllc.com); Ken-E Johnson (Johnson.Ken-E@epamail.epa.gov); Rusty Smith; Jerry Taylor; robert.combs@hollyfrontier.com; Johnny Lackey (johnny.lackey@hollyfrontier.com); Susie McKenzie (McKenzie.Susie@epamail.epa.gov); Brian Graves (Graves.Brian@epamail.epa.gov); Thurman Witte; Sanchez, Daniel J., EMNRD; Jones, William V., EMNRD
Subject: RE: 3D Reservoir Performance Modeling. Subsurface Project No. 60A6781

Ken:

Good morning. You've copied a whole lot of people and are now requesting a telephone conference call with the EPA.

First, a conference call is not needed and the EPA is not directly involved with directing the OCD's UIC Program on a day-to-day basis. However, the OCD may consult with Mr. Johnson (EPA) on the software and the approach the operator is taking to prove that there is interconnectivity between the 3 UIC Wells seating in the same injection zone. As with any model, all available well data and information on the reservoir must be used to substantiate the model inclusive of the 3 UIC Class I (NH) Disposal Wells. The purpose of the model as the OCD understands it is to prove that the 3 UIC wells are in communication and the program's use is to attempt to prove this. If this can be proven to the OCD, then the operator would like to stagger the annual Fall-Off Test (FOT) between the 3 wells (one FOT per year). If the above is correct, and the operator will be using all well information in the model that exists in the vicinity of the 3 UIC wells, then the OCD would just need to check with Mr. Johnson on the approach and rationale or basis for the model and what is attempting to satisfy.

After OCD discusses the matter with Mr. Johnson, and the OCD UIC Director Mr. Sanchez, the OCD may approve the approach with the clarification that the operator will be using all available well information with assumptions that are accurate for the model. In addition, the time frame for verification of interconnection of the 3 UIC Wells needs to be understood.

The OCD has approved the original Fall-Off Test Plan that the operator uses for its annual UIC Class I (NH) Disposal Well FOT. The operator will need to continue modeling the FOT as it has in the past and the Eclipse Software System would not be used to supersede current FOT information received in currently submitted FOT reports under the OCD approved FOT Plan.

The OCD notices that only one FOT has been completed on WDW-3 so far, but we have not received notification on the other FOTs for WDWs 1 and 2. Please provide the OCD with a schedule for the FOTs.

Please clarify the OCD's understanding on the proposed Eclipse Software Model proposal above to confirm the OCD position on the matter of staggering the FOT between the 3 UIC Wells so that it may not have to run annual FOTs on each well. The OCD has indicated in past discussions on the interconnectivity between the 3 UIC Wells would be difficult to show even for wells within a mile away due to sedimentation and variation in porosity and permeability 10s to 100s of feet away from any given injection well.

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/
"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)

From: Ken Davis [mailto:kdavis@subsurfacegroup.com]
Sent: Thursday, March 01, 2012 3:07 PM
To: Chavez, Carl J, EMNRD
Cc: David C. Shaw (dcshaw@nitecllc.com); Ken-E Johnson (Johnson.Ken-E@epamail.epa.gov); Rusty Smith; Jerry Taylor; robert.combs@hollyfrontier.com; Johnny Lackey (johnny.lackey@hollyfrontier.com); Susie McKenzie (McKenzie.Susie@epamail.epa.gov); Brian Graves (Graves.Brian@epamail.epa.gov); Thurman Witte
Subject: FW: 3D Reservoir Performance Modeling. Subsurface Project No. 60A6781

Carl:

The attached is a letter I prepared for you addressing some of the comments you mentioned in your voice mail. Based on yours and other comments I thought it would be useful to have a conference call with the interested parties next week. I suggest March 7, 2012 at 2:00 PM. The Call in and participant codes are listed below.

For convenience, I have copied who I thought would be interested parties. Please add anyone else you feel could contribute (David Shaw is the Eclipse representative).

We've rescheduled the conference call for 2 pm on next Wednesday, March 7. Brian should be available for the call and Susie is planning to call in also. The conference call phone information is the same as before and should be accessible from multiple locations: EPA is sponsoring the call so contact Ken Johnson if you have problems. Otherwise call me.

Ken E. Davis
Principal Staff Consultant
Subsurface Technology, Inc.
6925 Portwest Dr., Suite 110
Houston, Texas 77024
Office: (713) 880-4640
Fax: (713) 880-3248
Cell: (713) 201-3720

Call in number: 1-866-299-3188
Conference code: 2146657198#

Thanks,

Ken Johnson, PE
Environmental Engineer
US EPA R6 - Groundwater/UIC Section
6WQ-SG
1445 Ross Avenue
Dallas, Texas 75202-2733

johnson.ken-e@epa.gov
214-665-8473

Chavez, Carl J, EMNRD

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Sent: Thursday, March 01, 2012 3:07 PM
To: Chavez, Carl J, EMNRD
Cc: David C. Shaw (dcshaw@nitecllc.com); Ken-E Johnson (Johnson.Ken-E@epamail.epa.gov); Rusty Smith; Jerry Taylor; robert.combs@hollyfrontier.com; Johnny Lackey (johnny.lackey@hollyfrontier.com); Susie McKenzie (McKenzie.Susie@epamail.epa.gov); Brian Graves (Graves.Brian@epamail.epa.gov); Thurman Witte
Subject: FW: 3D Reservoir Performance Modeling. Subsurface Project No. 60A6781
Attachments: 3D Reservoir Performance Modeling.docx

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1445 Ross Avenue
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214-665-8473

SUBSURFACE

March 1, 2012

Mr. Carl Chavez
New Mexico OCD
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: Utilization of Eclipse 3-D modeling software in the Navajo Permit Renewal Application and Pressure Falloff Testing
Subsurface Project No. 60A6781

Dear Carl:

Thank you for the quick response to my voicemail. To better understand the operational characteristics of the Navajo refining waste disposal well (WDW) system, we are considering the use of computer simulation.

The objective of the study is to demonstrate that the three wastewater injection wells used by the Holly Corp. refinery in Artesia, New Mexico are in reservoir communication with each other. This would predict that their future hydraulic performance will be identical to each other and, in particular, any well test that is made on an individual well will yield identical performance to the other two wells.

Our proposed approach to demonstrating communication between the three injection wells is to perform a detailed simulation of the monthly injection volume and pressure performance of the reservoir. We would build a three-dimensional dynamic reservoir model using Eclipse, which is regarded as an industry standard, and then demonstrate that a single reservoir accounts for the well performance. In effect, this is an extended interference test, where variations in flow rate in each well affects the pressure in the other wells.

The work program will begin with data preparation and entry. A three-dimensional model would be built using contour maps of the structure of the reservoir and its gross thickness, and the position of the completions of the injection wells would be placed within this three-dimensional model.

The model would be built around the Eclipse software system supplied by Schlumberger, Inc. this software is an industry standard reservoir simulator that, in particular, takes into account the full three-dimension description of the reservoir, three-phase behavior of the reservoir fluids, the performance of the well completions, and the rate-pressure response of the rocks. It is widely used in the petroleum industry to perform prediction and planning studies in oilfield development.

Subsurface Technology, Inc.
6925 Portwest Drive Suite 110 Houston TX 77024
713/880-4640 Fax 713/880-3248 1-800-535-4105

Other reservoir properties, notably the rock permeability and porosity, will be assessed from previous well tests and from open-hole well logs. The model will then be run to simulate the pressure performance corresponding to the recorded injection volumes over time since the wells were put into service.

The model will then be tuned by adjusting reservoir parameters, and it is anticipated that the predicted pressure response will match the actual recorded pressures closely. This will demonstrate that the recorded rate pressure performance is consistent with the wells being in the same reservoir and that; this reservoir has the parameters input into the model.

This model can be used in the future for planning and for prediction work as well.

We contacted Ken Johnson, with the the EPA, Region VI, in Dallas, and the EPA is familiar with the software.

Your comments on the matter would be appreciated.

Very truly yours,

Ken E. Davis
Principal Staff Consultant

KED/jz

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: 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
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, go to "Pollution Prevention & Waste Minimization" at:
http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

HOLLYFRONTIER
THE HOLLYFRONTIER COMPANIES

August 31, 2011

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

RE: Fall Off Test Plan
Navajo Refining Company
Disposal Wells WDW-1, WDW-2, WDW-3

Carl,

Enclosed, please find two copies of our 2011 Pressure Fall Off (PFO) Plan for our injection wells. We plan to implement these tests on approximately October 17, 2011, November 14, 2011 and December 19, 2011. We are also plan to run temperature logs on all three wells (see pages 7, 9, 10). Additionally, we will re-run the annulus pressure test on WDW-2 (Chukka), see page 9. The actual field work dates may differ from those stated above as they are dependent on equipment availability.

If there are any questions concerning this submission, please call me at 575-746-5281.

Sincerely,
NAVAJO REFINING COMPANY, LLC

Darrell Moore

Darrell Moore
Environmental Manager for Water and Waste

Encl:

SUBSURFACE

August 29, 2011

Mr. Darrell Moore
Navajo Refining Company
P.O. Box 159
Highway 82 East
Artesia, New Mexico 88211

RE: Navajo WDW-1, WDW-2 and WDW-3, 2011 PFO Testing, Temperature Log and APT Re-do on WDW-2
Subsurface Project No. 70A6645

Darrell:

Enclosed are four (4) copies of the proposed 2011 Pressure Falloff (PFO) testing procedure. We plan to implement these tests on approximately October 17, November 14 and December 19, 2011. We also plan to run temperature logs on all three wells (see pages 7, 9 and 10). Additionally, we will re-run the annulus pressure test on WDW-2 (Chukka), see page 9.

Please submit these procedures to the OCD for approval. The actual field work dates may differ from those stated above as they are dependent on equipment availability.

Sincerely,

Ken E. Davis
Principal Staff Consultant

KD/bl
Enclosures

c: (w/o enclosures)
Wayne Landon
Tim Jones
Russell L. Smith
Larry McDonald

Subsurface Construction Corp.
7020 Portwest Drive Suite 100 Houston TX 77024
713/880-4640 Fax 713/880-3248 1-800-535-4105
www.subsurfacegroup.com

SUBSURFACE

DEVELOPMENT AND IMPLEMENTATION OF PRESSURE FALL-OFF TEST PLAN FOR NAVAJO REFINING WASTE DISPOSAL WELLS 1 (WDW-1 MEWBOURNE), WELL 2 (WDW-2 CHUKKA), AND WELL 3 (WDW-3 GAINES)

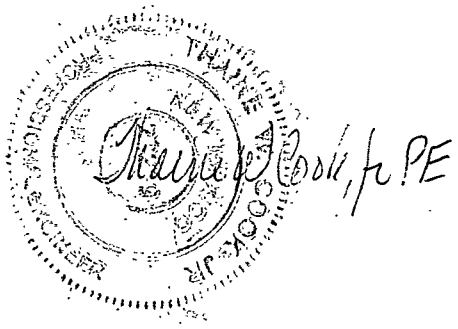
NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO
PROJECT NO. 70A6645

TEST PLAN SUBMITTED:
AUGUST 2011

SUBSURFACE TECHNOLOGY, INC.
6925 PORTWEST DR., STE. 110
HOUSTON, TEXAS 77024
pfh@subsurfacegroup.com

To whom it may concern:

I Thane Walter Cook, Jr PE certify that the engineering materials contained herein have been prepared by personnel under my supervision. I have met the requirements of NMSA 1978 61-23-3 (definition of responsible charge) with respect to these materials. I have personally reviewed the content and made any calculations and changes needed.



Thaine W. Cook, Jr. PE

August 26, 2011

New Mexico PE 20219

New Mexico Oil Conservation Division
UIC Class I Well Fall-Off Test Guidance with Temperature Survey
(December 3, 2007)

REVISED 2011 TESTING PROCEDURE
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Well No. 1 (Mewbourne)
Well No. 2 (Chukka)
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EXHIBIT 5: Historical Data 2009 and 2010 Falloff Test Results
Well No. 1 (Mewbourne)
Well No. 2 (Chukka)
Well No. 3 (Gaines)

EXHIBIT 6: Changes to 2010 Test Plan

New Mexico Oil Conservation Division
UIC Class I Well Fall-Off Test Guidance

Why does a fall-off test need to be performed?

From New Mexico Oil Conservation Division (OCD) Guidance Document.

Fall-off testing is a pressure transient test conducted on injection well formations to assess individual well conditions. The test provides the state regulatory agency with the necessary information to assess the validity of requested or existing injection well permit conditions and satisfy the permitting objective of protecting underground sources of drinking water (USDW). The test may also provide information about reservoir and completion characteristics such as transmissibility, skin factor, bottom-hole injection pressure, reservoir static pressure, and geologic boundaries.

In addition to the state UIC regulatory requirements, Federal UIC regulations in 40 CFR Part 146 have monitoring requirements applying to both Class I hazardous and nonhazardous injection wells that include annual fall-off testing. Specifically, Part 146 regulations state "the Director shall require monitoring of the pressure build up in the injection zone annually, including at a minimum, a shutdown of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve" (§146.13 (Non-hazardous)/§ 146.68 (Hazardous). In the case of Class II wells, the regulations may not directly require that a fall-off test be conducted, but under 40 CFR 146.8(f), EPA or the state agency delegated UIC Class II program primacy can require additional testing such as a fall-off test on individual injection wells to ensure protection of USDW's.

Why does a temperature survey need to be performed?

From New Mexico Oil Conservation Division (OCD) UIC Manual
20.6.2.5204 MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. A Class I non-hazardous waste injection well or Class III well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which the secretary 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 secretary considers to be significant.

B. Prior to well injection and at least once every five years or more frequently as the secretary may require for good cause during the life of the well, the discharger must demonstrate that a Class I non-hazardous waste injection well or Class III well has mechanical integrity. The demonstration shall be made through use of the following tests:
20.6.2 NMAC 42
(1) For evaluation of leaks,
(a) Monitoring of annulus pressure (after an initial pressure test with liquid or gas before operation commences), or
(b) Pressure test with liquid or gas;
(2) For determination of conduits for fluid movement,
(a) The results of a temperature or noise log, or
(b) Where the nature of the casing used for Class III wells precludes use of these logs, cementing records and an appropriate monitoring program as the secretary may require which will demonstrate the presence of adequate cement to prevent such movement;

Temperature surveys are performed every 5 years.

Essentials of Fall-Off (PFO) Testing.

From New Mexico Oil Conservation Division (OCD) Guidance Document.

A fall-off test is a pressure transient test involving shutting in an injection well and measuring the wellbore pressure decline versus time after radial flow conditions are achieved and well established in the preceding injection period. It is analyzed using the same pressure transient techniques for oil and gas well pressure build up and drawdown tests. The fall-off period is a replay of the preceding injection period, but is typically less noisy since no injection occurs while the well's pressure change is measured, similar to the pressure build up period in a production well.

Fall-off test data analysis can provide valuable information about both the condition of the wellbore itself and the nature of the reservoir the well injects into. For example, the skin factor parameter obtained from a fall-off test analysis can indicate whether completion damage exists and provide justification for a well stimulation or remedial treatment. The signature of the derivative may also provide insight into the well's completion, for example a negative half slope indicating spherical flow may be caused from wellbore fill or the well's completion. A properly designed fall-off may also provide information about natural fractures or geologic boundaries in the reservoir. The test analysis provides a determination of reservoir transmissibility which can be utilized to predict the relationship between reservoir pressure and injection rate, critical to designing appropriate UIC permit conditions. Recommended published technical references on fall-off testing methodology include Society of Petroleum Engineers (SPE) Monographs Volumes 1 and 5 as well as SPE Textbook Series Volumes 1 and 9.

For more detailed information about the basis, recommended calculations, and procedures for fall-off tests, the reader is referred to the US EPA internet URLs provided below:

USEPA Fall-Off Test Course
http://www.epa.gov/safewater/dwa/electronic/presentations/uic/2003nutsbolts-notebook.pdf

EPA Region 6 Fall-off Guidelines
http://www.epa.gov/region6/water/swp/uic/guideline.pdf

OCD UIC FALL-OFF TEST GUIDANCE

SECTION I – Purpose

The purpose of a fall-off test is to identify injection interval or wellbore problems and injection interval characteristics. The permittee is responsible for developing a testing procedure which will generate adequate data for a meaningful analysis.

SECTION II - Regulatory Citation

Pursuant to all applicable parts of the Water Quality Control Commission (WQCC) Regulations 20.6.2 NMAC and more specifically 20.6.2.3104 - 20.6.2.3999 discharge permit, and 20.6.2.5000-.5299 Underground Injection Control, the Oil Conservation Division (OCD), the OCD UIC Permit requires monitoring of the pressure build up in the injection zone at least

annually, including at a minimum, shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off. This test is known as the formation pressure fall-off test.

In accordance with the above statement "OCD UIC Permit requires monitoring of the pressure build up in the injection zone at least annually, including at a minimum, shut down of the well for a **time sufficient to conduct a valid observation of the pressure fall-off.**", historical data shows that a 30 hour shut down time is sufficient to conduct a valid observation of the pressure falloff. This can be seen in the historical data acquired from the 2009 and 2010 falloff test data (Exhibit V). Any data obtained after 30 hours was inconclusive in determining the reservoir parameters and the flow regime beyond 30 hours could not be identified.

SECTION III - Developing a Test Plan

A plan for conducting the test shall be submitted to OCD for review and approval prior to conducting the test. Plan approval shall be obtained from OCD prior to commencing the test. The plan shall include a proposed schedule. The test plan must address all items listed in the Sections V through IX of this document.

The Test Plan addresses these requirements and includes the requirements of Section V through IX below.

Proposed Procedure Considerations

The following is a proposed test procedure for Well No. 1 (Mewbourne), Well No. 2 (Chukka), and Well No. 3 (Gaines). The volumes and rates were determined from historical data collected during the previous fall-off testing. The rates, wellhead pressures, and bottom-hole pressure will be recorded throughout the procedure. An analysis will be completed using Pan System © pressure transient analysis software. An estimate of the tank volumes associated with the injection/fall-off periods are included at the end of the procedure. The reports for each well will be constructed according to Section IX in this test plan. All other considerations have been addressed in the following Sections, IV through IX.

Procedure

1. Navajo Refining is to maintain a constant injection rate into the disposal well for a minimum of 30 hours prior to testing. The approximate anticipated rates for each well are:

Well No. 1 (Mewbourne)	maximum of 260 gpm (8,914 bpd)
Volume injected 30 hours	11,143 bbls;
Well No. 2 (Chukka)	maximum of 175 gpm (6000 bpd)
Volume injected 30 hours	7,500 bbls;
Well No. 3 (Gaines)	maximum of 300 gpm (10,286 bpd)
Volume injected 30 hours	12,857 bbls.

The injection period used for the determination of the total volume of fluid needed for the injection portion of the testing was 30 hours. The volume is determined from the time it takes to reach radial flow in the reservoir brine as a function of radius of investigation.

These rates are based on historical information gathered after an acid stimulation and after the completion of the wells. The rates are estimates based on averages. The initial well system consisted of two wells and a third well was added in 2007.

The waste fluid will be used during the testing. Samples of the waste fluid should be gathered periodically for viscosity and density determination. Injection rates, pressure, and time will be recorded and submitted to Subsurface for fall-off analysis. The viscosity and density data should be included. If necessary, the flow rate will be controlled at the wing valve. The general procedure is to open the wing valve wide open and let the pump pressure control the flow rate. This will maximize the flow to the well at a steady rate with only one (1) well open in the three (3) well system.

Adequate waste storage has been accounted for using the storage tank located at the refinery. The tank holds 65,000 bbls. The working volume of the tank is 85% of the total capacity. Tank bottom is calculated at 18 % of the total capacity of the tank. The initial volume for the tank prior to starting the testing was calculated as follows:

Well No. 1 (Mewbourne)

Total Waste Fluid Gain for the Test Period	35,486 bbls
Total Waste Fluid Loss to Well No. 1 for the Test Period	11,143 bbls
Total Waste Fluid Generated	46,629 bbls
Initial Tank Volume Tank 1 (65,000 bbls)	12,000 bbls
Final Tank Volume Tank 1 (65,000 bbls)	48,500 bbls

Well No. 2 (Chukka)

Total Waste Fluid Gain for the Test Period	39,129 bbls
Total Waste Fluid Loss to Well No. 2 for the Test Period	7,500 bbls
Total Waste Fluid Generated	49,629 bbls
Initial Tank Volume Tank 1 (65,000 bbls)	12,000 bbls
Final Tank Volume Tank 1 (65,000 bbls)	52,000 bbls

Well No. 3 (Gaines)

Total Waste Fluid Gain for the Test Period	33,771 bbls
Total Waste Fluid Loss to Well No. 3 for the Test Period	12,857 bbls
Total Waste Fluid Generated	46,628 bbls
Initial Tank Volume Tank 1 (65,000 bbls)	12,000 bbls
Final Tank Volume Tank 1 (65,000 bbls)	47,000 bbls

The general procedure for testing each individual well is to inject into the test well for a period of 30 hours, with the two offset wells shut-in. Following the 30 hour injection period, the test well will be shut-in and the pressure fall-off monitored for 30 hours. The two offset Navajo wells will remain shut-in during the fall-off portion of the testing.

Confirmation of the injection rate and volumes will be provided by the continuous monitoring system at the plant. The plant has the ability to continuously monitor flow rates, wellhead pressures, annulus pressures, filter pod differential pressures, line pressures, and tank levels. Pressures and temperatures will be confirmed via data memory logging gauges. The recording time on the gauges will be set at minimum of 10-second intervals. The surface pressure gauge data can be downloaded to ascertain the status of the fall-off testing at any time during the fall-off segment of the procedure. The surface pressure memory gauge will be attached to a tee just above the crown valve.

2. Install a 5000 psi digital quartz memory pressure gauge on the wellhead. Drop tandem 8000 psi sapphire memory gauges into the wellbore and tag fill. Pull the bottom hole memory gauges up to the top of the perforations. Correlate depths from the wellhead at ground level to kelly bushing height as the reference depth. The top of the perforations for each well are as follows:

Well No. 1 (Mewbourne) :	7924 feet RKB;
Well No. 2 (Chukka):	7570 feet RKB;
Well No. 3 (Gaines):	7660 feet RKB.

Monitor injection pressure for one hour after placement of pressure gauge to ensure stabilization. Be sure to synchronize the time on the wellhead gauge and bottom-hole gauge and calibrate to the monitoring computer time. Discontinue injection into the test well and block well in near the wellhead by closing the wing valve and the motorized gate valve. The well should be blocked in as carefully and quickly as possible so as to avoid creating a water hammer effect in the wellbore.

Each wellhead consists of a crown valve, wing valve, and master valve. The crown valves on Well No. 1 and Well No. 2 are two-inch ball valves and the crown valve on Well No. 3 is a four-inch gate valve. The wells will be shut-in via the four-inch wing valves and the motorized gate valves.

3. Monitor the pressure fall-off for minimum of 30 hours. The testing fall-off segment was extended to include a full 30 hour fall-off period for conservative reasons. The 30 hour injection falloff period was determined based on data collected during the 2009 and 2010 falloff testing. The 2009 and 2010 falloff data clearly show that radial flow has been reached by the end of the 30-hour period and any data collected after the 30-hour period was not able to be analyzed and contained no intrinsic value (Exhibit 5).

4. At the end of the fall-off period, discontinue the pressure fall-off test. Tag the bottom of the fill and pull out of the wellbore, slowly with the downhole surface read out and memory gauges making gradient stops every 1000 feet to surface.

5. **With the well still shut in, run a temperature survey from top of fluid level to the fill.** After completing the survey, return the well to Navajo.

The following schedule is proposed after approval of test plan:

Testing of Well No. 1 (Mewbourne) on the second week of November 2011.
Testing of Well No. 2 (Chukka) on the third week of October 2011;
Testing of Well No. 3 (Gaines) on the second week of December 2011;

Testing Rates

The estimated maximum rates into each test well are as follows:

Well No. 1 (Mewbourne)	260 gpm (8,914 bpd)
Well No. 2 (Chukka)	175 gpm (6,000 bpd)
Well No. 3 (Gaines)	300 gpm (10,286 bpd)

This assumes the maximum pressure is 785 psig at the wellhead and can be maintained for 30 hours, and the total generated waste fluid flow rate from the plant processes is 510 gpm. Using the two holding tanks at the plant, the proposed schedules are based on starting tank volumes as described below.

It is assumed the working capacities of the tanks are 85% of their total capacities. Tank 1 has a total capacity of 65,000 bbls and a working capacity of 55,250 bbls. It is also assumed that minimum volume for Tank 1 is 11,700 bbls or 18% of its capacity. All calculations were based on the 85% operating capacity of each tank using minimum volume levels.

Well No. 1 (Mewbourne)

The general procedure for testing Well No. 1 would be to inject into Well No. 1 for a period of 30 hours with Well No. 2 and Well No. 3 shut-in. Following the 30-hour injection period Well No. 1 will be shut-in for 30 hours with Well No. 2 and Well No. 3 shut-in. In the first 30 hours, only Well No. 1 will be operating at its full rate. After the injection period is completed, all three wells will be shut-in for 30 hours. The excess volume generated by the plant will be stored in the holding tank at the plant.

Estimated Well Test Rates

HOURS	24	6	24	10
Total Fluid	**510**	**510**	510	510
Well 1 Mewbourne Test Rates (gpm)	**260**	**260**	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0
Well 3 Gaines Test Rates (gpm)	0	0	0	0

Total Waste Fluid Gain for the Test Period	35,489 bbls
Total Waste Fluid Loss to Well No. 1 for the Test Period	11,143 bbls
Total Waste Fluid Generated	46,629 bbls

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill.

Well No. 2 (Chukka)

The general procedure for testing Well No. 2 would be to inject into Well No. 2 for a period of 30 hours, with Well No. 1 and Well No. 3 shut-in. Following the 30-hour injection period, Well No. 2 will be shut-in for 30 hours, with Well No. 1 and Well No. 3 shut-in. For the first 30 hours, only Well No. 2 will be operating at its full rate. For the next 30 hours, all three (3) wells will be shut-in. The excess volume generated by the plant will be stored in the holding tank at the plant.

HOURS	24	6	24	10
Total Fluid	510	510	510	510
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0
Well 2 Chukka Test Rates (gpm)	**175**	**175**	0	0
Well 3 Gaines Test Rates (gpm)	0	0	0	0

Total Waste Fluid Gain for the Test Period	39,129 bbls
Total Waste Fluid Loss to Well No. 2 for the Test Period	7,500 bbls
Total Waste Fluid	49,629 bbls

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill. An additional (APT/MIT) pressure test will be performed. A pump truck will pump brine water in the annulus to a pressure of 600 psi and the annulus pressure will be recorded using a chart recorder for 30 minutes.

Well No. 3 (Gaines)

The general procedure for testing Well No. 3 would be to inject into Well No. 3 for a period of 30 hours with Well No. 1 and Well No. 2 shut-in. Following the 30-hour injection period, Well No. 3 will be shut-in for 30 hours, with Well No. 1 and Well No. 2 shut-in. For the first 30 hours, only Well No. 3 will be operating at its full rate. For the next 30 hours all three (3) wells will be shut-in. The excess volume generated by the plant will be stored in the holding tank at the plant.

HOURS	24	6	24	10
Total Fluid	510	510	510	510
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0
Well 3 Gaines Test Rates (gpm)	**300**	**300**	0	0

Total Waste Fluid Gain for the Test Period	33,771 bbls
Total Waste Fluid Loss to Well No. 3 for the Test Period	12,857 bbls
Total Waste Fluid	46,628 bbls

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill.

SECTION IV - Scheduling of Test and Report

The schedule for the test must be mutually agreed upon between OCD and the permittee so that OCD has the opportunity to witness the test. The operator should submit a summary report to OCD within 30 days of test completion.

It is currently estimated that the Test Plan will be submitted to OCD for approval during early September 2011. Subsequently, after approval, the field work will be performed in October, November, and December. The report will be submitted 30 days thereafter for each individual well.

SECTION V - General Test Operational Considerations

A successful fall-off test involves consideration of numerous factors of which most are under the control of the permittee. These include but are not limited to the following:

1. Confirmation of a constant injection rate can be maintained in the test well during the injectivity portion of the test.

   The injection rate of the injectate fluid will be maintained by throttling the flow with the wellhead wing valves and nearby injectate flow line valves or other control system.

2. The injection rate is sufficient to produce a measurable pressure build-up that will result in valid test data.

   These injection rates or equivalent conditions will be maintained to insure a 100 psi pressure differential. Historically, the reservoir has produced greater than 100 psi on previous testing after the maximum injection rate has been achieved.

3. Consideration for using the normal waste liquid during the injectivity portion of the test, unless the waste will be corrosive to the down-hole pressure gauge.

   The normal injectate will be maintained throughout the test period.

4. Calculating the total volume of injection fluid needed for the injectivity portion of the test.

   a. Arrange for additional fluids and storage of such fluid.

      It is not anticipated any additional fluids, other than the liquid waste injectate, will be needed.

   b. Reduce the injection rate to reduce the total fluid requirement.

      Every effort will be made to maintain the injection rate required for a successful pressure fall-off test as well as the disposal rate required to maintain refinery operation. (see procedure)

5. Sustaining a constant injection rate after installing the pressure gauges to allow stabilization of the gauges prior to initiating the fall-off test. A three day period is recommended, but adjustments may be made because rates have previously been stabilized or historical test results indicate a lesser time is adequate.

A constant injection rate will be maintained throughout the required three day build up period. Historically, for the 2009 and 2010 falloff testing, 30 hours is sufficient time to adequately perform a falloff analysis of the reservoir. In Exhibit 5 the 2009 and 2010 falloff test show that the data obtained after the 30 hour period was inconclusive in determining reservoir parameters and was not able to analyze. The data after 30 hour had added no intrinsic value to the reservoir determination.

6. Ensuring adequate waste storage is available for the duration of the fall-off test.

   The need for additional storage is not anticipated at the well site. The refinery facility storage tank will be used. One tank holds 65,000 bbls.

7. Shutting in offset wells completed in the same formation as the test well prior to the test. If impractical, then maintaining stable measured injection rates into the offset injection wells prior to and during the fall-off test.

   We plan to inject into one well at a constant rate for the 30-hour build up period. After the 30-hour period, all three (3) wells will be shut-in for the 30-hour pressure fall-off period. However, if this method is not feasible, it will be necessary to maintain constant injection rates into the offset injection wells during each of the PFO Tests on WDW-1, 2 & 3. This will allow us to maintain constant injection rates into WDW-1 & 2 when WDW-3 is shut-in, constant injection rates into WDW-2 & 3 when WDW-1 is shut-in and constant injection rates into WDW-1 & 3 when WDW-2 is shut-in.

8. Installing a crown valve on the well prior to starting the injectivity portion of the test so the well does not have to be shut-in to install the pressure gauges. Running both memory gauges in the hole through a lubricator installed into the crown valve for safety.

   All three wells have crown valves.

9. Locating the shut-in valve, ceasing flow to the well at or near the wellhead to minimize the wellbore storage in the well. Shut-in must be accomplished as instantaneously as possible to prevent erratic pressure behavior during the shut-in caused by the rate fluctuations.

   All three wells have wing valves or nearby injectate flow line valves that will be used to shut-in each well for the required PFO Test period. If necessary, other controllers will be implemented from the control room.

10. Evaluating the condition of the well, including wellbore fill, junk in the hole or wellbore damage, which may increase the length of shut-in time needed for the well to obtain a valid fall-off test and therefore also necessitate a longer injectivity period.

    All three wells were recently treated with a Coiled Tubing/HCl acid stimulation utilizing a sonic pulse tool in 2010. There was no wellbore fill across the perforated interval.

11. Using a surface readout down-hole pressure gauge and tandem down-hole memory electronic pressure gauges, one of which is surface readout capable, with a pressure resolution level of 0.0002% of the gauge's full pressure range. Gauge pressure range should exceed the maximum pressure expected during the testing with the larger the percentage of the gauge pressure range utilized, the better.

The previously approved memory gauges used on these wells were sapphire gauges with an accuracy of 0.025% full scale (FS) or 0.01% of the reading and will have a resolution of 0.0003%. The pressure range of the gauges is from 0-10,000 psi. This gauge is a typical bottom-hole memory gauge with the best accuracy available in the area.

12. Maintaining a test operations log throughout the fall-off test and submitting the log as part of the test report. The log should list all key test events, dates, and times. For example, the time the gauges were activated, run in the well and placed on bottom as well their setting depths. Synchronization of times and events is especially important in tests involving multiple wells.

    A field supervisor will be present throughout the testing period and all operating system control room monitors will be active and creating the aforementioned log.

13. If available, monitoring test progress with appropriate plots at the well site to insure valid test data is obtained and problematic tests can be identified and aborted.

    Where applicable, this requirement will be implemented. A surface pressure logging gauge will be installed on the wellhead.

14. Configuring the test gauges to obtain pressure data more frequently in the early portion of the test when the rate of pressure decline is greater, if the memory capacity of the gauge is limited. Memory capacity of the gauge should allow for a 10-day total recording time interval, unless a shorter test time is sufficient based on prior testing or appropriate test design calculations. Larger time increments may be used to obtain data later in the test when the rate of pressure decline is less. The recording frequency of the gauges and overall length of test should be set based on results of previous tests or test design calculations.

    Based on previous testing, a 10-second to 15-second interval will be adequate.

15. Using the injection facility pump if capable of maintaining a constant injection rate at the desired pre-fall-off test rate. If an alternate pump is needed, design the pump to operate as smoothly as possible at the desired constant rate. If feasible, design the test for a constant injection rate to cause a minimum of 100 psi differential pressure between the final injection and shut-in pressures.

    The injection facility pump will be used to maintain the appropriate injection rate and differential pressure requirement.

SECTION VI. Background Information

Acquisition of the following information is recommended for the planning, design, and analysis of the fall-off test.

1. Current wellbore schematic (Exhibit 4)

    a. Size and type of injection tubing (include type of internal coating, if applicable)

- Well No. 1: 4 ½", 11.6 lb/ft, N-80, SMLS, R3, LT&C, set at 7,879'
- Well No. 2: 3 ½", 9.2 lb/ft, J-55, SMLS, NUE 10 rd, set at 7,528'
- Well No. 3: 4 ½", 11.6 lb/ft, J-55, LT&C, set at 7575'

b. Packer depth

- Well No. 1: 7,879'
- Well No. 2: 7,528'
- Well No. 3: 7,575'

c. Tubing length including the depth of any seating or profile nipples, and the last date tubing was run. When tubing was originally installed.

- Well No. 1: 7879'
- Well No. 2: 7528'
- Well No. 3: 7575'

d. Size, type, and depth of casings

- Well No. 1: Surface Casing-13 3/8", 48 lb/ft, J-55, ST&C, set at 390'
  Intermediate Casing-9 5/8", 36 lb/ft, J-55, ST&C, set at 2,555'
  Protection Casing-7", 29 lb/ft, N-80, LT&C: 9094' to 7031'; 7", 29 lb/ft, P-110, LT&C: 7031' to 5845'; 7", 26 lb/ft, P-110, LT&C: 5845' to surface
- Well No. 2: Surface Casing-8 5/8", 32 lb/ft, set at 1,995'
  Protection Casing-5 ½", 17 lb/ft, L-80, LT&C: 8869' to surface
- Well No. 3: Surface Casing-13 3/8" at 400'
  Intermediate Casing-9 5/8" at 2,600'
  Protection Casin-7" at 9450', 26lb/ft, & 29 lb/ft

e. Cement tops with method of determining the top of cement

- Well No. 1: On July 12, 1998, 9 5/8" protection casing was set from 2548' to the surface. It was confirmed that a continuous column of cement with good bonding characteristics behind the 9 5/8" protection casing from 2548' to 400'. The hydraulic coupling was lost above 400' and the tool would not respond.

  Exhibit 3.3.1-2 shows the intermediate casing is 9 5/8", 36 lb/ft, J-55, that was set in a 12 ¼" open hole at 2,555' and cemented to the surface with 800 sacks of Class C Lite containing ½ lb/sack floccule, 2 lb/sack Gilsonite and 12% salt, followed by 200 sacks of Class C containing 2% Calcium Chloride. With 133 sacks of lead cement circulated to the surface, the volume of cement placed behind pipe approximated the estimated annular hole volume, which was based on an average hole diameter of 14-inches.
  On July 13, 1998 a cement bond log was run from 2548' to 580'. The log indicated an apparent cement compressive strength of 4,300 psi and bond index calculations ranged from 25% to 100% and averaged 72%.

- Well No. 2: On May 9, 1999, a bond log was performed within the 9 5/8" protection casing from 1910' to the surface. It was confirmed that a continuous column of cement with good bonding characteristics behind the 9 5/8" protection casing from 1910' to 116'. The hydraulic coupling was lost above 400' and the tool would not respond.

  Exhibit 2.2-2 shows the 8 5/8" surface casing was originally set in an 11" open hole to a depth of 1955' (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 were recorded circulated to surface. The calculated volume between an 11" and 8 5/8" casing is (0.2407 ft^3 per ft X 1955') 471 ft^3. The volume of cement pumped is (1.18 ft^3 per sack X 800 sacks) 944 ft^3 for an excess of 473 ft^3 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. (Re-entry and Completion report for Well No. 2)

- Well No. 3: On October 13, 2006, a CBL/VDL revealed cement had not been circulated to the surface behind the 7" protective casing, as was indicated in the state records. The top of cement (TOC) behind the 7" protective casing was located at 900' and the cement bond quality was poor down to 1200'. There were indications on the log that a micro-annulus may be present from 2662' to 2160', from 4876' to 5372', and from 6750' to 7600'. The CBL indicated there was good bonding between the 7" casing and the cement to isolate the injection interval. (Re-entry and Completion report for Well No. 3)

f. Top and bottom perforation/completion depths including the size of perforation holes and date perforated

- Well No. 1: Upper Zone – 7924'-7942', 7974'-8030', 8050'-8056', 8066'-8080', 8118'-8127', 8132'-8140', 8160'-8164', 8170'-8188'.
- Lower Zone – 8220'-8254', 8260'-8270', 8280'-8302', 8360'-8366', 8370'-8378', 8400'-8410', 8419'-8423', 8430'-8446', 8460'-8464', 8470'-8476'.

- Well No. 2: Zone 1 – 7570'-7620', 7676'-7736'
- Zone 2 – 7826'-7834', 7858'-7800', 7886'-7904', 7916'-7936', 7944'-7964', 7990'-8042', 8096'-8116', 8191'-8201', 8304'-8319', 8395'-8399'.

- Well No. 3: Original Open Perforations – 7676'-7698'
  New Upper Perforations – 7660'-8450'
  New Lower Perforations – 8540'-8620'

- Average hole sizes are approximately ½-inch in diameter.

g. Total depth, plug back depth, and the most recent depth to wellbore fill and date measured

- Well No. 1: TD-10,200', PBTD-9004', July 24, 1998 at 8470'-76'
- Well No. 2: TD-10,372', PBTD-8770'
- Well No. 3: TD-10,119', PBTD-9022'

h. Location of the pressure measuring tool during the test

- Well No. 1: 7924'
- Well No. 2: 7570'
- Well No. 3: 7660'

2. Copy of an electric log encompassing the completed interval

Exhibit 3 (Appendix J - 2008 Annual Report)

3. Copy of relevant portions of any porosity log used to estimate formation porosity

Exhibit 3 (Figure: 2.0-2 – 2008 Annual Report)

4. PVT Data

a. Estimation of formation fluid and reservoir rock compressibility

3.6×10^{-6} 1/psi

b. Formation fluid viscosity with reference temperature

0.72 cp at 112° F

c. Formation fluid specific gravity/density with reference temperature

8.6 ppg at 112° F

This data may or may not be available since it will not exist for older wells when the regulations did not require it. When necessary, it will be estimated.

5. Injection fluids

a. Description of fluids injected
b. Injection fluid specific gravity/density with reference temperature
c. Injection fluid compressibility
d. Injection fluid viscosity with reference temperature

- Petroleum Refinery Waste Analytical Data for all three wells (See Exhibit 4)

6. Daily rate history data for a minimum of one month preceding the fall-off test

   The daily rate history will be provided with fall-off test report.

7. Cumulative injection into the formation from test well and offset wells

   The total injection volumes for each well will be included in final reports.

8. Pressure gauges

   a. Description of the down-hole surface pressure readout or memory gauge

      The memory gauges that will be used for each well are sapphire gauges with an accuracy of 0.025% full scale (FS) or 0.01% of the reading and will have a resolution of 0.0003% (FS). The pressure range of the gauges will be from 0-10,000 psi. These are typical bottom-hole memory gauges with the best accuracy available in the area. The gauges will be lowered to the top of the injection interval at 7924 feet in Mewbourne Well No. 1, 7820 feet in Chukka Well No. 2, and 7660 feet in Gaines Well No. 3. The recording period will be set to record pressures at a minimum of every 10 seconds.

   b. List the full range, accuracy and resolution of the gauges

      - +/-0.025% F.S. + 0.01% of reading
      - Will also provide a data specification sheet of gauges that were used to run the fall-off with each well report.

   c. A calibration certificate showing date the gauges were last calibrated

      Current calibration certificates for the gauges used in each well will be provided with final reports.

9. One mile Area of Review (AOR)

   a. Identification of wells located within the one mile AOR

      Exhibit 3 (Table VII)

   b. Ascertaining the status of wells within the one mile AOR

      Exhibit 3 (Table VIII)

   c. Providing details on any offset producers and injectors completed in the same injection interval

      Area of Review (AOR) lists all wells. The only wells that will affect the PFO Test are Navajo's current injection wells. These wells will be referred to as offset wells. These wells and the controlled rates are referenced in the general procedure. An update to the AOR will be included in each well report.

10. Geology

a. Description of the geologic environment of the injection interval

The proposed injection zones are porous carbonates of the lower portion of the Wolfcamp Formation and the Cisco and Canyon Formations. The Lower Wolfcamp is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation consists of light brown to tan, fine to medium-grained, fossiliferous limestone with variegated shale interbeds.

The Cisco Formation of the Northwest Shelf is described as consisting of uniform, light-colored, chalky, fossiliferous limestone interbedded with variegated shales. Cisco, at the edge of the Permian basin, is also described as consisting of biothermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 745' thick in the Chukka Well No. 2, 650' thick in Mewbourne Well No. 1, and 720' thick in Gaines Well No. 3.

The Canyon Formation consists of white to tan to light brown fine grained, chalky, fossiliferous limestone with gray and red shale interbeds.

In summary, permeability values in the injection zone from producing fields in the region range up to 200 md. However, based on test data for the Mewbourne Well No. 1, Chukka Well No. 2, and Gaines Well No. 3, permeability values as high as 2733 md or higher occur in intervals in the injection zone. All three share the same injection interval.

b. Discussion on the presence of pinchouts, channels, and faults, if applicable.

N/A

c. Providing a portion of a relevant structure map, if necessary.

N/A

SECTION VII. Conducting the Fall-off Test

The following are recommended procedures for conducting the fall-off test. Alternative procedures that will produce valid test results and satisfy the requirements of OCD and the regulations will be considered by the OCD.

We anticipate additional analysis may be performed to confirm these results. If same zone injection is confirmed, it may be beneficial to annually run PFO tests on one well instead of all three for different (probably longer) periods of time.

1. Install a digital surface recorder, connected to a rate meter and a digital surface transducer, capable of adequately measuring surface injection rates and wellhead injection pressures during the test.

Digital pressure recorders (Sapphire or other similar gauges) will be located just above the perforated interval and on the wellhead. Injection rates will be monitored with the normal operation instrumentation. Historically the wellhead pressures will fall to zero psig at some point during the falloff segment of the testing depending upon the weight of the waste fluid at the time of the testing. The plant has the ability to record rates and wellhead pressure through flow meters and pressure indicating gauges at each well site. The instrumentation is connected to the plant by RTU and wireless transmitters.

2. Confirm the constant pre-fall-off test injection rate is maintained prior to the fall-off.

   The rate will be maintained through plant monitoring and flow equipment for each well.

3. Confirm pressure gauges have stabilized prior to shutting in the well for the fall-off test.

   For each well the gauges will remain on bottom for one hour to stabilize. This should be sufficient for pressure gauge stabilization.

4. Following installation of the bottom-hole pressure gauges and surface recorders, regulate injection to the stabilized designated pre-fall-off test injection rate that will result in a sufficiently sized pressure increase (above shut-in pressure) on the wellhead. If the injection rate was stabilized prior to running the down-hole gauges and the gauge installation did not disrupt the injection rate, monitoring the gauge for a minimum of one hour may be sufficient for verifying that the bottom-hole pressure is stabilized prior to initiating the fall-off test.

   As indicated in 2 & 3 of the above section, every effort will be made to comply with this requirement.

5. The injection rate shall be high enough and continuous for a period of time sufficient to produce a pressure build up that will result in valid test data. The injection rate shall result in a pressure build up such that a semi-log straight line can be determined from the Horner plot or other appropriate semi-log plot. The injection rate shall be the maximum injection rate that can be feasibly maintained constantly, in order to maximize pressure changes in the formation and provide valid test results, but not exceeding the daily injection pressure and volume limit of the UIC Permit.

   We anticipate a pressure build up of 100 psi or greater will be maintained during critical portions of the pressure fall off testing for each well.

6. Confirm the liquid injection density is held relatively constant during the injectivity portion of the test by periodically measuring one or more of the following:

   a. Density
   b. Chloride concentration
   c. Total dissolved solids concentration
   d. Conductivity
   e. pH

   Samples of the injectate for each well will be taken and where possible, analyzed before shut-in.

7. The surface readout down-hole pressure gauge must be located at or near the top of the injection interval, unless previous testing indicates a more appropriate location.

   The down-hole digital pressure gauges will be located at the top of the perforations at the following depths.

   - Well No. 1: 7924'
   - Well No. 2: 7570'
   - Well No. 3: 7660'

8. If the stabilization injection period is interrupted for any reason and for any length of time, the stabilization injection period must be restarted, unless superposition analysis can be applied and valid test results obtained.

   If the testing is interrupted as stated above the test will be shut down and restarted from the beginning for any one of the well test on wells 1 through 3.

9. The well must be shut-in at the wellhead or as near as feasible to the wellhead to minimize wellbore storage and after flow.

   The PFO test well(s) will be shut-in utilizing the wing valve on the wellhead or the nearby injectate flow line valve.

10. The well shut-in must be accomplished as instantaneously as possible to prevent erratic pressure behavior during the test.

    Every effort will be made to shut-in the PFO test well instantaneously.

11. Following shut-in at the well, shut-in relevant tubing valves to ensure complete shut-in of the well. Bottom-hole shut-in is preferred to surface shut-in, but not required. Shut-in the well with no disturbances for at least seven days or other approved time period as determined from previous tests results or the test design.

    Previous testing on each one of the wells has indicated only 30-hour shut-in period is necessary. Historically during the 2009 and 2010 falloff test the data obtained after the 30-hour period could not be analyzed. Exhibit 5 contains the 2009 and 2010 falloff data and analysis and clearly shows that radial flow was achieved before the end of the 30-hour period. The data obtained after the 30-hour period is highly scattered and banded indicating that the limit of the gauge resolution had been reached making the data unusable for analysis. The log-log plots for 2009 and 2010 clearly show that radial flow has been achieved before the end of a 30-hour shut-in period.

12. Upon completion of the test, tag fill depth with gauges, pull out bottom-hole gauges making stops every 1000 feet for 5-minutes to obtain gradient data, rig down, and resume normal injection into the well as needed.

    The absence of fill across the perforations will be confirmed before starting the PFO testing and if necessary reconfirmed prior to the gradient stop portion of the PFO tests for each well.

13. The fall-off portion of the test must be conducted for a length of time sufficient to reach radial flow, i.e., the pressure is no longer influenced by wellbore storage or skin effects and enough data points lie within the infinite acting period that the semi-log straight line is well developed. A log-log with derivative plot should be prepared during the fall-off to verify radial flow is occurring.

    This requirement has been considered during PFO Test Plan development and implemented into the general procedure for each well.

SECTION VIII - Evaluation of the Test Results

A licensed professional who is knowledgeable in the methods of pressure transient test analysis, must evaluate and summarize the test results. The following information and evaluations shall be provided in the test report:

1. A log-log plot with a derivative diagnostic plot shall be used to identify flow regimes.

2. The wellbore storage portion and infinite acting portion of the test shall be identified on the plot. Type curves shall be used to verify results.

3. A Horner plot or other appropriate semi-log plot must be used to calculate the kh/u product and to determine P*. The wellbore storage and infinite acting portions of the test should be identified on the plot. An expanded semi-log plot containing the entire infinite acting portion must be reproduced to permit a closer inspection of the semi-log slope and any data fluctuations. The slope used to calculate the transmissibility (kh/u) and to determine P* must be drawn on both semi-log plots.

4. The "h" value (injection interval thickness) used in the analysis must be agreed upon between OCD and the permittee. For formations with characteristics such as fracture-controlled karst reservoirs with porosity and permeability influenced by basement structural patterns and sub aerial exposure, the entire thickness of the injection interval should be considered. A reliable literature value can be used if site specific data is not available.

5. The viscosity used in analyzing the test shall be that of the liquid through which the pressure transient was propagating during the infinite acting portion of the test. The information used to determine the viscosity shall be provided. Distance estimates to the waste front may also be needed.

6. Any test that was not shut-in long enough to develop an infinite acting period, or cannot be properly analyzed for transmissibility (kh/u) from the semi-log plot, should be rerun using a procedure that will result in valid test results, unless other arrangements have been made with OCD.

7. All equations and assumptions used in the analysis shall be provided with the appropriate parameters substituted into the equations.

8. A plot of the temperature data shall be provided for review. Any temperature anomalies shall be noted to determine if they correspond to pressure anomalies since the temperature compensation mechanism of the pressure gauge may be influenced by temperature fluctuations.

9. Explain any anomalous pressure data responses. Investigate any potential physical causes for the anomaly in addition to potential reservoir response characteristics.

   Navajo will comply with these requirements in the test results for each well.

SECTION IX - Report Components

Include the following information in the report to the OCD in Santa Fe - Attention environmental Bureau of the Division (see address under OCD contacts listed in the Contacts Section). The information in the report includes general information, an overview of the test, analysis of the test data, summary of the results and a comparison of the results with previous test results and UIC permit parameters. Submit the report to OCD within 30 days of test completion.

1. Facility information
   a. Name: Navajo Refining Company (Subsidiary of Holly Corporation)
   b. Location: Highway 82 East, Artesia, New Mexico 88211
   c. Operator's OGRD number: 94081

   The above Data will be included in the report for each well.

2. Well information:

   a. OCD UIC Permit number authorizing injection

   - Well No. 1: UIC-CLI-008-1
   - Well No. 2: UIC-CLI-008-2
   - Well No. 3: UIC-CLI-008-3

   b. Well classification

   - Well No. 1: Class I Non Hazardous
   - Well No. 2: Class I Non Hazardous
   - Well No. 3: Class I Non Hazardous

   c. Well name and number

   - WDW-1 (Mewbourne)
   - WDW-2 (Chukka)
   - WDW-3 (Gaines

   d. API number

   - Well No. 1: 30-015-27592
   - Well No. 2: 30-015-20894
   - Well No. 3: 30-015-26575

e. Legal location

- Well No. 1: 660 FSL, 2310-FEL, Sect 31 T17S R28E
- Well No. 2: 1980 FNL, 660-FWL, Sect 12 T18S R27E
- Well No. 3: 790 FSL, 2250-FWL, Sect 1 T18S R27E

3. Current wellbore schematic as described in Section VI

   Current wellbore schematics will be attached and presented as figures for each well report. A copy of the well schematic for each well can be found in Exhibit 4.

4. Copy of an electric log encompassing the completed interval

   A copy of an electric log encompassing the completed interval will be attached and presented as exhibits for each well report.

5. Copy of relevant portions of any porosity log used to estimate formation porosity

   A copy of porosity logs used to estimate formation porosity will be attached and presented as exhibits for each well report.

6. PVT data of the formation and injection fluid as described in Section VI

   a. Estimation of formation fluid and reservoir rock compressibility
      3.6×10^{-6} 1/psi
   b. Formation fluid viscosity with reference temperature
      0.72 cp at 112° F
   c. Formation fluid specific gravity/density with reference temperature
      8.6 ppg at 112° F

7. Daily rate history data for a minimum of one month preceding the fall-off test

   The daily rate history will be provided with fall-off test report for each well.

8. Cumulative injection into the formation from test well and offset wells

   Current cumulative volumes will be provided in the test report for each well.

9. Pressure gauges

   a. Describe the type of down-hole surface pressure readout gauge used including manufacturer and type

      The memory gauges that will be used are sapphire gauges that will have an accuracy of 0.025% full scale (FS) or 0.01% of the reading and will have a resolution of 0.0003% (FS). The pressure range of the gauges will be form 0-10,000 psi. These are typical bottom hole memory gauges with the best accuracy available in the area. The gauges will be lowered to the top of the injection interval at 7924 feet

in Mewbourne Well No. 1, 7820 feet in Chukka Well No. 2, and 7660 feet in Gaines Well No. 3. The recoding period will be set to record pressures at a minimum of every 10 seconds for each well.

b. List the full range, accuracy and resolution of the gauge

- +/-0.025% F.S. + 0.01% of reading
- Will also provide a data specification sheet of gauges that were used to run the fall-off with report for each well.

c. Provide the manufacturer's recommended frequency of calibration and a calibration certificate showing date the gauge was last calibrated.

Current calibration certificates will be provided with final report for each well.

10. One mile Area of Review (AOR)

a. Identify wells located within the one mile AOR

Exhibit 3 (Table VII)

b. Ascertain the status of wells within the one-mile AOR

Exhibit 3 (Table VIII)

c. Provide details on any offset producers and injectors completed in the same injection interval

Area of Review (AOR) lists all wells. The only wells that will affect the PFO Test are Navajo's well(s). These wells and the controlled rates are referenced in the procedure for each well.

11. Geology

a. Describe geologic environment of the injection interval.

The proposed injection zones are porous carbonates of the lower portion of the Wolfcamp Formation and the Cisco and Canyon Formations. The Lower Wolfcamp is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation consists of light brown to tan, fine to medium-grained, fossiliferous limestone with variegated shale interbeds.

The Cisco Formation of the Northwest Shelf is described as consisting of uniform, light-colored, chalky, fossiliferous limestone interbedded with variegated shales. Cisco, at the edge of the Permian basin, is also described as consisting of biothermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 745 feet thick in the Chukka Well No. 2, 650 feet thick in Mewbourne Well No. 1, and 720 feet thick in Gaines Well No. 3.

The Canyon Formation consists of white to tan to light brown, fine grained, chalky, fossiliferous limestone with gray and red shale interbeds.

In summary, permeability values in the injection zone from producing fields in the region range up to 200 md. However, based on test data for the Mewbourne Well No. 1, Chukka Well No. 2, and Gaines Well No. 3, permeability values as high as 2733 md or higher occur in intervals in the injection zone. Each well report will include a short description of the injection interval as described above.

b. Discuss the presence of geologic features, i.e., pinchouts, channels, and faults, if applicable.

N/A

c. Provide a portion of a relevant structure map, if necessary.

N/A

12. Offset wells

(Area of Review lists all wells within the AOR. The AOR was updated in 2010 and the only wells that will affect the PFO Test are the Navajo's injection wells. These wells and controlled rates will be referenced in the procedure and accounted for in the analysis if necessary.)

a. Identify the distance between the test well and any offset wells completed in the same injection interval
b. Report the status of the offset wells during both the injection and shut-in portions of the test
c. Describe the impact, if any, the offset wells had on the test

13. Chronological listing of the daily testing activities (operations log)

A chronology of field activities will be included in each well report with a minimum of the following items:

a. Date of the test
b. Time of the injection period
c. Type of injection fluid
d. Final injection pressure and temperature prior to shutting in the well
e. Total shut-in time
f. Final static pressure and temperature at the end of the fall-off portion of the test

14. Describe the location of the shut-in valve used to cease flow to the well for the shut-in portion of the test.

Each well will be shut-in with a 4-inch gate valve: one at the wellhead and one at the filter pods. The valves will be locked out and tagged out.

15. Provide each of the following; including the equations used to calculate each, the equations with the appropriate parameters substituted in them, description of parameters used in calculations with references as to how the values were derived:

a. Radius of test investigation

$$r_{waste} = \left[\frac{0.13368\ V}{\pi\ h\ \phi} \right]^{1/2}$$

b. Time to beginning of the infinite acting portion of the test

$$t_{waste} = 948 \frac{\phi \mu_{waste} c_t r^2_{waste}}{k}$$

c. Slope or slopes determined from the semi-log plot

Determined from Pan Systems V3.5 © Horner or Superposition Plot

d. The value for transmissibility (kh/u)

$$\frac{k\,h}{\mu} = 162.6 \frac{q_{last}\ B}{m}$$

e. Permeability (k)

$$k = \frac{k\,h}{h}$$

f. Skin factor (s)

$$s = 1.151 \left[\frac{p_{wf} - p_{1hr}}{m} - \log \left[\frac{k}{\phi\ \mu\ c_t\ r_w^2} \right] + 3.23 \right]$$

g. Pressure drop due to skin (ΔPskin)

ΔPskin = 0.869ms

h. Flow efficiency ((Pwf-ΔPskin-Pstatic)/ (Pwf-Pstatic))

i. Flow capacity (kh) or mobility thickness

$$k\,h = \left(\frac{k\,h}{\mu} \right) \mu_{res}$$

j. $P_{1\ hour}$ (extrapolated pressure at one hour)

Determined from Pan Systems© V3.5, which is the extrapolated straight line at one hour on the Horner Plot.

16. Explain any pressure or temperature anomaly

Any pressure and temperature anomalies will be explained in the report for each well.

17. Describe the test results

a. Discuss if the test reached radial flow or if it was dominated by wellbore storage or another type of flow regime.

Will be determined from Log-Log Plot

b. Describe the reservoir results as homogeneous or heterogeneous explaining how this was determined.

Note: Initial assumption will be homogeneous reservoir in semi-steady state flow. An explanation will be included in the well reports.

18. Provide the following graphs:

The following graphs will be provided by the Pan System V3.5 © and will include the identifiable flow regemes on each plot, which will be included in each well report.

a. Cartesian plot of pressure and temperature versus time
b. Cartesian plot of injection rate versus time
c. Log-log and derivative plots with the flow regions identified

i. Identify the wellbore storage period
ii. Identify the radial flow period in.
iii. Identify any other relevant flow regimes
iv. Semi-log plot and expanded semi-log plot (typically Horner plots)
v. Identify the flow regions on each
vi. Draw the semi-log straight line
vii. Identify the P* (false extrapolated pressure)
viii. Calculate $P_{1\ hour}$ (extrapolated pressure at one hour)

e. Plot of the digital surface rates and pressures from the surface pressure gauge

Subsurface will attach a data logging surface gauge to the wellhead to generate data and plot. Navajo will provide the rates from there flow meters. This will be included in the well report for each well. As a note, historically the wellhead pressure at some point in time during the pressure falloff will go to zero and then on a vacuum.

f. Plot of digital pressures and times from the bottom hole gauges

Data will be provided from down-hole gauges for plot. The plots for each well will be generated by the Pan Systems© V3.5 software.

g. Complete injection rate history plot (injection rate and wellhead pressure vs. calendar time)

Injection rate history will be provided in Pan System © Report for each well.

h. Current Hall plot with explanation for any changes to the slope of this plot

Explanation will be provided in report for each well.

19. Comparison of permeability (k), transmissibility (kh/u), skin (s), false extrapolated pressure (P*), and depth to fill with the same values determined from fall-off tests previously conducted in the well.

A table will be provided comparing the results from previous testing with the report for each well.

20. A statement that the raw test data generated by the test will be kept on file by the permittee for a period of not less than 3 years and will be made available to OCD upon request during this time period. The raw test data need not be submitted to OCD unless requested.

Navajo will comply with this and a table of acquired pressure, rate, and analytical data will be included with the report for each well.

SECTION X – Contacts

OCD Contacts:

Mr. Carl Chavez
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87505
Phone: 505-476-3490
E-mail: carlj.chavez@state.nm.us

Mr. William Jones
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87505
Phone: 505-476-3448
E-mail: william.jones@state.nm.us

USEPA Contacts:

Mr. Ken Johnson
USEPA Region 6 (6WQ-SG)
1445 Ross Avenue
Dallas, TX 75202-2733
Phone: 214-665-8473
E-mail: Johnson. ken-e@epa.gov

Ms. Susan Lopez McKenzie
USEPA Region 6 (6WQ-SG)
1445 Ross Avenue
Dallas, TX 75202-2733
Phone: 214-665-7198
E-mail: lopez.susan@epa.gov

SECTION XI – Additional Information

As a result of the falloff testing done in 2008 and 2009 it appears that all three of the wells may be in communication to some degree. Pressure communication between the wells indicates that the reservoir is continuous with similar properties at each wellbore. Exhibit 1 contains a chart and tables with historical pressures for all 3 wells. On the chart, the trend appears to show that the addition of the Gaines well in 2007 to the injection interval resulted in an increase in pressure in the Mewbourne and Chukka wells. This would also indicate pressure communication between the wells.

To show that the wells are hydraulically connected it is proposed that each well be isolated and interference test be completed on each well set. This is to be accomplished by shutting in all the wells for a 24 hour period, placing bottom hole pressure gauges in each well. At the end of the 24 hour shut-in period initiate injection into the closest offset well at the maximum rate for a period of four hours and shut-in the well for four hours. The offset injection well should have the cycle repeated a minimum of three times.

The proposed procedure would have bottom hole pressure gauges in all three wells after the 24 hour shut-in period, injection would commence on the number three well for a period of four hours and then be shut-in for four hours, inject for another four hours and shut-in for another four hours, inject for four more hours and shut-in for four more hours. Repeat this injection process on the number two well and then repeat this injection process on the number one well. Pull all gauges and analyze the pressure data.

If the analysis shows good communication between the wells it will be proposed that falloff testing be completed on one well per year with an interference test being completed at the end of the falloff testing. The interference test at the end of the falloff testing will show that the wells continue to stay in communication and that the falloff data represents the reservoir parameters as they exist throughout the reservoir from well to well. This would eliminate the need to test each well individually to obtain the reservoir data allowing the required annual reservoir data to be collected at one well rather than at three.

EXHIBITS

SUBSURFACE

EXHIBIT 1

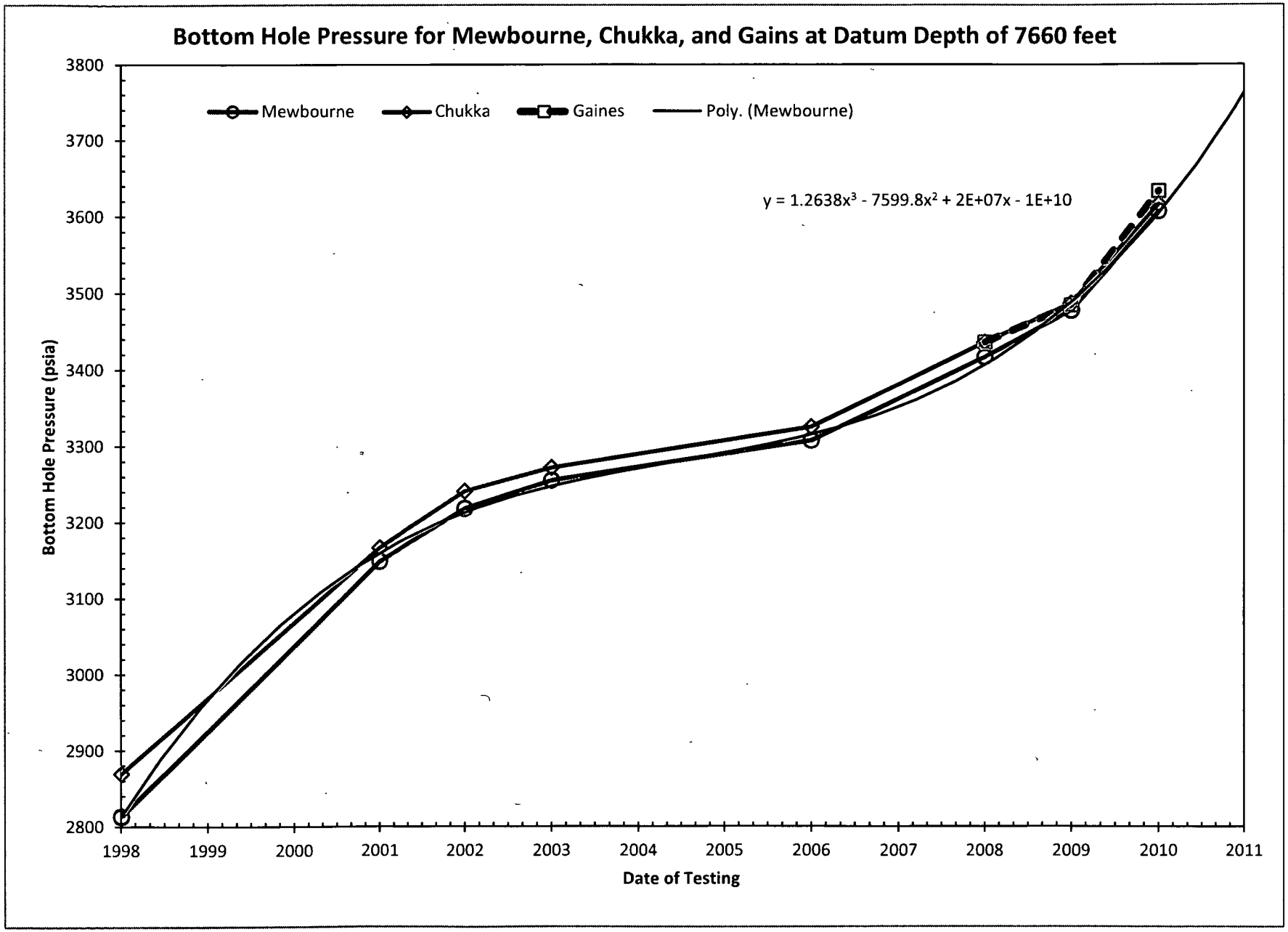
Bottom Hole Pressure for Mewbourne, Chukka, and Gains at Datum Depth of 7660 feet
Mewbourne
Chukka
Gaines
Poly. (Mewbourne)
y = 1.2638x³ - 7599.8x² + 2E+07x - 1E+10
Bottom Hole Pressure (psia)
3800
3700
3600
3500
3400
3300
3200
3100
3000
2900
2800
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date of Testing

Exhibit 1

Exhibit 1

Historical Pressures for WDW-1, WDW-2, WDW-3

WDW-1

Year Test were Performed	BHP	depth	Calculated BHP @ 7660
1998	2928	7924	2814
2001	3264	7924	3150
2002	3333	7924	3219
2003	3370	7924	3256
2006	3422	7924	3308
2008	3531	7924	3417
2009	3592	7924	3478
2010	3722	7924	3608

WDW-2

Year Test were Performed	BHP	depth	Calculated BHP @ 7660
1998	2940	7820	2871
2001	3237	7820	3168
2002	3311	7820	3242
2003	3342	7820	3273
2006	3395	7820	3326
2008	3397	7570	3436
2009	3448	7570	3487
2010	3578	7570	3617

WDW-3

Year Test were Performed	BHP	depth	Calculated BHP @ 7660
1998	-	-	-
2001	-	-	-
2002	-	-	-
2003	-	-	-
2006	-	-	-
2008	3440	7670	3436
2009	3484	7660	3484
2010	3634	7660	3634

EXHIBIT 2

EXHIBIT 2

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25184** InstrumentID: **VOA2**

LCS Sample ID: **VLCSW-1210** Test Code: **SW8260** Units: µg/L Analysis Date: **12/10/04 13:50**
Client ID: Run ID: **VOA2_041210A** SeqNo: **586931** 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	53.94	5.0	50	0	108	75.2-120	0			
1,1,2,2-Tetrachloroethane	53.63	5.0	50	0	107	72.4-121	0			
1,1,2-Trichloroethane	52.21	5.0	50	0	104	80-120	0			
1,1-Dichloroethane	51.53	5.0	50	0	103	76.9-120	0			
1,1-Dichloroethene	54.08	5.0	50	0	108	72.6-123	0			
1,2-Dichloroethane	51.67	5.0	50	0	103	80-120	0			
2-Butanone	119.9	10	100	0	120	69-131	0			
2-Chloroethyl vinyl ether	113.4	10	100	0	113	60-135	0			
2-Hexanone	121.4	10	100	0	121	55.6-126	0			
4-Methyl-2-pentanone	118.2	10	100	0	118	67.4-121	0			
Acetone	109.7	10	100	0	110	64.4-140	0			
Benzene	51.72	5.0	50	0	103	80-120	0			
Bromodichloromethane	51.04	5.0	50	0	102	80-120	0			
Bromoform	55.31	5.0	50	0	111	77.9-121	0			
Bromomethane	53.52	5.0	50	0	107	63.3-137	0			
Carbon disulfide	101.4	10	100	0	101	74.1-123	0			
Carbon tetrachloride	51.52	5.0	50	0	103	74.7-120	0			
Chlorobenzene	48.09	5.0	50	0	96.2	80-120	0			
Chloroethane	50.53	5.0	50	0	101	74.7-126	0			
Chloroform	50.64	5.0	50	0	101	80-120	0			
Chloromethane	49.38	5.0	50	0	98.8	64.5-132	0			
cis-1,3-Dichloropropene	50.36	5.0	50	0	101	80-120	0			
Dibromochloromethane	53.13	5.0	50	0	106	80-120	0			
Ethylbenzene	53.38	5.0	50	0	107	80-120	0			
m,p-Xylene	103.8	10	100	0	104	80-120	0			
Methylene chloride	48.39	10	50	0	96.8	76.2-120	0			
Styrene	53.58	5.0	50	0	107	80-120	0			
Tetrachloroethene	53.39	5.0	50	0	107	68.5-130	0			
Toluene	52.27	5.0	50	0	105	80-120	0			
trans-1,3-Dichloropropene	54.85	5.0	50	0	110	80-120	0			
Trichloroethene	54.11	5.0	50	0	108	78.9-120	0			
Vinyl acetate	115.6	10	100	0	116	62.4-133	0			
Vinyl chloride	52.09	2.0	50	0	104	72.7-128	0			
Xylenes, Total	152.9	15	150	0	102	80-120	0			
Surr: 1,2-Dichloroethane-d4	45.28	5.0	50	0	90.6	71-126	0			
Surr: 4-Bromofluorobenzene	45.14	5.0	50	0	90.3	74-125	0			
Surr: Dibromofluoromethane	43.25	5.0	50	0	86.5	73-126	0			
Surr: Toluene-d8	46.04	5.0	50	0	92.1	75-125	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
/ork Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25184** InstrumentID: **VOA2**

MS Sample ID: **0412122-01AMS** Test Code: **SW8260** Units: **µg/L** Analysis Date: **12/10/04 15:31**

Client ID: Run ID: **VOA2_041210A** SeqNo: **586934** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	4798	500	5000	0	96	75.2-120	0			
1,1,2,2-Tetrachloroethane	3949	500	5000	0	79	72.4-121	0			
1,1,2-Trichloroethane	4942	500	5000	0	98.8	80-120	0			
1,1-Dichloroethane	4844	500	5000	0	96.9	76.9-120	0			
1,1-Dichloroethene	4755	500	5000	0	95.1	72.6-123	0			
1,2-Dichloroethane	4962	500	5000	0	99.2	80-120	0			
2-Butanone	11580	1,000	10000	0	116	69-131	0			
2-Chloroethyl vinyl ether	8304	1,000	10000	0	83	60-135	0			
2-Hexanone	11630	1,000	10000	0	116	55.6-126	0			
4-Methyl-2-pentanone	11200	1,000	10000	0	112	67.4-121	0			
Acetone	10640	1,000	10000	0	106	64.4-140	0			
Benzene	4919	500	5000	0	98.4	80-120	0			
Bromodichloromethane	4991	500	5000	0	99.8	80-120	0			
Bromoform	5184	500	5000	0	104	77.9-121	0			
Bromomethane	4562	500	5000	0	91.2	63.3-137	0			
Carbon disulfide	9132	1,000	10000	0	91.3	74.1-123	0			
Carbon tetrachloride	4713	500	5000	0	94.3	74.7-120	0			
Chlorobenzene	4596	500	5000	0	91.9	80-120	0			
Chloroethane	4625	500	5000	0	92.5	74.7-126	0			
Chloroform	8788	500	5000	4602	83.7	80-120	0			
Chloromethane	4632	500	5000	0	92.6	64.5-132	0			
cis-1,3-Dichloropropene	4838	500	5000	0	96.8	80-120	0			
Dibromochloromethane	4989	500	5000	0	99.8	80-120	0			
Ethylbenzene	5104	500	5000	0	102	80-120	0			
m,p-Xylene	9965	1,000	10000	0	99.6	80-120	0			
Methylene chloride	4625	1,000	5000	0	92.5	76.2-120	0			
Styrene	5121	500	5000	0	102	80-120	0			
Tetrachloroethene	5010	500	5000	0	100	66.5-130	0			
Toluene	4924	500	5000	0	98.5	80-120	0			
trans-1,3-Dichloropropene	5349	500	5000	0	107	80-120	0			
Trichloroethene	5895	500	5000	0	118	78.9-120	0			
Vinyl acetate	1690	1,000	10000	0	16.9	62.4-133	0			S
Vinyl chloride	4609	200	5000	0	92.2	72.7-128	0			
Xylenes, Total	14660	1,500	15000	0	97.7	80-120	0			
Surr: 1,2-Dichloroethane-d4	4231	500	5000	0	84.6	71-126	0			
Surr: 4-Bromofluorobenzene	4306	500	5000	0	86.1	74-125	0			
Surr: Dibromofluoromethane	4042	500	5000	0	80.8	73-126	0			
Surr: Toluene-d8	4389	500	5000	0	87.8	75-125	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

03-Sep-08

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 746-5468
Fax: (505) 746-5421

Re: Injection Well Quarterly

Work Order : **0808447**

Dear Aaron,

ALS Laboratory Group received 2 samples on 8/20/2008 08:55 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group 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 Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 36.

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

Certificate No: T104704231-08-TX

ALS Laboratory Group

Date: 03-Sep-08

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 0808447

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0808447-01	Injection Well	Water		8/19/2008 11:30	8/20/2008 08:55	☐

Client:	Navajo Refining Company
Project:	Injection Well Quarterly
Work Order:	0808447

Case Narrative

pH sample (Injection Well) holding time had expired prior to request for analysis.

Batch 31577 Metals (sample 0808511-02MS/MSD) unrelated sample.

Batch R67271 Volatiles (sample 0808627-06MS/MSD) unrelated sample.

ALS Laboratory Group

Date: *03-Sep-08*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 0808447
Sample ID: Injection Well
Lab ID: 0808447-01
Collection Date: 8/19/2008 11:30 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ICP METALS, TOTAL - SW6020A			SW6020		Prep Date: 8/25/2008	Analyst: ALR
Aluminum	0.447		0.0100	mg/L	1	8/25/2008 09:21 PM
Arsenic	0.116		0.00500	mg/L	1	9/2/2008 03:31 PM
Barium	0.0187		0.00500	mg/L	1	8/25/2008 09:21 PM
Beryllium	ND		0.00200	mg/L	1	8/25/2008 09:21 PM
Boron	0.163		0.0200	mg/L	1	8/25/2008 09:21 PM
Cadmium	ND		0.00200	mg/L	1	8/25/2008 09:21 PM
Calcium	68.7		0.500	mg/L	1	8/25/2008 09:21 PM
Chromium	ND		0.00500	mg/L	1	9/2/2008 03:31 PM
Cobalt	ND		0.00500	mg/L	1	9/2/2008 03:31 PM
Copper	ND		0.00500	mg/L	1	8/25/2008 09:21 PM
Iron	0.240		0.200	mg/L	1	8/25/2008 09:21 PM
Lead	ND		0.00500	mg/L	1	8/25/2008 09:21 PM
Magnesium	27.1		0.200	mg/L	1	8/25/2008 09:21 PM
Manganese	0.0478		0.00500	mg/L	1	9/2/2008 03:31 PM
Molybdenum	0.0577		0.00500	mg/L	1	8/25/2008 09:21 PM
Nickel	0.00528		0.00500	mg/L	1	8/25/2008 09:21 PM
Potassium	13.0		0.200	mg/L	1	8/25/2008 09:21 PM
Selenium	0.339		0.00500	mg/L	1	9/2/2008 03:31 PM
Silver	ND		0.00500	mg/L	1	8/25/2008 09:21 PM
Sodium	985		20.0	mg/L	100	8/26/2008 04:20 PM
Vanadium	ND		0.00500	mg/L	1	9/2/2008 03:31 PM
Zinc	0.0369		0.00500	mg/L	1	8/25/2008 09:21 PM
SEMIVOLATILE ORGANICS BY GC/MS			SW8270		Prep Date: 8/22/2008	Analyst: ACN
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Methylphenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Nitroaniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Nitrophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
3-Nitroaniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
4-Nitroaniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
4-Nitrophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Acenaphthene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Acenaphthylene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Aniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Anthracene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM

Qualifiers:
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J - Analyte detected below quantitation limits
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ALS Laboratory Group

Date: *03-Sep-08*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 8/19/2008 11:30 AM

Work Order: 0808447
Lab ID: 0808447-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Benz(a)anthracene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Benzidine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Hexachloroethane	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Isophorone	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Naphthalene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Nitrobenzene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Pentachlorophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Phenanthrene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Phenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Pyrene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Surr: 2,4,6-Tribromophenol	*80.5*		*42-124*	*%REC*	1	8/26/2008 09:58 PM
Surr: 2-Fluorobiphenyl	*56.9*		*48-120*	*%REC*	1	8/26/2008 09:58 PM
Surr: 2-Fluorophenol	*43.8*		*20-120*	*%REC*	1	8/26/2008 09:58 PM
Surr: 4-Terphenyl-d14	*75.2*		*51-135*	*%REC*	1	8/26/2008 09:58 PM
Surr: Nitrobenzene-d5	*50.8*		*41-120*	*%REC*	1	8/26/2008 09:58 PM
Surr: Phenol-d6	*50.8*		*20-120*	*%REC*	1	8/26/2008 09:58 PM
VOLATILES BY GC/MS			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1,2,2-Tetrachloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1,2-Trichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1-Dichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1-Dichloroethene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,2-Dichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
2-Butanone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
2-Chloroethyl vinyl ether	ND		0.10	mg/L	10	8/28/2008 03:56 PM
2-Hexanone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
4-Methyl-2-pentanone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Acetone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Benzene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Bromodichloromethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Bromoform	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Bromomethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Carbon disulfide	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Carbon tetrachloride	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Chlorobenzene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Chloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM

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ALS Laboratory Group

Date: *03-Sep-08*

Client: Navajo Refining Company
Project: Injection Well Quarterly — **Work Order:** 0808447
Sample ID: Injection Well — **Lab ID:** 0808447-01
Collection Date: 8/19/2008 11:30 AM — **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Chloromethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
cis-1,3-Dichloropropene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Dibromochloromethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Ethylbenzene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
m,p-Xylene	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Methylene chloride	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Styrene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Tetrachloroethene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Toluene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
trans-1,3-Dichloropropene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Trichloroethene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Vinyl acetate	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Vinyl chloride	ND		0.020	mg/L	10	8/28/2008 03:56 PM
Xylenes, Total	ND		0.15	mg/L	10	8/28/2008 03:56 PM
Surr: 1,2-Dichloroethane-d4	*106*		*70-125*	*%REC*	10	8/28/2008 03:56 PM
Surr: 4-Bromofluorobenzene	*93.3*		*72-125*	*%REC*	10	8/28/2008 03:56 PM
Surr: Dibromofluoromethane	*105*		*71-125*	*%REC*	10	8/28/2008 03:56 PM
Surr: Toluene-d8	*102*		*75-125*	*%REC*	10	8/28/2008 03:56 PM
CYANIDE, REACTIVE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	8/22/2008
SULFIDE, REACTIVE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	8/22/2008
ANIONS BY ION CHROMATOGRAPHY			**E300**			Analyst: **PV**
Chloride	**492**		**10.0**	**mg/L**	20	8/20/2008 06:07 PM
Sulfate	**1,490**		**50.0**	**mg/L**	100	8/20/2008 06:30 PM
Surr: Selenate (surr)	*98.5*		*85-115*	*%REC*	100	8/20/2008 06:30 PM
Surr: Selenate (surr)	*100*		*85-115*	*%REC*	20	8/20/2008 06:07 PM
ALKALINITY			**SM2320B**			Analyst: **MAM**
Alkalinity, Bicarbonate (As CaCO3)	**179**		**5.00**	**mg/L**	1	8/21/2008 05:30 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	8/21/2008 05:30 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	8/21/2008 05:30 PM
Alkalinity, Total (As CaCO3)	**179**		**5.00**	**mg/L**	1	8/21/2008 05:30 PM
CONDUCTIVITY			**E120.1**			Analyst: **MAM**
Specific Conductance	**4,710**		**1.00**	**µmhos/cm**	1	8/22/2008 04:00 PM
PH			**SW9040**			Analyst: **RPM**
pH	**7.29**	H	**0.100**	**pH units**	1	8/20/2008 04:00 PM

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ALS Laboratory Group

Date: *03-Sep-08*

Client:	Navajo Refining Company		
Project:	Injection Well Quarterly	**Work Order:**	0808447
Sample ID:	Injection Well	**Lab ID:**	0808447-01
Collection Date:	8/19/2008 11:30 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL DISSOLVED SOLIDS			E160.1			Analyst: KKP
Total Dissolved Solids (Residue, Filterable)	3,620		10.0	mg/L	1	8/20/2008 04:00 PM

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ALS Laboratory Group

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

Date: *03-Sep-08*

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW1-082508-31577** Units: **mg/L** Analysis Date: **8/25/2008 09:08 PM**
Client ID: Run ID: **ICPMS02_080825A** SeqNo: **1476311** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.009435	0.010								J
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	ND	0.050								
Cadmium	ND	0.0020								
Calcium	ND	0.50								
Copper	ND	0.0050								
Iron	ND	0.20								
Lead	ND	0.0050								
Magnesium	ND	0.20								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Potassium	ND	0.20								
Silver	ND	0.0050								
Sodium	ND	0.20								
Zinc	0.00199	0.0050								J

MBLK Sample ID: **MBLKW1-082508-31577** Units: **mg/L** Analysis Date: **8/26/2008 06:06 PM**
Client ID: Run ID: **ICPMS02_080826A** SeqNo: **1477419** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Chromium	ND	0.0050								
Cobalt	ND	0.0050								
Manganese	ND	0.0050								
Selenium	ND	0.0050								
Vanadium	ND	0.0050								

ND - Not Detected at the Reporting Limit
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O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

LCS Sample ID: **MLCSW1-082508-31577** Units: **mg/L** Analysis Date: **8/25/2008 09:14 PM**
Client ID: Run ID: **ICPMS02_080825A** SeqNo: **1476312** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05241	0.010	0.05	0	105	80-120	0			
Barium	0.04958	0.0050	0.05	0	99.2	80-120	0			
Beryllium	0.04832	0.0020	0.05	0	96.6	80-120	0			
Boron	0.9602	0.050	1	0	96	80-120	0			
Cadmium	0.05195	0.0020	0.05	0	104	80-120	0			
Calcium	4.85	0.50	5	0	97	80-120	0			
Copper	0.04442	0.0050	0.05	0	88.8	80-120	0			
Iron	4.997	0.20	5	0	99.9	80-120	0			
Lead	0.04998	0.0050	0.05	0	100	80-120	0			
Magnesium	4.729	0.20	5	0	94.6	80-120	0			
Molybdenum	0.05009	0.0050	0.05	0	100	80-120	0			
Nickel	0.04845	0.0050	0.05	0	96.9	80-120	0			
Potassium	4.876	0.20	5	0	97.5	80-120	0			
Silver	0.04927	0.0050	0.05	0	98.5	80-120	0			
Sodium	4.708	0.20	5	0	94.2	80-120	0			
Zinc	0.05174	0.0050	0.05	0	103	80-120	0			

LCS Sample ID: **MLCSW1-082508-31577** Units: **mg/L** Analysis Date: **8/26/2008 06:12 PM**
Client ID: Run ID: **ICPMS02_080826A** SeqNo: **1477420** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05269	0.0050	0.05	0	105	80-120	0			
Chromium	0.05122	0.0050	0.05	0	102	80-120	0			
Cobalt	0.05196	0.0050	0.05	0	104	80-120	0			
Manganese	0.0518	0.0050	0.05	0	104	80-120	0			
Selenium	0.05144	0.0050	0.05	0	103	80-120	0			
Vanadium	0.05104	0.0050	0.05	0	102	80-120	0			

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E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

MS Sample ID: **0808511-02BMS** Units: **mg/L** Analysis Date: **8/27/2008 02:01 PM**

Client ID: Run ID: **ICPMS02_080827A** SeqNo: **1477992** Prep Date: **8/25/2008** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05404	0.020	0.05	0.007596	92.9	80-120	0			
Arsenic	0.05388	0.010	0.05	0.002166	103	80-120	0			
Barium	0.09094	0.010	0.05	0.03702	108	80-120	0			
Beryllium	0.04818	0.0040	0.05	0.0002298	95.9	80-120	0			
Boron	2.136	0.10	1	1.157	97.9	80-120	0			
Cadmium	0.05082	0.0040	0.05	0.0002848	101	80-120	0			
Calcium	287.2	1.0	5	278.8	168	80-120	0			SO
Chromium	0.05212	0.010	0.05	0.0006506	103	80-120	0			
Cobalt	0.05068	0.010	0.05	0.0002952	101	80-120	0			
Copper	0.05728	0.010	0.05	0.00864	97.3	80-120	0			
Iron	5.116	0.40	5	0.2318	97.7	80-120	0			
Lead	0.0531	0.010	0.05	0.001542	103	80-120	0			
Magnesium	133.9	0.40	5	126.4	152	80-120	0			SO
Manganese	0.05614	0.010	0.05	0.00613	100	80-120	0			
Molybdenum	0.06142	0.010	0.05	0.009076	105	80-120	0			
Nickel	0.0536	0.010	0.05	0.00507	97.1	80-120	0			
Potassium	12.93	0.40	5	8.01	98.4	80-120	0			
Selenium	0.0552	0.010	0.05	0.002548	105	80-120	0			
Silver	0.04754	0.010	0.05	-0.0003784	95.8	80-120	0			
Sodium	171.2	0.40	5	164.6	131	80-120	0			SO
Vanadium	0.05928	0.010	0.05	0.007996	103	80-120	0			
Zinc	0.1101	0.010	0.05	0.06128	97.7	80-120	0			

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R - RPD outside accepted recovery limits
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B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

MSD Sample ID: **0808511-02BMSD** Units: **mg/L** Analysis Date: **8/27/2008 02:27 PM**
Client ID: Run ID: **ICPMS02_080827A** SeqNo: **1478014** Prep Date: **8/25/2008** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05314	0.020	0.05	0.007596	91.1	80-120	0.05404	1.68	15	
Arsenic	0.05368	0.010	0.05	0.002166	103	80-120	0.05388	0.372	15	
Barium	0.08932	0.010	0.05	0.03702	105	80-120	0.09094	1.8	15	
Beryllium	0.04804	0.0040	0.05	0.0002298	95.6	80-120	0.04818	0.291	15	
Boron	2.114	0.10	1	1.157	95.7	80-120	2.136	1.04	15	
Cadmium	0.0507	0.0040	0.05	0.0002848	101	80-120	0.05082	0.236	15	
Calcium	284.4	1.0	5	278.8	112	80-120	287.2	0.98	15	O
Chromium	0.04898	0.010	0.05	0.0006506	96.7	80-120	0.05212	6.21	15	
Cobalt	0.04924	0.010	0.05	0.0002952	97.9	80-120	0.05068	2.88	15	
Copper	0.05714	0.010	0.05	0.00864	97	80-120	0.05728	0.245	15	
Iron	5.212	0.40	5	0.2318	99.6	80-120	5.116	1.86	15	
Lead	0.05296	0.010	0.05	0.001542	103	80-120	0.0531	0.264	15	
Magnesium	132.6	0.40	5	126.4	125	80-120	133.9	1.01	15	SO
Manganese	0.05514	0.010	0.05	0.00613	98	80-120	0.05614	1.8	15	
Molybdenum	0.06142	0.010	0.05	0.009076	105	80-120	0.06142	0	15	
Nickel	0.05416	0.010	0.05	0.00507	98.2	80-120	0.0536	1.04	15	
Potassium	13.05	0.40	5	8.01	101	80-120	12.93	0.924	15	
Selenium	0.04946	0.010	0.05	0.002548	93.8	80-120	0.0552	11	15	
Silver	0.04836	0.010	0.05	-0.0003784	97.5	80-120	0.04754	1.71	15	
Sodium	171.5	0.40	5	164.6	138	80-120	171.2	0.21	15	SO
Vanadium	0.05814	0.010	0.05	0.007996	100	80-120	0.05928	1.94	15	
Zinc	0.1117	0.010	0.05	0.06128	101	80-120	0.1101	1.44	15	

DUP Sample ID: **0808511-02BDUP** Units: **mg/L** Analysis Date: **8/26/2008 03:38 PM**
Client ID: Run ID: **ICP7500_080826A** SeqNo: **1477167** Prep Date: **8/25/2008** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	312.2	25	0	0	0	0-0	289	7.7	25	
Magnesium	140.6	10	0	0	0	0-0	136.3	3.11	25	
Sodium	181	10	0	0	0	0-0	175.8	2.94	25	

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U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

DUP Sample ID: **0808511-02BDUP** Units: **mg/L** Analysis Date: **8/27/2008 01:48 PM**

Client ID: Run ID: **ICPMS02_080827A** SeqNo: **1477928** Prep Date: **8/25/2008** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.006054	0.020	0	0	0	0-0	0.007596	0	25	J
Arsenic	ND	0.010	0	0	0	0-0	0.002166	0	25	
Barium	0.03874	0.010	0	0	0	0-0	0.03702	4.54	25	
Beryllium	ND	0.0040	0	0	0	0-0	0.0002298	0	25	
Boron	1.2	0.10	0	0	0	0-0	1.157	3.68	25	
Cadmium	ND	0.0040	0	0	0	0-0	0.0002848	0	25	
Chromium	ND	0.010	0	0	0	0-0	0.0006506	0	25	
Cobalt	ND	0.010	0	0	0	0-0	0.0002952	0	25	
Copper	0.008378	0.010	0	0	0	0-0	0.00864	0	25	J
Iron	0.241	0.40	0	0	0	0-0	0.2318	0	25	J
Lead	ND	0.010	0	0	0	0-0	0.001542	0	25	
Manganese	0.00617	0.010	0	0	0	0-0	0.00613	0	25	J
Molybdenum	0.009256	0.010	0	0	0	0-0	0.009076	0	25	J
Nickel	0.005284	0.010	0	0	0	0-0	0.00507	0	25	J
Potassium	8.234	0.40	0	0	0	0-0	8.01	2.76	25	
Selenium	ND	0.010	0	0	0	0-0	0.002548	0	25	
Silver	ND	0.010	0	0	0	0-0	-0.0003784	0	25	
Vanadium	0.008804	0.010	0	0	0	0-0	0.007996	0	25	J
Zinc	0.06038	0.010	0	0	0	0-0	0.06128	1.48	25	

The following samples were analyzed in this batch: 0808447-01B

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J - Analyte detected below quantitation limits
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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

MBLK Sample ID: **SBLKW3-080822-31556** Units: **µg/L** Analysis Date: **8/26/2008 03:21 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477746** Prep Date: **8/22/2008** 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								
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								
Surr: 2,4,6-Tribromophenol	*67.43*	5.0	*100*	0	*67.4*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*72.06*	5.0	*100*	0	*72.1*	*48-120*	0			
Surr: 2-Fluorophenol	*60.11*	5.0	*100*	0	*60.1*	*20-120*	0			
Surr: 4-Terphenyl-d14	*81.01*	5.0	*100*	0	*81*	*51-135*	0			
Surr: Nitrobenzene-d5	*73.36*	5.0	*100*	0	*73.4*	*41-120*	0			
Surr: Phenol-d6	*64.98*	5.0	*100*	0	*65*	*20-120*	0			

ND - Not Detected at the Reporting Limit
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U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

LCS Sample ID: **SLCSW3-080822-31556** Units: **µg/L** Analysis Date: **8/26/2008 03:49 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477747** Prep Date: **8/22/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	34.72	5.0	50	0	69.4	50-120	0			
2,4,5-Trichlorophenol	77.01	5.0	100	0	77	50-120	0			
2,4,6-Trichlorophenol	75.15	5.0	100	0	75.1	50-120	0			
2-Methylnaphthalene	35.59	5.0	50	0	71.2	55-120	0			
2-Methylphenol	76.58	5.0	100	0	76.6	50-120	0			
2-Nitroaniline	38.37	5.0	50	0	76.7	55-120	0			
2-Nitrophenol	74.18	5.0	100	0	74.2	55-120	0			
3&4-Methylphenol	114.7	5.0	150	0	76.5	55-120	0			
3-Nitroaniline	34.11	5.0	50	0	68.2	40-120	0			
4-Nitroaniline	36.62	5.0	50	0	73.2	50-120	0			
4-Nitrophenol	79.01	5.0	100	0	79	45-120	0			
Acenaphthene	36.95	5.0	50	0	73.9	55-120	0			
Acenaphthylene	36.28	5.0	50	0	72.6	55-120	0			
Aniline	29.52	5.0	50	0	59	30-120	0			
Anthracene	38.39	5.0	50	0	76.8	55-120	0			
Benz(a)anthracene	36.89	5.0	50	0	73.8	55-120	0			
Benzidine	22.62	5.0	50	0	45.2	10-120	0			
Hexachloroethane	33.94	5.0	50	0	67.9	55-120	0			
Indeno(1,2,3-cd)pyrene	40.02	5.0	50	0	80	55-120	0			
Isophorone	41	5.0	50	0	82	55-120	0			
N-Nitrosodi-n-propylamine	36.91	5.0	50	0	73 8	50-120	0			
N-Nitrosodimethylamine	34.52	5.0	50	0	69	45-120	0			
N-Nitrosodiphenylamine	36.2	5.0	50	0	72.4	55-120	0			
Naphthalene	35.86	5.0	50	0	71.7	55-120	0			
Nitrobenzene	36.23	5.0	50	0	72.5	55-120	0			
Pentachlorophenol	82.21	5.0	100	0	82.2	55-120	0			
Phenanthrene	35.76	5.0	50	0	71.5	55-120	0			
Phenol	77.28	5.0	100	0	77.3	50-120	0			
Pyrene	38.67	5.0	50	0	77.3	55-120	0			
Surr: 2,4,6-Tribromophenol	*75.53*	5.0	*100*	0	*75.5*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*75.37*	5.0	*100*	0	*75.4*	*48-120*	0			
Surr: 2-Fluorophenol	*69.51*	5.0	*100*	0	*69.5*	*20-120*	0			
Surr: 4-Terphenyl-d14	*79.92*	5.0	*100*	0	*79.9*	*51-135*	0			
Surr: Nitrobenzene-d5	*74.24*	5.0	*100*	0	*74.2*	*41-120*	0			
Surr: Phenol-d6	*73.1*	5.0	*100*	0	*73.1*	*20-120*	0			

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

MS Sample ID: **0808511-02CMS** Units: µg/L Analysis Date: **8/26/2008 04:46 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477749** Prep Date: **8/22/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	33.46	5.0	50	0	66.9	50-120	0			
2,4,5-Trichlorophenol	75.07	5.0	100	0	75.1	50-120	0			
2,4,6-Trichlorophenol	73.33	5.0	100	0	73.3	50-120	0			
2-Methylnaphthalene	35.68	5.0	50	0	71.4	55-120	0			
2-Methylphenol	77.57	5.0	100	0	77.6	50-120	0			
2-Nitroaniline	37.45	5.0	50	0	74.9	55-120	0			
2-Nitrophenol	75.45	5.0	100	0	75.4	55-120	0			
3&4-Methylphenol	115.5	5.0	150	0	77	55-120	0			
3-Nitroaniline	30.01	5.0	50	0	60	40-120	0			
4-Nitroaniline	37.96	5.0	50	0	75.9	50-120	0			
4-Nitrophenol	76.56	5.0	100	0	76.6	45-120	0			
Acenaphthene	35.71	5.0	50	0	71.4	55-120	0			
Acenaphthylene	35.78	5.0	50	0	71.6	55-120	0			
Aniline	26.28	5.0	50	0	52.6	30-120	0			
Anthracene	37.89	5.0	50	0	75.8	55-120	0			
Benz(a)anthracene	35.95	5.0	50	0	71.9	55-120	0			
Benzidine	26.85	5.0	50	0	53.7	10-120	0			
Hexachloroethane	33.96	5.0	50	0	67.9	55-120	0			
Indeno(1,2,3-cd)pyrene	38.84	5.0	50	0	77.7	55-120	0			
Isophorone	41.18	5.0	50	0	82.4	55-120	0			
N-Nitrosodi-n-propylamine	37.63	5.0	50	0	75.3	50-120	0			
N-Nitrosodimethylamine	34.99	5.0	50	0	70	45-120	0			
N-Nitrosodiphenylamine	36.46	5.0	50	0	72.9	55-120	0			
Naphthalene	35.13	5.0	50	0	70.3	55-120	0			
Nitrobenzene	35.47	5.0	50	0	70.9	55-120	0			
Pentachlorophenol	80.62	5.0	100	0	80.6	55-120	0			
Phenanthrene	36.14	5.0	50	0	72.3	55-120	0			
Phenol	76.73	5.0	100	0	76.7	50-120	0			
Pyrene	37.91	5.0	50	0	75.8	55-120	0			
Surr: 2,4,6-Tribromophenol	*72.83*	5.0	*100*	0	*72.8*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*68.96*	5.0	*100*	0	*69*	*48-120*	0			
Surr: 2-Fluorophenol	*66.08*	5.0	*100*	0	*66.1*	*20-120*	0			
Surr: 4-Terphenyl-d14	*75.78*	5.0	*100*	0	*75.8*	*51-135*	0			
Surr: Nitrobenzene-d5	*70.47*	5.0	*100*	0	*70.5*	*41-120*	0			
Surr: Phenol-d6	*70.07*	5.0	*100*	0	*70.1*	*20-120*	0			

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

MSD Sample ID: **0808511-02CMSD** Units: **µg/L** Analysis Date: **8/26/2008 05:15 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477750** Prep Date: **8/22/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	34.31	5.0	50	0	68.6	50-120	33.46	2.52	20	
2,4,5-Trichlorophenol	74.68	5.0	100	0	74.7	50-120	75.07	0.523	20	
2,4,6-Trichlorophenol	74.48	5.0	100	0	74.5	50-120	73.33	1.56	20	
2-Methylnaphthalene	35.49	5.0	50	0	71	55-120	35.68	0.532	20	
2-Methylphenol	75.01	5.0	100	0	75	50-120	77.57	3.35	20	
2-Nitroaniline	37.64	5.0	50	0	75.3	55-120	37.45	0.502	20	
2-Nitrophenol	74.39	5.0	100	0	74.4	55-120	75.45	1.41	20	
3&4-Methylphenol	110.4	5.0	150	0	73.6	55-120	115.5	4.5	20	
3-Nitroaniline	29.11	5.0	50	0	58.2	40-120	30.01	3.05	20	
4-Nitroaniline	36.67	5.0	50	0	73.3	50-120	37.96	3.43	20	
4-Nitrophenol	74.08	5.0	100	0	74.1	45-120	76.56	3.28	20	
Acenaphthene	36.41	5.0	50	0	72.8	55-120	35.71	1.94	20	
Acenaphthylene	36.19	5.0	50	0	72.4	55-120	35.78	1.14	20	
Aniline	26.16	5.0	50	0	52.3	30-120	26.28	0.454	20	
Anthracene	38.25	5.0	50	0	76.5	55-120	37.89	0.937	20	
Benz(a)anthracene	36.41	5.0	50	0	72.8	55-120	35.95	1.25	20	
Benzidine	23.27	5.0	50	0	46.5	10-120	26.85	14.3	20	
Hexachloroethane	33.42	5.0	50	0	66.8	55-120	33.96	1.6	20	
Indeno(1,2,3-cd)pyrene	39.46	5.0	50	0	78.9	55-120	38.84	1.6	20	
Isophorone	40.61	5.0	50	0	81.2	55-120	41.18	1.39	20	
N-Nitrosodi-n-propylamine	36.2	5.0	50	0	72.4	50-120	37.63	3.89	20	
N-Nitrosodimethylamine	34.97	5.0	50	0	69.9	45-120	34.99	0.0437	20	
N-Nitrosodiphenylamine	36.26	5.0	50	0	72.5	55-120	36.46	0.562	20	
Naphthalene	35.01	5.0	50	0	70	55-120	35.13	0.338	20	
Nitrobenzene	35.59	5.0	50	0	71.2	55-120	35.47	0.322	20	
Pentachlorophenol	82.71	5.0	100	0	82.7	55-120	80.62	2.57	20	
Phenanthrene	36.31	5.0	50	0	72.6	55-120	36.14	0.474	20	
Phenol	74.67	5.0	100	0	74.7	50-120	76.73	2.71	20	
Pyrene	38.78	5.0	50	0	77.6	55-120	37.91	2.28	20	
Surr: 2,4,6-Tribromophenol	*75.82*	*5.0*	*100*	*0*	*75.8*	*42-124*	72.83	*4.02*	*20*	
Surr: 2-Fluorobiphenyl	*76.92*	*5.0*	*100*	*0*	*76.9*	*48-120*	68.96	*10.9*	*20*	
Surr: 2-Fluorophenol	*70.84*	*5.0*	*100*	*0*	*70.8*	*20-120*	66.08	*6.96*	*20*	
Surr: 4-Terphenyl-d14	*82.48*	*5.0*	*100*	*0*	*82.5*	*51-135*	75.78	*8.47*	*20*	
Surr: Nitrobenzene-d5	*74.59*	*5.0*	*100*	*0*	*74.6*	*41-120*	70.47	*5.68*	*20*	
Surr: Phenol-d6	*73.62*	*5.0*	*100*	*0*	*73.6*	*20-120*	70.07	*4.94*	*20*	

The following samples were analyzed in this batch: 0808447-01D

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R67271 Instrument ID VOA1 Method: SW8260

MBLK Sample ID: VBLKW-082808-R67271 Units: µg/L Analysis Date: 8/28/2008 11:58 AM

Client ID: Run ID: VOA1_080828A SeqNo: 1480001 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								
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	*53.86*	5.0	*50*	0	*108*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*52.67*	5.0	*50*	0	*105*	*72-125*	0			
Surr: Dibromofluoromethane	*53.07*	5.0	*50*	0	*106*	*71-125*	0			
Surr: Toluene-d8	*52.33*	5.0	*50*	0	*105*	*75-125*	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Reference analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67271** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-082808-R67271** Units: µg/L Analysis Date: **8/28/2008 11:06 AM**
Client ID: Run ID: **VOA1_080828A** SeqNo: **1479999** 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	48.42	5.0	50	0	96.8	80-120	0			
1,1,2,2-Tetrachloroethane	47.22	5.0	50	0	94.4	72-120	0			
1,1,2-Trichloroethane	48.36	5.0	50	0	96.7	80-120	0			
1,1-Dichloroethane	49.74	5.0	50	0	99.5	76-120	0			
1,1-Dichloroethene	49.09	5.0	50	0	98.2	73-124	0			
1,2-Dichloroethane	48.21	5.0	50	0	96.4	78-120	0			
2-Butanone	95.73	10	100	0	95.7	58-132	0			
2-Chloroethyl vinyl ether	96.27	10	100	0	96.3	74-120	0			
2-Hexanone	93.29	10	100	0	93.3	61-130	0			
4-Methyl-2-pentanone	92.5	10	100	0	92.5	65-127	0			
Acetone	85.83	10	100	0	85.8	59-137	0			
Benzene	46.72	5.0	50	0	93.4	73-121	0			
Bromodichloromethane	46.81	5.0	50	0	93.6	80-120	0			
Bromoform	47.28	5.0	50	0	94.6	79-120	0			
Bromomethane	58.96	5.0	50	0	118	66-137	0			
Carbon disulfide	90.45	10	100	0	90.4	68-141	0			
Carbon tetrachloride	47.05	5.0	50	0	94.1	75-124	0			
Chlorobenzene	48.28	5.0	50	0	96.6	80-120	0			
Chloroethane	49.6	5.0	50	0	99.2	76-121	0			
Chloroform	48.58	5.0	50	0	97.2	80-120	0			
Chloromethane	44.24	5.0	50	0	88.5	67-123	0			
cis-1,3-Dichloropropene	45.99	5.0	50	0	92	80-120	0			
Dibromochloromethane	48.32	5.0	50	0	96.6	80-120	0			
Ethylbenzene	48.09	5.0	50	0	96.2	80-120	0			
m,p-Xylene	97.7	10	100	0	97.7	78-121	0			
Methylene chloride	46.2	10	50	0	92.4	65-133	0			
Styrene	50.75	5.0	50	0	101	80-120	0			
Tetrachloroethene	47.81	5.0	50	0	95.6	79-120	0			
Toluene	47.84	5.0	50	0	95.7	80-120	0			
trans-1,3-Dichloropropene	46.15	5.0	50	0	92.3	80-120	0			
Trichloroethene	46.02	5.0	50	0	92	80-120	0			
Vinyl acetate	91.99	10	100	0	92	67-139	0			
Vinyl chloride	46.39	2.0	50	0	92.8	70-127	0			
Xylenes, Total	147.9	15	150	0	98.6	80-120	0			
Surr: 1,2-Dichloroethane-d4	*54.64*	5.0	*50*	0	*109*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*54.98*	5.0	*50*	0	*110*	*72-125*	0			
Surr: Dibromofluoromethane	*52.57*	5.0	*50*	0	*105*	*71-125*	0			
Surr: Toluene-d8	*53.14*	5.0	*50*	0	*106*	*75-125*	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

lient: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R67271 Instrument ID VOA1 Method: SW8260

MS Sample ID: 0808627-06AMS Units: µg/L Analysis Date: 8/28/2008 03:03 PM

Client ID: Run ID: VOA1_080828A SeqNo: 1480008 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	45.92	5.0	50	0	91.8	80-120	0			
1,1,2,2-Tetrachloroethane	49.08	5.0	50	0	98.2	72-120	0			
1,1,2-Trichloroethane	48.76	5.0	50	0	97.5	80-120	0			
1,1-Dichloroethane	48.06	5.0	50	0	96.1	76-120	0			
1,1-Dichloroethene	43.76	5.0	50	0	87.5	73-124	0			
1,2-Dichloroethane	49.42	5.0	50	0	98.8	78-120	0			
2-Butanone	102.5	10	100	0	103	58-132	0			
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0			S
2-Hexanone	107.8	10	100	0	108	61-130	0			
4-Methyl-2-pentanone	105.3	10	100	0	105	65-127	0			
Acetone	100.7	10	100	3.737	97	59-137	0			
Benzene	46.44	5.0	50	0	92.9	73-121	0			
Bromodichloromethane	49.65	5.0	50	0	99.3	80-120	0			
Bromoform	49.32	5.0	50	0	98.6	79-120	0			
Bromomethane	52.71	5.0	50	0	105	66-137	0			
Carbon disulfide	86.56	10	100	0	86.6	68-141	0			
Carbon tetrachloride	45	5.0	50	0	90	75-124	0			
Chlorobenzene	46.09	5.0	50	0	92.2	80-120	0			
Chloroethane	43.6	5.0	50	0	87.2	76-121	0			
Chloroform	47.89	5.0	50	0	95.8	80-120	0			
Chloromethane	38.28	5.0	50	0	76.6	67-123	0			
cis-1,3-Dichloropropene	48.35	5.0	50	0	96.7	80-120	0			
Dibromochloromethane	50.05	5.0	50	0	100	80-120	0			
Ethylbenzene	46.95	5.0	50	0.1866	93.5	80-120	0			
m,p-Xylene	92.79	10	100	1.119	91.7	78-121	0			
Methylene chloride	46.72	10	50	0	93.4	65-133	0			
Styrene	44.75	5.0	50	0	89.5	80-120	0			
Tetrachloroethene	42.94	5.0	50	0	85.9	79-120	0			
Toluene	47.05	5.0	50	1.586	90.9	80-120	0			
trans-1,3-Dichloropropene	47.75	5.0	50	0	95.5	80-120	0			
Trichloroethene	46.39	5.0	50	0	92.8	80-120	0			
Vinyl acetate	102.3	10	100	0	102	67-139	0			
Vinyl chloride	41.12	2.0	50	0	82.2	70-127	0			
Xylenes, Total	138	15	150	1.119	91.3	80-120	0			
Surr: 1,2-Dichloroethane-d4	*54.66*	5.0	*50*	0	*109*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*55.17*	5.0	*50*	0	*110*	*72-125*	0			
Surr: Dibromofluoromethane	*55.4*	5.0	*50*	0	*111*	*71-125*	0			
Surr: Toluene-d8	*53.05*	5.0	*50*	0	*106*	*75-125*	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67271** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **0808627-06AMSD** Units: **µg/L** Analysis Date: **8/28/2008 03:29 PM**

Client ID: Run ID: **VOA1_080828A** SeqNo: **1480009** 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	41.94	5.0	50	0	83.9	80-120	45.92	9.07	20	
1,1,2,2-Tetrachloroethane	53.17	5.0	50	0	106	72-120	49.08	8.01	20	
1,1,2-Trichloroethane	50.71	5.0	50	0	101	80-120	48.76	3.92	20	
1,1-Dichloroethane	46.4	5.0	50	0	92.8	76-120	48.06	3.51	20	
1,1-Dichloroethene	41.39	5.0	50	0	82.8	73-124	43.76	5.59	20	
1,2-Dichloroethane	48.13	5.0	50	0	96.3	78-120	49.42	2.64	20	
2-Butanone	112.5	10	100	0	113	58-132	102.5	9.3	20	
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S
2-Hexanone	111.1	10	100	0	111	61-130	107.8	2.99	20	
4-Methyl-2-pentanone	112.2	10	100	0	112	65-127	105.3	6.35	20	
Acetone	108.2	10	100	3.737	104	59-137	100.7	7.13	20	
Benzene	45.28	5.0	50	0	90.6	73-121	46.44	2.53	20	
Bromodichloromethane	46.83	5.0	50	0	93.7	80-120	49.65	5.84	20	
Bromoform	50.69	5.0	50	0	101	79-120	49.32	2.75	20	
Bromomethane	52.06	5.0	50	0	104	66-137	52.71	1.24	20	
Carbon disulfide	85.97	10	100	0	86	68-141	86.56	0.686	20	
Carbon tetrachloride	39.27	5.0	50	0	78.5	75-124	45	13.6	20	
Chlorobenzene	45.26	5.0	50	0	90.5	80-120	46.09	1.8	20	
Chloroethane	44.84	5.0	50	0	89.7	76-121	43.6	2.79	20	
Chloroform	46.93	5.0	50	0	93.9	80-120	47.89	2.04	20	
Chloromethane	36.88	5.0	50	0	73.8	67-123	38.28	3.71	20	
cis-1,3-Dichloropropene	47.49	5.0	50	0	95	80-120	48.35	1.8	20	
Dibromochloromethane	50.22	5.0	50	0	100	80-120	50.05	0.344	20	
Ethylbenzene	46.01	5.0	50	0.1866	91.7	80-120	46.95	2.02	20	
m,p-Xylene	91.92	10	100	1.119	90.8	78-121	92.79	0.938	20	
Methylene chloride	46.42	10	50	0	92.8	65-133	46.72	0.647	20	
Styrene	47.71	5.0	50	0	95.4	80-120	44.75	6.41	20	
Tetrachloroethene	40.18	5.0	50	0	80.4	79-120	42.94	6.65	20	
Toluene	47.34	5.0	50	1.586	91.5	80-120	47.05	0.612	20	
trans-1,3-Dichloropropene	47.04	5.0	50	0	94.1	80-120	47.75	1.5	20	
Trichloroethene	43.51	5.0	50	0	87	80-120	46.39	6.39	20	
Vinyl acetate	101.4	10	100	0	101	67-139	102.3	0.936	20	
Vinyl chloride	38.99	2.0	50	0	78	70-127	41.12	5.32	20	
Xylenes, Total	139.1	15	150	1.119	92	80-120	138	0.743	20	
Surr: 1,2-Dichloroethane-d4	*51.43*	5.0	*50*	0	*103*	*70-125*	54.66	*6.1*	*20*	
Surr: 4-Bromofluorobenzene	*53.63*	5.0	*50*	0	*107*	*72-125*	55.17	*2.83*	*20*	
Surr: Dibromofluoromethane	*53.49*	5.0	*50*	0	*107*	*71-125*	55.4	*3.51*	*20*	
Surr: Toluene-d8	*54.15*	5.0	*50*	0	*108*	*75-125*	53.05	*2.05*	*20*	

The following samples were analyzed in this batch: 0808447-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R66876** Instrument ID **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-082008-R66876** Units: **pH units** Analysis Date: **8/20/2008 04:00 PM**

Client ID: Run ID: **WETCHEM_080820G** SeqNo: **1472036** 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: **0808447-01CDUP** Units: **pH units** Analysis Date: **8/20/2008 04:00 PM**

Client ID: **Injection Well** Run ID: **WETCHEM_080820G** SeqNo: **1472039** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.32	0.10	0	0	0	0-0	7.29	0.411	20	H

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

lient: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R66965** Instrument ID **WetChem** Method: **SM2320B**

MBLK Sample ID: **WBLKW1-082108-R66965** Units: **mg/L** Analysis Date: **8/21/2008 05:30 PM**
Client ID: Run ID: **WETCHEM_080821I** SeqNo: **1473296** 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: **WLCSW1-082108-R66965** Units: **mg/L** Analysis Date: **8/21/2008 05:30 PM**
Client ID: Run ID: **WETCHEM_080821I** SeqNo: **1473297** 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)	1011	5.0	1000	0	101	80-120	0			
Alkalinity, Total (As CaCO3)	1011	5.0	1000	0	101	80-120	0			

DUP Sample ID: **0808436-02DDUP** Units: **mg/L** Analysis Date: **8/21/2008 05:30 PM**
Client ID: Run ID: **WETCHEM_080821I** SeqNo: **1473318** 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)	357	5.0	0	0	0	0-0	359	0.559	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)	357	5.0	0	0	0	0-0	359	0.559	20	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
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E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: R67012 Instrument ID ICS3000 Method: E300

MBLK Sample ID: **WBLKW1-082008-R67012** Units: mg/L Analysis Date: 8/20/2008 11:47 AM
Client ID: Run ID: ICS3000_080820A SeqNo: 1474281 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)	*5.084*	0.10	*5*	0	*102*	*85-115*	0			

LCS Sample ID: **WLCSW1-082008-R67012** Units: mg/L Analysis Date: 8/20/2008 12:10 PM
Client ID: Run ID: ICS3000_080820A SeqNo: 1474282 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.88	0.50	20	0	99.4	90-110	0			
Sulfate	19.89	0.50	20	0	99.5	90-110	0			
Surr: Selenate (surr)	*4.925*	0.10	*5*	0	*98.5*	*85-115*	0			

MS Sample ID: **0808436-03DMS** Units: mg/L Analysis Date: 8/20/2008 01:46 PM
Client ID: Run ID: ICS3000_080820A SeqNo: 1474286 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	79.05	0.50	10	71.12	79.3	80-120	0			SEO
Sulfate	68.28	0.50	10	60.14	81.4	80-120	0			EO
Surr: Selenate (surr)	*4.676*	0.10	*5*	0	*93.5*	*85-115*	0			

DUP Sample ID: **0808436-03DDUP** Units: mg/L Analysis Date: 8/20/2008 01:22 PM
Client ID: Run ID: ICS3000_080820A SeqNo: 1474285 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	69.26	0.50	0	0	0	0-0	71.12	2.65	20	E
Sulfate	59.16	0.50	0	0	0	0-0	60.14	1.64	20	E
Surr: Selenate (surr)	*4.502*	0.10	*5*	0	*90*	*85-115*	4.576	*1.63*	*20*	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

lient: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67013** Instrument ID **Balance1** Method: **E160.1** **(Dissolve)**

MBLK Sample ID: **BLANK-R67013** Units: **mg/L** Analysis Date: **8/20/2008 04:00 PM**
Client ID: Run ID: **BALANCE1_080820E** SeqNo: **1474298** 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-R67013** Units: **mg/L** Analysis Date: **8/20/2008 04:00 PM**
Client ID: Run ID: **BALANCE1_080820E** SeqNo: **1474300** 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	1038	10	1000	0	104	85-115	0			

DUP Sample ID: **0808424-02ADUP** Units: **mg/L** Analysis Date: **8/20/2008 04:00 PM**
Client ID: Run ID: **BALANCE1_080820E** SeqNo: **1474292** 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	1508	10	0	0	0	0-0	1488	1.34	20	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

lient: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67035** Instrument ID **WetChem** Method: **E120.1**

MBLK Sample ID: **WBLKW1-082208-R67035** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1474821** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	ND	1.0								

LCS Sample ID: **WLCSW1-082208-R67035** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1474822** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	1420	1.0	1413	0	100	80-120	0			

DUP Sample ID: **0808333-01CDUP** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1474836** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	711	1.0	0	0	0	0-0	716	0.701	20	

DUP Sample ID: **0808447-01CDUP** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: **Injection Well** Run ID: **WETCHEM_080822C** SeqNo: **1474837** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	4690	1.0	0	0	0	0-0	4710	0.426	20	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

☐ 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 #: 0808-17

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Well Qrtly	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	P.O. Box 159	Address	P.O. Box 159	E	Anions (300) Cl, SO4
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(505) 748-3311	Phone	(505) 748-3311	H	Conductivity
Fax	(505) 746-5421	Fax	(505) 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	Injection Well	8/19/08	1130	L	Y	9	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☐ Other ☐ 2 Wk Days ☐ 24 Hour ☑ Std 10 Wk Days ☐ 5 Wk Days

Results Due Date:

Relinquished by: Aaron Strange — Date: 8/19/08 — Time: 1615

Received by:

Relinquished by: — Date: 8/20/8 — Time: 8:55

Received by (Laboratory):

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
☐ Level III Std QC/Raw Data
☐ Level IV SW846/CLP
☐ Other
☐ TRRP Checklist
☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 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.

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ALS Group USA, Corp.

Sample Receipt Checklist

Client Name: NAVAJO REFINING

Date/Time Received: 8/20/2008 08:55

Work Order Number 0809447

Received by: RSZ

Checklist completed by [signature] 8.2008
Signature Date

Reviewed by Initials [signature] Date 8/20/08

Matrix: 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):	0.6c	002	
Cooler(s)/Kit(s):	0394		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐

Adjusted? Checked by

Login Notes: Trip blank not on COC--logged in without analysis.

Client contacted: Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action

PURCHASE ORDER

The following number must appear on all related correspondence, shipping papers, and invoices:

P.O. NUMBER: 10-2114565

To: ALS Laboratory Group
3352 128th Ave.
Holland, MI 494249263
Ph: (616) 399-6070 Fax: (616) 399-6185

Bill To: **ALS Group USA, Corp.**
10450 Stancliff Rd, Suite 210
Houston, TX 77099
TEL 281-530-5656 FAX 281-530-5887

Ship To: ALS Laboratory Group
10450 Stancliff Rd, Suite 210

Houston, Texas 77099-4338
TEL (281) 530-5656 FAX (281) 530-5887

Acct #:

P.O. DATE	REQUISITIONER	Ship VIA	Department	TERMS
8/20/2008	rsanchez	UPS		NET 30

Item	Catalog No.	QTY	Unit Price	Total Price
Reactive Cyanide		2	$24.50	$49.00
Reactive Sulfide		2	$24.50	$49.00

Sales Tax:	$0.00
Shipping/Handling:	$0.00
Other:	$0.00
OrderAmount:	$98.00

Comments: 0808447

8/20/08

Authorized by Date

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Date: 20-Aug-08
COC ID: 6639
Due Date 01-Sep-08

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	0808447	A Cyanide, Reactive (SW-846)
Work Order		Project Number		B Sulfide, Reactive (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C
Send Report To	Jeffrey L Croston	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	jeff.croston@alsenviro.com	eMail CC	glenda.ramos@alsenviro.com	J

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
0808447-01E (Injection Well)	Water	8/19/2008 11:30	(1) 1LPNEAT	X	X								

Comments:

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		
	8/20/08				

ALS Laboratory Group

Date: 22-Aug-08

Client: ALS Laboratory Group
Project: 0808447
Work Order: 0808386

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0808386-01	0808447-01E	Water		8/19/2008 11:30	8/21/2008 14:10	☐

ALS Laboratory Group

Date: *22-Aug-08*

Client:	ALS Laboratory Group		
Project:	0808447	**Work Order:**	0808386
Sample ID:	0808447-01E	**Lab ID:**	0808386-01
Collection Date:	8/19/2008 11:30 AM	**Matrix:**	WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**EPA 7.3.3.2**			Analyst: **DB**
Cyanide, Reactive	ND		40.0	mg/Kg	1	8/22/2008
SULFIDE, REACTIVE			**EPA 7.3.4.2**			Analyst: **DB**
Sulfide, Reactive	ND		40.0	mg/Kg	1	8/22/2008

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

ALS Laboratory Group

Client: ALS Laboratory Group
Work Order: 0808386
Project: 0808447

Date: *22-Aug-08*

QC BATCH REPORT

Batch ID: **R61249** Instrument ID **WETCHEM** Method: **EPA 7.3.4.2**

MBLK Sample ID: **WBLKS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**

Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1018085** 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: 0808386-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%

B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: ALS Laboratory Group
Work Order: 0808386
Project: 0808447

QC BATCH REPORT

Batch ID: **R61250** Instrument ID **WETCHEM** Method: **EPA 7.3.3.2**

MBLK Sample ID: **WBLKS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: Run ID: **WETCHEM_080822D** SeqNo: **1018091** 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: **WLCSS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: Run ID: **WETCHEM_080822D** SeqNo: **1018092** 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	75-125	0			

LCSD Sample ID: **WLCSDS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: Run ID: **WETCHEM_080822D** SeqNo: **1018100** 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	75-125	278.9	0	35	

MS Sample ID: **0808386-01A MS** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: **0808447-01E** Run ID: **WETCHEM_080822D** SeqNo: **1018096** 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: **0808386-01A MSD** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: **0808447-01E** Run ID: **WETCHEM_080822D** SeqNo: **1018097** 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: 0808386-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

0808386

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Date: 20-Aug-08
COC ID: 6639
Due Date 01-Sep-08

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	0808447	A Cyanide, Reactive (SW-846)
Work Order		Project Number		B Sulfide, Reactive (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C
Send Report To	Jeffrey L Croston	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	jeff.croston@alsenviro.com	eMail CC	glenda.ramos@alsenviro.com	J

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
0808447-01E (Injection Well)	Water	8/19/2008 11:30	(1) 1LPNEAT	X	X								

Comments:

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
~~Relinquished by:~~	~~Date/Time~~	~~Received by:~~	~~Date/Time~~		Std
	8/20/08		8/21/08 2:10p		

ALS Laboratory Group

Sample Receipt Checklist

Client Name ELAB-HOU

Date/Time Received: 8/21/2008 14:10

Work Order Number 0808386

Received by: ARB

Checklist completed by _____ 8/21/08 (Signature / Date)

Reviewed by _____ 8/22/08 (Initials / Date)

Matrix: Water

Carrier name: UPS

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):	3.1 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 ☐

Adjusted? NP Checked by _____

Login Notes:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

_____

_____

Corrective Action _____

_____

_____

3.45

UPS Next Day Air Saver®

Shipping Document

WEIGHT 35 | DIMENSIONAL WEIGHT | LARGE PACKAGE

Saver

SHIPMENT FROM

UPS ACCOUNT NO. 698174

REFERENCE NUMBER

SUB CONTRACT

RICHARD SANCHEZ — TELEPHONE 281-530-5656

ALS LABORATORY GROUP

1450 STANCLIFF RD STE #210

HOUSTON TX 77099

DELIVER TO

RECEIVING — TELEPHONE 616-399-6070

ALS LABORATORY GROUP

3352 128TH AVE

HOLLAND MI 49424

MI 495

UPS Next Day Air Saver

1Z 698 174 23 1005 3

SHIPMENT ID NUMBER 6981 7478 857

(URC v.72.5A 10/2007)
0201952542009 1/07 S

United Parcel Service, Louisville, KY

CUSTODY SEAL

Date: 8-21-08 Time: 1420

Name: R SANCHEZ

Company: ALS

Seal Broken By: RB Date: 8/21/08

ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel +1 281 530 5656

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25184** InstrumentID: **VOA2**

MSD Sample ID: **0412122-01AMSD** Test Code: **SW8260** Units: µg/L Analysis Date: **12/10/04 15:56**

Client ID: Run ID: **VOA2_041210A** SeqNo: **586935** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	4901	500	5000	0	98	75.2-120	4798	2.14	20	
1,1,2,2-Tetrachloroethane	3673	500	5000	0	73.5	72.4-121	3949	7.23	20	
1,1,2-Trichloroethane	5074	500	5000	0	101	80-120	4942	2.63	20	
1,1-Dichloroethane	4943	500	5000	0	98.9	76.9-120	4844	2.02	20	
1,1-Dichloroethene	4860	500	5000	0	97.2	72.6-123	4755	2.18	20	
1,2-Dichloroethane	5155	500	5000	0	103	80-120	4962	3.81	20	
2-Butanone	11480	1,000	10000	0	115	69-131	11580	0.868	20	
2-Chloroethyl vinyl ether	8419	1,000	10000	0	84.2	60-135	8304	1.37	20	
2-Hexanone	11740	1,000	10000	0	117	55.6-126	11630	0.973	20	
4-Methyl-2-pentanone	11100	1,000	10000	0	111	67.4-121	11200	0.93	20	
Acetone	11240	1,000	10000	0	112	64.4-140	10640	5.48	20	
Benzene	5163	500	5000	0	103	80-120	4919	4.82	20	
Bromodichloromethane	5176	500	5000	0	104	80-120	4991	3.63	20	
Bromoform	5440	500	5000	0	109	77.9-121	5184	4.82	20	
Bromomethane	4925	500	5000	0	98.5	63.3-137	4562	7.66	20	
Carbon disulfide	9210	1,000	10000	0	92.1	74.1-123	9132	0.851	20	
Carbon tetrachloride	4749	500	5000	0	95	74.7-120	4713	0.763	20	
Chlorobenzene	4736	500	5000	0	94.7	80-120	4596	3.01	20	
Chloroethane	4762	500	5000	0	95.2	74.7-126	4625	2.92	20	
Chloroform	9470	500	5000	4602	97.4	80-120	8788	7.47	20	
Chloromethane	4892	500	5000	0	97.8	64.5-132	4632	5.45	20	
cis-1,3-Dichloropropene	5058	500	5000	0	101	80-120	4838	4.44	20	
Dibromochloromethane	5191	500	5000	0	104	80-120	4989	3.97	20	
Ethylbenzene	5207	500	5000	0	104	80-120	5104	1.99	20	
m,p-Xylene	10210	1,000	10000	0	102	80-120	9965	2.46	20	
Methylene chloride	4799	1,000	5000	0	96	76.2-120	4625	3.7	20	
Styrene	5332	500	5000	0	107	80-120	5121	4.03	20	
Tetrachloroethene	5155	500	5000	0	103	68.5-130	5010	2.85	20	
Toluene	5106	500	5000	0	102	80-120	4924	3.63	20	
trans-1,3-Dichloropropene	5390	500	5000	0	108	80-120	5349	0.761	20	
Trichloroethene	6591	500	5000	0	132	78.9-120	5895	11.2	20	S
Vinyl acetate	613	1,000	10000	0	6.13	62.4-133	1690	0	20	JS
Vinyl chloride	4832	200	5000	0	96.6	72.7-128	4609	4.73	20	
Xylenes, Total	15030	1,500	15000	0	100	80-120	14660	2.5	20	
Surr: 1,2-Dichloroethane-d4	4254	500	5000	0	85.1	71-126	4231	0.551	20	
Surr: 4-Bromofluorobenzene	4444	500	5000	0	88.9	74-125	4306	3.16	20	
Surr: Dibromofluoromethane	4082	500	5000	0	81.6	73-126	4042	0.978	20	
Surr: Toluene-d8	4509	500	5000	0	90.2	75-125	4389	2.69	20	

The following samples were analyzed in this batch: 0412005-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R24953** InstrumentID: **WetChem**

LCS Sample ID: **WLCSW1-120104** Test Code: **E150.1** Units: **pH units** Analysis Date: **12/01/04 0:00**
Client ID: Run ID: **WETCHEM_041201B** SeqNo: **581999** 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	85-115	0			

DUP Sample ID: **0412005-01CDUP** Test Code: **E150.1** Units: **pH units** Analysis Date: **12/01/04 0:00**
Client ID: **Inj Wells** Run ID: **WETCHEM_041201B** SeqNo: **582003** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.17	0.10	0	0	0	0-0	7.19	0.279	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25032** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-120304** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203B** SeqNo: **583600** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	ND	1.0								

LCS Sample ID: **WLCSW1-120304** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203B** SeqNo: **583601** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	142	1.0	141.2	0	101	80-120	0			

DUP Sample ID: **0412005-01CDUP** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **12/03/04 0:00**
Client ID: **Inj Wells** Run ID: **WETCHEM_041203B** SeqNo: **583639** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	6390	1.0	0	0	0	0-0	6350	0.628	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: R25042 InstrumentID: WetChem

MBLK Sample ID: **WBLKW1-120304** Test Code: **E160.1** Units: **mg/L** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203D** SeqNo: **583929** 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: **WLCSW1-120304** Test Code: **E160.1** Units: **mg/L** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203D** SeqNo: **583930** 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	992	10	1000	0	99.2	80-120		0		

DUP Sample ID: **0412038-01EDUP** Test Code: **E160.1** Units: **mg/L** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203D** SeqNo: **583942** 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	21880	10	0	0	0	0-0	21420	2.12	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: R25082 InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-120604** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584614** 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: **WLCSW1-120604** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584615** 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)	1000	5.0	0	0.9809	0	0-0	0			
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Total (As CaCO3)	1000	5.0	1000	0	100	80-120	0			

LCSD Sample ID: **WLCSDW1-12060** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584638** 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)	961	5.0	0	0.9809	0	0-0	1000	3.98	0	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	0	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	0	
Alkalinity, Total (As CaCO3)	961	5.0	1000	0	96.1	80-120	1000	3.98	20	

DUP Sample ID: **0411319-04CDUP** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584625** 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)	284	5.0	0	0	0	0-0	275	3.22	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)	284	5.0	0	0	0	0-0	275	3.22	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

LIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25133** InstrumentID: **IC201**

MBLK Sample ID: **WBLKW1-120804** Test Code: **E300** Units: **mg/L** Analysis Date: **12/09/04 0:01**
Client ID: Run ID: **IC201_041208A** SeqNo: **585675** 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	1.0								
Surr: Dichloroacetic acid (surr)	4.87	0.10	5	0	99.4	80-120	0			

LCS Sample ID: **WLCSW1-120804** Test Code: **E300** Units: **mg/L** Analysis Date: **12/09/04 0:29**
Client ID: Run ID: **IC201_041208A** SeqNo: **585676** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	8.79	0.50	10	0	87.9	80-120	0			
Sulfate	9.07	1.0	10	0	90.7	80-120	0			
Surr: Dichloroacetic acid (surr)	5.03	0.10	5	0	101	80-120	0			

LCSD Sample ID: **WLCSDW1-12080** Test Code: **E300** Units: **mg/L** Analysis Date: **12/09/04 0:58**
Client ID: Run ID: **IC201_041208A** SeqNo: **585677** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	8.72	0.50	10	0	87.2	80-120	8.79	0.8	20	
Sulfate	9.25	1.0	10	0	92.5	80-120	9.07	1.97	20	
Surr: Dichloroacetic acid (surr)	5.07	0.10	5	0	101	80-120	5.03	0.792	20	

MS Sample ID: **0412109-01EMS** Test Code: **E300** Units: **mg/L** Analysis Date: **12/08/04 21:38**
Client ID: Run ID: **IC201_041208A** SeqNo: **585655** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	45.15	0.50	10	34.02	111	75-125	0			
Sulfate	25.12	1.0	10	14.39	107	75-125	0			
Surr: Dichloroacetic acid (surr)	5.04	0.10	5	0	101	80-120	0			

MSD Sample ID: **0412109-01EMSD** Test Code: **E300** Units: **mg/L** Analysis Date: **12/08/04 22:07**
Client ID: Run ID: **IC201_041208A** SeqNo: **585696** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	45.28	0.50	10	34.02	113	75-125	45.15	0.288	20	
Sulfate	25.1	1.0	10	14.39	107	75-125	25.12	0.0796	20	
Surr: Dichloroacetic acid (surr)	4.93	0.10	5	0	98.6	80-120	5.04	2.21	20	

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

LIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25133** InstrumentID: **IC201**

DUP Sample ID: **0412109-01EDUP** Test Code: **E300** Units: **mg/L** Analysis Date: **12/08/04 17:50**

Client ID: Run ID: **IC201_041208A** SeqNo: **585641** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	33.91	0.50	0	0	0	0-0	34.02	0.324	20	
Sulfate	14.43	1.0	0	0	0	0-0	14.39	0.278	20	
Surr: Dichloroacetic acid (surr)	5.04	0.10	5	0	101	80-120	5.04	0	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Refcrenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

e-Lab Analytical, Inc.
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page ____ of ____

e-Lab Analytical, Inc.
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

e-Lab Project Manager:

e-Lab Work Order #: 94005

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Wells	A	VOC 8260
Work Order		Project Number		B	SVOC 8270
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals 6020
Send Report To	Jeff Byrd	Invoice Attn	Jeff Byrd	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions: (Cl, SO4)
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(505) 748-3311	Phone	(505) 748-3311	H	Conductivity
Fax	(505) 746-5421	Fax	(505) 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	Inj Well	11/30	0730	L	-	10	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: [signature]

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☐ STD 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other Std TAT

Results Due Date:

Relinquished by: [signature]	Date: 11/30	Time: 0730	Received by:	Notes:		
Relinquished by:	Date:	Time:	Received by (Laboratory):	e-Lab Cooler ID	Cooler Temp	QC Package: (Check One Box Below) ☑ Level II Std QC ☐ Level III Std QC/Raw Data ☐ Level IV SW846/CLP ☐ Other ☐ TRRP CheckList ☐ TRRP Level IV
Logged by (Laboratory):	Date: 12/1/04	Time: 0905	Checked by (Laboratory): [signature]			

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 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 e-Lab Analytical, Inc.

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e-Lab Analytical, Inc.

Sample Receipt Checklist

Client Name NAVAJO REFINING | Date/Time Received: 12/1/2004 9:05:00 AM

Work Order Number 0412005 | Received by: FSM

Checklist completed by [signature] 12/1/04 (Signature / Date) | Reviewed by [initials] 12/2/04 (Initials / Date)

Matrix: W | 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):	3.2c	002	
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐

Adjusted? _____ Checked by [initials]

Login Notes:

Any No and/or NA (not applicable) response must be detailed in the comments section below.

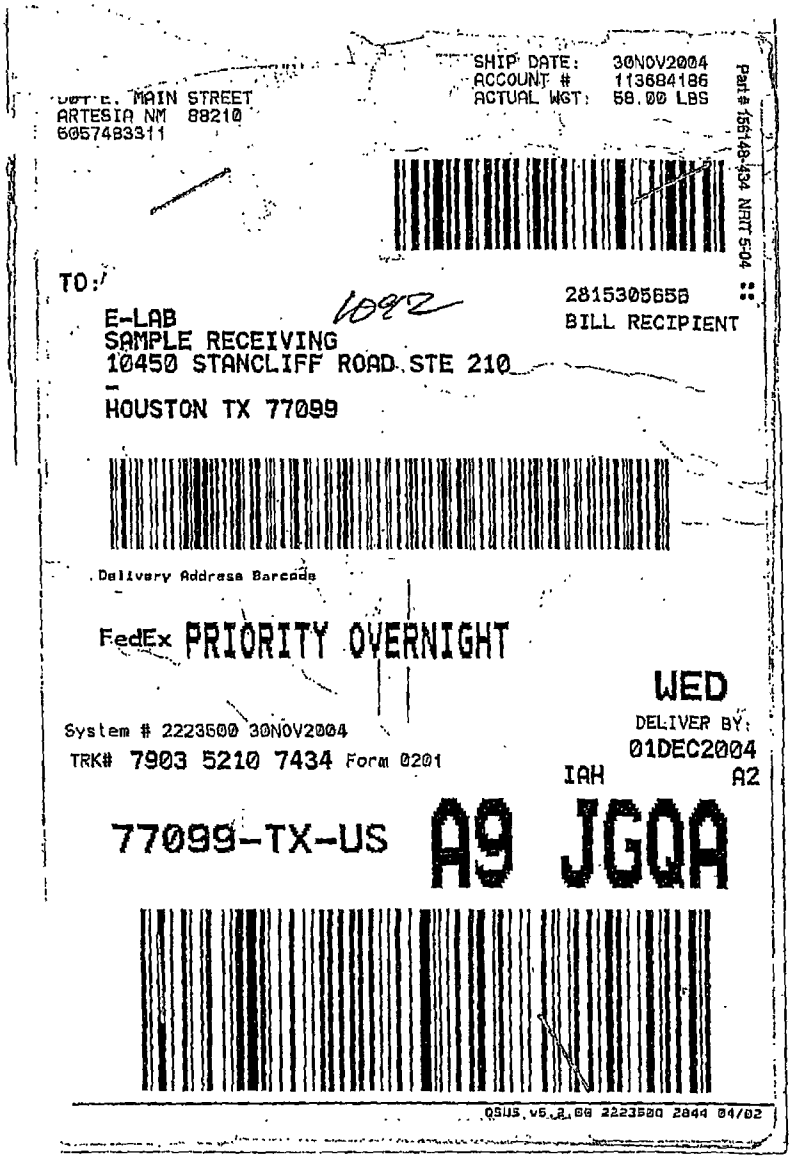
Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

W.O.# 041200E



SHIP DATE: 30NOV2004
ACCOUNT #: 113684186
ACTUAL WGT: 58.00 LBS

[illegible] E. MAIN STREET
ARTESIA NM 88210
6057483311

Part # 156148-434 NRIT 5-04

TO:

E-LAB
SAMPLE RECEIVING
10450 STANCLIFF ROAD STE 210
HOUSTON TX 77099

1092

2815305658
BILL RECIPIENT

Delivery Address Barcode

FedEx PRIORITY OVERNIGHT

WED
DELIVER BY:
01DEC2004

System # 2223600 30NOV2004
TRK# 7903 5210 7434 Form 0201

IAH A2

77099-TX-US A9 JGQA

QSUS v5.2.00 2223600 2844 04/02

e-Lab Analytical, Inc

Date: *December 10, 2004*

CLIENT: e-Lab Analytical, Inc
Project: 0412005
Work Order: 0412024

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0412024-01	0412005-01E	Water		11/30/2004 07:30	12/2/2004 10:00	☐

e-Lab Analytical, Inc

Date: *December 10, 2004*

CLIENT: e-Lab Analytical, Inc
Project: 0412005
Work Order: 0412024

Lab ID: 0412024-01A
Client Sample ID: 0412005-01E
Collection Date: 11/30/2004 7:30:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**EPA 7.3.3.2**			Analyst: BAT
Cyanide, Reactive	ND	0.0300		mg/Kg	1	12/2/2004
FLASHPOINT, P-M CLOSED-CUP			**ASTM D93**			Analyst: KAE
Flashpoint, P-M Closed-cup	>196			°F	1	12/6/2004
SULFIDE, REACTIVE			**EPA 7.3.4.2**			Analyst: BAT
Sulfide, Reactive	ND	40.0		mg/Kg	1	12/2/2004

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

-Lab Analytical, Inc

CLIENT: e-Lab Analytical, Inc
Work Order: 0412024
Project: 0412005

Date: *Dec 10 2004*

QC BATCH REPORT

Batch ID: R25689 InstrumentID: WETCHEM

MBLK Sample ID: WBLKW1-041202 Test Code: EPA 7.3.4.2 Units: mg/Kg Analysis Date 12/02/04 0:00

Client ID: Run ID: WETCHEM_041202H SeqNo: 381679 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: 0412024-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

LIENT: e-Lab Analytical, Inc

Work Order: 0412024

Project: 0412005

QC BATCH REPORT

Batch ID: R25698 InstrumentID: WETCHEM

MBLK Sample ID: **WBLKW1-041202** Test Code: **EPA 7.3.3.2** Units: mg/Kg Analysis Date **12/02/04 0:00**

Client ID: Run ID: **WETCHEM_041202I** SeqNo: **381814** 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	0.030								

LCS Sample ID: **WLCSW1-041202** Test Code: **EPA 7.3.3.2** Units: mg/Kg Analysis Date **12/02/04 0:00**

Client ID: Run ID: **WETCHEM_041202I** SeqNo: **381815** Prep Date: DF: **2500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	449.2	75	922	0	48.7	5-100		0		

The following samples were analyzed in this batch: 0412024-01A

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

O - Referenced analyte value is > 4 times amount spiked

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

P - Dual Column results percent difference > 40%

B - Analyte detected in assoc. Method Blank

U - Analyzed for but not detected

E - Value above quantitation range

CLIENT: e-Lab Analytical, Inc
Work Order: 0412024
Project: 0412005

QC BATCH REPORT

Batch ID: R25752 InstrumentID: WETCHEM

LCS Sample ID: WLCSW1-120304 Test Code: ASTM D93 Units: °F Analysis Date 12/06/04 0:00
Client ID: Run ID: WETCHEM_041206G SeqNo: 382883 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Flashpoint, P-M Closed-cup	83	0	81	0	102	97-103	0	0	0	

The following samples were analyzed in this batch: 0412024-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

04/2024

e-Lab Analytical
QUALITY · INTEGRITY · SERVICE

Subcontractor:
e-Lab Analytical, Inc.
3352 128th Ave.
Holland, MI 49424
TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: Dec 01, 2004
COC ID: 2225
Due Date: 12/13/2004

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	2107246	Project Name	0412005	A	Cyanide, Reactive (SW-846)
Work Order		Project Number		B	Sulfide, Reactive (SW-846)
Company Name	e-Lab Analytical, Inc.	Bill To Company	e-Lab Analytical, Inc.	C	Flashpoint (SW1010)
Send Report To	Jeffrey L. Croston	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				J	

Sample ID	Matrix	Collection Date	Bottle	A	B	C	D	E	F	G	H	I	J
0412005-01E (Inj Wells)	Water	11/30/2004 7:30	(1) 1LPNEAT	X	X	X							

Comments:

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
	12/1/04 VPS		12-2-04 10:00		Std
Relinquished by:	Date/Time	Received by:	Date/Time		

2

Signature | Date | Initials | Date

Matrix: Carrier name: UPS

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		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐

Adjusted? _____ Checked by

Login Notes

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

_____

_____

Corrective Action _____

_____

_____

UPS Next Day Air Saver
Shipping Document

SHIPMENT FROM:

ACCOUNT NO.

REFERENCE NUMBER

DELIVERY TO:

WEIGHT | DIMENSIONAL WEIGHT

1P
1P

Saver

UPS Next Day Air Saver 1P

0

United Parcel Service, Louisville, KY

e-Lab, Inc.
10450 Stancliff Rd. Suite 210
Houston, Texas 77099
Tel. 281.530.5656
Fax. 281.530.5887

CUSTODY SEAL

Date:

Time:

Name:

Company:

Signature:

Print

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

17-Dec-08

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 746-5468
Fax: (575) 746-5421

Re: Injection Wells

Work Order : **0812122**

Dear Aaron,

ALS Laboratory Group received 1 sample on 12/4/2008 10:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group 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 Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 17.

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: T104704231-08-TX

ALS Laboratory Group

Date: 17-Dec-08

Client: Navajo Refining Company
Project: Injection Wells
Work Order: 0812122

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0812122-01	Effluent To Inj. Wells	Water		12/3/2008 15:25	12/4/2008 10:10	☐

ALS Laboratory Group

Date: *17-Dec-08*

Client: Navajo Refining Company
Project: Injection Wells
Sample ID: Effluent To Inj. Wells
Collection Date: 12/3/2008 03:25 PM

Work Order: 0812122
Lab ID: 0812122-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **12/15/2008**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	12/15/2008 06:37 PM
METALS			**SW6020**		Prep Date: **12/8/2008**	Analyst: **ALR**
Arsenic	**0.103**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
Cadmium	ND		0.00200	mg/L	1	12/9/2008 02:09 AM
Chromium	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Copper	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Lead	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Molybdenum	**0.0843**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
Nickel	**0.00662**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
Selenium	**0.653**		**0.0500**	**mg/L**	10	12/10/2008 04:06 PM
Silver	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Zinc	**0.0624**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
BOD			**SM5210 B**		Prep Date: **12/5/2008**	Analyst: **DM**
Biochemical Oxygen Demand	**48.4**		**2.00**	**mg/L**	1	12/5/2008 03:00 PM
CYANIDE			**M4500CN E&G**			Analyst: **KKP**
Cyanide	**0.0580**		**0.0200**	**mg/L**	1	12/11/2008 03:00 PM
Cyanide, Amenable to Chlorination	ND		0.0200	mg/L	1	12/11/2008 03:00 PM
AMMONIA AS N			**SM4500 NH3-B-F**			Analyst: **KKP**
Nitrogen, Ammonia (as N)	**24.3**		**0.625**	**mg/L**	25	12/10/2008 01:00 PM
OIL AND GREASE			**E1664**			Analyst: **MAM**
Oil and Grease	**6.00**		**2.00**	**mg/L**	1	12/12/2008 03:00 PM
PHENOLICS			**E420.1**			Analyst: **DM**
Phenolics, Total Recoverable	**0.665**		**0.0500**	**mg/L**	1	12/15/2008 03:15 PM
TOTAL KJELDAHL L NITROGEN			**M4500 NH3 D**			Analyst: **RPM**
Nitrogen, Total Kjeldahl	**28.2**		**1.00**	**mg/L**	1	12/8/2008 07:00 AM
TOTAL SUSPENDED SOLIDS			**M2540D**			Analyst: **TDW**
Suspended Solids (Residue, Non-Filterable)	**60.0**		**2.00**	**mg/L**	1	12/8/2008 09:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
a - Not accredited
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time
n - Not offered for accreditation

ALS Laboratory Group

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

Date: *17-Dec-08*

QC BATCH REPORT

Batch ID: **33311** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW3-120808-33311** Units: **mg/L** Analysis Date: **12/9/2008 02:22 PM**
Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555470** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	0.002495	0.0050								J

LCS Sample ID: **MLCSW3-120808-33311** Units: **mg/L** Analysis Date: **12/9/2008 02:28 PM**
Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555471** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05244	0.0050	0.05	0	105	80-120	0			
Cadmium	0.05188	0.0020	0.05	0	104	80-120	0			
Chromium	0.0506	0.0050	0.05	0	101	80-120	0			
Copper	0.04657	0.0050	0.05	0	93.1	80-120	0			
Lead	0.0509	0.0050	0.05	0	102	80-120	0			
Molybdenum	0.05101	0.0050	0.05	0	102	80-120	0			
Nickel	0.05078	0.0050	0.05	0	102	80-120	0			
Selenium	0.05401	0.0050	0.05	0	108	80-120	0			
Silver	0.05068	0.0050	0.05	0	101	80-120	0			
Zinc	0.05208	0.0050	0.05	0	104	80-120	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: 33311 Instrument ID ICPMS02 Method: SW6020

MS Sample ID: 0812117-01CMS Units: mg/L Analysis Date: 12/9/2008 02:54 PM

Client ID: Run ID: ICPMS02_081209A SeqNo: 1555475 Prep Date: 12/8/2008 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05294	0.0050	0.05	0.001126	104	80-120	0			
Cadmium	0.0503	0.0020	0.05	0.0001897	100	80-120	0			
Chromium	0.05013	0.0050	0.05	0.001399	97.5	80-120	0			
Copper	0.04434	0.0050	0.05	0.0008793	86.9	80-120	0			
Lead	0.05066	0.0050	0.05	0.0005488	100	80-120	0			
Molybdenum	0.05264	0.0050	0.05	0.002014	101	80-120	0			
Nickel	0.04974	0.0050	0.05	0.004183	91.1	80-120	0			
Selenium	0.06171	0.0050	0.05	0.009191	105	80-120	0			
Silver	0.04861	0.0050	0.05	0.00006999	97.1	80-120	0			
Zinc	0.05362	0.0050	0.05	0.007323	92.6	80-120	0			

MSD Sample ID: 0812117-01CMSD Units: mg/L Analysis Date: 12/9/2008 03:00 PM

Client ID: Run ID: ICPMS02_081209A SeqNo: 1555476 Prep Date: 12/8/2008 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05573	0.0050	0.05	0.001126	109	80-120	0.05294	5.13	15	
Cadmium	0.04992	0.0020	0.05	0.0001897	99.5	80-120	0.0503	0.758	15	
Chromium	0.0525	0.0050	0.05	0.001399	102	80-120	0.05013	4.62	15	
Copper	0.04488	0.0050	0.05	0.0008793	88	80-120	0.04434	1.21	15	
Lead	0.0503	0.0050	0.05	0.0005488	99.5	80-120	0.05066	0.713	15	
Molybdenum	0.05296	0.0050	0.05	0.002014	102	80-120	0.05264	0.606	15	
Nickel	0.04983	0.0050	0.05	0.004183	91.3	80-120	0.04974	0.181	15	
Selenium	0.06479	0.0050	0.05	0.009191	111	80-120	0.06171	4.87	15	
Silver	0.04952	0.0050	0.05	0.00006999	98.9	80-120	0.04861	1.85	15	
Zinc	0.05265	0.0050	0.05	0.007323	90.7	80-120	0.05362	1.83	15	

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **33311** Instrument ID **ICPMS02** Method: **SW6020**

DUP Sample ID: **0812117-01CDUP** Units: **mg/L** Analysis Date: **12/9/2008 02:41 PM**

Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555473** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.00128	0.0050	0	0	0	0-0	0.001126	0	25	J
Cadmium	ND	0.0020	0	0	0	0-0	0.0001897	0	25	
Chromium	0.001442	0.0050	0	0	0	0-0	0.001399	0	25	J
Copper	0.001068	0.0050	0	0	0	0-0	0.0008793	0	25	J
Lead	ND	0.0050	0	0	0	0-0	0.0005488	0	25	
Molybdenum	0.002052	0.0050	0	0	0	0-0	0.002014	0	25	J
Nickel	0.002117	0.0050	0	0	0	0-0	0.004183	0	25	J
Selenium	0.008773	0.0050	0	0	0	0-0	0.009191	4.65	25	
Silver	ND	0.0050	0	0	0	0-0	0.00006999	0	25	
Zinc	0.007153	0.0050	0	0	0	0-0	0.007323	2.35	25	

The following samples were analyzed in this batch: 0812122-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **33455** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW2-121508-33455** Units: **mg/L** Analysis Date: **12/15/2008 05:31 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559517** Prep Date: **12/15/2008** 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: **GLCSW2-121508-33455** Units: **mg/L** Analysis Date: **12/15/2008 05:33 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559518** Prep Date: **12/15/2008** 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	99	85-115	0			

MS Sample ID: **0812097-01BMS** Units: **mg/L** Analysis Date: **12/15/2008 06:12 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559840** Prep Date: **12/15/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.00020	0.005	-0.000028	104	85-115	0			

MSD Sample ID: **0812097-01BMSD** Units: **mg/L** Analysis Date: **12/15/2008 06:14 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559843** Prep Date: **12/15/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00525	0.00020	0.005	-0.000028	106	85-115	0.00517	1.54	20	

DUP Sample ID: **0812097-01BDUP** Units: **mg/L** Analysis Date: **12/15/2008 06:10 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559837** Prep Date: **12/15/2008** 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	-0.000028	0	20	

The following samples were analyzed in this batch: 0812122-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **33290** Instrument ID **WetChem** Method: **SM5210 B**

MBLK Sample ID: **WBLKW1-120508-33290** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556302** Prep Date: **12/5/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	ND	2.0								

LCS Sample ID: **WLCSW1-120508-33290** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556303** Prep Date: **12/5/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	193.3	2.0	198	0	97.6	85-115	0			

LCSD Sample ID: **WLCSDW1-120508-33290** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556307** Prep Date: **12/5/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	192.8	2.0	198	0	97.4	85-115	0			

DUP Sample ID: **0812114-01HDUP** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556306** Prep Date: **12/5/2008** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	982.8	20	0	0	0	0-0	985.8	0.305	20	

The following samples were analyzed in this batch: 0812122-01B

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R70944** Instrument ID **WetChem** Method: **M4500 NH3 D**

MBLK Sample ID: **WBLKW1-120808-R70944** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554324** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	ND	1.0								

LCS Sample ID: **WLCSW1-120808-R70944** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554325** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	20.2	1.0	20	0	101	80-120	0			

MS Sample ID: **0812027-02IMS** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554329** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	20	1.0	20	1.526	92.4	75-125	0			

DUP Sample ID: **0812027-02IDUP** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554328** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	1.516	1.0	0	0	0	0-0	1.526	0.657	20	

The following samples were analyzed in this batch: 0812122-01G

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R70952** Instrument ID **Balance1** Method: **M2540D**

MBLK Sample ID: **BLANK-R70952** Units: **mg/L** Analysis Date: **12/8/2008 09:00 PM**
Client ID: Run ID: **BALANCE1_081208A** SeqNo: **1554423** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Fl	ND	2.0								

LCS Sample ID: **LCS-R70952** Units: **mg/L** Analysis Date: **12/8/2008 09:00 PM**
Client ID: Run ID: **BALANCE1_081208A** SeqNo: **1554424** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Fl	94	2.0	100	0	94	78-120	0			

DUP Sample ID: **0812145-01ADUP** Units: **mg/L** Analysis Date: **12/8/2008 09:00 PM**
Client ID: Run ID: **BALANCE1_081208A** SeqNo: **1554417** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Fl	70	2.0	0	0	0	0-0	69	1.44	20	

The following samples were analyzed in this batch: 0812122-01D

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R71045** Instrument ID **UV-2450** Method: **SM4500 NH3-**

MBLK Sample ID: **WBLKW1-121008-R71045** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556194** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.025								

LCS Sample ID: **WLCSW1-121008-R71045** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556195** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.192	0.025	0.2	0	96	80-120	0			

MS Sample ID: **0812086-01BMS** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556201** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.363	0.025	0.2	0.176	93.5	80-120	0			

DUP Sample ID: **0812086-01BDUP** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556200** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.173	0.025	0	0	0	0-0	0.176	1.72	20	

The following samples were analyzed in this batch: 0812122-01G

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: R71097 Instrument ID UV-2450 Method: M4500CN E&

MBLK Sample ID: WBLKW1-121108-R71097 Units: mg/L Analysis Date: 12/11/2008 03:00 PM
Client ID: Run ID: UV-2450_081211A SeqNo: 1557039 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	ND	0.020								
Cyanide, Amenable to Chlorination	ND	0.020								

LCS Sample ID: WLCSW1-121108-R71097 Units: mg/L Analysis Date: 12/11/2008 03:00 PM
Client ID: Run ID: UV-2450_081211A SeqNo: 1557040 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.193	0.020	0.2	0	96.5	80-120	0			

MS Sample ID: 0812191-01BMS Units: mg/L Analysis Date: 12/11/2008 03:00 PM
Client ID: Run ID: UV-2450_081211A SeqNo: 1557050 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.185	0.020	0.2	0.001	92	80-120	0			

DUP Sample ID: 0812191-01BDUP Units: mg/L Analysis Date: 12/11/2008 03:00 PM
Client ID: Run ID: UV-2450_081211A SeqNo: 1557049 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	ND	0.020	0	0	0	0-0	0.001	0	20	
Cyanide, Amenable to Chlorination	ND	0.020	0	0	0	0-0	0	0	0	

The following samples were analyzed in this batch: 0812122-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R71172** Instrument ID **WetChem** Method: **E1664**

MBLK Sample ID: **WBLKW1-121208-R71172** Units: **mg/L** Analysis Date: **12/12/2008 03:00 PM**
Client ID: Run ID: **WETCHEM_081212F** SeqNo: **1558390** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	2.0								

LCS Sample ID: **WLCSW1-121208-R71172** Units: **mg/L** Analysis Date: **12/12/2008 03:00 PM**
Client ID: Run ID: **WETCHEM_081212F** SeqNo: **1558391** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	36.3	2.0	40	0	90.8	80-120	0			

DUP Sample ID: **0812073-02BDUP** Units: **mg/L** Analysis Date: **12/12/2008 03:00 PM**
Client ID: Run ID: **WETCHEM_081212F** SeqNo: **1558402** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	2.5	2.0	0	0	0	0-0	3	18.2	20	

The following samples were analyzed in this batch: 0812122-01E

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R71220** Instrument ID **UV-2450** Method: **E420.1**

MBLK Sample ID: **WBLKW1-121508-R71220** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559301** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	ND	0.050								

LCS Sample ID: **WLCSW1-121508-R71220** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559302** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.519	0.050	0.5	0	104	80-120	0			

MS Sample ID: **0812219-01BMS** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559316** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.53	0.050	0.5	0.021	102	80-120	0			

DUP Sample ID: **0812219-01BDUP** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559315** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.028	0.050	0	0	0	0-0	0.021	0	20	J

The following samples were analyzed in this batch: 0812122-01F

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

e-Lab Analytical, Inc.
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

The Chain of Custody is a Legal Document. All information must be completed accurately.

e-Lab Analytical, Inc.
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

e-Lab Project Manager:

e-Lab Work Order #: 0812122

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	Injection Wells	A
Work Order		Project Number		B
Company Name	Navajo Refining Co	Bill To Company		C
Send Report To	Aaron Strange	Invoice Attn		D
Address	P.O. Box 159	Address		E
				F
City/State/Zip	Artesia NM 88210	City/State/Zip		G
Phone	575-748-3311	Phone		H
Fax	575-746-5421	Fax		I
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 To Inj. Wells	12/3/08	1525	L	Y	7	X										
2																	
3																	
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 ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: Aaron Strange	Date: 12/3/08	Time: 1615	Received by:	Notes:	
Relinquished by:	Date:	Time:	Received by (Laboratory): 12/4/08 1610	e-Lab Analytical Cooler ID:	Trip Blank Number:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):		

QC Package: (Check One Box Below)
- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

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 e-Lab Analytical, Inc.

2. *Unless otherwise agreed in a formal contract, services provided by e-Lab Analytical, Inc. are expressly limited to the terms and conditions stated on the reverse.*

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ALS Laboratory Group

Sample Receipt Checklist

Client Name: NAVAJO REFINING

Date/Time Received: 12/4/2008 10:10

Work Order Number 0812122

Received by: RNG

Checklist completed by [signature] Signature 12/5/08 Date

Reviewed by [initials] Date 12/7/08

Matrix: 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):	3.3c	002	
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

Adjusted? Checked by

Login Notes:

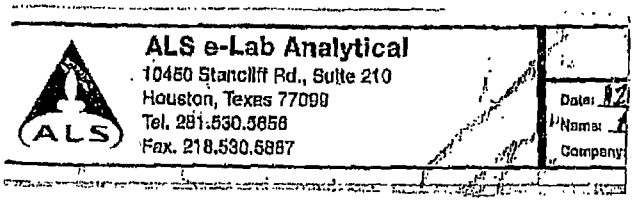
Client contacted: Date contacted: Person contacted

Contacted by: Regarding:

Comments:

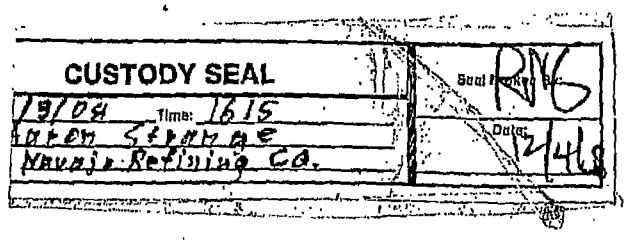
Corrective Action

W10ff08122122



ALS e-Lab Analytical
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. 281.530.5656
Fax. 218.530.5887

Date: 12
Name:
Company:



CUSTODY SEAL
Seal Number: RNG
12/08 Time: 1615
Date: 12/4/08
Aaron Stamme
Navajo Refining Co.

e-Lab Analytical, Inc.

10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 281-530-5656 Fax 281-530-5887

July 23, 2004

Darrell Moore
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88211

Tel: (505) 746-5281
Fax: (505) 746-5421

Re: Injection Wells

Work Order : **0407074**

Dear Darrell Moore,

e-Lab Analytical, Inc. received 2 samples on 7/8/2004 8:40:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by e-Lab Analytical, Inc. 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 e-Lab Analytical, Inc. 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,

Jeffrey L Croston

Electronically approved by: Patrina A. Dathorne

Jeffrey L Croston

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Project: Injection Wells
Work Order: 0407074

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0407074-01	Inj Wells	Water		7/7/2004 09:00	7/8/2004 08:40	☐
0407074-02	Trip Blank	Water		7/7/2004	7/8/2004 08:40	☐

e-Lab Analytical, Inc. **Date:** *July 23, 2004*

CLIENT:	Navajo Refining Company
Project:	Injection Wells
Work Order:	0407074

Case Narrative

Semivolatile (sample Inj. Wells) Surrogates were outside of control limits due to a matrix interference. Sample was re-extracted and re-analyzed and surrogates recoveries were confirmed.

Batch 9539 Metals MS/MSD was an unrelated sample.

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT:	Navajo Refining Company	**Client Sample ID:**	Inj Wells
Work Order:	0407074	**Collection Date:**	7/7/2004 9:00:00 AM
Project:	Injection Wells		
Lab ID:	0407074-01	**Matrix:**	WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
MERCURY, TOTAL		**SW7470**			Prep Date: **7/17/2004**	Analyst: **JCJ**
Mercury	ND	0.000200		mg/L	1	7/17/2004 6:08:25 PM
ICP METALS, TOTAL		**SW6020**			Prep Date: **7/9/2004**	Analyst: **ALR**
Aluminum	0.556	0.100		mg/L	10	7/9/2004 10:24:00 PM
Arsenic	0.171	0.0500		mg/L	10	7/9/2004 10:24:00 PM
Barium	0.0354	0.0100		mg/L	2	7/23/2004 2:11:00 PM
Beryllium	ND	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Boron	0.240	0.200		mg/L	10	7/9/2004 10:24:00 PM
Cadmium	ND	0.00200		mg/L	2	7/23/2004 2:11:00 PM
Calcium	216	25.0		mg/L	50	7/9/2004 9:39:00 PM
Chromium	0.00818	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Cobalt	ND	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Copper	0.00655	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Iron	4.42	0.400		mg/L	2	7/23/2004 12:23:00 AM
Lead	ND	0.0100		mg/L	2	7/23/2004 2:11:00 PM
Magnesium	34.1	2.00		mg/L	10	7/9/2004 10:24:00 PM
Manganese	0.116	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Molybdenum	ND	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Nickel	0.0195	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Potassium	24.9	0.400		mg/L	2	7/23/2004 12:23:00 AM
Selenium	0.432	0.0500		mg/L	10	7/9/2004 10:24:00 PM
Silver	ND	0.0100		mg/L	2	7/23/2004 2:11:00 PM
Sodium	1,580	10.0		mg/L	50	7/9/2004 9:39:00 PM
Vanadium	ND	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Zinc	0.0677	0.0100		mg/L	2	7/23/2004 12:23:00 AM
SEMIVOLATILE ORGANICS BY GC/MS		**SW8270**			Prep Date: **7/12/2004**	Analyst: **HV**
1,2,4-Trichlorobenzene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2,4,5-Trichlorophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2,4,6-Trichlorophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Methylnaphthalene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Methylphenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Nitroaniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Nitrophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
3-Nitroaniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
4-Methylphenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
4-Nitroaniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
4-Nitrophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Acenaphthene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Acenaphthylene	ND	12		µg/L	1	7/15/2004 1:53:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells
Lab ID: 0407074-01

Client Sample ID: Inj Wells
Collection Date: 7/7/2004 9:00:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Aniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Anthracene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Benz(a)anthracene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Benzidine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Hexachloroethane	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Indeno(1,2,3-cd)pyrene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Isophorone	ND	12		µg/L	1	7/15/2004 1:53:00 AM
N-Nitrosodi-n-propylamine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
N-Nitrosodimethylamine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
N-Nitrosodiphenylamine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Naphthalene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Nitrobenzene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Pentachlorophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Phenanthrene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Phenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Pyrene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Surr: 2,4,6-Tribromophenol	28.6	39-153	S	%REC	1	7/15/2004 1:53:00 AM
Surr: 2-Fluorobiphenyl	45.7	40-147		%REC	1	7/15/2004 1:53:00 AM
Surr: 2-Fluorophenol	12.1	21-110	S	%REC	1	7/15/2004 1:53:00 AM
Surr: 4-Terphenyl-d14	40.9	39-141		%REC	1	7/15/2004 1:53:00 AM
Surr: Nitrobenzene-d5	40.8	37-140		%REC	1	7/15/2004 1:53:00 AM
Surr: Phenol-d6	7.92	11-100	S	%REC	1	7/15/2004 1:53:00 AM
VOLATILES BY GC/MS		**SW8260**				Analyst: PC
1,1,1-Trichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
2-Butanone	16	10		µg/L	1	7/19/2004 2:58:00 PM
2-Chloroethyl vinyl ether	ND	10		µg/L	1	7/19/2004 2:58:00 PM
2-Hexanone	ND	10		µg/L	1	7/19/2004 2:58:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Acetone	87	10		µg/L	1	7/19/2004 2:58:00 PM
Benzene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Bromodichloromethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Bromoform	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Bromomethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Carbon disulfide	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Carbon tetrachloride	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells
Lab ID: 0407074-01

Client Sample ID: Inj Wells
Collection Date: 7/7/2004 9:00:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Chloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Chloroform	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Chloromethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Dibromochloromethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Ethylbenzene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
m,p-Xylene	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Methylene chloride	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Styrene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Tetrachloroethene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Toluene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Trichloroethene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Vinyl acetate	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Vinyl chloride	ND	2.0		µg/L	1	7/19/2004 2:58:00 PM
Xylenes, Total	ND	15		µg/L	1	7/19/2004 2:58:00 PM
Surr: 1,2-Dichloroethane-d4	85.9	71-126		%REC	1	7/19/2004 2:58:00 PM
Surr: 4-Bromofluorobenzene	93.8	74-125		%REC	1	7/19/2004 2:58:00 PM
Surr: Dibromofluoromethane	89.3	73-126		%REC	1	7/19/2004 2:58:00 PM
Surr: Toluene-d8	89.9	75-125		%REC	1	7/19/2004 2:58:00 PM
FLASHPOINT		**SW1010**				Analyst: **MAG**
Ignitability	>200	50		°F	1	7/16/2004
CYANIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Cyanide	ND	0.0300		mg/L	1	7/16/2004
SULFIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Sulfide	ND	40.0		mg/L	1	7/16/2004
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **MG**
Chloride	992	50.0		mg/L	100	7/13/2004 3:25:00 AM
Sulfate	2,270	100		mg/L	100	7/13/2004 3:25:00 AM
Surr: Dichloroacetic acid (surr)	107	80-120		%REC	100	7/13/2004 3:25:00 AM
ALKALINITY		**E310.1**				Analyst: **HDO**
Alkalinity, Bicarbonate (As CaCO3)	157	5.00		mg/L	1	7/12/2004
Alkalinity, Carbonate (As CaCO3)	ND	5.00		mg/L	1	7/12/2004
Alkalinity, Hydroxide (As CaCO3)	ND	5.00		mg/L	1	7/12/2004
Alkalinity, Total (As CaCO3)	157	5.00		mg/L	1	7/12/2004
CONDUCTIVITY		**E120.1**				Analyst: **HDO**
Specific Conductance	7,200	1.00		µmhos/cm	1	7/12/2004

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT:	Navajo Refining Company	**Client Sample ID:**	Inj Wells
Work Order:	0407074	**Collection Date:**	7/7/2004 9:00:00 AM
Project:	Injection Wells		
Lab ID:	0407074-01	**Matrix:**	WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
PH			**E150.1**			Analyst: **LMD**
pH	6.92	0.100		pH units	1	7/8/2004
TOTAL DISSOLVED SOLIDS			**E160.1**			Analyst: **LMD**
Total Dissolved Solids (Residue, Filterable)	4,960	10.0		mg/L	1	7/8/2004

Qualifiers:	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits
	J - Analyte detected below quantitation limits	P - Dual Column results percent difference > 40%
	B - Analyte detected in the associated Method Blank	E - Value above quantitation range
	* - Value exceeds Maximum Contaminant Level	H - Analyzed outside of Hold Time

Batch ID: **9539** InstrumentID: **ICP4500**

MBLK Sample ID: **MBLKW3-070904** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/09/04 21:25**

Client ID: Run ID: **ICP4500_040709A** SeqNo: **505844** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.003459	0.010								J
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	ND	0.020								
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								
Potassium	ND	0.20								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Sodium	ND	0.20								
Vanadium	ND	0.0050								
Zinc	ND	0.0050								

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9539** InstrumentID: **ICP4500**

LCS Sample ID: **MLCSW3-070904** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/09/04 21:29**
Client ID: Run ID: **ICP4500_040709A** SeqNo: **505845** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.04844	0.010	0.05	0	96.9	79-126	0			
Arsenic	0.04766	0.0050	0.05	0	95.3	80-121	0			
Barium	0.04274	0.0050	0.05	0	85.5	79.8-119	0			
Beryllium	0.04529	0.0020	0.05	0	90.6	78.9-120	0			
Boron	0.4936	0.020	0.5	0	98.7	80-120	0			
Cadmium	0.04849	0.0020	0.05	0	97	79.1-119	0			
Calcium	4.804	0.50	5	0	96.1	80-121	0			
Chromium	0.04798	0.0050	0.05	0	96	79.3-121	0			
Cobalt	0.04761	0.0050	0.05	0	95.2	82-121	0			
Copper	0.04535	0.0050	0.05	0	90.7	83-121	0			
Iron	4.902	0.20	5	0	98	80-120	0			
Lead	0.04454	0.0050	0.05	0	89.1	80-118	0			
Magnesium	5.139	0.20	5	0	103	80-120	0			
Manganese	0.04778	0.0050	0.05	0	95.6	82-119	0			
Molybdenum	0.04486	0.0050	0.05	0	89.7	84.6-115	0			
Nickel	0.04723	0.0050	0.05	0	94.5	85-120	0			
Potassium	4.953	0.20	5	0	99.1	80-120	0			
Selenium	0.0466	0.0050	0.05	0	93.2	79.2-118	0			
Silver	0.04787	0.0050	0.05	0	95.7	83-117	0			
Sodium	5.081	0.20	5	0	102	82.4-120	0			
Vanadium	0.04735	0.0050	0.05	0	94.7	82.1-119	0			
Zinc	0.04587	0.0050	0.05	0	91.7	83-118	0			

ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
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B - Analyte detected in assoc. Method Blank
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E - Value above quantitation range

CLIENT: Navajo Refining Company
/ork Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9539** InstrumentID: **ICP4500**

MS Sample ID: **0407028-83CMS** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/10/04 0:14**

Client ID: Run ID: **ICP4500_040709A** SeqNo: **505874** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05038	0.010	0.05	0.002733	95.3	79-126	0			
Arsenic	0.04968	0.0050	0.05	0.003932	91.5	80-121	0			
Barium	0.07232	0.0050	0.05	0.02595	92.7	79.8-119	0			
Beryllium	0.0509	0.0020	0.05	0.0005094	101	78.9-120	0			
Boron	0.623	0.020	0.5	0.09092	106	80-120	0			
Cadmium	0.04574	0.0020	0.05	0.0003332	90.8	79.1-119	0			
Calcium	90.82	0.50	5	84.69	123	80-121	0			SEO
Chromium	0.04515	0.0050	0.05	0	90.3	79.3-121	0			
Cobalt	0.04827	0.0050	0.05	0.004039	88.5	82-121	0			
Copper	0.04228	0.0050	0.05	0.0009502	82.7	83-121	0			S
Iron	5.002	0.20	5	0.2496	95	80-120	0			
Lead	0.04748	0.0050	0.05	0	95	80-118	0			
Magnesium	28.5	0.20	5	23.83	93.4	80-120	0			O
Manganese	0.1942	0.0050	0.05	0.1499	88.6	82-119	0			
Molybdenum	0.04699	0.0050	0.05	0	94	84.6-115	0			
Nickel	0.05298	0.0050	0.05	0.01094	84.1	85-120	0			S
'otassium	7.353	0.20	5	2.353	100	80-120	0			
Selenium	0.046	0.0050	0.05	0.003609	84.8	79.2-118	0			
Silver	0.04262	0.0050	0.05	0	85.2	83-117	0			
Sodium	164.1	0.20	5	161.8	46	82.4-120	0			SEO
Vanadium	0.0482	0.0050	0.05	0.0006576	95.1	82.1-119	0			
Zinc	0.04617	0.0050	0.05	0.004682	83	83-118	0			S

ND - Not Detected at the Reporting Limit
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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9539 InstrumentID: ICP4500

MSD Sample ID: 0407028-83CMSD Test Code: SW6020 Units: mg/L Analysis Date: 07/10/04 0:19
Client ID: Run ID: ICP4500_040709A SeqNo: 505875 Prep Date: 7/9/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05215	0.010	0.05	0.002733	98.8	79-126	0.05038	3.45	15	
Arsenic	0.04869	0.0050	0.05	0.003932	89.5	80-121	0.04968	2.01	15	
Barium	0.07266	0.0050	0.05	0.02595	93.4	79.8-119	0.07232	0.469	15	
Beryllium	0.05198	0.0020	0.05	0.0005094	103	78.9-120	0.0509	2.1	15	
Boron	0.6325	0.020	0.5	0.09092	108	80-120	0.623	1.51	15	
Cadmium	0.04625	0.0020	0.05	0.0003332	91.8	79.1-119	0.04574	1.11	15	
Calcium	93.55	0.50	5	84.69	177	80-121	90.82	2.96	15	SEO
Chromium	0.04685	0.0050	0.05	0	93.7	79.3-121	0.04515	3.7	15	
Cobalt	0.04998	0.0050	0.05	0.004039	91.9	82-121	0.04827	3.48	15	
Copper	0.04371	0.0050	0.05	0.0009502	85.5	83-121	0.04228	3.33	15	
Iron	5.13	0.20	5	0.2496	97.6	80-120	5.002	2.53	15	
Lead	0.0471	0.0050	0.05	0	94.2	80-118	0.04748	0.804	15	
Magnesium	30.14	0.20	5	23.83	126	80-120	28.5	5.59	15	SO
Manganese	0.2008	0.0050	0.05	0.1499	102	82-119	0.1942	3.34	15	
Molybdenum	0.04735	0.0050	0.05	0	94.7	84.6-115	0.04699	0.763	15	
Nickel	0.05422	0.0050	0.05	0.01094	86.6	85-120	0.05298	2.31	15	
Potassium	7.483	0.20	5	2.353	103	80-120	7.353	1.75	15	
Selenium	0.04327	0.0050	0.05	0.003609	79.3	79.2-118	0.046	6.12	15	
Silver	0.04351	0.0050	0.05	0	87	83-117	0.04262	2.07	15	
Sodium	173.9	0.20	5	161.8	242	82.4-120	164.1	5.8	15	SEO
Vanadium	0.04997	0.0050	0.05	0.0006576	98.6	82.1-119	0.0482	3.61	15	
Zinc	0.04806	0.0050	0.05	0.004682	86.8	83-118	0.04617	4.01	15	

ND - Not Detected at the Reporting Limit
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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9539 InstrumentID: ICP4500

DUP Sample ID: 0407028-83CDUP Test Code: SW6020 Units: mg/L Analysis Date: 07/10/04 0:09
Client ID: Run ID: ICP4500_040709A SeqNo: 505873 Prep Date: 7/9/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.002615	0.010	0	0	0	0-0	0.002733	0	25	J
Arsenic	0.003323	0.0050	0	0	0	0-0	0.003932	0	25	J
Barium	0.026	0.0050	0	0	0	0-0	0.02595	0.192	25	
Beryllium	0.000439	0.0020	0	0	0	0-0	0.0005094	0	25	J
Boron	0.08249	0.020	0	0	0	0-0	0.09092	9.72	25	
Cadmium	0.0002675	0.0020	0	0	0	0-0	0.0003332	0	25	J
Chromium	ND	0.0050	0	0	0	0-0	0.0003544	0	25	
Cobalt	0.003999	0.0050	0	0	0	0-0	0.004039	0	25	J
Copper	0.001006	0.0050	0	0	0	0-0	0.0009502	0	25	J
Iron	0.2425	0.20	0	0	0	0-0	0.2496	2.89	25	
Lead	ND	0.0050	0	0	0	0-0	0.0001737	0	25	
Magnesium	22.32	0.20	0	0	0	0-0	23.83	6.54	25	
Manganese	0.1501	0.0050	0	0	0	0-0	0.1499	0.133	25	
Molybdenum	ND	0.0050	0	0	0	0-0	0.0005272	0	25	
Nickel	0.01059	0.0050	0	0	0	0-0	0.01094	3.25	25	
Potassium	2.237	0.20	0	0	0	0-0	2.353	5.05	25	
Selenium	ND	0.0050	0	0	0	0-0	0.003609	0	25	
Silver	ND	0.0050	0	0	0	0-0	0.0001129	0	25	
Vanadium	0.0005641	0.0050	0	0	0	0-0	0.0006576	0	25	J
Zinc	0.00462	0.0050	0	0	0	0-0	0.004682	0	25	J

DUP Sample ID: 0407028-83CDUP Test Code: SW6020 Units: mg/L Analysis Date: 07/12/04 20:25
Client ID: Run ID: ICP4500_040712A SeqNo: 506283 Prep Date: 7/9/2004 DF: 10

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	85.98	5.0	0	0	0	0-0	85.98	0	25	
Sodium	175.6	2.0	0	0	0	0-0	175.6	0	25	

The following samples were analyzed in this batch: 0407074-01B

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
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U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9641 InstrumentID: Mercury

MBLK Sample ID: GBLKW1-071704 Test Code: SW7470 Units: mg/L Analysis Date: 07/17/04 17:39
Client ID: Run ID: MERCURY_040717C SeqNo: 509754 Prep Date: 7/17/2004 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			

LCS Sample ID: GLCSW1-071704 Test Code: SW7470 Units: mg/L Analysis Date: 07/17/04 17:41
Client ID: Run ID: MERCURY_040717C SeqNo: 509755 Prep Date: 7/17/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00503	0.00020	0.005	0	101	83-115	0			

LCSD Sample ID: GLCSDW1-071704 Test Code: SW7470 Units: mg/L Analysis Date: 07/17/04 17:43
Client ID: Run ID: MERCURY_040717C SeqNo: 509756 Prep Date: 7/17/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00506	0.00020	0.005	0	101	83-115	0.00503	0.595	20	

MS Sample ID: 0407082-18CMS Test Code: SW7470 Units: mg/L Analysis Date: 07/17/04 17:50
Client ID: Run ID: MERCURY_040717C SeqNo: 509759 Prep Date: 7/17/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00482	0.00020	0.005	-0.000006	96.5	83-115	0			

MSD Sample ID: 0407082-18CMSD Test Code: SW7470 Units: mg/L Analysis Date: 07/17/04 17:51
Client ID: Run ID: MERCURY_040717C SeqNo: 509760 Prep Date: 7/17/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00484	0.00020	0.005	-0.000006	96.9	83-115	0.00482	0.414	20	

DUP Sample ID: 0407082-18CDUP Test Code: SW7470 Units: mg/L Analysis Date: 07/17/04 17:48
Client ID: Run ID: MERCURY_040717C SeqNo: 509758 Prep Date: 7/17/2004 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	-0.000006	0	20	

The following samples were analyzed in this batch: 0407074-01B

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9560 InstrumentID: SV-2

MBLK Sample ID: SBLKW1-040712 Test Code: SW8270 Units: µg/L Analysis Date: 07/13/04 15:58
Client ID: Run ID: SV-2_040713A SeqNo: 507356 Prep Date: 7/12/2004 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	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3-Nitroaniline	ND	10								
4-Methylphenol	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Benz(a)anthracene	ND	10								
Benzidine	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
Pentachlorophenol	ND	10								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
1,4-Dichlorobenzene-d4	40	0								
Acenaphthene-d10	40	0								
Chrysene-d12	40	0								
Naphthalene-d8	40	0								
Perylene-d12	40	0								
Phenanthrene-d10	40	0								
Surr: 2,4,6-Tribromophenol	82.25	10	100	0	82.2	39-153	0			
Surr: 2-Fluorobiphenyl	78.39	10	100	0	78.4	40-147	0			
Surr: 2-Fluorophenol	33.79	10	100	0	33.8	21-110	0			
Surr: 4-Terphenyl-d14	84.32	10	100	0	84.3	39-141	0			
Surr: Nitrobenzene-d5	70.65	10	100	0	70.7	37-140	0			
Surr: Phenol-d6	18.81	10	100	0	18.8	11-100	0			

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E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9560 InstrumentID: SV-2

LCS Sample ID: SLCSW1-040712 Test Code: SW8270 Units: µg/L Analysis Date: 07/13/04 16:29
Client ID: Run ID: SV-2_040713A SeqNo: 507357 Prep Date: 7/12/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	31.26	10	50	0	62.5	50-115	0			
2,4,5-Trichlorophenol	86.7	10	100	0	86.7	68-128	0			
2,4,6-Trichlorophenol	85.39	10	100	0	85.4	66-125	0			
2-Methylnaphthalene	34.79	10	50	0	69.6	47-122	0			
2-Methylphenol	61.44	10	100	0	61.4	51-115	0			
2-Nitroaniline	46.51	10	50	0	93	64-128	0			
2-Nitrophenol	76.92	10	100	0	76.9	60-119	0			
3-Nitroaniline	44.47	10	50	0	88.9	61-118	0			
4-Methylphenol	81.14	10	150	0	54.1	44-115	0			
4-Nitroaniline	44.56	10	50	0	89.1	61-123	0			
4-Nitrophenol	29.12	10	100	0	29.1	17-100	0			
Acenaphthene	40.9	10	50	0	81.8	68-115	0			
Acenaphthylene	40.88	10	50	0	81.8	67-116	0			
Aniline	32.02	10	50	0	64	40-130	0			
Anthracene	43.56	10	50	0	87.1	70-129	0			
Benz(a)anthracene	42.22	10	50	0	84.4	55-131	0			
Benzidine	30.17	10	50	0	60.3	10-115	0			
Hexachloroethane	30.87	10	50	0	61.7	46-115	0			
Indeno(1,2,3-cd)pyrene	48.4	10	50	0	96.8	42-123	0			
Isophorone	39.55	10	50	0	79.1	63-117	0			
N-Nitrosodi-n-propylamine	42.61	10	50	0	85.2	67-115	0			
N-Nitrosodimethylamine	21.15	10	50	0	42.3	28-115	0			
N-Nitrosodiphenylamine	46.31	10	50	0	92.6	72-144	0			
Naphthalene	33.4	10	50	0	66.8	52-115	0			
Nitrobenzene	38.35	10	50	0	76.7	65-115	0			
Pentachlorophenol	70.64	10	100	0	70.6	65-123	0			
Phenanthrene	41.84	10	50	0	83.7	69-119	0			
Phenol	23.79	10	100	0	23.8	16-115	0			
Pyrene	40.12	10	50	0	80.2	51-130	0			
Surr: 2,4,6-Tribromophenol	87.89	10	100	0	87.9	39-153	0			
Surr: 2-Fluorobiphenyl	82.26	10	100	0	82.3	40-147	0			
Surr: 2-Fluorophenol	40.23	10	100	0	40.2	21-110	0			
Surr: 4-Terphenyl-d14	86.41	10	100	0	86.4	39-141	0			
Surr: Nitrobenzene-d5	75.5	10	100	0	75.5	37-140	0			
Surr: Phenol-d6	23.26	10	100	0	23.3	11-100	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9560 InstrumentID: SV-2

LCSD Sample ID: SLCSDW1-040712 Test Code: SW8270 Units: µg/L Analysis Date: 07/13/04 16:59
Client ID: Run ID: SV-2_040713A SeqNo: 507358 Prep Date: 7/12/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	31.58	10	50	0	63.2	50-115	31.26	1.01	30	
2,4,5-Trichlorophenol	87.3	10	100	0	87.3	68-128	86.7	0.685	30	
2,4,6-Trichlorophenol	86.39	10	100	0	86.4	66-125	85.39	1.16	30	
2-Methylnaphthalene	33.56	10	50	0	67.1	47-122	34.79	3.61	30	
2-Methylphenol	60.16	10	100	0	60.2	51-115	61.44	2.11	30	
2-Nitroaniline	47.23	10	50	0	94.5	64-128	46.51	1.53	30	
2-Nitrophenol	75.92	10	100	0	75.9	60-119	76.92	1.32	30	
3-Nitroaniline	40.62	10	50	0	81.2	61-118	44.47	9.05	30	
4-Methylphenol	81.3	10	150	0	54.2	44-115	81.14	0.188	30	
4-Nitroaniline	42.15	10	50	0	84.3	61-123	44.56	5.54	30	
4-Nitrophenol	30.34	10	100	0	30.3	17-100	29.12	4.08	30	
Acenaphthene	39.88	10	50	0	79.8	68-115	40.9	2.52	30	
Acenaphthylene	39.7	10	50	0	79.4	67-116	40.88	2.93	30	
Aniline	31.01	10	50	0	62	40-130	32.02	3.2	30	
Anthracene	42.13	10	50	0	84.3	70-129	43.56	3.34	30	
Benz(a)anthracene	41.72	10	50	0	83.4	55-131	42.22	1.2	30	
Benzidine	28.39	10	50	0	56.8	10-115	30.17	6.06	30	
Hexachloroethane	29.4	10	50	0	58.8	46-115	30.87	4.89	30	
Indeno(1,2,3-cd)pyrene	44.19	10	50	0	88.4	42-123	48.4	9.1	30	
Isophorone	38.71	10	50	0	77.4	63-117	39.55	2.15	30	
N-Nitrosodi-n-propylamine	41.17	10	50	0	82.3	67-115	42.61	3.43	30	
N-Nitrosodimethylamine	22.1	10	50	0	44.2	28-115	21.15	4.41	30	
N-Nitrosodiphenylamine	44.6	10	50	0	89.2	72-144	46.31	3.77	30	
Naphthalene	32.74	10	50	0	65.5	52-115	33.4	1.99	30	
Nitrobenzene	38.2	10	50	0	76.4	65-115	38.35	0.387	30	
Pentachlorophenol	72.91	10	100	0	72.9	65-123	70.64	3.15	30	
Phenanthrene	40.12	10	50	0	80.2	69-119	41.84	4.2	30	
Phenol	24.22	10	100	0	24.2	16-115	23.79	1.79	30	
Pyrene	40.25	10	50	0	80.5	51-130	40.12	0.331	30	
Surr: 2,4,6-Tribromophenol	86.61	10	100	0	86.6	39-153	87.89	1.46	30	
Surr: 2-Fluorobiphenyl	81.97	10	100	0	82	40-147	82.26	0.35	30	
Surr: 2-Fluorophenol	39.11	10	100	0	39.1	21-110	40.23	2.82	30	
Surr: 4-Terphenyl-d14	85.17	10	100	0	85.2	39-141	86.41	1.45	30	
Surr: Nitrobenzene-d5	75.33	10	100	0	75.3	37-140	75.5	0.231	30	
Surr: Phenol-d6	23.6	10	100	0	23.6	11-100	23.26	1.46	30	

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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9560 InstrumentID: SV-2

MS Sample ID: 0407082-18DMS Test Code: SW8270 Units: µg/L Analysis Date: 07/13/04 18:00

Client ID: Run ID: SV-2_040713A SeqNo: 507360 Prep Date: 7/12/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	38.77	11	53.19	0	72.9	50-115	0			
2,4,5-Trichlorophenol	91.48	11	106.4	0	86	68-128	0			
2,4,6-Trichlorophenol	92.28	11	106.4	0	86.7	66-125	0			
2-Methylnaphthalene	39.59	11	53.19	0	74.4	47-122	0			
2-Methylphenol	68.77	11	106.4	0	64.6	51-115	0			
2-Nitroaniline	49.37	11	53.19	0	92.8	64-128	0			
2-Nitrophenol	82.66	11	106.4	0	77.7	60-119	0			
3-Nitroaniline	39.84	11	53.19	0	74.9	61-118	0			
4-Methylphenol	95.14	11	159.6	0	59.6	44-115	0			
4-Nitroaniline	41.31	11	53.19	0	77.7	61-123	0			
4-Nitrophenol	36.34	11	106.4	0	34.2	17-100	0			
Acenaphthene	46.9	11	53.19	0	88.2	68-115	0			
Acenaphthylene	42.53	11	53.19	0	80	67-116	0			
Aniline	31.51	11	53.19	0	59.2	40-130	0			
Anthracene	45.14	11	53.19	0	84.9	70-129	0			
Benz(a)anthracene	44.52	11	53.19	0	83.7	55-131	0			
enzidine	24.16	11	53.19	0	45.4	10-115	0			
Hexachloroethane	42.45	11	53.19	0	79.8	46-115	0			
Indeno(1,2,3-cd)pyrene	49.91	11	53.19	0	93.8	42-123	0			
Isophorone	41.24	11	53.19	0	77.5	63-117	0			
N-Nitrosodi-n-propylamine	46.57	11	53.19	0	87.5	67-115	0			
N-Nitrosodimethylamine	26.9	11	53.19	0	50.6	28-115	0			
N-Nitrosodiphenylamine	47.19	11	53.19	0	88.7	72-144	0			
Naphthalene	37.95	11	53.19	0	71.4	52-115	0			
Nitrobenzene	42.36	11	53.19	0	79.6	65-115	0			
Pentachlorophenol	71.64	11	106.4	0	67.3	65-123	0			
Phenanthrene	43.67	11	53.19	0	82.1	69-119	0			
Phenol	29.8	11	106.4	0	28	16-115	0			
Pyrene	41.73	11	53.19	0	78.4	51-130	0			
Surr: 2,4,6-Tribromophenol	88.29	11	106.4	0	83	39-153	0			
Surr: 2-Fluorobiphenyl	88.06	11	106.4	0	82.8	40-147	0			
Surr: 2-Fluorophenol	46.77	11	106.4	0	44	21-110	0			
Surr: 4-Terphenyl-d14	88.44	11	106.4	0	83.1	39-141	0			
Surr: Nitrobenzene-d5	81.74	11	106.4	0	76.8	37-140	0			
Surr: Phenol-d6	27.76	11	106.4	0	26.1	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: 9560 InstrumentID: SV-2

MSD Sample ID: 0407082-18DMSD Test Code: SW8270 Units: µg/L Analysis Date: 07/13/04 18:30
Client ID: Run ID: SV-2_040713A SeqNo: 507361 Prep Date: 7/12/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	38.35	11	53.19	0	72.1	50-115	38.77	1.09	30	
2,4,5-Trichlorophenol	95.8	11	106.4	0	90.1	68-128	91.48	4.61	30	
2,4,6-Trichlorophenol	92.06	11	106.4	0	86.5	66-125	92.28	0.244	30	
2-Methylnaphthalene	39.08	11	53.19	0	73.5	47-122	39.59	1.29	30	
2-Methylphenol	70.25	11	106.4	0	66	51-115	68.77	2.12	30	
2-Nitroaniline	48.77	11	53.19	0	91.7	64-128	49.37	1.21	30	
2-Nitrophenol	83.64	11	106.4	0	78.6	60-119	82.66	1.17	30	
3-Nitroaniline	37.37	11	53.19	0	70.3	61-118	39.84	6.4	30	
4-Methylphenol	94.8	11	159.6	0	59.4	44-115	95.14	0.358	30	
4-Nitroaniline	38.45	11	53.19	0	72.3	61-123	41.31	7.17	30	
4-Nitrophenol	36.01	11	106.4	0	33.8	17-100	36.34	0.923	30	
Acenaphthene	47.64	11	53.19	0	89.6	68-115	46.9	1.56	30	
Acenaphthylene	42.64	11	53.19	0	80.2	67-116	42.53	0.255	30	
Aniline	31.17	11	53.19	0	58.6	40-130	31.51	1.09	30	
Anthracene	45.61	11	53.19	0	85.7	70-129	45.14	1.04	30	
Benz(a)anthracene	45.17	11	53.19	0	84.9	55-131	44.52	1.46	30	
Benzidine	18.51	11	53.19	0	34.8	10-115	24.16	26.5	30	
Hexachloroethane	40.74	11	53.19	0	76.6	46-115	42.45	4.12	30	
Indeno(1,2,3-cd)pyrene	50.25	11	53.19	0	94.5	42-123	49.91	0.68	30	
Isophorone	42.87	11	53.19	0	80.6	63-117	41.24	3.88	30	
N-Nitrosodi-n-propylamine	46.44	11	53.19	0	87.3	67-115	46.57	0.281	30	
N-Nitrosodimethylamine	25.12	11	53.19	0	47.2	28-115	26.9	6.83	30	
N-Nitrosodiphenylamine	47.79	11	53.19	0	89.8	72-144	47.19	1.25	30	
Naphthalene	38.24	11	53.19	0	71.9	52-115	37.95	0.757	30	
Nitrobenzene	42.83	11	53.19	0	80.5	65-115	42.36	1.09	30	
Pentachlorophenol	81.78	11	106.4	0	76.9	65-123	71.64	13.2	30	
Phenanthrene	44.03	11	53.19	0	82.8	69-119	43.67	0.831	30	
Phenol	29.65	11	106.4	0	27.9	16-115	29.8	0.497	30	
Pyrene	42.44	11	53.19	0	79.8	51-130	41.73	1.71	30	
Surr: 2,4,6-Tribromophenol	93.87	11	106.4	0	88.2	39-153	88.29	6.12	30	
Surr: 2-Fluorobiphenyl	87.34	11	106.4	0	82.1	40-147	88.06	0.818	30	
Surr: 2-Fluorophenol	46.17	11	106.4	0	43.4	21-110	46.77	1.28	30	
Surr: 4-Terphenyl-d14	90.02	11	106.4	0	84.6	39-141	88.44	1.78	30	
Surr: Nitrobenzene-d5	80.82	11	106.4	0	76	37-140	81.74	1.14	30	
Surr: Phenol-d6	27.76	11	106.4	0	26.1	11-100	27.76	0.011	30	

The following samples were analyzed in this batch: 0407074-01D

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21831** InstrumentID: **VOA2**

MBLK Sample ID: **VBLKW-0719** Test Code: **SW8260** Units: **µg/L** Analysis Date: **07/19/04 11:33**

Client ID: Run ID: **VOA2_040719A** SeqNo: **510670** 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								
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	42.27	5.0	50	0	84.5	71-126		0		
Surr: 4-Bromofluorobenzene	43.71	5.0	50	0	87.4	74-125		0		
Surr: Dibromofluoromethane	43.99	5.0	50	0	88	73-126		0		
Surr: Toluene-d8	44.34	5.0	50	0	88.7	75-125		0		

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: R21831 InstrumentID: VOA2

LCS Sample ID: VLCSW-0719 Test Code: SW8260 Units: µg/L Analysis Date: 07/19/04 10:42
Client ID: Run ID: VOA2_040719A SeqNo: 510669 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	49.5	5.0	50	0	99	75.2-120	0			
1,1,2,2-Tetrachloroethane	47.64	5.0	50	0	95.3	72.4-121	0			
1,1,2-Trichloroethane	49.05	5.0	50	0	98.1	80-120	0			
1,1-Dichloroethane	40.8	5.0	50	0	81.6	76.9-120	0			
1,1-Dichloroethene	42.24	5.0	50	0	84.5	72.6-123	0			
1,2-Dichloroethane	50.08	5.0	50	0	100	80-120	0			
2-Butanone	98.22	10	100	0	98.2	69-131	0			
2-Chloroethyl vinyl ether	99.78	10	100	0	99.8	60-135	0			
2-Hexanone	109.7	10	100	0	110	55.6-126	0			
4-Methyl-2-pentanone	105.7	10	100	0	106	67.4-121	0			
Acetone	110	10	100	0	110	64.4-140	0			
Benzene	47.36	5.0	50	0	94.7	80-120	0			
Bromodichloromethane	49.67	5.0	50	0	99.3	80-120	0			
Bromoform	52.48	5.0	50	0	105	77.9-121	0			
Bromomethane	46.73	5.0	50	0	93.5	63.3-137	0			
Carbon disulfide	81.78	10	100	0	81.8	74.1-123	0			
Carbon tetrachloride	50.26	5.0	50	0	101	74.7-120	0			
Chlorobenzene	48.77	5.0	50	0	97.5	80-120	0			
Chloroethane	46	5.0	50	0	92	74.7-126	0			
Chloroform	46.23	5.0	50	0	92.5	80-120	0			
Chloromethane	43.9	5.0	50	0	87.8	64.5-132	0			
cis-1,3-Dichloropropene	51.24	5.0	50	0	102	80-120	0			
Dibromochloromethane	50.88	5.0	50	0	102	80-120	0			
Ethylbenzene	49.39	5.0	50	0	98.8	80-120	0			
m,p-Xylene	98.82	10	100	0	98.8	80-120	0			
Methylene chloride	41.13	10	50	0	82.3	76.2-120	0			
Styrene	50.69	5.0	50	0	101	80-120	0			
Tetrachloroethene	51.64	5.0	50	0	103	68.5-130	0			
Toluene	48.46	5.0	50	0	96.9	80-120	0			
trans-1,3-Dichloropropene	52.38	5.0	50	0	105	80-120	0			
Trichloroethene	50.2	5.0	50	0	100	78.9-120	0			
Vinyl acetate	106.1	10	100	0	106	62.4-133	0			
Vinyl chloride	46.69	2.0	50	0	93.4	72.7-128	0			
Xylenes, Total	148.4	15	150	0	98.9	80-120	0			
Surr: 1,2-Dichloroethane-d4	40.65	5.0	50	0	81.3	71-126	0			
Surr: 4-Bromofluorobenzene	46.15	5.0	50	0	92.3	74-125	0			
Surr: Dibromofluoromethane	41.66	5.0	50	0	83.3	73-126	0			
Surr: Toluene-d8	45.05	5.0	50	0	90.1	75-125	0			

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: R21831 InstrumentID: VOA2

MS Sample ID: 0407154-01AMS Test Code: SW8260 Units: µg/L Analysis Date: 07/19/04 14:05
Client ID: Run ID: VOA2_040719A SeqNo: 510672 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	12140	1,200	12500	0	97.1	75.2-120	0			
1,1,2,2-Tetrachloroethane	11150	1,200	12500	0	89.2	72.4-121	0			
1,1,2-Trichloroethane	12470	1,200	12500	0	99.8	80-120	0			
1,1-Dichloroethane	11610	1,200	12500	0	92.9	76.9-120	0			
1,1-Dichloroethene	9668	1,200	12500	0	77.3	72.6-123	0			
1,2-Dichloroethane	12100	1,200	12500	0	96.8	80-120	0			
2-Butanone	24170	2,500	25000	0	96.7	69-131	0			
2-Chloroethyl vinyl ether	23350	2,500	25000	0	93.4	60-135	0			
2-Hexanone	28460	2,500	25000	0	114	55.6-126	0			
4-Methyl-2-pentanone	26920	2,500	25000	0	108	67.4-121	0			
Acetone	28630	2,500	25000	0	115	64.4-140	0			
Benzene	12840	1,200	12500	1617	89.8	80-120	0			
Bromodichloromethane	12110	1,200	12500	0	96.9	80-120	0			
Bromoform	12900	1,200	12500	0	103	77.9-121	0			
Bromomethane	10540	1,200	12500	0	84.3	63.3-137	0			
Carbon disulfide	21710	2,500	25000	0	86.8	74.1-123	0			
Carbon tetrachloride	15530	1,200	12500	3701	94.7	74.7-120	0			
Chlorobenzene	17760	1,200	12500	6761	88	80-120	0			
Chloroethane	11150	1,200	12500	0	89.2	74.7-126	0			
Chloroform	27960	1,200	12500	16690	90.2	80-120	0			
Chloromethane	11340	1,200	12500	0	90.7	64.5-132	0			
cis-1,3-Dichloropropene	12280	1,200	12500	0	98.3	80-120	0			
Dibromochloromethane	12560	1,200	12500	0	101	80-120	0			
Ethylbenzene	12120	1,200	12500	0	97	80-120	0			
m,p-Xylene	24660	2,500	25000	0	98.7	80-120	0			
Methylene chloride	11050	2,500	12500	251	86.4	76.2-120	0			
Styrene	12310	1,200	12500	0	98.5	80-120	0			
Tetrachloroethene	12830	1,200	12500	307.5	100	68.5-130	0			
Toluene	11740	1,200	12500	0	93.9	80-120	0			
trans-1,3-Dichloropropene	12720	1,200	12500	0	102	80-120	0			
Trichloroethene	13050	1,200	12500	382.7	101	78.9-120	0			
Vinyl acetate	16340	2,500	25000	0	65.4	62.4-133	0			
Vinyl chloride	11910	500	12500	0	95.2	72.7-128	0			
Xylenes, Total	36910	3,800	37500	0	98.4	80-120	0			
Surr: 1,2-Dichloroethane-d4	10910	1,200	12500	0	87.3	71-126	0			
Surr: 4-Bromofluorobenzene	12050	1,200	12500	0	96.4	74-125	0			
Surr: Dibromofluoromethane	10810	1,200	12500	0	86.5	73-126	0			
Surr: Toluene-d8	11660	1,200	12500	0	93.3	75-125	0			

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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: R21831 InstrumentID: VOA2

MSD Sample ID: 0407154-01AMSD Test Code: SW8260 Units: µg/L Analysis Date: 07/19/04 14:33
Client ID: Run ID: VOA2_040719A SeqNo: 510673 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	12300	1,200	12500	0	98.4	75.2-120	12140	1.31	20	
1,1,2,2-Tetrachloroethane	11100	1,200	12500	0	88.8	72.4-121	11150	0.381	20	
1,1,2-Trichloroethane	12660	1,200	12500	0	101	80-120	12470	1.46	20	
1,1-Dichloroethane	10890	1,200	12500	0	87.2	76.9-120	11610	6.37	20	
1,1-Dichloroethene	10340	1,200	12500	0	82.7	72.6-123	9668	6.67	20	
1,2-Dichloroethane	12510	1,200	12500	0	100	80-120	12100	3.41	20	
2-Butanone	25610	2,500	25000	0	102	69-131	24170	5.39	20	
2-Chloroethyl vinyl ether	23900	2,500	25000	0	95.6	60-135	23350	2.29	20	
2-Hexanone	29060	2,500	25000	0	116	55.6-126	28460	2.07	20	
4-Methyl-2-pentanone	27690	2,500	25000	0	111	67.4-121	26920	2.82	20	
Acetone	28630	2,500	25000	0	115	64.4-140	28630	0.0181	20	
Benzene	13310	1,200	12500	1617	93.5	80-120	12840	3.55	20	
Bromodichloromethane	12400	1,200	12500	0	99.2	80-120	12110	2.29	20	
Bromoform	13180	1,200	12500	0	105	77.9-121	12900	2.16	20	
Bromomethane	11380	1,200	12500	0	91	63.3-137	10540	7.65	20	
Carbon disulfide	22610	2,500	25000	0	90.4	74.1-123	21710	4.08	20	
Carbon tetrachloride	16060	1,200	12500	3701	98.9	74.7-120	15530	3.35	20	
Chlorobenzene	18250	1,200	12500	6761	91.9	80-120	17760	2.71	20	
Chloroethane	11550	1,200	12500	0	92.4	74.7-126	11150	3.48	20	
Chloroform	27240	1,200	12500	16690	84.4	80-120	27960	2.59	20	
Chloromethane	11380	1,200	12500	0	91.1	64.5-132	11340	0.38	20	
cis-1,3-Dichloropropene	12670	1,200	12500	0	101	80-120	12280	3.12	20	
Dibromochloromethane	12910	1,200	12500	0	103	80-120	12560	2.71	20	
Ethylbenzene	12480	1,200	12500	0	99.8	80-120	12120	2.91	20	
m,p-Xylene	25180	2,500	25000	0	101	80-120	24660	2.07	20	
Methylene chloride	10390	2,500	12500	251	81.1	76.2-120	11050	6.19	20	
Styrene	12620	1,200	12500	0	101	80-120	12310	2.5	20	
Tetrachloroethene	13110	1,200	12500	307.5	102	68.5-130	12830	2.1	20	
Toluene	12160	1,200	12500	0	97.3	80-120	11740	3.54	20	
trans-1,3-Dichloropropene	12790	1,200	12500	0	102	80-120	12720	0.554	20	
Trichloroethene	13550	1,200	12500	382.7	105	78.9-120	13050	3.73	20	
Vinyl acetate	16770	2,500	25000	0	67.1	62.4-133	16340	2.6	20	
Vinyl chloride	11890	500	12500	0	95.1	72.7-128	11910	0.11	20	
Xylenes, Total	37950	3,800	37500	0	101	80-120	36910	2.78	20	
Surr: 1,2-Dichloroethane-d4	10830	1,200	12500	0	86.7	71-126	10910	0.714	20	
Surr: 4-Bromofluorobenzene	12050	1,200	12500	0	96.4	74-125	12050	0.0324	20	
Surr: Dibromofluoromethane	11040	1,200	12500	0	88.3	73-126	10810	2.07	20	
Surr: Toluene-d8	11800	1,200	12500	0	94.4	75-125	11660	1.17	20	

The following samples were analyzed in this batch: 0407074-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: R21602 InstrumentID: WetChem

LCS Sample ID: WLCSW1-070804 Test Code: E150.1 Units: pH units Analysis Date: 07/08/04 0:00
Client ID: Run ID: WETCHEM_040708A SeqNo: 504779 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	85-115	0			

DUP Sample ID: 0407074-01CDUP Test Code: E150.1 Units: pH units Analysis Date: 07/08/04 0:00
Client ID: Inj Wells Run ID: WETCHEM_040708A SeqNo: 504783 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.91	0.10	0	0	0	0-0	6.92	0.145	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21620** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-070804** Test Code: **E160.1** Units: **mg/L** Analysis Date: **07/08/04 0:00**
Client ID: Run ID: **WETCHEM_040708F** SeqNo: **505164** 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: **WLCSW1-070804** Test Code: **E160.1** Units: **mg/L** Analysis Date: **07/08/04 0:00**
Client ID: Run ID: **WETCHEM_040708F** SeqNo: **505165** 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	1058	10	1000	0	106	80-120		0		

DUP Sample ID: **0407068-01EDUP** Test Code: **E160.1** Units: **mg/L** Analysis Date: **07/08/04 0:00**
Client ID: Run ID: **WETCHEM_040708F** SeqNo: **505171** 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	25900	10	0	0	0	0-0	25620	1.07	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: R21657 InstrumentID: WetChem

MBLK Sample ID: WBLKW-071204 Test Code: E310.1 Units: mg/L Analysis Date: 07/12/04 0:00
Client ID: Run ID: WETCHEM_040712B SeqNo: 506101 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: WLCSW1-071204 Test Code: E310.1 Units: mg/L Analysis Date: 07/12/04 0:00
Client ID: Run ID: WETCHEM_040712B SeqNo: 506102 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)	980.7	5.0	0	0.9806	0	0-0	0			
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Total (As CaCO3)	980.7	5.0	1000	0	98.1	80-120	0			

DUP Sample ID: 0407076-01BDUP Test Code: E310.1 Units: mg/L Analysis Date: 07/12/04 0:00
Client ID: Run ID: WETCHEM_040712B SeqNo: 506130 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)	421.7	5.0	0	0	0	0-0	421.7	0	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)	421.7	5.0	0	0	0	0-0	421.7	0	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21661** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-071204** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **07/12/04 0:00**
Client ID: Run ID: **WETCHEM_040712D** SeqNo: **506172** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	ND	1.0								

LCS Sample ID: **WLCSW1-071204** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **07/12/04 0:00**
Client ID: Run ID: **WETCHEM_040712D** SeqNo: **506173** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	1440	1.0	1409	0	102	80-120		0		

DUP Sample ID: **0407074-01CDUP** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **07/12/04 0:00**
Client ID: **Inj Wells** Run ID: **WETCHEM_040712D** SeqNo: **506175** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	7190	1.0	0	0	0	0-0	7200	0.139	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: R21698 InstrumentID: IC201

MBLK Sample ID: WBLKW1-071204 Test Code: E300 Units: mg/L Analysis Date: 07/12/04 23:08
Client ID: Run ID: IC201_040712B SeqNo: 506929 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	1.0								
Surr: Dichloroacetic acid (surr)	5.26	0.10	5	0	105	80-120	0			

LCS Sample ID: WLCSW1-071204 Test Code: E300 Units: mg/L Analysis Date: 07/12/04 23:37
Client ID: Run ID: IC201_040712B SeqNo: 506930 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.89	0.50	10	0	98.9	80-120	0			
Sulfate	10.41	1.0	10	0	104	80-120	0			
Surr: Dichloroacetic acid (surr)	5.58	0.10	5	0	112	80-120	0			

LCSD Sample ID: WLCSW1DUP-071 Test Code: E300 Units: mg/L Analysis Date: 07/13/04 0:05
Client ID: Run ID: IC201_040712B SeqNo: 506931 Prep Date: DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.9	0.50	10	0	99	80-120	0			
Sulfate	10.43	1.0	10	0	104	80-120	0			
Surr: Dichloroacetic acid (surr)	5.6	0.10	5	0	112	80-120	0			

MS Sample ID: 0407016-02AMS Test Code: E300 Units: mg/L Analysis Date: 07/13/04 1:31
Client ID: Run ID: IC201_040712B SeqNo: 506934 Prep Date: DF: 100

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3695	50	1000	2719	97.6	75-125	0			
Sulfate	1255	100	1000	273	98.2	75-125	0			
Surr: Dichloroacetic acid (surr)	528	10	500	0	106	80-120	0			

MSD Sample ID: 0407016-02AMSD Test Code: E300 Units: mg/L Analysis Date: 07/13/04 1:59
Client ID: Run ID: IC201_040712B SeqNo: 506935 Prep Date: DF: 100

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3686	50	1000	2719	96.7	75-125	3695	0.244	20	
Sulfate	1255	100	1000	273	98.2	75-125	1255	0	20	
Surr: Dichloroacetic acid (surr)	534	10	500	0	107	80-120	528	1.13	20	

ND - Not Detected at the Reporting Limit
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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21698** InstrumentID: **IC201**

DUP Sample ID: **0407016-02ADUP** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 1:02**
Client ID: Run ID: **IC201_040712B** SeqNo: **506933** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	2515	50	0	0	0	0-0	2719	7.8	20	
Sulfate	259	100	0	0	0	0-0	273	5.26	20	
Surr: Dichloroacetic acid (surr)	538	10	500	0	108	80-120	571	5.95	20	

DUP Sample ID: **0407076-04BDUP** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 11:01**
Client ID: Run ID: **IC201_040712B** SeqNo: **506938** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	844	25	0	0	0	0-0	845.5	0.178	20	
Sulfate	2172	50	0	0	0	0-0	2174	0.115	20	
Surr: Dichloroacetic acid (surr)	279	5.0	250	0	112	80-120	284.5	1.95	20	

DUP Sample ID: **0407076-07BDUP** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 14:49**
Client ID: Run ID: **IC201_040712B** SeqNo: **506944** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3191	0.50	0	0	0	0-0	3183	0.227	20	E
Sulfate	4941	1.0	0	0	0	0-0	4912	0.6	20	E
Surr: Dichloroacetic acid (surr)	4.38	0.10	5	0	87.6	80-120	5.6	24.4	20	R

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

e-Lab, Inc.
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page ____ of ____

e-Lab, Inc.
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

e-Lab Project Manager: _____ e-Lab Work Order: 40107

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Wells	A	VOC (8260)
Work Order		Project Number		B	SVOC (8270)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Tot Metals WQCC + Cations (6020)
Send Report To	Charlie Plymale	Invoice Attn	Charlie Plymale	D	Anions: Cl, SO4 (300)
Address	P.O. Box 159	Address	P.O. Box 159	E	Alkalinity (310.1)
				F	pH
City/State/Zip	Artesia, New Mexico 88211	City/State/Zip	Artesia, New Mexico 88211	G	TDS
Phone	(505) 748-3311	Phone	(505) 748-3311	H	Conductivity
Fax	(505) 746-5421	Fax	(505) 746-5421	I	Uranium
e-Mail Address		e-Mail Address		J	RCI

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj Wells	7/7/04	900			11	X	X	X	X	X	X	X	X	X	X	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Charlie Plymale

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☐ STD 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other 10 Day TAT

Results Due Date:

Relinquished by:	Date: 7/7/04	Time: 1615	Received by:	Notes:
Relinquished by:	Date:	Time:	Received by (Laboratory):	e-Lab Cooler ID: / Cooler Temp:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory): 7/8/04	

QC Package: (Check One Box Below)
☑ Level I Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

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

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to e-Lab, Inc.
2. Unless otherwise agreed in a formal contract, services provided by e-Lab, Inc. are [illegible]

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e-Lab Analytical, Inc.

Sample Receipt Checklist

Client Name NAVAJO REFINING | Date/Time Received: 7/8/2004 8:40:00 AM

Work Order Number 0407074 | Received by: FSM

Checklist completed by RICHARD SANCHEZ 7-8-04 (Signature / Date) | Reviewed by (Initials) 7/9/04 (Date)

Matrix: W | 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):	3.0c	002	
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐

Adjusted? _____ Checked by _____

Login Notes: Trip blank not on COC; logged in without analysis.

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

e-Lab, Inc

Date: *July 19, 2004*

CLIENT: e-Lab, Inc
Project: 0407074
Work Order: 0407128

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0407128-01	0407074-01E	Water		7/7/2004 09:00	7/9/2004 10:00	☐

e-Lab, Inc

Date: *July 19, 2004*

CLIENT: e-Lab, Inc
Project: 0407074
Work Order: 0407128

Lab ID: 0407128-01A
Client Sample ID: 0407074-01E
Collection Date: 7/7/2004 9:00:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE		**EPA 7.3.3.2**				Analyst: **KAE**
Cyanide, Reactive	ND	0.0300		mg/Kg	1	7/16/2004
FLASHPOINT, P-M CLOSED-CUP		**ASTM D93**				Analyst: **MB**
Flashpoint, P-M Closed-cup	>200			°F	1	7/16/2004
SULFIDE, REACTIVE		**EPA 7.3.4.2**				Analyst: **KAE**
Sulfide, Reactive	ND	40.0		mg/Kg	1	7/16/2004

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab, Inc

CLIENT: e-Lab, Inc
Work Order: 0407128
Project: 0407074

Date: *Jul 19 2004*

QC BATCH REPORT

Batch ID: **R22476** InstrumentID: **WETCHEM**

LCS Sample ID: **WLCSW1-071504** Test Code: **ASTM D93** Units: **°F** Analysis Date **07/16/04 0:00**

Client ID: Run ID: **WETCHEM_040716G** SeqNo: **329758** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Flashpoint, P-M Closed-cup	80	0	81	0	98.8	97.5-102.4		0		

The following samples were analyzed in this batch: 0407128-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Reference analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: e-Lab, Inc
Work Order: 0407128
Project: 0407074

QC BATCH REPORT

Batch ID: R22479 InstrumentID: WETCHEM

MBLK Sample ID: WBLKW1-071504 Test Code: EPA 7.3.3.2 Units: mg/Kg Analysis Date 07/16/04 0:00

Client ID: Run ID: WETCHEM_040716I SeqNo: 329826 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	0.030								

LCS Sample ID: WLCSW1-071504 Test Code: EPA 7.3.3.2 Units: mg/Kg Analysis Date 07/16/04 0:00

Client ID: Run ID: WETCHEM_040716I SeqNo: 329827 Prep Date: DF: 25

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	4.238	0.75	19.71	0	21.5	5-100		0		

The following samples were analyzed in this batch: 0407128-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Reference analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: e-Lab, Inc
Work Order: 0407128
Project: 0407074

QC BATCH REPORT

Batch ID: R22462 InstrumentID: WETCHEM

MBLK Sample ID: WBLKW1-071604 Test Code: EPA 7.3.4.2 Units: mg/Kg Analysis Date 07/16/04 0:00
Client ID: Run ID: WETCHEM_040716L SeqNo: 329840 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: 0407128-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

040728

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: Jul 03, 2024
Work Order: [illegible]
Due Date: [illegible]

[illegible]
Houston, TX 77024

Tel: [illegible]
Fax: [illegible]

Customer Information		Project Information		Preservation Methods / Number of Containers
Purchase Order		Project Name	[illegible]	A: Cyanide, Reactive (SW-846)
Work Order		Project Number		B: Sulfide, Reactive (SW-846)
Company Name	[illegible]	Bill To Company	[illegible]	C: Dechlorinated (SW-846)
Send Report To	Jeffrey L Dasovich	Invoice To	Accounts Payable	D:
Address	[illegible]	Address	[illegible]	E:
				F:
City/State/Zip	Houston, Texas 77059-4311	City/State/Zip	Houston, Texas 77064-1335	G:
Phone	[illegible]	Phone	[illegible]	H:
Fax	[illegible]	Fax	[illegible]	I:
eMail Address				J:

Sample ID	Matrix	Collection Date	Bottle	A	B	C	D	E	F	J
[illegible]	Water	7/2/2024 9:00	1L HDPE DAT	X	X	X				

Comments:

Relinquished By:	Date/Time:	Received By:	Date/Time:	Received By:	Date/Time:
[signature]	7/3/24	[signature]	7/3/24 1000		

e-Lab, Inc

Sample Receipt Checklist

Client Name ELAB-HOU | Date/Time Received: 7/9/2004 10:00:00 AM

Work Order Number 0407128 | Received by: TL

Checklist completed by [signature] Signature 7/9/04 Date | Reviewed by [signature] Initials 7/9/04 Date

Matrix: | 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):	1.8 C		
Water - VOA vials have zero headspace?	Yes	No	No VOA vials submitted ✓
Water - pH acceptable upon receipt?	Yes ✓	No	N/A

Adjusted? | Checked b

Login Notes:

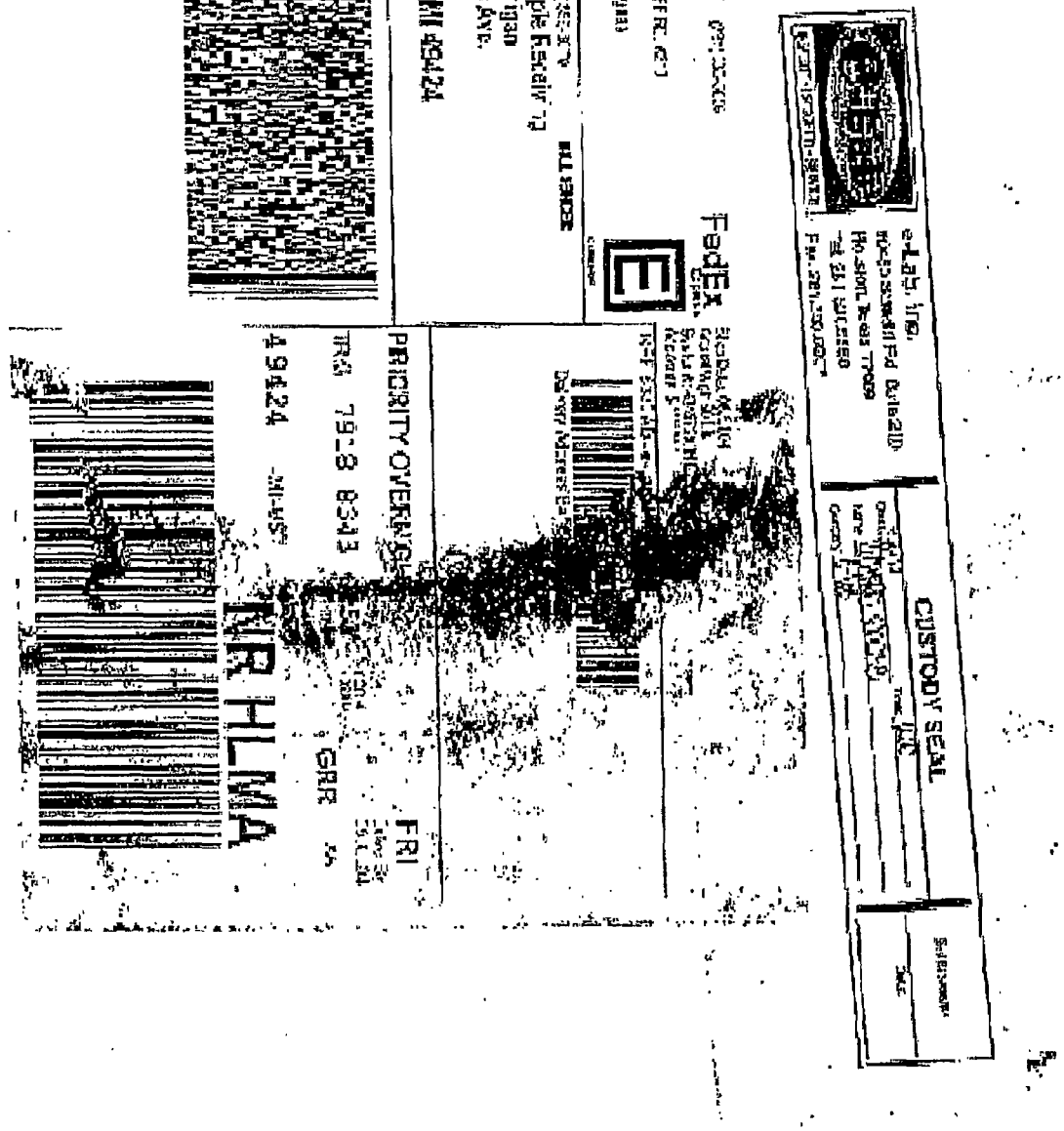
Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted | Date contacted: | Person contacted

Contacted by: | Regarding:

Comments:

Corrective Action



ALIGN OPEN END OF FEDEX AIRBILL POUCH HERE

e-Lab Analytical, Inc.

10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 281-530-5656 Fax 281-530-5887

December 23, 2004

Jeff Byrd
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88211

Tel: (505) 746-5468
Fax: (505) 746-5421

Re: Injection Wells Work Order : **0412005**

Dear Jeff Byrd,

e-Lab Analytical, Inc. received 1 sample on 12/1/2004 9:05:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by e-Lab Analytical, Inc. 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 e-Lab Analytical, Inc. The total number of pages in this report is 40.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Jeffrey L Croston

Electronically approved by: Jeffrey L Croston

Jeffrey L Croston

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT: Navajo Refining Company
Project: Injection Wells
Work Order: 0412005

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0412005-01	Inj Wells	Water		11/30/2004 07:30	12/1/2004 09:05	☐

e-Lab Analytical, Inc. **Date:** *December 23, 2004*

CLIENT:	Navajo Refining Company
Project:	Injection Wells
Work Order:	0412005

Case Narrative

Batch 11292 Metals MS/MSD was an unrelated sample.

Batch 11279 Semivolatiles MS/MSD were unrelated sample.

Batch R25184 Volatiles MS/MSD was an unrelated sample.

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT:	Navajo Refining Company	**Client Sample ID:**	Inj Wells
Work Order:	0412005	**Collection Date:**	11/30/2004 7:30:00 AM
Project:	Injection Wells		
Lab ID:	0412005-01	**Matrix:**	WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
MERCURY, TOTAL		**SW7470**			Prep Date: **12/7/2004**	Analyst: **JCJ**
Mercury	ND	0.000200		mg/L	1	12/8/2004 4:29:34 PM
ICP METALS, TOTAL		**SW6020**			Prep Date: **12/3/2004**	Analyst: **SA**
Aluminum	0.0414	0.0100		mg/L	1	12/10/2004 9:00:00 PM
Arsenic	0.193	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Barium	0.0187	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Beryllium	ND	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Boron	0.211	0.200		mg/L	10	12/9/2004 9:13:00 PM
Cadmium	ND	0.00100		mg/L	1	12/10/2004 9:00:00 PM
Calcium	172	25.0		mg/L	50	12/9/2004 5:23:00 PM
Chromium	ND	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Cobalt	0.00208	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Copper	0.00888	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Iron	0.304	0.200		mg/L	1	12/10/2004 9:00:00 PM
Lead	ND	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Magnesium	22.7	0.200		mg/L	1	12/10/2004 9:00:00 PM
Manganese	0.0658	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Molybdenum	0.00632	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Nickel	0.0286	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Potassium	26.6	0.200		mg/L	1	12/10/2004 9:00:00 PM
Selenium	0.300	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Silver	ND	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Sodium	1,860	10.0		mg/L	50	12/9/2004 5:23:00 PM
Vanadium	0.0117	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Zinc	0.0541	0.00500		mg/L	1	12/10/2004 9:00:00 PM
SEMIVOLATILE ORGANICS BY GC/MS		**SW8270**			Prep Date: **12/1/2004**	Analyst: **HV**
1,2,4-Trichlorobenzene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2,4,5-Trichlorophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2,4,6-Trichlorophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Methylnaphthalene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Methylphenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Nitroaniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Nitrophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
3&4-Methylphenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
3-Nitroaniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
4-Nitroaniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
4-Nitrophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Acenaphthene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Acenaphthylene	ND	11		µg/L	1	12/3/2004 10:18:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells
Lab ID: 0412005-01

Client Sample ID: Inj Wells
Collection Date: 11/30/2004 7:30:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Aniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Anthracene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Benz(a)anthracene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Benzidine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Hexachloroethane	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Indeno(1,2,3-cd)pyrene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Isophorone	ND	11		µg/L	1	12/3/2004 10:18:00 PM
N-Nitrosodi-n-propylamine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
N-Nitrosodimethylamine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
N-Nitrosodiphenylamine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Naphthalene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Nitrobenzene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Pentachlorophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Phenanthrene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Phenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Pyrene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Surr: 2,4,6-Tribromophenol	108	39-153		%REC	1	12/3/2004 10:18:00 PM
Surr: 2-Fluorobiphenyl	89.2	40-147		%REC	1	12/3/2004 10:18:00 PM
Surr: 2-Fluorophenol	46.8	21-110		%REC	1	12/3/2004 10:18:00 PM
Surr: 4-Terphenyl-d14	93.6	39-141		%REC	1	12/3/2004 10:18:00 PM
Surr: Nitrobenzene-d5	88.3	37-140		%REC	1	12/3/2004 10:18:00 PM
Surr: Phenol-d6	24.9	11-100		%REC	1	12/3/2004 10:18:00 PM
VOLATILES BY GC/MS		**SW8260**				Analyst: **PC**
1,1,1-Trichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
2-Butanone	ND	10		µg/L	1	12/10/2004 7:44:00 PM
2-Chloroethyl vinyl ether	ND	10		µg/L	1	12/10/2004 7:44:00 PM
2-Hexanone	ND	10		µg/L	1	12/10/2004 7:44:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Acetone	39	10		µg/L	1	12/10/2004 7:44:00 PM
Benzene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Bromodichloromethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Bromoform	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Bromomethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Carbon disulfide	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Carbon tetrachloride	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells
Lab ID: 0412005-01

Client Sample ID: Inj Wells
Collection Date: 11/30/2004 7:30:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Chloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Chloroform	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Chloromethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Dibromochloromethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Ethylbenzene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
m,p-Xylene	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Methylene chloride	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Styrene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Tetrachloroethene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Toluene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Trichloroethene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Vinyl acetate	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Vinyl chloride	ND	2.0		µg/L	1	12/10/2004 7:44:00 PM
Xylenes, Total	ND	15		µg/L	1	12/10/2004 7:44:00 PM
Surr: 1,2-Dichloroethane-d4	105	71-126		%REC	1	12/10/2004 7:44:00 PM
Surr: 4-Bromofluorobenzene	80.8	74-125		%REC	1	12/10/2004 7:44:00 PM
Surr: Dibromofluoromethane	96.4	73-126		%REC	1	12/10/2004 7:44:00 PM
Surr: Toluene-d8	80.4	75-125		%REC	1	12/10/2004 7:44:00 PM
FLASHPOINT		**SW1010**				Analyst: **MAG**
Ignitability	>196	50		°F	1	12/6/2004
CYANIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Cyanide	ND	0.0300		mg/Kg	1	12/2/2004
SULFIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Sulfide	ND	40.0		mg/Kg	1	12/2/2004
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **MG**
Chloride	1,200	50.0		mg/L	100	12/8/2004 11:32:00 PM
Sulfate	2,450	100		mg/L	100	12/8/2004 11:32:00 PM
Surr: Dichloroacetic acid (surr)	102	80-120		%REC	100	12/8/2004 11:32:00 PM
ALKALINITY		**E310.1**				Analyst: **IGF**
Alkalinity, Bicarbonate (As CaCO3)	132	5.00		mg/L	1	12/6/2004
Alkalinity, Carbonate (As CaCO3)	ND	5.00		mg/L	1	12/6/2004
Alkalinity, Hydroxide (As CaCO3)	ND	5.00		mg/L	1	12/6/2004
Alkalinity, Total (As CaCO3)	132	5.00		mg/L	1	12/6/2004
CONDUCTIVITY		**E120.1**				Analyst: **IGF**
Specific Conductance	6,350	1.00		µmhos/cm	1	12/3/2004

Qualifiers:

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J - Analyte detected below quantitation limits
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* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT:	Navajo Refining Company	**Client Sample ID:**	Inj Wells
Work Order:	0412005	**Collection Date:**	11/30/2004 7:30:00 AM
Project:	Injection Wells		
Lab ID:	0412005-01	**Matrix:**	WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
PH		E150.1				Analyst: **IGF**
pH	7.19	0.100		pH units	1	12/1/2004
TOTAL DISSOLVED SOLIDS		E160.1				Analyst: **MG**
Total Dissolved Solids (Residue, Filterable)	4,940	10.0		mg/L	1	12/3/2004

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

Date: *Dec 23 2004*

QC BATCH REPORT

Batch ID: **11292** InstrumentID: **ICP4500**

MBLK Sample ID: **MBLKW1-120304** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/08/04 15:12**

Client ID: Run ID: **ICP4500_041208A** SeqNo: **585425** Prep Date: **12/3/2004** 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	ND	0.020								
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	0.0006782	0.0050								J
Magnesium	ND	0.20								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Potassium	ND	0.20								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Sodium	0.07729	0.20								J
Vanadium	ND	0.0050								
Zinc	0.0021	0.0050								J

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11292** InstrumentID: **ICP4500**

LCS Sample ID: **MLCSW1-120304** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/08/04 15:17**

Client ID: Run ID: **ICP4500_041208A** SeqNo: **585426** Prep Date: **12/3/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.04516	0.010	0.05	0	90.3	79-126	0			
Arsenic	0.04774	0.0050	0.05	0	95.5	80-121	0			
Barium	0.04532	0.0050	0.05	0	90.6	79.8-119	0			
Beryllium	0.04939	0.0020	0.05	0	98.8	78.9-120	0			
Boron	0.5121	0.020	0.5	0	102	80-120	0			
Cadmium	0.05014	0.0020	0.05	0	100	79.1-119	0			
Calcium	4.515	0.50	5	0	90.3	80-121	0			
Chromium	0.04476	0.0050	0.05	0	89.5	79.3-121	0			
Cobalt	0.04611	0.0050	0.05	0	92.2	82-121	0			
Copper	0.04562	0.0050	0.05	0	91.2	81-120	0			
Iron	4.832	0.20	5	0	96.6	80-120	0			
Lead	0.04448	0.0050	0.05	0	89	80-118	0			
Magnesium	4.737	0.20	5	0	94.7	80-120	0			
Manganese	0.0458	0.0050	0.05	0	91.6	82-119	0			
Molybdenum	0.04286	0.0050	0.05	0	85.7	81-115	0			
Nickel	0.0465	0.0050	0.05	0	93	82-120	0			
Potassium	4.477	0.20	5	0	89.5	80-120	0			
Selenium	0.04793	0.0050	0.05	0	95.9	79.2-118	0			
Silver	0.04639	0.0050	0.05	0	92.8	80-117	0			
Sodium	4.588	0.20	5	0	91.8	80.6-119	0			
Vanadium	0.04421	0.0050	0.05	0	88.4	82.1-119	0			
Zinc	0.04855	0.0050	0.05	0	97.1	79-118	0			

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: 11292 InstrumentID: ICP4500

MS Sample ID: 0411323-01CMS Test Code: SW6020 Units: mg/L Analysis Date: 12/13/04 17:14
Client ID: Run ID: ICP7500_041213A SeqNo: 587685 Prep Date: 12/3/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1069	0.010	0.05	0.5579	-902	79-126	0			SO
Arsenic	0.05512	0.0050	0.05	0.006109	98	80-121	0			
Barium	0.09539	0.0050	0.05	0.05106	88.7	79.8-119	0			
Beryllium	0.04669	0.0020	0.05	0	93.4	78.9-120	0			
Boron	0.7308	0.020	0.5	0.2504	96.1	80-120	0			
Cadmium	0.04737	0.0020	0.05	0	94.7	79.1-119	0			
Calcium	264.3	0.50	5	266.5	-44	80-121	0			SEO
Chromium	0.04732	0.0050	0.05	0.0007623	93.1	79.3-121	0			
Cobalt	0.04668	0.0050	0.05	0.001722	89.9	82-121	0			
Copper	0.04436	0.0050	0.05	0.0009763	86.8	80-120	0			
Iron	6.504	0.20	5	2.249	85.1	80-120	0			
Lead	0.04604	0.0050	0.05	0.000464	91.2	80-118	0			
Magnesium	114.1	0.20	5	106.8	146	80-120	0			SEO
Manganese	0.1654	0.0050	0.05	0.1179	95	82-119	0			
Molybdenum	0.05048	0.0050	0.05	0.00484	91.3	81-115	0			
Nickel	0.05074	0.0050	0.05	0.006594	88.3	82-120	0			
Potassium	5.203	0.20	5	0.5493	93.1	80-120	0			
Selenium	0.04587	0.0050	0.05	0	91.7	79.2-118	0			
Silver	0.03777	0.0050	0.05	0	75.5	80-117	0			S
Sodium	40.61	0.20	5	34.32	126	80.6-119	0			SO
Vanadium	0.04854	0.0050	0.05	0.001477	94.1	82.1-119	0			
Zinc	0.07754	0.0050	0.05	0.02374	108	79-118	0			

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: 11292 InstrumentID: ICP4500

MSD Sample ID: 0411323-01CMSD Test Code: SW6020 Units: mg/L Analysis Date: 12/13/04 17:25
Client ID: Run ID: ICP7500_041213A SeqNo: 587686 Prep Date: 12/3/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09847	0.010	0.05	0.5579	-919	79-126	0.1069	8.21	15	SO
Arsenic	0.05478	0.0050	0.05	0.006109	97.3	80-121	0.05512	0.619	15	
Barium	0.09357	0.0050	0.05	0.05106	85	79.8-119	0.09539	1.93	15	
Beryllium	0.04578	0.0020	0.05	0	91.6	78.9-120	0.04669	1.97	15	
Boron	0.7187	0.020	0.5	0.2504	93.7	80-120	0.7308	1.67	15	
Cadmium	0.04671	0.0020	0.05	0	93.4	79.1-119	0.04737	1.4	15	
Calcium	264.8	0.50	5	266.5	-34	80-121	264.3	0.189	15	SEO
Chromium	0.04649	0.0050	0.05	0.0007623	91.5	79.3-121	0.04732	1.77	15	
Cobalt	0.04571	0.0050	0.05	0.001722	88	82-121	0.04668	2.1	15	
Copper	0.04363	0.0050	0.05	0.0009763	85.3	81-120	0.04436	1.66	15	
Iron	6.331	0.20	5	2.249	81.6	80-120	6.504	2.7	15	
Lead	0.04463	0.0050	0.05	0.000464	88.3	80-118	0.04604	3.11	15	
Magnesium	111.1	0.20	5	106.8	86	80-120	114.1	2.66	15	EO
Manganese	0.1615	0.0050	0.05	0.1179	87.2	82-119	0.1654	2.39	15	
Molybdenum	0.0504	0.0050	0.05	0.00484	91.1	81-115	0.05048	0.159	15	
Nickel	0.04918	0.0050	0.05	0.006594	85.2	82-120	0.05074	3.12	15	
Potassium	5.187	0.20	5	0.5493	92.8	80-120	5.203	0.308	15	
Selenium	0.04899	0.0050	0.05	0	98	79.2-118	0.04587	6.58	15	
Silver	0.03712	0.0050	0.05	0	74.2	80-117	0.03777	1.74	15	S
Sodium	39.2	0.20	5	34.32	97.6	80.6-119	40.61	3.53	15	O
Vanadium	0.0472	0.0050	0.05	0.001477	91.4	82.1-119	0.04854	2.8	15	
Zinc	0.04375	0.0050	0.05	0.02374	40	79-118	0.07754	55.7	15	SR

DUP Sample ID: 0411323-01CDUP Test Code: SW6020 Units: mg/L Analysis Date: 12/08/04 15:26
Client ID: Run ID: ICP4500_041208A SeqNo: 585428 Prep Date: 12/3/2004 DF: 50

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	242.3	25	0	0	0	0-0	237.6	1.96	25	

DUP Sample ID: 0411323-01CDUP Test Code: SW6020 Units: mg/L Analysis Date: 12/09/04 17:33
Client ID: Run ID: ICP4500_041209A SeqNo: 586207 Prep Date: 12/3/2004 DF: 10

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Magnesium	104	2.0	0	0	0	0-0	94.02	10.1	25	

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E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11292** InstrumentID: **ICP4500**

DUP Sample ID: **0411323-01CDUP** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/13/04 17:08**

Client ID: Run ID: **ICP7500_041213A** SeqNo: **587684** Prep Date: **12/3/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.5114	0.010	0	0	0	0-0	0.5579	8.7	25	
Arsenic	0.007011	0.0050	0	0	0	0-0	0.006109	13.8	25	
Barium	0.04884	0.0050	0	0	0	0-0	0.05106	4.44	25	
Beryllium	ND	0.0020	0	0	0	0-0	0.00004484	0	25	
Boron	0.2336	0.020	0	0	0	0-0	0.2504	6.94	25	
Cadmium	ND	0.0020	0	0	0	0-0	0.00002551	0	25	
Chromium	0.00112	0.0050	0	0	0	0-0	0.0007623	0	25	J
Cobalt	0.001584	0.0050	0	0	0	0-0	0.001722	0	25	J
Copper	0.0007835	0.0050	0	0	0	0-0	0.0009763	0	25	J
Iron	2.272	0.20	0	0	0	0-0	2.249	1.02	25	
Lead	0.0005578	0.0050	0	0	0	0-0	0.000464	0	25	J
Manganese	0.118	0.0050	0	0	0	0-0	0.1179	0.0848	25	
Molybdenum	0.004888	0.0050	0	0	0	0-0	0.00484	0	25	J
Nickel	0.006244	0.0050	0	0	0	0-0	0.006594	5.45	25	
Potassium	0.1045	0.20	0	0	0	0-0	0.5493	0	25	J
Selenium	ND	0.0050	0	0	0	0-0	0.00126	0	25	
Silver	ND	0.0050	0	0	0	0-0	0.00001912	0	25	
Sodium	34.43	0.20	0	0	0	0-0	34.32	0.32	25	
Vanadium	0.001493	0.0050	0	0	0	0-0	0.001477	0	25	J
Zinc	0.02671	0.0050	0	0	0	0-0	0.02374	11.8	25	

The following samples were analyzed in this batch: 0412005-01B

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11333** InstrumentID: **Mercury**

MBLK Sample ID: **GBLKW2-120704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:16**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585330** Prep Date: **12/7/2004** 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: **GLCSW2-120704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:18**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585331** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00516	0.00020	0.005	0	103	83-115	0			

LCSD Sample ID: **GLCSDW2-120704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:19**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585332** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00525	0.00020	0.005	0	105	83-115	0.00516	1.73	20	

MS Sample ID: **0411323-05CMS** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:24**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585335** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00521	0.00020	0.005	-0.00001	104	83-115	0			

MSD Sample ID: **0411323-05CMSD** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:25**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585336** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00537	0.00020	0.005	-0.00001	108	83-115	0.00521	3.02	20	

DUP Sample ID: **0411323-05CDUP** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:22**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585334** Prep Date: **12/7/2004** 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	-0.00001	0	20	

The following samples were analyzed in this batch: 0412005-01B

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MBLK Sample ID: **SBLKW1-041201** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 19:16**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584523** Prep Date: **12/1/2004** 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	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3&4-Methylphenol	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Benz(a)anthracene	ND	10								
Benzidine	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
Pentachlorophenol	ND	10								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
1,4-Dichlorobenzene-d4	40	0								
Acenaphthene-d10	40	0								
Chrysene-d12	40	0								
Naphthalene-d8	40	0								
Perylene-d12	40	0								
Phenanthrene-d10	40	0								
Surr: 2,4,6-Tribromophenol	111.4	10	100	0	111	39-153	0			
Surr: 2-Fluorobiphenyl	94.94	10	100	0	94.9	40-147	0			
Surr: 2-Fluorophenol	41.49	10	100	0	41.5	21-110	0			
Surr: 4-Terphenyl-d14	92.33	10	100	0	92.3	39-141	0			
Surr: Nitrobenzene-d5	92.12	10	100	0	92.1	37-140	0			
Surr: Phenol-d6	24.52	10	100	0	24.5	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

LCS Sample ID: **SLCSW1-041201** Test Code: **SW8270** Units: µg/L Analysis Date: **12/06/04 19:42**
Client ID: Run ID: **SV-3_041206A** SeqNo: **584524** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	46.41	10	50	0	92.8	50-115	0			
2,4,5-Trichlorophenol	85.9	10	100	0	85.9	68-128	0			
2,4,6-Trichlorophenol	80.73	10	100	0	80.7	66-125	0			
2-Methylnaphthalene	42.71	10	50	0	85.4	47-122	0			
2-Methylphenol	62.35	10	100	0	62.4	51-115	0			
2-Nitroaniline	40.81	10	50	0	81.6	64-128	0			
2-Nitrophenol	85.56	10	100	0	85.6	60-119	0			
3&4-Methylphenol	83.39	10	150	0	55.6	44-115	0			
3-Nitroaniline	31.82	10	50	0	63.6	61-118	0			
4-Nitroaniline	35.23	10	50	0	70.5	61-123	0			
4-Nitrophenol	38.6	10	100	0	38.6	17-100	0			
Acenaphthene	47.59	10	50	0	95.2	68-115	0			
Acenaphthylene	45.62	10	50	0	91.2	67-116	0			
Aniline	28.31	10	50	0	56.6	40-130	0			
Anthracene	51.46	10	50	0	103	70-129	0			
Benz(a)anthracene	45.47	10	50	0	90.9	55-131	0			
Benzidine	7.922	10	50	0	15.8	10-115	0			J
Hexachloroethane	44.02	10	50	0	88	46-115	0			
Indeno(1,2,3-cd)pyrene	45.47	10	50	0	90.9	42-123	0			
Isophorone	43.19	10	50	0	86.4	63-117	0			
N-Nitrosodi-n-propylamine	41.82	10	50	0	83.6	67-115	0			
N-Nitrosodimethylamine	18.78	10	50	0	37.6	28-115	0			
N-Nitrosodiphenylamine	52.16	10	50	0	104	72-144	0			
Naphthalene	47.05	10	50	0	94.1	52-115	0			
Nitrobenzene	42.92	10	50	0	85.8	65-115	0			
Pentachlorophenol	88.33	10	100	0	88.3	65-123	0			
Phenanthrene	49.68	10	50	0	99.4	69-119	0			
Phenol	28.84	10	100	0	28.8	16-115	0			
Pyrene	47.04	10	50	0	94.1	51-130	0			
Surr: 2,4,6-Tribromophenol	104.5	10	100	0	105	39-153	0			
Surr: 2-Fluorobiphenyl	88	10	100	0	88	40-147	0			
Surr: 2-Fluorophenol	42.87	10	100	0	42.9	21-110	0			
Surr: 4-Terphenyl-d14	92.9	10	100	0	92.9	39-141	0			
Surr: Nitrobenzene-d5	84.16	10	100	0	84.2	37-140	0			
Surr: Phenol-d6	26.45	10	100	0	26.5	11-100	0			

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S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MS Sample ID: **0411323-01DMS** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 20:34**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584526** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.38	10	50	0	86.8	50-115	0			
2,4,5-Trichlorophenol	90.42	10	100	0	90.4	68-128	0			
2,4,6-Trichlorophenol	85.7	10	100	0	85.7	66-125	0			
2-Methylnaphthalene	43.28	10	50	0	86.6	47-122	0			
2-Methylphenol	64.36	10	100	0	64.4	51-115	0			
2-Nitroaniline	43.18	10	50	0	86.3	64-128	0			
2-Nitrophenol	86.59	10	100	0	86.6	60-119	0			
3&4-Methylphenol	86.42	10	150	0	57.6	44-115	0			
3-Nitroaniline	33.78	10	50	0	67.6	61-118	0			
4-Nitroaniline	38.79	10	50	0	77.6	61-123	0			
4-Nitrophenol	36.47	10	100	0	36.5	17-100	0			
Acenaphthene	48.47	10	50	0	96.9	68-115	0			
Acenaphthylene	47.05	10	50	0	94.1	67-116	0			
Aniline	32.99	10	50	0	66	40-130	0			
Anthracene	51.79	10	50	0	104	70-129	0			
Benz(a)anthracene	49.25	10	50	0	98.5	55-131	0			
Benzidine	6.74	10	50	0	13.5	10-115	0			J
Hexachloroethane	36.94	10	50	0	73.9	46-115	0			
Indeno(1,2,3-cd)pyrene	49.15	10	50	0	98.3	42-123	0			
Isophorone	45.12	10	50	0	90.2	63-117	0			
N-Nitrosodi-n-propylamine	43.97	10	50	0	87.9	67-115	0			
N-Nitrosodimethylamine	17.91	10	50	0	35.8	28-115	0			
N-Nitrosodiphenylamine	53.36	10	50	0	107	72-144	0			
Naphthalene	45.94	10	50	0	91.9	52-115	0			
Nitrobenzene	44.54	10	50	0	89.1	65-115	0			
Pentachlorophenol	94.58	10	100	0	94.6	65-123	0			
Phenanthrene	50.51	10	50	0	101	69-119	0			
Phenol	29.37	10	100	0	29.4	16-115	0			
Pyrene	48.25	10	50	0	96.5	51-130	0			
Surr: 2,4,6-Tribromophenol	101.5	10	100	0	102	39-153	0			
Surr: 2-Fluorobiphenyl	84.74	10	100	0	84.7	40-147	0			
Surr: 2-Fluorophenol	39.74	10	100	0	39.7	21-110	0			
Surr: 4-Terphenyl-d14	90.52	10	100	0	90.5	39-141	0			
Surr: Nitrobenzene-d5	82.8	10	100	0	82.8	37-140	0			
Surr: Phenol-d6	25.63	10	100	0	25.6	11-100	0			

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B - Analyte detected in assoc. Method Blank
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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: 11279 InstrumentID: SV-3

MS Sample ID: 0411323-05DMS Test Code: SW8270 Units: µg/L Analysis Date: 12/06/04 21:52

Client ID: Run ID: SV-3_041206A SeqNo: 584529 Prep Date: 12/1/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.27	10	50	0	88.5	50-115	0			
2,4,5-Trichlorophenol	93.28	10	100	0	93.3	68-128	0			
2,4,6-Trichlorophenol	83.02	10	100	0	83	66-125	0			
2-Methylnaphthalene	45.01	10	50	0	90	47-122	0			
2-Methylphenol	64.66	10	100	0	64.7	51-115	0			
2-Nitroaniline	45.32	10	50	0	90.6	64-128	0			
2-Nitrophenol	89.99	10	100	0	90	60-119	0			
3&4-Methylphenol	85.58	10	150	0	57.1	44-115	0			
3-Nitroaniline	36.65	10	50	0	73.3	61-118	0			
4-Nitroaniline	39.1	10	50	0	78.2	61-123	0			
4-Nitrophenol	40.12	10	100	0	40.1	17-100	0			
Acenaphthene	48.32	10	50	0	96.6	68-115	0			
Acenaphthylene	47.27	10	50	0	94.5	67-116	0			
Aniline	30.49	10	50	0	61	40-130	0			
Anthracene	52.19	10	50	0	104	70-129	0			
Benz(a)anthracene	49.77	10	50	0	99.5	55-131	0			
Benzidine	ND	10	50	0	0	10-115	0			S
Hexachloroethane	35.92	10	50	0	71.8	46-115	0			
Indeno(1,2,3-cd)pyrene	50.64	10	50	0	101	42-123	0			
Isophorone	47.44	10	50	0	94.9	63-117	0			
N-Nitrosodi-n-propylamine	43.49	10	50	0	87	67-115	0			
N-Nitrosodimethylamine	19.55	10	50	0	39.1	28-115	0			
N-Nitrosodiphenylamine	53.06	10	50	0	106	72-144	0			
Naphthalene	46.32	10	50	0	92.6	52-115	0			
Nitrobenzene	44.87	10	50	0	89.7	65-115	0			
Pentachlorophenol	95.19	10	100	0	95.2	65-123	0			
Phenanthrene	50.74	10	50	0	101	69-119	0			
Phenol	30.24	10	100	0	30.2	16-115	0			
Pyrene	48.75	10	50	0	97.5	51-130	0			
Surr: 2,4,6-Tribromophenol	109.7	10	100	0	110	39-153	0			
Surr: 2-Fluorobiphenyl	86.29	10	100	0	86.3	40-147	0			
Surr: 2-Fluorophenol	44.57	10	100	0	44.6	21-110	0			
Surr: 4-Terphenyl-d14	92.93	10	100	0	92.9	39-141	0			
Surr: Nitrobenzene-d5	87.65	10	100	0	87.7	37-140	0			
Surr: Phenol-d6	28.07	10	100	0	28.1	11-100	0			

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U - Analyzed for but not detected
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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: 11279 InstrumentID: SV-3

MSD Sample ID: 0411323-01DMS Test Code: SW8270 Units: µg/L Analysis Date: 12/06/04 21:00
Client ID: Run ID: SV-3_041206A SeqNo: 584527 Prep Date: 12/1/2004 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.32	10	50	0	86.6	50-115	43.38	0.129	30	
2,4,5-Trichlorophenol	94.48	10	100	0	94.5	68-128	90.42	4.39	30	
2,4,6-Trichlorophenol	86.55	10	100	0	86.6	66-125	85.7	0.994	30	
2-Methylnaphthalene	44.24	10	50	0	88.5	47-122	43.28	2.19	30	
2-Methylphenol	68.14	10	100	0	68.1	51-115	64.36	5.71	30	
2-Nitroaniline	45.64	10	50	0	91.3	64-128	43.16	5.59	30	
2-Nitrophenol	90.48	10	100	0	90.5	60-119	86.59	4.4	30	
3&4-Methylphenol	91.48	10	150	0	61	44-115	86.42	5.69	30	
3-Nitroaniline	34.37	10	50	0	68.7	61-118	33.78	1.73	30	
4-Nitroaniline	41.5	10	50	0	83	61-123	38.79	6.75	30	
4-Nitrophenol	39.15	10	100	0	39.2	17-100	36.47	7.1	30	
Acenaphthene	50.19	10	50	0	100	68-115	48.47	3.49	30	
Acenaphthylene	48.71	10	50	0	97.4	67-116	47.05	3.46	30	
Aniline	32.02	10	50	0	64	40-130	32.99	3.01	30	
Anthracene	53.42	10	50	0	107	70-129	51.79	3.1	30	
Benz(a)anthracene	48.44	10	50	0	96.9	55-131	49.25	1.68	30	
Benzidine	1.612	10	50	0	3.22	10-115	6.74	0	30	JS
Hexachloroethane	37.56	10	50	0	75.1	46-115	36.94	1.67	30	
Indeno(1,2,3-cd)pyrene	48.03	10	50	0	96.1	42-123	49.15	2.29	30	
Isophorone	46.72	10	50	0	93.4	63-117	45.12	3.49	30	
N-Nitrosodi-n-propylamine	46.57	10	50	0	93.1	67-115	43.97	5.74	30	
N-Nitrosodimethylamine	18.67	10	50	0	37.3	28-115	17.91	4.15	30	
N-Nitrosodiphenylamine	55.51	10	50	0	111	72-144	53.36	3.96	30	
Naphthalene	45.62	10	50	0	91.2	52-115	45.94	0.71	30	
Nitrobenzene	45.19	10	50	0	90.4	65-115	44.54	1.44	30	
Pentachlorophenol	98.42	10	100	0	98.4	65-123	94.58	3.98	30	
Phenanthrene	51.17	10	50	0	102	69-119	50.51	1.3	30	
Phenol	31.17	10	100	0	31.2	16-115	29.37	5.95	30	
Pyrene	50.05	10	50	0	100	51-130	48.25	3.67	30	
Surr: 2,4,6-Tribromophenol	107.9	10	100	0	108	39-153	101.5	6.09	30	
Surr: 2-Fluorobiphenyl	89.32	10	100	0	89.3	40-147	84.74	5.26	30	
Surr: 2-Fluorophenol	43.8	10	100	0	43.8	21-110	39.74	9.73	30	
Surr: 4-Terphenyl-d14	95.13	10	100	0	95.1	39-141	90.52	4.97	30	
Surr: Nitrobenzene-d5	85.54	10	100	0	85.5	37-140	82.8	3.26	30	
Surr: Phenol-d6	29.34	10	100	0	29.3	11-100	25.63	13.5	30	

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MSD Sample ID: **0411323-05DMSD** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 22:18**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584530** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.57	10	50	0	89.1	50-115	44.27	0.69	30	
2,4,5-Trichlorophenol	84.29	10	100	0	84.3	68-128	93.28	10.1	30	
2,4,6-Trichlorophenol	81.09	10	100	0	81.1	66-125	83.02	2.35	30	
2-Methylnaphthalene	42.69	10	50	0	85.4	47-122	45.01	5.28	30	
2-Methylphenol	62.41	10	100	0	62.4	51-115	64.66	3.54	30	
2-Nitroaniline	40.69	10	50	0	81.4	64-128	45.32	10.8	30	
2-Nitrophenol	84.59	10	100	0	84.6	60-119	89.99	6.18	30	
3&4-Methylphenol	84.1	10	150	0	56.1	44-115	85.58	1.74	30	
3-Nitroaniline	33.02	10	50	0	66	61-118	36.65	10.4	30	
4-Nitroaniline	36.04	10	50	0	72.1	61-123	39.1	8.15	30	
4-Nitrophenol	36.03	10	100	0	36	17-100	40.12	10.8	30	
Acenaphthene	47.19	10	50	0	94.4	68-115	48.32	2.36	30	
Acenaphthylene	45.79	10	50	0	91.6	67-116	47.27	3.19	30	
Aniline	29.07	10	50	0	58.1	40-130	30.49	4.79	30	
Anthracene	51.25	10	50	0	102	70-129	52.19	1.82	30	
Benz(a)anthracene	45	10	50	0	90	55-131	49.77	10.1	30	
Benzidine	4.102	10	50	0	8.2	10-115	0	0	30	JS
Hexachloroethane	38.51	10	50	0	77	46-115	35.92	6.94	30	
Indeno(1,2,3-cd)pyrene	47.66	10	50	0	95.3	42-123	50.64	6.06	30	
Isophorone	43.85	10	50	0	87.7	63-117	47.44	7.86	30	
N-Nitrosodi-n-propylamine	42.41	10	50	0	84.8	67-115	43.49	2.52	30	
N-Nitrosodimethylamine	18.23	10	50	0	36.5	28-115	19.55	6.99	30	
N-Nitrosodiphenylamine	51.31	10	50	0	103	72-144	53.06	3.35	30	
Naphthalene	45.52	10	50	0	91	52-115	46.32	1.73	30	
Nitrobenzene	42.69	10	50	0	85.4	65-115	44.87	4.98	30	
Pentachlorophenol	88.25	10	100	0	88.3	65-123	95.19	7.56	30	
Phenanthrene	49.54	10	50	0	99.1	69-119	50.74	2.39	30	
Phenol	28.67	10	100	0	28.7	16-115	30.24	5.35	30	
Pyrene	45.83	10	50	0	91.7	51-130	48.75	6.17	30	
Surr: 2,4,6-Tribromophenol	103.5	10	100	0	104	39-153	109.7	5.77	30	
Surr: 2-Fluorobiphenyl	89.41	10	100	0	89.4	40-147	86.29	3.55	30	
Surr: 2-Fluorophenol	40.87	10	100	0	40.9	21-110	44.57	8.65	30	
Surr: 4-Terphenyl-d14	88.85	10	100	0	88.8	39-141	92.93	4.48	30	
Surr: Nitrobenzene-d5	84.44	10	100	0	84.4	37-140	87.65	3.74	30	
Surr: Phenol-d6	26.57	10	100	0	26.6	11-100	28.07	5.5	30	

The following samples were analyzed in this batch: 0412005-01D

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
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B - Analyte detected in assoc. Method Blank
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E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: R25184 InstrumentID: VOA2

MBLK Sample ID: VBLKW-1210 Test Code: SW8260 Units: µg/L Analysis Date: 12/10/04 14:40

Client ID: Run ID: VOA2_041210A SeqNo: 586932 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								
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	50.58	5.0	50	0	101	71-126		0		
Surr: 4-Bromofluorobenzene	38.87	5.0	50	0	77.7	74-125		0		
Surr: Dibromofluoromethane	46.88	5.0	50	0	93.8	73-126		0		
Surr: Toluene-d8	43.86	5.0	50	0	87.7	75-125		0		

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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
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EXHIBIT 3

TABLE VII
Wells that have been Recompleted in Upper Zones since the Revised 2003 Permit
Well Changes in the Combined One Mile Area of Review for Navajo's WDW-1, WDW-2, and WDW-3

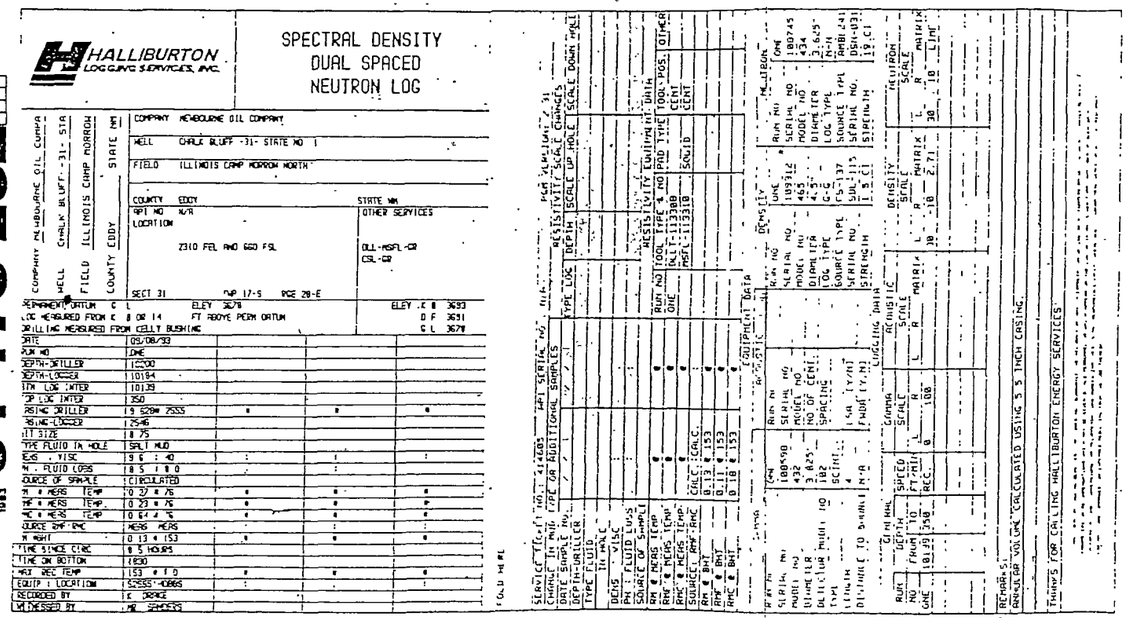
ID	API No.	Unit	Sect	Town	Range	Footages	Well Name	Operator	Changes
3	30 015 00646	A	36	17S	27E	990 FNL & 330 FEL	Delhi No 007	Aspen Oil Inc	Change of Owner Pronghorn Management Corp to Aspen Oil Company Inc Recomp Well:
73	30 015 01659	N	32	17S	28E	660 FNL & 1980 FWL	Empire ABO Unit No 026A	BP America Production Company	Recomp Well: New Perf in ABO 5651'-6118'
74	30 015 21539	N	32	17S	28E	150 FSL & 1400 FWL	Empire ABO Unit No. 261	BP America Production Company	Recomp Well· New Perf in ABO 5690'-5954'
75	30 015 22009	O	32	17S	28E	330 FSL & 2481 FWL	Empire ABO Unit No 272	BP America Production Company	Recomp Well: New Perf in ABO 5714'-6120'
76	30 015 02606	C	05	18S	28E	330 FNL & 1941 FWL	Empire ABO Unit No 026E	BP America Production Company	Recomp Well New Perf in ABO 5662'-5907'
78	30 015 02607	D	05	18S	28E	660 FNL & 660 FWL	Empire ABO Unit No 025C	BP America Production Company	Recomp Well New Perf in ABO 5760"
88	30 015 02615	A	06	18S	28E	660 FNL & 660 FEL	Empire ABO Unit No. 24B	BP America Production Company	Recomp Well. PBTD 6205' CIBP 6091', New Perf in ABO 5794'-5924'
90	30 015 21542	B	06	18S	28E	1260 FNL & 1580 FEL	Empire ABO Unit No 231	BP America Production Company	Recomp Well PBTD 6222' New Perf in ABO 5850'-6018'
94	30 015 23116	E	06	18S	28E	2050 FNL & 100 FWL	Empire ABO Unit No 213	BP America Production Company	Recomp Well: New Perf in ABO 5606'-5796'
96	30 015 22637	E	06	18S	28E	2450 FNL & 400 FWL	Empire ABO Unit No 212	BP America Production Company	Recomp Well PBTD 6203' New Perf in ABO 5588'-6080'
106	30 015 02614	G	06	18S	28E	1980 FNL & 1980 FEL	Empire ABO Unit No 23B	BP America Production Company	Recomp Well PBTD 6240', New Perf in ABO 5842'-6142'
752	30 015 00703	L	01	18S	27E	1980 FSL & 660 FWL	Empire ABO Unit No 017A	BP America Production Company	Recomp Well PBD 6101', CIBP 5823', New Vert Perf in Abo 5472'-5736'
765	30 015 00724	A	02	18S	27E	990 FNL & 330 FEL	Empire Abo Unit No 16B	BP America Production Company	Recomp Well New Perf in ABO 5444'-5786'
766	30 015 00737	B	02	18S	27E	905 FNL & 1610 FEL	South Red Lake II Unit #38	Fairway Resources Operating LLC	Change of Owner McQuadrangle LC to Fairway Resources Operating LLC Recomp Well Plugback 75 sks cmt 1430'-1530' & complete in Grayburg
786	30 015 00716	J	02	18S	27E	1980 FSL & 1980 FEL	Empire Abo Unit No 15	BP America Production Company	Recomp Well New Perf in ABO 5348'-6000'
841	30 015 22834	C	11	18S	27E	225 FNL & 2280 FWL	Empire Abo Unit No 141B	BP America Production Company	Recomp Well· New Perf in ABO 5961'-6030'
843	30 015 22833	D	11	18S	27E	450 FNL & 1175 FWL	Empire Abo Unit No 133B	BP America Production Company	Recomp Well New Perf in ABO 5966'-6064'
912	30 015 31036	H	36	17S	27E	231 FNL & 990 FEL	Gates State No 3	George A Chase JR DBA and C Service	Change of Owner: Aspen Oil Company Inc to George A Chase JR DBA and C Service, Recomplete
928	30 015 32310	1	01	18S	27E	990 FNL & 990 FEL	AAO Federal No 004	Marbob Energy Corp.	Recomp Well. New Perf San Andres 2134'-2849'
929	30 015 32309	2	01	18S	27E	330 FNL & 1690 FEL	AAO Federal No 003	Marbob Energy Corp.	Recomp Well New Perf San Andres 2092'-2807'
930	30 015 32308	3	01	18S	27E	430 FNL & 2310 FWL	AAO Federal No 002	Marbob Energy Corp.	Recomp Well New Perf San Andres 1967'-3115', Old Perf Glorieta 3373'-3699'
931	30 015 32307	4	01	18S	27E	330 FNL & 990 FWL	AAO Federal No 001	Marbob Energy Corp	Recomp Well: CIBP 3250', New Perf in San Andres 2356'-2900', 2974'-3071'
10	30 015 00669	H	36	17S	27E	2310 FNL & 330 FEL	Homan #1	George A Chase JR DBA and C Service	Change of Owner: Aspen Oil Company Inc to George A Chase JR DBA and C Service Recomp Well. Drill out cmt plugs, tagg at 1805', run 4-1/2" liner to 1390' to surf and cmt 316 sks, prod 1450' to 1800'
159	30 015 00698	O	01	18S	27E	660 FSL & 1980 FEL	Empire Abo Unit No. 191	BP America Production Company	Reclamation of plugged well. installed liner and waiting for reclamation inspection
133	30 015 00710	C	01	18S	27E	660 FNL & 1980 FWL	AAO Federal No. 013	Marbob Energy Corp	Change of Owner. from BP America Production Company to Marbob Energy Corp; Recomp Perf the Yeso 1 from 4581'-4944' and acdz w/ 2000 gal NE Fe 15% HCL; Perf the Yeso 2 from 3990'-4395' and acdz w/ 2500 gal NE Fe 15% HCl, Perf the Yeso 3 from 3377'-3678' and acdz w/ 2500 gal NE Fe 15% HCl, Well producing as single from 3377'-4395'
152	30 015 22096	K	01	18S	27E	2370 FSL & 1510 FWL	Empire Abo Unit No. 183	BP America Production Company	Recomp Well. New perf at 5641'-6053' Acdz with 15% HCL
929	30 015 32309	2	01	18S	27E	330 FNL & 1690 FEL	AAO Federal No 003	Marbob Energy Corp.	Recomp Well Pump 1000 gal NE Fe 15% HCl acid
807	30 015 22608	N	02	18S	27E	100 FSL & 1950 FWL	Empire Abo Unit No. 142	BP America Production Company	Recomplete: New perfs in the Abo 5927'-5930', 5938'-5956', 6123', 6130'-6140'. Return to production

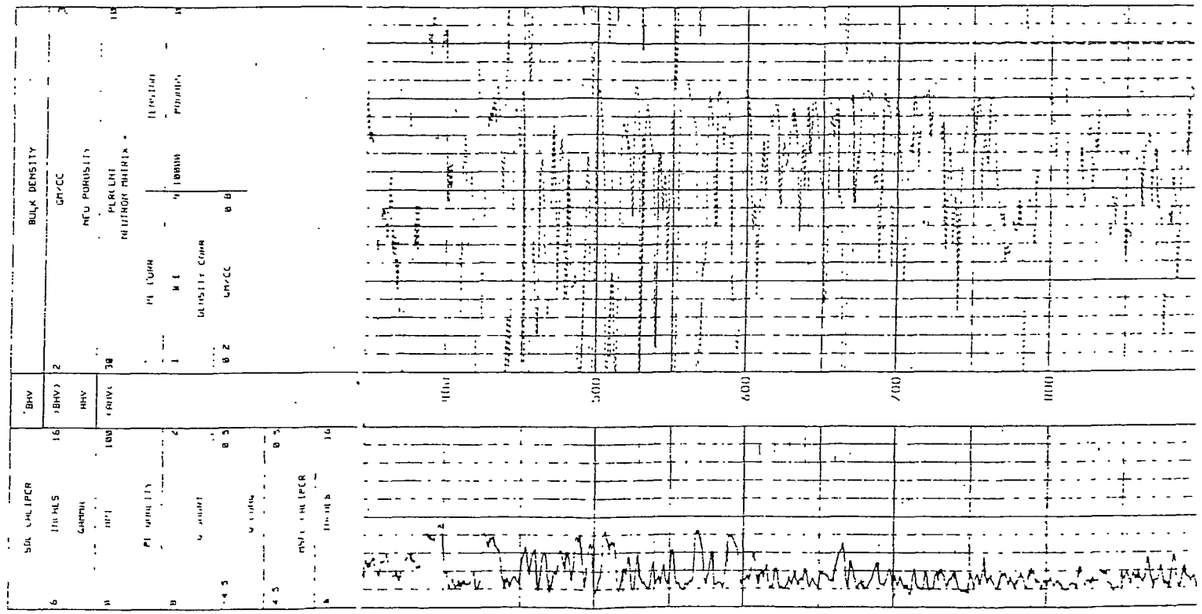
TABLE VII
Wells that have been Recompleted in Upper Zones since the Revised 2003 Permit
Well Changes in the Combined One Mile Area of Review for Navajo's WDW-1, WDW-2, and WDW-3

65	30	015	01657	F	32	17S	28E	2280 FNL & 1980 FWL	AA State No 001	Marbob Energy Corp	Change of Owner BP America Production Company to Marbob Energy Corp , Recomplete Proposal to plug back and perforate, acidize, test, and possibly frac the Yeso 1 (4288'-4525'), Yeso 2 (3880'-4173'), and Yeso 3 (3523'-3715')
954	30	015	35050	D	32	17S	28E	330 FNL & 500 FWL	Enron State No 012	Lime Rock Resources A, LP	Change of Owner SDX Resources Inc to Lime Rock Resources A, LP, Recompletion Open San Andres and comingle with Yeso by perfing San Andres at 2294',2312',2409',2503' and acidized with 3360 gal NEFE acid Then fraced perfs w/ 95,000 lbs 16/30 and 35,000 lbs 12/20 brady sand in 25 lb X-linked gel.
104	30	015	22913	G	06	18S	28E	1750 FNL & 1600 FEL	Empire Abo Unit No 235	BP America Production Company	Recomplete Set CIBP to shut off water. Set at 6176'

TABLE VIII
Newly Drilled Wells in the Area of Review since the Revised 2003 Permit
Well Changes in the Combined One Mile Area of Review for Navajo's WDW-1, WDW-2, and WDW-3

ID	API No.	Unit	Sect	Town	Range	Footages	Well Name	Operator	Changes
944	30 015 26575	N	01	18S	27E	790 FSL & 2250 FWL	Chalk Bluff Fed Com 1/ WDW-3	Navajo Refining Co Pipeline Division	Well Completed in the Wolfcamp 7660'-8620' Injecting
945	30 015 32959	E	01	18S	27E	1650 FNL & 875 FWL	AAO Federal No 005	Marbob Energy Corp	NEW ~4000'
946	30 015 33473	G	01	18S	27E	1750 FNL & 1650 FEL	AAO Federal No 007	Marbob Energy Corp.	NEW ~4000'
947	30 015 33784	H	01	18S	27E	1650 FNL & 330 FEL	AAO Federal No 008	Marbob Energy Corp	NEW ~4000'
948	30 015 34071	F	01	18S	27E	2169 FNL & 1963 FWL	AAO Federal No 006	Marbob Energy Corp.	NEW ~4000'
949	30 015 34387	L	01	18S	27E	1980 FSL & 630 FWL	AAO Federal No 009	Marbob Energy Corp	NEW ~4000'
950	30 015 34555	M	01	18S	27E	890 FSL & 660 FWL	AAO Federal No 011	Marbob Energy Corp	NEW ~4000'
951	30 015 34576	K	01	18S	27E	2060 FSL & 2160 FWL	AAO Federal No 010	Marbob Energy Corp	NEW ~4000'
952	30 015 34998	N	01	18S	27E	890 FSL & 1650 FWL	AAO Federal No 012	Marbob Energy Corp	NEW ~4000'
955	30 015 36939	A	14	18S	27E	660 FNL & 990 FEL	Violet BIV State Com 001	Yates Petroleum Corp	NEW. Permit to Drill by 2/20/09
956	30 015 33994	A	36	17S	27E	915 FNL & 420 FEL	Red Lake 36 State No 2	Edge Petroleum Operating Company Inc	NEW ~3650'
957	30 015 36116	G	36	17S	27E	2305 FNL & 1650 FEL	South Red Lake II Unit No 57	Fairway Resources Operating LLC	NEW ~2081' Well completed in the Queen, Grayburg, San Andres
958	30 015 32946	J	02	18S	27E	2210 FSL & 1650 FEL	SCBP State No 1	Marbob Energy Corp	NEW ~3880' Perf 1975'-2664', 3342'-3638'
959	30 015 35814	H	02	18S	27E	2063 FNL & 441 FEL	State H No 2	Mack Energy Corporation	NEW ~7545' PBTD 5265' Perf: 6134.5'-6434' w/CIBP 6020' Perf 5391'-5957 5' w/ CIBP 5300' Perf 4118 5'-4197'
960	30 015 36343	G	31	17S	28E	1650 FNL & 2310 FEL	Malco State No 002	George A Chase JR DBA and C Service	NEW 633' Open Hole Completion. Change of Owner. Aspen Oil Inc to George A Chase JR DBA G and C Service
961	30 015 36978	D	31	17S	28E	990 FNL & 330 FWL	Enron State No 015	Lime Rock Resources A, LP	NEW 3700' in the Glorietta-Yeso.
962	30 015 36554	L	32	17S	28E	1770 FSL & 550 FWL	NW State No 029	Lime Rock Resources A, LP	NEW 3450'. Well completed in the San Andres from 2817'-3098', 69 perforations
963	30 015 36989	K	32	17S	28E	1630 FSL & 1710 FWL	NW State No 030	Lime Rock Resources A, LP	NEW 3405'. No completion yet.
964	30 015 37057	N	32	17S	28E	330 FSL & 1750 FWL	NW State No 031	Lime Rock Resources A, LP	NEW 3500'. No completion yet.
965	30 015 37058	M	32	17S	28E	330 FSL & 330 FWL	NW State No 032	Lime Rock Resources A, LP	NEW 3425'. No completion yet.
	30 015 36281	J	01	18S	27E	2193 FSL & 1520 FEL	Sun Devils Federal No 001	Mack Energy Corporation	Permit to Drill - 6000' TVD


HALLIBURTON
LOG GING SERVICES, INC.
SPECTRAL DENSITY
DUAL SPACED
NEUTRON LOG
COMPANY MEWBOURNE OIL COMPA
WELL CHALK BLUFF -31- STA
FIELD ILLINOIS CAMP MORROW
COUNTY EDDY
STATE NM
COMPANY MEWBOURNE OIL COMPANY
WELL CHALK BLUFF -31- STATE NO 1
FIELD ILLINOIS CAMP MORROW NORTH
COUNTY EDDY
STATE NM
API NO N/A
LOCATION
2310 FEL AND 660 FSL
OTHER SERVICES
DLL-MSFL-GR
CSL-GR
SECT 31
TWP 17-S
RGE 28-E
PERMANENT DATUM G L
ELEV 3678
LOG MEASURED FROM K B OR 14
FT ABOVE PERM DATUM
DRILLING MEASURED FROM KELLY BUSHING
ELEV. K B 3692
D F 3691
G L 3678
DATE 05/08/93
RUN NO ONE
DEPTH-DRILLER 12000
DEPTH-LOGGER 10194
BTM LOG INTER 10139
TOP LOG INTER 250
CASING DRILLER 9 5/8@ 2555
CASING-LOGGER 2546
BIT SIZE 8 75
TYPE FLUID IN HOLE SALT MUD
DENS . VISC 9 6 : 40
PH . FLUID LOSS 10 5 : 8 0
SOURCE OF SAMPLE CIRCULATED
RM @ MEAS TEMP 0 37 @ 76
RMF @ MEAS TEMP 0 29 @ 76
RMC @ MEAS TEMP 0 64 @ 76
SOURCE RMF RMC MEAS MEAS
M WGHT 0 13 @ 153
TIME SINCE CIRC 9 5 HOURS
TIME ON BOTTOM 1830
MAX REC TEMP 153 @ TD
EQUIP . LOCATION 52555 -10865
RECORDED BY E GRAGE
WITNESSED BY MR SANDERS
FOLD HERE
RUN NO ONE
DENSITY
SCALE
R 30 — 10
MATRIX
L 10 — 2.71
NEUTRON
SCALE
R 30 — 10
MATRIX
LIME
RUN NO ONE
GAM
SERIAL NO 180745
MODEL NO 434
DIAMETER 4.5"
LOG TYPE G-G
SOURCE TYPE AmBe-241
SERIAL NO. DSH-103
STRENGTH 19 Ci
RUN NO ONE
GAM
SERIAL NO 180598
MODEL NO 432
DIAMETER 3 625"
DETECTOR TYPE 2
SPACING 10 2
SCINT. 4
LSA (Y/N) Y
FSA (Y/N) N
LOGGING DATA
GAMMA RAY
SCALE
L 0 — 100
SPEED FPM 10 — 30
REC. 360
RUN NO ONE
LOG INTERVAL TOP 10139
BOTTOM 2546
CASING THICKNESS 0 49
DENSITY 2 65
MATRIX LIME
REMARKS
ANGULAR VOLUME CALCULATED USING 5 5 INCH CASING.
THANKS FOR CALLING HALLIBURTON ENERGY SERVICES!
DSN-406385
31-17S-28E
Eddy Co. NM
1993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MATRIX
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SGL CALIPER
INCHES
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API UNITS
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INCHES

EXHIBIT 3

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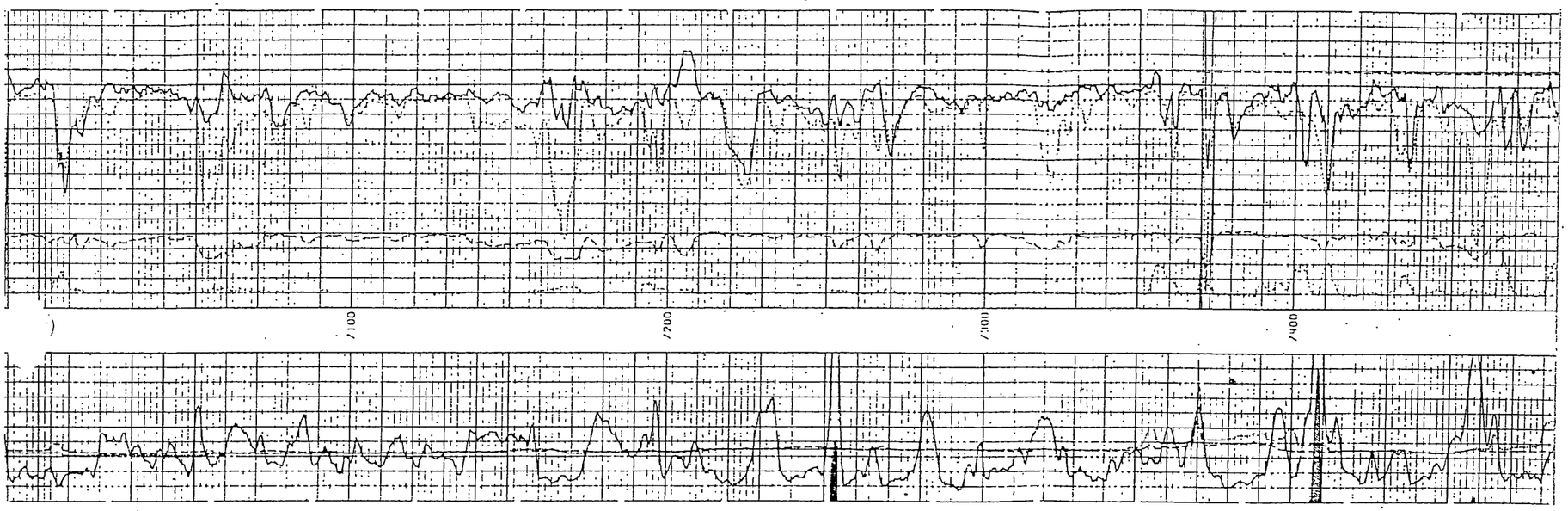
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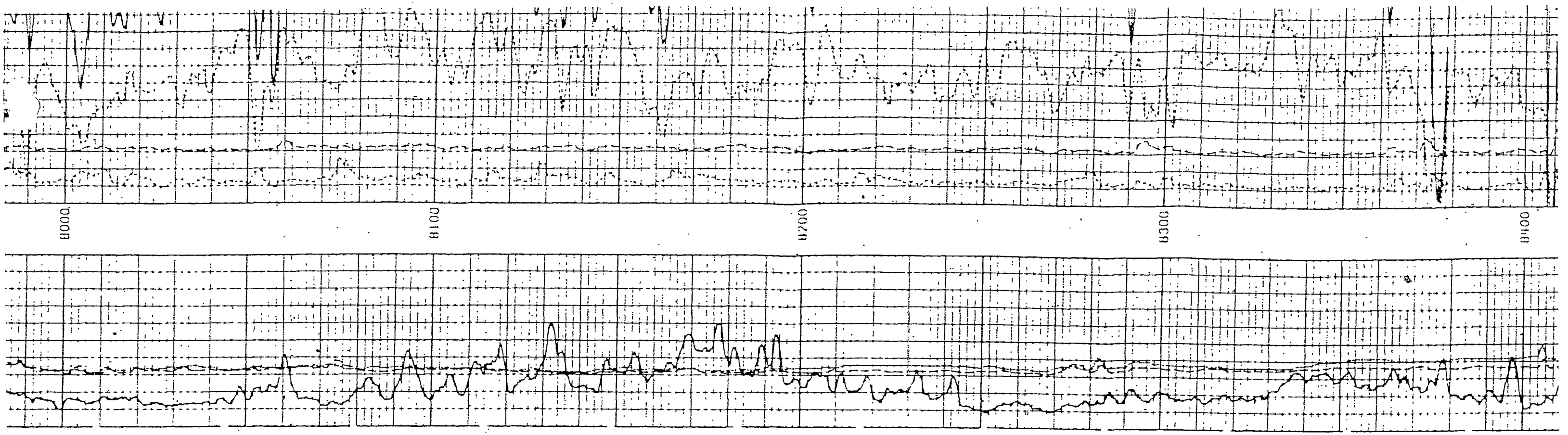
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31-17S-28E

HALLIBURTON LOGGING SERVICES INC.

DUAL LATEROLOG MICRO-SFL

COMPANY MELBOURNE OIL COMPA

WELL CHALK BLUFF -31- STA

FIELD ILLINOIS CAMP MORROW

COUNTY EDDY STATE NM

COMPANY MELBOURNE OIL COMPANY
WELL CHALK BLUFF -31- STATE NO 1
FIELD ILLINOIS CAMP MORROW NORTH
COUNTY EDDY
API NO
LOCATION
2310 FEL AND 660 FSL
SEC 31 TWP 17-S RGE 28-E
ELEV 3629
PERM DATUM G.L. ELEV 3629 FT ABOVE PERM DATUM
LOG MEASURED FROM K.B. 14 FT ABOVE PERM DATUM
DRILLING MEASURED FROM KELLY BUSHING
DATE
RUN NO
DEPTH-DRILLER
DEPTH-LOGGER
BTM LOG INTRVL
TOP LOG INTRVL
CASING DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENS. | VISC
PH | FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE: RMF | RMC
RM @ BHT
RMF @ BHT
RMC @ BHT
TIME SINCE CIRC
TIME ON BOTTOM
MAX REC TEMP
EQUIP LOCATION
RECORDED BY
WITNESSED BY
SERVICES 4349 | 5
STATE NM
8.5 @ 1254
9.0 @ 2550
9.2 @ 3050
FOLD HERE
SERVICE TICKET NO.: 414605 API SERIAL NO.: N/A PGM VERSION: 2.31
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLES
DATE | SAMPLE NO. / / | / / |
DEPTH-DRILLER
TYPE FLUID IN HOLE
DENS. | VISC
PH | FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS TEMP @ | @
RMF @ MEAS TEMP @ | @
RMC @ MEAS TEMP @ | @
SOURCE: RMF | RMC CALC. | CALC. |
RM @ BHT 0.13 @ 153 @
RMF @ BHT 0.11 @ 153 @
RMC @ BHT 0.18 @ 153 @
RESISTIVITY SCALE CHANGES
TYPE LOG | DEPTH | SCALE UP HOLE | SCALE DOWN HOLE
RESISTIVITY EQUIPMENT DATA
RUN NO | TOOL TYPE & NO | PAD TYPE | TOOL POS. | OTHER
ONE | DLLT 113308 | | CENT |
| MSFL 113910 | SOLID | CENT |
EQUIPMENT DATA
GAMMA
RUN NO
SERIAL NO 100910
MODEL NO 432
DIAMETER 3.625
DETECTOR MODEL NO 102
TYPE SCINT.
LENGTH 4"
DISTANCE TO SOURCE N/A
ACOUSTIC
RUN NO
SERIAL NO
MODEL NO
NO OF CENT.
SPACING
LSA (Y/N)
FWDA (Y,N)
DENSITY
SERIAL NO 109116
MODEL NO 465
DIAMETER 4.5
LOG TYPE G G
SOURCE TYPE CS 137
SERIAL NO SDL 115
STRENGTH 1.5 CI
NEUTRON
SERIAL NO 100 47
MODEL NO 4 48
DIAMETER 3 6 5
LOG TYPE P N
SOURCE TYPE AMBER 241
SERIAL NO PSN 811
STRENGTH 13 CI
LOGGING DATA

RUN NO	GENERAL DEPTH FROM	TO	SPEED FT/MIN	GAMMA SCALE L	R	ACOUSTIC SCALE L	R	MATRIX	DENSITY SCALE L	R	MATRIX	NEUTRON SCALE L	R	MATRIX
ONE	10182	2546	REC.	0	100				30	-10	2.71	30	-10	LIME

REMARKS:
ANNULAR VOLUME CALCULATED USING 5.5 INCH CASING

THANKS FOR CALLING HALLIBURTON ENERGY SERVICES

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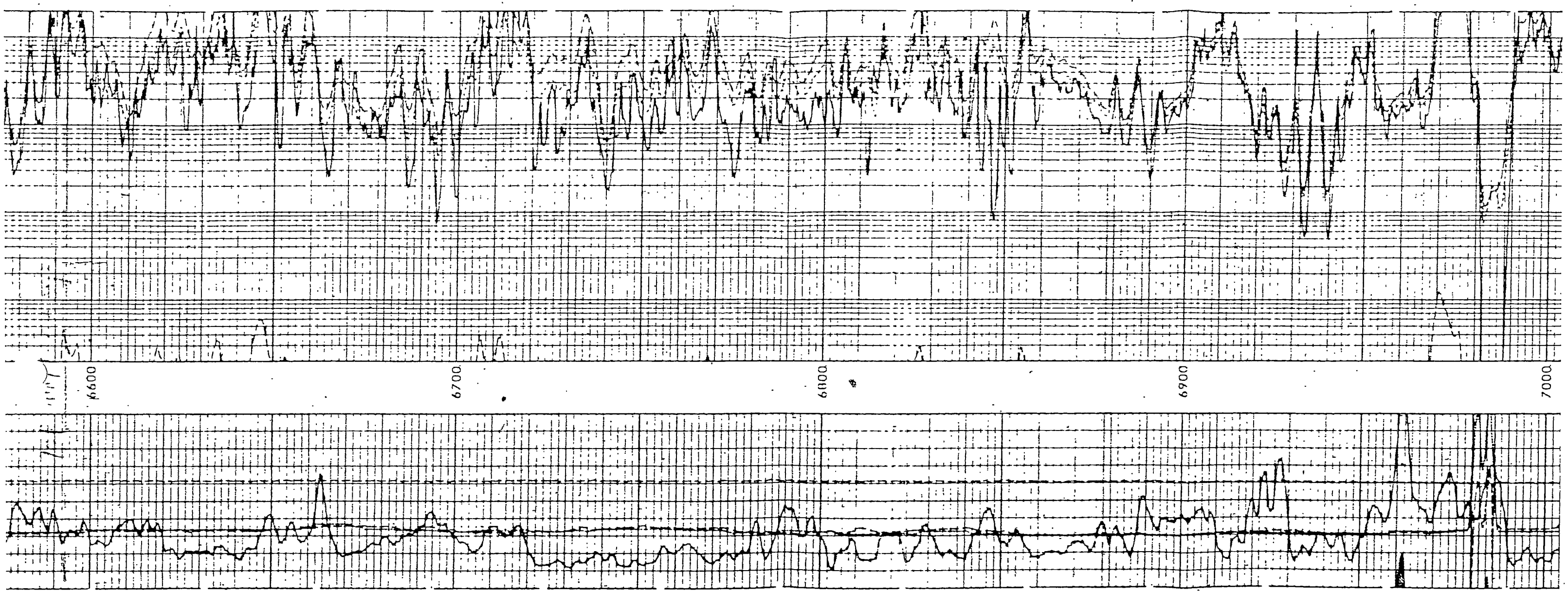
SDL CALIPER
6 INCHES 16
GAMMA
0 API 100
TENSION
10000 POUNDS 0
MSFL CALIPER

DEEP LL
.2 OHM-M 2000
SHALLOW LL
.2 OHM-M 2000

EXHIBIT 3

APPENDIX J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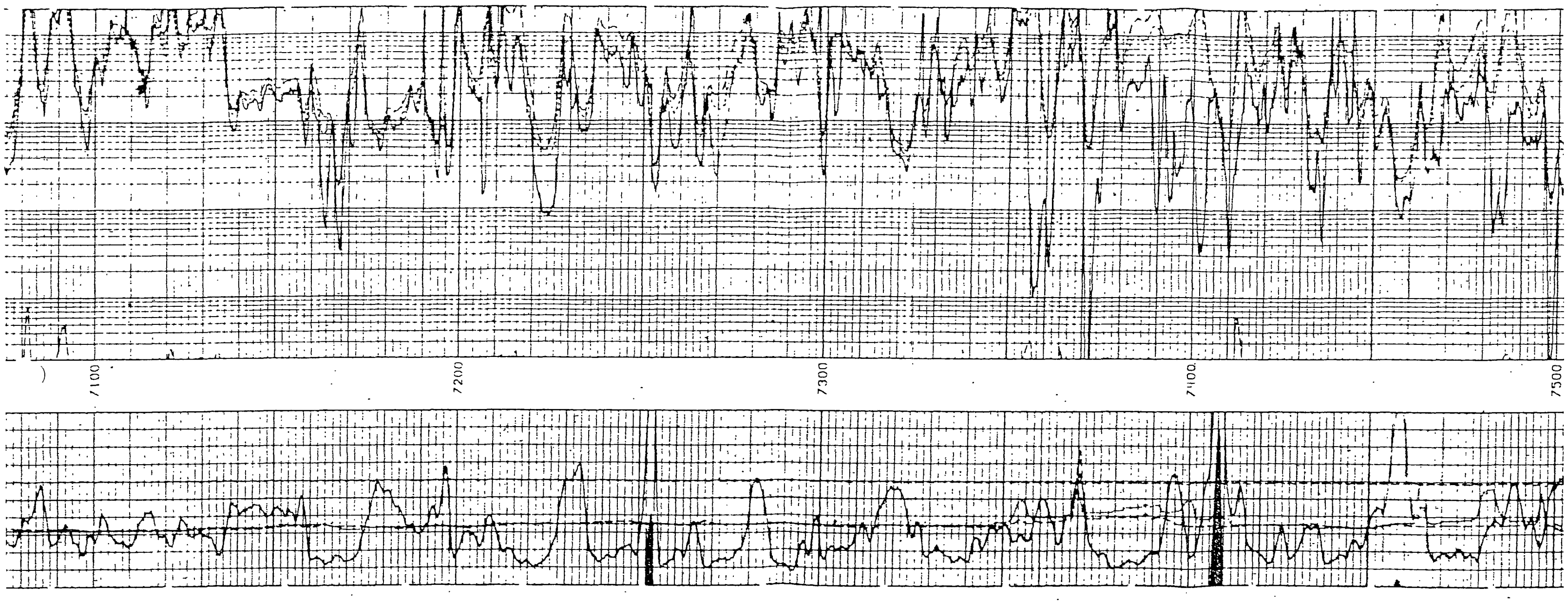
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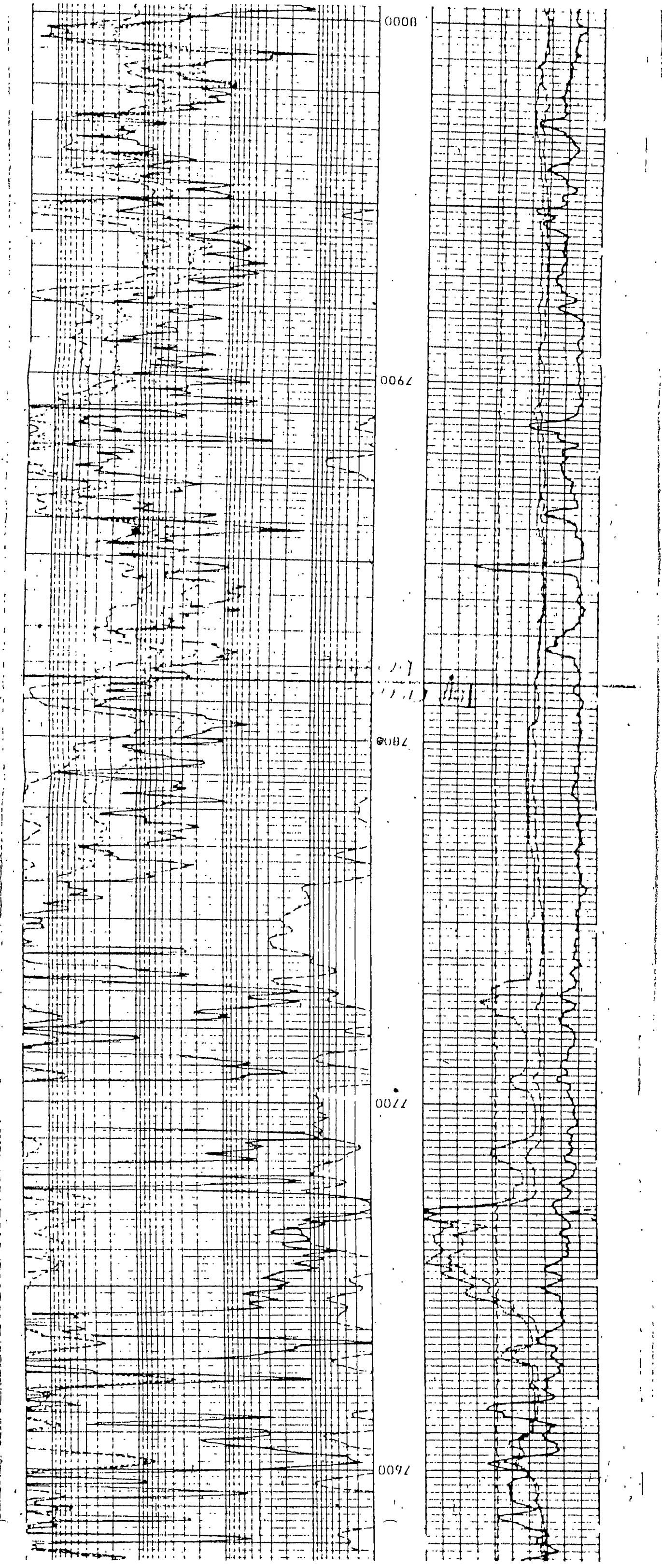
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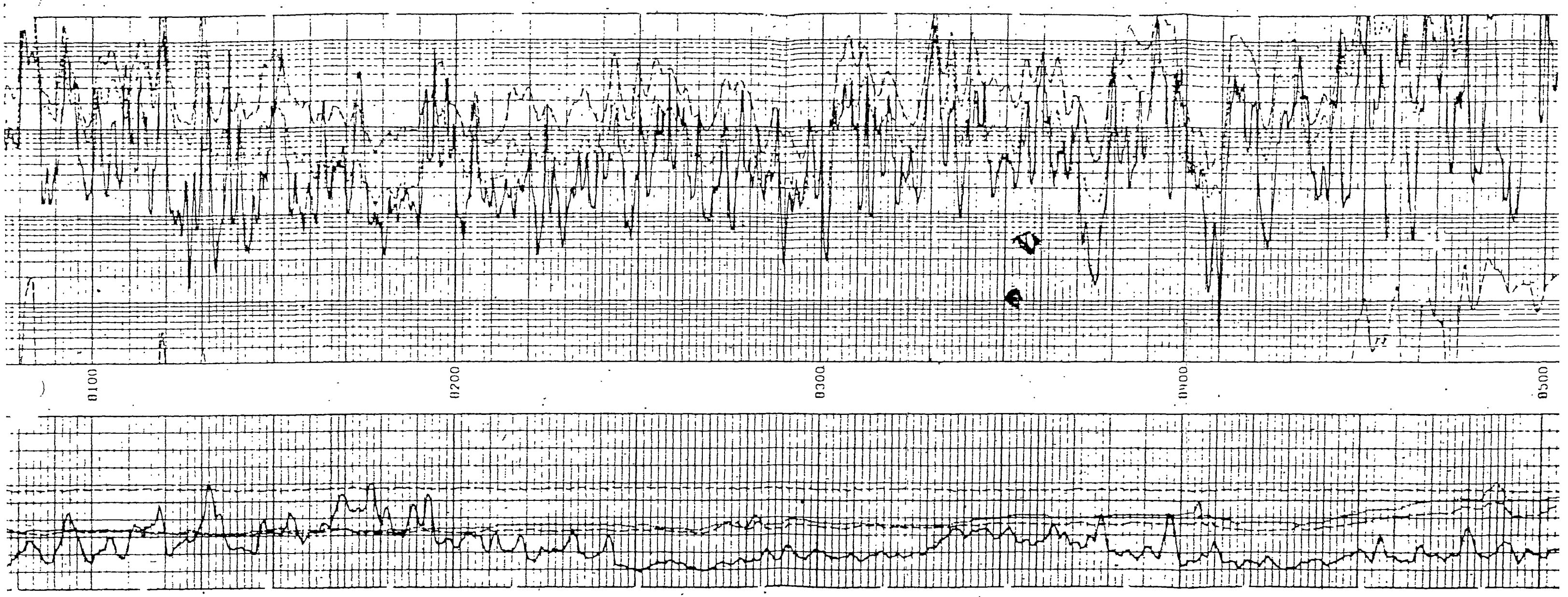
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Schlumberger DUAL INDUCTION [illegible] 8611

COMPANY AMOCO PRODUCTION COMPANY

WELL DIAMOND FEDERAL GAS COMM #1

FIELD SCOGGINS DRAW MORROW

COUNTY EDDY STATE NEW MEXICO

COUNTY EDDY
FIELD or LOCATION SCOGGINS DRAW
WELL DIAMOND FEDERAL GAS COMM #1
COMPANY AMOCO PROD. CO.

Location: 1980' FNL & 660' FWL

Sec. 12 Twp. 18-S Rge. 27-E

Other Services: CNL-FDC

Permanent Datum G.L. Elev.: 3610
Log Measured From R.K.B. 13 Ft. Above Perm. Datum
Drilling Measured From R.K.B.

Elev.: K.B. 3623
D.F. 3622
G.L. 3610

Date	8-27-73			
Run No.	ONE			
Depth—Driller	10373			
Depth—Logger	10370			
Btm. Log Interval	10366			
Top Log Interval	1997			
Casing—Driller	8 5/8@ 1995	@	@	@
Casing—Logger	1997			
Bit Size	7 7/8			
Type Fluid in Hole	FRESH MUD			
Fluid Level	FULL			
Dens. / Visc.	9 / 39			
pH / Fluid Loss	11 / 8 ml	ml	ml	ml
Source of Sample	FLOWLINE			
R_m @ Meas. Temp.	1.6 @ 90 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	.70 @ 75 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	3.2 @ 90 °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	M / C			
R_m @ BHT	1.06 @ 152°F	@ °F	@ °F	@ °F
Time Since Circ.	14 HOURS			
Max. Rec. Temp.	152 °F	°F	°F	°F
Equip. / Location	7646 / HOBBS			
Recorded By	CREEK			
Witnessed By	KLAAR			

Reproduced By
Electrical Log Services
MIDLAND, TEXAS 79701

24

REFERENCE W 8664W

21 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

API NO 30-015-20894

CASING RECORD

PERFORATING RECORD

ACID FRAC SHOT

I P

GOR GR

T P C P

REMARKS:

REPRODUCTION FOR RESALE PROHIBITED

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date / Sample No.				
Depth - Driller				
Type Fluid in Hole				
Dens. / Visc.				
ph / Fluid Loss		ml		ml
Source of Sample				
R_m @ Meas. Temp.		@ °F	@ °F	
R_{mf} @ Meas. Temp.		@ °F	@ °F	
R_{mc} @ Meas. Temp		@ °F	@ °F	
Source R_{mf} / R_{mc}				
R_m @ BHT		@ °F	@ °F	
R_{mf} @ BHT		@ °F	@ °F	
R_{mc} @ BHT		@ °F	@ °F	

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

EQUIPMENT DATA

Run No.	ONE		
Panel No.	C-133		
Cart. No.	C-		
Sonde No.	6-247		
Mem. Panel No			
G.R. Cart. No.			
G.R. Panel No.			
TTR No			
Cent. Device	YES		
Stand off - Inches	1.5		
Time Const - Sec			
Speed - F.P.M.	60/80		

REMARKS

Service Order No. - 90316
API Serial No. -

☐ Surface determined sonde errors used
☐ Sonde error corrected for ____ Inch borehole signed at R_m =
☒ Induction zero set in hole at depth of 9450 feet

CALIBRATION DATA

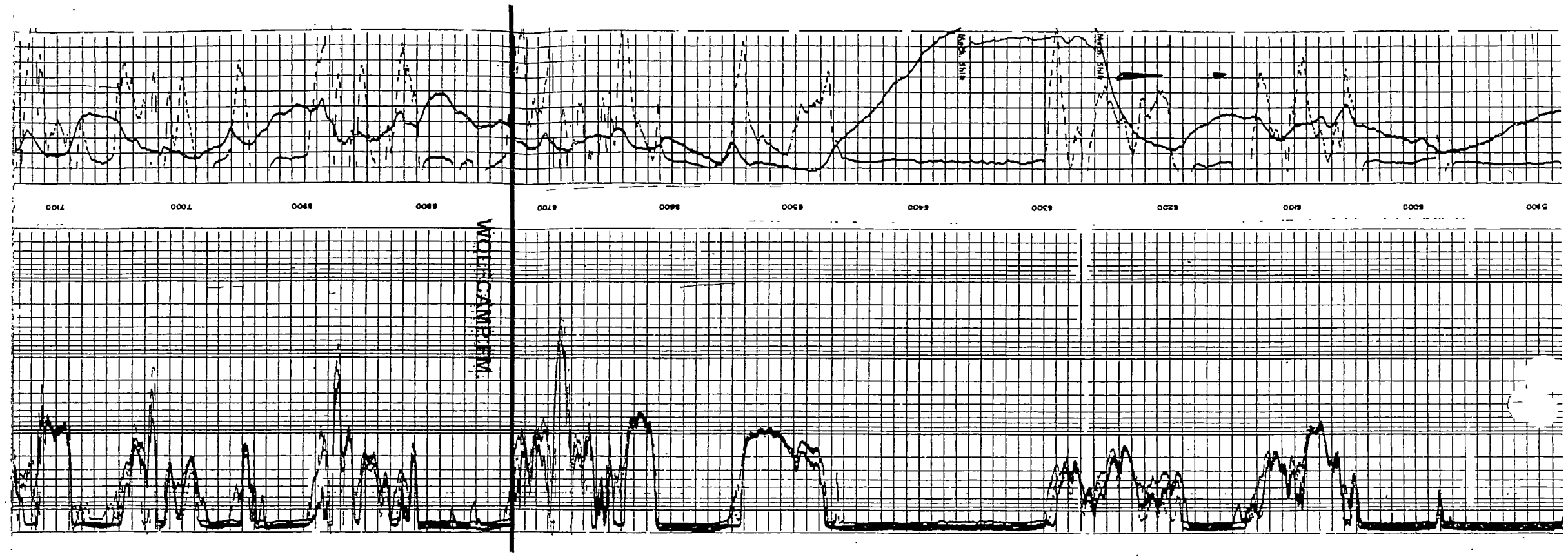
CALIBRATION:	BACKGND. CPS.	SOURCE CPS.	GALV. INCR. DIVISION	SENS. TAP (FOR CAL.)	SENS. TAP (RECORD)	TIME CONST.
GAMMA RAY:						

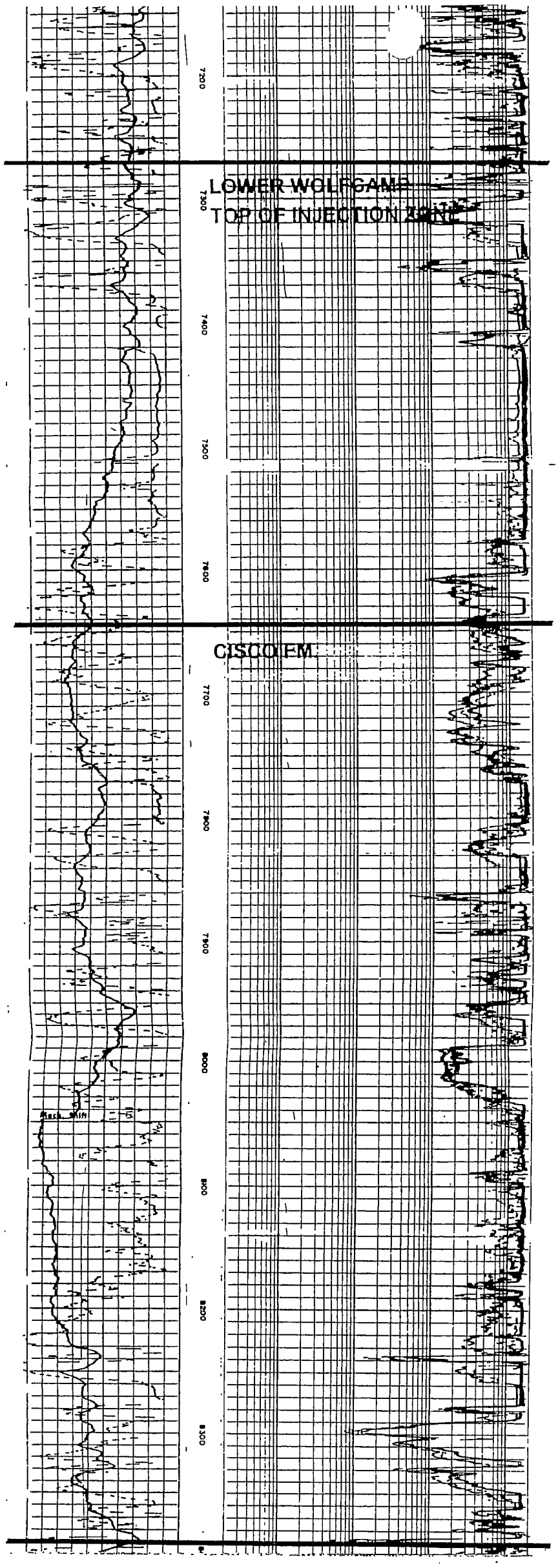
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

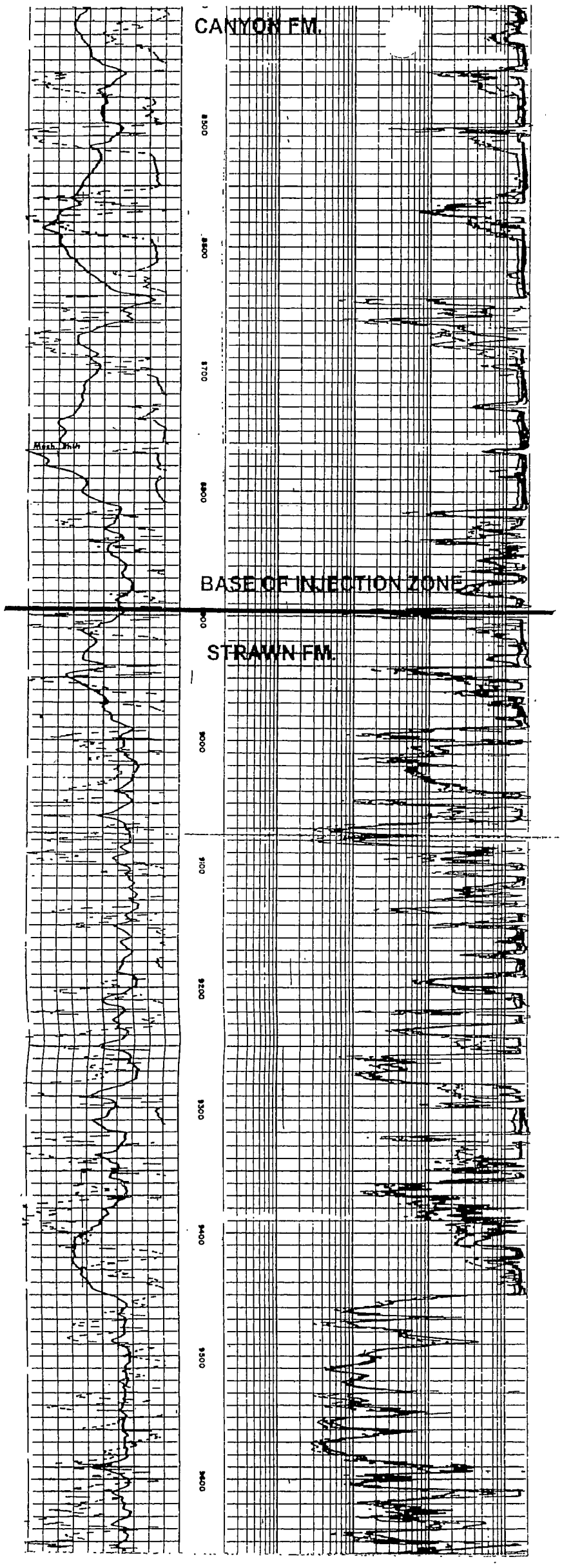
SPONTANEOUS POTENTIAL MILLIVOLTS	DEPTHS	RESISTIVITY OHMS. M²/M
10 (−┼+) R_{XO}/R_T		DEEP INDUCTION LOG 0.2 1.0 10 100 1000 2000
		MEDIUM INDUCTION LOG 0.2 1.0 10 100 1000 2000
		LATEROLOG – 8 0.2 1.0 10 100 1000 2000
		CALIBRATION AFTER SURVEY

EXHIBIT 3

APPENDIX J


WOLFCAMP FM.
Wolfcamp
7100
7000
6900
6800
6700
6600
6500
6400
6300
6200
6100
6000
5900


LOWER WOLFGAMP
TOP OF INJECTION ZONE
CISCO FM
7200
7300
7400
7500
7600
7700
7800
7900
8000
8100
8200
8300


CANYON FM.
BASE OF INJECTION ZONE
STRAWN FM.

AQ
861

Schlumberger

COMPENSATED NEUTRON-FORMATION DENSITY

COUNTY EDDY
FIELD SCOGGINS DRAW
LOCATION DIAMOND FEDERAL
WELL DIAMOND FEDERAL GAS COMM #1
COMPANY AMOCO PROD. CO.

COMPANY AMOCO PRODUCTION COMPANY

WELL DIAMOND FEDERAL GAS COMM #1

FIELD SCOGGINS DRAW MORROW

COUNTY EDDY STATE NEW MEXICO

Location: 1980' FNL & 660' FWL

Sec. 12 Twp. 18-S Rge. 27-E

Other Services: DIL

Permanent Datum: G.L. Elev.: 3610
Log Measured From: R.K.B. 13 Ft. Above Perm. Datum
Drilling Measured From: R.K.B.

Elev.: K.B. 3623
D.F. 3622
G.L. 3610

Date	8-27-73			
Run No	ONE			
Depth Driller	10372			
Depth Logger	10370			
Btm Log Interval	10369			
Top Log Interval	0			
Casng Driller	8 5/8@1995	@	@	@
Casng Logger	1997			
Bit Size	7 7/8			
Type Fluid in Hole	FRESH MUD			
Fluid Level	FULL			
Dens / Visc	9 / 39			
pH / Fluid Loss	11 / 8 ml	ml	ml	ml
Source of Sample	FLOWLINE			
Rm @ Meas Temp	1.8 @ 90 °F	@ °F	@ °F	@ °F
Rmf @ Meas Temp	.70 @ 75 °F	@ °F	@ °F	@ °F
Rmc @ Meas Temp	3.2 @ 90 °F	@ °F	@ °F	@ °F
Source Rmf / Rmc	M / C			
Rm @ BHT	1.07 @ 152 °F	@ °F	@ °F	@ °F
Time Since Circ	5 HOURS			
Max. Rec. Temp.	152 °F	°F	°F	°F
Equip. / Location	7646 / HOBBS			
Recorded By	CREEK			
Witnessed By	KLAAR			

Reproduced By
Electrical Log Services
Midland, Texas 79701

REFERENCE W 86645

24 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

API NO. 30-015-20894

CASING RECORD

PERFORATING RECORD

ACID FRAC SHOT

T P

GOR GR

T P C P

REMARKS

REPRODUCTION FOR RESALE PROHIBITED

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Date	Sample No.		
Depth - Driller			
Type Fluid			
Source of Sample			
Rm @ Meas. Temp.	@ °F	@ °F	
Rmf @ Meas Temp	@ °F	@ °F	
Rmc @ Meas. Temp.	@ °F		
Rm @ BHT	@ °F		
Dens. / Visc.			
pH / Fluid Loss		ml	ml
Water by Vol			
Oil by Vol.			
Solids by Vol			
Chlride Av Sp Gr			

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

EQUIPMENT DATA

Run No.	ONE
Dens. Pnl	D-396
Dens. Cart	A-117
Dens. Skid	D-1032
Dens. Sde	E-203
Dens. Source	134
Dens. Calib	C-2472
Aux. Pnl.	A-130
Aux. Cart	A-93
Aux. Source	E-234
Aux. Calib	A-67
GR Cart	J-267
TR	
Com. Pnl	C-2467

LOGGING DATA

CNP

Matrix	Auto Hole Size Corr.	Hole Size Setting (if not auto)	Porosity Scale	From	To
LIME	☒ Yes ☐ No		30 - 10	TD	CSG
	☐ Yes ☐ No				
	☐ Yes ☐ No				
	☐ Yes ☐ No				

FDC

Liquid Density	Grain Density	Hole Fluid	Porosity Scale	From	To
1.0	2.71	LIQUID	30 - 10	TD	CSG

CASING / HOLE SIZE/CASING DATA

	From	To	Csg. Size	Csg. Wt.	From	To
	1037	1995	8 5/8		1995	SURF

REMARKS

Service Order No. - 90317

API Serial No. -

CALIBRATION DATA

Run No.	Gamma Ray API Scale	Gamma Ray Background CPS	Gamma Ray Total CPS	CNL—Before Log—ACPS Long Spacing	CNL—Before Log—ACPS Short Spacing	CNL—After Log—ACPS Long Spacing	CNL—After Log—ACPS Short Spacing
1	165	100	550	440	940	440	960
2							
3							
4							

Run No.	FDC — Before Log — ACPS P_1	FDC — Before Log — ACPS P_2	FDC — After Log — ACPS P_1	FDC — After Log — ACPS P_2
1				
2	466	744	472	752
3				
4				

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

CALIPER
HOLE DIAM IN INCHES
6 ... 16

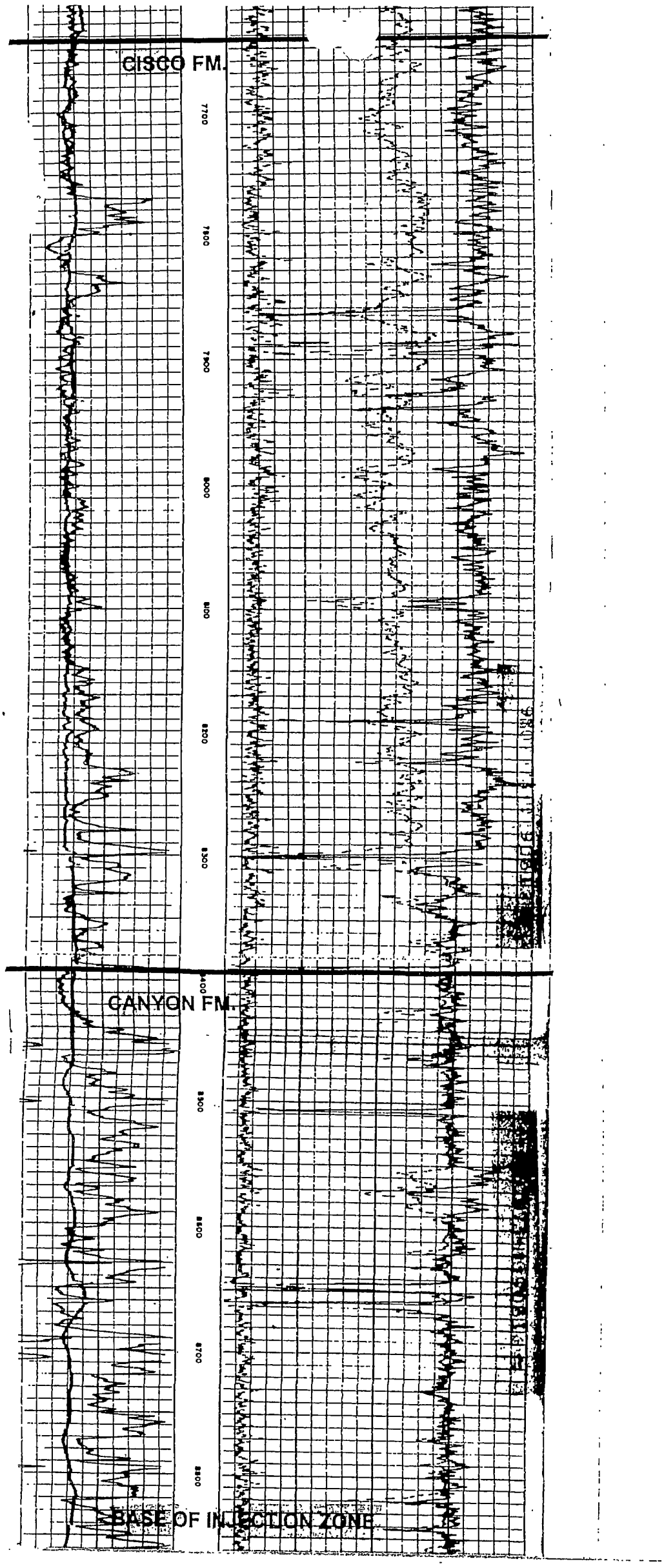
DEPTHS

CNL POROSITY—%
30 20 10 0 -10

0 1.25

EXHIBIT 3

APPENDIX J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7700
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7900
8000
8100
8200
8300
8400
CANYON FM.
8500
8600
8700
8800
BASE OF INJECTION ZONE

157

EDDY SEC 1-18S-27E

Petroleum Information

DENVER, COLORADO 80201

REFERENCE Y 4949N

API NO. 30 015 26575

REPRODUCTION FOR RESALE IN WHOLE OR PART PROHIBITED

HALLIBURTON LOGGING SERVICES, INC.

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

COMPANY _____
WELL _____
FIELD _____
COUNTY _____ ST __

COMPANY HENBOURNE OIL CO.
WELL CHALK BLUFF FEDERAL NO. 1
FIELD NORTH ILLINOIS CHAP-NORDEN
COUNTY EDDY STATE NM
API NO. NM
LOCATION 2250 FNL & 760FEL OTHER SERVICES DLL-MSFL DITL
SEC 1 TWP 18S RGE 27E
ELEV.: K.B. 3609 D.F. N.M. G.L. 3585

PERMANENT DATUM G.L.	ELEV. 3585	ELEV.: K.B. 3609 D.F. N.M. G.L. 3585	
LOG MEASURED FROM K.B.	16 FT. ABOVE PERM. DATUM		
DRILLING MEASURED FROM K.B.			
DATE	1/22/91	1/25/91	
RUN NO	ONE	TWO	
DEPTH-DRILLER	9450	10120	
DEPTH-LOGGER	9449	10124	
BTM. LOG INTER.	9431	10121	
TOP LOG INTER.	SURFACE	8500	
CASING-DRILLER	9.625@3500	7.0 @ 9450	
CASING-LOGGER	3505	9446	
BIT SIZE	8 7/8	6.0	
TYPE FLUID IN HOLE	LIMEWATER	SALT MUD	
DENS. / VISC.	9.8 / 30	9.5 / 33	
PH / FLUID LOSS	10.5 / 7.0	10.5 / 7.0	
SOURCE OF SAMPLE	MUD PIT	CIRCULATED PILL	
RM @ MEAS. TEMP	1.4 @ 62	.21 @ 55	
RMF @ MEAS. TEMP	.98 @ NA	.18 @ 49	
RMC @ MEAS. TEMP	NA @ NA	NA @ NA	
SOURCE: RMF / RMC	NA / NA	NA / NA	
RM @ BHT	.541 @ 122	.083 @ 148	
RMF @ BHT	NA @ NA	NA @ NA	
RMC @ BHT	NA @ NA	NA @ NA	
TIME SINCE CIRC.	6 HOURS	6 HOURS	
TIME ON BOTTOM	12:44 HRS	5:11 HRS	
MAX. REC. TEMP.	122 @ M.D.	148 @ M.D.	
EQUIP. / LOCATION	3414 / HOBBS	3414 / HOBBS	
RECORDED BY	BIEGERLEG	D. BOUDC	
WITNESSED BY	D. OPERATOR		

TIGHT HOLE

Fold Here

Service Ticket No.: 63052 API Serial No.: NA PGM Version: 2.51

Change in Mud Type or Additional Samples

Date/Sample No.	/ / :	/ / :
Depth-Driller		
Type Fluid in Hole		
Dens. : Visc.	:	:
pH. : Fluid Loss	:	:
Source of Sample		
Rm @ Meas. Temp.	@	@
Rmf @ Meas. Temp.	@	@
Rmc @ Meas. Temp.	@	@
Source: Rmf : Rmc	:	:
Rm @ BHT	.541 @122	@
Rmf @ BHT	NA @NA	@
Rmc @ BHT	NA @NA	NA @NA

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole
NA			

RESISTIVITY EQUIPMENT DATA

Run No	Tool Type & No	Pad Type	Tool Pos.	Other
ONE	DILT-109430	NA	NA	
	SGPT-108938	NA	CENT	
TWO	DLL-113309	NA	CENT	NA

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	108615	Serial No.		Serial No.	113611	Serial No.	108763
Model No.	432	Model No.		Model No.	455	Model No.	434
Diameter	3.625	No.of Cent.		Diameter	4.5"	Diameter	3 5/8
Detector Model No.	102T	Spacing		Log Type	G-G	Log Type	N-N
Type	SCINT			Source Type	CS-137	Source Type	AM-241
Length	4"	LSA		Serial No.	30	Serial No.	DSN-27
Distance To Source	18"	FWDA		Strength	1.5 CI	Strength	18.5 CI

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	9417	SURF	REC	0	100				30	-10	2.71	30	-10	LIME
TWO	10124	8500	REC	0	100				30	-10	2.71	30	-10	LIME

Remarks:

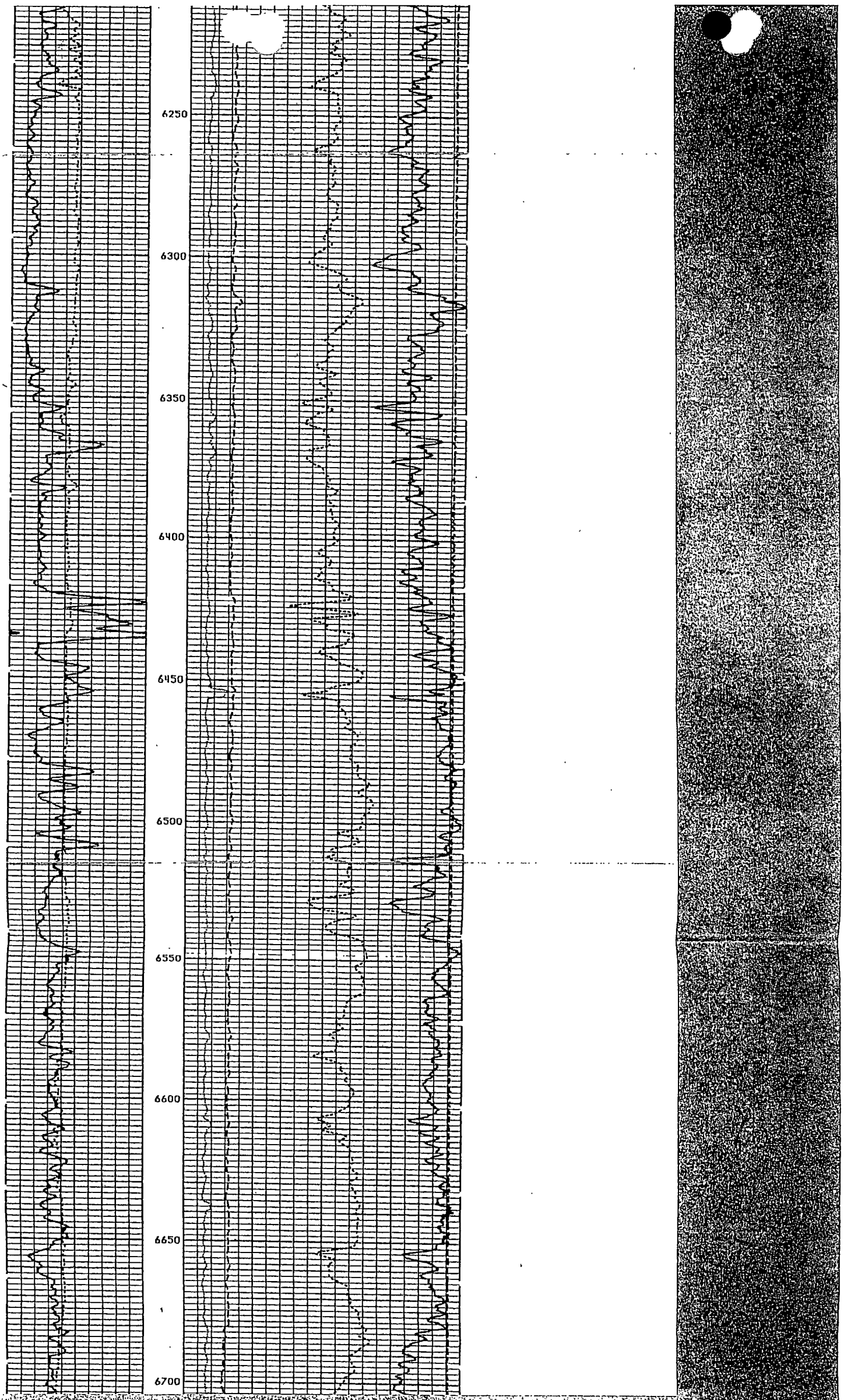
2" = 100'

P.E.			
0 QUALITY -2		PE CORR	
Q SHORT		-1 B/E 9	
-4.5 8.5		DEN CORR	TENSION
Q LONG		-0.2 GM/CC 0.8	10000 POUNDS 0
4.5 -0.5		DENSITY	
GAMMA			
0 API 100		2 GM/CC 1	
CALIPER		157 NEU POROS	
6 INCHES 16		30 LIME -10	

← MINIMUM MARKER

EXHIBIT 3

APPENDIX J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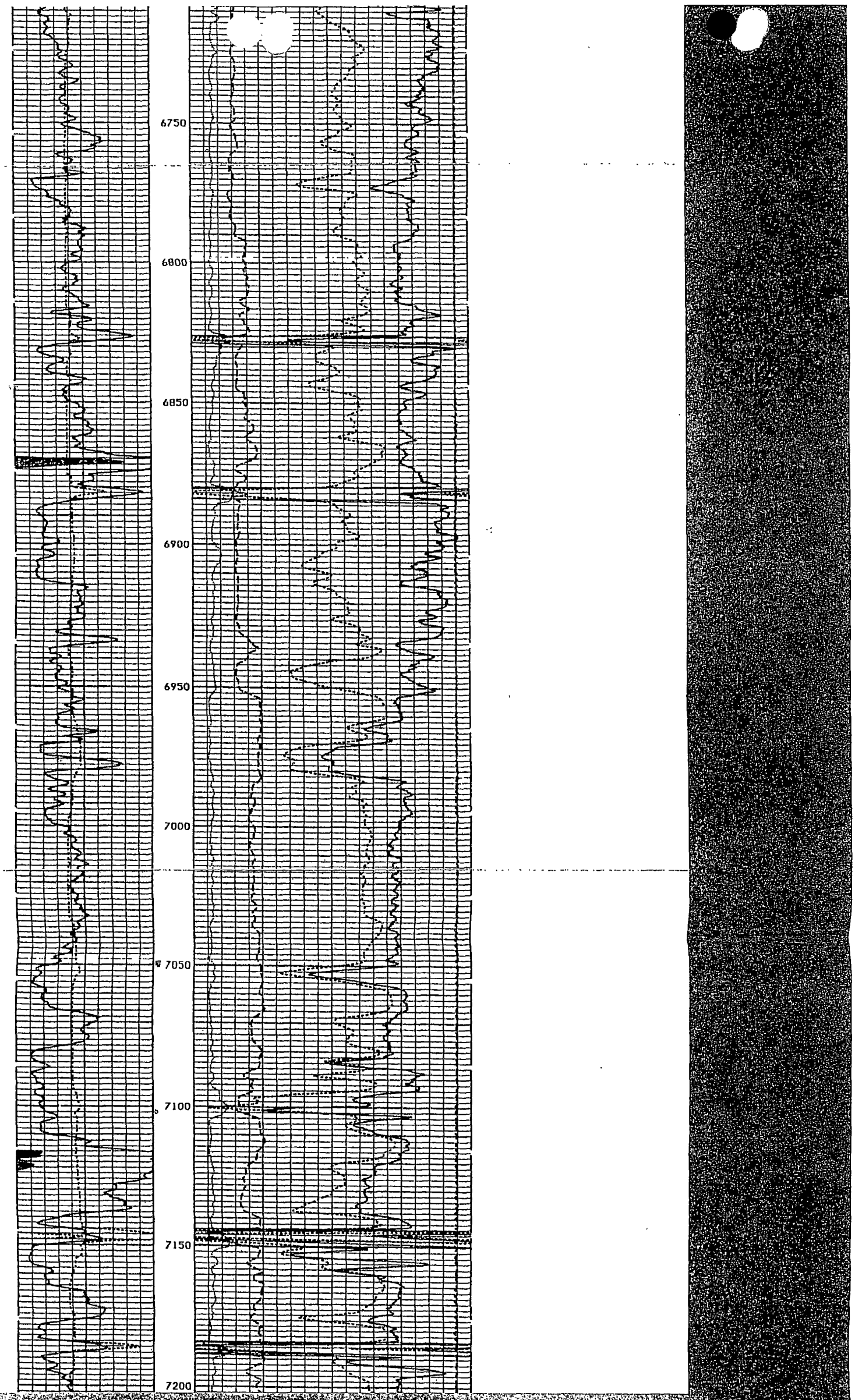
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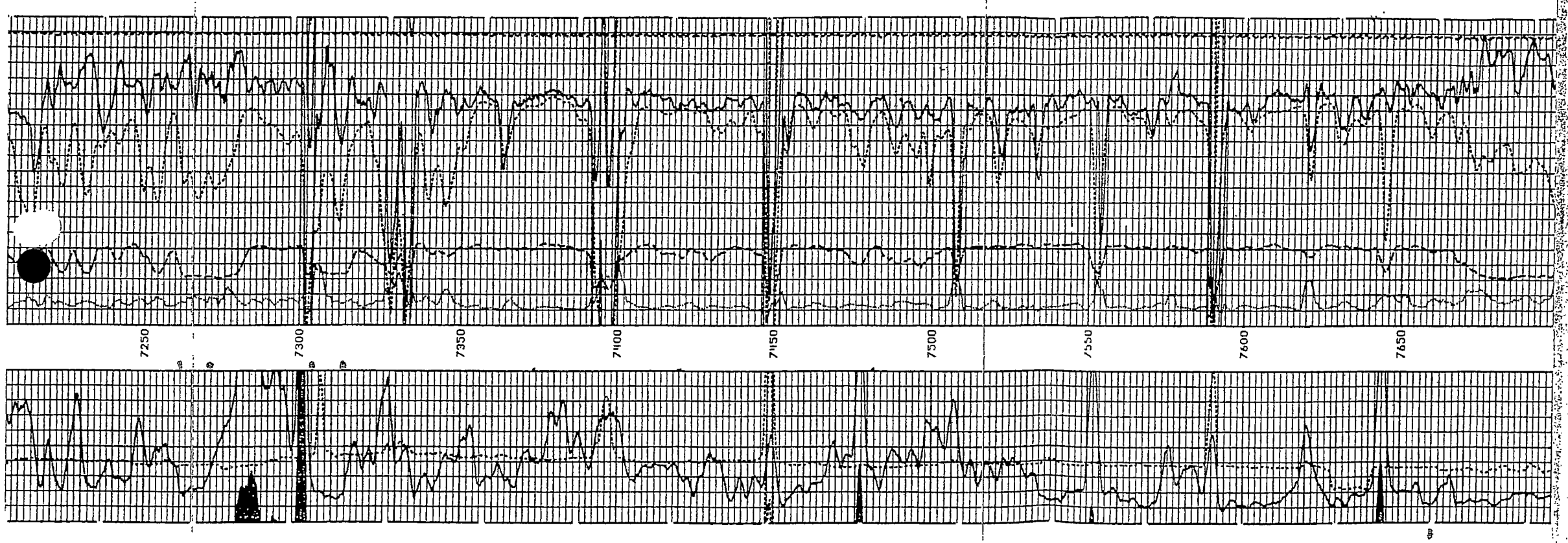
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157

EDDY SEC 1-18S-27E

Petroleum Information

DENVER, COLORADO 80201

REFERENCE Y 49491

25 API NO. 30 015 26575

REPRODUCTION FOR RESALE IN WHOLE OR PART PROHIBITED

HALLIBURTON LOGGING SERVICES

DUAL INDUCTION LATEROLOG

COMPANY NEWBOURNE OIL CO

WELL CHALK BLUFF FEDERAL NO. 1

FIELD NORTH ILLINOIS CAMP-MORROW

COUNTY EDDY STATE NM

API NO. NA OTHER SERVICES SDL-DSN

LOCATION 2250 FNL & 760 FEL

PERMANENT DATUM G. L.	ELEV. 3869	ELEV.: K.B. 3884
LOG MEASURED FROM K.B.	15 FT. ABOVE PERM. DATUM	D.F. 3883
DRILLING MEASURED FROM K.B.		G.L. 3869
DATE	1/22/91	
RUN NO.	ONE	
DEPTH-DRILLER	9450	
DEPTH-LOGGER	9448	
BTM. LOG INTER.	9385	
TOP LOG INTER.	2595	
CASING-DRILLER	8.625@2600	
CASING-LOGGER	2595	
BIT SIZE	7.875	
TYPE FLUID IN HOLE	WATER	TIGHT HOLE
DENS. / VISC.	NA / NA	NO RETURNS
PH / FLUID LOSS	NA / NA	
SOURCE OF SAMPLE	MUDPIT	
RM @ MEAS. TEMP.	1.4 @43	
RMF @ MEAS. TEMP.	NA @NA	
RMC @ MEAS. TEMP.	NA @NA	
SOURCE RMF / RMC	NA / NA	
RM @ BHT	.541 @122	
TIME BHCE CIRC.	6 HRS	
TIME ON BOTTOM	12:45 HRS	
UNIT NO.	122 OK.M.	
RECORDED BY	3414 (NOBLE)	
WITNESSED BY	BIEGLER	D'SOUZA

Fold Here

Service Ticket No.: 63852			API Serial No.: NA			PGM Version: 2.58 E					
Change in Mud Type or Additional Samples						RESISTIVITY SCALE CHANGES					
Date/Sample No.	/ / :		/ / :			Type Log	Depth	Scale Up Hole	Scale Down Hole		
Depth-Driller						NA					
Type Fluid in Hole											
Dens. : Visc.	:		:								
pH. : Fluid Loss	:		:								
Source of Sample						RESISTIVITY EQUIPMENT DATA					
Rm @ Meas.Temp.	@		@			Run No	Tool Type & No	Pad Type	Tool Pos.	Other	
Rmf @ Meas.Temp.	@		@			ONE	DILT-189430	NA	NA		
Rmc @ Meas.Temp.	@		@				SGRT-188928	NA	CENT		
Source: Rmf:Rmc	:		:								
Rm @ BHT	.541	@122	@								
Rmf @ BHT	NA	@NA	@								
Rmc @ BHT	NA	@NA	@								

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	NA	Run No.	ONE	Run No.	ONE
Serial No.	188615	Serial No.		Serial No.	112611	Serial No.	184763
Model No.	432	Model No.		Model No.	465	Model No.	494
Diameter	3.625	No.of Cent.		Diameter	4.5"	Diameter	3 5/8
Detector Model No.	182T	Spacing		Log Type	C-C	Log Type	M-M
Type	SCINT			Source Type	CS-137	Source Type	AM-241
Length	4"	LSA		Serial No.	38	Serial No.	DSN-27
Distance To Source	18"	FWDA		Strength	1.5 C.	Strength	10.5 Ci

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	9446	2595	REC	0	100				30	-10	2.71	30	-10	LIME

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 7" CASING
DUAL INDUCTION RUN IN COMBO WITH SDL-DSN.
DRILLING RIG HAD NO RETURNS BEFORE COMING OUT OF THE HOLE.

CREW: SIEGFRIED, HOUSTON, MORRIS, D'SOUZA

Halliburton Logging Services, Inc. does not guarantee the accuracy of any interpretation of log data, and is not to be responsible for any conclusions which may be drawn by the customer or others as the result of any such data. The use of such data, interpretations, conclusions or recommendations hereon shall not be considered evidence of gross negligence or willful misconduct. For any loss, damages or liabilities resulting from this use, shall

2" = 100'

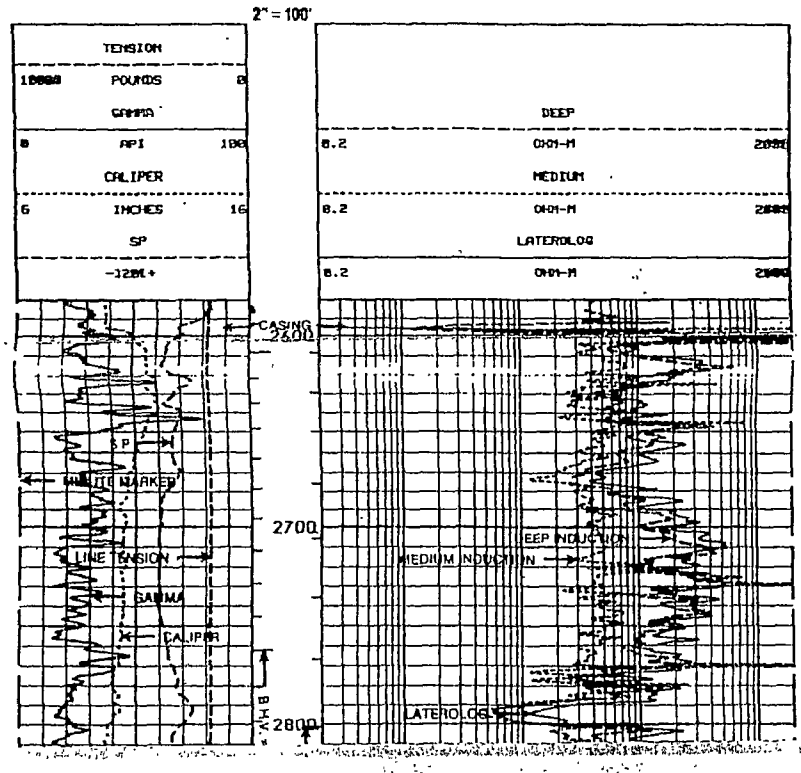
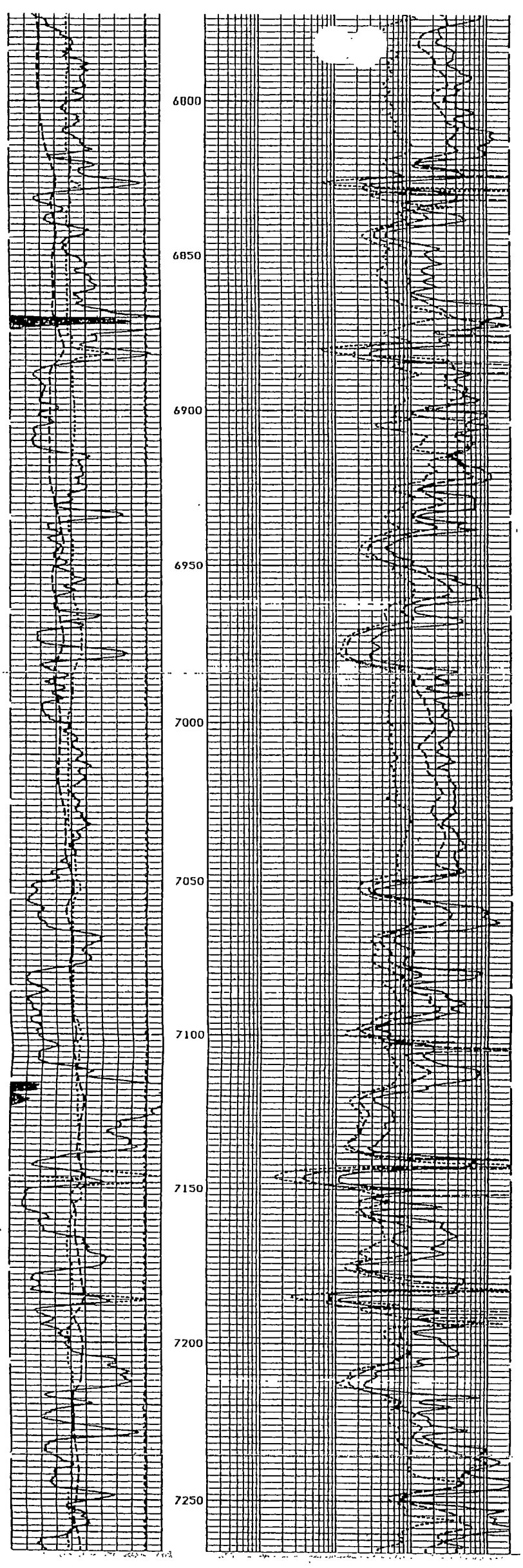


EXHIBIT 3

APPENDIX J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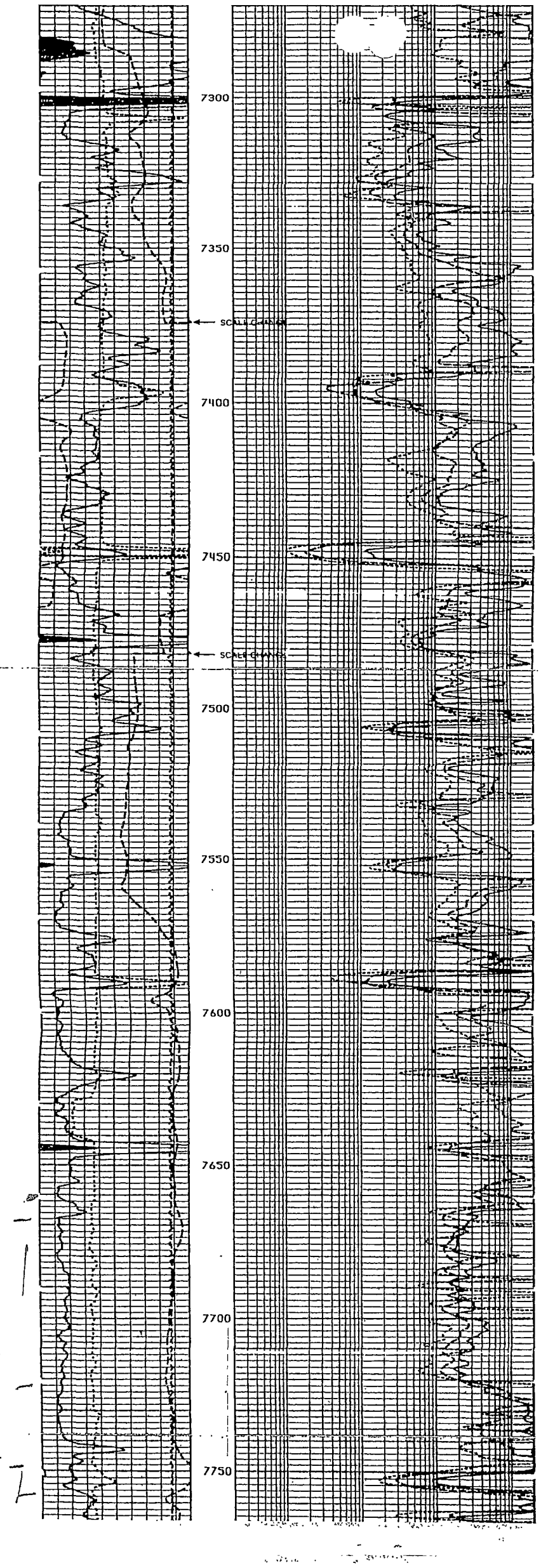
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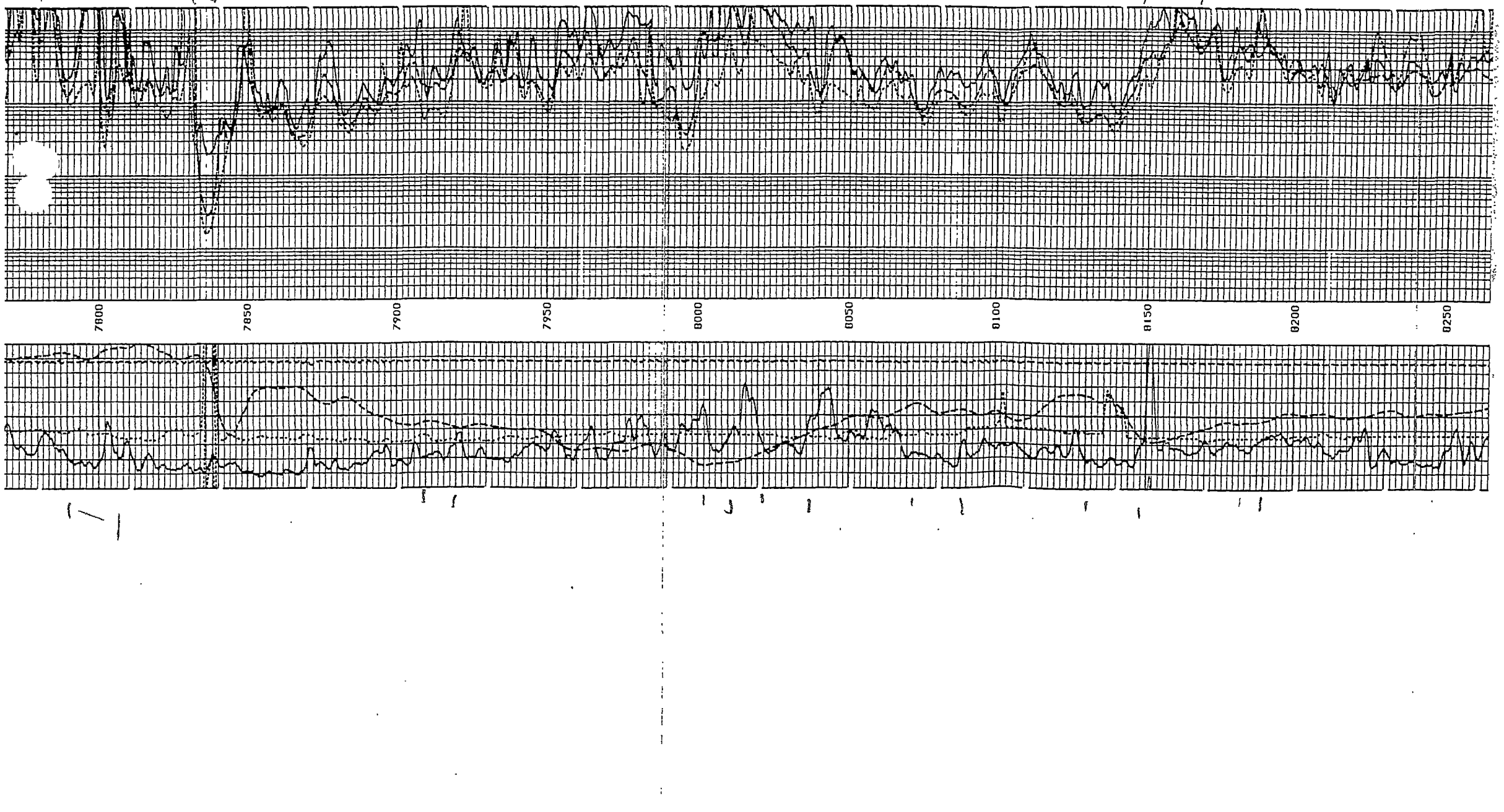
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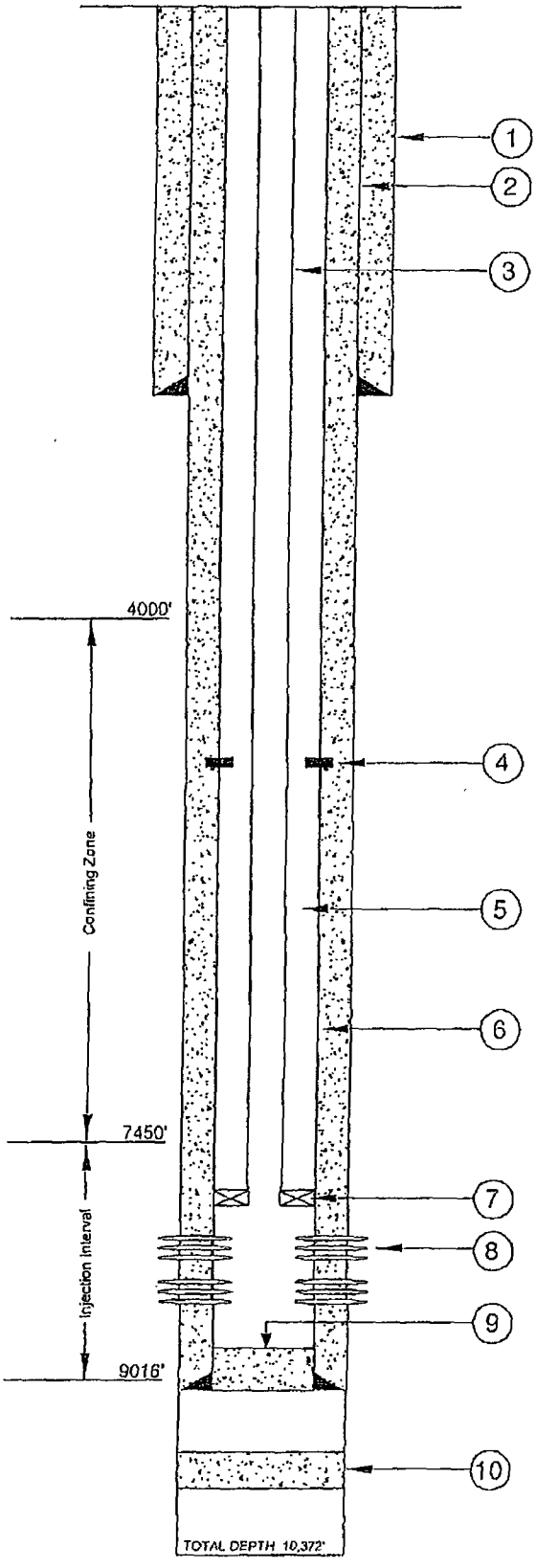
EXHIBIT 4



BELOW GROUND DETAILS

All depths are referenced to the Kelly bushing elevation of 13' above ground level. Ground level elevation is 3610' above mean sea level.

1. Base of the USDW at 473'.
2. Surface Casing: 8 5/8", 32 lb/ft, set at 1995' in an 11" hole. Cemented to surface with 800 sacks of cement.
3. Injection Tubing: 3 ½", 9.2 lb/ft, J-55, smls, NUE 10 rd. set at 7528'.
4. DV Tool: at 5,785'.
5. Annulus Fluid: 8.7 lb/gal brine water mixed w/UniChem Techni-Hib 370 corrosion inhibitor.
6. Protection Casing: 5 ½", 17 lb/ft, L-80, LT&C: 8869' to the surface and set in a 7 7/8" hole. Casing cemented in two stages as follows:

   First Stage - 575 sacks of modified Class "H" with 0.4 % CFR-3, 5 lb/sk Gilsonite, 0.5 % Halad-344, and 3 lb/sk salt. Mixed at 13.0 ppg. Opened DV tool at 5785 and circulated 20 sacks to surface.

   Second Stage - Lead Slurry: 300 sacks of Interfill "C" (35:65:6) mixed at 11.7 ppg. Tail slurry: 695 sacks modified Class "H" with 0.4% CFR-3, 5 lb/sk Gilsonite, 0.5 % Halad-344 and 3 lb/sk salt mixed at 13.0 ppg. Circulated 150 sacks to surface. Topped out with 10 yards of Redi-mix.
7. Packer: 5 ½" x 2 7/8" Weatherford Completion Tools (Arrow) Model X-1 retrievable packer set at 7528'. Minimum ID is 2.4375". Wireline re-entry guide is on bottom. To release: turn ¼ turn to the right and pick up.
8. Perforations (2 SPF):

   Zone 1: 7570-7620', 7676-7736'

   Zone 2: 7826-7834', 7858-7880', 7886-7904', 7916-7936', 7944-7964', 7990-8042', 8096-8116', 8191-8201', 8304-8319',8395-8399'.
9. PBTD: 8770'
10. Cement Plug: 45 sacks from 9675' to 9775'.

SUBSURFACE

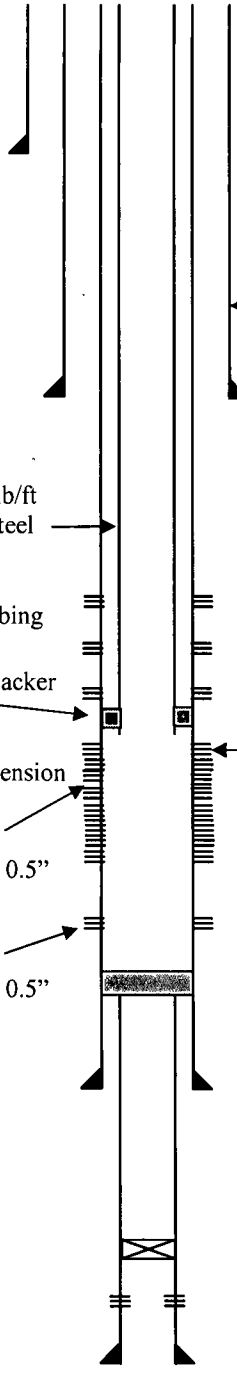
HOUSTON, TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO

BELOW GROUND DETAILS
WASTE DISPOSAL WELL NO. 2

DATE: 07/13/01	CHECKED BY:	JOB NO: 7005256
DRAWN BY: WDL	APPROVED BY:	DWG. NO:

Exhibit 4



13-3/8" 54.5 lb/ft J-55 STC steel at 400' in OH 17.5" cemented with 425 sks to surface

Top of Cement at 900' from CBL in 7" x 9-5/8" casing annulus
CBL was run 10/13/06

9-5/8" 36 lb/ft J-55 STC steel at 2600' in OH 12.25" cemented with 1025 sks to surface

300PSI Sealant was placed across the intervals
Surface – 1000'
7000' – 7550'
The Remaining Annulus Contains Inhibited Brine 8.7 ppg
Tubing was run on 10/24/06
Casing was perforated on 10/14/06 and 10/15/06

4-1/2" 11.6 lb/ft J-55 LTC, Steel at 7568'
No Nipples
Injection Tubing 10/24/06

7050'-7102' Squeezed with 80 sks

7262'-7278' Squeezed with 100 sks

Arrow X-1 Packer 7"x 2 7/8"
No nipples
7575' 37K Tension

7304'-7314' Squeezed with 80 sks,

7676'-7698' Old Perforations Open

Perforations 7660'-8450'
2 JSPF, 60°, 0.5"
10/14/06

SRO was at 7660' and MRO at 7663'
Fill was tagged on 8/30/09 at 8986'

Cement was tagged at 9022' on 11/15/06

8540'-8620'
2 JSPF, 60°, 0.5"
10/15/06

4-1/2" Liner Top @ 9051'

7" 26 lb/ft & 29 lb/ft N-80 and P110 steel at 9450' in OH 8.75" cemented with 1350 sks

CIBP @ 9800' w/35' cement

Existing Perforations at 9861'-9967'

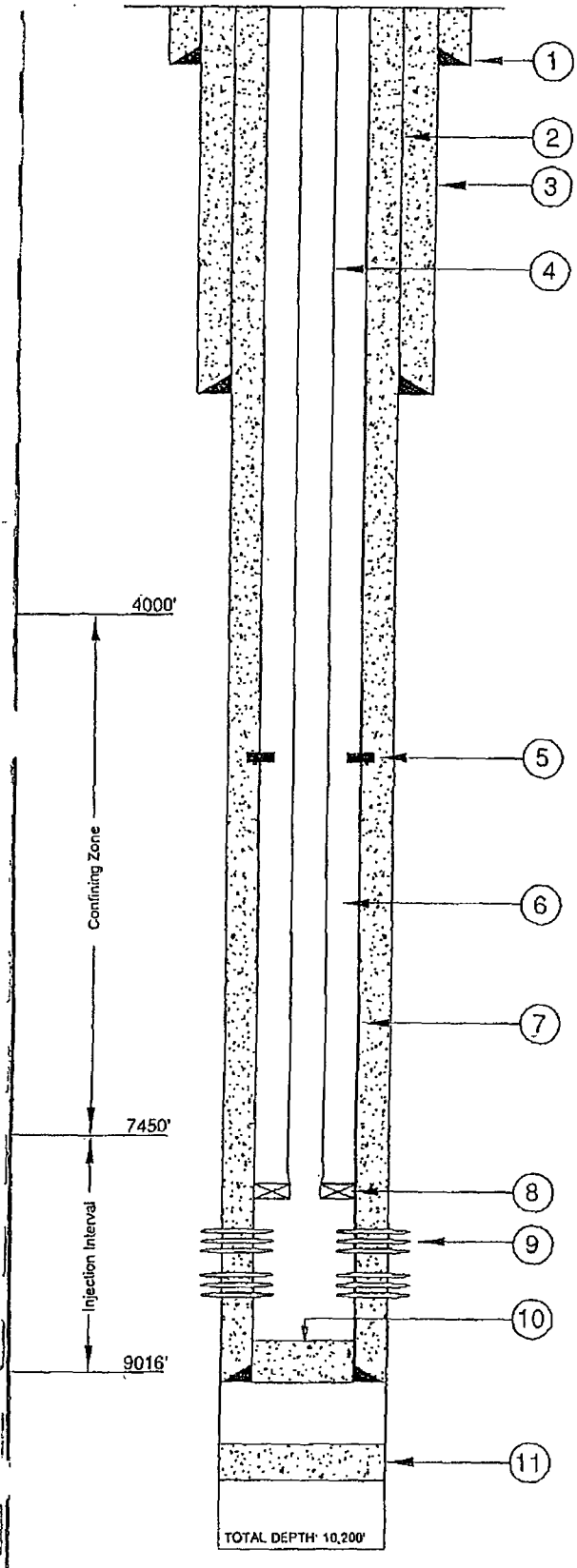
4-1/2" Liner @ 10,119'

API# 30-015-26575
UIC-CLI-008-3
S1-T18S-R27E
Gaines Well #3 Formally Chalk Bluff Federal #1
Not to Scale

SUBSURFACE
HOUSTON, TX
SOUTH BEND, IN
BATON ROUGE, LA

Figure
Gaines Well #3
Navajo Refining

DATED: 9/8/09	APPROVED BY:	JOB NO. 70A6365
DRAWN BY: rls	CHECKED BY:rls	SCALE: N/A



BELOW GROUND DETAILS

All depths are referenced to the Kelly bushing elevation of 12.5' above ground level. Ground level elevation is 3,678' above mean sea level.

1. Surface Casing: 13 ⅜", 48 lb/ft, J-55, ST&C set at 390' in a 17 ½" hole. Cemented with 150 sx Class C with 3 % calcium chloride, 375 sx Class C Litewate w/3 % calcium chloride and ½ lb/sx flocele. Circulated 86 sx to surface.

2. Intermediate Casing: 9 ⅝", 36 lb/ft, J-55, ST&C set at 2,555' in a 12 ¼ " hole. Cemented w/800 sx of Class C Lite w/ ½ lb/sx flocele and 2 lb/sx Gilsonite and 12 % salt. Followed by 200 sx of Class C w/2 % calcium chloride. Circulated 133 sx to surface.

3. Base of the USDW at 493'.

4. Injection Tubing: 4 ½", 11.6 lb/ft, N-80, SMLS, R3, LT&C set at 7,879'.

5. DV Tool: at 5,498'.

6. Annulus Fluid: 8.7 lb/gal brine water mixed w/UniChem Techni-Hib 370 corrosion inhibitor.

7. Protection Casing: 7", 29 lb/ft, N-80, LT&C: 9094' to 7031'. 7", 29 lb/ft, P-110, LT&C: 7031' to 5845'. 7", 26 lb/ft, P-110, LT&C; 5845' to surface. Casing cemented in two stages as follows:

   First Stage - 600 sx modified Class H w/0.4 % CFR-3, 5 lb/sx Gilsonite, 0.5 % Halad-344, and 1 lb/sx salt mixed at 13.0 ppg. Opened DV tool at 5498' and circulated 142 sx to surface.

   Second Stage - Lead Slurry: 220 sx Interfill "C" (35:65:6) mixed at 11.7 ppg. Tail Slurry: 550 sx modified Class H w/0.4 % CFR-3, 5 lb/sx, Gilsonite, 0.5 % Halad-344, 0.1 % HR-7, and 1 lb/sx mixed at 13.0 ppg. Circulated 75 sx to surface. Top out w/20 sx permium plus 3 % calcium chloride.

8. Packer: 7" x 3.5" EVI Oil Tools (Arrow), Model X-1 retrievable packer set at 7879'. Minimum I.D. is 3.0". Wireline re-entry guide on bottom. To release: turn ¼ turn to the right and pick up.

9. Perforations (2 SPF):

   Upper Zone - 7924-7942', 7974-8030', 8050-8056', 8066-8080', 8118-8127', 8132-8140', 8160-8164', 8170-8188'.

   Lower Zone - 8220-8254', 8260-8270', 8280-8302', 8360-8366', 8370-8378', 8400-8410', 8419-8423', 8430-8446', 8460-8464', 8470-8476'.

10. PBTD: 9004'.

11. Cement Plug: 45 sx Class H from 9624' to 9734'.

SUBSURFACE

HOUSTON, TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO

BELOW GROUND DETAILS
WASTE DISPOSAL WELL NO. 1

DATE: 07/13/01	CHECKED BY:	JOB NO: 70D5256
DRAWN BY: WDL	APPROVED BY:	DWG. NO:

EXHIBIT 5

SUBSURFACE

HOUSTON, TX ◆ BATON ROUGE, LA ◆ SOUTH BEND, IN

Production Optimization Systems | Report File:

PanSystem Version 3.5 | Analysis Date: 11/16/2009

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Chukka Well #2
Date	October 1 - October 4, 2009
Test	Injection / Falloff
Gauge Tpye / Serial No.	SRO SpartekSystems / No. 76841
Gauge Depth	7,570 feet
Injection Interval	7,570 feet - 8,399 feet
Completion Type	Perforated
Top of Fill	8,775 feet
Analyst	RLS
Subsurface Project Number	70A6365

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	0.000000 psia
Temperature	0.000000 deg F

Well Parameters Data

	Well 1
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.107026 bbl/psi
Storage Amplitude	25.000000 psi
Storage Time Constant	0.050000 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	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	0.590 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	760.0000 md
Skin factor (Well 1)	37.0000

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-775.216733	0.000000	-4444.545033
-55.216733	0.000000	-6422.400000
-31.216733	0.000000	-6469.200000
-6.513558	3622.754491	-6328.800000
1.344770	3637.724551	-6328.800000
9.517513	3626.017832	-6328.800000
81.819819	3448.781578	0.000000

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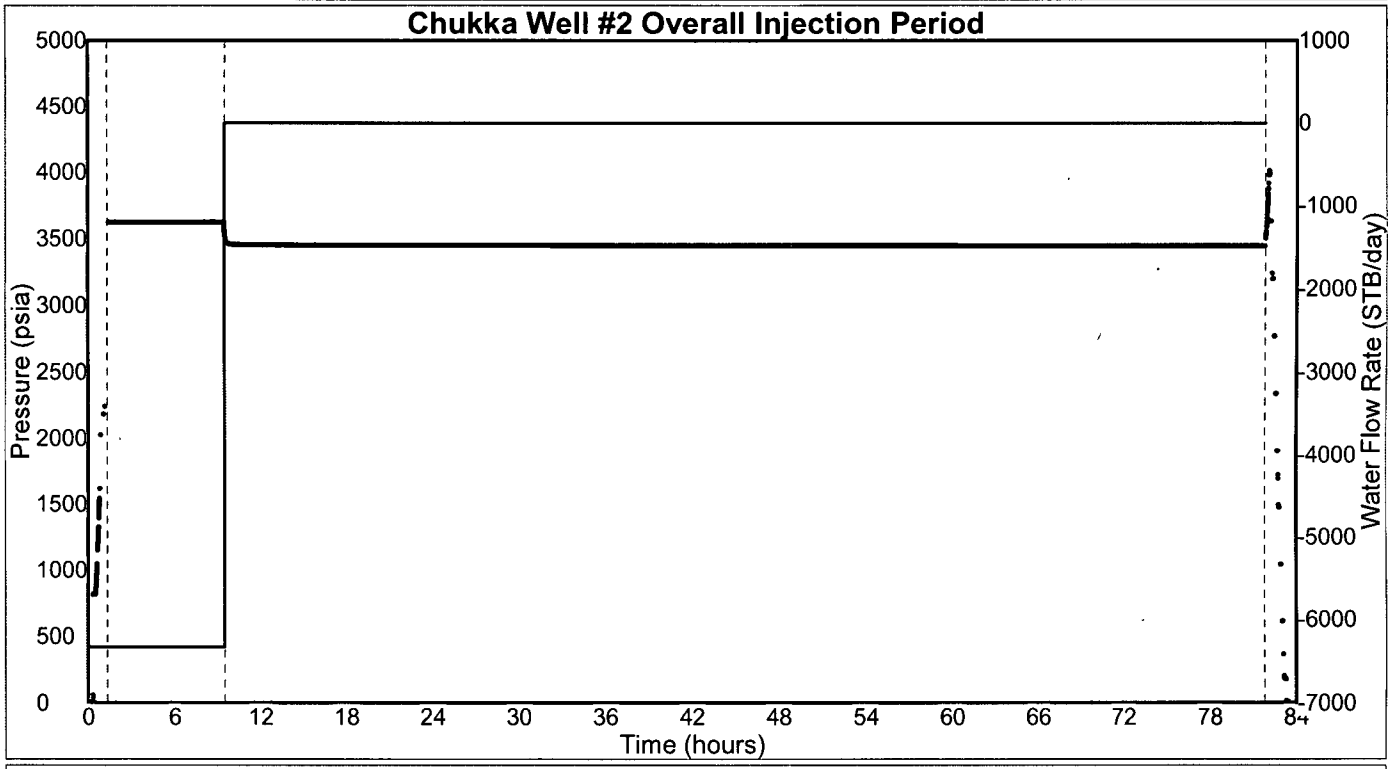
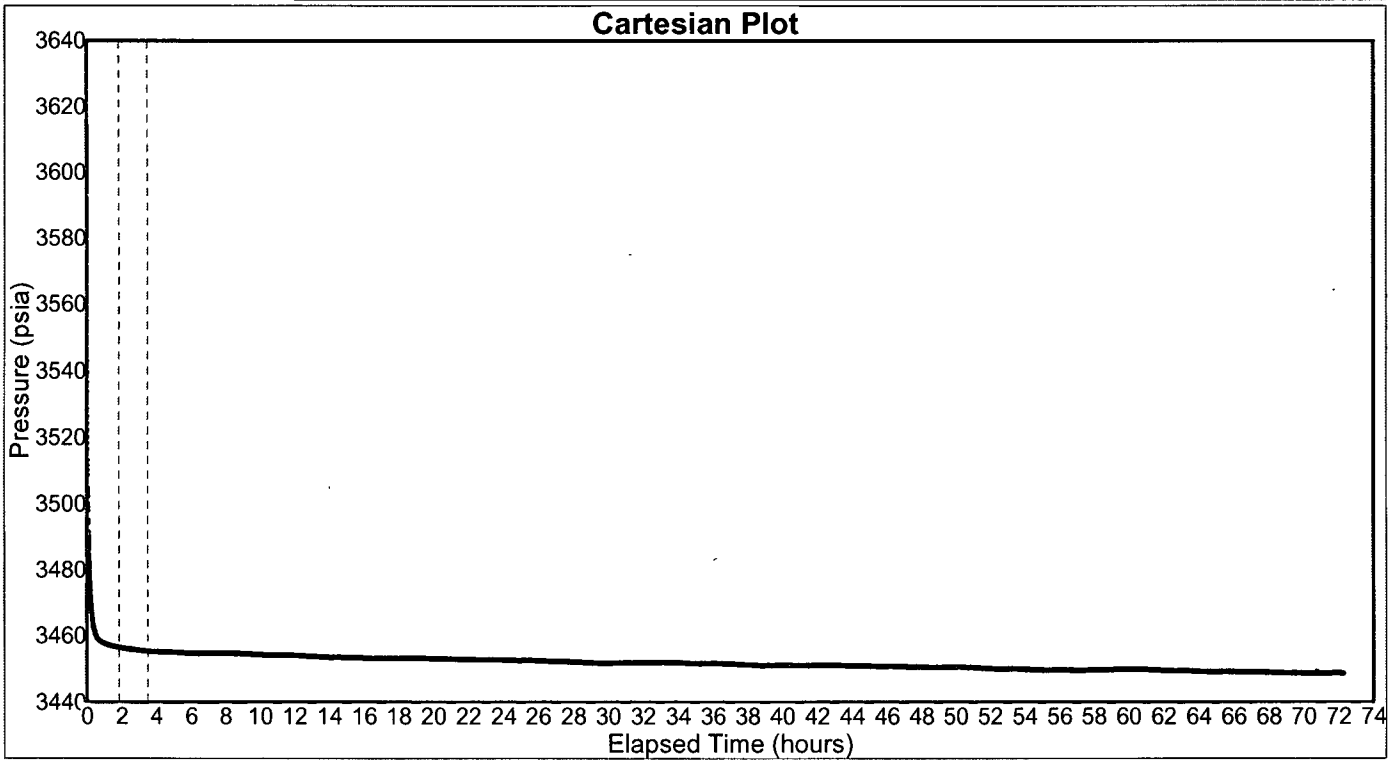

Chukka Well #2 Overall Injection Period
Pressure (psia)
Water Flow Rate (STB/day)
Time (hours)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-7000
0
6
12
18
24
30
36
42
48
54
60
66
72
78
84

FIGURE 11



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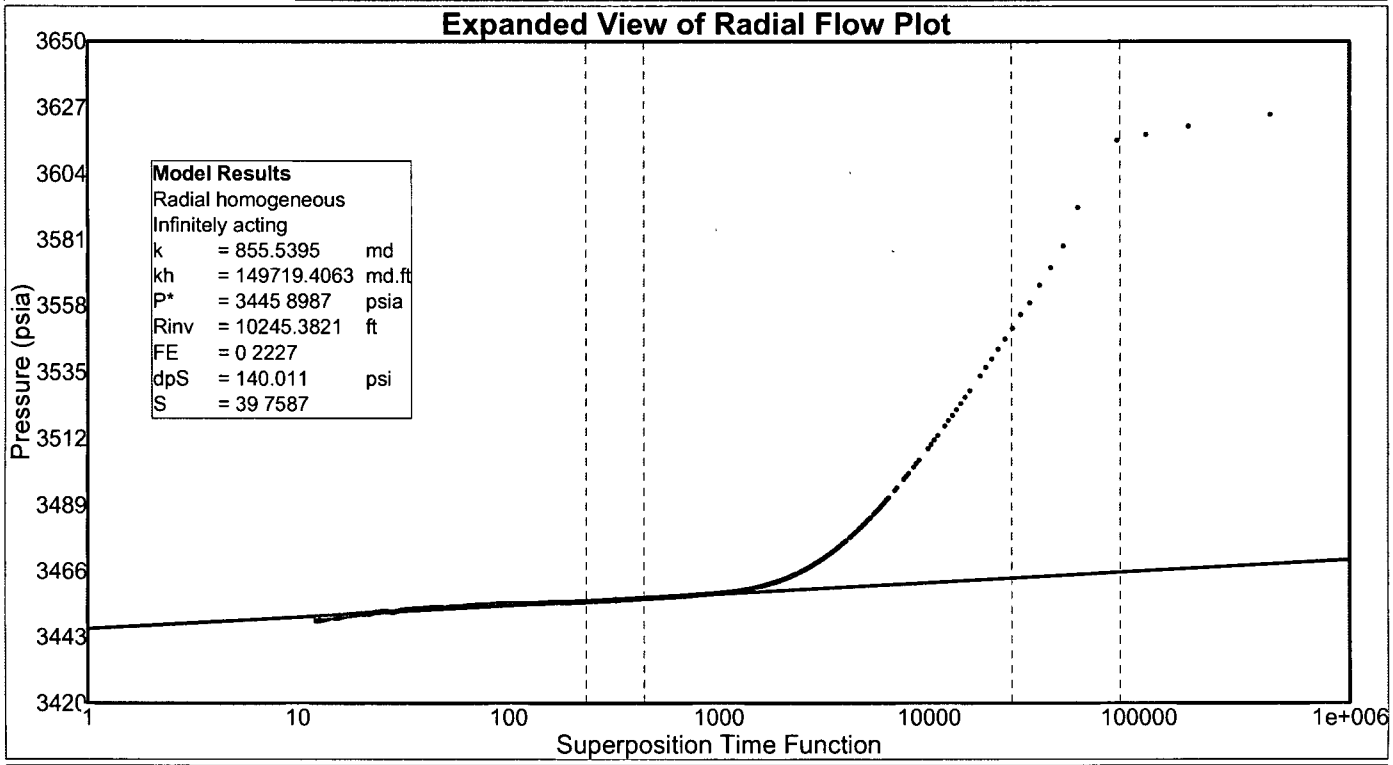

FIGURE 16

Expanded View of Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Permeability	855.539465 md
Permeability-thickness	1.4972e5 md.ft
Extrapolated pressure	3445.898721 psia
Radius of investigation	1.0245e4 ft
Flow efficiency	0.222676
dP skin (constant rate)	140.010965 psi
Skin factor	39.75869

Expanded View of Radial Flow Plot Line Details
Line type : Radial flow
Slope : 4.0543
Intercept : 3445.9
Coefficient of Determination : Not Used

	Radial flow
Extrapolated pressure	3445.898721 psia
Pressure at dt = 1 hour	3457.719995 psia

Number of Intersections = 0

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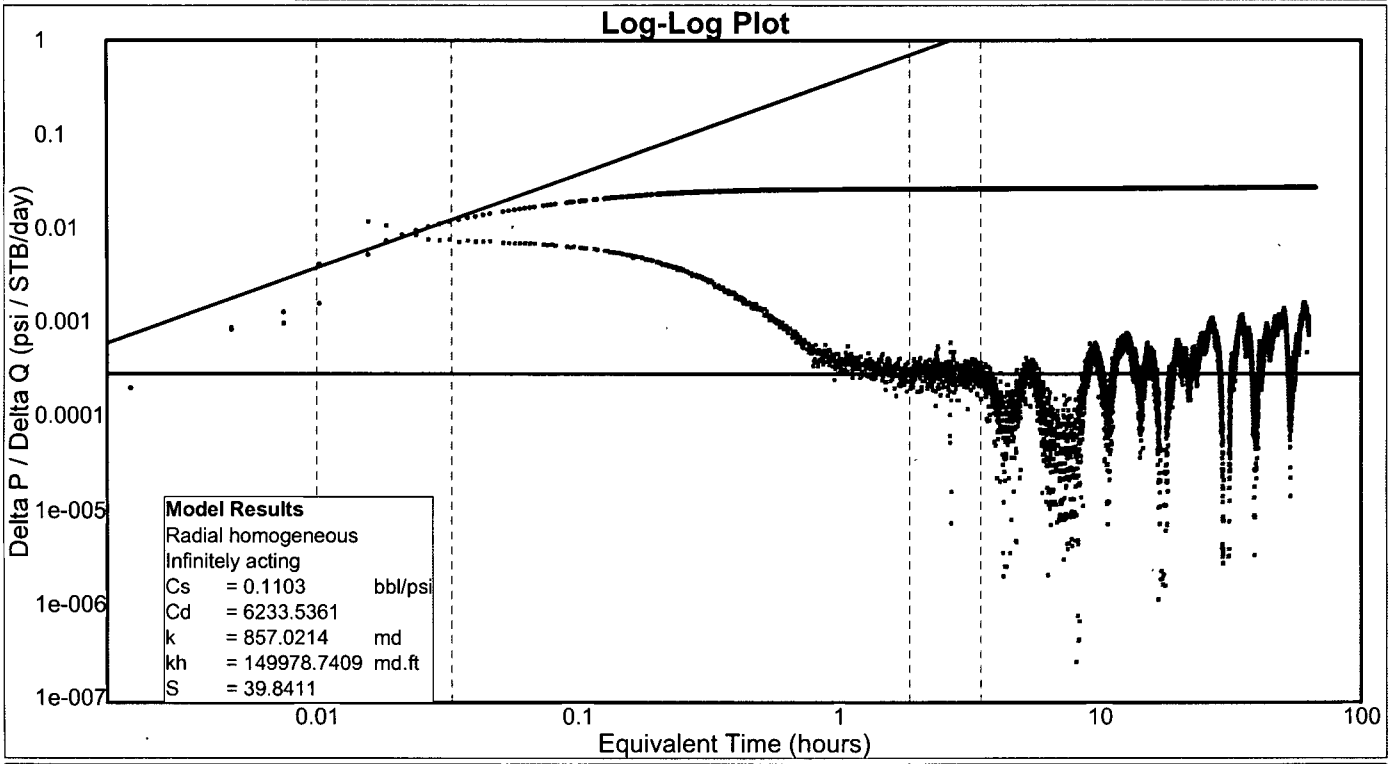

FIGURE 14

Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.110338 bbl/psi
Dimensionless wellbore storage	6233.536095
Permeability	857.021377 md
Permeability-thickness	1.4998e5 md.ft
Skin factor	39.841114

Log-Log Plot Line Details
Line type : Radial flow
Slope : 0
Intercept : 0.000277733
Coefficient of Determination : Not Used
Line type : Wellbore storage
Slope : 1
Intercept : 0.377626
Coefficient of Determination : Not Used
Number of Intersections = 0

SUBSURFACE

HOUSTON TX ♦ BATON ROUGE, LA ♦ SOUTH BEND, IN

Production Optimization Systems | Report File: Navajo Chukka-2 2010.pan

PanSystem Version 3.5 | Analysis Date: 11/03/2010

Well Test Analysis Report

Company	Navajo Refining (Holly Corporation)
Location	Artesia, NM
Well	Chukka Well No. 2
Test Date	9/27/2010 to 10/2/2010
Test Type	Buildup / Falloff Test
Gauge Type/Serial Number	Spartek Systems / 76182
Gauge Depth	7570 feet
Injection Interval	7570 feet to 8399 feet
Completion Type	Perforated at 2 SPF on 120° phasing
Top of Fill	8775 feet
Time Since Last Stabilization	9/26/2010 at 8:03 am
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	0.000000 psia
Temperature	0.000000 deg F

Well Parameters Data

	Well 1
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.165091 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	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	0.590 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	819.765533 md
Skin factor (Well 1)	86.420585

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
0.000000	3833.476563	-4871.559201
22.970710	3831.992188	-4778.058483
24.246201	3594.394531	0.000000
24.493927	3743.125000	-4646.123708
25.015291	3805.429688	-4820.724923
25.487001	3819.179688	-4814.652537
26.338441	3823.615770	-4756.099574
26.568248	3663.033854	-4053.304818
26.970536	3606.384413	-4069.764434
27.638318	3803.437500	-4853.830169
27.835189	3803.111979	-4116.067297
28.787478	3596.601563	0.000000
29.004138	3724.218750	-4438.998944
29.492399	3801.562500	-4820.724923
30.257061	3818.600260	-4754.483452
32.196910	3570.787760	0.000000
32.496448	3753.867188	-4591.773558
33.149199	3813.437500	-4748.918492
33.678249	3612.089844	-3559.195009
34.207299	3591.438802	-3535.635027
34.561977	3775.000000	-4652.313650
35.028786	3808.007813	-4788.344923
51.127182	3828.203125	-4586.994614
52.273767	3799.583333	-4605.305001
52.728528	3617.154948	-3769.179656
53.065196	3799.218750	-5032.468196
96.112292	3819.540405	-4803.208696
115.714673	3581.354167	0.000000
116.076831	3773.489583	-4565.768407
121.761133	3796.093750	-4682.080000
122.154782	3620.911458	-3974.992332
122.532686	3841.302083	-5408.425253

Rate Change Data (cont)

Time Hours	Pressure psia	Rate STB/day
130.752092	3807.395833	-4707.712921
131.208726	3615.260417	-3724.231763
131.598737	3795.208333	-5075.855633
135.853792	3801.744792	-4583.763218
136.278934	3626.562500	-3859.921643
136.641092	3801.744792	-4944.449187
139.900511	3801.000000	-4618.582529
144.764163	3572.762051	0.000000
148.944717	3790.625000	-4656.048179
149.214800	3646.875000	-4073.744778
149.541742	3812.500000	-5159.058022
154.052238	3808.593750	-4742.680000
154.360583	3659.375000	-4746.863123
154.867295	3815.234375	-4840.936435
164.300092	3823.645833	-4813.104923
164.552646	3665.625000	-4443.194397
164.908018	3821.875000	-4950.027966
175.630419	3809.375000	-4786.818089
175.856322	3656.250000	-4595.321201
176.101868	3790.625000	-4799.183140
189.389981	3806.250000	-4739.656009
189.788532	3622.916667	-3974.317347
190.175005	3799.583333	-4950.509508
194.534909	3822.916667	-4855.210548
194.742789	3910.703125	-4989.309519
225.350268	3887.736977	-5530.270000
255.962283	3578.465271	0.000000

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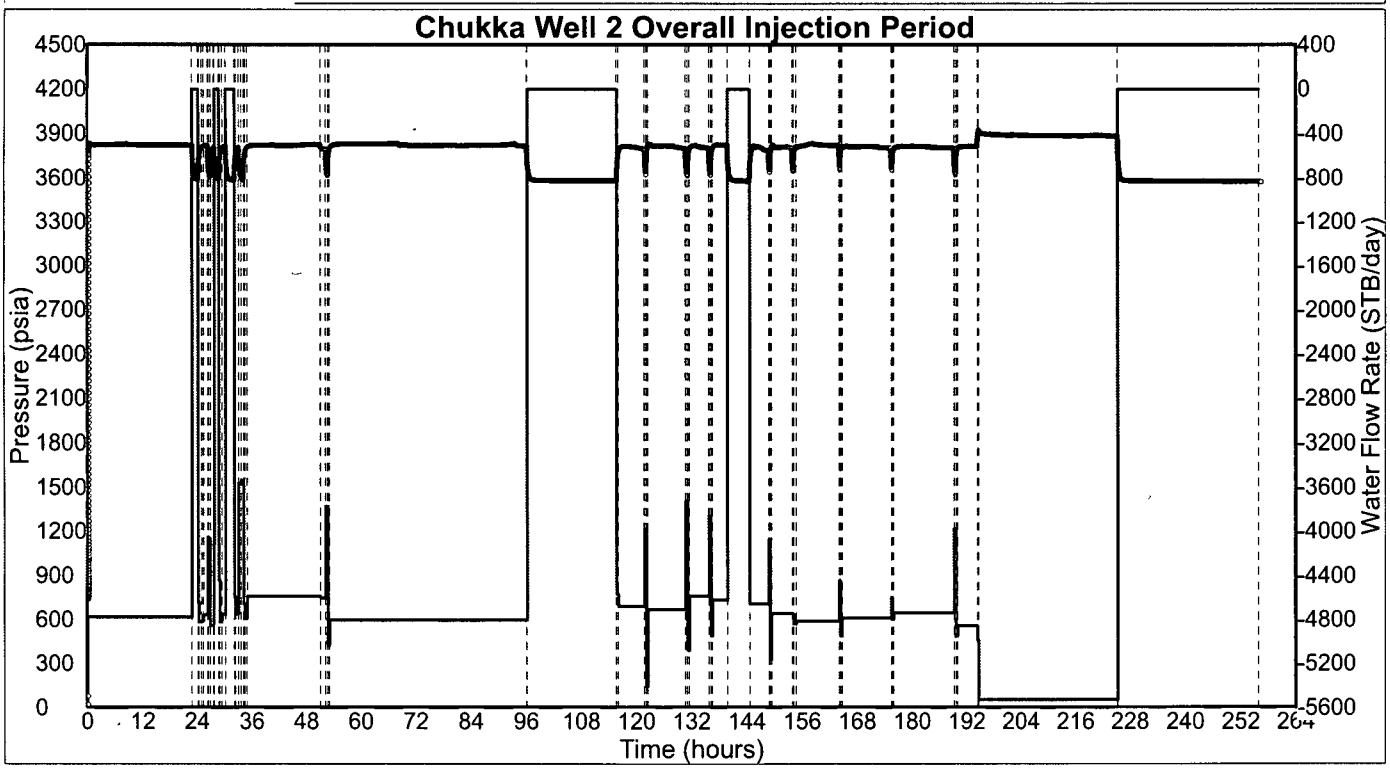
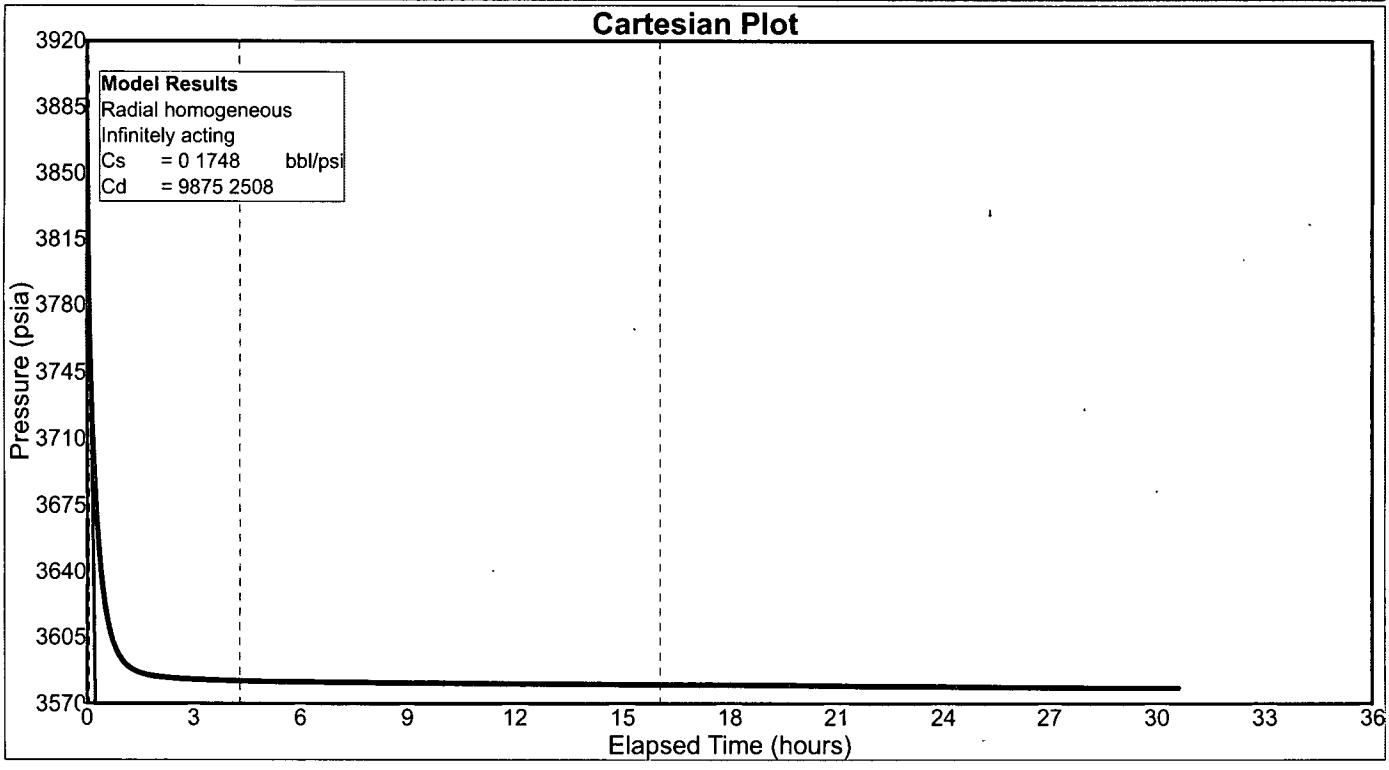

Chukka Well 2 Overall Injection Period
Pressure (psia)
Water Flow Rate (STB/day)
Time (hours)
4500
4200
3900
3600
3300
3000
2700
2400
2100
1800
1500
1200
900
600
300
0
400
0
-400
-800
-1200
-1600
-2000
-2400
-2800
-3200
-3600
-4000
-4400
-4800
-5200
-5600
0 12 24 36 48 60 72 84 96 108 120 132 144 156 168 180 192 204 216 228 240 252



Cartesian Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.1748 bbl/psi
Dimensionless wellbore storage	9875.250844

Cartesian Plot Line Details
Line type : Wellbore storage
Slope : -1318.24
Intercept : 3892.6
Coefficient of Determination : 0.975954
Number of Intersections = 0

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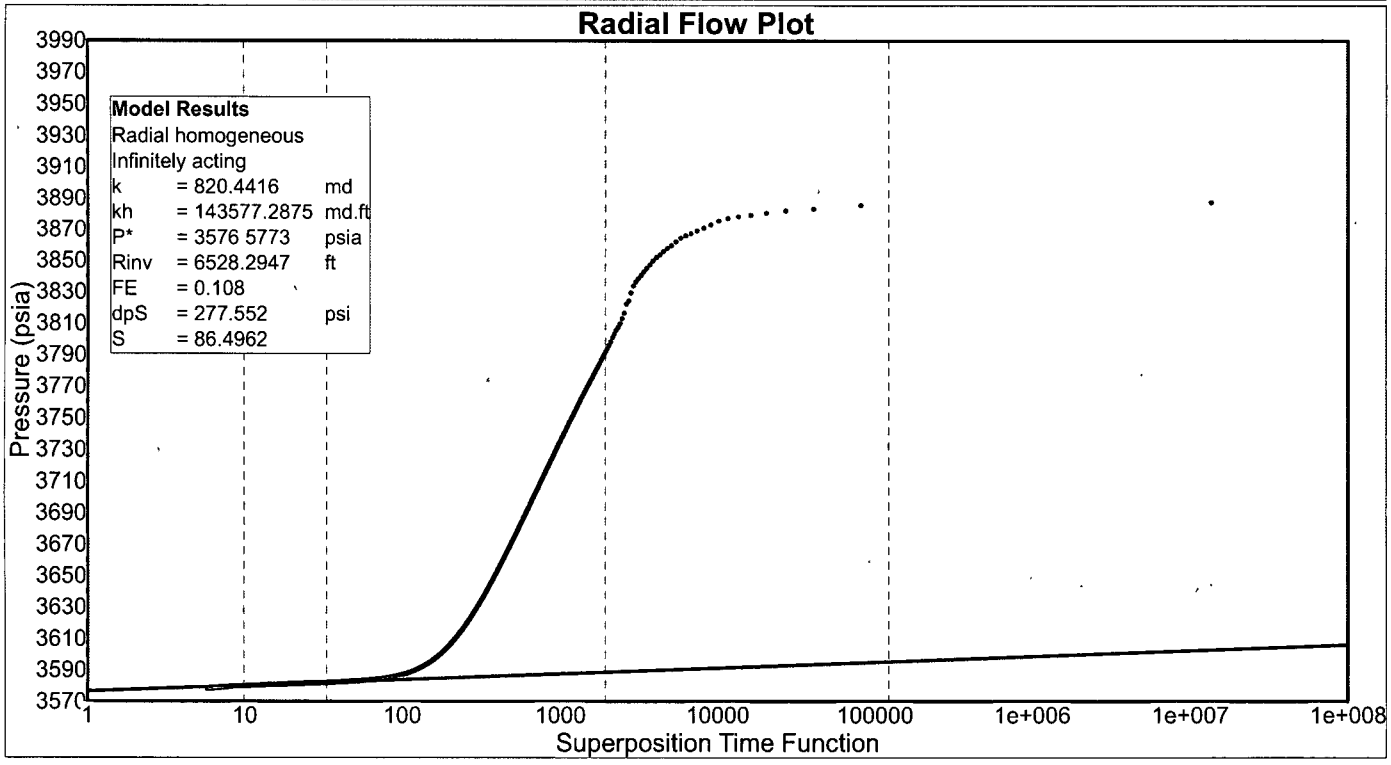

Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Permeability	820.441643 md
Permeability-thickness	1.4358e5 md.ft
Extrapolated pressure	3576.577282 psia
Radius of investigation	6528.294692 ft
Flow efficiency	0.108008
dP skin (constant rate)	277.551972 psi
Skin factor	86.496198

Radial Flow Plot Line Details
Line type : Radial flow
Slope : 3.69431
Intercept : 3576.58
Coefficient of Determination : 0.990257

	Radial flow
Extrapolated pressure	3576.577282 psia
Pressure at dt = 1 hour	3584.486694 psia

Number of Intersections = 0

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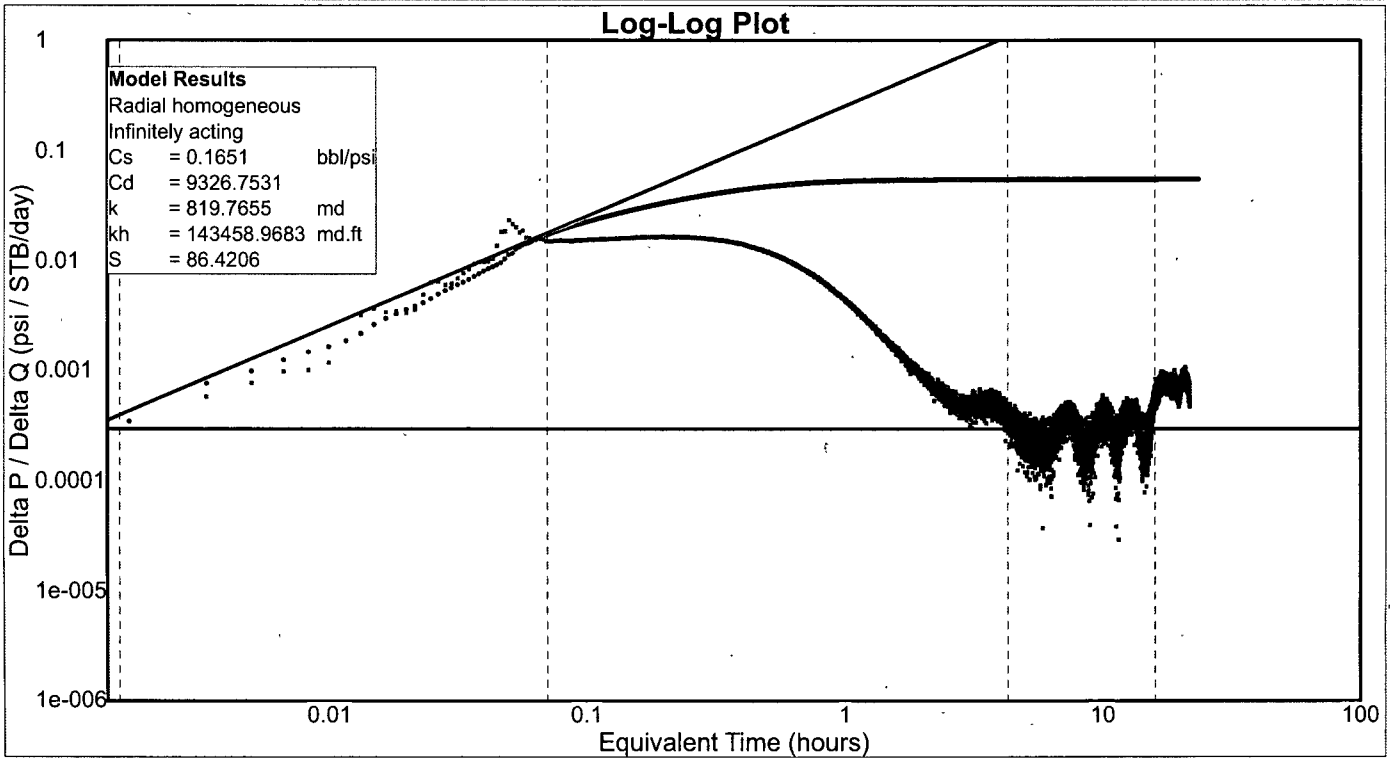

Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Fair Wellbore Storage

	Value
Wellbore storage coefficient	0.165091 bbl/psi
Dimensionless wellbore storage	9326.753065
Permeability	819.765533 md
Permeability-thickness	1.4346e5 md.ft
Skin factor	86.420585

Log-Log Plot Line Details
Line type : Wellbore storage
Slope : 1
Intercept : 0.252386
Coefficient of Determination : Not Used
Line type : Radial flow
Slope : 0
Intercept : 0.000290355
Coefficient of Determination : Not Used
Number of Intersections = 0

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SUBSURFACE

HOUSTON, TX • BATON ROUGE, LA • SOUTH BEND, IN

Production Optimization Systems

PanSystem Version 3.5

Well Test Analysis Report

Report File: Navajo Well No. 3 Gaines 2

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

Exhibit 5

PanSystem - Copyright (C) 2008 Edinburgh Petroleum Services Ltd.

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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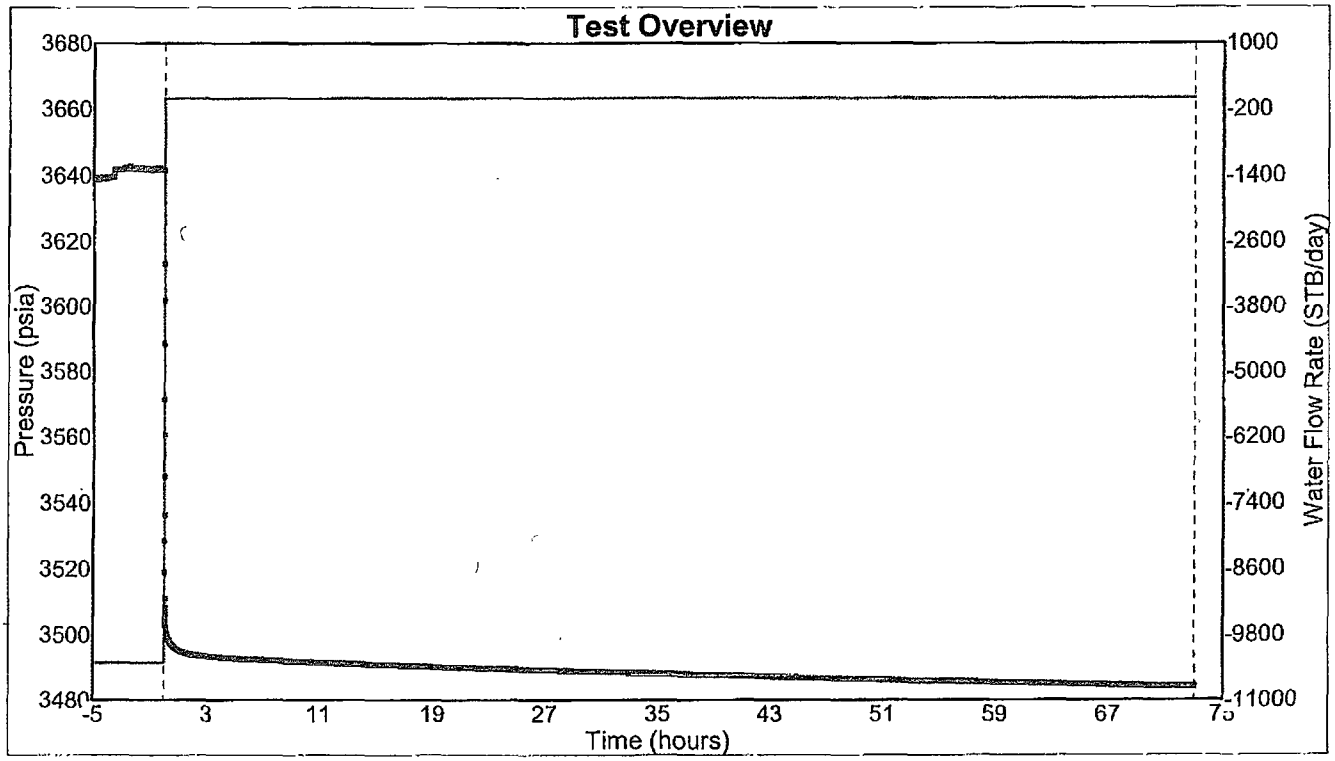
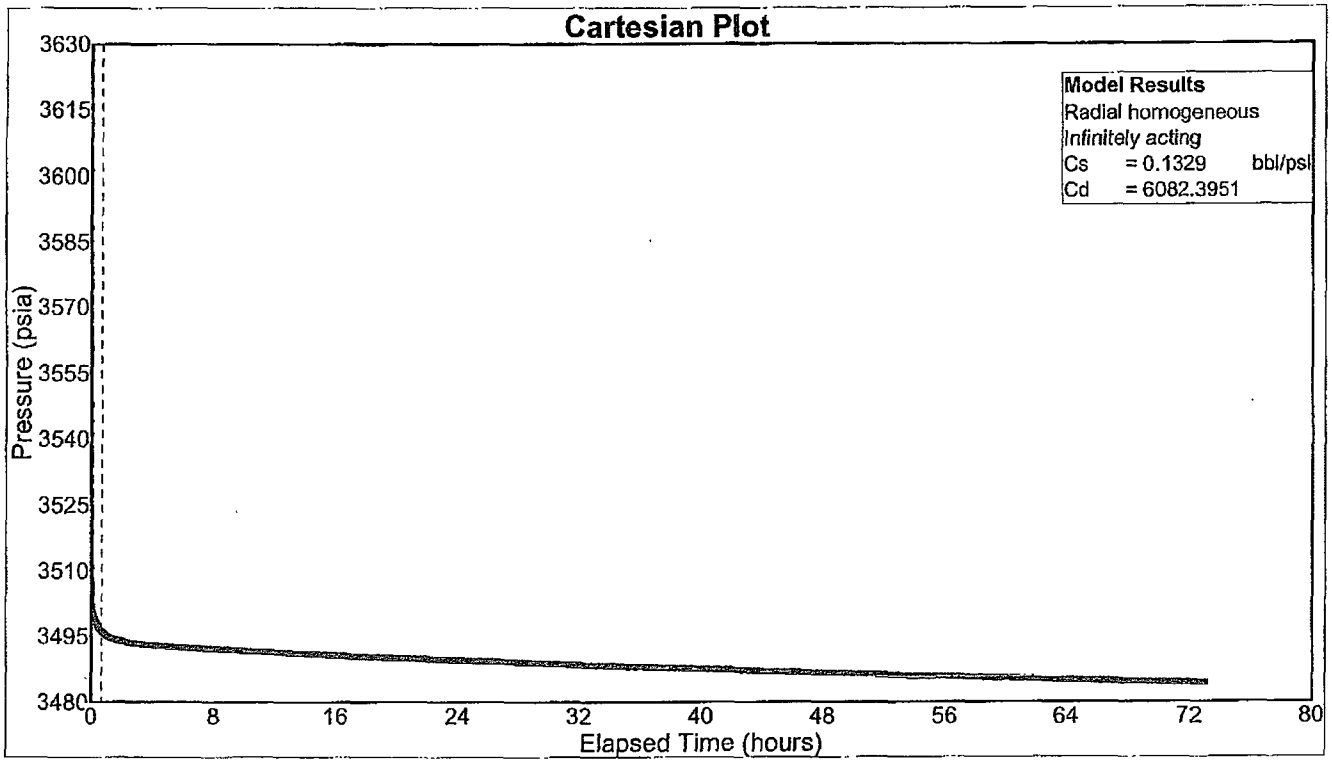

Test Overview
Pressure (psia)
Water Flow Rate (STB/day)
Time (hours)
3680
3660
3640
3620
3600
3580
3560
3540
3520
3500
3480
1000
-200
-1400
-2600
-3800
-5000
-6200
-7400
-8600
-9800
-11000
-5
3
11
19
27
35
43
51
59
67
75



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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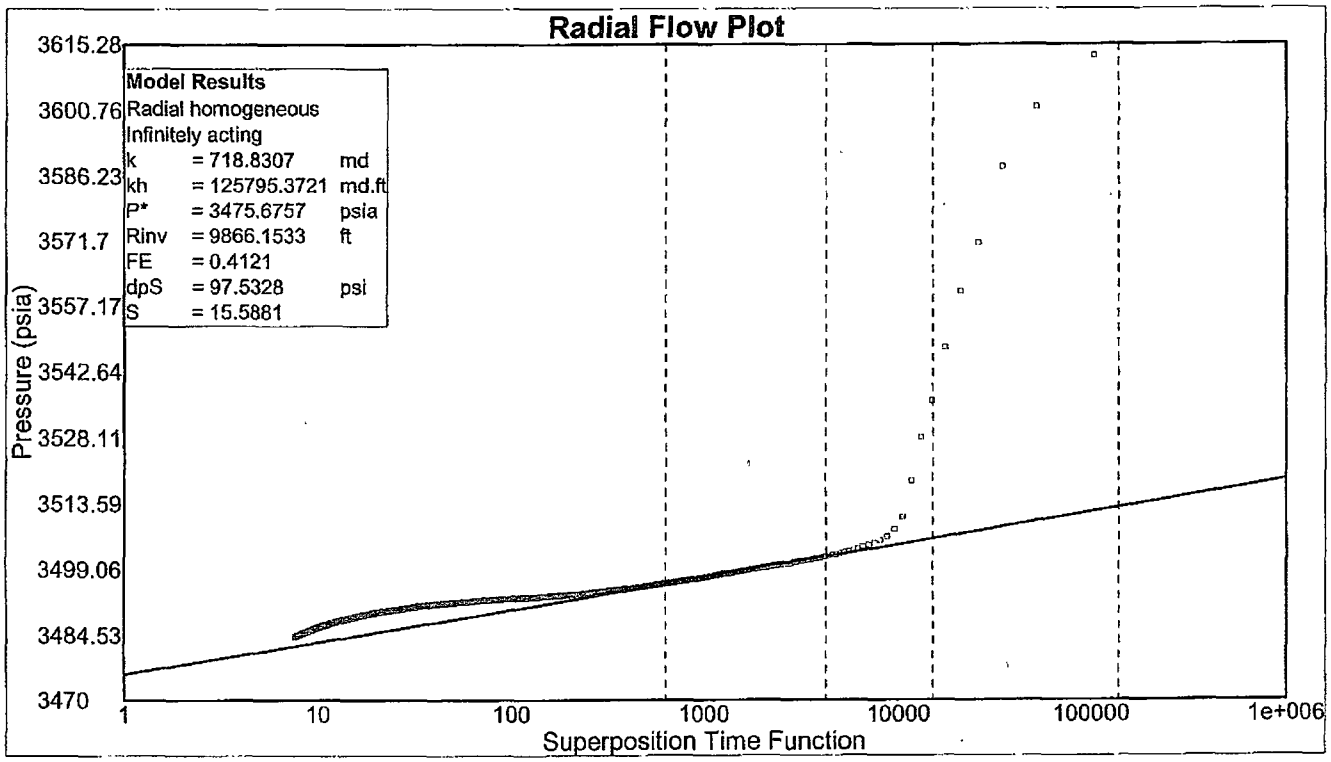

Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

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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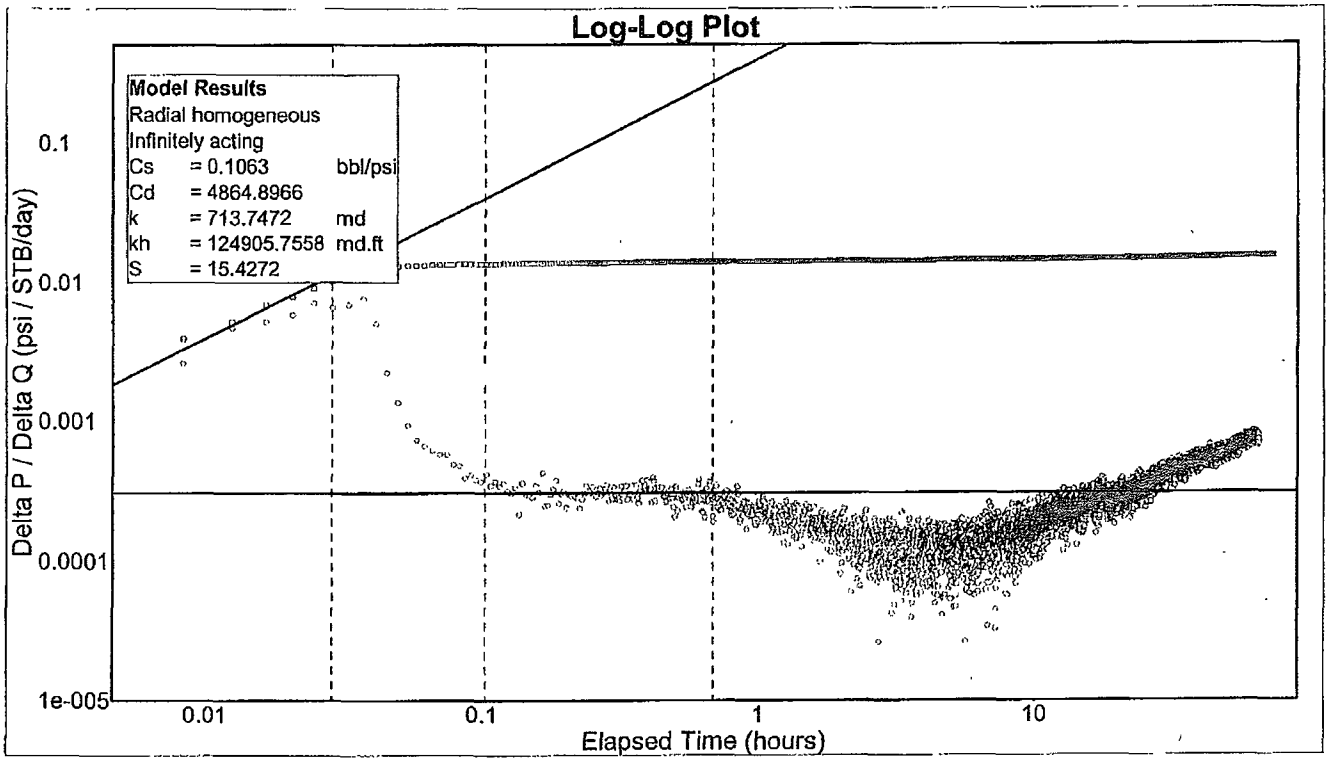

Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

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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SUBSURFACE

HOUSTON, TX ♦ BATON ROUGE, LA ♦ SOUTH BEND, IN

Production Optimization Systems | Report File: 2010 Gaines Well-3.pan

PanSystem Version 3.5 | Analysis Date: 12/02/2010

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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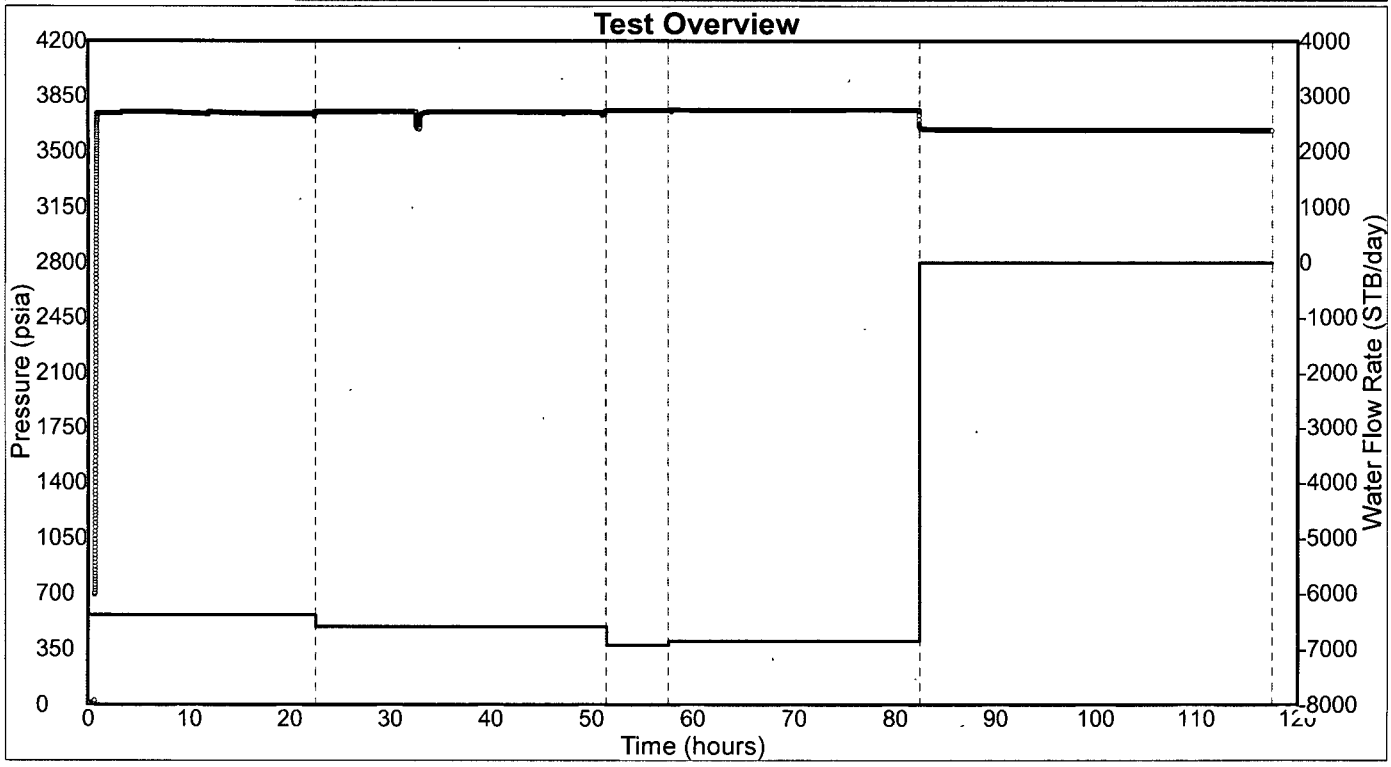
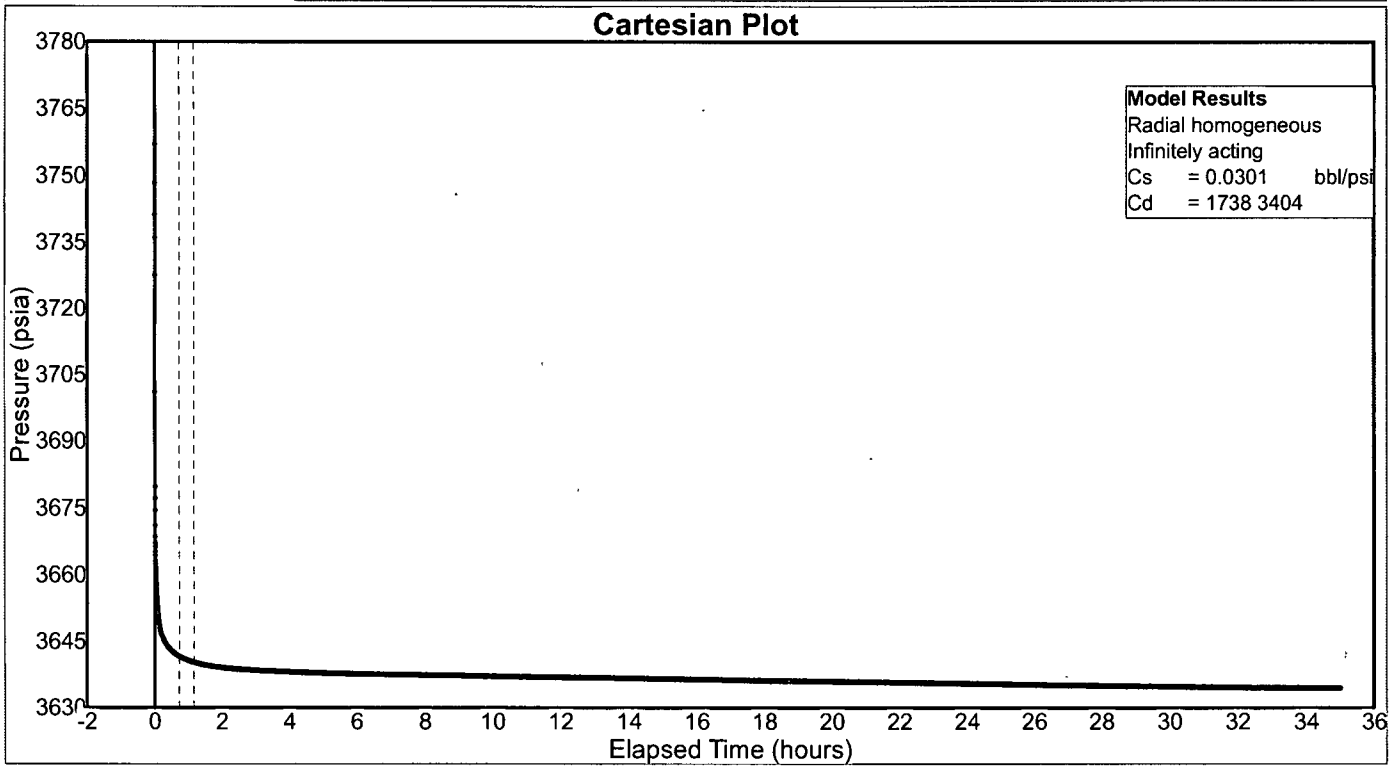

Test Overview
Pressure (psia)
Water Flow Rate (STB/day)
Time (hours)
4200
3850
3500
3150
2800
2450
2100
1750
1400
1050
700
350
0
4000
3000
2000
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-7000
-8000
0
10
20
30
40
50
60
70
80
90
100
110



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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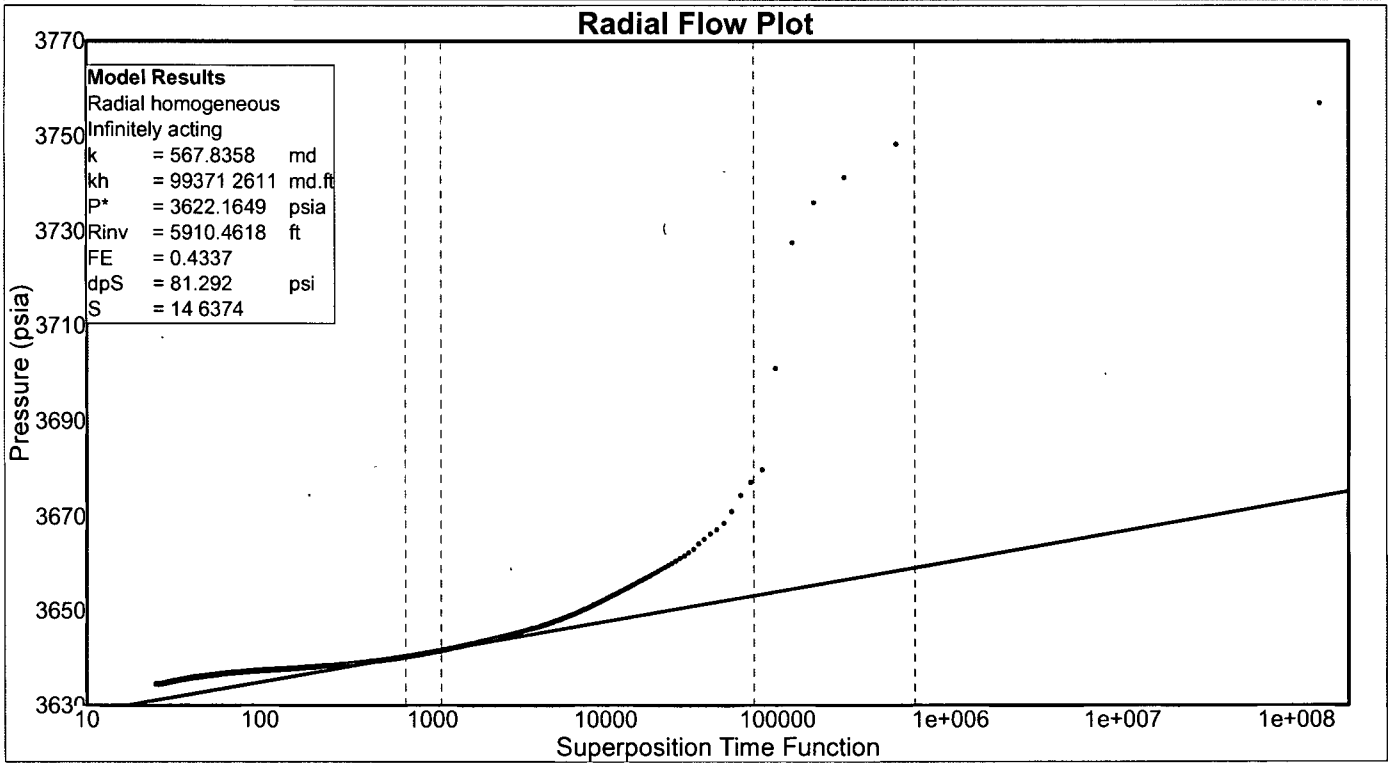

Radial Flow Plot Model Results
Radial homogeneous - Infinitely acting

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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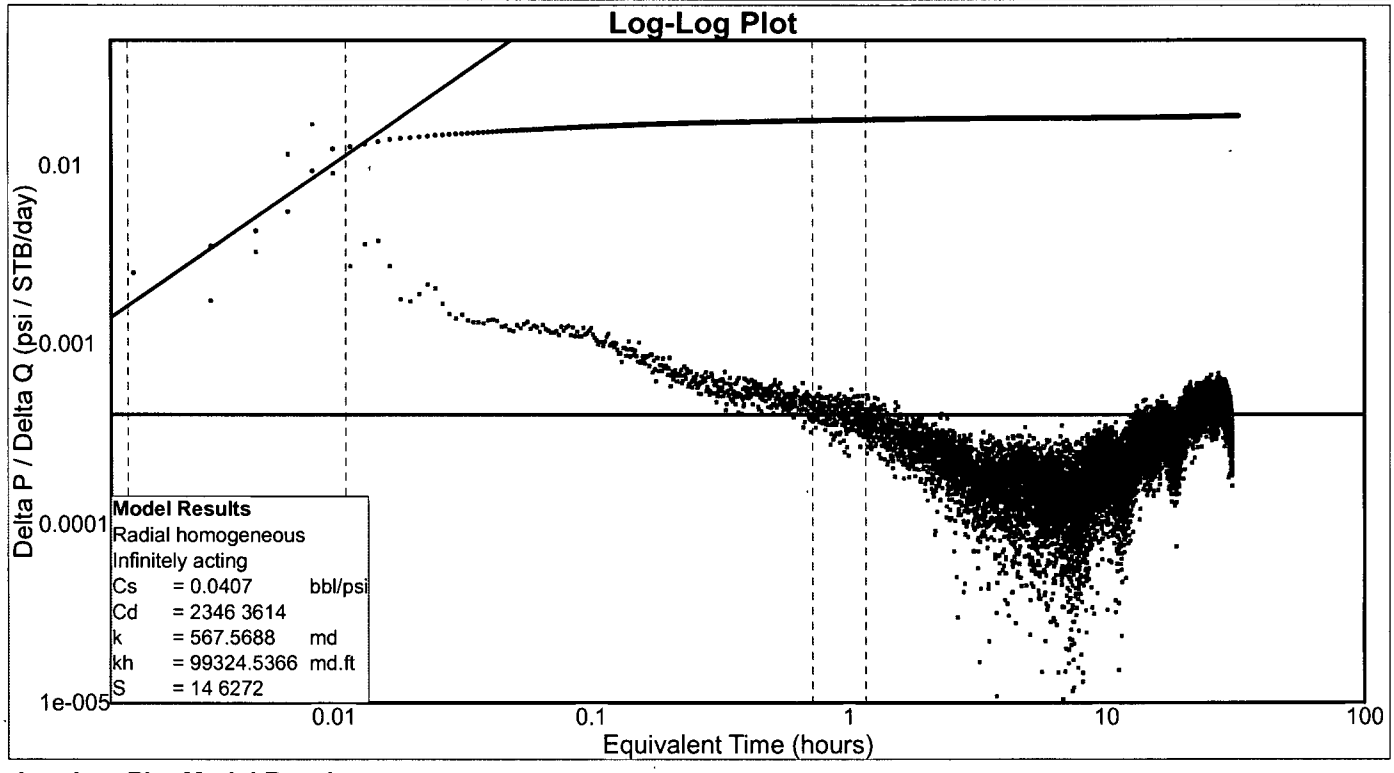

Log-Log Plot Model Results

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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Edinburgh Petroleum Services Ltd.	Report File:	2009_WDW-1.pan

PanSystem

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	WDW-1
Date	October 23 - 29, 2009
Test	Falloff
Gauge Type/Serial Number	Spartek/#76931
Gauge Depth	7,924 feet
Injection Interval	7,924 feet - 8,476 feet
Completion Type	Perforated
Top of Fill	9,001 feet
Analyst	LKM
Subsurface Project No.	70A6365

PanSystem - Copyright (C) 2000 Edinburgh Petroleum Services Ltd.

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	3591.618000 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-1
Well radius	0.3646 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.091439 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	3420.440000 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	882.9870 md
Skin factor (Well 1)	76.7254

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-803.550000	0.000000	0.000000
-707.550000	0.000000	-4382.400000
-683.550000	0.000000	-1433.860000
-563.550000	0.000000	0.000000
-539.550000	0.000000	-4254.770000
-203.550000	0.000000	-4462.970000
-76.500000	0.000000	-4112.800000
-76.483330	0.000000	-4853.610000
-76.466670	0.000000	-5914.450000
-76.350000	0.000000	-6225.260000
-76.333330	0.000000	-6789.710000
-76.300000	0.000000	-7722.350000
-75.533330	0.000000	-7666.290000
-75.250000	0.000000	-7418.400000
-67.100000	0.000000	-7971.770000
-64.483330	0.000000	-8257.370000
-64.383330	0.000000	-7891.200000
-64.366670	0.000000	-6054.090000
-64.350000	0.000000	-2149.960000
-64.333330	0.000000	-4161.270000
-64.316670	0.000000	-8860.770000
-63.700000	0.000000	-8328.690000
-63.583330	0.000000	-8062.630000
-63.500000	0.000000	-7693.030000
-63.450000	0.000000	-7340.570000
-63.300000	0.000000	-7007.660000
-62.883330	0.000000	-8390.060000
-62.816670	0.000000	-7958.400000
-62.583330	0.000000	-5958.510000
-62.233330	0.000000	-8491.890000
-62.083330	0.000000	-8056.800000
-61.866670	0.000000	-7384.460000
-61.683330	0.000000	-6364.460000
-61.183330	0.000000	-8404.800000
-60.600000	0.000000	-8026.630000
-58.933330	0.000000	-8211.430000
-58.666670	0.000000	-7995.430000
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72.117646	3592.514000	0.000000

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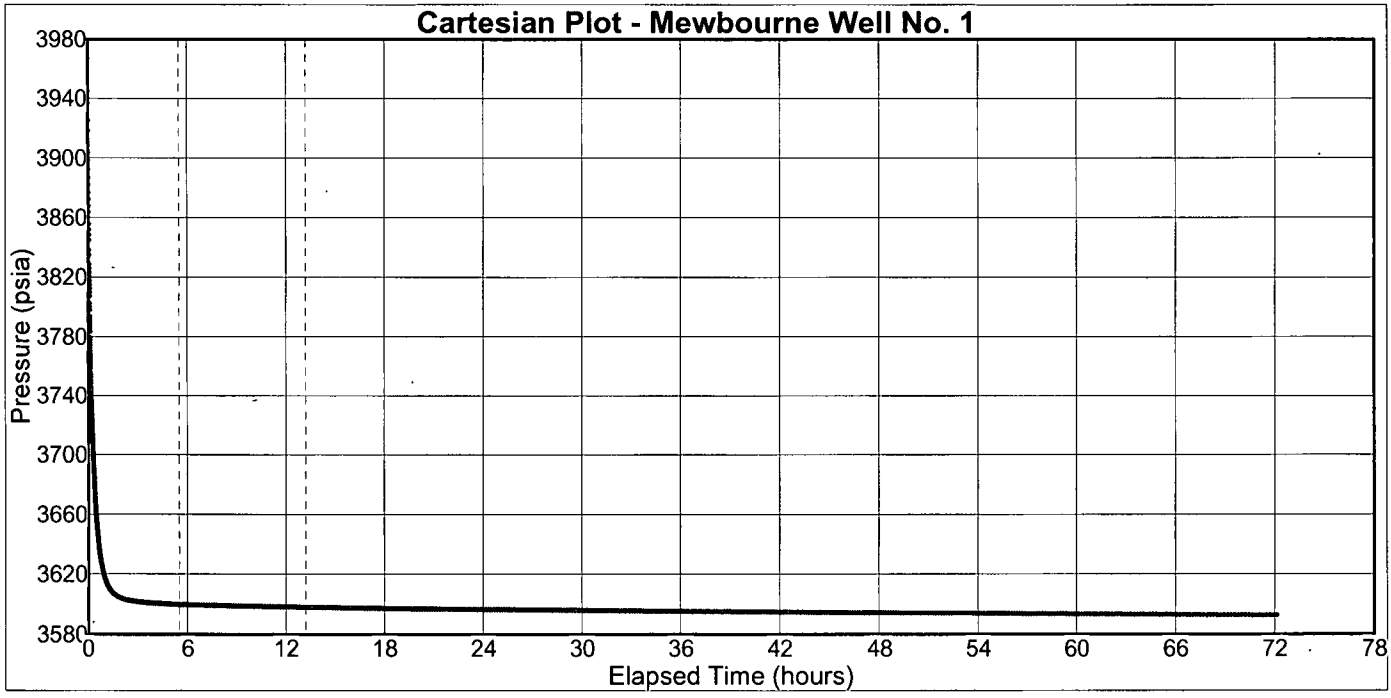

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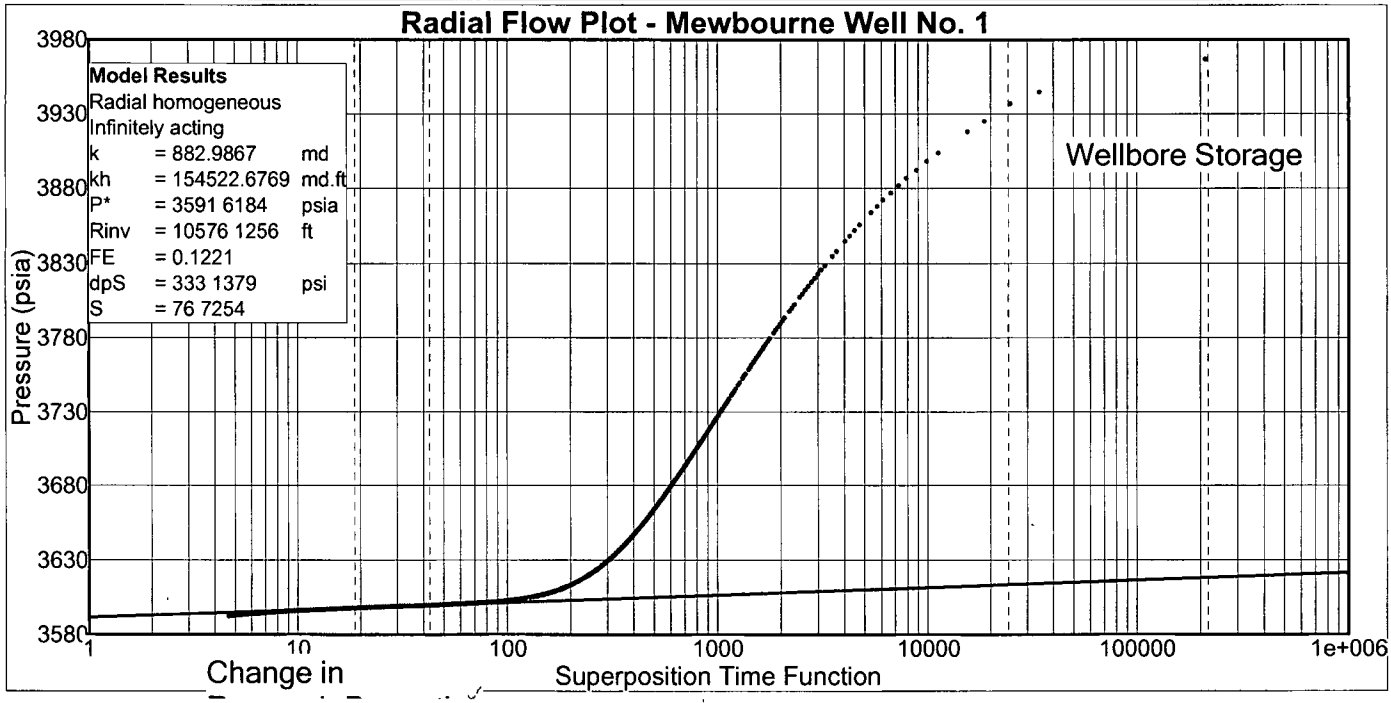


Radial Flow Plot - Mewbourne Well No. 1 Model Results

Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Permeability	882.986725 md
Permeability-thickness	1.5452e5 md.ft
Extrapolated pressure	3591.618387 psia
Radius of investigation	1.0576e4 ft
Flow efficiency	0.122094
dP skin (constant rate)	333.137884 psi
Skin factor	76.725432

Radial Flow Plot - Mewbourne Well No. 1 Line Details

Line type : Radial flow

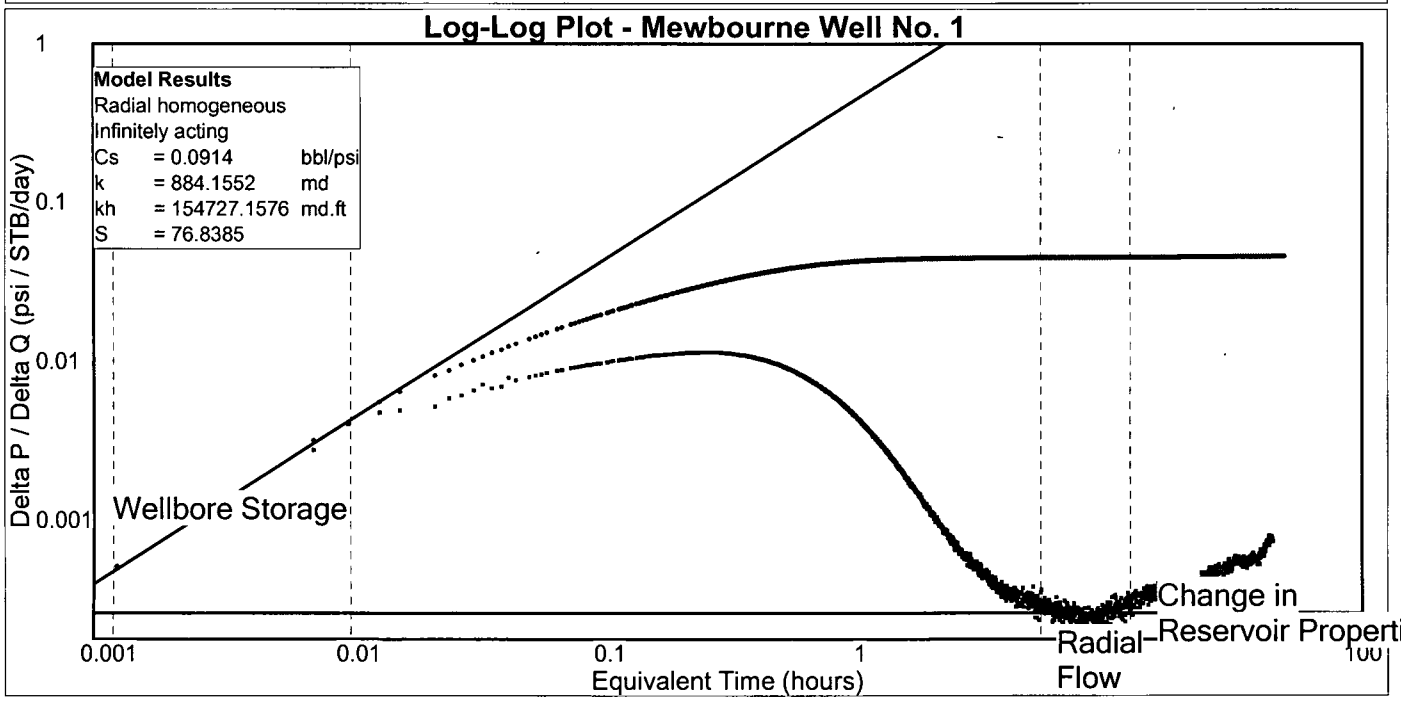
Slope : 4.99868

Intercept : 3591.62

Coefficient of Determination : 0.996681

	Radial flow
Extrapolated pressure	3591.618387 psia
Pressure at dt = 1 hour	3603.406573 psia

Number of Intersections = 0



Log-Log Plot - Mewbourne Well No. 1 Model Results
Radial homogeneous - Infinitely acting

Classic Wellbore Storage

	Value
Wellbore storage coefficient	0.091439 bbl/psi
Permeability	884.155186 md
Permeability-thickness	1.5473e5 md.ft
Skin factor	76.838547

Log-Log Plot - Mewbourne Well No. 1 Line Details
Line type : Radial flow
Slope : 0
Intercept : 0.000260084
Coefficient of Determination : Not Used
Line type : Wellbore storage
Slope : 1
Intercept : 0.455678
Coefficient of Determination : Not Used
Number of Intersections = 0

SUBSURFACE

HOUSTON, TX • BATON ROUGE, LA • SOUTH BEND, IN

Subsurface Technology, Inc | Report File: Holly Well No1 2010.pan

PanSystem Version 3.5

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	Mewbourne Well No. 1
Date	December 16 - 21, 2011
Test	Falloff
Gauge Depth	7924 feet
Injection Interval	7924 feet - 8476 feet
Completion Type	Perforated
Top of Fill	9001 feet
Last Stabilization	January 2009
Analyst	RLS
Subsurface Project No.	70A6516

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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	3716.931804 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-1
Well radius	0.3646 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.0900 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.170000 bbl/psi
Time Change for Second Storage	0.050000 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	0.570 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

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-792.000000	0.000000	-4228.888582
-768.000000	0.000000	-4391.549806
-744.000000	0.000000	-4384.479672
-720.000000	0.000000	-4384.376378
-696.000000	0.000000	-4374.848597
-672.000000	0.000000	-4176.157065
-648.000000	0.000000	-4325.868803
-624.000000	0.000000	-4308.064641
-600.000000	0.000000	-4302.856847
-576.000000	0.000000	-4268.163357
-552.000000	0.000000	-4211.405051
-528.000000	0.000000	-4314.799121
-504.000000	0.000000	-4274.892719
-480.000000	0.000000	-3790.877466
-456.000000	0.000000	-4078.245257
-432.000000	0.000000	-4080.230053
-408.000000	0.000000	-4067.616136
-384.000000	0.000000	-4044.605134
-360.000000	0.000000	-4027.491560
-336.000000	0.000000	-3777.450665
-312.000000	0.000000	-3466.263264
-288.000000	0.000000	-4606.468701
-264.000000	0.000000	-4060.063248
-240.000000	0.000000	-4051.826741
-216.000000	0.000000	-4064.050333
-192.000000	0.000000	-4064.043834
-168.000000	0.000000	-4082.369662
-144.000000	0.000000	-4090.841307
-120.000000	4031.250000	-4091.821452
-96.000000	4031.250000	-4087.686695
-72.000000	4031.250000	-4091.460208
-47.449664	4031.250000	-4113.064348
-23.489933	4040.625000	-4063.756218
0.696213	4045.107422	-3687.836512
21.181005	4039.775391	-3633.179677
49.300562	4046.689453	-4268.197524
82.243625	4145.268121	-4683.825820
116.393616	3722.481995	0.000000

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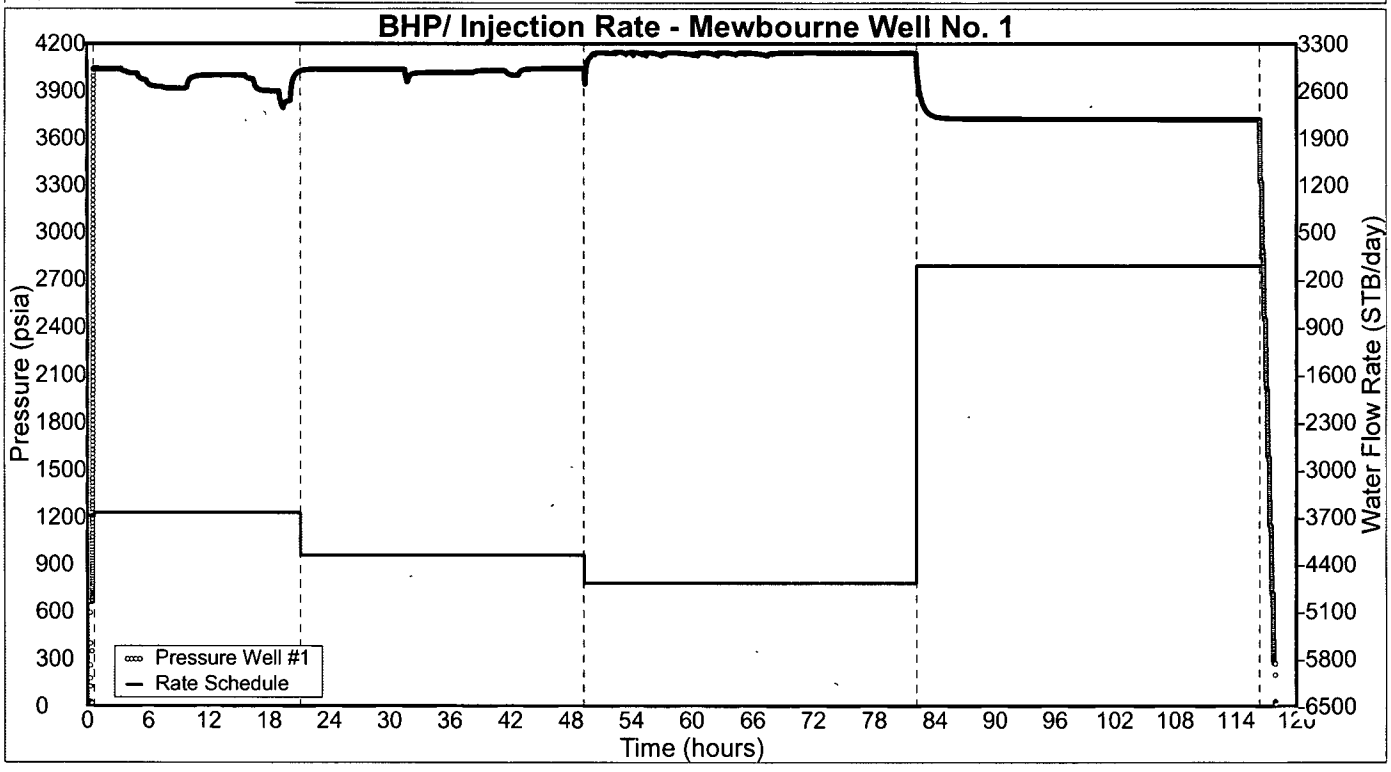

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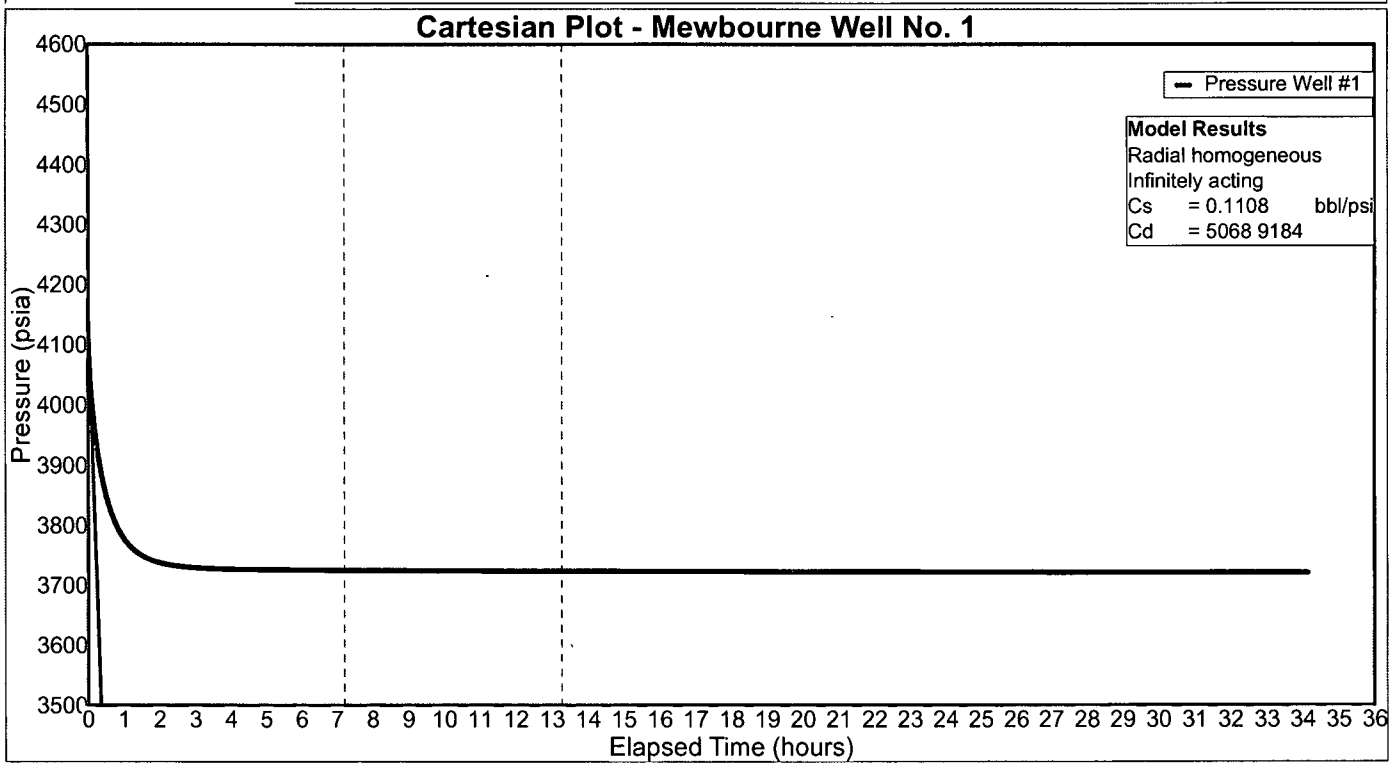

Cartesian Plot - Mewbourne Well No. 1 Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.110797 bbl/psi
Dimensionless wellbore storage	5068.918371

Cartesian Plot - Mewbourne Well No. 1 Line Details
Line type : Wellbore storage
Slope : -1761.41
Intercept : 4146.57
Coefficient of Determination : 0.99476
Number of Intersections = 0

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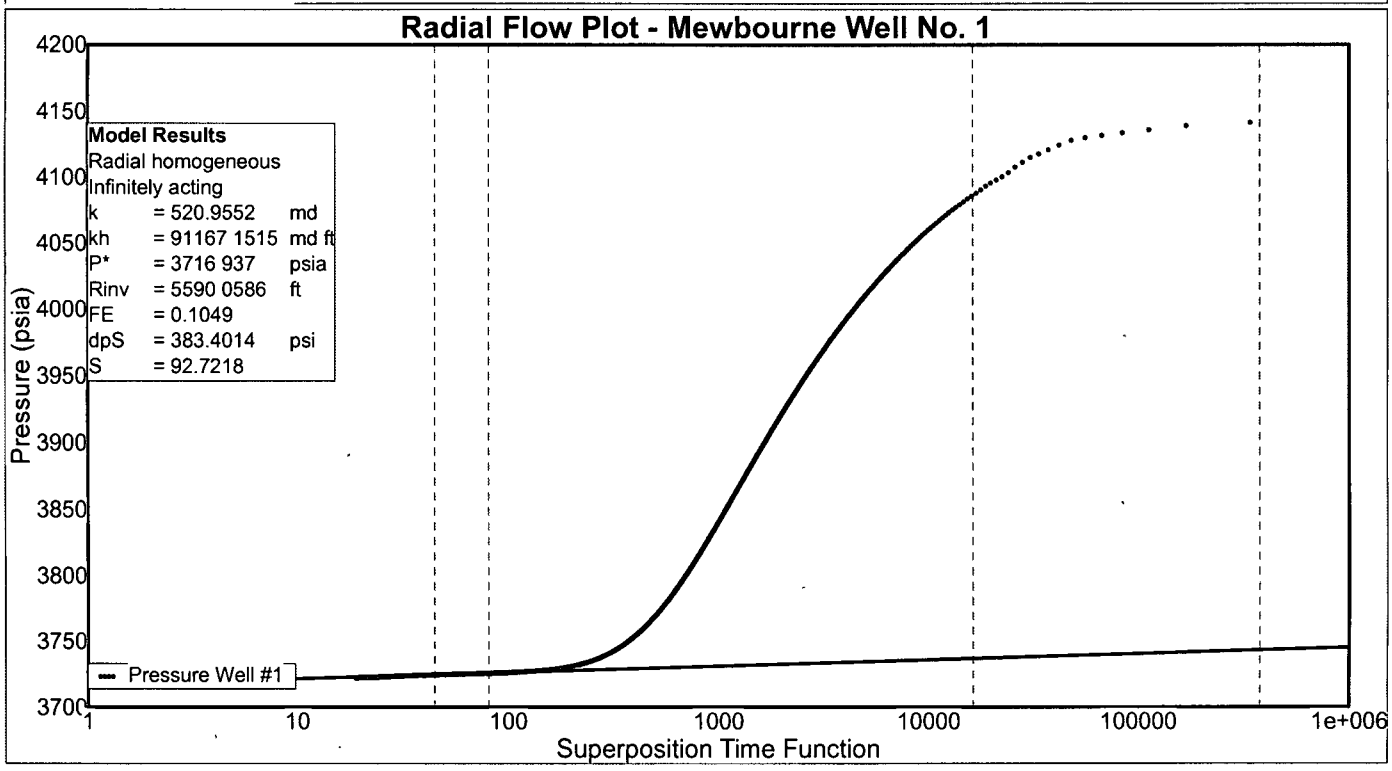

Radial Flow Plot - Mewbourne Well No. 1 Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Permeability	520.955151 md
Permeability-thickness	9.1167e4 md.ft
Extrapolated pressure	3716.937002 psia
Radius of investigation	5590.058560 ft
Flow efficiency	0.104895
dP skin (constant rate)	383.401416 psi
Skin factor	92.721791

Radial Flow Plot - Mewbourne Well No. 1 Line Details
Line type : Radial flow
Slope : 4.76056
Intercept : 3716.94
Coefficient of Determination : 0.991613

	Radial flow
Extrapolated pressure	3716.937002 psia
Pressure at dt = 1 hour	3730.043896 psia

Number of Intersections = 0

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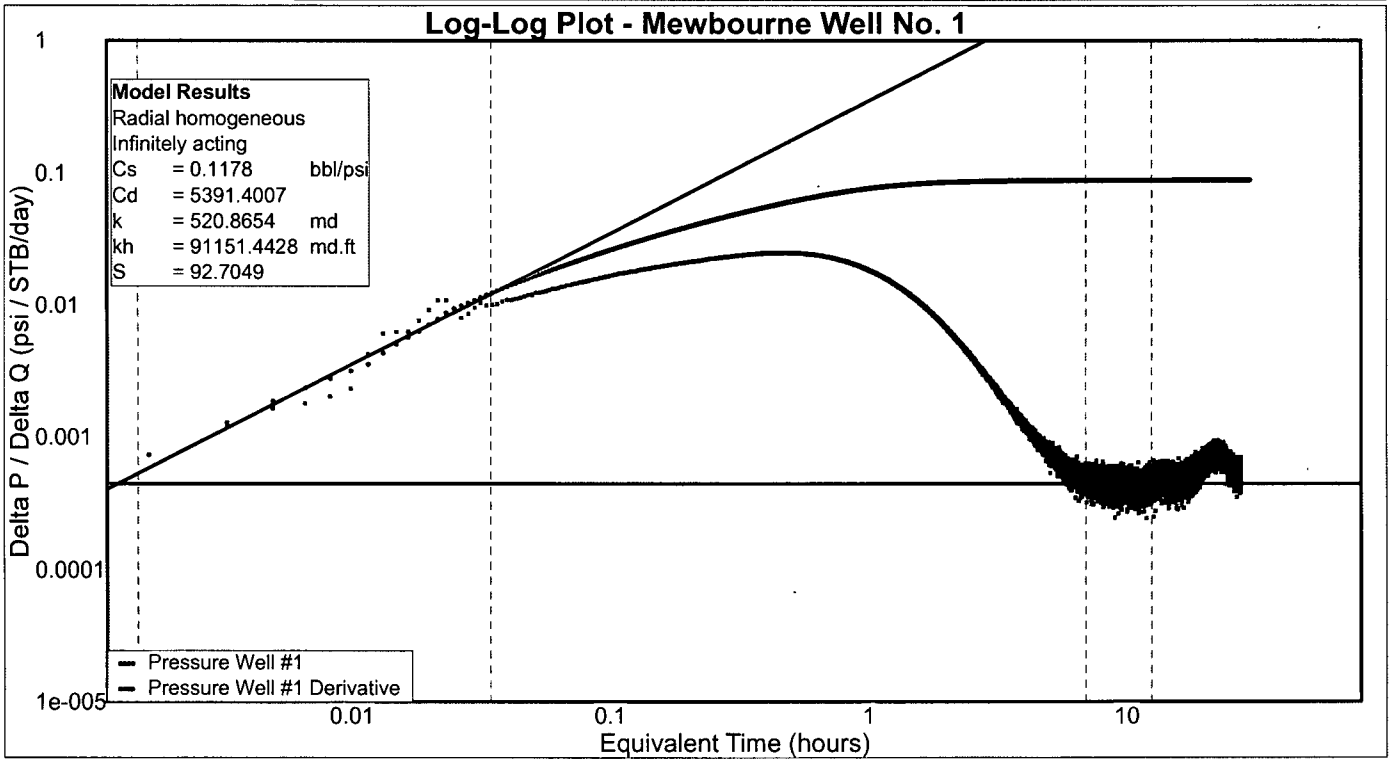

Log-Log Plot - Mewbourne Well No. 1 Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.117846 bbl/psi
Dimensionless wellbore storage	5391.400700
Permeability	520.865387 md
Permeability-thickness	9.1151e4 md.ft
Skin factor	92.704903

Log-Log Plot - Mewbourne Well No. 1 Line Details
Line type : Radial flow
Slope : 0
Intercept : 0.000441485
Coefficient of Determination : Not Used
Line type : Wellbore storage
Slope : 1
Intercept : 0.353569
Coefficient of Determination : Not Used
Number of Intersections = 0

PanSystem - Copyright (C) 2006 Edinburgh Petroleum Services Ltd.

EXHIBIT 6

EXHIBIT 6: CHANGES MADE TO 2010 TEST PLAN

Added to 2011 Revised Test Plan:

Table of Contents

EXHIBIT 5: Historical Data 2009 and 2010 Falloff Test Results
Well No. 1 (Mewbourne)
Well No. 2 (Chukka)
Well No. 3 (Gaines)

EXHIBIT 6: Changes to 2010 Test Plan

Added to 2011 Revised Test Plan:

Why does a temperature survey need to be performed?

From New Mexico Oil Conservation Division (OCD) UIC Manual

20.6.2.5204 MECHANICAL INTEGRITY FOR CLASS I NON-HAZARDOUS WASTE INJECTION WELLS AND CLASS III WELLS:

A. A Class I non-hazardous waste injection well or Class III well has mechanical integrity if there is no detectable leak in the casing, tubing or packer which the secretary 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 secretary considers to be significant.

B. Prior to well injection and at least once every five years or more frequently as the secretary may require for good cause during the life of the well, the discharger must demonstrate that a Class I non-hazardous waste injection well or Class III well has mechanical integrity. The demonstration shall be made through use of the following tests:

20.6.2 NMAC 42

(1) For evaluation of leaks,

(a) Monitoring of annulus pressure (after an initial pressure test with liquid or gas before operation commences), or

(b) Pressure test with liquid or gas;

(2) For determination of conduits for fluid movement,

(a) The results of a temperature or noise log, or

(b) Where the nature of the casing used for Class III wells precludes use of these logs, cementing records and an appropriate monitoring program as the secretary may require which will demonstrate the presence of adequate cement to prevent such movement;

Temperature surveys are performed every 5 years.

SECTION III - Developing a Test Plan

Added to the 2011 Test Plan:

5. With the well still shut in, run a temperature survey from top of fluid level to the fill. After completing the survey, return the well to Navajo.

From 2010 Test Plan:

The following schedule is proposed after approval of test plan:

Testing of Well No. 3 (Gaines) on the third week of August, 2010;

Testing of Well No. 2 (Chukka) on the third week of September 2010;

Testing of Well No. 1 (Mewbourne) on the third week of October 2010.

From 2011 Test Plan:

The following schedule is proposed after approval of test plan:

Testing of Well No. 1 (Mewbourne) on the second week of November 2011.

Testing of Well No. 2 (Chukka) on the third week of October 2011;

Testing of Well No. 3 (Gaines) on the second week of December 2011;

From 2010 Test Plan:

Well No. 1 (Mewbourne)

The general procedure for testing Well No. 1 would be to inject into Well No. 1 for a period of 30 hours with Well No. 2 and Well No. 3 shut-in. Following the 30-hour injection period Well No. 1 will be shut-in for 30 hours with Well No. 2 and Well No. 3 shut-in. In the first 30 hours, only Well No. 1 will be operating at its full rate. After the injection period is completed, all three wells will be shut-in for 30 hours. The excess volume generated by the plant will be stored in the holding tank at the plant.

Estimated Well Test Rates

HOURS	24	6	24	10
Well 1 Mewbourne Test Rates (gpm)	**260**	**260**	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0
Well 3 Gaines Test Rates (gpm)	0	0	0	0

Total Waste Fluid Gain for the Test Period	35,489 bbls
Total Waste Fluid Loss to Well No. 1 for the Test Period	11,143 bbls
Total Waste Fluid Generated	46,629 bbls

Added to 2011 Test Plan:

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill.

From 2010 Test Plan:

Well No. 2 (Chukka)

The general procedure for testing Well No. 2 would be to inject into Well No. 2 for a period of 30 hours, with Well No. 1 and Well No. 3 shut-in. Following the 30-hour injection period, Well No. 2 will be shut-in for 30 hours, with Well No. 1 and Well No. 3 shut-in. For the first 30 hours, only Well No. 2 will be operating at its full rate. For the next 30 hours, all three (3) wells will be shut-in. The excess volume generated by the plant will be stored in the holding tank at the plant.

HOURS	24	6	24	10
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0
Well 2 Chukka Test Rates (gpm)	**175**	**175**	0	0
Well 3 Gaines Test Rates (gpm)	0	0	0	0

Total Waste Fluid Gain for the Test Period	39,129 bbls
Total Waste Fluid Loss to Well No. 2 for the Test Period	7,500 bbls
Total Waste Fluid	49,629 bbls

Added to 2011 Test Plan:

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill. An additional pressure test will be performed. A pump track will pump brine water in the annulus to 600 psi and the annulus pressure will be recorded using a chart recorder for 30 minutes.

From 2010 Test Plan:

Well No. 3 (Gaines)

The general procedure for testing Well No. 3 would be to inject into Well No. 3 for a period of 30 hours with Well No. 1 and Well No. 2 shut-in. Following the 30-hour injection period, Well No. 3 will be shut-in for 30 hours, with Well No. 1 and Well No. 2 shut-in. For the first 30 hours, only Well No. 3 will be operating at its full rate. For the next 30 hours all three (3) wells will be shut-in. The excess volume generated by the plant will be stored in the holding tank at the plant.

HOURS	24	6	24	10
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0
Well 3 Gaines Test Rates (gpm)	**300**	**300**	0	0

Total Waste Fluid Gain for the Test Period	33,771 bbls
Total Waste Fluid Loss to Well No. 3 for the Test Period	12,857 bbls
Total Waste Fluid	46,628 bbls

Added to 2011 Test Plan:

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill.

From 2010 Test Plan:

SECTION IV - Scheduling of Test and Report

The schedule for the test must be mutually agreed upon between OCD and the permittee so that OCD has the opportunity to witness the test. The operator should submit a summary report to OCD within 30 days of test completion.

It is currently estimated that the Test Plan will be submitted to OCD for approval during July 2010. Subsequently, after approval, the field work will be performed in August, September, and October. The report will be submitted 30 days thereafter for each individual well.

Added to 2011 Test Plan:

SECTION IV - Scheduling of Test and Report

The schedule for the test must be mutually agreed upon between OCD and the permittee so that OCD has the opportunity to witness the test. The operator should submit a summary report to OCD within 30 days of test completion.

It is currently estimated that the Test Plan will be submitted to OCD for approval during August 2011. Subsequently, after approval, the field work will be performed in October, November, and December. The report will be submitted 30 days thereafter for each individual well.

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B. Prior to well injection and at least once every five years or more frequently as the secretary may require for good cause during the life of the well, the discharger must demonstrate that a Class I non-hazardous waste injection well or Class III well has mechanical integrity. The demonstration shall be made through use of the following tests:

20.6.2 NMAC 42

(1) For evaluation of leaks,

(a) Monitoring of annulus pressure (after an initial pressure test with liquid or gas before operation commences), or

(b) Pressure test with liquid or gas;

(2) For determination of conduits for fluid movement,

(a) The results of a temperature or noise log, or

(b) Where the nature of the casing used for Class III wells precludes use of these logs, cementing records and an appropriate monitoring program as the secretary may require which will demonstrate the presence of adequate cement to prevent such movement;

Temperature surveys are performed every 5 years.

SECTION III - Developing a Test Plan

Added to the 2011 Test Plan:

5. With the well still shut in, run a temperature survey from top of fluid level to the fill. After completing the survey, return the well to Navajo.

From 2010 Test Plan:

The following schedule is proposed after approval of test plan:

Testing of Well No. 3 (Gaines) on the third week of August, 2010;

Testing of Well No. 2 (Chukka) on the third week of September 2010;

Testing of Well No. 1 (Mewbourne) on the third week of October 2010.

From 2011 Test Plan:

The following schedule is proposed after approval of test plan:

Testing of Well No. 1 (Mewbourne) on the second week of November 2011.

Testing of Well No. 2 (Chukka) on the third week of October 2011;

Testing of Well No. 3 (Gaines) on the second week of December 2011;

From 2010 Test Plan:

Well No. 1 (Mewbourne)

The general procedure for testing Well No. 1 would be to inject into Well No. 1 for a period of 30 hours with Well No. 2 and Well No. 3 shut-in. Following the 30-hour injection period Well No. 1 will be shut-in for 30 hours with Well No. 2 and Well No. 3 shut-in. In the first 30 hours, only Well No. 1 will be operating at its full rate. After the injection period is completed, all three wells will be shut-in for 30 hours. The excess volume generated by the plant will be stored in the holding tank at the plant.

Estimated Well Test Rates

HOURS	24	6	24	10
Well 1 Mewbourne Test Rates (gpm)	**260**	**260**	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0
Well 3 Gaines Test Rates (gpm)	0	0	0	0

Total Waste Fluid Gain for the Test Period	35,489 bbls
Total Waste Fluid Loss to Well No. 1 for the Test Period	11,143 bbls
Total Waste Fluid Generated	46,629 bbls

Added to 2011 Test Plan:

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill.

From 2010 Test Plan:

Well No. 2 (Chukka)

The general procedure for testing Well No. 2 would be to inject into Well No. 2 for a period of 30 hours, with Well No. 1 and Well No. 3 shut-in. Following the 30-hour injection period, Well No. 2 will be shut-in for 30 hours, with Well No. 1 and Well No. 3 shut-in. For the first 30 hours, only Well No. 2 will be operating at its full rate. For the next 30 hours, all three (3) wells will be shut-in. The excess volume generated by the plant will be stored in the holding tank at the plant.

HOURS	24	6	24	10
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0
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Well 3 Gaines Test Rates (gpm)	0	0	0	0

Total Waste Fluid Gain for the Test Period	39,129 bbls
Total Waste Fluid Loss to Well No. 2 for the Test Period	7,500 bbls
Total Waste Fluid	49,629 bbls

Added to 2011 Test Plan:

Following the pressure falloff, a temperature survey will be performed from the surface to the top of the fill. An additional pressure test will be performed. A pump track will pump brine water in the annulus to 600 psi and the annulus pressure will be recorded using a chart recorder for 30 minutes.

From 2010 Test Plan:

Well No. 3 (Gaines)

The general procedure for testing Well No. 3 would be to inject into Well No. 3 for a period of 30 hours with Well No. 1 and Well No. 2 shut-in. Following the 30-hour injection period, Well No. 3 will be shut-in for 30 hours, with Well No. 1 and Well No. 2 shut-in. For the first 30 hours, only Well No. 3 will be operating at its full rate. For the next 30 hours all three (3) wells will be shut-in. The excess volume generated by the plant will be stored in the holding tank at the plant.

HOURS	24	6	24	10
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0
Well 3 Gaines Test Rates (gpm)	**300**	**300**	0	0

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Susana Martinez
Governor

John H. Bemis
Cabinet Secretary

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

Jami Bailey
Division Director
Oil Conservation Division

July 15, 2011

Mr. Darrell Moore
Navajo Refining Company
501 East Main Street, P.O. Drawer 159
Artesia, New Mexico 88211-0159

RE: **Fall-Off Test (FOT) Scheduling**

Dear Mr. Moore:

On June 14, 2011 the Oil Conservation Division (OCD) sent out an e-mail reminder requesting that you schedule each of your wells for the 2011 FOT by June 30, 2011.

The OCD has not received a response to the e-mail. Please contact Mr. Carl Chavez of my staff at (505) 476-3490 or via E-mail: CarlJ.Chavez@state.nm.us to schedule FOTs for your wells by COB Friday July 22, 2011. Thank you for your cooperation in this matter.

Sincerely,

Daniel Sanchez
UIC Program Director

DS/cjc
Attachment

xc: OCD District Offices

File: OCD Online "FOT"

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, June 14, 2011 10:53 AM
To: 'Patterson, Bob'; 'Dan Gibson'; 'Moore, Darrell'; 'Lackey, Johnny'; 'Schmaltz, Randy'
Cc: Dade, Randy, EMNRD; Perrin, Charlie, EMNRD; VonGonten, Glenn, EMNRD
Subject: New Mexico UIC Class I (non-hazardous) Well MIT & Annual Fall-Off Test Scheduling with Completion by September 30, 2011

Gentlemen:

Re:

Key Energy Services: UICI-005
Navajo Refining Company: UICI-008; UICI-008-0 & UICI-008-1
Western Refining Southwest, Inc.: UICI-009

Good morning. It is that time of year again to remind operators that their annual MITs and Fall-Off Tests (FOT) for this season must be completed by 9/30/2011. The list of operator names w/ associated UIC Class I (non-hazardous) Wells are provided above.

Operators are aware of the MIT (30 min @ 300 psig or more w/ Bradenhead) requirement(s) that are typically run concurrently (usually before the FOT) with the FOT and more frequent where required.

The FOTs span several days with a couple of important notes to operators from past testing, please install your bottom hole gauge(s) with recorder(s) at least 48-hours in advance of the pump shut-off during the steady-state injection period. Also, you are accountable for your OCD approved FOT Test Plan and the requirements in the UIC Test Guidance at http://www.emnrd.state.nm.us/ocd/documents/UICGuidance.pdf.

You may access your well information on OCD Online either by API# and/or Permit Number at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderCriteria.aspx and http://www.emnrd.state.nm.us/OCD/OCDPermitting/Data/Wells.aspx. For information on New Mexico's UIC Program and training information, please go to: http://www.emnrd.state.nm.us/ocd/Publications.htm.

Please contact me at (505) 476-3490 on or before June 30, 2011 to schedule your preferred MIT and FOT date and time. I will work to finalize the witness schedule with each of you. Thank you in advance for your cooperation.

File: Class I (non-hazardous) Well Files UICI- 5, 8, 8-0, 8-1 & 9

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
"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)

Chavez, Carl J, EMNRD

From: Moore, Darrell [Darrell.Moore@hollyfrontier.com]
Sent: Friday, July 01, 2011 3:13 PM
To: Chavez, Carl J, EMNRD; Lackey, Johnny
Cc: Sanchez, Daniel J., EMNRD; Dade, Randy, EMNRD
Subject: RE: UICI-8 MIT Explanation Due

Carl

Subsurface was here at the plant this week running APT tests on the wells. Those results, along with the PE certification, should be to you during the middle of July. We are shooting for the same time frame for the FOT follow-up since the same people (Subsurface) are doing that.

Due to Subsurface's schedule, that's the soonest we could get all this done.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, July 01, 2011 8:48 AM
To: Lackey, Johnny; Moore, Darrell
Cc: Sanchez, Daniel J., EMNRD; Dade, Randy, EMNRD
Subject: FW: UICI-8 MIT Explanation Due

Johnny and Darrell:

Good morning. The OCD has not received a response to its request for a signed PE opinion on the anomalous differential annulus pressures occurring in WDWs 1, 2 and 3. At the /31 meeting in Santa Fe OCD requested this information by COB on 6/10. Was this sent? If not, when can Navajo Refining Company have its down hole PE Expert provide an opinion for OCD review?

Also, OCD requested a response to the annual Fall-Off Test (FOT) performed in 2010 related to your request for a reduced FOT schedule for the aforementioned WDWs. The response was expected by 6/30 or early July 2011 (5/31 Mtg. in Santa Fe). When can OCD expect to receive this?

Please contact me if you have questions. Thank you.

File: OCD Online WDWs "Annual Report" and "FOT" Thumbnails

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
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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.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, July 01, 2011 8:48 AM
To: 'Lackey, Johnny'; 'Moore, Darrell'
Cc: Sanchez, Daniel J., EMNRD; Dade, Randy, EMNRD
Subject: FW: UICI-8 MIT Explanation Due
Attachments: UICI-8 MIT Explanation Due

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

Chavez, Carl J, EMNRD

Subject: UICI-8 MIT Explanation Due
Location: Office

Start: Fri 6/10/2011 4:00 PM
End: Fri 6/10/2011 4:30 PM

Recurrence: (none)

Organizer: Chavez, Carl J, EMNRD

OCD requested PE explanation for variation in annulus pressure in WDWs 1, 2 & 3 due by today that would explain why OCD should not consider wells failing MIT.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, June 14, 2011 10:53 AM
To: 'Patterson, Bob'; 'Dan Gibson'; 'Moore, Darrell'; 'Lackey, Johnny'; 'Schmaltz, Randy'
Cc: Dade, Randy, EMNRD; Perrin, Charlie, EMNRD; VonGonten, Glenn, EMNRD
Subject: New Mexico UIC Class I (non-hazardous) Well MIT & Annual Fall-Off Test Scheduling with Completion by September 30, 2011

Gentlemen:

Re:

Key Energy Services: UICI-005
Navajo Refining Company: UICI-008; UICI-008-0 & UICI-008-1
Western Refining Southwest, Inc.: UICI-009

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You may access your well information on OCD Online either by API# and/or Permit Number at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderCriteria.aspx and http://www.emnrd.state.nm.us/OCD/OCDPermitting/Data/Wells.aspx. For information on New Mexico's UIC Program and training information, please go to: http://www.emnrd.state.nm.us/ocd/Publications.htm.

Please contact me at (505) 476-3490 on or before June 30, 2011 to schedule your preferred MIT and FOT date and time. I will work to finalize the witness schedule with each of you. Thank you in advance for your cooperation.

File: Class I (non-hazardous) Well Files UICI- 5, 8, 8-0, 8-1 & 9

Carl J. Chavez, CHMM
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Office: (505) 476-3490
Fax: (505) 476-3462
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http://www.emnrd.state.nm.us/ocd/environmental.htm#environmental)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 24, 2010 9:08 AM
To: Dade, Randy, EMNRD
Cc: 'Moore, Darrell'; Lackey, Johnny; Rusty Smith
Subject: FW: Navajo Refining Company (UICI-8; UICI-8-1 & UICI-8-0) Annual Fall-Off Test (FOT) Electronic Test Data Request Work Plan & OCD Clarifications

FYI, in case OCD Artesia is available to witness important aspects of a fall-off test. I am copying Navajo Refining Company (NRC) so they are aware of OCD aspects and/or concerns associated with their FOT and recent work plan submittal for the upcoming FOTs. I think we will have to wait and see how this year's annual FOT results go on these wells to make a final determination of whether it will be approvable for next year and beyond.

The annual FOT for WDWs 1, 2 and 3 will begin one well per month in September 2010 and end in November 2010. Some important aspects of the tests to observe or witness are bottom hole gauge installation at least 48 hours in advance of well shut-in; the period prior to injection shut-in and FOT monitoring for confirmation that a steady-state injection rate condition was achieved (NRC should be monitoring T,P&Q during the 48 hrs. leading up to FOT monitoring); instant or quick shut-off of flow into the well was achieved; and to observe bottom-hole pressure differential after shut-off. If steady-state injection is not achieved coupled with instant shut-off, the test results may be compromised. In addition, there should be some noticeable fall-off in pressure in the injection zone and OCD has required at least 3 days of monitoring to see the pressure fall off. NRC maintains that they need about 24 hours to show the pressure drop off, and this may be acceptable, but we will have to see the test results. There is concern that they may not be creating the pressure buildup necessary to create a pressure differential that will adequately characterize the characteristics of the injection zone, and NRC has formulated some flow rates per well that should create the pressure buildup needed to be consistent and/or comparible with past FOTs.

There are a couple of concerns identified in the FOT work plan (work plan) that I am copying Navajo Refining Company (NRC) so they are aware. The concerns are:

1) A steady-state injection condition must be achieved in advance of system shut-off and FOT monitoring. The shut-off should also be instantaneous or quick. Bottom hole temperature, pressure and flow rates should be recorded for 48 hours before shut-in of injection to the well.
2) On page 9 of the work plan, the goal is **NOT** to achieve a pressure differential of 100 psi before and after injection shut-in, but OCD uses this rule of thumb for an over pressured injection zone condition if the pressure differential approaches just 100 psi. Therefore, NRC's flow rates in the work plan must create sufficient pressure buildup in the injection zone to allow FOT monitoring to record true injection zone characteristics. In past FOT monitoring, there has been a significant pressure differential realized indicating the injection zone has good porosity, transmissibility, etc.
3) NRC must ensure that it submits C-103s for all work performed on each of its disposal wells, i.e., Page 11 No. 10 in the work plan indicates that NRC performed acid stimulation on WDWs 1, 2, and 3. It must also submit C-103s for each well it performs work to for final OCD approvals of their FOTs.
4) Page 12 No. 15 of the work plan seems to indicate that NRC's goal is to achieve a pressure differential at FOT monitoring of about 100 psi. Again, per No. 2 above, this is not the goal. We should see a significant pressure drop over the FOT monitoring period, and if it is not consistent with past FOT monitoring results, then NRC's request for a shorter FOT monitoring period may fail in providing true injection zone characteristics.

Please contact me if you have questions. Thanks.

Carl J. Chavez, CHMM
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Oil Conservation Division, Environmental Bureau
1220 South St. Francis Dr., Santa Fe, New Mexico 87505
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E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Chavez, Carl J, EMNRD
Sent: Tuesday, August 10, 2010 8:21 AM
To: 'Moore, Darrell'
Cc: Lackey, Johnny; 'Ken Davis'; Rusty Smith; Jones, William V., EMNRD
Subject: RE: Annual Fall-Off Test Electronic Test Data Request

Darrell:

Approved. Let's get the tests wrapped up in November 2010 and let OCD know when you want to run the pulse tests for the proposed one well fall-off test to be performed annually consideration for approval. Also, you will need to submit a C-103 and reference your approved fall-off test plan.

One important note is that OCD wants the bottom hole gauges installed a minimum of 48 hours in advance of fall-off test monitoring. We want pressure and flow rate data to verify that a steady-state injection condition was reached and also for the software evaluation. I think I shared this with you recently on things OCD noticed last year on the fall-off test.

Please contact me if you have questions. Thank you.

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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: Tuesday, August 10, 2010 8:09 AM
To: Chavez, Carl J, EMNRD
Cc: Lackey, Johnny; 'Ken Davis'; Rusty Smith
Subject: RE: Annual Fall-Off Test Electronic Test Data Request

Carl

We are scheduling the fall off tests in September, October and November...much like last year. One well each month. The procedure we Fed-Exed you last week is our preferred plan of action. We are waiting for OCD's approval of that plan to finalize the timing of the tests. The electronic data on CD will be no problem.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Tuesday, August 10, 2010 6:20 AM
To: Moore, Darrell
Cc: Lackey, Johnny
Subject: Annual Fall-Off Test Electronic Test Data Request

Darrell:

Good morning. Similar to last year's fall-off test and electronic data submittal, OCD needs the CD with the electronic data for our software evaluation from this year's test.

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

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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, July 13, 2010 11:22 AM
To: 'Moore, Darrell'
Subject: UICI-Class I WDW-1 and WDW-2 MITs w/ Bradenheads to be completed by 9/30/2010 + Annual Fall-Off Test Scheduling

Darrell:

Good morning. FYI, OCD records indicate that MITs are needed for WDW-1 and WDW-2 by 9/30/2010.

Also, I have not heard when Navajo Refining Company is scheduling the Annual Fall-Off Test, which also needs to be completed by 9/30/2010. I presume the above wells could be MIT'd before at the time of and before the FOT.

Please advise or clarify.

Thank you.

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E-mail: CarlJ.Chavez@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, April 23, 2010 7:25 AM
To: 'Patterson, Bob'; 'Dan Gibson'; 'Moore, Darrell'; 'Lackey, Johnny'; 'Schmaltz, Randy'
Cc: Dade, Randy, EMNRD; Perrin, Charlie, EMNRD
Subject: New Mexico UIC Class I (non-hazardous) Well MIT & Annual Fall-Off Test Scheduling with Completion by September 30, 2010

Gentlemen:

Re:

Key Energy Services: UICI-005
Navajo Refining Company: UICI-008; UICI-008-0 & UICI-008-1
Western Refining Southwest: BW-028

Good morning. It is that time of year again to remind operators that their annual MITs and Fall-Off Tests (FOT) for this season must be completed by 9/30/2010. The list of operator names w/ associated UIC Class I (non-hazardous) Wells are provided above.

Operators are aware of the MIT (30 min @ 300 psig or more w/ Bradenhead) requirement(s) and more frequent where required.

The FOTs span several days with a couple of important notes to operators from past testing, please install your bottom hole gauge(s) with recorder(s) at least 48-hours in advance of the pump shut-off during the steady-state injection period. Also, you are accountable for your OCD approved FOT Test Plan and the requirements in the UIC Test Guidance at http://www.emnrd.state.nm.us/ocd/documents/UICGuidance.pdf.

You may access your well information on OCD Online either by API# and/or Permit Number at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderCriteria.aspx and http://www.emnrd.state.nm.us/OCD/OCDPermitting/Data/Wells.aspx. For information on New Mexico's UIC Program and training information, please go to: http://www.emnrd.state.nm.us/ocd/Publications.htm.

Please contact me at (505) 476-3490 on or before May 7, 2010 to schedule your preferred MIT and FOT date and time. I will work to finalize the witness schedule with each of you. Thank you in advance for your cooperation.

Copy: Class I (non-hazardous) Well Files UICI- 5, 8, 8-0, 8-1 & 9

Carl J. Chavez, CHMM
UIC Quality Assurance and Quality Control Officer
New Mexico Energy, Minerals & Natural Resources Dept.
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(Pollution Prevention Guidance is under "Publications")

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, September 03, 2009 5:06 PM
To: 'Moore, Darrell'; Lackey, Johnny
Cc: Jones, William V., EMNRD; Sanchez, Daniel J., EMNRD
Subject: Navajo Refining Company (UICI-008) UIC Class I Well Fall-Off Test Gauge Inquiry from September 1, 2009

Darrell and Johnny:

I am responding to your inquiry or request regarding bottom hole gauges and removal when a "radial flow" condition is achieved during our September 1, 2009 meeting in Santa Fe. NRC is currently planning to leave the gauges in for at least 72 hours this year, but next year NRC would like to pull the gauges when it feels it has achieved a radial flow condition.

Section V Item 14 indicates "memory gauge capacity should allow for a 10-day total recording time interval unless a shorter test time is sufficient based on prior testing or appropriate test design calculations. Larger time increments may be used to obtain data later in the test when the rate of pressure decline is less. The recording frequency of the gauges and overall length of test should be set based on results of previous tests or test design calculations.

OCD's response is that there really have not been any previous tests or test design calculations to support your inquiry or request for a shorter shut-in gauge monitoring period. In fact this year, the OCD has only requested 72 hours of monitoring after well shut-in, but we may find from your report that this monitoring period was unacceptable. The OCD will be evaluating this year's Fall-Off Test to see whether a shorter monitoring period may be feasible or whether the monitoring period may need to be protracted out to 7 days as stated in the OCD guidance? In addition, Item 15 from the same section states that there must be a pressure drop of at least 100 psi achieved during the test, which NRC needs to consider, but did not mention the pressure drop during our meeting.

Section VII Item 5 must be achieved. Item 11 from the same section requires the well to be shut-in for at least 7 days or other approved period based on previous test results or test design. Item 13 of the same section requires that the fall-off monitoring portion of the test must be conducted for a length of time sufficient to reach radial flow conditions. This is established in the field while the test is in progress as depicted in a semi-log straight line plot that is well developed. A log-log with derivative plot should also be prepared in the Fall-Off Test to confirm that a radial flow condition is occurring. It is important to point out that not only must this condition be satisfied, but the other conditions mentioned must not be adversely affected by stopping the test early. In addition to the radial condition, the flat derivative curve must achieve flat line to ensure that a boundary condition, etc. goes undetected during the test.

Section VIII, Item 6 indicates that any test that is not shut-in long enough to develop an infinite acting period, or cannot properly be analyzed for transmissibility from the semi-log plot, should be rerun using a procedure that will result in valid test results, unless other arrangements have been made with OCD. Consequently, in addition to achieving and confirming a radial flow condition in the field during test, the semi-log plot may require more time to achieve an "infinite acting period" as described above.

After reviewing the OCD Fall-Off Test guidance related to your inquiry, the OCD thinks that the NRC should keep the bottom hole gauges in for at least 72 hours this year or greater depending on the test formation's ability to satisfy the above and make plans for next year's test to obtain the tank volume necessary to complete the test satisfactorily.

OCD UIC Fall-Off Test Guidance evaluated based on your inquiry or request are provided below.

SECTION V. General Test Operational Considerations

A successful fall-off test involves consideration of numerous factors of which most are under t control of the permittee. These include but are not limited to the following:

5. Sustaining a constant injection rate after installing the pressure gauges to allow stabilizatic of the gauges prior to initiating the fall-off test. A three day period is recommended, but adjustments may be made because rates have previously been stabilized or historical test results indicate a lesser time is adequate.
7. Shutting in offset wells completed in the same formation as the test well prior to the test. I impractical, then maintaining stable measured injection rates into the offset injection wells prior to and during the fall-off test.
11. Using a surface readout downhole pressure gauge. Utilizing tandem downhole memory electronic pressure gauges, one of which is surface readout capable, with a pressure resolution level of 0.0002% of the gauge's full pressure range. Gauge pressure range shoul exceed the maximum pressure expected during the testing with the larger the percentage of the gauge pressure range utilized, the better.
12. Maintaining a test operations log throughout the fall-off test and submitting the log as part c the test report. The log should list all key test events, dates, and times. For example, the time the gauges were activated, run in the well and placed on bottom as well their setting depths. Synchronization of times and events is especially important in tests involving multiple wells.
13. If available, monitoring test progress with appropriate plots at the wellsite to insure valid tes data is obtained and problematic tests can be identified and aborted.
14. Configuring the test gauges to obtain pressure data more frequently in the early portion of tl test when the rate of pressure decline is greater if the memory capacity of the gauge is limited. Memory capacity of the gauge should allow for a 10-day total recording time interval unless a shorter test time is sufficient based on prior testing or appropriate test desig calculations. Larger time increments may be used to obtain data later in the test when the rate of pressure decline is less. The recording frequency of the gauges and overall length of test should be set based on results of previous tests or test design calculations.
15. Using the injection facility pump if capable of maintaining a constant injection rate at the desired pre-fall-off test rate. If an alternate pump is needed, design the pump to operate as smoothly as possible at the desired constant rate. If feasible, design the test for a constant injection rate to cause a minimum of 100 psi differential pressure between the final injectic and shut-in pressures.

SECTION VII. Conducting the Fall-off Test

The following are recommended procedures for conducting the fall-off test. Alternative procedures that will produce valid test results and satisfy the requirements of OCD and tl regulations will be considered by the OCD.

1. Install a digital surface recorder, connected to a rate meter and a digital surface transducer, capable of adequately measuring surface injection rates and wellhead injection pressures during the test.
2. Confirm the constant pre-fall-off test injection rate is maintained prior to the fall-off.
3. Confirm pressure gauges have stabilized prior to shutting in the well for the fall-off test
4. Following installation of the bottom hole pressure gauges and surface recorders, regulat injection to the stabilized designated pre-fall-off test injection rate that will result in a sufficiently sized pressure increase (above shut-in pressure) on the wellhead. If the injection rate was stabilized prior to running the downhole gauges and the gauge installation did not disrupt the injection rate, monitoring the gauge for a minimum of on hour may be sufficient for verifying that the bottom hole pressure is stabilized prior to initiating the fall-off test.
5. The injection rate shall be high enough and continuous for a period of time sufficient to produce a pressure buildup that will result in valid test data. The injection rate shall result in a pressure buildup such that a semi-log straight line can be determined from th Horner plot or other appropriate semi-log plot. The injection rate shall be the maximun injection rate that can be feasibly maintained constant in order to maximize pressure changes in the formation and provide valid test results, but not exceeding the daily injection pressure and volume limit of the UIC Permit.
6. Confirm the liquid injection density is held relatively constant during the injectivity portion of the test by periodically measuring one or more of the following:
    a. Density
    b. Chloride concentration
    c. Total dissolved solids concentration
    d. Conductivity
    e. pH
7. The surface readout downhole pressure gauge must be located at or near the top of the injection interval unless previous testing indicates a more appropriate location.
8. ***If the stabilization injection period is interrupted, for any reason and for any length o time, the stabilization injection period must be restarted unless superposition analysis can be applied and valid test results obtained.***
9. The well must be shut-in at the wellhead or as near as feasible to the wellhead to minimize wellbore storage and after flow.
10. The well shut-in must be accomplished as instantaneously as possible to prevent erratic pressure behavior during the test.
11. Following shut-in at the well, shut-in relevant tubing valves to ensure complete shut-in the well. Bottom-hole shut-in is preferred to surface shut-in, but not required. Shut-in the well with no disturbances for at least seven days or other approved time period as determined from previous tests results or the test design.
12. Upon completion of the test, tag fill depth with gauges, pull out bottom hole gauges making stops every 1000 feet for 5 minutes to obtain gradient data, rig down, and resun normal injection into the well as needed.

is well developed. A log-log with derivative plot should be prepared during the fall-off t verify that radial flow is occurring.

SECTION VIII. Evaluation of the Test Results

A licensed professional who is knowledgeable in the methods of pressure transient test analys must evaluate and summarize the test results. The following information and evaluations sha be provided in the test report:

6. Any test that was not shut-in long enough to develop an infinite acting period, or cann be properly analyzed for transmissibility (kh/μ) from the semi-log plot, should be reru using a procedure that will result in valid test results, unless other arrangements have been made with OCD.

9. Explain any anomalous pressure data responses. Investigate any potential physic causes for the anomaly in addition to potential reservoir response characteristics.

I think we will know more based on this year's Fall-Off Test whether NRC can plan on pulling gauges and stopping the monitoring after achieving a radial flow conditions.
Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
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(Pollution Prevention Guidance is under "Publications")

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, July 07, 2009 4:06 PM
To: 'Moore, Darrell'
Cc: Ken Davis; Rusty Smith; Lackey, Johnny; Griswold, Jim, EMNRD; Jones, William V., EMNRD
Subject: RE: UICI-008 WDWs 1 - 3 Fall-Off Test Schedule 2009

Darrell:

Assuming your Fall-Off Test Plan submitted in July 2009 is acceptable, ok.

If NRC submits another Fall-Off Test Plan that is clearly unacceptable, the OCD will need to reassess with the EPA your ability to operate Class I Wells in New Mexico. The OCD allowed Navajo Refining Company (NRC) to get by in last year's Fall-Off Test that was not in conformance with OCD UIC Guidance developed for Fall-Off Tests in order to allow NRC time to submit an acceptable Fall-Off Test Plan for this season. The Test Plan is supposed to bring NRC to the level specified in the OCD UIC Fall-Off Test Guidance.

Thank you.

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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: Friday, July 03, 2009 3:43 PM
To: Chavez, Carl J, EMNRD
Cc: Ken Davis; Rusty Smith; Lackey, Johnny; Griswold, Jim, EMNRD; Jones, William V., EMNRD
Subject: RE: UICI-008 WDWs 1 - 3 Fall-Off Test Schedule 2009

Carl

Running these fall off tests puts us in a little bit of a bind because we have to hold our wastewater in our tanks while the tests are being run. We would like to extend the deadline to have the tests rununtil October 2009. That extra month gives the weather some time to cool off and thus we have less boiler blow down to get rid of. In this scenario, we would run one test in August 2009, another in September 2009, and the last in October 2009. During the heat of the summer, our boiler blowdown is a huge contributor to our wastewater, that extra month will help us a great deal.

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Friday, June 19, 2009 5:37 PM
To: Moore, Darrell
Cc: Ken Davis; Rusty Smith; Lackey, Johnny; Griswold, Jim, EMNRD; Jones, William V., EMNRD
Subject: RE: UICI-008 WDWs 1 - 3 Fall-Off Test Schedule 2009

Darrell:

The OCD will expedite your test plan upon receipt in July 2009.

Please plan on scheduling and running your Fall-Off Test by the end of September 2009.

Please contact me if you have questions. Thank you.

Carl J. Chavez, CHMM
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Oil Conservation Division, Environmental Bureau
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Office: (505) 476-3490
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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: Tuesday, May 19, 2009 8:03 AM
To: Chavez, Carl J, EMNRD
Cc: 'Ken Davis'; Rusty Smith; Lackey, Johnny
Subject:

Carl

Attached is a letter with an extension request and some questions about the fall off test on our injection wells. Hard copy will follow.

Thanks

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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Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, July 28, 2009 5:06 PM
To: 'Moore, Darrell'
Cc: 'Ken Davis'; 'Rusty Smith'; 'Lackey, Johnny'; Sanchez, Daniel J., EMNRD
Subject: Fall-Off Test Plan 2009 (UICI-008 WDW-1; UICI-008-1 WDW-2 & UICI-008-0 WDW-3) Resubmittal w/ Schedule for Each Class I Well (August, September & October) Approved by the OCD

Darrell:

The Fall-Off Test Plan is hereby approved. The Fall-Off Test Plan for the three UIC Class I Disposal Wells is available at OCD Online at "UICI-008" under the thumbnail entitled, "EPA Fall-Off Test Plan" at http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pLWP0425236022.

If possible, the OCD recommends that the operator monitor bottom hole pressures in the other UIC Class I Disposal Wells that are not being tested in order to determine if there is a physical connection with the other disposal wells that inject into the same formation.

Please provide the OCD with notification of the Fall-Off Test dates and time that injection will be shut-off for at least 72 hour monitoring for each of your UIC Class I Disposal Wells scheduled for the third week of August, September and October of 2009 in order for the OCD to be present to witness the point at which injection is shut-off for each well.

Please be advised that OCD approval of this Fall-Off Test Plan does not relieve the Navajo Refining Company of responsibility should their operations fail to meet OCD "Fail-Off Test Guidelines." In addition, OCD approval does not relieve the Navajo Refining Company of responsibility for compliance with any other federal, state, or local laws and/or regulations throughout the Fall-Off Test.

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
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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: Chavez, Carl J, EMNRD
Sent: Thursday, May 21, 2009 2:52 PM
To: 'Moore, Darrell'
Cc: 'Ken Davis'; Rusty Smith; Lackey, Johnny
Subject: RE: Fall-Off Test Plan Submittal

Darrell, et al.:

Your request for an extension from June 1, 2009 to July 20, 2009 is hereby approved.

In response to your questions in the attached letter dated May 19, 2009, the OCD responses are in red text below.

Section II of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states that, "shut down of the well for time sufficient to conduct a valid observation of the pressure fall-off".
What does the OCD consider sufficient when there are different radial flow periods, such as you find in naturally fractured or induced fractured formations?

A minimum of at least 72 hours or until you see a boundary.

What exactly does the OCD need for confirmation? Would rate data submitted with the report be confirmation?

A plot or graph.

Section V item 4 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states, "Calculating the total volume of injection fluid needed for the injectivity portion of the test".
Does the OCD have any specific equation that they require?

Calculate a daily rate based on the last 14 days of production, i.e., cumulative production/days to obtain an average daily rate of injection. Remember that at least 100 psi differential in pressure from injection to the end of the fall-off test is needed for a good fall-off test.

Section V item 5 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document implies that the OCD request a 3 day injection period and fall-off.
Is this what the OCD wants or can a shorter fall-off period be used?

Minimum day fall-off period needed for test.

Section V item 4 and item 6 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document appear to say the same thing.
Is this what OCD intended or are they different, if so how?

Item 6 deals with the handling of waste at the well during the test. You could divert the waste from the test well to the furthest way class I well owned by Navajo. Item 4 is talking about an adequate volume of injected fluid being available for the 3 day injection period.

Section V item 11 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states, "Using a surface readout downhole pressure gauge. Utilizing tandem down-hole memory electronic pressure gauges, one of which is surface readout capable, with a pressure resolution level of 0.0002% of the gauge full pressure range".
What type of gauge does the OCD require? There are surface readout gauges (SRO) that record data on a computer at the surface, there are memory read out (MRO) gauges that record data on volatile memory in the tool, and there are surface attached gauges that record wellhead pressure on volatile memory (data logger). There is only one pressure media Quartz that will have a pressure resolution of 0.0002% FS. The next best down-hole gauge pressure medium is Sapphire which has a pressure resolution of 0.0003% FS.

If cost is a factor, you could hang in hole 2 memory gauges without surface readout and sapphire gauges should be good enough.

Section VI item 4 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for PVT data.
The data may or may not be available as this data will not exist for older wells where the OCD has not required it. Can the data be estimated where it does exist?

Yes.

Section VI item 9 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for AOR data.
Is the OCD requesting this data before the testing to be included in the test plan?

No. Include the data in the final report.

Section VII items 2 &3 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for conformation.
How would the does the OCD want conformation in the test plan stated?

Present recorded information in the final report. Chart recorder?

Section IX item 18 sub-item (h) of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for a Hall plot.
What is the Hall plot to be used for? In generally this plot is used for injection wells in water floods for Enhanced Oil Recovery (EOR) and is a cheap qualitative approach to determine near wellbore damage and has very little usefulness in determining pressure build in a reservoir.

A change in slope on the plot shows limits of reservoir or changes in injectivity rates and pressures. By estimating the average injection pressure based on cumulative volume injected with record of injection pressure.

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: Tuesday, May 19, 2009 8:03 AM
To: Chavez, Carl J, EMNRD
Cc: 'Ken Davis'; Rusty Smith; Lackey, Johnny
Subject:

Carl

Attached is a letter with an extension request and some questions about the fall off test on our injection wells. Hard copy will follow.

Thanks

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

This inbound email has been scanned by the MessageLabs Email Security System.

REFINING COMPANY, LLC

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May 19, 2009

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

Re: Navajo Refining APT, PFO & MIT Test Plan (UICI-8) and Request for Extension on WDWs 1, 2 & 3

Dear Carl:

Navajo has received your May 1, 2009 e-mail concerning the subject 2009 Pressure Fall-Off (PFO) Test Plan. Generally, based on your comments, it appears that the Oil Conservation Division (OCD) wants a stand alone test plan for each of the Navajo WDW 1, 2 & 3 facilities at Artesia. We agree that most, if not all, of the required information is available but it is scattered between the original permit application files and numerous maintenance and other reports. These files are generally located in the state files with drilling records and other files our contractor, Subsurface Technology Inc. (Subsurface), has developed. Additionally, we will need to evaluate any new activity in the Area of Review. Since it will be virtually impossible to locate, evaluate, copy and assemble this information by June 1, 2009, we are requesting an extension to July 20, 2009. At or before that time, we will deliver the test plan to the OCD for approval. Upon receipt of approval, we will implement the test procedure and schedule the field work. Probably in the July-August time frame.

Subsurface has also reviewed the referenced e-mail and has asked the following questions:

Section II of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states that, "shut down of the well for time sufficient to conduct a valid observation of the pressure fall-off".
What does the OCD consider sufficient when there are different radial flow periods, such as you find in naturally fractured or induced fractured formations?

Section V item 1 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states, "Confirmation that a constant injection rate can be maintained into the test well during the injectivity portion of the test".

What exactly does the OCD need for confirmation? Would rate data submitted with the report be confirmation?

Section V item 4 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states, "Calculating the total volume of injection fluid needed for the injectivity portion of the test".
Does the OCD have any specific equation that they require? In order to analyze the transit pressures in late time the maximum amount of volume injected into the well needs to be considered, this would encompass the injected volumes since the last major shut down. The injectivity will need to remain constant at least for the period of time that fall-off portion of the testing is conducted (3 days of injection for 3 days of fall-off). The rate into the well will be limited by the pump and the permitted wellhead pressure. In most cases the plant generally has more volume than they can dispose of down the well(s) due to economics (the well(s) cost a lot of money) and are constantly trying to keep up with production. In most cases they cannot shut down a well for more than 2 days.

Section V item 5 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document implies that the OCD request a 3 day injection period and fall-off.
Is this what the OCD wants or can a shorter fall-off period be used?

Section V item 4 and item 6 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document appear to say the same thing.
Is this what OCD intended or are they different, if so how?

Section V item 11 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states, "Using a surface readout downhole pressure gauge. Utilizing tandem down-hole memory electronic pressure gauges, one of which is surface readout capable, with a pressure resolution level of 0.0002% of the gauge full pressure range".
What type of gauge does the OCD require? There are surface readout gauges (SRO) that record data on a computer at the surface, there are memory read out (MRO) gauges that record data on volatile memory in the tool, and there are surface attached gauges that record wellhead pressure on volatile memory (data logger). There is only one pressure media Quartz that will have a pressure resolution of 0.0002% FS. The next best down-hole gauge pressure medium is Sapphire which has a pressure resolution of 0.0003% FS.

Section V item 13 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document states, "If available, monitoring test progress with appropriate plots at the well site to insure a valid test data is obtained and problematic test can be identified and aborted".

In order to do this we would have to have all the rate data available before starting the falloff testing to construct a real-time Horner plot or Log-Log plot and analyze the data as we collect it. In most cases the rate data can only be obtained at some point toward the end of the testing.

Section VI item 4 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for PVT data.
The data may or may not be available as this data will not exist for older wells where the OCD has not required it. Can the data be estimated where it does exist?

Section VI item 9 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for AOR data.
Is the OCD requesting this data before the testing to be included in the test plan?

Section VII items 2 &3 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for conformation.
How would the does the OCD want conformation in the test plan stated?

Section IX item 18 sub-item (h) of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for a Hall plot.
What is the Hall plot to be used for? In generally this plot is used for injection wells in water floods for Enhanced Oil Recovery (EOR) and is a cheap qualitative approach to determine near wellbore damage and has very little usefulness in determining pressure build in a reservoir.

For convenience, we have sent Subsurface a copy of this letter. Please send them a copy of your response. If it would be more convenient to call them, you can contact Ken Davis with Subsurface at 713-880-4640. Or you can contact me at 575-748-3311.

Very truly yours,
NAVAJO REFINING COMPANY,LLC

Darrell Moore
Environmental Manager for Water and Waste

Cc: Subsurface Technology Inc.

REFINING COMPANY, LLC

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July 15, 2009

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

RE:

Dear Carl,

Enclosed, please find a copy of Navajo Refining Company's Fall Off Test Plan for our three injection wells. We have also delivered a copy to the local OCD Office in Artesia. If there are any questions concerning this submission, please call me at 575-746-5281.

Sincerely,
NAVAJO REFINING COMPANY, LLC

Darrell Moore
Environmental Manager for Water and Waste

Encl

DEVELOPMENT AND IMPLEMENTATION OF A PRESSURE FALL-OFF TEST PLAN FOR NAVAJO REFINING WASTE DISPOSAL WELLS (WDW) WDW-1 (MEWBOURNE), WDW-2 (CHUKKA), WDW-3 (GAINES)

Subsurface Project No. 60A6365

TEST PLAN SUBMITTED FOR APPROVAL:
JULY 2009

Prepared By:

Subsurface Technology, Inc.
6925 Portwest Drive, Suite 110
Houston, Texas 77024

SUBSURFACE

New Mexico Oil Conservation Division
UIC Class I Well Fall-Off Test Guidance
(December 3, 2007)

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EXHIBITS

EXHIBIT 1: 2008 Annual Bottom Hole Pressure Survey

EXHIBIT 2: Petroleum Refining Waste Analysis

EXHIBIT 3: 2008 Annual Report

Table VII

Table VIII

Appendix J

EXHIBIT 4: Well Schematics

Well No. 1 (Mewbourne)

Well No. 2 (Chukka)

Well No. 3 (Gaines)

SUBSURFACE

New Mexico Oil Conservation Division
UIC Class I Well Fall-Off Test Guidance

Why does a fall-off test need to be performed?

From New Mexico Oil Conservation Division (OCD) Guidance Document.

Fall-off testing is a pressure transient test conducted on injection well formations to assess individual well conditions. The test provides the state regulatory agency with the necessary information to assess the validity of requested or existing injection well permit conditions and satisfy the permitting objective of protecting underground sources of drinking water (USDW). The test may also provide information about reservoir and completion characteristics such as transmissibility, skin factor, bottom-hole injection pressure, reservoir static pressure, and geologic boundaries.

In addition to the state UIC regulatory requirements, Federal UIC regulations in 40 CFR Part 146 have monitoring requirements applying to both Class I hazardous and nonhazardous injection wells that include annual fall-off testing. Specifically, Part 146 regulations state "the Director shall require monitoring of the pressure build up in the injection zone annually, including at a minimum, a shutdown of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve" (§146.13 (Non-hazardous)/§ 146.68 (Hazardous). In the case of Class II wells, the regulations may not directly require that a fall-off test be conducted, but under 40 CFR 146.8(f), EPA or the state agency delegated UIC Class II program primacy can require additional testing such as a fall-off test on individual injection wells to ensure protection of USDW's.

Essentials of Fall-Off (PFO) Testing.

From New Mexico Oil Conservation Division (OCD) Guidance Document.

A fall-off test is a pressure transient test involving shutting in an injection well and measuring the wellbore pressure decline versus time after radial flow conditions are achieved and well established in the preceding injection period. It is analyzed using the same pressure transient techniques for oil and gas well pressure build up and drawdown tests. The fall-off period is a replay of the preceding injection period, but is typically less noisy since no injection occurs while the well's pressure change is measured, similar to the pressure build up period in a production well.

Fall-off test data analysis can provide valuable information about both the condition of the wellbore itself and the nature of the reservoir the well injects into. For example, the skin factor parameter obtained from a fall-off test analysis can indicate whether completion damage exists and provide justification for a well stimulation or remedial treatment. The signature of the derivative may also provide insight into the well's completion, for example a negative half slope indicating spherical flow may be caused from wellbore fill or the well's completion. A properly designed fall-off may also provide information about natural fractures or geologic boundaries in the reservoir. The test analysis provides a determination of reservoir transmissibility which can be utilized to predict the relationship between reservoir pressure and injection rate, critical to designing appropriate UIC permit conditions. Recommended published technical references on

fall-off testing methodology include Society of Petroleum Engineers (SPE) Monographs Volumes 1 and 5 as well as SPE Textbook Series Volumes 1 and 9.

For more detailed information about the basis, recommended calculations, and procedures for fall-off tests, the reader is referred to the US EPA internet URLs provided below:

USEPA Fall-Off Test Course
http://www.epa.gov/safewater/dwa/electronic/presentations/uic/2003nutsbolts-notebook.pdf

EPA Region 6 Fall-off Guidelines
http://www.epa.gov/region6/water/swp/uic/guideline.pdf

OCD UIC FALL-OFF TEST GUIDANCE

SECTION I – Purpose

The purpose of a fall-off test is to identify injection interval or wellbore problems and injection interval characteristics. The permittee is responsible for developing a testing procedure which will generate adequate data for a meaningful analysis.

SECTION II - Regulatory Citation

Pursuant to all applicable parts of the Water Quality Control Commission (WQCC) Regulations 20.6.2 NMAC and more specifically 20.6.2.3104 - 20.6.2.3999 discharge permit, and 20.6.2.5000-.5299 Underground Injection Control, the Oil Conservation Division (OCD), the OCD UIC Permit requires monitoring of the pressure build up in the injection zone at least annually, including at a minimum, shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off. This test is known as the formation pressure fall-off test.

SECTION III - Developing a Test Plan

A plan for conducting the test shall be submitted to OCD for review and approval prior to conducting the test. Plan approval shall be obtained from OCD prior to commencing the test. The plan shall include a proposed schedule. The test plan must address all items listed in the Sections V through IX of this document.

The Test Plan addresses these requirements and includes the requirements of Section V through IX below.

Proposed Procedure Considerations

The following is a proposed test procedure for Well No. 1 (Mewbourne), Well No. 2 (Chukka), and Well No. 3 (Gaines). The volumes and rates were determined from historical data collected during the previous fall-off testing. The rates, wellhead pressures, and bottom-hole pressure will be recorded throughout the procedure. An analysis will be completed using Pan System © software. An estimate of the tank volumes associated with the injection/fall-off periods are included at the end of the procedure. The reports for each well will be constructed according to

Section IX in this test plan. All other considerations have been addressed in the following Sections, IV through IX.

Procedure

1. Navajo Refining is to maintain a constant injection rate into the disposal well for a minimum of 24 hours prior to testing. The approximate anticipated rates for each well are:

Well No. 1 (Mewbourne)	maximum of 330 gpm (11,314 bpd)
Volume injected 3 days	33,943 bbls;
Well No. 2 (Chukka)	maximum of 175 gpm (6000 bpd)
Volume injected 3 days	18,000 bbls;
Well No. 3 (Gaines)	maximum of 350 gpm (12,000 bpd)
Volume injected 3 days	36,000 bbls.

The injection period used for the determination of the total volume of fluid needed for the injection portion of the testing was 72 hours. The volume is determined from the time it takes to reach radial flow in the reservoir brine as a function of radius of investigation.

These rates are based on historical information gathered after an acid stimulation and after the completion of the wells. The rates are estimates based on averages. The initial well system consisted of two wells and a third was added in 2007.

The waste fluid will be used during the testing. Samples of the waste fluid should be gathered periodically for viscosity and density determination. Injection rates, pressure, and time will be recorded and submitted to Subsurface for fall-off analysis. The viscosity and density data should be included. If necessary, the flow rate will be controlled at the wing valve. The general procedure is to open the wing valve wide open and let the pump pressure control the flow rate. This will maximize the flow to the well at a steady rate with only one well open in the 3 well system.

Adequate waste storage has been accounted for using the two storage tanks located at the refinery. The two tanks hold 80,000 barrels (bbls) and 65,000 bbls, respectively. The working volumes of the tanks are 85% of the total capacity. Tank bottoms are calculated at 18 % of the total capacity of the tanks. The initial volumes for each tank prior to starting the testing were calculated as follows:

Well No. 1 (Mewbourne)

Total Waste Fluid Gain for the Test Period	70,971 bbls
Total Waste Fluid Loss to Well No. 1 for the Test Period	33,943 bbls
Total Waste Fluid	104,914 bbls
Initial Tank Volume Tank 1 (80,000 bbls)	55,000 bbls
Initial Tank Volume Tank 2 (65,000 bbls)	19,500 bbls
Final Tank Volume Tank 1 (80,000 bbls)	62,779 bbls
Final Tank Volume Tank 2 (65,000 bbls)	48,750 bbls

Well No. 2 (Chukka)

Total Waste Fluid Gain for the Test Period	86,914 bbls
Total Waste Fluid Loss to Well No. 2 for the Test Period	18,000 bbls
Total Waste Fluid	104,914 bbls
Initial Tank Volume Tank 1 (80,000 bbls)	33,000 bbls
Initial Tank Volume Tank 2 (65,000 bbls)	16,000 bbls
Final Tank Volume Tank 1 (80,000 bbls)	67,457 bbls
Final Tank Volume Tank 2 (65,000 bbls)	50,457 bbls

Well No. 3 (Gaines)

Total Waste Fluid Gain for the Test Period	68,914 bbls
Total Waste Fluid Loss to Well No. 3 for the Test Period	36,000 bbls
Total Waste Fluid	104,914 bbls
Initial Tank Volume Tank 1 (80,000 bbls)	60,000 bbls
Initial Tank Volume Tank 2 (65,000 bbls)	16,000 bbls
Final Tank Volume Tank 1 (80,000 bbls)	58,971 bbls
Final Tank Volume Tank 2 (65,000 bbls)	49,943 bbls

The general procedure for testing each individual well is to inject into the test well for a period of three days, with the two offset wells shut-in. Following the 3-day injection period, the test well will be shut-in and the pressure fall-off monitored for 72 hours. The two offset Navajo wells will remain shut-in during the fall-off portion of the testing.

Confirmation of the injection rate and volumes will be provided by the continuous monitoring system at the plant. The plant has the ability to continuously monitor flow rates, wellhead pressures, annulus pressures, filter pod differential pressures, line pressures, and tank levels. Pressures and temperatures will be confirmed via data memory logging gauges. The recording time on the gauges will be set at minimum of 10-second intervals. The surface pressure gauge data can be downloaded to ascertain the status of the fall-off testing at any time during the fall-off segment of the procedure. The surface pressure memory gauge will be attached to a tee just above the crown valve.

2. Install a 5000 psi digital quartz memory pressure gauge on the wellhead. Lower tandem 8000 psi sapphire memory gauges into the wellbore and tag fill. Pull the bottom hole memory gauges up to the top of the perforations. Correlate depths to the wellhead at ground level to kelly bushing height as the reference depth. The top of the perforations for each well are as follows:

Well No. 1 (Mewbourne):	7924 feet RKB;
Well No. 2 (Chukka):	7570 feet RKB;
Well No. 3 (Gaines):	7660 feet RKB.

Monitor injection pressure for one hour after placement to stabilize the gauge. Be sure to sync the time on the gauges to each other and calibrate to the monitoring computer time. Discontinue injection into the test well and block well in near the wellhead with the wing

valve and the motorized gate valve. The well should be blocked in as quickly as possible without creating water hammer effect in the wellbore.

Each wellhead consists of a crown valve, wing valve, and master valve. The crown valves on Well No. 1 and Well No. 2 are two inch ball valves and the crown valve on Well No. 3 is a four inch gate valve. The wells will be shut-in via the four inch wing valves and the motorized gate valves.

3. Monitor the pressure fall-off for minimum of 24 hours. The testing fall-off segment was extended to include a full 72 hour fall-off period for conservative reasons. During the fall-off segment of the testing, download surface pressure data and evaluate the fall-off to determine if the radial flow period has been reached.

4. At the end of the fall-off period, discontinue the pressure fall-off test. Tag the bottom of the fill and pull out of the wellbore, with the memory gauges making gradient stops every 1000 feet to surface.

The following schedule is proposed after approval of test plan:

Testing of Well No. 3 (Gaines) on the third week of August, 2009;
Testing of Well No. 2 (Chukka) on the third week of September 2009;
Testing of Well No. 1 (Mewbourne) on the third week of October 2009.

Testing Rates

The estimated maximum rates into each test well are as follows:

Well No. 1 (Mewbourne)	330 gpm (11,314 bpd)
Well No. 2 (Chukka)	175 gpm (6000 bpd)
Well No. 3 (Gaines)	350 gpm (12,000 bpd)

This assumes the maximum pressure is 785 psig at the wellhead and can be maintained for 3 days, and the total generated waste fluid flow rate from the plant processes is 510 gpm. Using the two holding tanks at the plant, the proposed schedules are based on starting tank volumes as described below.

It is assumed the working capacities of the tanks are 85% of their total capacities. Tank 1 has a total capacity of 80,000 bbls and a working capacity of 68,000 bbls. Tank 2 has a total capacity of 65,000 bbls and a working capacity of 55,250 bbls. It is also assumed that minimum volumes for Tank 1 and Tank 2 are 14,000 bbls and 11,700 bbls respectively or 18% of their capacity. All calculations were based on the 85% operating capacity of each tank using minimum volume levels.

Well No. 1 (Mewbourne)

The general procedure for testing Well No. 1 would be to inject into Well No. 1 for a period of 3 days with Well No. 2 and Well No. 3 shut-in. Following the three day injection period Well No. 1 will be shut-in for 3 additional days with Well No. 2 and Well No. 3 shut-in. In the first 3

days, only one well will be operating at its full rate, for the next 3 days all three wells will be shut-in. The excess volume generated by the plant will be stored in the two holding tanks at the plant. Tank 1 has a capacity of 80,000 barrels (bbls) and Tank 2 has a capacity of 65,000 bbls. The calculations are based on an 85% working capacity of the tanks.

Estimated Well Test Rates

DAYS	1	2	3	4	5	6
Well 1 Mewbourne Test Rates (gpm)	**330**	**330**	**330**	0	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0	0	0
Well 3 Gaines Test Rates (gpm)	0	0	0	0	0	0

Total Waste Fluid Gain for the Test Period	70,971 bbls
Total Waste Fluid Loss to Well No. 1 for the Test Period	33,943 bbls
Total Waste Fluid	104,914 bbls

Estimated Tank Volumes During the Testing

Starting Volume in Tanks		
Tank 1 Volume (drawdown tank)	55,000 bbls	69%
Tank 2 Volume (overflow tank)	19,500 bbls	30%
Tank Volumes After 1 Days		
Tank 1 Volume (drawdown tank)	43,686 bbls	55%
Tank 2 Volume (overflow tank)	25,671 bbls	39%
Tank Volumes After 2 Days		
Tank 1 Volume (drawdown tank)	32,371 bbls	40%
Tank 2 Volume (overflow tank)	31,848 bbls	49%
Tank Volumes After 3 Days		
Tank 1 Volume (drawdown tank)	21,057 bbls	26%
Tank 2 Volume (overflow tank)	38,014 bbls	58%
Tank Volumes After 4 Days		
Tank 1 Volume (overflow tank)	22,807 bbls	35%
Tank 2 Volume (overflow tank)	48,750 bbls	75%
Tank Volumes After 5 Days		
Tank 1 Volume (overflow tank)	45,293 bbls	57%
Tank 2 Volume (full tank)	48,750 bbls	75%
Tank Volumes After 6 Days		
Tank 1 Volume (overflow tank)	62,779 bbls	78%
Tank 2 Volume (full tank)	48,750 bbls	75%

Well No. 2 (Chukka)

The general procedure for testing Well No. 2 would be to inject into Well No. 2 for a period of 3 days, with Well No. 1 and Well No. 3 shut-in. Following the 3 day injection period, Well No. 2 will be shut-in for 3 additional days, with Well No. 1 and Well No. 3 shut-in. For the first 3 days, only one well will be operating at its full rate. For the next 3 days, all 3 wells will be shut-in. The excess volume generated by the plant will be stored in the two holding tanks at the plant. Tank 1 has a capacity of 80,000 barrels (bbls) and Tank 2 has a capacity of 65,000 bbls. The calculations are based on an 85% working capacity of the tanks.

Estimated Well Test Rates

DAYS	1	2	3	4	5	6
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0	0	0
Well 2 Chukka Test Rates (gpm)	**175**	**175**	**175**	0	0	0
Well 3 Gaines Test Rates (gpm)	0	0	0	0	0	0

Total Waste Fluid Gain for the Test Period	86,914 bbls
Total Waste Fluid Loss to Well No. 2 for the Test Period	18,000 bbls
Total Waste Fluid	104,914 bbls

Estimated Tank Volumes During the Testing

Starting Volumes in Tanks		
Tank 1 Volume (drawdown tank)	33,000 bbls	41%
Tank 2 Volume (overflow tank)	16,000 bbls	25%
Tank Volumes After 1 Days		
Tank 1 Volume (drawdown tank)	27,000 bbls	34%
Tank 2 Volume (overflow tank)	27,486 bbls	42%
Tank Volumes After 2 Days		
Tank 1 Volume (drawdown tank)	21,000 bbls	26%
Tank 2 Volume (overflow tank)	38,971 bbls	60%
Tank Volumes After 3 Days		
Tank 1 Volume (drawdown tank)	15,000 bbls	19%
Tank 2 Volume (overflow tank)	50,457 bbls	78%
Tank Volumes After 4 Days		
Tank 1 Volume (overflow tank)	32,486 bbls	41%
Tank 2 Volume (full tank)	50,457 bbls	78%
Tank Volumes After 5 Days		
Tank 1 Volume (overflow tank)	49,971 bbls	62%
Tank 2 Volume (full tank)	50,457 bbls	78%
Tank Volumes After 6 Days		

Tank 1 Volume (overflow tank)	67,457 bbls	84%
Tank 2 Volume (full tank)	50,457 bbls	78%

Well No. 3 (Gaines)

The general procedure for testing Well No. 3 would be to inject into Well No. 3 for a period of 3 days with Well No. 1 and Well No. 2 shut-in. Following the 3 day injection period, Well No. 3 will be shut-in for 3 additional days, with Well No. 1 and Well No. 2 shut-in. For the first 3 days, only one well will be operating at its full rate. For the next 3 days all 3 wells will be shut-in. The excess volume generated by the plant will be stored in the two holding tanks at the plant. Tank 1 has a capacity of 80,000 barrels (bbls) and Tank 2 has a capacity of 65,000 bbls. The calculations are based on a 85% working capacity of the tanks.

Estimated Well Test Rates

DAYS	1	2	3	4	5	6
Well 1 Mewbourne Test Rates (gpm)	0	0	0	0	0	0
Well 2 Chukka Test Rates (gpm)	0	0	0	0	0	0
Well 3 Gaines Test Rates (gpm)	**350**	**350**	**350**	0	0	0

Total Waste Fluid Gain for the Test Period	68,914 bbls
Total Waste Fluid Loss to Well No. 3 for the Test Period	36,000 bbls
Total Waste Fluid	104,914 bbls

Estimated Tank Volumes During the Testing

Starting Volumes in Tanks		
Tank 1 Volume (drawdown tank)	60,000 bbls	75%
Tank 2 Volume (overflow tank)	16,000 bbls	25%
Tank Volumes After 1 Days		
Tank 1 Volume (drawdown tank)	48,000 bbls	60%
Tank 2 Volume (overflow tank)	21,486 bbls	33%
Tank Volumes After 2 Days		
Tank 1 Volume (drawdown tank)	36,000 bbls	45%
Tank 2 Volume (overflow tank)	26,971 bbls	41%
Tank Volumes After 3 Days		
Tank 1 Volume (drawdown tank)	24,000 bbls	30%
Tank 2 Volume (overflow tank)	32,457 bbls	50%
Tank Volumes After 4 Days		
Tank 1 Volume	24,000 bbls	30%
Tank 2 Volume	49,943 bbls	77%
Tank Volumes After 5 Days		

Tank 1 Volume (overflow tank)	41,486 bbls	52%
Tank 2 Volume (full tank)	49,943 bbls	77%
Tank Volumes After 6 Days		
Tank 1 Volume	58,971 bbls	74%
Tank 2 Volume	49,943 bbls	77%

SECTION IV - Scheduling of Test and Report

The schedule for the test must be mutually agreed upon between OCD and the permittee so that OCD has the opportunity to witness the test. The operator should submit a summary report to OCD within 30 days of test completion.

It is currently estimated that the Test Plan will be submitted to OCD for approval during July 2009. Subsequently, after approval, the field work will be performed in August, September, and October. The report will be submitted 30 days thereafter for each individual well.

SECTION V - General Test Operational Considerations

A successful fall-off test involves consideration of numerous factors of which most are under the control of the permittee. These include but are not limited to the following:

1. Confirmation of a constant injection rate can be maintained in the test well during the injectivity portion of the test.

   The injection rate of the injectate fluid will be maintained by throttling the flow with the wellhead wing valves and nearby injectate flow line valves, or other control system.

2. The injection rate is sufficient to produce a measurable pressure build up that will result in valid test data.

   These injection rates or equivalent conditions will be maintained to insure a 100 psi pressure differential. Historically, the reservoir has produced greater than 100 psi on previous testing after the maximum injection rate has been achieved.

3. Consideration for using the normal waste liquid during the injectivity portion of the test, unless the waste will be corrosive to the down-hole pressure gauge.

   The normal injectate will be maintained throughout the test period.

4. Calculating the total volume of injection fluid needed for the injectivity portion of the test.

   a. Arrange for additional fluids and storage of such fluid.

      It is not anticipated any additional fluids, other than the liquid waste injectate, will be needed.

b. Reduce the injection rate to reduce the total fluid requirement.

Every effort will be made to maintain the injection rate required for a successful pressure fall-off test as well as the disposal rate required to maintain refinery operation. (see procedure)

5. Sustaining a constant injection rate after installing the pressure gauges to allow stabilization of the gauges prior to initiating the fall-off test. A three day period is recommended, but adjustments may be made because rates have previously been stabilized or historical test results indicate a lesser time is adequate.

   A constant injection rate will be maintained throughout the required three day build up period.

6. Ensuring adequate waste storage is available for the duration of the fall-off test.

   The need for additional storage is not anticipated at the wellsite. The refinery facility storage tanks will be used; one tank at 65,000 bbls and another at 80,000 bbls.

7. Shutting in offset wells completed in the same formation as the test well prior to the test. If impractical, then maintaining stable measured injection rates into the offset injection wells prior to and during the fall-off test.

   We plan to inject into one well at a constant rate for the 3 day build up period. After the 3 day period, all 3 wells will be shut-in for the 3 day pressure fall-off period. However, if this method is not feasible, it will be necessary to maintain constant injection rates into the offset injection wells during each of the PFO Tests on WDW-1, 2 & 3. This will allow us to maintain constant injection rates into WDW-1 & 2 when WDW-3 is shut-in, constant injection rates into WDW-2 & 3 when WDW-1 is shut-in and constant injection rates into WDW-1 & 3 when WDW-2 is shut-in.

8. Installing a crown valve on the well prior to starting the injectivity portion of the test so the well does not have to be shut-in to install the pressure gauges. Running both memory gauges in the hole through a lubricator installed into the crown valve for safety.

   All three wells have crown valves.

9. Locating the shut-in valve, ceasing flow to the well at or near the wellhead to minimize the wellbore storage in the well. Shut-in must be accomplished as instantaneously as possible to prevent erratic pressure behavior during the shut-in caused by the rate fluctuations.

   All three wells have wing valves or nearby injectate flow line valves that will be used to shut-in each well for the required PFO Test period. If necessary, other controllers will be implemented from the control room.

10. Evaluating the condition of the well, including wellbore fill, junk in the hole or wellbore damage, which may increase the length of shut-in time needed for the well to obtain a valid fall-off test and therefore also necessitate a longer injectivity period.

    All three wells were recently treated with a Coiled Tubing/HCl acid stimulation, utilizing a sonic pulse tool and found that there was no wellbore fill across the perforated interval.

11. Using a surface readout down-hole pressure gauge and tandem down-hole memory electronic pressure gauges, one of which is surface readout capable, with a pressure resolution level of 0.0002% of the gauge's full pressure range. Gauge pressure range should exceed the maximum pressure expected during the testing with the larger the percentage of the gauge pressure range utilized, the better.

    The previously approved memory gauges used on these wells were sapphire gauges with an accuracy of 0.025% full scale (FS) or 0.01% of the reading and will have a resolution of 0.0003%. The pressure range of the gauges is from 0-10,000 psi. This gauge is a typical bottom-hole memory gauge with the best accuracy available in the area.

12. Maintaining a test operations log throughout the fall-off test and submitting the log as part of the test report. The log should list all key test events, dates, and times. For example, the time the gauges were activated, run in the well and placed on bottom as well their setting depths. Synchronization of times and events is especially important in tests involving multiple wells.

    A field supervisor will be present throughout the testing period and all operating system control room monitors will be active and creating the aforementioned log.

13. If available, monitoring test progress with appropriate plots at the wellsite to insure valid test data is obtained and problematic tests can be identified and aborted.

    Where applicable, this requirement will be implemented. A surface pressure logging gauge will be installed on the wellhead.

14. Configuring the test gauges to obtain pressure data more frequently in the early portion of the test when the rate of pressure decline is greater, if the memory capacity of the gauge is limited. Memory capacity of the gauge should allow for a 10-day total recording time interval, unless a shorter test time is sufficient based on prior testing or appropriate test design calculations. Larger time increments may be used to obtain data later in the test when the rate of pressure decline is less. The recording frequency of the gauges and overall length of test should be set based on results of previous tests or test design calculations.

    Based on previous testing, a 10-second to 15-second interval will be adequate.

15. Using the injection facility pump if capable of maintaining a constant injection rate at the desired pre-fall-off test rate. If an alternate pump is needed, design the pump to operate as smoothly as possible at the desired constant rate. If feasible, design the test for a

constant injection rate to cause a minimum of 100 psi differential pressure between the final injection and shut-in pressures.

The injection facility pump will be used to maintain the appropriate injection rate and differential pressure requirement.

SECTION VI. Background Information

Acquisition of the following information is recommended for the planning, design, and analysis of the fall-off test.

1. Current wellbore schematic (Exhibit 4)

   a. Size and type of injection tubing (include type of internal coating, if applicable)

   - Well No. 1: 4 ½", 11.6 lb/ft, N-80, SMLS, R3, LT&C, set at 7,879'
   - Well No. 2: 3 ½", 9.2 lb/ft, J-55, SMLS, NUE 10 rd, set at 7,528'
   - Well No. 3: 4 ½", 11.6 lb/ft, J-55, LT&C, set at 7575'

   b. Packer depth

   - Well No. 1: 7,879'
   - Well No. 2: 7,528'
   - Well No. 3: 7,575'

   c. Tubing length including the depth of any seating or profile nipples, and the last date tubing was run. When tubing was originally installed.

   - Well No. 1: 7879'
   - Well No. 2: 7528'
   - Well No. 3: 7575'

   d. Size, type, and depth of casings

   - Well No. 1: Surface Casing-13 3/8", 48 lb/ft, J-55, ST&C, set at 390'
     Intermediate Casing-9 5/8", 36 lb/ft, J-55, ST&C, set at 2,555'
     Protection Casing-7", 29 lb/ft, N-80, LT&C: 9094' to 7031'; 7", 29 lb/ft, P-110, LT&C: 7031' to 5845'; 7", 26 lb/ft, P-110, LT&C: 5845" to surface
   - Well No. 2: Surface Casing-8 5/8", 32 lb/ft, set at 1,995'
     Protection Casing-5 ½", 17 lb/ft, L-80, LT&C: 8869' to surface
   - Well No. 3: Surface Casing-13 3/8" at 400'
     Intermediate Casing-9 5/8" at 2,600'
     Protection Casin-7" at 9450', 26lb/ft, & 29 lb/ft

e. Cement tops with method of determining the top of cement

- Well No. 1: On July 12, 1998, 9 5/8" protection casing was set from 2548' to the surface. It was confirmed that a continuous column of cement with good bonding characteristics behind the 9 5/8" protection casing from 2548' to 400'. The hydraulic coupling was lost above 400' and the tool would not respond.

  Exhibit 3.3.1-2 shows the intermediate casing at 9 5/8", 36 lb/ft, J-55, was set in a 12 ¼" open hole at 2,555' and cemented to the surface with 800 sacks of Class C Lite containing ½ lb/sack flocele, 2 lb/sack Gilsonite and 12% salt, followed by 200 sacks of Class C containing 2% Calcium Chloride. With 133 sacks of lead cement circulated to the surface, the volume of cement placed behind pipe approximated the estimated annular hole volume, which was based on an average hole diameter of 14-inches.

  On July 13, 1998 a cement bond log was run from 2548' to 580'. The log indicated an apparent cement compressive strength of 4,300 psi and bond index calculations ranged from 25% to 100% and averaged 72%.

- Well No. 2: On May 9, 1999, a bond log was performed within the 9 5/8" protections casing from 1910 feet to the surface. It was confirmed that a continuous column of cement with good bonding characteristics behind the 9 5/8" protection casing from 1910' to 116'. The hydraulic coupling was lost above 400' and the tool would not respond.

  Exhibit 2.2-2 shows the 8 5/8" surface casing was originally set in an 11-inch open hole to a depth of 1955' (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 were recorded circulated to surface. The calculated volume between an 11' hole and 8 5/8" 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. (Re-entry and Completion report for Well No. 2)

- Well No. 3: On October 13, 2006, a CBL/VDL revealed cement had not been circulated to the surface behind the 7" protective casing, as was indicated in the state records. The TOC behind the 7" protective casing was located at 900' and the cement bond quality was poor down to 1200'. There were indications on the log that a micro

annulus may be present from 2662' to 2160', from 4876' to 5372', and from 6750' to 7600'. The CBL indicated there was good bonding between the 7" casing and the cement to isolate the injection interval. (Re-entry and Completion report for Well No. 3)

f. Top and bottom perforation/completion depths including the size of perforation holes and date perforated

- Well No. 1: Upper Zone - 7924-7942', 7974-8030', 8050-8056', 8066-8080', 8118-8127', 8132-8140', 8160-8164', 8170-8188'.
  Lower Zone - 8220-8254', 8260-8270', 8280-8302', 8360-8366', 8370-8378', 8400-8410', 8419-8423', 8430-8446', 8460-8464', 8470-8476.

- Well No. 2: Zone 1 - 7570-7620', 7676-7736'
  Zone 2 - 7826-7834', 7858-7800', 7886-7904', 7916-7936', 7944-7964', 7990-8042', 8096-8116', 8191-8201', 8304-8319', 8395-8399'.

- Well No. 3: Original Open Perforations – 7676-7698'
  New Upper Perforations – 7660-8450'
  New Lower Perforations – 8540-8620'

- Average hole sizes are approximately ½-inch in diameter.

g. Total depth, plug back depth, and the most recent depth to wellbore fill and date measured

- Well No. 1: TD-10,200', PBTD-9004', July 24, 1998 at 8470'-76'
- Well No. 2: TD-10,372', PBTD-8770'
- Well No. 3: TD-10,119', PBTD-9022'

h. Location of the pressure measuring tool during the test

- Well No. 1: 7924'
- Well No. 2: 7570'
- Well No. 3: 7660'

2. Copy of an electric log encompassing the completed interval

   Exhibit 3 (Appendix J - 2008 Annual Report)

3. Copy of relevant portions of any porosity log used to estimate formation porosity

   Exhibit 3 (Figure: 2.0-2 – 2008 Annual Report)

4. PVT Data

   a. Estimation of formation fluid and reservoir rock compressibility

      3.6×10^{-6} ^{1}/psi

   b. Formation fluid viscosity with reference temperature

      0.72 cp at 112° F

   c. Formation fluid specific gravity/density with reference temperature

      8.6 ppg at 112° F

      This data may or may not be available since it will not exist for older wells when t he regulations did not require it. When necessary, it will be estimated.

5. Injection fluids

   a. Description of fluids injected
   b. Injection fluid specific gravity/density with reference temperature
   c. Injection fluid compressibility
   d. Injection fluid viscosity with reference temperature

      - Petroleum Refinery Waste Analytical Data for all three wells (See Exhibit 4)

6. Daily rate history data for a minimum of one month preceding the fall-off test

      The daily rate history will be provided with fall-off test report.

7. Cumulative injection into the formation from test well and offset wells

      The total injection volumes for each well will be included in final reports.

8. Pressure gauges

   a. Description of the down-hole surface pressure readout or memory gauge

      The memory gauges that will be used for each well are sapphire gauges with an accuracy of 0.025% full scale (FS) or 0.01% of the reading and will have a resolution of 0.0003% (FS). The pressure range of the gauges will be from 0-10,000 psi. These are typical bottom-hole memory gauges with the best accuracy available in the area. The gauges will be lowered to the top of the injection interval at 7924 feet in Mewbourne Well No. 1, 7820 feet in Chukka Well No. 2, and 7660 feet in Gaines Well No. 3. The recoding period will be set to record pressures at a minimum of every 10 seconds.

b. List the full range, accuracy and resolution of the gauges

- +/-0.025% F.S. + 0.01% of reading
- Will also provide a data specification sheet of gauges that were used to run the fall-off with each well report.

c. A calibration certificate showing date the gauges were last calibrated

Current calibration certificates for the gauges used in each well will be provided with final reports.

9. One mile Area of Review (AOR)

a. Identification of wells located within the one mile AOR

Exhibit 3 (Table VII)

b. Ascertaining the status of wells within the one mile AOR

Exhibit 3 (Table VIII)

c. Providing details on any offset producers and injectors completed in the same injection interval

Area of Review (AOR) lists all wells. The only wells that will affect the PFO Test are Navajo's current injection wells. The wells will be refered to as offset wells. These wells and the controlled rates are referenced in the general procedure. A update to the AOR will be included in each well report.

10. Geology

a. Description of the geologic environment of the injection interval

The proposed injection zones are porous carbonates of the lower portion of the Wolfcamp Formation and the Cisco and Canyon Formations. The Lower Wolfcamp is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation consists of light brown to tan, fine to medium-grained, fossiliferous limestone with variegated shale interbeds.

The Cisco Formation of the Northwest Shelf is described as consisting of uniform, light-colored, chalky, fossiliferous limestone interbedded with variegated shales. Cisco, at the edge of the Permian basin, is also described as consisting of biothermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 745 feet thick in the Chukka Well No. 2, 650 feet thick in Mewbourne Well No. 1, and 720 feet thick in Gaines Well No. 3.

The Canyon Formation consists of white to tan to light brown fine grained, chalky, fossiliferous limestone with gray and red shale interbeds.

In summary, permeability values in the injection zone from producing fields in the region range up to 200 md. However, based on test data for the Mewbourne Well No. 1, Chukka Well No. 2, and Gaines Well No. 3, permeability values as high as 2733 md or higher occur in intervals in the injection zone. All three share the same injection interval.

b. Discussion on the presence of pinchouts, channels, and faults, if applicable.

N/A

c. Providing a portion of a relevant structure map, if necessary.

N/A

SECTION VII. Conducting the Fall-off Test

The following are recommended procedures for conducting the fall-off test. Alternative procedures that will produce valid test results and satisfy the requirements of OCD and the regulations will be considered by the OCD.

We anticipate additional analysis may be performed to confirm these results. If same zone injection is confirmed, it may be beneficial to annually run PFO tests on one well instead of all three for different (probably longer) periods of time.

1. Install a digital surface recorder, connected to a rate meter and a digital surface transducer, capable of adequately measuring surface injection rates and wellhead injection pressures during the test.

   Digital pressure recorders (Sapphire or other similar gauges) will be located just above the perforated interval and on the wellhead. Injection rates will be monitored with the normal operation instrumentation. Historically the wells wellhead pressures will fall to zero psig at some point during the falloff segment of the testing depending upon the weight of the waste fluid at the time of the testing. The plant has the ability to record rates and wellhead pressure through flow meters and pressure indicating gauges at each well site. The instrumentation is connected to the plant by a RTU and wireless transmitters.

2. Confirm the constant pre-fall-off test injection rate is maintained prior to the fall-off.

   The rate will be maintained through plant monitoring and flow equipment for each well.

3. Confirm pressure gauges have stabilized prior to shutting in the well for the fall-off test.

   For each well the gauges will remain on bottom for one hour to stabilize. This should be sufficient for pressure gauge stabilization.

4. Following installation of the bottom-hole pressure gauges and surface recorders, regulate injection to the stabilized designated pre-fall-off test injection rate that will result in a sufficiently sized pressure increase (above shut-in pressure) on the wellhead. If the injection rate was stabilized prior to running the down-hole gauges and the gauge installation did not disrupt the injection rate, monitoring the gauge for a minimum of one hour may be sufficient for verifying that the bottom-hole pressure is stabilized prior to initiating the fall-off test.

   As indicated in 2 & 3 of the above section, every effort will be made to comply with this requirement.

5. The injection rate shall be high enough and continuous for a period of time sufficient to produce a pressure build up that will result in valid test data. The injection rate shall result in a pressure build up such that a semi-log straight line can be determined from the Horner plot or other appropriate semi-log plot. The injection rate shall be the maximum injection rate that can be feasibly maintained constantly, in order to maximize pressure changes in the formation and provide valid test results, but not exceeding the daily injection pressure and volume limit of the UIC Permit.

   We anticipate a pressure build up of 100 psi or greater will be maintained during critical portions of the pressure fall off testing for each well.

6. Confirm the liquid injection density is held relatively constant during the injectivity portion of the test by periodically measuring one or more of the following:

   a. Density
   b. Chloride concentration
   c. Total dissolved solids concentration
   d. Conductivity
   e. pH

   Samples of the injectate for each well will be taken and where possible, analyzed before shut-in.

7. The surface readout down-hole pressure gauge must be located at or near the top of the injection interval, unless previous testing indicates a more appropriate location.

   The down-hole digital pressure gauges will be located at the top of the perforations at the following depths.

   - Well No. 1: 7924'
   - Well No. 2: 7570'
   - Well No. 3: 7660'

8. If the stabilization injection period is interrupted for any reason and for any length of time, the stabilization injection period must be restarted, unless superposition analysis can be applied and valid test results obtained.

   If the testing is interrupted as stated above the test will be shut down and restarted from the beginning for any one of the well test on wells 1 trough 3.

9. The well must be shut-in at the wellhead or as near as feasible to the wellhead to minimize wellbore storage and after flow.

   The PFO test well(s) will be shut-in utilizing the wing valve on the wellhead or the nearby injectate flow line valve.

10. The well shut-in must be accomplished as instantaneously as possible to prevent erratic pressure behavior during the test.

    Every effort will be made to shut-in the PFO test well instantaneously.

11. Following shut-in at the well, shut-in relevant tubing valves to ensure complete shut-in of the well. Bottom-hole shut-in is preferred to surface shut-in, but not required. Shut-in the well with no disturbances for at least seven days or other approved time period as determined from previous tests results or the test design.

    Previous testing on each one of the wells has indicated only a three day shut-in period is necessary.

12. Upon completion of the test, tag fill depth with gauges, pull out bottom-hole gauges making stops every 1000 feet for 5-minutes to obtain gradient data, rig down, and resume normal injection into the well as needed.

    The absence of fill across the perforations will be confirmed before starting the PFO testing and if necessary reconfirmed prior to the gradient stop portion of the PFO tests for each well.

13. The fall-off portion of the test must be conducted for a length of time sufficient to reach radial flow, i.e., the pressure is no longer influenced by wellbore storage or skin effects and enough data points lie within the infinite acting period that the semi-log straight line is well developed. A log-log with derivative plot should be prepared during the fall-off to verify radial flow is occurring.

    This requirement has been considered during PFO Test Plan development and implemented into the general procedure for each well.

SECTION VIII - Evaluation of the Test Results

A licensed professional who is knowledgeable in the methods of pressure transient test analysis, must evaluate and summarize the test results. The following information and evaluations shall be provided in the test report:

1. A log-log plot with a derivative diagnostic plot shall be used to identify flow regimes.

2. The wellbore storage portion and infinite acting portion of the test shall be identified on he plot. Type curves shall be used to verify results.

3. A Horner plot or other appropriate semi-log plot must be used to calculate the kh/u product and to determine P*. The wellbore storage and infinite acting portions of the test should be identified on the plot. An expanded semi-log plot containing the entire infinite acting portion must be reproduced to permit a closer inspection of the semi-log slope and any data fluctuations. The slope used to calculate the transmissibility (kh/u) and to determine P* must be drawn on both semi-log plots.

4. The "h" value (injection interval thickness) used in the analysis must be agreed upon between OCD and the permittee. For formations with characteristics such as fracture-controlled karst reservoirs with porosity and permeability influenced by basement structural patterns and subaerial exposure, the entire thickness of the injection interval should be considered. A reliable literature value can be used if site specific data is not available.

5. The viscosity used in analyzing the test shall be that of the liquid through which the pressure transient was propagating during the infinite acting portion of the test. The information used to determine the viscosity shall be provided. Distance estimates to the waste front may also be needed.

6. Any test that was not shut-in long enough to develop an infinite acting period, or cannot be properly analyzed for transmissibility (kh/u) from the semi-log plot, should be rerun using a procedure that will result in valid test results, unless other arrangements have been made with OCD.

7. All equations and assumptions used in the analysis shall be provided with the appropriate parameters substituted into the equations.

8. A plot of the temperature data shall be provided for review. Any temperature anomalies shall be noted to determine if they correspond to pressure anomalies since the temperature compensation mechanism of the pressure gauge may be influenced by temperature fluctuations.

9. Explain any anomalous pressure data responses. Investigate any potential physical causes for the anomaly in addition to potential reservoir response characteristics.

Navajo will comply with these requirements in the test results for each well.

SECTION IX - Report Components

Include the following information in the report to the OCD in Santa Fe - Attention environmental Bureau of the Division (see address under OCD contacts listed in the Contacts Section). The information in the report includes general information, an overview of the test, analysis of the test data, summary of the results and a comparison of the results with previous test results and UIC permit parameters. Submit the report to OCD within 30 days of test completion.

1. Facility information
   a. Name: Navajo Refining Company (Subsidiary of Holly Corporation)
   b. Location: Highway 82 East, Artesia, New Mexico 88211
   c. Operator's OGRD number: 94081

   The above Data will be included in the report for each well.

2. Well information:

   a. OCD UIC Permit number authorizing injection

   - Well No. 1: UIC-CLI-008-1
   - Well No. 2: UIC-CLI-008-2
   - Well No. 3: UIC-CLI-008-3

   b. Well classification

   - Well No. 1: Class I Non Hazardous
   - Well No. 2: Class I Non Hazardous
   - Well No. 3: Class I Non Hazardous

   c. Well name and number

   - WDW-1 (Mewbourne)
   - WDW-2 (Chukka)
   - WDW-3 (Gaines

   d. API number

   - Well No. 1: 30-015-27592
   - Well No. 2: 30-015-20894
   - Well No. 3: 30-015-26575

   e. Legal location

   - Well No. 1: 660 FSL, 2310-FEL, Sect 31 T17S R28E
   - Well No. 2: 1980 FNL, 660-FWL, Sect 12 T18S R27E

- Well No. 3: 790 FSL, 2250-FWL, Sect 1 T18S R27E

3. Current wellbore schematic as described in Section VI

   Current wellbore schematics will be attached and presented as figures for each well report. A copy of the well schematic for each well can be found in Exhibit 4.

4. Copy of an electric log encompassing the completed interval

   A copy of an electric log encompassing the completed interval will be attached and presented as exhibits for each well report.

5. Copy of relevant portions of any porosity log used to estimate formation porosity

   A copy of porosity logs used to estimate formation porosity will be attached and presented as exhibits for each well report.

6. PVT data of the formation and injection fluid as described in Section VI

   a. Estimation of formation fluid and reservoir rock compressibility
      3.6×10^{-6} 1/psi
   b. Formation fluid viscosity with reference temperature
      0.72 cp at 112° F
   c. Formation fluid specific gravity/density with reference temperature
      8.6 ppg at 112° F

7. Daily rate history data for a minimum of one month preceding the fall-off test

   The daily rate history will be provided with fall-off test report for each well.

8. Cumulative injection into the formation from test well and offset wells

   Current cumulative volumes will be provided in the test report for each well.

9. Pressure gauges

   a. Describe the type of down-hole surface pressure readout gauge used including manufacturer and type

      The memory gauges that will be used are sapphire gauges that will have an accuracy of 0.025% full scale (FS) or 0.01% of the reading and will have a resolution of 0.0003% (FS). The pressure range of the gauges will be form 0-10,000 psi. These are typical bottom hole memory gauges with the best accuracy available in the area. The gauges will be lowered to the top of the injection interval at 7924 feet in Mewbourne Well No. 1, 7820 feet in Chukka Well No. 2, and 7660 feet in Gaines Well No. 3. The recoding period will be set to record pressures at a minimum of every 10 seconds for each well.

b. List the full range, accuracy and resolution of the gauge

- +/-0.025% F.S. + 0.01% of reading
- Will also provide a data specification sheet of gauges that were used to run the fall-off with report for each well.

c. Provide the manufacturer's recommended frequency of calibration and a calibration certificate showing date the gauge was last calibrated.

Current calibration certificates will be provided with final report for each well.

10. One mile Area of Review (AOR)

a. Identify wells located within the one mile AOR

Exhibit 3 (Table VII)

b. Ascertain the status of wells within the one-mile AOR

Exhibit 3 (Table VIII)

c. Provide details on any offset producers and injectors completed in the same injection interval

Area of Review (AOR) lists all wells. The only wells that will affect the PFO Test are Navajo's well(s). These wells and the controlled rates are referenced in the procedure for each well.

11. Geology

a. Describe geologic environment of the injection interval.

The proposed injection zones are porous carbonates of the lower portion of the Wolfcamp Formation and the Cisco and Canyon Formations. The Lower Wolfcamp is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation consists of light brown to tan, fine to medium-grained, fossiliferous limestone with variegated shale interbeds.

The Cisco Formation of the Northwest Shelf is described as consisting of uniform, light-colored, chalky, fossiliferous limestone interbedded with variegated shales. Cisco, at the edge of the Permian basin, is also described as consisting of biothermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 745 feet thick in the Chukka Well No. 2, 650 feet thick in Mewbourne Well No. 1, and 720 feet thick in Gaines Well No. 3.

The Canyon Formation consists of white to tan to light brown fine grained, chalky, fossiliferous limestone with gray and red shale interbeds.

In summary, permeability values in the injection zone from producing fields in the region range up to 200 md. However, based on test data for the Mewbourne Well No. 1, Chukka Well No. 2, and Gaines Well No. 3, permeability values as high as 2733 md or higher occur in intervals in the injection zone. Each well report will include a short description of the injection interval as described above.

b. Discuss the presence of geologic features, i.e., pinchouts, channels, and faults, if applicable.

N/A

c. Provide a portion of a relevant structure map, if necessary.

N/A

12. Offset wells

(Area of Review lists all wells within the AOR. The AOR was update in 2008 and the only wells that will affect the PFO Test are the Navajo's injection wells. These wells and controlled rates will be referenced in the procedure and accounted for in the analysis if necessary.)

a. Identify the distance between the test well and any offset wells completed in the same injection interval
b. Report the status of the offset wells during both the injection and shut-in portions of the test
c. Describe the impact, if any, the offset wells had on the test

13. Chronological listing of the daily testing activities (operations log)

Chronology of activities will be included in each well report with a minimum of the following items:

a. Date of the test
b. Time of the injection period
c. Type of injection fluid
d. Final injection pressure and temperature prior to shutting in the well
e. Total shut-in time
f. Final static pressure and temperature at the end of the fall-off portion of the test

14. Describe the location of the shut-in valve used to cease flow to the well for the shut-in portion of the test.

Each well will be shut-in with a 4-inch gate valve, one at the wellhead and one at the filter pods. The valves will be locked out and tagged out.

15. Provide each of the following; including the equations used to calculate each, the equations with the appropriate parameters substituted in them, description of parameters used in calculations with references as to how the values were derived:

a. Radius of test investigation

$$r_{waste} = \left[\frac{0.13368\ V}{\pi\ h\ \phi} \right]^{1/2}$$

b. Time to beginning of the infinite acting portion of the test

$$t_{waste} = 948 \frac{\phi\ \mu_{waste}\ c_t\ r^2_{waste}}{k}$$

c. Slope or slopes determined from the semi-log plot

Determined from Pan Systems V3.5 © Horner or Superposition Plot

d. The value for transmissibility (kh/u)

$$\frac{k\ h}{\mu} = 162.6 \frac{q_{last}\ B}{m}$$

e. Permeability (k)

$$k = \frac{k\ h}{h}$$

f. Skin factor (s)

$$s = 1.151 \left[\frac{p_{wf} - p_{1\,hr}}{m} - \log \left[\frac{k}{\phi\ \mu\ c_t\ r_w^2} \right] + 3.23 \right]$$

g. Pressure drop due to skin (ΔPskin)

ΔPskin = 0.869ms

h. Flow efficiency ((Pwf-ΔPskin-Pstatic)/ (Pwf-Pstatic))

i. Flow capacity (kh) or mobility thickness

$$k\,h = \left(\frac{k\,h}{\mu}\right)\mu_{res}$$

j. $P_{1\ hour}$ (extrapolated pressure at one hour)

Determined from Pan Systems© V3.5, which is the extrapolated straight line at one hour on the Horner Plot.

16. Explain any pressure or temperature anomaly

Any pressure and temperature anomalies will be explained in the report for each well.

17. Describe the test results

a. Discuss if the test reached radial flow or if it was dominated by wellbore storage or another type of flow regime.

Will be determined from Log-Log Plot

b. Describe the reservoir results as homogeneous or heterogeneous explaining how this was determined.

Note: Initial assumption will be homogeneous reservoir in semi-steady state flow. An explanation will be included in the well reports.

18. Provide the following graphs:

The following graphs will be provided by the Pan System V3.5 © and will include the identifiable flow regemes on each plot, which will be included in each well report.

a. Cartesian plot of pressure and temperature versus time
b. Cartesian plot of injection rate versus time
c. Log-log and derivative plots with the flow regions identified

i. Identify the wellbore storage period
ii. Identify the radial flow period in.
iii. Identify any other relevant flow regimes
iv. Semi-log plot and expanded semi-log plot (typically Horner plots)
v. Identify the flow regions on each
vi. Draw the semi-log straight line
vii. Identify the P* (false extrapolated pressure)
viii. Calculate $P_{1\ hour}$ (extrapolated pressure at one hour)

e. Plot of the digital surface rates and pressures from the surface pressure gauge

Subsurface will attach a data logging surface gauge to the wellhead to generate data and plot. Navajo will provide the rates from there flow meters. This will be included in the well report for each well. As a note, historically the wellhead pressure at some point in time during the pressure falloff will go to zero and then on a vacuum.

f. Plot of digital pressures and times from the bottom hole gauges

Data will be provided from down-hole gauges for plot. The plots for each well will be generated by the Pan Systems© V3.5 software.

g. Complete injection rate history plot (injection rate and wellhead pressure vs. calendar time)

Injection rate history will be provided in Pan System © Report for each well.

h. Current Hall plot with explanation for any changes to the slope of this plot

Explanation will be provided in report for each well.

19. Comparison of permeability (k), transmissibility (kh/u), skin (s), false extrapolated pressure (P*), and depth to fill with the same values determined from fall-off tests previously conducted in the well.

A table will be provided comparing the results from previous testing with the report for each well.

20. A statement that the raw test data generated by the test will be kept on file by the permittee for a period of not less than 3 years and will be made available to OCD upon request during this time period. The raw test data need not be submitted to OCD unless requested.

Navajo will comply with this and a table of acquired pressure, rate, and analytical data will be included with the report for each well.

SECTION X – Contacts

OCD Contacts:

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EXHIBITS

EXHIBIT 1

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PanSystem Version 3.2

APPENDIX E

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	WDW-1
Date	April 3 - 4, 2008
Test	Falloff
Gauge Depth	7924 feet
Injection Interval	7924 feet - 8476 feet
Completion Type	Perforated
Top of Fill	8856 feet
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 : 3
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	3527.366128 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-1	WDW-2	WDW-3
Well radius	0.3646 ft	0.3281 ft	0.3281 ft
Distance from observation to active well	0.000000 ft	1.0970e4 ft	7907.000000 ft
Wellbore storage coefficient	0.0900 bbl/psi	1.0000e-3 bbl/psi	1.0000e-3 bbl/psi
Storage Amplitude	0.000000 psi	0.000000 psi	0.000000 psi
Storage Time Constant	0.000000 hr	0.000000 hr	0.000000 hr
Second Wellbore Storage	0.170000 bbl/psi	2.7000e-3 bbl/psi	1.7500e-4 bbl/psi
Time Change for Second Storage	0.050000 hr	0.017500 hr	7.5000e-3 hr
Well offset - x direction	0.0000 ft	-7590.0000 ft	-6000.0000 ft
Well offset - y direction	0.0000 ft	-7920.0000 ft	-5150.0000 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	3420.440000 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	2010.0000 md
Skin factor (Well 1)	262.3980
Skin factor (Well 2)	0.0000
Skin factor (Well 3)	0.0000

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-1763.241389	3530.933000	0.000000
-1595.241389	3742.850000	-3439.885715
-1259.241389	3742.850000	-5424.685715
-1115.241389	3742.850000	-6529.028572
-851.241389	3742.850000	-6134.057144
-755.241389	3742.850000	-5884.114286
-659.241389	3742.850000	-5420.571429
-227.241389	3742.850000	-5796.342858
-179.241389	3742.850000	-5624.228572
-83.241389	3742.850000	-5940.685715
-25.624723	4067.800000	-6229.371429
-1.191389	4142.320000	-7045.714287
0.625277	4100.720000	-8088.000001
24.642373	3534.546000	0.000000
25.507253	4186.389750	-9358.628573
27.362985	4082.968739	-7498.285715
50.380409	4108.528193	-7872.685715
50.567202	4014.491440	-6134.742858
76.145279	3530.921000	0.000000
77.391944	3530.933000	0.000000
78.241944	4034.450000	-7370.742858
80.308611	4035.810000	-6503.314287
94.775277	4031.990000	-6392.571429
96.525277	4034.450000	-6566.057144
101.641944	4034.450000	-6640.800001
103.091944	4039.380000	-6556.800001
108.758611	4024.680000	-6465.942858

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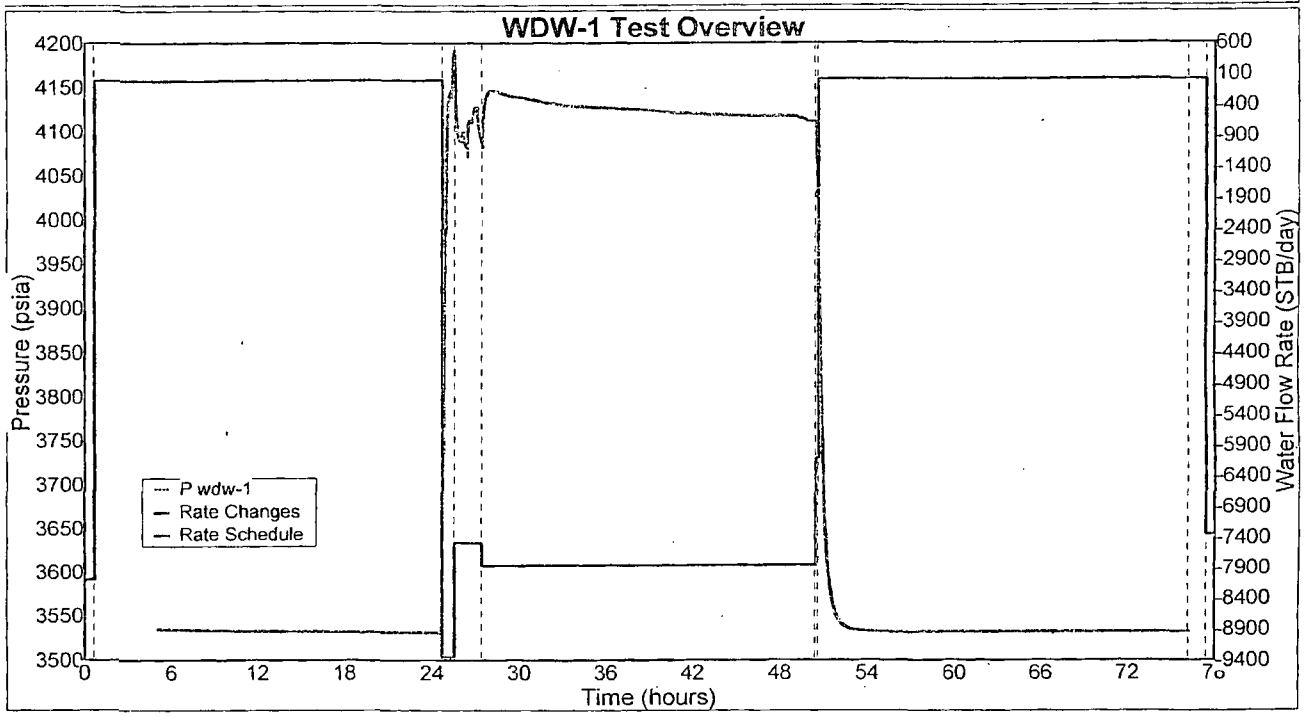

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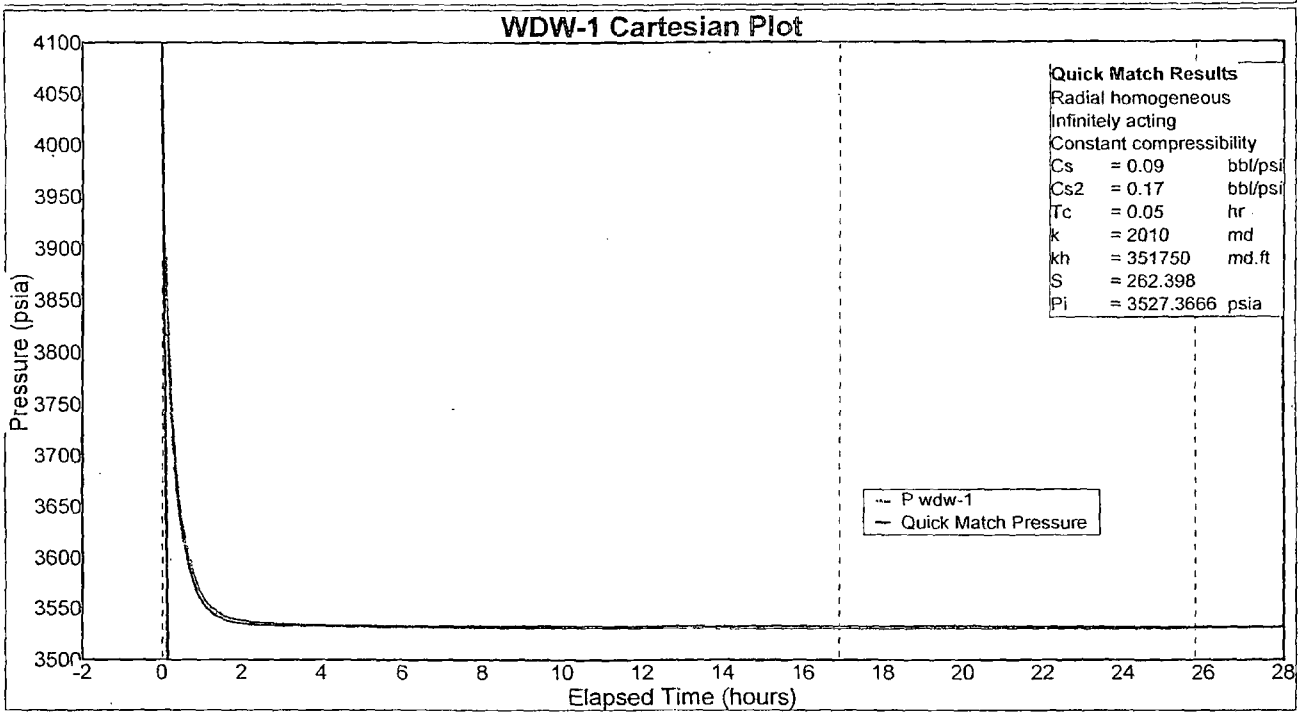
Well Test Analysis Report



WDW-1 Cartesian Plot Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.070713 bbl/psi
Dimensionless wellbore storage	3235.095983

Quick Match Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.0900 bbl/psi
Second Wellbore Storage	0.170000 bbl/psi
Time Change for Second Storage	0.050000 hr
Permeability	2010.0000 md
Permeability-thickness	3.5175e5 md.ft
Skin factor	262.3980
Computed initial pressure	3527.366588 psia

WDW-1 Cartesian Plot Line Details
Line type : Wellbore storage
Slope : -3614.8
Intercept : 4014.82
Coefficient of Determination : 0.930827
Number of Intersections = 0

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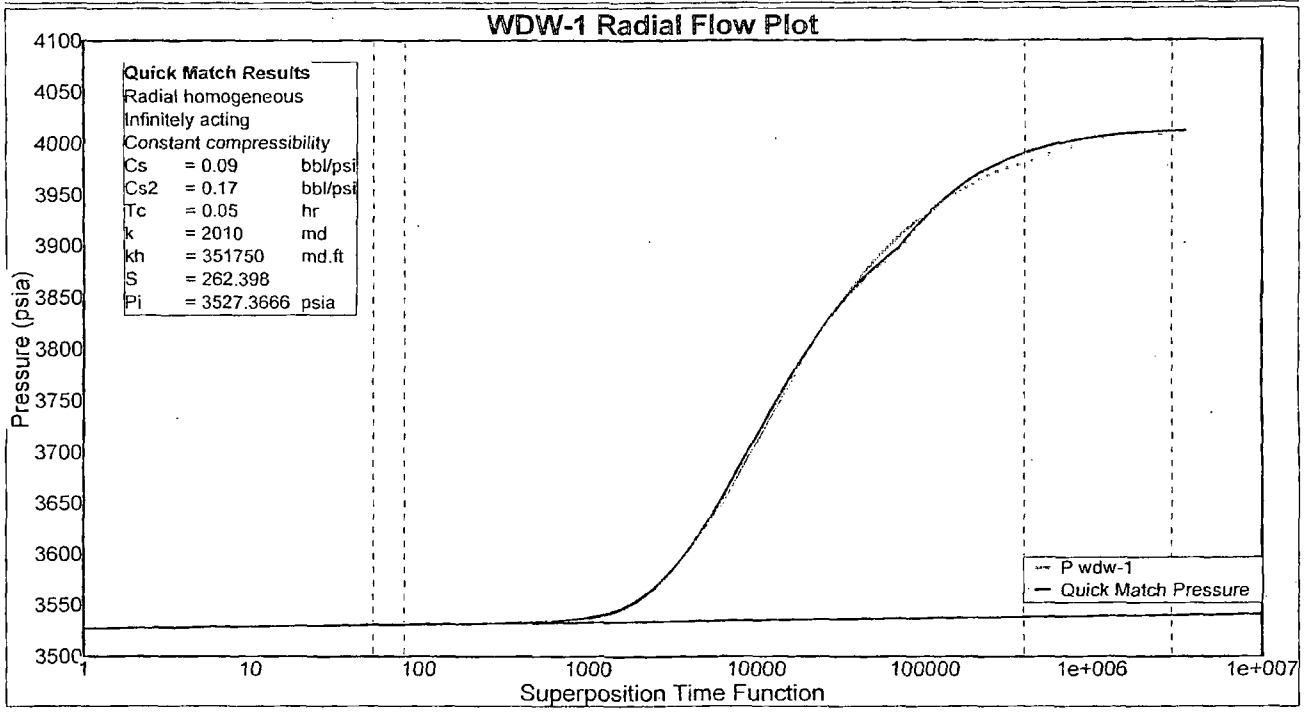
Well Test Analysis Report



WDW-1 Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Permeability	2010.003805 md
Permeability-thickness	3.5175e5 md.ft
Radius of investigation	8455.211837 ft
Flow efficiency	0.044899
dP skin (constant rate)	465.253678 psi
Skin factor	262.398403
Extrapolated pressure	3527.366128 psia

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.0900 bbl/psi
Second Wellbore Storage	0.170000 bbl/psi
Time Change for Second Storage	0.050000 hr
Permeability	2010.0000 md
Permeability-thickness	3.5175e5 md.ft
Skin factor	262.3980
Computed initial pressure	3527.366588 psia

WDW-1 Radial Flow Plot Line Details

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Line type : Radial flow
Slope : 2.04134
Intercept : 3527.37
Coefficient of Determination : 0.894916

	Radial flow
Extrapolated pressure	3527.366128 psia
Pressure at dt = 1 hour	3534.600851 psia

Number of Intersections = 0

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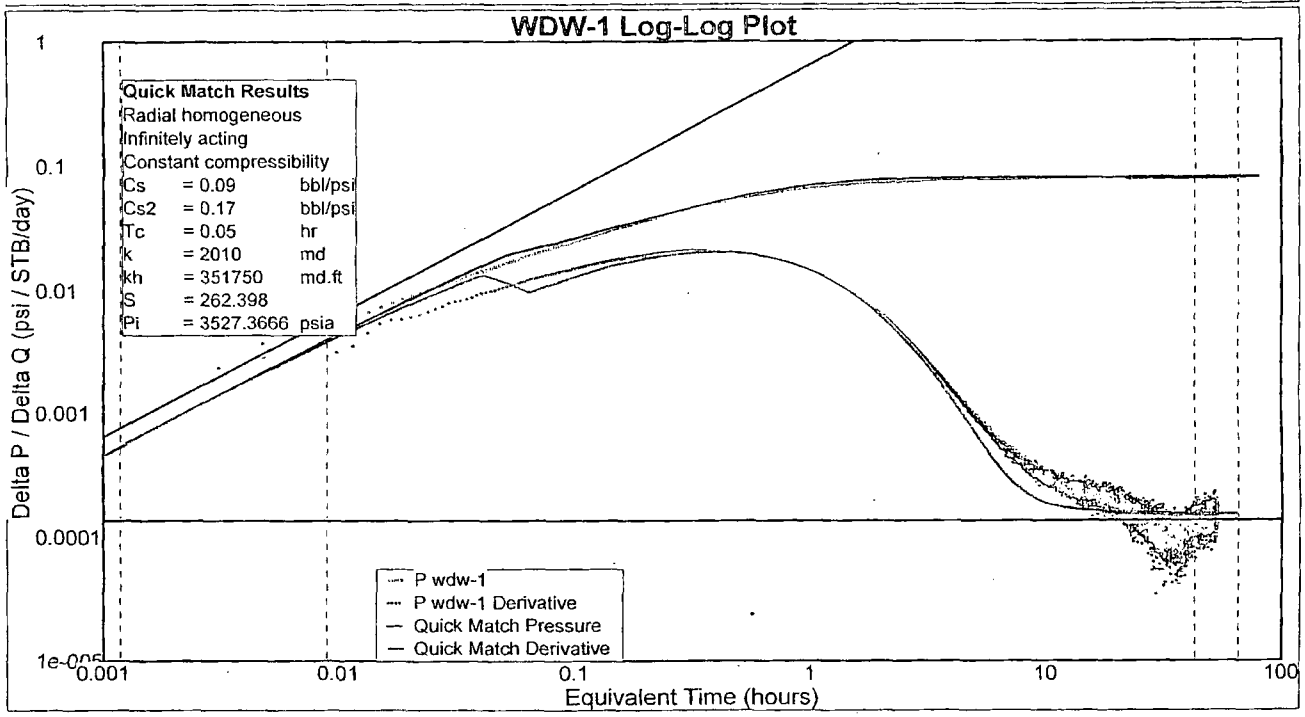
Well Test Analysis Report



WDW-1 Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.064111 bbl/psi
Dimensionless wellbore storage	2933.037703
Permeability	2150.010209 md
Permeability-thickness	3.7625e5 md.ft

Quick Match Results
Radial homogeneous - Infinitely acting
Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.0900 bbl/psi
Second Wellbore Storage	0.170000 bbl/psi
Time Change for Second Storage	0.050000 hr
Permeability	2010.0000 md
Permeability-thickness	3.5175e5 md.ft
Skin factor	262.3980
Computed initial pressure	3527.366588 psia

WDW-1 Log-Log Plot Line Details
Line type : Radial flow
Slope : 0
Intercept : 0.000135101
Coefficient of Determination : Not Used

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Line type : Wellbore storage
Slope : 1
Intercept : 0.649917
Coefficient of Determination : Not Used
Number of Intersections = 0

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APPENDIX G

Well Test Analysis Report

Company	Navajo Refining Company
Location	Artesia, New Mexico
Well	WDW-2
Date	April 2 - 3, 2008
Test	Falloff
Gauge Depth	7570 feet
Injection Interval	7570 feet - 8399 feet
Completion Type	Perforated
Top of Fill	7928 feet
Last Stabilization	February 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	3393.473989 psia
Temperature	0.000000 deg F

Well Parameters Data

	WDW-2
Well radius	0.3281 ft
Distance from observation to active well	0.000000 ft
Wellbore storage coefficient	0.0200 bbl/psi
Storage Amplitude	0.000000 psi
Storage Time Constant	0.000000 hr
Second Wellbore Storage	0.090000 bbl/psi
Time Change for Second Storage	0.010000 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	1091.2700 md
Skin factor (Well 1)	155.4730

Rate Change Data

Time Hours	Pressure psia	Rate STB/day
-1281.744722	3308.951000	0.000000
-1257.744722	3308.951000	-1009.371429
-921.744722	3308.951000	-3436.114286
-849.744722	3308.951000	-3216.000000
-753.744722	3308.951000	-3075.428572
-657.744722	3308.951000	-2098.628572
-537.744722	3308.951000	-2907.085715
-441.744722	3308.951000	-2146.628572
-369.744722	3308.951000	-2880.342858
-321.744722	3308.951000	-2167.200000
-225.744722	3308.951000	-2618.057143
-153.744722	3308.951000	-2184.342857
-81.744722	3308.951000	-2675.657143
-78.644722	3585.981000	-3308.571429
-78.211389	3419.241000	0.000000
-66.878056	3644.511000	-3332.571429
-65.494722	3626.071000	-2360.228572
-24.094722	3602.201000	-3407.657143
2.039445	3397.140503	0.000000
19.855333	3787.956314	-5774.742858
26.240907	3775.819996	-5504.571429
26.439073	3717.310533	-3627.771429
51.947374	3396.690000	0.000000
52.597356	3735.005862	-4935.428572
53.001464	3441.443305	0.000000
72.737657	3759.507221	-5255.657144
73.579609	3759.678076	-5337.257144
75.405640	3793.956000	-5979.771429
75.505634	3759.120370	-4458.171429
75.602349	3584.133640	-2338.971429

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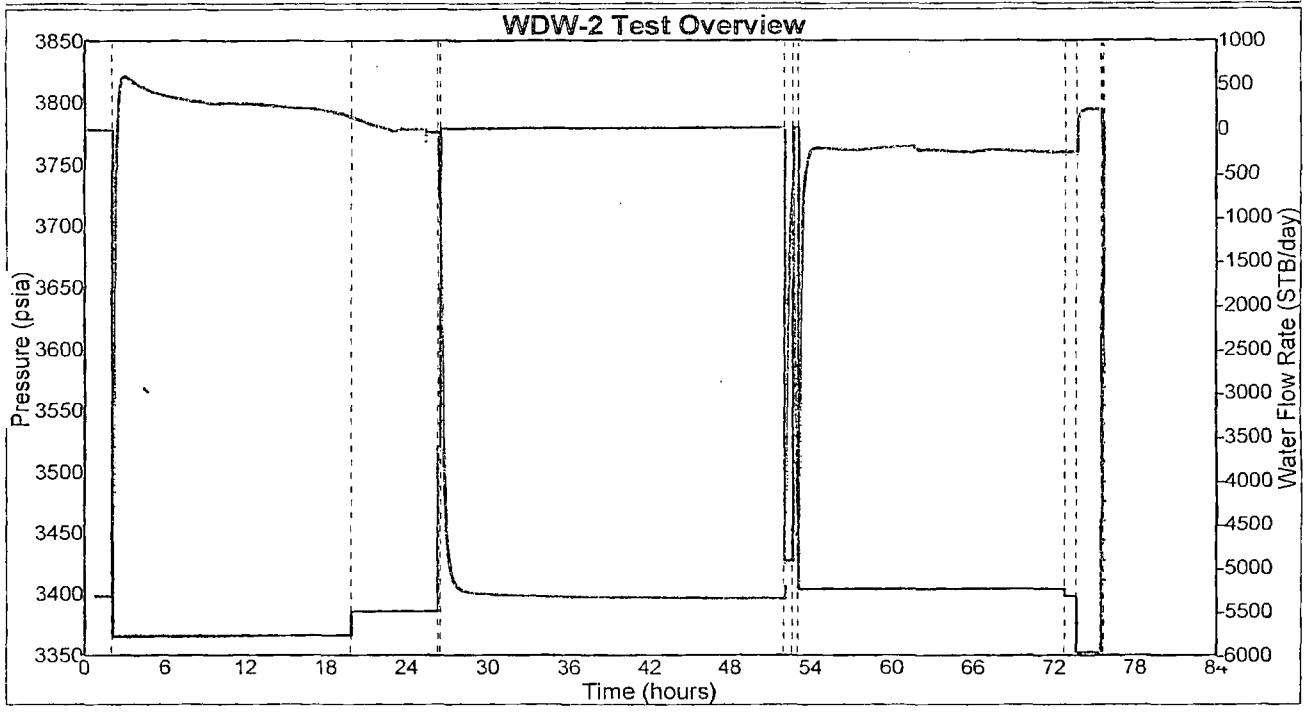
Well Test Analysis Report



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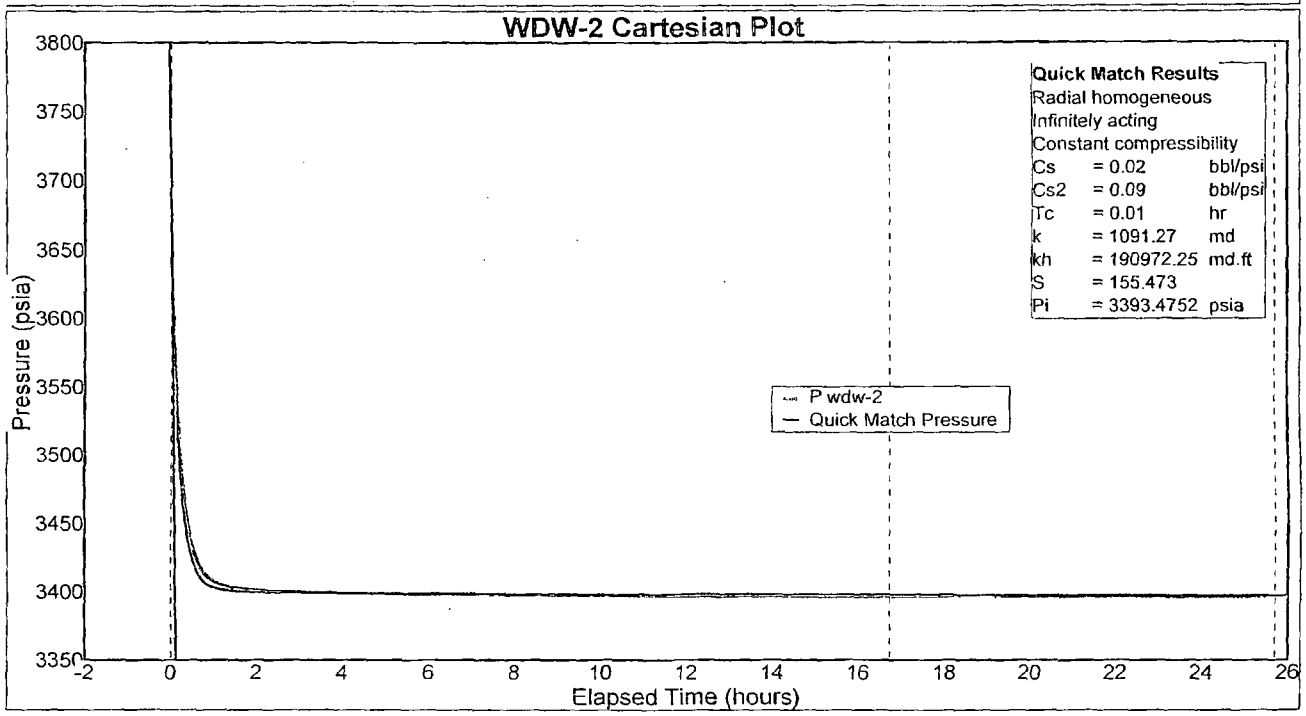
Well Test Analysis Report



WDW-2 Cartesian Plot Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.05561 bbl/psi
Dimensionless wellbore storage	3141.673428

Quick Match Results
Radial homogeneous - Infinitely acting
Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.0200 bbl/psi
Second Wellbore Storage	0.090000 bbl/psi
Time Change for Second Storage	0.010000 hr
Permeability	1091.2700 md
Permeability-thickness	1.9097e5 md.ft
Skin factor	155.4730
Computed initial pressure	3393.475193 psia

WDW-2 Cartesian Plot Line Details
Line type : Wellbore storage
Slope : -2718.16
Intercept : 3700.66
Coefficient of Determination : 0.970598
Number of Intersections = 0

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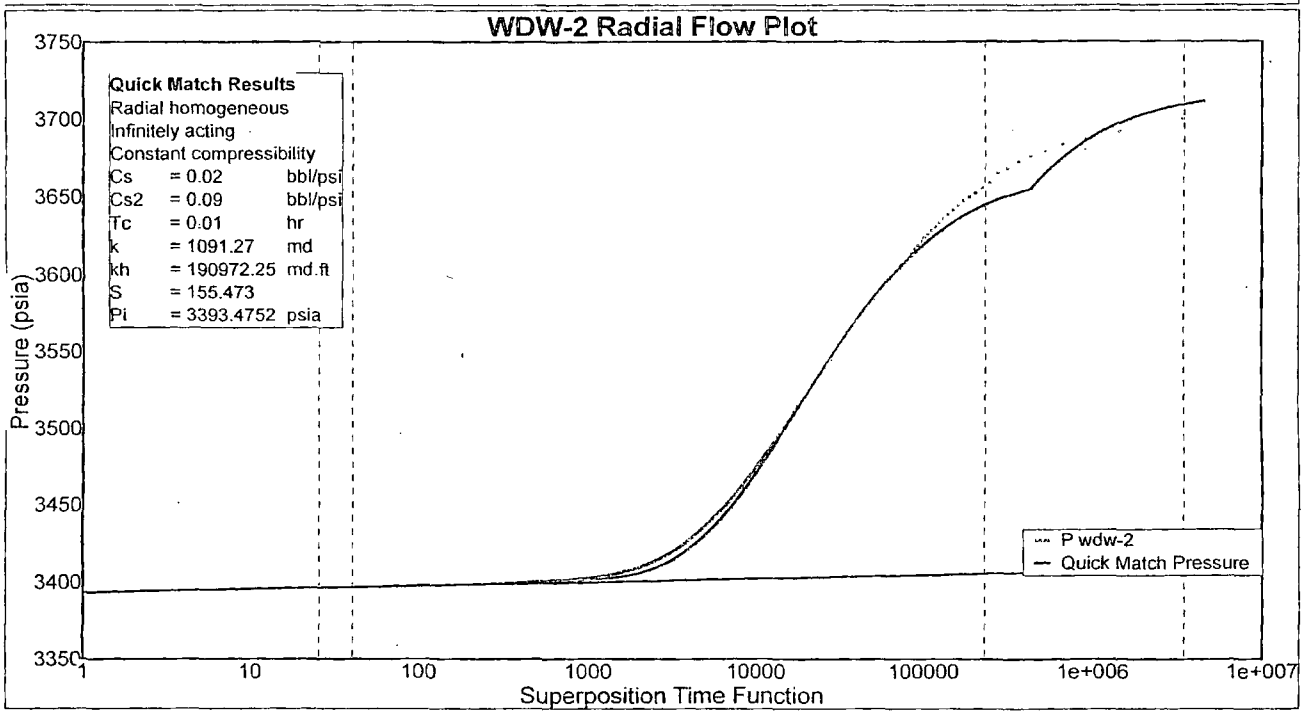

WDW-2 Radial Flow Plot Model Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Permeability	1091.26691 md
Permeability-thickness	1.9097e5 md.ft
Radius of investigation	6221.494338 ft
Flow efficiency	0.072814
dP skin (constant rate)	300.256629 psi
Skin factor	155.472839
Extrapolated pressure	3393.473989 psia

Quick Match Results

Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.0200 bbl/psi
Second Wellbore Storage	0.090000 bbl/psi
Time Change for Second Storage	0.010000 hr
Permeability	1091.2700 md
Permeability-thickness	1.9097e5 md.ft
Skin factor	155.4730
Computed initial pressure	3393.475193 psia

WDW-2 Radial Flow Plot Line Details

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Line type : Radial flow
Slope : 2.22343
Intercept : 3393.47
Coefficient of Determination : 0.934369

	Radial flow
Extrapolated pressure	3393.473989 psia
Pressure at dt = 1 hour	3401.497360 psia

Number of Intersections = 0

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SUBSURFACE

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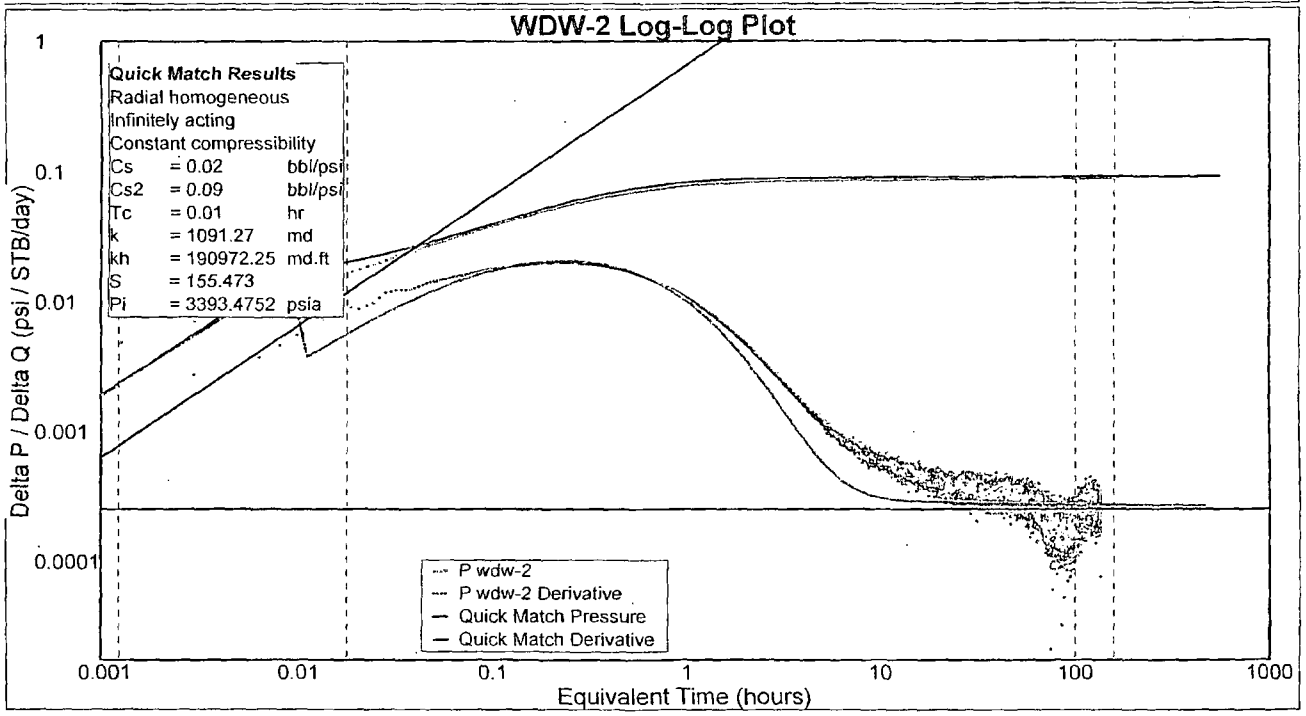
PanSystem

Well Test Analysis Report



WDW-2 Log-Log Plot Model Results
Radial homogeneous - Infinitely acting

Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.062582 bbl/psi
Dimensionless wellbore storage	3535.531263
Permeability	1136.569494 md
Permeability-thickness	1.9890e5 md.ft

Quick Match Results
Radial homogeneous - Infinitely acting
Time Stepped Wellbore Storage

	Value
Wellbore storage coefficient	0.0200 bbl/psi
Second Wellbore Storage	0.090000 bbl/psi
Time Change for Second Storage	0.010000 hr
Permeability	1091.2700 md
Permeability-thickness	1.9097e5 md.ft
Skin factor	155.4730
Computed initial pressure	3393.475193 psia

WDW-2 Log-Log Plot Line Details
Line type : Wellbore storage
Slope : 1
Intercept : 0.665797
Coefficient of Determination : Not Used

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Line type : Radial flow
Slope : 0
Intercept : 0.000255566
Coefficient of Determination : Not Used
Number of Intersections = 0

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APPENDIX I

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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Well Test Analysis Report

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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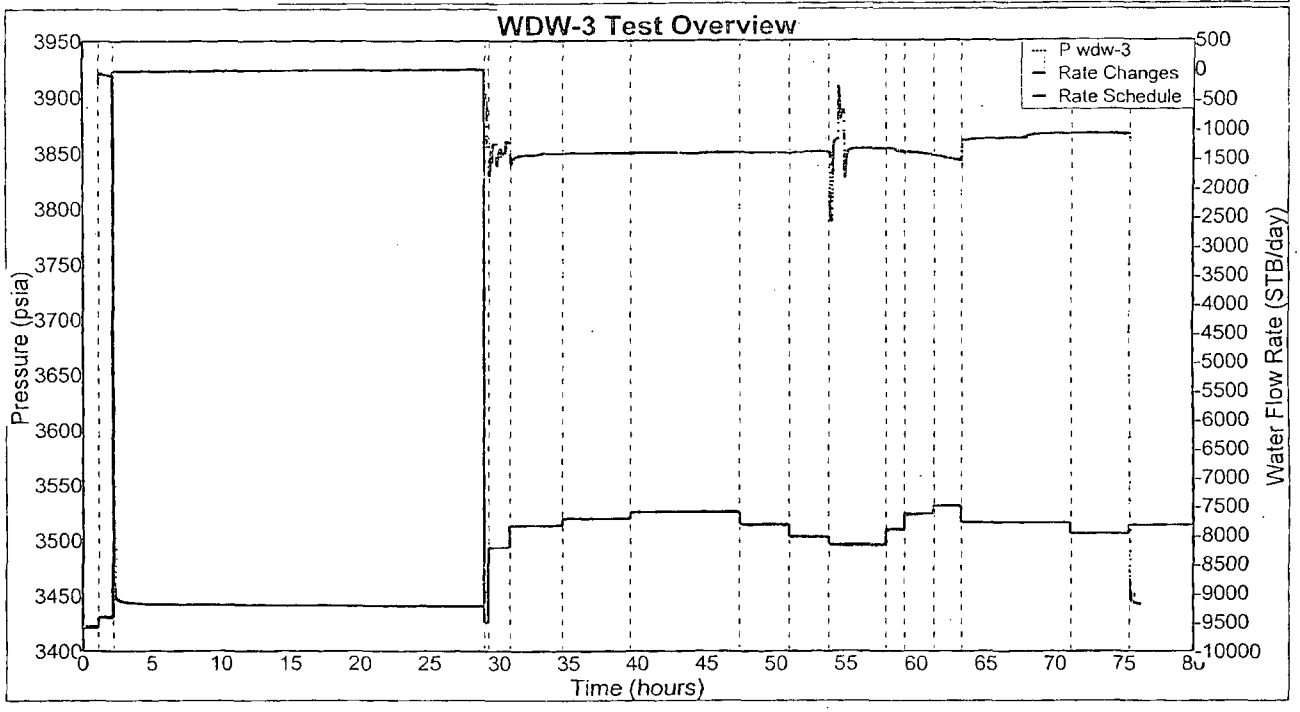
Well Test Analysis Report



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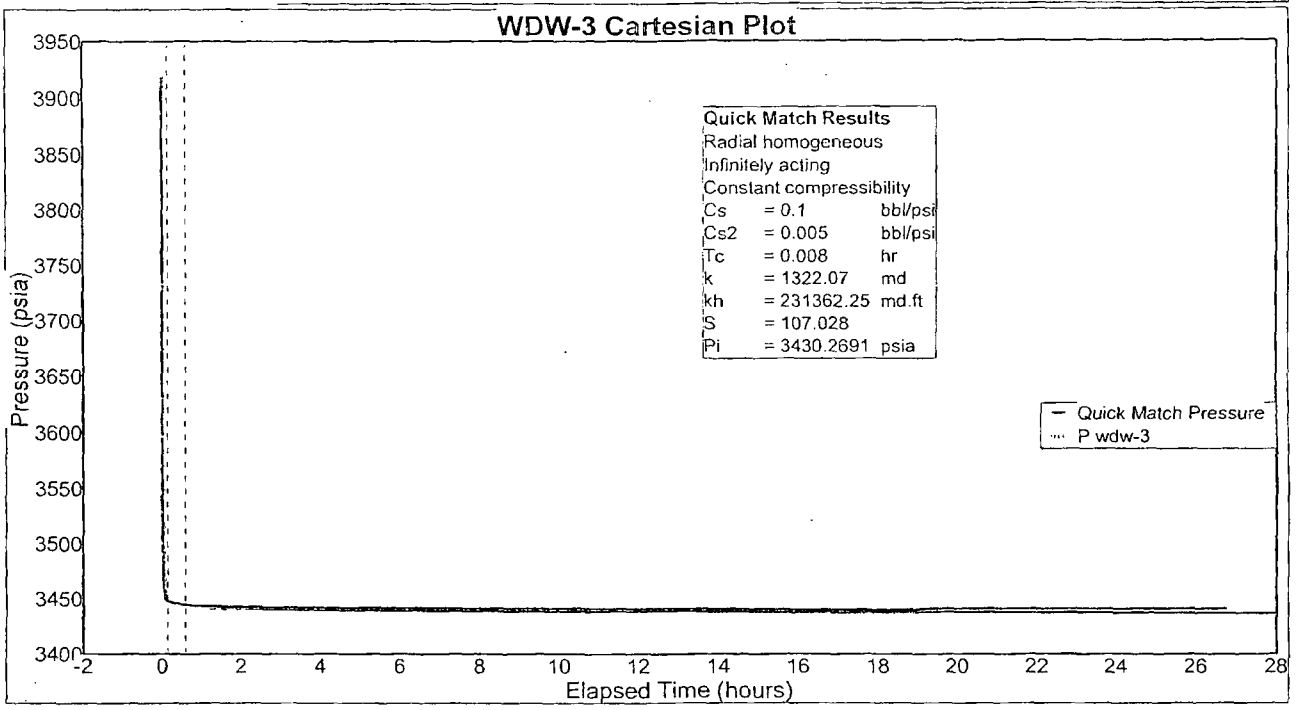

Quick Match Results

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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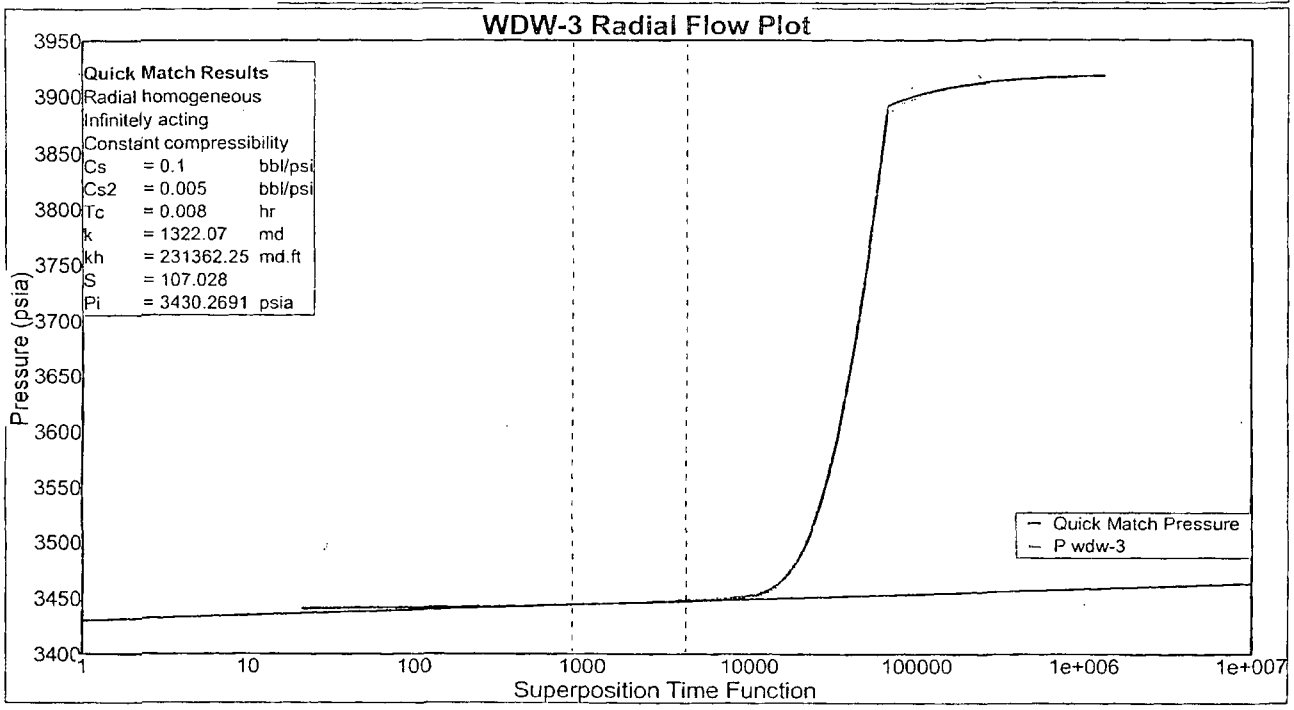
Well Test Analysis Report



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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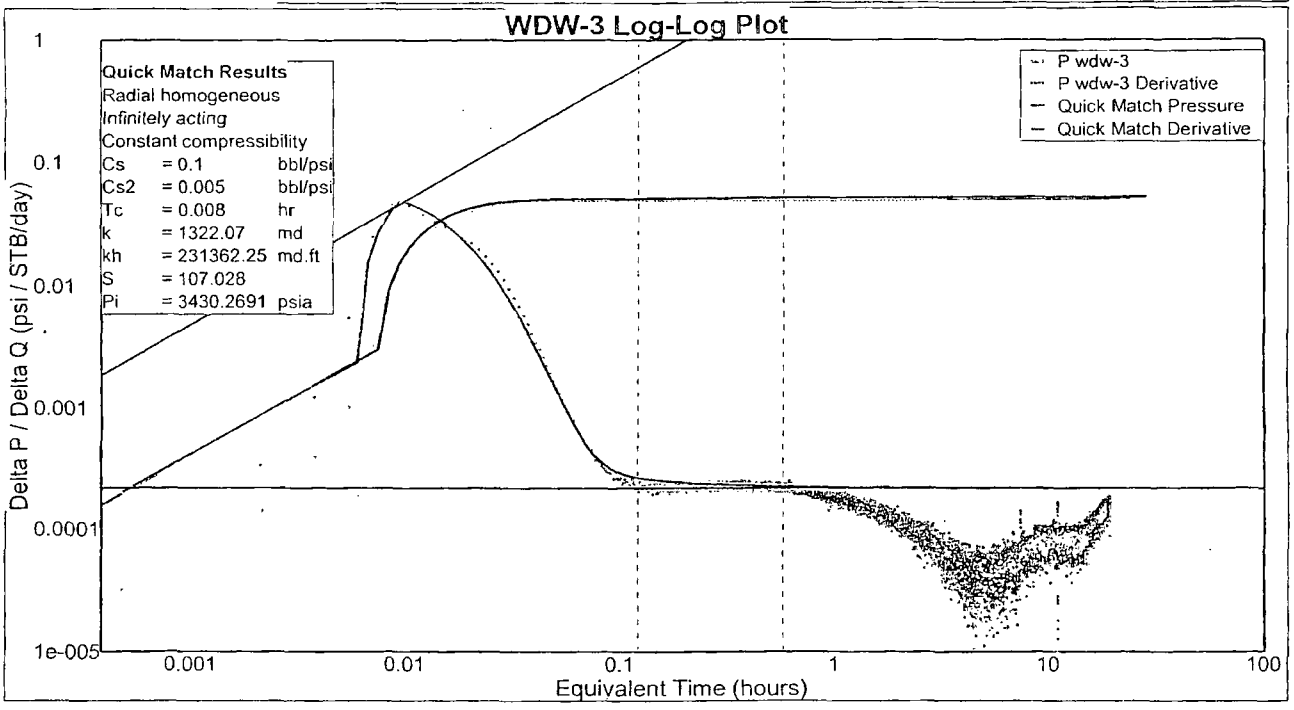
PanSystem

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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EXHIBIT 2

SUBSURFACE

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

17-Dec-08

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 746-5468
Fax: (575) 746-5421

Re: Injection Wells

Work Order : **0812122**

Dear Aaron,

ALS Laboratory Group received 1 sample on 12/4/2008 10:10 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group 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 Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 17.

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: T104704231-08-TX

ALS Laboratory Group

Date: 17-Dec-08

Client: Navajo Refining Company
Project: Injection Wells
Work Order: **0812122**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0812122-01	Effluent To Inj. Wells	Water		12/3/2008 15:25	12/4/2008 10:10	☐

ALS Laboratory Group

Date: *17-Dec-08*

Client: Navajo Refining Company
Project: Injection Wells
Sample ID: Effluent To Inj. Wells
Collection Date: 12/3/2008 03:25 PM

Work Order: 0812122
Lab ID: 0812122-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY			**SW7470**		Prep Date: **12/15/2008**	Analyst: **JCJ**
Mercury	ND		0.000200	mg/L	1	12/15/2008 06:37 PM
METALS			**SW6020**		Prep Date: **12/8/2008**	Analyst: **ALR**
Arsenic	**0.103**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
Cadmium	ND		0.00200	mg/L	1	12/9/2008 02:09 AM
Chromium	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Copper	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Lead	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Molybdenum	**0.0843**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
Nickel	**0.00662**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
Selenium	**0.653**		**0.0500**	**mg/L**	10	12/10/2008 04:06 PM
Silver	ND		0.00500	mg/L	1	12/9/2008 02:09 AM
Zinc	**0.0624**		**0.00500**	**mg/L**	1	12/9/2008 02:09 AM
BOD			**SM5210 B**		Prep Date: **12/5/2008**	Analyst: **DM**
Biochemical Oxygen Demand	**48.4**		**2.00**	**mg/L**	1	12/5/2008 03:00 PM
CYANIDE			**M4500CN E&G**			Analyst: **KKP**
Cyanide	**0.0580**		**0.0200**	**mg/L**	1	12/11/2008 03:00 PM
Cyanide, Amenable to Chlorination	ND		0.0200	mg/L	1	12/11/2008 03:00 PM
AMMONIA AS N			**SM4500 NH3-B-F**			Analyst: **KKP**
Nitrogen, Ammonia (as N)	**24.3**		**0.625**	**mg/L**	25	12/10/2008 01:00 PM
OIL AND GREASE			**E1664**			Analyst: **MAM**
Oil and Grease	**6.00**		**2.00**	**mg/L**	1	12/12/2008 03:00 PM
PHENOLICS			**E420.1**			Analyst: **DM**
Phenolics, Total Recoverable	**0.665**		**0.0500**	**mg/L**	1	12/15/2008 03:15 PM
TOTAL KJELDAHL L NITROGEN			**M4500 NH3 D**			Analyst: **RPM**
Nitrogen, Total Kjeldahl	**28.2**		**1.00**	**mg/L**	1	12/8/2008 07:00 AM
TOTAL SUSPENDED SOLIDS			**M2540D**			Analyst: **TDW**
Suspended Solids (Residue, Non-Filterable)	**60.0**		**2.00**	**mg/L**	1	12/8/2008 09:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
a - Not accredited
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time
n - Not offered for accreditation

ALS Laboratory Group

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

Date: *17-Dec-08*

QC BATCH REPORT

Batch ID: **33311** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW3-120808-33311** Units: **mg/L** Analysis Date: **12/9/2008 02:22 PM**

Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555470** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Cadmium	ND	0.0020								
Chromium	ND	0.0050								
Copper	ND	0.0050								
Lead	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Zinc	0.002495	0.0050								J

LCS Sample ID: **MLCSW3-120808-33311** Units: **mg/L** Analysis Date: **12/9/2008 02:28 PM**

Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555471** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05244	0.0050	0.05	0	105	80-120	0			
Cadmium	0.05188	0.0020	0.05	0	104	80-120	0			
Chromium	0.0506	0.0050	0.05	0	101	80-120	0			
Copper	0.04657	0.0050	0.05	0	93.1	80-120	0			
Lead	0.0509	0.0050	0.05	0	102	80-120	0			
Molybdenum	0.05101	0.0050	0.05	0	102	80-120	0			
Nickel	0.05078	0.0050	0.05	0	102	80-120	0			
Selenium	0.05401	0.0050	0.05	0	108	80-120	0			
Silver	0.05068	0.0050	0.05	0	101	80-120	0			
Zinc	0.05208	0.0050	0.05	0	104	80-120	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **33311** Instrument ID **ICPMS02** Method: **SW6020**

MS Sample ID: **0812117-01CMS** Units: **mg/L** Analysis Date: **12/9/2008 02:54 PM**

Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555475** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05294	0.0050	0.05	0.001126	104	80-120	0			
Cadmium	0.0503	0.0020	0.05	0.0001897	100	80-120	0			
Chromium	0.05013	0.0050	0.05	0.001399	97.5	80-120	0			
Copper	0.04434	0.0050	0.05	0.0008793	86.9	80-120	0			
Lead	0.05066	0.0050	0.05	0.0005488	100	80-120	0			
Molybdenum	0.05264	0.0050	0.05	0.002014	101	80-120	0			
Nickel	0.04974	0.0050	0.05	0.004183	91.1	80-120	0			
Selenium	0.06171	0.0050	0.05	0.009191	105	80-120	0			
Silver	0.04861	0.0050	0.05	0.00006999	97.1	80-120	0			
Zinc	0.05362	0.0050	0.05	0.007323	92.6	80-120	0			

MSD Sample ID: **0812117-01CMSD** Units: **mg/L** Analysis Date: **12/9/2008 03:00 PM**

Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555476** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05573	0.0050	0.05	0.001126	109	80-120	0.05294	5.13	15	
Cadmium	0.04992	0.0020	0.05	0.0001897	99.5	80-120	0.0503	0.758	15	
Chromium	0.0525	0.0050	0.05	0.001399	102	80-120	0.05013	4.62	15	
Copper	0.04488	0.0050	0.05	0.0008793	88	80-120	0.04434	1.21	15	
Lead	0.0503	0.0050	0.05	0.0005488	99.5	80-120	0.05066	0.713	15	
Molybdenum	0.05296	0.0050	0.05	0.002014	102	80-120	0.05264	0.606	15	
Nickel	0.04983	0.0050	0.05	0.004183	91.3	80-120	0.04974	0.181	15	
Selenium	0.06479	0.0050	0.05	0.009191	111	80-120	0.06171	4.87	15	
Silver	0.04952	0.0050	0.05	0.00006999	98.9	80-120	0.04861	1.85	15	
Zinc	0.05265	0.0050	0.05	0.007323	90.7	80-120	0.05362	1.83	15	

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **33311** Instrument ID **ICPMS02** Method: **SW6020**

DUP Sample ID: **0812117-01CDUP** Units: **mg/L** Analysis Date: **12/9/2008 02:41 PM**

Client ID: Run ID: **ICPMS02_081209A** SeqNo: **1555473** Prep Date: **12/8/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.00128	0.0050	0	0	0	0-0	0.001126	0	25	J
Cadmium	ND	0.0020	0	0	0	0-0	0.0001897	0	25	
Chromium	0.001442	0.0050	0	0	0	0-0	0.001399	0	25	J
Copper	0.001068	0.0050	0	0	0	0-0	0.0008793	0	25	J
Lead	ND	0.0050	0	0	0	0-0	0.0005488	0	25	
Molybdenum	0.002052	0.0050	0	0	0	0-0	0.002014	0	25	J
Nickel	0.002117	0.0050	0	0	0	0-0	0.004183	0	25	J
Selenium	0.008773	0.0050	0	0	0	0-0	0.009191	4.65	25	
Silver	ND	0.0050	0	0	0	0-0	0.00006999	0	25	
Zinc	0.007153	0.0050	0	0	0	0-0	0.007323	2.35	25	

The following samples were analyzed in this batch: 0812122-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **33455** Instrument ID **Mercury** Method: **SW7470**

MBLK Sample ID: **GBLKW2-121508-33455** Units: **mg/L** Analysis Date: **12/15/2008 05:31 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559517** Prep Date: **12/15/2008** 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: **GLCSW2-121508-33455** Units: **mg/L** Analysis Date: **12/15/2008 05:33 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559518** Prep Date: **12/15/2008** 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	99	85-115	0			

MS Sample ID: **0812097-01BMS** Units: **mg/L** Analysis Date: **12/15/2008 06:12 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559840** Prep Date: **12/15/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00517	0.00020	0.005	-0.000028	104	85-115	0			

MSD Sample ID: **0812097-01BMSD** Units: **mg/L** Analysis Date: **12/15/2008 06:14 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559843** Prep Date: **12/15/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00525	0.00020	0.005	-0.000028	106	85-115	0.00517	1.54	20	

DUP Sample ID: **0812097-01BDUP** Units: **mg/L** Analysis Date: **12/15/2008 06:10 PM**
Client ID: Run ID: **MERCURY_081215C** SeqNo: **1559837** Prep Date: **12/15/2008** 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	-0.000028	0	20	

The following samples were analyzed in this batch: 0812122-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **33290** Instrument ID **WetChem** Method: **SM5210 B**

MBLK Sample ID: **WBLKW1-120508-33290** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556302** Prep Date: **12/5/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	ND	2.0								

LCS Sample ID: **WLCSW1-120508-33290** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556303** Prep Date: **12/5/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	193.3	2.0	198	0	97.6	85-115	0			

LCSD Sample ID: **WLCSDW1-120508-33290** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556307** Prep Date: **12/5/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	192.8	2.0	198	0	97.4	85-115	0			

DUP Sample ID: **0812114-01HDUP** Units: **mg/L** Analysis Date: **12/5/2008 01:00 PM**
Client ID: Run ID: **WETCHEM_081210E** SeqNo: **1556306** Prep Date: **12/5/2008** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Biochemical Oxygen Demand	982.8	20	0	0	0	0-0	985.8	0.305	20	

The following samples were analyzed in this batch: 0812122-01B

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - *Referenced analyte value is > 4 times amount spiked*
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - *Dual Column results percent difference > 40%*
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - *Value above quantitation range*

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R70944** Instrument ID **WetChem** Method: **M4500 NH3 D**

MBLK Sample ID: **WBLKW1-120808-R70944** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554324** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	ND	1.0								

LCS Sample ID: **WLCSW1-120808-R70944** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554325** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	20.2	1.0	20	0	101	80-120	0			

MS Sample ID: **0812027-02IMS** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554329** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	20	1.0	20	1.526	92.4	75-125	0			

DUP Sample ID: **0812027-02IDUP** Units: **mg/L** Analysis Date: **12/8/2008 07:00 AM**
Client ID: Run ID: **WETCHEM_081208C** SeqNo: **1554328** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Total Kjeldahl	1.516	1.0	0	0	0	0-0	1.526	0.657	20	

The following samples were analyzed in this batch: 0812122-01G

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R70952** Instrument ID **Balance1** Method: **M2540D**

MBLK Sample ID: **BLANK-R70952** Units: **mg/L** Analysis Date: **12/8/2008 09:00 PM**
Client ID: Run ID: **BALANCE1_081208A** SeqNo: **1554423** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Fi	ND	2.0								

LCS Sample ID: **LCS-R70952** Units: **mg/L** Analysis Date: **12/8/2008 09:00 PM**
Client ID: Run ID: **BALANCE1_081208A** SeqNo: **1554424** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Fi	94	2.0	100	0	94	78-120	0			

DUP Sample ID: **0812145-01ADUP** Units: **mg/L** Analysis Date: **12/8/2008 09:00 PM**
Client ID: Run ID: **BALANCE1_081208A** SeqNo: **1554417** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Suspended Solids (Residue, Non-Fi	70	2.0	0	0	0	0-0	69	1.44	20	

The following samples were analyzed in this batch: 0812122-01D

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R71045** Instrument ID **UV-2450** Method: **SM4500 NH3-**

MBLK Sample ID: **WBLKW1-121008-R71045** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556194** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	ND	0.025								

LCS Sample ID: **WLCSW1-121008-R71045** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556195** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.192	0.025	0.2	0	96	80-120	0			

MS Sample ID: **0812086-01BMS** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556201** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.363	0.025	0.2	0.176	93.5	80-120	0			

DUP Sample ID: **0812086-01BDUP** Units: **mg/L** Analysis Date: **12/10/2008 01:00 PM**
Client ID: Run ID: **UV-2450_081210A** SeqNo: **1556200** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (as N)	0.173	0.025	0	0	0	0-0	0.176	1.72	20	*

The following samples were analyzed in this batch: 0812122-01G

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R71097** Instrument ID **UV-2450** Method: **M4500CN E&**

MBLK Sample ID: **WBLKW1-121108-R71097** Units: **mg/L** Analysis Date: **12/11/2008 03:00 PM**
Client ID: Run ID: **UV-2450_081211A** SeqNo: **1557039** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	ND	0.020								
Cyanide, Amenable to Chlorination	ND	0.020								

LCS Sample ID: **WLCSW1-121108-R71097** Units: **mg/L** Analysis Date: **12/11/2008 03:00 PM**
Client ID: Run ID: **UV-2450_081211A** SeqNo: **1557040** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.193	0.020	0.2	0	96.5	80-120	0			

MS Sample ID: **0812191-01BMS** Units: **mg/L** Analysis Date: **12/11/2008 03:00 PM**
Client ID: Run ID: **UV-2450_081211A** SeqNo: **1557050** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	0.185	0.020	0.2	0.001	92	80-120	0			

DUP Sample ID: **0812191-01BDUP** Units: **mg/L** Analysis Date: **12/11/2008 03:00 PM**
Client ID: Run ID: **UV-2450_081211A** SeqNo: **1557049** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide	ND	0.020	0	0	0	0-0	0.001	0	20	
Cyanide, Amenable to Chlorination	ND	0.020	0	0	0	0-0	0	0	0	

The following samples were analyzed in this batch: 0812122-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R71172** Instrument ID **WetChem** Method: **E1664**

MBLK Sample ID: **WBLKW1-121208-R71172** Units: **mg/L** Analysis Date: **12/12/2008 03:00 PM**
Client ID: Run ID: **WETCHEM_081212F** SeqNo: **1558390** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	ND	2.0								

LCS Sample ID: **WLCSW1-121208-R71172** Units: **mg/L** Analysis Date: **12/12/2008 03:00 PM**
Client ID: Run ID: **WETCHEM_081212F** SeqNo: **1558391** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	36.3	2.0	40	0	90.8	80-120	0			

DUP Sample ID: **0812073-02BDUP** Units: **mg/L** Analysis Date: **12/12/2008 03:00 PM**
Client ID: Run ID: **WETCHEM_081212F** SeqNo: **1558402** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Oil and Grease	2.5	2.0	0	0	0	0-0	3	18.2	20	

The following samples were analyzed in this batch: 0812122-01E

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0812122
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R71220** Instrument ID **UV-2450** Method: **E420.1**

MBLK Sample ID: **WBLKW1-121508-R71220** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559301** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	ND	0.050								

LCS Sample ID: **WLCSW1-121508-R71220** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559302** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.519	0.050	0.5	0	104	80-120	0			

MS Sample ID: **0812219-01BMS** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559316** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.53	0.050	0.5	0.021	102	80-120	0			

DUP Sample ID: **0812219-01BDUP** Units: **mg/L** Analysis Date: **12/15/2008 03:15 PM**
Client ID: Run ID: **UV-2450_081215A** SeqNo: **1559315** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phenolics, Total Recoverable	0.028	0.050	0	0	0	0-0	0.021	0	20	J

The following samples were analyzed in this batch: 0812122-01F

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

e-Lab Analytical, Inc.
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page 1 of 1

The Chain of Custody is a Legal Document. All information must be completed accurately.

e-Lab Analytical, Inc.
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

e-Lab Project Manager:

e-Lab Work Order #: 0812122

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order:		Project Name:	Injection Wells	A
Work Order:		Project Number:		B
Company Name:	Navajo Refining Co	Bill To Company:		C
Send Report To:	Aaron Strange	Invoice Attn:		D
Address:	P.O. Box 159	Address:		E
				F
City/State/Zip:	Artesia NM 88210	City/State/Zip:		G
Phone:	575-748-3311	Phone:		H
Fax:	575-746-5421	Fax:		I
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 To Inj. Wells	12/3/08	1525	L	Y	7	X										
2																	
3																	
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 ☒ 2 Wk Days ☐ 24 Hour ☐ other

Results Due Date:

Relinquished by: Aaron Strange — Date: 12/3/08 — Time: 1615

Relinquished by: — Date: — Time:

Received by: — Received by (Laboratory): — 12/4/08 10:10

Notes:

Logged by (Laboratory): — Date: — Time:

Checked by (Laboratory):

e-Lab Analytical Cooler ID:

Trip Blank Number:

QC Package: (Check One Box Below)

- ☐ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

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 e-Lab Analytical, Inc.

2. Unless otherwise agreed in a formal contract, services provided by e-Lab Analytical, Inc. are expressly limited to the terms and conditions stated on the reverse.

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ALS Laboratory Group

Sample Receipt Checklist

Client Name: NAVAJO REFINING

Date/Time Received: 12/4/2008 10:10

Work Order Number 0812122

Received by: RNG

Checklist completed by [signature] 12/5/08 (Signature / Date)

Reviewed by [initials] Date 12/1/08

Matrix: 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):	3.3c	002	
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

Adjusted? Checked by

Login Notes:

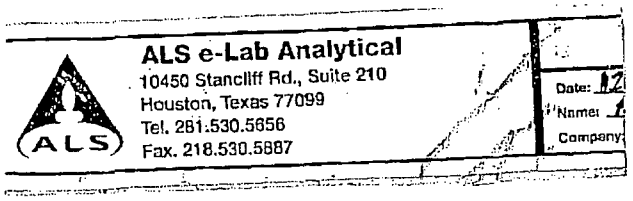
Client contacted: Date contacted: Person contacted

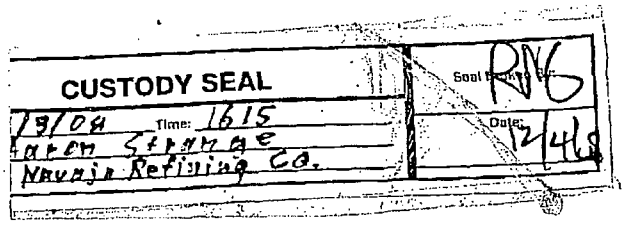
Contacted by: Regarding:

Comments:

Corrective Action

WO#0812122


ALS e-Lab Analytical
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. 281.530.5656
Fax. 218.530.5887
ALS
Date:
Name:
Company:


CUSTODY SEAL
Seal Number: RNG
Time: 1615
Date: 12/4/8
Eaton Storage
Navajo Refining Co.

e-Lab Analytical, Inc.

10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 281-530-5656 Fax 281-530-5887

July 23, 2004

Darrell Moore
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88211

Tel: (505) 746-5281
Fax: (505) 746-5421

Re: Injection Wells

Work Order : **0407074**

Dear Darrell Moore,

e-Lab Analytical, Inc. received 2 samples on 7/8/2004 8:40:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by e-Lab Analytical, Inc. 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 e-Lab Analytical, Inc. 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,

Jeffrey L Croston

Electronically approved by: Patrina A. Dathorne

Jeffrey L Croston

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Project: Injection Wells
Work Order: 0407074

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0407074-01	Inj Wells	Water		7/7/2004 09:00	7/8/2004 08:40	☐
0407074-02	Trip Blank	Water		7/7/2004	7/8/2004 08:40	☐

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Project: Injection Wells
Work Order: 0407074

Case Narrative

Semivolatile (sample Inj. Wells) Surrogates were outside of control limits due to a matrix interference. Sample was re-extracted and re-analyzed and surrogates recoveries were confirmed.

Batch 9539 Metals MS/MSD was an unrelated sample.

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells
Lab ID: 0407074-01

Client Sample ID: Inj Wells
Collection Date: 7/7/2004 9:00:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
MERCURY, TOTAL		**SW7470**			Prep Date: **7/17/2004**	Analyst: **JCJ**
Mercury	ND	0.000200		mg/L	1	7/17/2004 6:08:25 PM
ICP METALS, TOTAL		**SW6020**			Prep Date: **7/9/2004**	Analyst: **ALR**
Aluminum	0.556	0.100		mg/L	10	7/9/2004 10:24:00 PM
Arsenic	0.171	0.0500		mg/L	10	7/9/2004 10:24:00 PM
Barium	0.0354	0.0100		mg/L	2	7/23/2004 2:11:00 PM
Beryllium	ND	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Boron	0.240	0.200		mg/L	10	7/9/2004 10:24:00 PM
Cadmium	ND	0.00200		mg/L	2	7/23/2004 2:11:00 PM
Calcium	216	25.0		mg/L	50	7/9/2004 9:39:00 PM
Chromium	0.00818	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Cobalt	ND	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Copper	0.00655	0.00400		mg/L	2	7/23/2004 12:23:00 AM
Iron	4.42	0.400		mg/L	2	7/23/2004 12:23:00 AM
Lead	ND	0.0100		mg/L	2	7/23/2004 2:11:00 PM
Magnesium	34.1	2.00		mg/L	10	7/9/2004 10:24:00 PM
Manganese	0.116	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Molybdenum	ND	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Nickel	0.0195	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Potassium	24.9	0.400		mg/L	2	7/23/2004 12:23:00 AM
Selenium	0.432	0.0500		mg/L	10	7/9/2004 10:24:00 PM
Silver	ND	0.0100		mg/L	2	7/23/2004 2:11:00 PM
Sodium	1,580	10.0		mg/L	50	7/9/2004 9:39:00 PM
Vanadium	ND	0.0100		mg/L	2	7/23/2004 12:23:00 AM
Zinc	0.0677	0.0100		mg/L	2	7/23/2004 12:23:00 AM
SEMIVOLATILE ORGANICS BY GC/MS		**SW8270**			Prep Date: **7/12/2004**	Analyst: **HV**
1,2,4-Trichlorobenzene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2,4,5-Trichlorophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2,4,6-Trichlorophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Methylnaphthalene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Methylphenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Nitroaniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
2-Nitrophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
3-Nitroaniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
4-Methylphenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
4-Nitroaniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
4-Nitrophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Acenaphthene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Acenaphthylene	ND	12		µg/L	1	7/15/2004 1:53:00 AM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells
Lab ID: 0407074-01

Client Sample ID: Inj Wells
Collection Date: 7/7/2004 9:00:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Aniline	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Anthracene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Benz(a)anthracene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Benzidine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Hexachloroethane	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Indeno(1,2,3-cd)pyrene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Isophorone	ND	12		µg/L	1	7/15/2004 1:53:00 AM
N-Nitrosodi-n-propylamine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
N-Nitrosodimethylamine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
N-Nitrosodiphenylamine	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Naphthalene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Nitrobenzene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Pentachlorophenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Phenanthrene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Phenol	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Pyrene	ND	12		µg/L	1	7/15/2004 1:53:00 AM
Surr: 2,4,6-Tribromophenol	28.6	39-153	S	%REC	1	7/15/2004 1:53:00 AM
Surr: 2-Fluorobiphenyl	45.7	40-147		%REC	1	7/15/2004 1:53:00 AM
Surr: 2-Fluorophenol	12.1	21-110	S	%REC	1	7/15/2004 1:53:00 AM
Surr: 4-Terphenyl-d14	40.9	39-141		%REC	1	7/15/2004 1:53:00 AM
Surr: Nitrobenzene-d5	40.8	37-140		%REC	1	7/15/2004 1:53:00 AM
Surr: Phenol-d6	7.92	11-100	S	%REC	1	7/15/2004 1:53:00 AM
VOLATILES BY GC/MS		**SW8260**				Analyst: **PC**
1,1,1-Trichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
2-Butanone	16	10		µg/L	1	7/19/2004 2:58:00 PM
2-Chloroethyl vinyl ether	ND	10		µg/L	1	7/19/2004 2:58:00 PM
2-Hexanone	ND	10		µg/L	1	7/19/2004 2:58:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Acetone	87	10		µg/L	1	7/19/2004 2:58:00 PM
Benzene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Bromodichloromethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Bromoform	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Bromomethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Carbon disulfide	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Carbon tetrachloride	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM

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H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells
Lab ID: 0407074-01

Client Sample ID: Inj Wells
Collection Date: 7/7/2004 9:00:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Chloroethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Chloroform	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Chloromethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Dibromochloromethane	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Ethylbenzene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
m,p-Xylene	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Methylene chloride	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Styrene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Tetrachloroethene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Toluene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Trichloroethene	ND	5.0		µg/L	1	7/19/2004 2:58:00 PM
Vinyl acetate	ND	10		µg/L	1	7/19/2004 2:58:00 PM
Vinyl chloride	ND	2.0		µg/L	1	7/19/2004 2:58:00 PM
Xylenes, Total	ND	15		µg/L	1	7/19/2004 2:58:00 PM
Surr: 1,2-Dichloroethane-d4	85.9	71-126		%REC	1	7/19/2004 2:58:00 PM
Surr: 4-Bromofluorobenzene	93.8	74-125		%REC	1	7/19/2004 2:58:00 PM
Surr: Dibromofluoromethane	89.3	73-126		%REC	1	7/19/2004 2:58:00 PM
Surr: Toluene-d8	89.9	75-125		%REC	1	7/19/2004 2:58:00 PM
FLASHPOINT		**SW1010**				Analyst: **MAG**
Ignitability	>200	50		°F	1	7/16/2004
CYANIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Cyanide	ND	0.0300		mg/L	1	7/16/2004
SULFIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Sulfide	ND	40.0		mg/L	1	7/16/2004
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **MG**
Chloride	992	50.0		mg/L	100	7/13/2004 3:25:00 AM
Sulfate	2,270	100		mg/L	100	7/13/2004 3:25:00 AM
Surr: Dichloroacetic acid (surr)	107	80-120		%REC	100	7/13/2004 3:25:00 AM
ALKALINITY		**E310.1**				Analyst: **HDO**
Alkalinity, Bicarbonate (As CaCO3)	157	5.00		mg/L	1	7/12/2004
Alkalinity, Carbonate (As CaCO3)	ND	5.00		mg/L	1	7/12/2004
Alkalinity, Hydroxide (As CaCO3)	ND	5.00		mg/L	1	7/12/2004
Alkalinity, Total (As CaCO3)	157	5.00		mg/L	1	7/12/2004
CONDUCTIVITY		**E120.1**				Analyst: **HDO**
Specific Conductance	7,200	1.00		µmhos/cm	1	7/12/2004

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P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *July 23, 2004*

CLIENT:	Navajo Refining Company	**Client Sample ID:**	Inj Wells
Work Order:	0407074	**Collection Date:**	7/7/2004 9:00:00 AM
Project:	Injection Wells		
Lab ID:	0407074-01	**Matrix:**	WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
PH			**E150.1**			Analyst: **LMD**
pH	6.92	0.100		pH units	1	7/8/2004
TOTAL DISSOLVED SOLIDS			**E160.1**			Analyst: **LMD**
Total Dissolved Solids (Residue, Filterable)	4,960	10.0		mg/L	1	7/8/2004

Qualifiers:

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* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

Batch ID: **9539** InstrumentID: **ICP4500**

MBLK Sample ID: **MBLKW3-070904** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/09/04 21:25**

Client ID: Run ID: **ICP4500_040709A** SeqNo: **505844** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.003459	0.010								J
Arsenic	ND	0.0050								
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	ND	0.020								
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								
Potassium	ND	0.20								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Sodium	ND	0.20								
Vanadium	ND	0.0050								
Zinc	ND	0.0050								

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9539** InstrumentID: **ICP4500**

LCS Sample ID: **MLCSW3-070904** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/09/04 21:29**

Client ID: Run ID: **ICP4500_040709A** SeqNo: **505845** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.04844	0.010	0.05	0	96.9	79-126	0			
Arsenic	0.04766	0.0050	0.05	0	95.3	80-121	0			
Barium	0.04274	0.0050	0.05	0	85.5	79.8-119	0			
Beryllium	0.04529	0.0020	0.05	0	90.6	78.9-120	0			
Boron	0.4936	0.020	0.5	0	98.7	80-120	0			
Cadmium	0.04849	0.0020	0.05	0	97	79.1-119	0			
Calcium	4.804	0.50	5	0	96.1	80-121	0			
Chromium	0.04798	0.0050	0.05	0	96	79.3-121	0			
Cobalt	0.04761	0.0050	0.05	0	95.2	82-121	0			
Copper	0.04535	0.0050	0.05	0	90.7	83-121	0			
Iron	4.902	0.20	5	0	98	80-120	0			
Lead	0.04454	0.0050	0.05	0	89.1	80-118	0			
Magnesium	5.139	0.20	5	0	103	80-120	0			
Manganese	0.04778	0.0050	0.05	0	95.6	82-119	0			
Molybdenum	0.04486	0.0050	0.05	0	89.7	84.6-115	0			
Nickel	0.04723	0.0050	0.05	0	94.5	85-120	0			
Potassium	4.953	0.20	5	0	99.1	80-120	0			
Selenium	0.0466	0.0050	0.05	0	93.2	79.2-118	0			
Silver	0.04787	0.0050	0.05	0	95.7	83-117	0			
Sodium	5.081	0.20	5	0	102	82.4-120	0			
Vanadium	0.04735	0.0050	0.05	0	94.7	82.1-119	0			
Zinc	0.04587	0.0050	0.05	0	91.7	83-118	0			

ND - Not Detected at the Reporting Limit
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in assoc. Method Blank
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
U - Analyzed for but not detected
O - Referenced analyte value is > 4 times amount spiked
P - Dual Column results percent difference > 40%
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9539** InstrumentID: **ICP4500**

MS Sample ID: **0407028-83CMS** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/10/04 0:14**

Client ID: Run ID: **ICP4500_040709A** SeqNo: **505874** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05038	0.010	0.05	0.002733	95.3	79-126		0		
Arsenic	0.04968	0.0050	0.05	0.003932	91.5	80-121		0		
Barium	0.07232	0.0050	0.05	0.02595	92.7	79.8-119		0		
Beryllium	0.0509	0.0020	0.05	0.0005094	101	78.9-120		0		
Boron	0.623	0.020	0.5	0.09092	106	80-120		0		
Cadmium	0.04574	0.0020	0.05	0.0003332	90.8	79.1-119		0		
Calcium	90.82	0.50	5	84.69	123	80-121		0		SEO
Chromium	0.04515	0.0050	0.05	0	90.3	79.3-121		0		
Cobalt	0.04827	0.0050	0.05	0.004039	88.5	82-121		0		
Copper	0.04228	0.0050	0.05	0.0009502	82.7	83-121		0		S
Iron	5.002	0.20	5	0.2496	95	80-120		0		
Lead	0.04748	0.0050	0.05	0	95	80-118		0		
Magnesium	28.5	0.20	5	23.83	93.4	80-120		0		O
Manganese	0.1942	0.0050	0.05	0.1499	88.6	82-119		0		
Molybdenum	0.04699	0.0050	0.05	0	94	84.6-115		0		
Nickel	0.05298	0.0050	0.05	0.01094	84.1	85-120		0		S
Potassium	7.353	0.20	5	2.353	100	80-120		0		
Selenium	0.046	0.0050	0.05	0.003609	84.8	79.2-118		0		
Silver	0.04262	0.0050	0.05	0	85.2	83-117		0		
Sodium	164.1	0.20	5	161.8	46	82.4-120		0		SEO
Vanadium	0.0482	0.0050	0.05	0.0006576	95.1	82.1-119		0		
Zinc	0.04617	0.0050	0.05	0.004682	83	83-118		0		S

ND - Not Detected at the Reporting Limit
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O - Referenced analyte value is > 4 times amount spiked
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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9539** InstrumentID: **ICP4500**

MSD Sample ID: **0407028-83CMSD** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/10/04 0:19**

Client ID: Run ID: **ICP4500_040709A** SeqNo: **505875** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05215	0.010	0.05	0.002733	98.8	79-126	0.05038	3.45	15	
Arsenic	0.04869	0.0050	0.05	0.003932	89.5	80-121	0.04968	2.01	15	
Barium	0.07266	0.0050	0.05	0.02595	93.4	79.8-119	0.07232	0.469	15	
Beryllium	0.05198	0.0020	0.05	0.0005094	103	78.9-120	0.0509	2.1	15	
Boron	0.6325	0.020	0.5	0.09092	108	80-120	0.623	1.51	15	
Cadmium	0.04625	0.0020	0.05	0.0003332	91.8	79.1-119	0.04574	1.11	15	
Calcium	93.55	0.50	5	84.69	177	80-121	90.82	2.96	15	SEO
Chromium	0.04685	0.0050	0.05	0	93.7	79.3-121	0.04515	3.7	15	
Cobalt	0.04998	0.0050	0.05	0.004039	91.9	82-121	0.04827	3.48	15	
Copper	0.04371	0.0050	0.05	0.0009502	85.5	83-121	0.04228	3.33	15	
Iron	5.13	0.20	5	0.2496	97.6	80-120	5.002	2.53	15	
Lead	0.0471	0.0050	0.05	0	94.2	80-118	0.04748	0.804	15	
Magnesium	30.14	0.20	5	23.83	126	80-120	28.5	5.59	15	SO
Manganese	0.2008	0.0050	0.05	0.1499	102	82-119	0.1942	3.34	15	
Molybdenum	0.04735	0.0050	0.05	0	94.7	84.6-115	0.04699	0.763	15	
Nickel	0.05422	0.0050	0.05	0.01094	86.6	85-120	0.05298	2.31	15	
Potassium	7.483	0.20	5	2.353	103	80-120	7.353	1.75	15	
Selenium	0.04327	0.0050	0.05	0.003609	79.3	79.2-118	0.046	6.12	15	
Silver	0.04351	0.0050	0.05	0	87	83-117	0.04262	2.07	15	
Sodium	173.9	0.20	5	161.8	242	82.4-120	164.1	5.8	15	SEO
Vanadium	0.04997	0.0050	0.05	0.0006576	98.6	82.1-119	0.0482	3.61	15	
Zinc	0.04806	0.0050	0.05	0.004682	86.8	83-118	0.04617	4.01	15	

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9539** InstrumentID: **ICP4500**

DUP Sample ID: **0407028-83CDUP** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/10/04 0:09**

Client ID: Run ID: **ICP4500_040709A** SeqNo: **505873** Prep Date: **7/9/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.002615	0.010	0	0	0	0-0	0.002733	0	25	J
Arsenic	0.003323	0.0050	0	0	0	0-0	0.003932	0	25	J
Barium	0.026	0.0050	0	0	0	0-0	0.02595	0.192	25	
Beryllium	0.000439	0.0020	0	0	0	0-0	0.0005094	0	25	J
Boron	0.08249	0.020	0	0	0	0-0	0.09092	9.72	25	
Cadmium	0.0002675	0.0020	0	0	0	0-0	0.0003332	0	25	J
Chromium	ND	0.0050	0	0	0	0-0	0.0003544	0	25	
Cobalt	0.003999	0.0050	0	0	0	0-0	0.004039	0	25	J
Copper	0.001006	0.0050	0	0	0	0-0	0.0009502	0	25	J
Iron	0.2425	0.20	0	0	0	0-0	0.2496	2.89	25	
Lead	ND	0.0050	0	0	0	0-0	0.0001737	0	25	
Magnesium	22.32	0.20	0	0	0	0-0	23.83	6.54	25	
Manganese	0.1501	0.0050	0	0	0	0-0	0.1499	0.133	25	
Molybdenum	ND	0.0050	0	0	0	0-0	0.0005272	0	25	
Nickel	0.01059	0.0050	0	0	0	0-0	0.01094	3.25	25	
Potassium	2.237	0.20	0	0	0	0-0	2.353	5.05	25	
Selenium	ND	0.0050	0	0	0	0-0	0.003609	0	25	
Silver	ND	0.0050	0	0	0	0-0	0.0001129	0	25	
Vanadium	0.0005641	0.0050	0	0	0	0-0	0.0006576	0	25	J
Zinc	0.00462	0.0050	0	0	0	0-0	0.004682	0	25	J

DUP Sample ID: **0407028-83CDUP** Test Code: **SW6020** Units: **mg/L** Analysis Date: **07/12/04 20:25**

Client ID: Run ID: **ICP4500_040712A** SeqNo: **506283** Prep Date: **7/9/2004** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	85.98	5.0	0	0	0	0-0	85.98	0	25	
Sodium	175.6	2.0	0	0	0	0-0	175.6	0	25	

The following samples were analyzed in this batch: 0407074-01B

ND - Not Detected at the Reporting Limit
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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9641** InstrumentID: **Mercury**

MBLK Sample ID: **GBLKW1-071704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **07/17/04 17:39**
Client ID: Run ID: **MERCURY_040717C** SeqNo: **509754** Prep Date: **7/17/2004** 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			

LCS Sample ID: **GLCSW1-071704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **07/17/04 17:41**
Client ID: Run ID: **MERCURY_040717C** SeqNo: **509755** Prep Date: **7/17/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00503	0.00020	0.005	0	101	83-115	0			

LCSD Sample ID: **GLCSDW1-071704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **07/17/04 17:43**
Client ID: Run ID: **MERCURY_040717C** SeqNo: **509756** Prep Date: **7/17/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00506	0.00020	0.005	0	101	83-115	0.00503	0.595	20	

MS Sample ID: **0407082-18CMS** Test Code: **SW7470** Units: **mg/L** Analysis Date: **07/17/04 17:50**
Client ID: Run ID: **MERCURY_040717C** SeqNo: **509759** Prep Date: **7/17/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00482	0.00020	0.005	-0.000006	96.5	83-115	0			

MSD Sample ID: **0407082-18CMSD** Test Code: **SW7470** Units: **mg/L** Analysis Date: **07/17/04 17:51**
Client ID: Run ID: **MERCURY_040717C** SeqNo: **509760** Prep Date: **7/17/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00484	0.00020	0.005	-0.000006	96.9	83-115	0.00482	0.414	20	

DUP Sample ID: **0407082-18CDUP** Test Code: **SW7470** Units: **mg/L** Analysis Date: **07/17/04 17:48**
Client ID: Run ID: **MERCURY_040717C** SeqNo: **509758** Prep Date: **7/17/2004** 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	-0.000006	0	20	

The following samples were analyzed in this batch: 0407074-01B

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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9560** InstrumentID: **SV-2**

MBLK Sample ID: **SBLKW1-040712** Test Code: **SW8270** Units: **µg/L** Analysis Date: **07/13/04 15:58**
Client ID: Run ID: **SV-2_040713A** SeqNo: **507356** Prep Date: **7/12/2004** 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	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3-Nitroaniline	ND	10								
4-Methylphenol	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Benz(a)anthracene	ND	10								
Benzidine	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
Pentachlorophenol	ND	10								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
1,4-Dichlorobenzene-d4	40	0								
Acenaphthene-d10	40	0								
Chrysene-d12	40	0								
Naphthalene-d8	40	0								
Perylene-d12	40	0								
Phenanthrene-d10	40	0								
Surr: 2,4,6-Tribromophenol	82.25	10	100	0	82.2	39-153	0			
Surr: 2-Fluorobiphenyl	78.39	10	100	0	78.4	40-147	0			
Surr: 2-Fluorophenol	33.79	10	100	0	33.8	21-110	0			
Surr: 4-Terphenyl-d14	84.32	10	100	0	84.3	39-141	0			
Surr: Nitrobenzene-d5	70.65	10	100	0	70.7	37-140	0			
Surr: Phenol-d6	18.81	10	100	0	18.8	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9560** InstrumentID: **SV-2**

LCS Sample ID: **SLCSW1-040712** Test Code: **SW8270** Units: **µg/L** Analysis Date: **07/13/04 16:29**
Client ID: Run ID: **SV-2_040713A** SeqNo: **507357** Prep Date: **7/12/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	31.26	10	50	0	62.5	50-115	0			
2,4,5-Trichlorophenol	86.7	10	100	0	86.7	68-128	0			
2,4,6-Trichlorophenol	85.39	10	100	0	85.4	66-125	0			
2-Methylnaphthalene	34.79	10	50	0	69.6	47-122	0			
2-Methylphenol	61.44	10	100	0	61.4	51-115	0			
2-Nitroaniline	46.51	10	50	0	93	64-128	0			
2-Nitrophenol	76.92	10	100	0	76.9	60-119	0			
3-Nitroaniline	44.47	10	50	0	88.9	61-118	0			
4-Methylphenol	81.14	10	150	0	54.1	44-115	0			
4-Nitroaniline	44.56	10	50	0	89.1	61-123	0			
4-Nitrophenol	29.12	10	100	0	29.1	17-100	0			
Acenaphthene	40.9	10	50	0	81.8	68-115	0			
Acenaphthylene	40.88	10	50	0	81.8	67-116	0			
Aniline	32.02	10	50	0	64	40-130	0			
Anthracene	43.56	10	50	0	87.1	70-129	0			
Benz(a)anthracene	42.22	10	50	0	84.4	55-131	0			
Benzidine	30.17	10	50	0	60.3	10-115	0			
Hexachloroethane	30.87	10	50	0	61.7	46-115	0			
Indeno(1,2,3-cd)pyrene	48.4	10	50	0	96.8	42-123	0			
Isophorone	39.55	10	50	0	79.1	63-117	0			
N-Nitrosodi-n-propylamine	42.61	10	50	0	85.2	67-115	0			
N-Nitrosodimethylamine	21.15	10	50	0	42.3	28-115	0			
N-Nitrosodiphenylamine	46.31	10	50	0	92.6	72-144	0			
Naphthalene	33.4	10	50	0	66.8	52-115	0			
Nitrobenzene	38.35	10	50	0	76.7	65-115	0			
Pentachlorophenol	70.64	10	100	0	70.6	65-123	0			
Phenanthrene	41.84	10	50	0	83.7	69-119	0			
Phenol	23.79	10	100	0	23.8	16-115	0			
Pyrene	40.12	10	50	0	80.2	51-130	0			
Surr: 2,4,6-Tribromophenol	87.89	10	100	0	87.9	39-153	0			
Surr: 2-Fluorobiphenyl	82.26	10	100	0	82.3	40-147	0			
Surr: 2-Fluorophenol	40.23	10	100	0	40.2	21-110	0			
Surr: 4-Terphenyl-d14	86.41	10	100	0	86.4	39-141	0			
Surr: Nitrobenzene-d5	75.5	10	100	0	75.5	37-140	0			
Surr: Phenol-d6	23.26	10	100	0	23.3	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9560** InstrumentID: **SV-2**

LCSD Sample ID: **SLCSDW1-040712** Test Code: **SW8270** Units: **µg/L** Analysis Date: **07/13/04 16:59**

Client ID: Run ID: **SV-2_040713A** SeqNo: **507358** Prep Date: **7/12/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	31.58	10	50	0	63.2	50-115	31.26	1.01	30	
2,4,5-Trichlorophenol	87.3	10	100	0	87.3	68-128	86.7	0.685	30	
2,4,6-Trichlorophenol	86.39	10	100	0	86.4	66-125	85.39	1.16	30	
2-Methylnaphthalene	33.56	10	50	0	67.1	47-122	34.79	3.61	30	
2-Methylphenol	60.16	10	100	0	60.2	51-115	61.44	2.11	30	
2-Nitroaniline	47.23	10	50	0	94.5	64-128	46.51	1.53	30	
2-Nitrophenol	75.92	10	100	0	75.9	60-119	76.92	1.32	30	
3-Nitroaniline	40.62	10	50	0	81.2	61-118	44.47	9.05	30	
4-Methylphenol	81.3	10	150	0	54.2	44-115	81.14	0.188	30	
4-Nitroaniline	42.15	10	50	0	84.3	61-123	44.56	5.54	30	
4-Nitrophenol	30.34	10	100	0	30.3	17-100	29.12	4.08	30	
Acenaphthene	39.88	10	50	0	79.8	68-115	40.9	2.52	30	
Acenaphthylene	39.7	10	50	0	79.4	67-116	40.88	2.93	30	
Aniline	31.01	10	50	0	62	40-130	32.02	3.2	30	
Anthracene	42.13	10	50	0	84.3	70-129	43.56	3.34	30	
Benz(a)anthracene	41.72	10	50	0	83.4	55-131	42.22	1.2	30	
Benzidine	28.39	10	50	0	56.8	10-115	30.17	6.06	30	
Hexachloroethane	29.4	10	50	0	58.8	46-115	30.87	4.89	30	
Indeno(1,2,3-cd)pyrene	44.19	10	50	0	88.4	42-123	48.4	9.1	30	
Isophorone	38.71	10	50	0	77.4	63-117	39.55	2.15	30	
N-Nitrosodi-n-propylamine	41.17	10	50	0	82.3	67-115	42.61	3.43	30	
N-Nitrosodimethylamine	22.1	10	50	0	44.2	28-115	21.15	4.41	30	
N-Nitrosodiphenylamine	44.6	10	50	0	89.2	72-144	46.31	3.77	30	
Naphthalene	32.74	10	50	0	65.5	52-115	33.4	1.99	30	
Nitrobenzene	38.2	10	50	0	76.4	65-115	38.35	0.387	30	
Pentachlorophenol	72.91	10	100	0	72.9	65-123	70.64	3.15	30	
Phenanthrene	40.12	10	50	0	80.2	69-119	41.84	4.2	30	
Phenol	24.22	10	100	0	24.2	16-115	23.79	1.79	30	
Pyrene	40.25	10	50	0	80.5	51-130	40.12	0.331	30	
Surr: 2,4,6-Tribromophenol	86.61	10	100	0	86.6	39-153	87.89	1.46	30	
Surr: 2-Fluorobiphenyl	81.97	10	100	0	82	40-147	82.26	0.35	30	
Surr: 2-Fluorophenol	39.11	10	100	0	39.1	21-110	40.23	2.82	30	
Surr: 4-Terphenyl-d14	85.17	10	100	0	85.2	39-141	86.41	1.45	30	
Surr: Nitrobenzene-d5	75.33	10	100	0	75.3	37-140	75.5	0.231	30	
Surr: Phenol-d6	23.6	10	100	0	23.6	11-100	23.26	1.46	30	

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9560** InstrumentID: **SV-2**

MS Sample ID: **0407082-18DMS** Test Code: **SW8270** Units: **µg/L** Analysis Date: **07/13/04 18:00**
Client ID: Run ID: **SV-2_040713A** SeqNo: **507360** Prep Date: **7/12/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	38.77	11	53.19	0	72.9	50-115	0			
2,4,5-Trichlorophenol	91.48	11	106.4	0	86	68-128	0			
2,4,6-Trichlorophenol	92.28	11	106.4	0	86.7	66-125	0			
2-Methylnaphthalene	39.59	11	53.19	0	74.4	47-122	0			
2-Methylphenol	68.77	11	106.4	0	64.6	51-115	0			
2-Nitroaniline	49.37	11	53.19	0	92.8	64-128	0			
2-Nitrophenol	82.66	11	106.4	0	77.7	60-119	0			
3-Nitroaniline	39.84	11	53.19	0	74.9	61-118	0			
4-Methylphenol	95.14	11	159.6	0	59.6	44-115	0			
4-Nitroaniline	41.31	11	53.19	0	77.7	61-123	0			
4-Nitrophenol	36.34	11	106.4	0	34.2	17-100	0			
Acenaphthene	46.9	11	53.19	0	88.2	68-115	0			
Acenaphthylene	42.53	11	53.19	0	80	67-116	0			
Aniline	31.51	11	53.19	0	59.2	40-130	0			
Anthracene	45.14	11	53.19	0	84.9	70-129	0			
Benz(a)anthracene	44.52	11	53.19	0	83.7	55-131	0			
Benzidine	24.16	11	53.19	0	45.4	10-115	0			
Hexachloroethane	42.45	11	53.19	0	79.8	46-115	0			
Indeno(1,2,3-cd)pyrene	49.91	11	53.19	0	93.8	42-123	0			
Isophorone	41.24	11	53.19	0	77.5	63-117	0			
N-Nitrosodi-n-propylamine	46.57	11	53.19	0	87.5	67-115	0			
N-Nitrosodimethylamine	26.9	11	53.19	0	50.6	28-115	0			
N-Nitrosodiphenylamine	47.19	11	53.19	0	88.7	72-144	0			
Naphthalene	37.95	11	53.19	0	71.4	52-115	0			
Nitrobenzene	42.36	11	53.19	0	79.6	65-115	0			
Pentachlorophenol	71.64	11	106.4	0	67.3	65-123	0			
Phenanthrene	43.67	11	53.19	0	82.1	69-119	0			
Phenol	29.8	11	106.4	0	28	16-115	0			
Pyrene	41.73	11	53.19	0	78.4	51-130	0			
Surr: 2,4,6-Tribromophenol	88.29	11	106.4	0	83	39-153	0			
Surr: 2-Fluorobiphenyl	88.06	11	106.4	0	82.8	40-147	0			
Surr: 2-Fluorophenol	46.77	11	106.4	0	44	21-110	0			
Surr: 4-Terphenyl-d14	88.44	11	106.4	0	83.1	39-141	0			
Surr: Nitrobenzene-d5	81.74	11	106.4	0	76.8	37-140	0			
Surr: Phenol-d6	27.76	11	106.4	0	26.1	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **9560** InstrumentID: **SV-2**

MSD Sample ID: **0407082-18DMSD** Test Code: **SW8270** Units: **µg/L** Analysis Date: **07/13/04 18:30**
Client ID: Run ID: **SV-2_040713A** SeqNo: **507361** Prep Date: **7/12/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	38.35	11	53.19	0	72.1	50-115	38.77	1.09	30	
2,4,5-Trichlorophenol	95.8	11	106.4	0	90.1	68-128	91.48	4.61	30	
2,4,6-Trichlorophenol	92.06	11	106.4	0	86.5	66-125	92.28	0.244	30	
2-Methylnaphthalene	39.08	11	53.19	0	73.5	47-122	39.59	1.29	30	
2-Methylphenol	70.25	11	106.4	0	66	51-115	68.77	2.12	30	
2-Nitroaniline	48.77	11	53.19	0	91.7	64-128	49.37	1.21	30	
2-Nitrophenol	83.64	11	106.4	0	78.6	60-119	82.66	1.17	30	
3-Nitroaniline	37.37	11	53.19	0	70.3	61-118	39.84	6.4	30	
4-Methylphenol	94.8	11	159.6	0	59.4	44-115	95.14	0.358	30	
4-Nitroaniline	38.45	11	53.19	0	72.3	61-123	41.31	7.17	30	
4-Nitrophenol	36.01	11	106.4	0	33.8	17-100	36.34	0.923	30	
Acenaphthene	47.64	11	53.19	0	89.6	68-115	46.9	1.56	30	
Acenaphthylene	42.64	11	53.19	0	80.2	67-116	42.53	0.255	30	
Aniline	31.17	11	53.19	0	58.6	40-130	31.51	1.09	30	
Anthracene	45.61	11	53.19	0	85.7	70-129	45.14	1.04	30	
Benz(a)anthracene	45.17	11	53.19	0	84.9	55-131	44.52	1.46	30	
Benzidine	18.51	11	53.19	0	34.8	10-115	24.16	26.5	30	
Hexachloroethane	40.74	11	53.19	0	76.6	46-115	42.45	4.12	30	
Indeno(1,2,3-cd)pyrene	50.25	11	53.19	0	94.5	42-123	49.91	0.68	30	
Isophorone	42.87	11	53.19	0	80.6	63-117	41.24	3.88	30	
N-Nitrosodi-n-propylamine	46.44	11	53.19	0	87.3	67-115	46.57	0.281	30	
N-Nitrosodimethylamine	25.12	11	53.19	0	47.2	28-115	26.9	6.83	30	
N-Nitrosodiphenylamine	47.79	11	53.19	0	89.8	72-144	47.19	1.25	30	
Naphthalene	38.24	11	53.19	0	71.9	52-115	37.95	0.757	30	
Nitrobenzene	42.83	11	53.19	0	80.5	65-115	42.36	1.09	30	
Pentachlorophenol	81.78	11	106.4	0	76.9	65-123	71.64	13.2	30	
Phenanthrene	44.03	11	53.19	0	82.8	69-119	43.67	0.831	30	
Phenol	29.65	11	106.4	0	27.9	16-115	29.8	0.497	30	
Pyrene	42.44	11	53.19	0	79.8	51-130	41.73	1.71	30	
Surr: 2,4,6-Tribromophenol	93.87	11	106.4	0	88.2	39-153	88.29	6.12	30	
Surr: 2-Fluorobiphenyl	87.34	11	106.4	0	82.1	40-147	88.06	0.818	30	
Surr: 2-Fluorophenol	46.17	11	106.4	0	43.4	21-110	46.77	1.28	30	
Surr: 4-Terphenyl-d14	90.02	11	106.4	0	84.6	39-141	88.44	1.78	30	
Surr: Nitrobenzene-d5	80.82	11	106.4	0	76	37-140	81.74	1.14	30	
Surr: Phenol-d6	27.76	11	106.4	0	26.1	11-100	27.76	0.011	30	

The following samples were analyzed in this batch: 0407074-01D

ND - Not Detected at the Reporting Limit
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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21831** InstrumentID: **VOA2**

MBLK Sample ID: **VBLKW-0719** Test Code: **SW8260** Units: **µg/L** Analysis Date: **07/19/04 11:33**

Client ID: Run ID: **VOA2_040719A** SeqNo: **510670** 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								
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	42.27	5.0	50	0	84.5	71-126		0		
Surr: 4-Bromofluorobenzene	43.71	5.0	50	0	87.4	74-125		0		
Surr: Dibromofluoromethane	43.99	5.0	50	0	88	73-126		0		
Surr: Toluene-d8	44.34	5.0	50	0	88.7	75-125		0		

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21831** InstrumentID: **VOA2**

LCS Sample ID: **VLCSW-0719** Test Code: **SW8260** Units: **µg/L** Analysis Date: **07/19/04 10:42**

Client ID: Run ID: **VOA2_040719A** SeqNo: **510669** 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	49.5	5.0	50	0	99	75.2-120		0		
1,1,2,2-Tetrachloroethane	47.64	5.0	50	0	95.3	72.4-121		0		
1,1,2-Trichloroethane	49.05	5.0	50	0	98.1	80-120		0		
1,1-Dichloroethane	40.8	5.0	50	0	81.6	76.9-120		0		
1,1-Dichloroethene	42.24	5.0	50	0	84.5	72.6-123		0		
1,2-Dichloroethane	50.08	5.0	50	0	100	80-120		0		
2-Butanone	98.22	10	100	0	98.2	69-131		0		
2-Chloroethyl vinyl ether	99.78	10	100	0	99.8	60-135		0		
2-Hexanone	109.7	10	100	0	110	55.6-126		0		
4-Methyl-2-pentanone	105.7	10	100	0	106	67.4-121		0		
Acetone	110	10	100	0	110	64.4-140		0		
Benzene	47.36	5.0	50	0	94.7	80-120		0		
Bromodichloromethane	49.67	5.0	50	0	99.3	80-120		0		
Bromoform	52.48	5.0	50	0	105	77.9-121		0		
Bromomethane	46.73	5.0	50	0	93.5	63.3-137		0		
Carbon disulfide	81.78	10	100	0	81.8	74.1-123		0		
Carbon tetrachloride	50.26	5.0	50	0	101	74.7-120		0		
Chlorobenzene	48.77	5.0	50	0	97.5	80-120		0		
Chloroethane	46	5.0	50	0	92	74.7-126		0		
Chloroform	46.23	5.0	50	0	92.5	80-120		0		
Chloromethane	43.9	5.0	50	0	87.8	64.5-132		0		
cis-1,3-Dichloropropene	51.24	5.0	50	0	102	80-120		0		
Dibromochloromethane	50.88	5.0	50	0	102	80-120		0		
Ethylbenzene	49.39	5.0	50	0	98.8	80-120		0		
m,p-Xylene	98.82	10	100	0	98.8	80-120		0		
Methylene chloride	41.13	10	50	0	82.3	76.2-120		0		
Styrene	50.69	5.0	50	0	101	80-120		0		
Tetrachloroethene	51.64	5.0	50	0	103	68.5-130		0		
Toluene	48.46	5.0	50	0	96.9	80-120		0		
trans-1,3-Dichloropropene	52.38	5.0	50	0	105	80-120		0		
Trichloroethene	50.2	5.0	50	0	100	78.9-120		0		
Vinyl acetate	106.1	10	100	0	106	62.4-133		0		
Vinyl chloride	46.69	2.0	50	0	93.4	72.7-128		0		
Xylenes, Total	148.4	15	150	0	98.9	80-120		0		
Surr: 1,2-Dichloroethane-d4	40.65	5.0	50	0	81.3	71-126		0		
Surr: 4-Bromofluorobenzene	46.15	5.0	50	0	92.3	74-125		0		
Surr: Dibromofluoromethane	41.66	5.0	50	0	83.3	73-126		0		
Surr: Toluene-d8	45.05	5.0	50	0	90.1	75-125		0		

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21831** InstrumentID: **VOA2**

MS Sample ID: **0407154-01AMS** Test Code: **SW8260** Units: **µg/L** Analysis Date: **07/19/04 14:05**

Client ID: Run ID: **VOA2_040719A** SeqNo: **510672** 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	12140	1,200	12500	0	97.1	75.2-120		0		
1,1,2,2-Tetrachloroethane	11150	1,200	12500	0	89.2	72.4-121		0		
1,1,2-Trichloroethane	12470	1,200	12500	0	99.8	80-120		0		
1,1-Dichloroethane	11610	1,200	12500	0	92.9	76.9-120		0		
1,1-Dichloroethene	9668	1,200	12500	0	77.3	72.6-123		0		
1,2-Dichloroethane	12100	1,200	12500	0	96.8	80-120		0		
2-Butanone	24170	2,500	25000	0	96.7	69-131		0		
2-Chloroethyl vinyl ether	23350	2,500	25000	0	93.4	60-135		0		
2-Hexanone	28460	2,500	25000	0	114	55.6-126		0		
4-Methyl-2-pentanone	26920	2,500	25000	0	108	67.4-121		0		
Acetone	28630	2,500	25000	0	115	64.4-140		0		
Benzene	12840	1,200	12500	1617	89.8	80-120		0		
Bromodichloromethane	12110	1,200	12500	0	96.9	80-120		0		
Bromoform	12900	1,200	12500	0	103	77.9-121		0		
Bromomethane	10540	1,200	12500	0	84.3	63.3-137		0		
Carbon disulfide	21710	2,500	25000	0	86.8	74.1-123		0		
Carbon tetrachloride	15530	1,200	12500	3701	94.7	74.7-120		0		
Chlorobenzene	17760	1,200	12500	6761	88	80-120		0		
Chloroethane	11150	1,200	12500	0	89.2	74.7-126		0		
Chloroform	27960	1,200	12500	16690	90.2	80-120		0		
Chloromethane	11340	1,200	12500	0	90.7	64.5-132		0		
cis-1,3-Dichloropropene	12280	1,200	12500	0	98.3	80-120		0		
Dibromochloromethane	12560	1,200	12500	0	101	80-120		0		
Ethylbenzene	12120	1,200	12500	0	97	80-120		0		
m,p-Xylene	24660	2,500	25000	0	98.7	80-120		0		
Methylene chloride	11050	2,500	12500	251	86.4	76.2-120		0		
Styrene	12310	1,200	12500	0	98.5	80-120		0		
Tetrachloroethene	12830	1,200	12500	307.5	100	68.5-130		0		
Toluene	11740	1,200	12500	0	93.9	80-120		0		
trans-1,3-Dichloropropene	12720	1,200	12500	0	102	80-120		0		
Trichloroethene	13050	1,200	12500	382.7	101	78.9-120		0		
Vinyl acetate	16340	2,500	25000	0	65.4	62.4-133		0		
Vinyl chloride	11910	500	12500	0	95.2	72.7-128		0		
Xylenes, Total	36910	3,800	37500	0	98.4	80-120		0		
Surr: 1,2-Dichloroethane-d4	10910	1,200	12500	0	87.3	71-126		0		
Surr: 4-Bromofluorobenzene	12050	1,200	12500	0	96.4	74-125		0		
Surr: Dibromofluoromethane	10810	1,200	12500	0	86.5	73-126		0		
Surr: Toluene-d8	11660	1,200	12500	0	93.3	75-125		0		

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CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21831** InstrumentID: **VOA2**

MSD Sample ID: **0407154-01AMSD** Test Code: **SW8260** Units: **µg/L** Analysis Date: **07/19/04 14:33**

Client ID: Run ID: **VOA2_040719A** SeqNo: **510673** 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	12300	1,200	12500	0	98.4	75.2-120	12140	1.31	20	
1,1,2,2-Tetrachloroethane	11100	1,200	12500	0	88.8	72.4-121	11150	0.381	20	
1,1,2-Trichloroethane	12660	1,200	12500	0	101	80-120	12470	1.46	20	
1,1-Dichloroethane	10890	1,200	12500	0	87.2	76.9-120	11610	6.37	20	
1,1-Dichloroethene	10340	1,200	12500	0	82.7	72.6-123	9668	6.67	20	
1,2-Dichloroethane	12510	1,200	12500	0	100	80-120	12100	3.41	20	
2-Butanone	25510	2,500	25000	0	102	69-131	24170	5.39	20	
2-Chloroethyl vinyl ether	23900	2,500	25000	0	95.6	60-135	23350	2.29	20	
2-Hexanone	29060	2,500	25000	0	116	55.6-126	28460	2.07	20	
4-Methyl-2-pentanone	27690	2,500	25000	0	111	67.4-121	26920	2.82	20	
Acetone	28630	2,500	25000	0	115	64.4-140	28630	0.0181	20	
Benzene	13310	1,200	12500	1617	93.5	80-120	12840	3.55	20	
Bromodichloromethane	12400	1,200	12500	0	99.2	80-120	12110	2.29	20	
Bromoform	13180	1,200	12500	0	105	77.9-121	12900	2.16	20	
Bromomethane	11380	1,200	12500	0	91	63.3-137	10540	7.65	20	
Carbon disulfide	22610	2,500	25000	0	90.4	74.1-123	21710	4.08	20	
Carbon tetrachloride	16060	1,200	12500	3701	98.9	74.7-120	15530	3.35	20	
Chlorobenzene	18250	1,200	12500	6761	91.9	80-120	17760	2.71	20	
Chloroethane	11550	1,200	12500	0	92.4	74.7-126	11150	3.48	20	
Chloroform	27240	1,200	12500	16690	84.4	80-120	27960	2.59	20	
Chloromethane	11380	1,200	12500	0	91.1	64.5-132	11340	0.38	20	
cis-1,3-Dichloropropene	12670	1,200	12500	0	101	80-120	12280	3.12	20	
Dibromochloromethane	12910	1,200	12500	0	103	80-120	12560	2.71	20	
Ethylbenzene	12480	1,200	12500	0	99.8	80-120	12120	2.91	20	
m,p-Xylene	25180	2,500	25000	0	101	80-120	24660	2.07	20	
Methylene chloride	10390	2,500	12500	251	81.1	76.2-120	11050	6.19	20	
Styrene	12620	1,200	12500	0	101	80-120	12310	2.5	20	
Tetrachloroethene	13110	1,200	12500	307.5	102	68.5-130	12830	2.1	20	
Toluene	12160	1,200	12500	0	97.3	80-120	11740	3.54	20	
trans-1,3-Dichloropropene	12790	1,200	12500	0	102	80-120	12720	0.554	20	
Trichloroethene	13550	1,200	12500	382.7	105	78.9-120	13050	3.73	20	
Vinyl acetate	16770	2,500	25000	0	67.1	62.4-133	16340	2.6	20	
Vinyl chloride	11890	500	12500	0	95.1	72.7-128	11910	0.11	20	
Xylenes, Total	37950	3,800	37500	0	101	80-120	36910	2.78	20	
Surr: 1,2-Dichloroethane-d4	10830	1,200	12500	0	86.7	71-126	10910	0.714	20	
Surr: 4-Bromofluorobenzene	12050	1,200	12500	0	96.4	74-125	12050	0.0324	20	
Surr: Dibromofluoromethane	11040	1,200	12500	0	88.3	73-126	10810	2.07	20	
Surr: Toluene-d8	11800	1,200	12500	0	94.4	75-125	11660	1.17	20	

The following samples were analyzed in this batch: 0407074-01A

ND - Not Detected at the Reporting Limit
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in assoc. Method Blank
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
U - Analyzed for but not detected
O - Referenced analyte value is > 4 times amount spiked
P - Dual Column results percent difference > 40%
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21602** InstrumentID: **WetChem**

LCS Sample ID: **WLCSW1-070804** Test Code: **E150.1** Units: **pH units** Analysis Date: **07/08/04 0:00**
Client ID: Run ID: **WETCHEM_040708A** SeqNo: **504779** 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	85-115	0			

DUP Sample ID: **0407074-01CDUP** Test Code: **E150.1** Units: **pH units** Analysis Date: **07/08/04 0:00**
Client ID: **Inj Wells** Run ID: **WETCHEM_040708A** SeqNo: **504783** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	6.91	0.10	0	0	0	0-0	6.92	0.145	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21620** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-070804** Test Code: **E160.1** Units: **mg/L** Analysis Date: **07/08/04 0:00**
Client ID: Run ID: **WETCHEM_040708F** SeqNo: **505164** 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: **WLCSW1-070804** Test Code: **E160.1** Units: **mg/L** Analysis Date: **07/08/04 0:00**
Client ID: Run ID: **WETCHEM_040708F** SeqNo: **505165** 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	1058	10	1000	0	106	80-120	0			

DUP Sample ID: **0407068-01EDUP** Test Code: **E160.1** Units: **mg/L** Analysis Date: **07/08/04 0:00**
Client ID: Run ID: **WETCHEM_040708F** SeqNo: **505171** 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	25900	10	0	0	0	0-0	25620	1.07	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21657** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW-071204** Test Code: **E310.1** Units: **mg/L** Analysis Date: **07/12/04 0:00**
Client ID: Run ID: **WETCHEM_040712B** SeqNo: **506101** 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: **WLCSW1-071204** Test Code: **E310.1** Units: **mg/L** Analysis Date: **07/12/04 0:00**
Client ID: Run ID: **WETCHEM_040712B** SeqNo: **506102** 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)	980.7	5.0	0	0.9806	0	0-0	0			
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Total (As CaCO3)	980.7	5.0	1000	0	98.1	80-120	0			

DUP Sample ID: **0407076-01BDUP** Test Code: **E310.1** Units: **mg/L** Analysis Date: **07/12/04 0:00**
Client ID: Run ID: **WETCHEM_040712B** SeqNo: **506130** 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)	421.7	5.0	0	0	0	0-0	421.7	0	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)	421.7	5.0	0	0	0	0-0	421.7	0	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21661** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-071204** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **07/12/04 0:00**
Client ID: Run ID: **WETCHEM_040712D** SeqNo: **506172** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	ND	1.0								

LCS Sample ID: **WLCSW1-071204** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **07/12/04 0:00**
Client ID: Run ID: **WETCHEM_040712D** SeqNo: **506173** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	1440	1.0	1409	0	102	80-120		0		

DUP Sample ID: **0407074-01CDUP** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **07/12/04 0:00**
Client ID: **Inj Wells** Run ID: **WETCHEM_040712D** SeqNo: **506175** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	7190	1.0	0	0	0	0-0	7200	0.139	20	

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21698** InstrumentID: **IC201**

MBLK Sample ID: **WBLKW1-071204** Test Code: **E300** Units: **mg/L** Analysis Date: **07/12/04 23:08**
Client ID: Run ID: **IC201_040712B** SeqNo: **506929** 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	1.0								
Surr: Dichloroacetic acid (surr)	5.26	0.10	5	0	105	80-120		0		

LCS Sample ID: **WLCSW1-071204** Test Code: **E300** Units: **mg/L** Analysis Date: **07/12/04 23:37**
Client ID: Run ID: **IC201_040712B** SeqNo: **506930** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.89	0.50	10	0	98.9	80-120		0		
Sulfate	10.41	1.0	10	0	104	80-120		0		
Surr: Dichloroacetic acid (surr)	5.58	0.10	5	0	112	80-120		0		

LCSD Sample ID: **WLCSW1DUP-071** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 0:05**
Client ID: Run ID: **IC201_040712B** SeqNo: **506931** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.9	0.50	10	0	99	80-120		0		
Sulfate	10.43	1.0	10	0	104	80-120		0		
Surr: Dichloroacetic acid (surr)	5.6	0.10	5	0	112	80-120		0		

MS Sample ID: **0407016-02AMS** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 1:31**
Client ID: Run ID: **IC201_040712B** SeqNo: **506934** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3695	50	1000	2719	97.6	75-125		0		
Sulfate	1255	100	1000	273	98.2	75-125		0		
Surr: Dichloroacetic acid (surr)	528	10	500	0	106	80-120		0		

MSD Sample ID: **0407016-02AMSD** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 1:59**
Client ID: Run ID: **IC201_040712B** SeqNo: **506935** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3686	50	1000	2719	96.7	75-125	3695	0.244	20	
Sulfate	1255	100	1000	273	98.2	75-125	1255	0	20	
Surr: Dichloroacetic acid (surr)	534	10	500	0	107	80-120	528	1.13	20	

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0407074
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R21698** InstrumentID: **IC201**

DUP Sample ID: **0407016-02ADUP** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 1:02**
Client ID: Run ID: **IC201_040712B** SeqNo: **506933** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	2515	50	0	0	0	0-0	2719	7.8	20	
Sulfate	259	100	0	0	0	0-0	273	5.26	20	
Surr: Dichloroacetic acid (surr)	538	10	500	0	108	80-120	571	5.95	20	

DUP Sample ID: **0407076-04BDUP** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 11:01**
Client ID: Run ID: **IC201_040712B** SeqNo: **506938** Prep Date: DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	844	25	0	0	0	0-0	845.5	0.178	20	
Sulfate	2172	50	0	0	0	0-0	2174	0.115	20	
Surr: Dichloroacetic acid (surr)	279	5.0	250	0	112	80-120	284.5	1.95	20	

DUP Sample ID: **0407076-07BDUP** Test Code: **E300** Units: **mg/L** Analysis Date: **07/13/04 14:49**
Client ID: Run ID: **IC201_040712B** SeqNo: **506944** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	3191	0.50	0	0	0	0-0	3183	0.227	20	E
Sulfate	4941	1.0	0	0	0	0-0	4912	0.6	20	E
Surr: Dichloroacetic acid (surr)	4.38	0.10	5	0	87.6	80-120	5.6	24.4	20	R

The following samples were analyzed in this batch: 0407074-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Chain of Custody Form

☐ e-Lab, Inc.
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

☐ e-Lab, Inc.
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

QUALITY • INTEGRITY • SERVICE

Page ____ of ____

e-Lab Project Manager: | e-Lab Work Order #: 0400U

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Wells	A	VOC (8260)
Work Order		Project Number		B	SVOC (8270)
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Tot Metals WQCC + Cations (6020)
Send Report To	Charlie Plymale	Invoice Attn	Charlie Plymale	D	Anions: Cl, SO4 (300)
Address	P.O. Box 159	Address	P.O. Box 159	E	Alkalinity (310.1)
				F	pH
City/State/Zip	Artesia, New Mexico 88211	City/State/Zip	Artesia, New Mexico 88211	G	TDS
Phone	(505) 748-3311	Phone	(505) 748-3311	H	Conductivity
Fax	(505) 746-5421	Fax	(505) 746-5421	I	Uranium
e-Mail Address		e-Mail Address		J	RCI

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Inj Wells	7/7/04	900			11	X	X	X	X	X	X	X	X	X	X	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Charlie Plymale

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☐ STD 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other 10 Day TAT

Results Due Date:

Relinquished by:	Date: 7/7/04	Time: ~~1615~~	Received by:	Notes:
Relinquished by:	Date:	Time:	Received by (Laboratory):	e-lab Cooler ID: / Cooler Temp.:
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory): 7/8/04	

QC Package: (Check One Box Below)
- ☑ Level II Std QC
- ☐ Level III Std QC/Raw Data
- ☐ Level IV SW846/CLP
- ☐ Other
- ☐ TRRP Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-NaHSO 7-Other 8-4°C

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to e-Lab, Inc.
2. Unless otherwise agreed in a formal contract, services provided by e-Lab, Inc. are expressly limited to the

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e-Lab Analytical, Inc.

Sample Receipt Checklist

Client Name NAVAJO REFINING

Date/Time Received: 7/8/2004 8:40:00 AM

Work Order Number 0407074

Received by: FSM

Checklist completed by RICHARD SHAHAN 7-8-04 (Signature / Date)

Reviewed by _____ 7/9/04 (Initials / Date)

Matrix: W

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):	3.0c	002	
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐

Adjusted? _____ Checked by _____

Login Notes: Trip blank not on COC; logged in without anlaysis.

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

e-Lab, Inc

Date: *July 19, 2004*

CLIENT: e-Lab, Inc
Project: 0407074
Work Order: **0407128**

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0407128-01	0407074-01E	Water		7/7/2004 09:00	7/9/2004 10:00	☐

e-Lab, Inc

Date: *July 19, 2004*

CLIENT: e-Lab, Inc
Project: 0407074

Work Order: 0407128

Lab ID: 0407128-01A
Client Sample ID: 0407074-01E

Collection Date: 7/7/2004 9:00:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE		**EPA 7.3.3.2**				Analyst: **KAE**
Cyanide, Reactive	ND	0.0300		mg/Kg	1	7/16/2004
FLASHPOINT, P-M CLOSED-CUP		**ASTM D93**				Analyst: **MB**
Flashpoint, P-M Closed-cup	>200			°F	1	7/16/2004
SULFIDE, REACTIVE		**EPA 7.3.4.2**				Analyst: **KAE**
Sulfide, Reactive	ND	40.0		mg/Kg	1	7/16/2004

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab, Inc

CLIENT: e-Lab, Inc
Work Order: 0407128
Project: 0407074

Date: *Jul 19 2004*

QC BATCH REPORT

Batch ID: **R22476** InstrumentID: **WETCHEM**

LCS Sample ID: **WLCSW1-071504** Test Code: **ASTM D93** Units: **°F** Analysis Date **07/16/04 0:00**

Client ID: Run ID: **WETCHEM_040716G** SeqNo: **329758** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Flashpoint, P-M Closed-cup	80	0	81	0	98.8	97.5-102.4	0			

The following samples were analyzed in this batch: 0407128-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: e-Lab, Inc
Work Order: 0407128
Project: 0407074

QC BATCH REPORT

Batch ID: **R22479** InstrumentID: **WETCHEM**

MBLK Sample ID: **WBLKW1-071504** Test Code: **EPA 7.3.3.2** Units: **mg/Kg** Analysis Date **07/16/04 0:00**
Client ID: Run ID: **WETCHEM_040716I** SeqNo: **329826** 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	0.030								

LCS Sample ID: **WLCSW1-071504** Test Code: **EPA 7.3.3.2** Units: **mg/Kg** Analysis Date **07/16/04 0:00**
Client ID: Run ID: **WETCHEM_040716I** SeqNo: **329827** Prep Date: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	4.238	0.75	19.71	0	21.5	5-100		0		

The following samples were analyzed in this batch: 0407128-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: e-Lab, Inc
Work Order: 0407128
Project: 0407074

QC BATCH REPORT

Batch ID: **R22482** InstrumentID: **WETCHEM**

MBLK Sample ID: **WBLKW1-071604** Test Code: **EPA 7.3.4.2** Units: **mg/Kg** Analysis Date **07/16/04 0:00**

Client ID: Run ID: **WETCHEM_040716L** SeqNo: **329840** 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: 0407128-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

040728

CHAIN-OF-CUSTODY RECORD

Date: Jul 01, 2014
Work Order: 14071
Due Date: 7/7/2014 5:00:00 PM

e-Lab Analytical, Inc.
[illegible]
Lubbock, TX 79424

Tel: [illegible]
Fax: [illegible]

Client Information		Project Information		Requested Analyses
Purchase Order		Project Name	C400021	A Cyanide, Available (SAY-CAE)
Work Order		Project Number		B Sulfide, Dissolved (EYA-S3E)
Company Name	e-Lab Analytical, Inc.	Bill To Company	e-Lab Analytical, Inc.	C [illegible]
Send Report To	Jeffrey L Dann	Invoice Attn	Accounts Payable	D
Address	[illegible]	Address	[illegible]	E
City/State/Zip	Houston, Texas 77099-4311	City/State/Zip	Houston, Texas 77099-4335	F
Phone	(281) 530-5656	Phone	(281) 530-5656	G
Fax	(281) 530-5887	Fax	(281) 530-5887	H
eMail Address				

Sample ID	Matrix	Collection Date	Bottle	A	B	C	D	E	F	G	H
[illegible]	Water	7/1/2014 9:00	1L HDPE-DAT	X	X	X					

Comments

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler Temp	Report Format
[signature]	7/1/14	[signature]	7/1/14 1400		STD

e-Lab, Inc

Sample Receipt Checklist

Client Name ELAB-HOU

Date/Time Received: 7/9/2004 10:00:00 AM

Work Order Number 0407128

Received by: TL

Checklist completed by [signature] 7/9/04 (Signature, Date)

Reviewed by [signature] 7/9/04 (Initials, Date)

Matrix:

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):	1.8 C		
Water - VOA vials have zero headspace?	Yes	No	No VOA vials submitted ✓
Water - pH acceptable upon receipt?	Yes ✓	No	N/A

Adjusted? Checked b

Login Notes:

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action

ALIGN OPEN END OF FEDEX AIRBILL POUCH HERE
CUSTODY SEAL
FedEx
PRIORITY OVERNIGHT
FRI
TRK 7913 8343
GRR
49424
MI-US
XR HLMA
Holland, MI 49424

e-Lab Analytical, Inc.

10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 281-530-5656 Fax 281-530-5887

December 23, 2004

Jeff Byrd
Navajo Refining Company
P.O. Box 159
Artesia, New Mexico 88211

Tel: (505) 746-5468
Fax: (505) 746-5421

Re: Injection Wells

Work Order : **0412005**

Dear Jeff Byrd,

e-Lab Analytical, Inc. received 1 sample on 12/1/2004 9:05:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by e-Lab Analytical, Inc. 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 e-Lab Analytical, Inc. The total number of pages in this report is 40.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Jeffrey L Croston

Electronically approved by: Jeffrey L Croston

Jeffrey L Croston

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT: Navajo Refining Company
Project: Injection Wells
Work Order: **0412005**

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0412005-01	Inj Wells	Water		11/30/2004 07:30	12/1/2004 09:05	☐

e-Lab Analytical, Inc. **Date:** *December 23, 2004*

CLIENT: Navajo Refining Company
Project: Injection Wells
Work Order: 0412005

Case Narrative

Batch 11292 Metals MS/MSD was an unrelated sample.

Batch 11279 Semivolatiles MS/MSD were unrelated sample.

Batch R25184 Volatiles MS/MSD was an unrelated sample.

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells
Lab ID: 0412005-01

Client Sample ID: Inj Wells
Collection Date: 11/30/2004 7:30:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
MERCURY, TOTAL		**SW7470**			Prep Date: **12/7/2004**	Analyst: **JCJ**
Mercury	ND	0.000200		mg/L	1	12/8/2004 4:29:34 PM
ICP METALS, TOTAL		**SW6020**			Prep Date: **12/3/2004**	Analyst: **SA**
Aluminum	0.0414	0.0100		mg/L	1	12/10/2004 9:00:00 PM
Arsenic	0.193	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Barium	0.0187	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Beryllium	ND	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Boron	0.211	0.200		mg/L	10	12/9/2004 9:13:00 PM
Cadmium	ND	0.00100		mg/L	1	12/10/2004 9:00:00 PM
Calcium	172	25.0		mg/L	50	12/9/2004 5:23:00 PM
Chromium	ND	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Cobalt	0.00208	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Copper	0.00888	0.00200		mg/L	1	12/10/2004 9:00:00 PM
Iron	0.304	0.200		mg/L	1	12/10/2004 9:00:00 PM
Lead	ND	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Magnesium	22.7	0.200		mg/L	1	12/10/2004 9:00:00 PM
Manganese	0.0658	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Molybdenum	0.00632	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Nickel	0.0286	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Potassium	26.6	0.200		mg/L	1	12/10/2004 9:00:00 PM
Selenium	0.300	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Silver	ND	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Sodium	1,880	10.0		mg/L	50	12/9/2004 5:23:00 PM
Vanadium	0.0117	0.00500		mg/L	1	12/10/2004 9:00:00 PM
Zinc	0.0541	0.00500		mg/L	1	12/10/2004 9:00:00 PM
SEMIVOLATILE ORGANICS BY GC/MS		**SW8270**			Prep Date: **12/1/2004**	Analyst: **HV**
1,2,4-Trichlorobenzene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2,4,5-Trichlorophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2,4,6-Trichlorophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Methylnaphthalene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Methylphenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Nitroaniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
2-Nitrophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
3&4-Methylphenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
3-Nitroaniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
4-Nitroaniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
4-Nitrophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Acenaphthene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Acenaphthylene	ND	11		µg/L	1	12/3/2004 10:18:00 PM

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells
Lab ID: 0412005-01

Client Sample ID: Inj Wells
Collection Date: 11/30/2004 7:30:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Aniline	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Anthracene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Benz(a)anthracene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Benzidine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Hexachloroethane	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Indeno(1,2,3-cd)pyrene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Isophorone	ND	11		µg/L	1	12/3/2004 10:18:00 PM
N-Nitrosodi-n-propylamine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
N-Nitrosodimethylamine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
N-Nitrosodiphenylamine	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Naphthalene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Nitrobenzene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Pentachlorophenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Phenanthrene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Phenol	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Pyrene	ND	11		µg/L	1	12/3/2004 10:18:00 PM
Surr: 2,4,6-Tribromophenol	108	39-153		%REC	1	12/3/2004 10:18:00 PM
Surr: 2-Fluorobiphenyl	89.2	40-147		%REC	1	12/3/2004 10:18:00 PM
Surr: 2-Fluorophenol	46.8	21-110		%REC	1	12/3/2004 10:18:00 PM
Surr: 4-Terphenyl-d14	93.6	39-141		%REC	1	12/3/2004 10:18:00 PM
Surr: Nitrobenzene-d5	88.3	37-140		%REC	1	12/3/2004 10:18:00 PM
Surr: Phenol-d6	24.9	11-100		%REC	1	12/3/2004 10:18:00 PM
VOLATILES BY GC/MS		**SW8260**				Analyst: **PC**
1,1,1-Trichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1,2,2-Tetrachloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1,2-Trichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1-Dichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,1-Dichloroethene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
1,2-Dichloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
2-Butanone	ND	10		µg/L	1	12/10/2004 7:44:00 PM
2-Chloroethyl vinyl ether	ND	10		µg/L	1	12/10/2004 7:44:00 PM
2-Hexanone	ND	10		µg/L	1	12/10/2004 7:44:00 PM
4-Methyl-2-pentanone	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Acetone	39	10		µg/L	1	12/10/2004 7:44:00 PM
Benzene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Bromodichloromethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Bromoform	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Bromomethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Carbon disulfide	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Carbon tetrachloride	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM

Qualifiers:

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J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - *Value exceeds Maximum Contaminant Level*
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - *Analyzed outside of Hold Time*

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells
Lab ID: 0412005-01

Client Sample ID: Inj Wells
Collection Date: 11/30/2004 7:30:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
Chlorobenzene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Chloroethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Chloroform	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Chloromethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
cis-1,3-Dichloropropene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Dibromochloromethane	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Ethylbenzene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
m,p-Xylene	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Methylene chloride	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Styrene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Tetrachloroethene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Toluene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
trans-1,3-Dichloropropene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Trichloroethene	ND	5.0		µg/L	1	12/10/2004 7:44:00 PM
Vinyl acetate	ND	10		µg/L	1	12/10/2004 7:44:00 PM
Vinyl chloride	ND	2.0		µg/L	1	12/10/2004 7:44:00 PM
Xylenes, Total	ND	15		µg/L	1	12/10/2004 7:44:00 PM
Surr: 1,2-Dichloroethane-d4	105	71-126		%REC	1	12/10/2004 7:44:00 PM
Surr: 4-Bromofluorobenzene	80.8	74-125		%REC	1	12/10/2004 7:44:00 PM
Surr: Dibromofluoromethane	96.4	73-126		%REC	1	12/10/2004 7:44:00 PM
Surr: Toluene-d8	80.4	75-125		%REC	1	12/10/2004 7:44:00 PM
FLASHPOINT		**SW1010**				Analyst: **MAG**
Ignitability	>196	50		°F	1	12/6/2004
CYANIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Cyanide	ND	0.0300		mg/Kg	1	12/2/2004
SULFIDE, REACTIVE		**SW-846**				Analyst: **MAG**
Reactive Sulfide	ND	40.0		mg/Kg	1	12/2/2004
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **MG**
Chloride	1,200	50.0		mg/L	100	12/8/2004 11:32:00 PM
Sulfate	2,450	100		mg/L	100	12/8/2004 11:32:00 PM
Surr: Dichloroacetic acid (surr)	102	80-120		%REC	100	12/8/2004 11:32:00 PM
ALKALINITY		**E310.1**				Analyst: **IGF**
Alkalinity, Bicarbonate (As CaCO3)	132	5.00		mg/L	1	12/6/2004
Alkalinity, Carbonate (As CaCO3)	ND	5.00		mg/L	1	12/6/2004
Alkalinity, Hydroxide (As CaCO3)	ND	5.00		mg/L	1	12/6/2004
Alkalinity, Total (As CaCO3)	132	5.00		mg/L	1	12/6/2004
CONDUCTIVITY		**E120.1**				Analyst: **IGF**
Specific Conductance	6,350	1.00		µmhos/cm	1	12/3/2004

Qualifiers:

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* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

e-Lab Analytical, Inc.

Date: *December 23, 2004*

CLIENT:	Navajo Refining Company	**Client Sample ID:**	Inj Wells
Work Order:	0412005	**Collection Date:**	11/30/2004 7:30:00 AM
Project:	Injection Wells		
Lab ID:	0412005-01	**Matrix:**	WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
PH			**E150.1**			Analyst: **IGF**
pH	7.19	0.100		pH units	1	12/1/2004
TOTAL DISSOLVED SOLIDS			**E160.1**			Analyst: **MG**
Total Dissolved Solids (Residue, Filterable)	4,940	10.0		mg/L	1	12/3/2004

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- S - Spike Recovery outside accepted recovery limits
- P - Dual Column results percent difference > 40%
- E - Value above quantitation range
- H - Analyzed outside of Hold Time

-Lab Analytical, Inc.

Date: *Dec 23 2004*

CLIENT: Navajo Refining Company

QC BATCH REPORT

Work Order: 0412005

Project: Injection Wells

Batch ID: **11292** InstrumentID: **ICP4500**

MBLK Sample ID: **MBLKW1-120304** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/08/04 15:12**

Client ID: Run ID: **ICP4500_041208A** SeqNo: **585425** Prep Date: **12/3/2004** 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	ND	0.020								
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	0.0006782	0.0050								J
Magnesium	ND	0.20								
Manganese	ND	0.0050								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Potassium	ND	0.20								
Selenium	ND	0.0050								
Silver	ND	0.0050								
Sodium	0.07729	0.20								J
Vanadium	ND	0.0050								
Zinc	0.0021	0.0050								J

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

O - Referenced analyte value is > 4 times amount spiked

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

P - Dual Column results percent difference > 40%

B - Analyte detected in assoc. Method Blank

U - Analyzed for but not detected

E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11292** InstrumentID: **ICP4500**

LCS Sample ID: **MLCSW1-120304** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/08/04 15:17**

Client ID: Run ID: **ICP4500_041208A** SeqNo: **585426** Prep Date: **12/3/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.04516	0.010	0.05	0	90.3	79-126	0			
Arsenic	0.04774	0.0050	0.05	0	95.5	80-121	0			
Barium	0.04532	0.0050	0.05	0	90.6	79.8-119	0			
Beryllium	0.04939	0.0020	0.05	0	98.8	78.9-120	0			
Boron	0.5121	0.020	0.5	0	102	80-120	0			
Cadmium	0.05014	0.0020	0.05	0	100	79.1-119	0			
Calcium	4.515	0.50	5	0	90.3	80-121	0			
Chromium	0.04476	0.0050	0.05	0	89.5	79.3-121	0			
Cobalt	0.04611	0.0050	0.05	0	92.2	82-121	0			
Copper	0.04562	0.0050	0.05	0	91.2	81-120	0			
Iron	4.832	0.20	5	0	96.6	80-120	0			
Lead	0.04448	0.0050	0.05	0	89	80-118	0			
Magnesium	4.737	0.20	5	0	94.7	80-120	0			
Manganese	0.0458	0.0050	0.05	0	91.6	82-119	0			
Molybdenum	0.04286	0.0050	0.05	0	85.7	81-115	0			
Nickel	0.0465	0.0050	0.05	0	93	82-120	0			
Potassium	4.477	0.20	5	0	89.5	80-120	0			
Selenium	0.04793	0.0050	0.05	0	95.9	79.2-118	0			
Silver	0.04639	0.0050	0.05	0	92.8	80-117	0			
Sodium	4.588	0.20	5	0	91.8	80.6-119	0			
Vanadium	0.04421	0.0050	0.05	0	88.4	82.1-119	0			
Zinc	0.04855	0.0050	0.05	0	97.1	79-118	0			

ND - Not Detected at the Reporting Limit
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in assoc. Method Blank
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
U - Analyzed for but not detected
O - Referenced analyte value is > 4 times amount spiked
P - Dual Column results percent difference > 40%
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11292** InstrumentID: **ICP4500**

MS Sample ID: **0411323-01CMS** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/13/04 17:14**

Client ID: Run ID: **ICP7500_041213A** SeqNo: **587685** Prep Date: **12/3/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.1069	0.010	0.05	0.5579	-902	79-126	0			SO
Arsenic	0.05512	0.0050	0.05	0.006109	98	80-121	0			
Barium	0.09539	0.0050	0.05	0.05106	88.7	79.8-119	0			
Beryllium	0.04669	0.0020	0.05	0	93.4	78.9-120	0			
Boron	0.7308	0.020	0.5	0.2504	96.1	80-120	0			
Cadmium	0.04737	0.0020	0.05	0	94.7	79.1-119	0			
Calcium	264.3	0.50	5	266.5	-44	80-121	0			SEO
Chromium	0.04732	0.0050	0.05	0.0007623	93.1	79.3-121	0			
Cobalt	0.04668	0.0050	0.05	0.001722	89.9	82-121	0			
Copper	0.04436	0.0050	0.05	0.0009763	86.8	80-120	0			
Iron	6.504	0.20	5	2.249	85.1	80-120	0			
Lead	0.04604	0.0050	0.05	0.000464	91.2	80-118	0			
Magnesium	114.1	0.20	5	106.8	146	80-120	0			SEO
Manganese	0.1654	0.0050	0.05	0.1179	95	82-119	0			
Molybdenum	0.05048	0.0050	0.05	0.00484	91.3	81-115	0			
Nickel	0.05074	0.0050	0.05	0.006594	88.3	82-120	0			
Potassium	5.203	0.20	5	0.5493	93.1	80-120	0			
Selenium	0.04587	0.0050	0.05	0	91.7	79.2-118	0			
Silver	0.03777	0.0050	0.05	0	75.5	80-117	0			S
Sodium	40.61	0.20	5	34.32	126	80.6-119	0			SO
Vanadium	0.04854	0.0050	0.05	0.001477	94.1	82.1-119	0			
Zinc	0.07754	0.0050	0.05	0.02374	108	79-118	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11292** InstrumentID: **ICP4500**

MSD Sample ID: **0411323-01CMSD** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/13/04 17:25**
Client ID: Run ID: **ICP7500_041213A** SeqNo: **587686** Prep Date: **12/3/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.09847	0.010	0.05	0.5579	-919	79-126	0.1069	8.21	15	SO
Arsenic	0.05478	0.0050	0.05	0.006109	97.3	80-121	0.05512	0.619	15	
Barium	0.09357	0.0050	0.05	0.05106	85	79.8-119	0.09539	1.93	15	
Beryllium	0.04578	0.0020	0.05	0	91.6	78.9-120	0.04669	1.97	15	
Boron	0.7187	0.020	0.5	0.2504	93.7	80-120	0.7308	1.67	15	
Cadmium	0.04671	0.0020	0.05	0	93.4	79.1-119	0.04737	1.4	15	
Calcium	264.8	0.50	5	266.5	-34	80-121	264.3	0.189	15	SEO
Chromium	0.04649	0.0050	0.05	0.0007623	91.5	79.3-121	0.04732	1.77	15	
Cobalt	0.04571	0.0050	0.05	0.001722	88	82-121	0.04668	2.1	15	
Copper	0.04363	0.0050	0.05	0.0009763	85.3	81-120	0.04436	1.66	15	
Iron	6.331	0.20	5	2.249	81.6	80-120	6.504	2.7	15	
Lead	0.04463	0.0050	0.05	0.000464	88.3	80-118	0.04604	3.11	15	
Magnesium	111.1	0.20	5	106.8	86	80-120	114.1	2.66	15	EO
Manganese	0.1615	0.0050	0.05	0.1179	87.2	82-119	0.1654	2.39	15	
Molybdenum	0.0504	0.0050	0.05	0.00484	91.1	81-115	0.05048	0.159	15	
Nickel	0.04918	0.0050	0.05	0.006594	85.2	82-120	0.05074	3.12	15	
Potassium	5.187	0.20	5	0.5493	92.8	80-120	5.203	0.308	15	
Selenium	0.04899	0.0050	0.05	0	98	79.2-118	0.04587	6.58	15	
Silver	0.03712	0.0050	0.05	0	74.2	80-117	0.03777	1.74	15	S
Sodium	39.2	0.20	5	34.32	97.6	80.6-119	40.61	3.53	15	O
Vanadium	0.0472	0.0050	0.05	0.001477	91.4	82.1-119	0.04854	2.8	15	
Zinc	0.04375	0.0050	0.05	0.02374	40	79-118	0.07754	55.7	15	SR

DUP Sample ID: **0411323-01CDUP** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/08/04 15:26**
Client ID: Run ID: **ICP4500_041208A** SeqNo: **585428** Prep Date: **12/3/2004** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	242.3	25	0	0	0	0-0	237.6	1.96	25	

DUP Sample ID: **0411323-01CDUP** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/09/04 17:33**
Client ID: Run ID: **ICP4500_041209A** SeqNo: **586207** Prep Date: **12/3/2004** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Magnesium	104	2.0	0	0	0	0-0	94.02	10.1	25	

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U - Analyzed for but not detected
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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11292** InstrumentID: **ICP4500**

DUP Sample ID: **0411323-01CDUP** Test Code: **SW6020** Units: **mg/L** Analysis Date: **12/13/04 17:08**

Client ID: Run ID: **ICP7500_041213A** SeqNo: **587684** Prep Date: **12/3/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.5114	0.010	0	0	0	0-0	0.5579	8.7	25	
Arsenic	0.007011	0.0050	0	0	0	0-0	0.006109	13.8	25	
Barium	0.04884	0.0050	0	0	0	0-0	0.05106	4.44	25	
Beryllium	ND	0.0020	0	0	0	0-0	0.00004484	0	25	
Boron	0.2336	0.020	0	0	0	0-0	0.2504	6.94	25	
Cadmium	ND	0.0020	0	0	0	0-0	0.00002551	0	25	
Chromium	0.00112	0.0050	0	0	0	0-0	0.0007623	0	25	J
Cobalt	0.001584	0.0050	0	0	0	0-0	0.001722	0	25	J
Copper	0.0007835	0.0050	0	0	0	0-0	0.0009763	0	25	J
Iron	2.272	0.20	0	0	0	0-0	2.249	1.02	25	
Lead	0.0005578	0.0050	0	0	0	0-0	0.000464	0	25	J
Manganese	0.118	0.0050	0	0	0	0-0	0.1179	0.0848	25	
Molybdenum	0.004888	0.0050	0	0	0	0-0	0.00484	0	25	J
Nickel	0.006244	0.0050	0	0	0	0-0	0.006594	5.45	25	
Potassium	0.1045	0.20	0	0	0	0-0	0.5493	0	25	J
Selenium	ND	0.0050	0	0	0	0-0	0.00126	0	25	
Silver	ND	0.0050	0	0	0	0-0	0.00001912	0	25	
Sodium	34.43	0.20	0	0	0	0-0	34.32	0.32	25	
Vanadium	0.001493	0.0050	0	0	0	0-0	0.001477	0	25	J
Zinc	0.02671	0.0050	0	0	0	0-0	0.02374	11.8	25	

The following samples were analyzed in this batch: 0412005-01B

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Refcrenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11333** InstrumentID: **Mercury**

MBLK Sample ID: **GBLKW2-120704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:16**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585330** Prep Date: **12/7/2004** 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: **GLCSW2-120704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:18**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585331** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00516	0.00020	0.005	0	103	83-115	0			

LCSD Sample ID: **GLCSDW2-120704** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:19**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585332** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00525	0.00020	0.005	0	105	83-115	0.00516	1.73	20	

MS Sample ID: **0411323-05CMS** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:24**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585335** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00521	0.00020	0.005	-0.00001	104	83-115	0			

MSD Sample ID: **0411323-05CMSD** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:25**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585336** Prep Date: **12/7/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.00537	0.00020	0.005	-0.00001	108	83-115	0.00521	3.02	20	

DUP Sample ID: **0411323-05CDUP** Test Code: **SW7470** Units: **mg/L** Analysis Date: **12/08/04 15:22**
Client ID: Run ID: **MERCURY_041208B** SeqNo: **585334** Prep Date: **12/7/2004** 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	-0.00001	0	20	

The following samples were analyzed in this batch: 0412005-01B

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
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E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MBLK Sample ID: **SBLKW1-041201** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 19:16**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584523** Prep Date: **12/1/2004** 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	10								
2,4,5-Trichlorophenol	ND	10								
2,4,6-Trichlorophenol	ND	10								
2-Methylnaphthalene	ND	10								
2-Methylphenol	ND	10								
2-Nitroaniline	ND	10								
2-Nitrophenol	ND	10								
3&4-Methylphenol	ND	10								
3-Nitroaniline	ND	10								
4-Nitroaniline	ND	10								
4-Nitrophenol	ND	10								
Acenaphthene	ND	10								
Acenaphthylene	ND	10								
Aniline	ND	10								
Anthracene	ND	10								
Benz(a)anthracene	ND	10								
Benzidine	ND	10								
Hexachloroethane	ND	10								
Indeno(1,2,3-cd)pyrene	ND	10								
Isophorone	ND	10								
N-Nitrosodi-n-propylamine	ND	10								
N-Nitrosodimethylamine	ND	10								
N-Nitrosodiphenylamine	ND	10								
Naphthalene	ND	10								
Nitrobenzene	ND	10								
Pentachlorophenol	ND	10								
Phenanthrene	ND	10								
Phenol	ND	10								
Pyrene	ND	10								
1,4-Dichlorobenzene-d4	40	0								
Acenaphthene-d10	40	0								
Chrysene-d12	40	0								
Naphthalene-d8	40	0								
Perylene-d12	40	0								
Phenanthrene-d10	40	0								
Surr: 2,4,6-Tribromophenol	111.4	10	100	0	111	39-153	0			
Surr: 2-Fluorobiphenyl	94.94	10	100	0	94.9	40-147	0			
Surr: 2-Fluorophenol	41.49	10	100	0	41.5	21-110	0			
Surr: 4-Terphenyl-d14	92.33	10	100	0	92.3	39-141	0			
Surr: Nitrobenzene-d5	92.12	10	100	0	92.1	37-140	0			
Surr: Phenol-d6	24.52	10	100	0	24.5	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

LCS Sample ID: **SLCSW1-041201** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 19:42**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584524** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	46.41	10	50	0	92.8	50-115	0			
2,4,5-Trichlorophenol	85.9	10	100	0	85.9	68-128	0			
2,4,6-Trichlorophenol	80.73	10	100	0	80.7	66-125	0			
2-Methylnaphthalene	42.71	10	50	0	85.4	47-122	0			
2-Methylphenol	62.35	10	100	0	62.4	51-115	0			
2-Nitroaniline	40.81	10	50	0	81.6	64-128	0			
2-Nitrophenol	85.56	10	100	0	85.6	60-119	0			
3&4-Methylphenol	83.39	10	150	0	55.6	44-115	0			
3-Nitroaniline	31.82	10	50	0	63.6	61-118	0			
4-Nitroaniline	35.23	10	50	0	70.5	61-123	0			
4-Nitrophenol	38.6	10	100	0	38.6	17-100	0			
Acenaphthene	47.59	10	50	0	95.2	68-115	0			
Acenaphthylene	45.62	10	50	0	91.2	67-116	0			
Aniline	28.31	10	50	0	56.6	40-130	0			
Anthracene	51.46	10	50	0	103	70-129	0			
Benz(a)anthracene	45.47	10	50	0	90.9	55-131	0			
Benzidine	7.922	10	50	0	15.8	10-115	0			J
Hexachloroethane	44.02	10	50	0	88	46-115	0			
Indeno(1,2,3-cd)pyrene	45.47	10	50	0	90.9	42-123	0			
Isophorone	43.19	10	50	0	86.4	63-117	0			
N-Nitrosodi-n-propylamine	41.82	10	50	0	83.6	67-115	0			
N-Nitrosodimethylamine	18.78	10	50	0	37.6	28-115	0			
N-Nitrosodiphenylamine	52.16	10	50	0	104	72-144	0			
Naphthalene	47.05	10	50	0	94.1	52-115	0			
Nitrobenzene	42.92	10	50	0	85.8	65-115	0			
Pentachlorophenol	88.33	10	100	0	88.3	65-123	0			
Phenanthrene	49.68	10	50	0	99.4	69-119	0			
Phenol	28.84	10	100	0	28.8	16-115	0			
Pyrene	47.04	10	50	0	94.1	51-130	0			
Surr: 2,4,6-Tribromophenol	104.5	10	100	0	105	39-153	0			
Surr: 2-Fluorobiphenyl	88	10	100	0	88	40-147	0			
Surr: 2-Fluorophenol	42.87	10	100	0	42.9	21-110	0			
Surr: 4-Terphenyl-d14	92.9	10	100	0	92.9	39-141	0			
Surr: Nitrobenzene-d5	84.16	10	100	0	84.2	37-140	0			
Surr: Phenol-d6	26.45	10	100	0	26.5	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MS Sample ID: **0411323-01DMS** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 20:34**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584526** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.38	10	50	0	86.8	50-115	0			
2,4,5-Trichlorophenol	90.42	10	100	0	90.4	68-128	0			
2,4,6-Trichlorophenol	85.7	10	100	0	85.7	66-125	0			
2-Methylnaphthalene	43.28	10	50	0	86.6	47-122	0			
2-Methylphenol	64.36	10	100	0	64.4	51-115	0			
2-Nitroaniline	43.16	10	50	0	86.3	64-128	0			
2-Nitrophenol	86.59	10	100	0	86.6	60-119	0			
3&4-Methylphenol	86.42	10	150	0	57.6	44-115	0			
3-Nitroaniline	33.78	10	50	0	67.6	61-118	0			
4-Nitroaniline	38.79	10	50	0	77.6	61-123	0			
4-Nitrophenol	36.47	10	100	0	36.5	17-100	0			
Acenaphthene	48.47	10	50	0	96.9	68-115	0			
Acenaphthylene	47.05	10	50	0	94.1	67-116	0			
Aniline	32.99	10	50	0	66	40-130	0			
Anthracene	51.79	10	50	0	104	70-129	0			
Benz(a)anthracene	49.25	10	50	0	98.5	55-131	0			
Benzidine	6.74	10	50	0	13.5	10-115	0			J
Hexachloroethane	36.94	10	50	0	73.9	46-115	0			
Indeno(1,2,3-cd)pyrene	49.15	10	50	0	98.3	42-123	0			
Isophorone	45.12	10	50	0	90.2	63-117	0			
N-Nitrosodi-n-propylamine	43.97	10	50	0	87.9	67-115	0			
N-Nitrosodimethylamine	17.91	10	50	0	35.8	28-115	0			
N-Nitrosodiphenylamine	53.36	10	50	0	107	72-144	0			
Naphthalene	45.94	10	50	0	91.9	52-115	0			
Nitrobenzene	44.54	10	50	0	89.1	65-115	0			
Pentachlorophenol	94.58	10	100	0	94.6	65-123	0			
Phenanthrene	50.51	10	50	0	101	69-119	0			
Phenol	29.37	10	100	0	29.4	16-115	0			
Pyrene	48.25	10	50	0	96.5	51-130	0			
Surr: 2,4,6-Tribromophenol	101.5	10	100	0	102	39-153	0			
Surr: 2-Fluorobiphenyl	84.74	10	100	0	84.7	40-147	0			
Surr: 2-Fluorophenol	39.74	10	100	0	39.7	21-110	0			
Surr: 4-Terphenyl-d14	90.52	10	100	0	90.5	39-141	0			
Surr: Nitrobenzene-d5	82.8	10	100	0	82.8	37-140	0			
Surr: Phenol-d6	25.63	10	100	0	25.6	11-100	0			

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J - Analyte detected below quantitation limits
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S - Spike Recovery outside accepted recovery limits
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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MS Sample ID: **0411323-05DMS** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 21:52**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584529** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.27	10	50	0	88.5	50-115	0			
2,4,5-Trichlorophenol	93.28	10	100	0	93.3	68-128	0			
2,4,6-Trichlorophenol	83.02	10	100	0	83	66-125	0			
2-Methylnaphthalene	45.01	10	50	0	90	47-122	0			
2-Methylphenol	64.66	10	100	0	64.7	51-115	0			
2-Nitroaniline	45.32	10	50	0	90.6	64-128	0			
2-Nitrophenol	89.99	10	100	0	90	60-119	0			
3&4-Methylphenol	85.58	10	150	0	57.1	44-115	0			
3-Nitroaniline	36.65	10	50	0	73.3	61-118	0			
4-Nitroaniline	39.1	10	50	0	78.2	61-123	0			
4-Nitrophenol	40.12	10	100	0	40.1	17-100	0			
Acenaphthene	48.32	10	50	0	96.6	68-115	0			
Acenaphthylene	47.27	10	50	0	94.5	67-116	0			
Aniline	30.49	10	50	0	61	40-130	0			
Anthracene	52.19	10	50	0	104	70-129	0			
Benz(a)anthracene	49.77	10	50	0	99.5	55-131	0			
Benzidine	ND	10	50	0	0	10-115	0			S
Hexachloroethane	35.92	10	50	0	71.8	46-115	0			
Indeno(1,2,3-cd)pyrene	50.64	10	50	0	101	42-123	0			
Isophorone	47.44	10	50	0	94.9	63-117	0			
N-Nitrosodi-n-propylamine	43.49	10	50	0	87	67-115	0			
N-Nitrosodimethylamine	19.55	10	50	0	39.1	28-115	0			
N-Nitrosodiphenylamine	53.06	10	50	0	106	72-144	0			
Naphthalene	46.32	10	50	0	92.6	52-115	0			
Nitrobenzene	44.87	10	50	0	89.7	65-115	0			
Pentachlorophenol	95.19	10	100	0	95.2	65-123	0			
Phenanthrene	50.74	10	50	0	101	69-119	0			
Phenol	30.24	10	100	0	30.2	16-115	0			
Pyrene	48.75	10	50	0	97.5	51-130	0			
Surr: 2,4,6-Tribromophenol	109.7	10	100	0	110	39-153	0			
Surr: 2-Fluorobiphenyl	86.29	10	100	0	86.3	40-147	0			
Surr: 2-Fluorophenol	44.57	10	100	0	44.6	21-110	0			
Surr: 4-Terphenyl-d14	92.93	10	100	0	92.9	39-141	0			
Surr: Nitrobenzene-d5	87.65	10	100	0	87.7	37-140	0			
Surr: Phenol-d6	28.07	10	100	0	28.1	11-100	0			

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MSD Sample ID: **0411323-01DMS** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 21:00**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584527** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	43.32	10	50	0	86.6	50-115	43.38	0.129	30	
2,4,5-Trichlorophenol	94.48	10	100	0	94.5	68-128	90.42	4.39	30	
2,4,6-Trichlorophenol	86.55	10	100	0	86.6	66-125	85.7	0.994	30	
2-Methylnaphthalene	44.24	10	50	0	88.5	47-122	43.28	2.19	30	
2-Methylphenol	68.14	10	100	0	68.1	51-115	64.36	5.71	30	
2-Nitroaniline	45.64	10	50	0	91.3	64-128	43.16	5.59	30	
2-Nitrophenol	90.48	10	100	0	90.5	60-119	86.59	4.4	30	
3&4-Methylphenol	91.48	10	150	0	61	44-115	86.42	5.69	30	
3-Nitroaniline	34.37	10	50	0	68.7	61-118	33.78	1.73	30	
4-Nitroaniline	41.5	10	50	0	83	61-123	38.79	6.75	30	
4-Nitrophenol	39.15	10	100	0	39.2	17-100	36.47	7.1	30	
Acenaphthene	50.19	10	50	0	100	68-115	48.47	3.49	30	
Acenaphthylene	48.71	10	50	0	97.4	67-116	47.05	3.46	30	
Aniline	32.02	10	50	0	64	40-130	32.99	3.01	30	
Anthracene	53.42	10	50	0	107	70-129	51.79	3.1	30	
Benz(a)anthracene	48.44	10	50	0	96.9	55-131	49.25	1.68	30	
Benzidine	1.612	10	50	0	3.22	10-115	6.74	0	30	JS
Hexachloroethane	37.56	10	50	0	75.1	46-115	36.94	1.67	30	
Indeno(1,2,3-cd)pyrene	48.03	10	50	0	96.1	42-123	49.15	2.29	30	
Isophorone	46.72	10	50	0	93.4	63-117	45.12	3.49	30	
N-Nitrosodi-n-propylamine	46.57	10	50	0	93.1	67-115	43.97	5.74	30	
N-Nitrosodimethylamine	18.67	10	50	0	37.3	28-115	17.91	4.15	30	
N-Nitrosodiphenylamine	55.51	10	50	0	111	72-144	53.36	3.96	30	
Naphthalene	45.62	10	50	0	91.2	52-115	45.94	0.71	30	
Nitrobenzene	45.19	10	50	0	90.4	65-115	44.54	1.44	30	
Pentachlorophenol	98.42	10	100	0	98.4	65-123	94.58	3.98	30	
Phenanthrene	51.17	10	50	0	102	69-119	50.51	1.3	30	
Phenol	31.17	10	100	0	31.2	16-115	29.37	5.95	30	
Pyrene	50.05	10	50	0	100	51-130	48.25	3.67	30	
Surr: 2,4,6-Tribromophenol	107.9	10	100	0	108	39-153	101.5	6.09	30	
Surr: 2-Fluorobiphenyl	89.32	10	100	0	89.3	40-147	84.74	5.26	30	
Surr: 2-Fluorophenol	43.8	10	100	0	43.8	21-110	39.74	9.73	30	
Surr: 4-Terphenyl-d14	95.13	10	100	0	95.1	39-141	90.52	4.97	30	
Surr: Nitrobenzene-d5	85.54	10	100	0	85.5	37-140	82.8	3.26	30	
Surr: Phenol-d6	29.34	10	100	0	29.3	11-100	25.63	13.5	30	

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **11279** InstrumentID: **SV-3**

MSD Sample ID: **0411323-05DMSD** Test Code: **SW8270** Units: **µg/L** Analysis Date: **12/06/04 22:18**

Client ID: Run ID: **SV-3_041206A** SeqNo: **584530** Prep Date: **12/1/2004** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	44.57	10	50	0	89.1	50-115	44.27	0.69	30	
2,4,5-Trichlorophenol	84.29	10	100	0	84.3	68-128	93.28	10.1	30	
2,4,6-Trichlorophenol	81.09	10	100	0	81.1	66-125	83.02	2.35	30	
2-Methylnaphthalene	42.69	10	50	0	85.4	47-122	45.01	5.28	30	
2-Methylphenol	62.41	10	100	0	62.4	51-115	64.66	3.54	30	
2-Nitroaniline	40.69	10	50	0	81.4	64-128	45.32	10.8	30	
2-Nitrophenol	84.59	10	100	0	84.6	60-119	89.99	6.18	30	
3&4-Methylphenol	84.1	10	150	0	56.1	44-115	85.58	1.74	30	
3-Nitroaniline	33.02	10	50	0	66	61-118	36.65	10.4	30	
4-Nitroaniline	36.04	10	50	0	72.1	61-123	39.1	8.15	30	
4-Nitrophenol	36.03	10	100	0	36	17-100	40.12	10.8	30	
Acenaphthene	47.19	10	50	0	94.4	68-115	48.32	2.36	30	
Acenaphthylene	45.79	10	50	0	91.6	67-116	47.27	3.19	30	
Aniline	29.07	10	50	0	58.1	40-130	30.49	4.79	30	
Anthracene	51.25	10	50	0	102	70-129	52.19	1.82	30	
Benz(a)anthracene	45	10	50	0	90	55-131	49.77	10.1	30	
Benzidine	4.102	10	50	0	8.2	10-115	0	0	30	JS
Hexachloroethane	38.51	10	50	0	77	46-115	35.92	6.94	30	
Indeno(1,2,3-cd)pyrene	47.66	10	50	0	95.3	42-123	50.64	6.06	30	
Isophorone	43.85	10	50	0	87.7	63-117	47.44	7.86	30	
N-Nitrosodi-n-propylamine	42.41	10	50	0	84.8	67-115	43.49	2.52	30	
N-Nitrosodimethylamine	18.23	10	50	0	36.5	28-115	19.55	6.99	30	
N-Nitrosodiphenylamine	51.31	10	50	0	103	72-144	53.06	3.35	30	
Naphthalene	45.52	10	50	0	91	52-115	46.32	1.73	30	
Nitrobenzene	42.69	10	50	0	85.4	65-115	44.87	4.98	30	
Pentachlorophenol	88.25	10	100	0	88.3	65-123	95.19	7.56	30	
Phenanthrene	49.54	10	50	0	99.1	69-119	50.74	2.39	30	
Phenol	28.67	10	100	0	28.7	16-115	30.24	5.35	30	
Pyrene	45.83	10	50	0	91.7	51-130	48.75	6.17	30	
Surr: 2,4,6-Tribromophenol	103.5	10	100	0	104	39-153	109.7	5.77	30	
Surr: 2-Fluorobiphenyl	89.41	10	100	0	89.4	40-147	86.29	3.55	30	
Surr: 2-Fluorophenol	40.87	10	100	0	40.9	21-110	44.57	8.65	30	
Surr: 4-Terphenyl-d14	88.85	10	100	0	88.8	39-141	92.93	4.48	30	
Surr: Nitrobenzene-d5	84.44	10	100	0	84.4	37-140	87.65	3.74	30	
Surr: Phenol-d6	26.57	10	100	0	26.6	11-100	28.07	5.5	30	

The following samples were analyzed in this batch: 0412005-01D

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25184** InstrumentID: **VOA2**

MBLK Sample ID: **VBLKW-1210** Test Code: **SW8260** Units: **µg/L** Analysis Date: **12/10/04 14:40**

Client ID: Run ID: **VOA2_041210A** SeqNo: **586932** 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								
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	50.58	5.0	50	0	101	71-126		0		
Surr: 4-Bromofluorobenzene	38.87	5.0	50	0	77.7	74-125		0		
Surr: Dibromofluoromethane	46.88	5.0	50	0	93.8	73-126		0		
Surr: Toluene-d8	43.86	5.0	50	0	87.7	75-125		0		

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25184** InstrumentID: **VOA2**

LCS Sample ID: **VLCSW-1210** Test Code: **SW8260** Units: **µg/L** Analysis Date: **12/10/04 13:50**

Client ID: Run ID: **VOA2_041210A** SeqNo: **586931** 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	53.94	5.0	50	0	108	75.2-120	0			
1,1,2,2-Tetrachloroethane	53.63	5.0	50	0	107	72.4-121	0			
1,1,2-Trichloroethane	52.21	5.0	50	0	104	80-120	0			
1,1-Dichloroethane	51.53	5.0	50	0	103	76.9-120	0			
1,1-Dichloroethene	54.08	5.0	50	0	108	72.6-123	0			
1,2-Dichloroethane	51.67	5.0	50	0	103	80-120	0			
2-Butanone	119.9	10	100	0	120	69-131	0			
2-Chloroethyl vinyl ether	113.4	10	100	0	113	60-135	0			
2-Hexanone	121.4	10	100	0	121	55.6-126	0			
4-Methyl-2-pentanone	118.2	10	100	0	118	67.4-121	0			
Acetone	109.7	10	100	0	110	64.4-140	0			
Benzene	51.72	5.0	50	0	103	80-120	0			
Bromodichloromethane	51.04	5.0	50	0	102	80-120	0			
Bromoform	55.31	5.0	50	0	111	77.9-121	0			
Bromomethane	53.52	5.0	50	0	107	63.3-137	0			
Carbon disulfide	101.4	10	100	0	101	74.1-123	0			
Carbon tetrachloride	51.52	5.0	50	0	103	74.7-120	0			
Chlorobenzene	48.09	5.0	50	0	96.2	80-120	0			
Chloroethane	50.53	5.0	50	0	101	74.7-126	0			
Chloroform	50.64	5.0	50	0	101	80-120	0			
Chloromethane	49.38	5.0	50	0	98.8	64.5-132	0			
cis-1,3-Dichloropropene	50.36	5.0	50	0	101	80-120	0			
Dibromochloromethane	53.13	5.0	50	0	106	80-120	0			
Ethylbenzene	53.38	5.0	50	0	107	80-120	0			
m,p-Xylene	103.8	10	100	0	104	80-120	0			
Methylene chloride	48.39	10	50	0	96.8	76.2-120	0			
Styrene	53.58	5.0	50	0	107	80-120	0			
Tetrachloroethene	53.39	5.0	50	0	107	68.5-130	0			
Toluene	52.27	5.0	50	0	105	80-120	0			
trans-1,3-Dichloropropene	54.85	5.0	50	0	110	80-120	0			
Trichloroethene	54.11	5.0	50	0	108	78.9-120	0			
Vinyl acetate	115.6	10	100	0	116	62.4-133	0			
Vinyl chloride	52.09	2.0	50	0	104	72.7-128	0			
Xylenes, Total	152.9	15	150	0	102	80-120	0			
Surr: 1,2-Dichloroethane-d4	45.28	5.0	50	0	90.6	71-126	0			
Surr: 4-Bromofluorobenzene	45.14	5.0	50	0	90.3	74-125	0			
Surr: Dibromofluoromethane	43.25	5.0	50	0	86.5	73-126	0			
Surr: Toluene-d8	46.04	5.0	50	0	92.1	75-125	0			

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CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25184** InstrumentID: **VOA2**

MS Sample ID: **0412122-01AMS** Test Code: **SW8260** Units: **µg/L** Analysis Date: **12/10/04 15:31**

Client ID: Run ID: **VOA2_041210A** SeqNo: **586934** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	4798	500	5000	0	96	75.2-120	0			
1,1,2,2-Tetrachloroethane	3949	500	5000	0	79	72.4-121	0			
1,1,2-Trichloroethane	4942	500	5000	0	98.8	80-120	0			
1,1-Dichloroethane	4844	500	5000	0	96.9	76.9-120	0			
1,1-Dichloroethene	4755	500	5000	0	95.1	72.6-123	0			
1,2-Dichloroethane	4962	500	5000	0	99.2	80-120	0			
2-Butanone	11580	1,000	10000	0	116	69-131	0			
2-Chloroethyl vinyl ether	8304	1,000	10000	0	83	60-135	0			
2-Hexanone	11630	1,000	10000	0	116	55.6-126	0			
4-Methyl-2-pentanone	11200	1,000	10000	0	112	67.4-121	0			
Acetone	10640	1,000	10000	0	106	64.4-140	0			
Benzene	4919	500	5000	0	98.4	80-120	0			
Bromodichloromethane	4991	500	5000	0	99.8	80-120	0			
Bromoform	5184	500	5000	0	104	77.9-121	0			
Bromomethane	4562	500	5000	0	91.2	63.3-137	0			
Carbon disulfide	9132	1,000	10000	0	91.3	74.1-123	0			
Carbon tetrachloride	4713	500	5000	0	94.3	74.7-120	0			
Chlorobenzene	4596	500	5000	0	91.9	80-120	0			
Chloroethane	4625	500	5000	0	92.5	74.7-126	0			
Chloroform	8788	500	5000	4602	83.7	80-120	0			
Chloromethane	4632	500	5000	0	92.6	64.5-132	0			
cis-1,3-Dichloropropene	4838	500	5000	0	96.8	80-120	0			
Dibromochloromethane	4989	500	5000	0	99.8	80-120	0			
Ethylbenzene	5104	500	5000	0	102	80-120	0			
m,p-Xylene	9965	1,000	10000	0	99.6	80-120	0			
Methylene chloride	4625	1,000	5000	0	92.5	76.2-120	0			
Styrene	5121	500	5000	0	102	80-120	0			
Tetrachloroethene	5010	500	5000	0	100	68.5-130	0			
Toluene	4924	500	5000	0	98.5	80-120	0			
trans-1,3-Dichloropropene	5349	500	5000	0	107	80-120	0			
Trichloroethene	5895	500	5000	0	118	78.9-120	0			
Vinyl acetate	1690	1,000	10000	0	16.9	62.4-133	0			S
Vinyl chloride	4609	200	5000	0	92.2	72.7-128	0			
Xylenes, Total	14660	1,500	15000	0	97.7	80-120	0			
Surr: 1,2-Dichloroethane-d4	4231	500	5000	0	84.6	71-126	0			
Surr: 4-Bromofluorobenzene	4306	500	5000	0	86.1	74-125	0			
Surr: Dibromofluoromethane	4042	500	5000	0	80.8	73-126	0			
Surr: Toluene-d8	4389	500	5000	0	87.8	75-125	0			

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ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

03-Sep-08

Aaron Strange
Navajo Refining Company
PO Box 159
Artesia, NM 88211

Tel: (575) 746-5468
Fax: (505) 746-5421

Re: Injection Well Quarterly

Work Order : **0808447**

Dear Aaron,

ALS Laboratory Group received 2 samples on 8/20/2008 08:55 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Laboratory Group 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 Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 36.

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

Certificate No: T104704231-08-TX

ALS Laboratory Group

Date: 03-Sep-08

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 0808447

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0808447-01	Injection Well	Water		8/19/2008 11:30	8/20/2008 08:55	☐

ALS Laboratory Group

Date: 03-Sep-08

Client: Navajo Refining Company
Project: Injection Well Quarterly
Work Order: 0808447

Case Narrative

pH sample (Injection Well) holding time had expired prior to request for analysis.

Batch 31577 Metals (sample 0808511-02MS/MSD) unrelated sample.

Batch R67271 Volatiles (sample 0808627-06MS/MSD) unrelated sample.

ALS Laboratory Group

Date: *03-Sep-08*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 8/19/2008 11:30 AM

Work Order: 0808447
Lab ID: 0808447-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ICP METALS, TOTAL - SW6020A			SW6020		Prep Date: **8/25/2008**	Analyst: **ALR**
Aluminum	**0.447**		**0.0100**	**mg/L**	1	8/25/2008 09:21 PM
Arsenic	**0.116**		**0.00500**	**mg/L**	1	9/2/2008 03:31 PM
Barium	**0.0187**		**0.00500**	**mg/L**	1	8/25/2008 09:21 PM
Beryllium	ND		0.00200	mg/L	1	8/25/2008 09:21 PM
Boron	**0.163**		**0.0200**	**mg/L**	1	8/25/2008 09:21 PM
Cadmium	ND		0.00200	mg/L	1	8/25/2008 09:21 PM
Calcium	**68.7**		**0.500**	**mg/L**	1	8/25/2008 09:21 PM
Chromium	ND		0.00500	mg/L	1	9/2/2008 03:31 PM
Cobalt	ND		0.00500	mg/L	1	9/2/2008 03:31 PM
Copper	ND		0.00500	mg/L	1	8/25/2008 09:21 PM
Iron	**0.240**		**0.200**	**mg/L**	1	8/25/2008 09:21 PM
Lead	ND		0.00500	mg/L	1	8/25/2008 09:21 PM
Magnesium	**27.1**		**0.200**	**mg/L**	1	8/25/2008 09:21 PM
Manganese	**0.0478**		**0.00500**	**mg/L**	1	9/2/2008 03:31 PM
Molybdenum	**0.0577**		**0.00500**	**mg/L**	1	8/25/2008 09:21 PM
Nickel	**0.00528**		**0.00500**	**mg/L**	1	8/25/2008 09:21 PM
Potassium	**13.0**		**0.200**	**mg/L**	1	8/25/2008 09:21 PM
Selenium	**0.339**		**0.00500**	**mg/L**	1	9/2/2008 03:31 PM
Silver	ND		0.00500	mg/L	1	8/25/2008 09:21 PM
Sodium	**985**		**20.0**	**mg/L**	100	8/26/2008 04:20 PM
Vanadium	ND		0.00500	mg/L	1	9/2/2008 03:31 PM
Zinc	**0.0369**		**0.00500**	**mg/L**	1	8/25/2008 09:21 PM
SEMIVOLATILE ORGANICS BY GC/MS			SW8270		Prep Date: **8/22/2008**	Analyst: **ACN**
1,2,4-Trichlorobenzene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2,4,5-Trichlorophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2,4,6-Trichlorophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Methylnaphthalene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Methylphenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Nitroaniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
2-Nitrophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
3&4-Methylphenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
3-Nitroaniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
4-Nitroaniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
4-Nitrophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Acenaphthene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Acenaphthylene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Aniline	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Anthracene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM

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P - Dual Column results percent difference > 40%
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ALS Laboratory Group

Date: *03-Sep-08*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 8/19/2008 11:30 AM

Work Order: 0808447
Lab ID: 0808447-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Benz(a)anthracene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Benzidine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Hexachloroethane	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Indeno(1,2,3-cd)pyrene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Isophorone	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
N-Nitrosodi-n-propylamine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
N-Nitrosodimethylamine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
N-Nitrosodiphenylamine	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Naphthalene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Nitrobenzene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Pentachlorophenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Phenanthrene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Phenol	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Pyrene	ND		0.0050	mg/L	1	8/26/2008 09:58 PM
Surr: 2,4,6-Tribromophenol	*80.5*		*42-124*	*%REC*	1	8/26/2008 09:58 PM
Surr: 2-Fluorobiphenyl	*56.9*		*48-120*	*%REC*	1	8/26/2008 09:58 PM
Surr: 2-Fluorophenol	*43.8*		*20-120*	*%REC*	1	8/26/2008 09:58 PM
Surr: 4-Terphenyl-d14	*75.2*		*51-135*	*%REC*	1	8/26/2008 09:58 PM
Surr: Nitrobenzene-d5	*50.8*		*41-120*	*%REC*	1	8/26/2008 09:58 PM
Surr: Phenol-d6	*50.8*		*20-120*	*%REC*	1	8/26/2008 09:58 PM
VOLATILES BY GC/MS			**SW8260**			Analyst: **PC**
1,1,1-Trichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1,2,2-Tetrachloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1,2-Trichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1-Dichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,1-Dichloroethene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
1,2-Dichloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
2-Butanone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
2-Chloroethyl vinyl ether	ND		0.10	mg/L	10	8/28/2008 03:56 PM
2-Hexanone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
4-Methyl-2-pentanone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Acetone	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Benzene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Bromodichloromethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Bromoform	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Bromomethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Carbon disulfide	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Carbon tetrachloride	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Chlorobenzene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Chloroethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM

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ALS Laboratory Group

Date: *03-Sep-08*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 8/19/2008 11:30 AM

Work Order: 0808447
Lab ID: 0808447-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Chloroform	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Chloromethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
cis-1,3-Dichloropropene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Dibromochloromethane	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Ethylbenzene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
m,p-Xylene	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Methylene chloride	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Styrene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Tetrachloroethene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Toluene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
trans-1,3-Dichloropropene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Trichloroethene	ND		0.050	mg/L	10	8/28/2008 03:56 PM
Vinyl acetate	ND		0.10	mg/L	10	8/28/2008 03:56 PM
Vinyl chloride	ND		0.020	mg/L	10	8/28/2008 03:56 PM
Xylenes, Total	ND		0.15	mg/L	10	8/28/2008 03:56 PM
Surr: 1,2-Dichloroethane-d4	*106*		*70-125*	*%REC*	10	8/28/2008 03:56 PM
Surr: 4-Bromofluorobenzene	*93.3*		*72-125*	*%REC*	10	8/28/2008 03:56 PM
Surr: Dibromofluoromethane	*105*		*71-125*	*%REC*	10	8/28/2008 03:56 PM
Surr: Toluene-d8	*102*		*75-125*	*%REC*	10	8/28/2008 03:56 PM
CYANIDE, REACTIVE			**SW-846**			Analyst: **HN**
Reactive Cyanide	ND		40.0	mg/Kg	1	8/22/2008
SULFIDE, REACTIVE			**SW-846**			Analyst: **HN**
Reactive Sulfide	ND		40.0	mg/Kg	1	8/22/2008
ANIONS BY ION CHROMATOGRAPHY			**E300**			Analyst: **PV**
Chloride	**492**		**10.0**	**mg/L**	20	8/20/2008 06:07 PM
Sulfate	**1,490**		**50.0**	**mg/L**	100	8/20/2008 06:30 PM
Surr: Selenate (surr)	*98.5*		*85-115*	*%REC*	100	8/20/2008 06:30 PM
Surr: Selenate (surr)	*100*		*85-115*	*%REC*	20	8/20/2008 06:07 PM
ALKALINITY			**SM2320B**			Analyst: **MAM**
Alkalinity, Bicarbonate (As CaCO3)	**179**		**5.00**	**mg/L**	1	8/21/2008 05:30 PM
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	8/21/2008 05:30 PM
Alkalinity, Hydroxide (As CaCO3)	ND		5.00	mg/L	1	8/21/2008 05:30 PM
Alkalinity, Total (As CaCO3)	**179**		**5.00**	**mg/L**	1	8/21/2008 05:30 PM
CONDUCTIVITY			**E120.1**			Analyst: **MAM**
Specific Conductance	**4,710**		**1.00**	**µmhos/cm**	1	8/22/2008 04:00 PM
PH			**SW9040**			Analyst: **RPM**
pH	**7.29**	H	**0.100**	**pH units**	1	8/20/2008 04:00 PM

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ALS Laboratory Group

Date: *03-Sep-08*

Client: Navajo Refining Company
Project: Injection Well Quarterly
Sample ID: Injection Well
Collection Date: 8/19/2008 11:30 AM

Work Order: 0808447
Lab ID: 0808447-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
TOTAL DISSOLVED SOLIDS			**E160.1**			Analyst: **KKP**
Total Dissolved Solids (Residue, Filterable)	**3,620**		**10.0**	**mg/L**	1	8/20/2008 04:00 PM

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ALS Laboratory Group

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

Date: *03-Sep-08*

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

MBLK Sample ID: **MBLKW1-082508-31577** Units: **mg/L** Analysis Date: **8/25/2008 09:08 PM**

Client ID: Run ID: **ICPMS02_080825A** SeqNo: **1476311** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.009435	0.010								J
Barium	ND	0.0050								
Beryllium	ND	0.0020								
Boron	ND	0.050								
Cadmium	ND	0.0020								
Calcium	ND	0.50								
Copper	ND	0.0050								
Iron	ND	0.20								
Lead	ND	0.0050								
Magnesium	ND	0.20								
Molybdenum	ND	0.0050								
Nickel	ND	0.0050								
Potassium	ND	0.20								
Silver	ND	0.0050								
Sodium	ND	0.20								
Zinc	0.00199	0.0050								J

MBLK Sample ID: **MBLKW1-082508-31577** Units: **mg/L** Analysis Date: **8/26/2008 06:06 PM**

Client ID: Run ID: **ICPMS02_080826A** SeqNo: **1477419** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.0050								
Chromium	ND	0.0050								
Cobalt	ND	0.0050								
Manganese	ND	0.0050								
Selenium	ND	0.0050								
Vanadium	ND	0.0050								

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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

LCS Sample ID: **MLCSW1-082508-31577** Units: **mg/L** Analysis Date: **8/25/2008 09:14 PM**
Client ID: Run ID: **ICPMS02_080825A** SeqNo: **1476312** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05241	0.010	0.05	0	105	80-120	0			
Barium	0.04958	0.0050	0.05	0	99.2	80-120	0			
Beryllium	0.04832	0.0020	0.05	0	96.6	80-120	0			
Boron	0.9602	0.050	1	0	96	80-120	0			
Cadmium	0.05195	0.0020	0.05	0	104	80-120	0			
Calcium	4.85	0.50	5	0	97	80-120	0			
Copper	0.04442	0.0050	0.05	0	88.8	80-120	0			
Iron	4.997	0.20	5	0	99.9	80-120	0			
Lead	0.04998	0.0050	0.05	0	100	80-120	0			
Magnesium	4.729	0.20	5	0	94.6	80-120	0			
Molybdenum	0.05009	0.0050	0.05	0	100	80-120	0			
Nickel	0.04845	0.0050	0.05	0	96.9	80-120	0			
Potassium	4.876	0.20	5	0	97.5	80-120	0			
Silver	0.04927	0.0050	0.05	0	98.5	80-120	0			
Sodium	4.708	0.20	5	0	94.2	80-120	0			
Zinc	0.05174	0.0050	0.05	0	103	80-120	0			

LCS Sample ID: **MLCSW1-082508-31577** Units: **mg/L** Analysis Date: **8/26/2008 06:12 PM**
Client ID: Run ID: **ICPMS02_080826A** SeqNo: **1477420** Prep Date: **8/25/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.05269	0.0050	0.05	0	105	80-120	0			
Chromium	0.05122	0.0050	0.05	0	102	80-120	0			
Cobalt	0.05196	0.0050	0.05	0	104	80-120	0			
Manganese	0.0518	0.0050	0.05	0	104	80-120	0			
Selenium	0.05144	0.0050	0.05	0	103	80-120	0			
Vanadium	0.05104	0.0050	0.05	0	102	80-120	0			

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

MS Sample ID: **0808511-02BMS** Units: **mg/L** Analysis Date: **8/27/2008 02:01 PM**

Client ID: Run ID: **ICPMS02_080827A** SeqNo: **1477992** Prep Date: **8/25/2008** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05404	0.020	0.05	0.007596	92.9	80-120	0			
Arsenic	0.05388	0.010	0.05	0.002166	103	80-120	0			
Barium	0.09094	0.010	0.05	0.03702	108	80-120	0			
Beryllium	0.04818	0.0040	0.05	0.0002298	95.9	80-120	0			
Boron	2.136	0.10	1	1.157	97.9	80-120	0			
Cadmium	0.05082	0.0040	0.05	0.0002848	101	80-120	0			
Calcium	287.2	1.0	5	278.8	168	80-120	0			SO
Chromium	0.05212	0.010	0.05	0.0006506	103	80-120	0			
Cobalt	0.05068	0.010	0.05	0.0002952	101	80-120	0			
Copper	0.05728	0.010	0.05	0.00864	97.3	80-120	0			
Iron	5.116	0.40	5	0.2318	97.7	80-120	0			
Lead	0.0531	0.010	0.05	0.001542	103	80-120	0			
Magnesium	133.9	0.40	5	126.4	152	80-120	0			SO
Manganese	0.05614	0.010	0.05	0.00613	100	80-120	0			
Molybdenum	0.06142	0.010	0.05	0.009076	105	80-120	0			
Nickel	0.0536	0.010	0.05	0.00507	97.1	80-120	0			
Potassium	12.93	0.40	5	8.01	98.4	80-120	0			
Selenium	0.0552	0.010	0.05	0.002548	105	80-120	0			
Silver	0.04754	0.010	0.05	-0.0003784	95.8	80-120	0			
Sodium	171.2	0.40	5	164.6	131	80-120	0			SO
Vanadium	0.05928	0.010	0.05	0.007996	103	80-120	0			
Zinc	0.1101	0.010	0.05	0.06128	97.7	80-120	0			

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

MSD Sample ID: **0808511-02BMSD** Units: **mg/L** Analysis Date: **8/27/2008 02:27 PM**
Client ID: Run ID: **ICPMS02_080827A** SeqNo: **1478014** Prep Date: **8/25/2008** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.05314	0.020	0.05	0.007596	91.1	80-120	0.05404	1.68	15	
Arsenic	0.05368	0.010	0.05	0.002166	103	80-120	0.05388	0.372	15	
Barium	0.08932	0.010	0.05	0.03702	105	80-120	0.09094	1.8	15	
Beryllium	0.04804	0.0040	0.05	0.0002298	95.6	80-120	0.04818	0.291	15	
Boron	2.114	0.10	1	1.157	95.7	80-120	2.136	1.04	15	
Cadmium	0.0507	0.0040	0.05	0.0002848	101	80-120	0.05082	0.236	15	
Calcium	284.4	1.0	5	278.8	112	80-120	287.2	0.98	15	O
Chromium	0.04898	0.010	0.05	0.0006506	96.7	80-120	0.05212	6.21	15	
Cobalt	0.04924	0.010	0.05	0.0002952	97.9	80-120	0.05068	2.88	15	
Copper	0.05714	0.010	0.05	0.00864	97	80-120	0.05728	0.245	15	
Iron	5.212	0.40	5	0.2318	99.6	80-120	5.116	1.86	15	
Lead	0.05296	0.010	0.05	0.001542	103	80-120	0.0531	0.264	15	
Magnesium	132.6	0.40	5	126.4	125	80-120	133.9	1.01	15	SO
Manganese	0.05514	0.010	0.05	0.00613	98	80-120	0.05614	1.8	15	
Molybdenum	0.06142	0.010	0.05	0.009076	105	80-120	0.06142	0	15	
Nickel	0.05416	0.010	0.05	0.00507	98.2	80-120	0.0536	1.04	15	
Potassium	13.05	0.40	5	8.01	101	80-120	12.93	0.924	15	
Selenium	0.04946	0.010	0.05	0.002548	93.8	80-120	0.0552	11	15	
Silver	0.04836	0.010	0.05	-0.0003784	97.5	80-120	0.04754	1.71	15	
Sodium	171.5	0.40	5	164.6	138	80-120	171.2	0.21	15	SO
Vanadium	0.05814	0.010	0.05	0.007996	100	80-120	0.05928	1.94	15	
Zinc	0.1117	0.010	0.05	0.06128	101	80-120	0.1101	1.44	15	

DUP Sample ID: **0808511-02BDUP** Units: **mg/L** Analysis Date: **8/26/2008 03:38 PM**
Client ID: Run ID: **ICP7500_080826A** SeqNo: **1477167** Prep Date: **8/25/2008** DF: **50**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	312.2	25	0	0	0	0-0	289	7.7	25	
Magnesium	140.6	10	0	0	0	0-0	136.3	3.11	25	
Sodium	181	10	0	0	0	0-0	175.8	2.94	25	

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R - RPD outside accepted recovery limits
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B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31577** Instrument ID **ICPMS02** Method: **SW6020**

DUP Sample ID: **0808511-02BDUP** Units: **mg/L** Analysis Date: **8/27/2008 01:48 PM**

Client ID: Run ID: **ICPMS02_080827A** SeqNo: **1477928** Prep Date: **8/25/2008** DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Aluminum	0.006054	0.020	0	0	0	0-0	0.007596	0	25	J
Arsenic	ND	0.010	0	0	0	0-0	0.002166	0	25	
Barium	0.03874	0.010	0	0	0	0-0	0.03702	4.54	25	
Beryllium	ND	0.0040	0	0	0	0-0	0.0002298	0	25	
Boron	1.2	0.10	0	0	0	0-0	1.157	3.68	25	
Cadmium	ND	0.0040	0	0	0	0-0	0.0002848	0	25	
Chromium	ND	0.010	0	0	0	0-0	0.0006506	0	25	
Cobalt	ND	0.010	0	0	0	0-0	0.0002952	0	25	
Copper	0.008378	0.010	0	0	0	0-0	0.00864	0	25	J
Iron	0.241	0.40	0	0	0	0-0	0.2318	0	25	J
Lead	ND	0.010	0	0	0	0-0	0.001542	0	25	
Manganese	0.00617	0.010	0	0	0	0-0	0.00613	0	25	J
Molybdenum	0.009256	0.010	0	0	0	0-0	0.009076	0	25	J
Nickel	0.005284	0.010	0	0	0	0-0	0.00507	0	25	J
Potassium	8.234	0.40	0	0	0	0-0	8.01	2.76	25	
Selenium	ND	0.010	0	0	0	0-0	0.002548	0	25	
Silver	ND	0.010	0	0	0	0-0	-0.0003784	0	25	
Vanadium	0.008804	0.010	0	0	0	0-0	0.007996	0	25	J
Zinc	0.06038	0.010	0	0	0	0-0	0.06128	1.48	25	

The following samples were analyzed in this batch: 0808447-01B

ND - Not Detected at the Reporting Limit
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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

MBLK Sample ID: **SBLKW3-080822-31556** Units: **µg/L** Analysis Date: **8/26/2008 03:21 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477746** Prep Date: **8/22/2008** 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								
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								
Surr: 2,4,6-Tribromophenol	*67.43*	5.0	*100*	0	*67.4*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*72.06*	5.0	*100*	0	*72.1*	*48-120*	0			
Surr: 2-Fluorophenol	*60.11*	5.0	*100*	0	*60.1*	*20-120*	0			
Surr: 4-Terphenyl-d14	*81.01*	5.0	*100*	0	*81*	*51-135*	0			
Surr: Nitrobenzene-d5	*73.36*	5.0	*100*	0	*73.4*	*41-120*	0			
Surr: Phenol-d6	*64.98*	5.0	*100*	0	*65*	*20-120*	0			

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E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

LCS Sample ID: **SLCSW3-080822-31556** Units: **µg/L** Analysis Date: **8/26/2008 03:49 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477747** Prep Date: **8/22/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	34.72	5.0	50	0	69.4	50-120	0			
2,4,5-Trichlorophenol	77.01	5.0	100	0	77	50-120	0			
2,4,6-Trichlorophenol	75.15	5.0	100	0	75.1	50-120	0			
2-Methylnaphthalene	35.59	5.0	50	0	71.2	55-120	0			
2-Methylphenol	76.58	5.0	100	0	76.6	50-120	0			
2-Nitroaniline	38.37	5.0	50	0	76.7	55-120	0			
2-Nitrophenol	74.18	5.0	100	0	74.2	55-120	0			
3&4-Methylphenol	114.7	5.0	150	0	76.5	55-120	0			
3-Nitroaniline	34.11	5.0	50	0	68.2	40-120	0			
4-Nitroaniline	36.62	5.0	50	0	73.2	50-120	0			
4-Nitrophenol	79.01	5.0	100	0	79	45-120	0			
Acenaphthene	36.95	5.0	50	0	73.9	55-120	0			
Acenaphthylene	36.28	5.0	50	0	72.6	55-120	0			
Aniline	29.52	5.0	50	0	59	30-120	0			
Anthracene	38.39	5.0	50	0	76.8	55-120	0			
Benz(a)anthracene	36.89	5.0	50	0	73.8	55-120	0			
Benzidine	22.62	5.0	50	0	45.2	10-120	0			
Hexachloroethane	33.94	5.0	50	0	67.9	55-120	0			
Indeno(1,2,3-cd)pyrene	40.02	5.0	50	0	80	55-120	0			
Isophorone	41	5.0	50	0	82	55-120	0			
N-Nitrosodi-n-propylamine	36.91	5.0	50	0	73.8	50-120	0			
N-Nitrosodimethylamine	34.52	5.0	50	0	69	45-120	0			
N-Nitrosodiphenylamine	36.2	5.0	50	0	72.4	55-120	0			
Naphthalene	35.86	5.0	50	0	71.7	55-120	0			
Nitrobenzene	36.23	5.0	50	0	72.5	55-120	0			
Pentachlorophenol	82.21	5.0	100	0	82.2	55-120	0			
Phenanthrene	35.76	5.0	50	0	71.5	55-120	0			
Phenol	77.28	5.0	100	0	77.3	50-120	0			
Pyrene	38.67	5.0	50	0	77.3	55-120	0			
Surr: 2,4,6-Tribromophenol	*75.53*	5.0	*100*	0	*75.5*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*75.37*	5.0	*100*	0	*75.4*	*48-120*	0			
Surr: 2-Fluorophenol	*69.51*	5.0	*100*	0	*69.5*	*20-120*	0			
Surr: 4-Terphenyl-d14	*79.92*	5.0	*100*	0	*79.9*	*51-135*	0			
Surr: Nitrobenzene-d5	*74.24*	5.0	*100*	0	*74.2*	*41-120*	0			
Surr: Phenol-d6	*73.1*	5.0	*100*	0	*73.1*	*20-120*	0			

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

MS Sample ID: **0808511-02CMS** Units: **µg/L** Analysis Date: **8/26/2008 04:46 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477749** Prep Date: **8/22/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	33.46	5.0	50	0	66.9	50-120	0			
2,4,5-Trichlorophenol	75.07	5.0	100	0	75.1	50-120	0			
2,4,6-Trichlorophenol	73.33	5.0	100	0	73.3	50-120	0			
2-Methylnaphthalene	35.68	5.0	50	0	71.4	55-120	0			
2-Methylphenol	77.57	5.0	100	0	77.6	50-120	0			
2-Nitroaniline	37.45	5.0	50	0	74.9	55-120	0			
2-Nitrophenol	75.45	5.0	100	0	75.4	55-120	0			
3&4-Methylphenol	115.5	5.0	150	0	77	55-120	0			
3-Nitroaniline	30.01	5.0	50	0	60	40-120	0			
4-Nitroaniline	37.96	5.0	50	0	75.9	50-120	0			
4-Nitrophenol	76.56	5.0	100	0	76.6	45-120	0			
Acenaphthene	35.71	5.0	50	0	71.4	55-120	0			
Acenaphthylene	35.78	5.0	50	0	71.6	55-120	0			
Aniline	26.28	5.0	50	0	52.6	30-120	0			
Anthracene	37.89	5.0	50	0	75.8	55-120	0			
Benz(a)anthracene	35.95	5.0	50	0	71.9	55-120	0			
Benzidine	26.85	5.0	50	0	53.7	10-120	0			
Hexachloroethane	33.96	5.0	50	0	67.9	55-120	0			
Indeno(1,2,3-cd)pyrene	38.84	5.0	50	0	77.7	55-120	0			
Isophorone	41.18	5.0	50	0	82.4	55-120	0			
N-Nitrosodi-n-propylamine	37.63	5.0	50	0	75.3	50-120	0			
N-Nitrosodimethylamine	34.99	5.0	50	0	70	45-120	0			
N-Nitrosodiphenylamine	36.46	5.0	50	0	72.9	55-120	0			
Naphthalene	35.13	5.0	50	0	70.3	55-120	0			
Nitrobenzene	35.47	5.0	50	0	70.9	55-120	0			
Pentachlorophenol	80.62	5.0	100	0	80.6	55-120	0			
Phenanthrene	36.14	5.0	50	0	72.3	55-120	0			
Phenol	76.73	5.0	100	0	76.7	50-120	0			
Pyrene	37.91	5.0	50	0	75.8	55-120	0			
Surr: 2,4,6-Tribromophenol	*72.83*	5.0	*100*	0	*72.8*	*42-124*	0			
Surr: 2-Fluorobiphenyl	*68.96*	5.0	*100*	0	*69*	*48-120*	0			
Surr: 2-Fluorophenol	*66.08*	5.0	*100*	0	*66.1*	*20-120*	0			
Surr: 4-Terphenyl-d14	*75.78*	5.0	*100*	0	*75.8*	*51-135*	0			
Surr: Nitrobenzene-d5	*70.47*	5.0	*100*	0	*70.5*	*41-120*	0			
Surr: Phenol-d6	*70.07*	5.0	*100*	0	*70.1*	*20-120*	0			

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **31556** Instrument ID **SV-5** Method: **SW8270**

MSD Sample ID: **0808511-02CMSD** Units: **µg/L** Analysis Date: **8/26/2008 05:15 PM**

Client ID: Run ID: **SV-5_080826B** SeqNo: **1477750** Prep Date: **8/22/2008** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trichlorobenzene	34.31	5.0	50	0	68.6	50-120	33.46	2.52	20	
2,4,5-Trichlorophenol	74.68	5.0	100	0	74.7	50-120	75.07	0.523	20	
2,4,6-Trichlorophenol	74.48	5.0	100	0	74.5	50-120	73.33	1.56	20	
2-Methylnaphthalene	35.49	5.0	50	0	71	55-120	35.68	0.532	20	
2-Methylphenol	75.01	5.0	100	0	75	50-120	77.57	3.35	20	
2-Nitroaniline	37.64	5.0	50	0	75.3	55-120	37.45	0.502	20	
2-Nitrophenol	74.39	5.0	100	0	74.4	55-120	75.45	1.41	20	
3&4-Methylphenol	110.4	5.0	150	0	73.6	55-120	115.5	4.5	20	
3-Nitroaniline	29.11	5.0	50	0	58.2	40-120	30.01	3.05	20	
4-Nitroaniline	36.67	5.0	50	0	73.3	50-120	37.96	3.43	20	
4-Nitrophenol	74.08	5.0	100	0	74.1	45-120	76.56	3.28	20	
Acenaphthene	36.41	5.0	50	0	72.8	55-120	35.71	1.94	20	
Acenaphthylene	36.19	5.0	50	0	72.4	55-120	35.78	1.14	20	
Aniline	26.16	5.0	50	0	52.3	30-120	26.28	0.454	20	
Anthracene	38.25	5.0	50	0	76.5	55-120	37.89	0.937	20	
Benz(a)anthracene	36.41	5.0	50	0	72.8	55-120	35.95	1.25	20	
Benzidine	23.27	5.0	50	0	46.5	10-120	26.85	14.3	20	
Hexachloroethane	33.42	5.0	50	0	66.8	55-120	33.96	1.6	20	
Indeno(1,2,3-cd)pyrene	39.46	5.0	50	0	78.9	55-120	38.84	1.6	20	
Isophorone	40.61	5.0	50	0	81.2	55-120	41.18	1.39	20	
N-Nitrosodi-n-propylamine	36.2	5.0	50	0	72.4	50-120	37.63	3.89	20	
N-Nitrosodimethylamine	34.97	5.0	50	0	69.9	45-120	34.99	0.0437	20	
N-Nitrosodiphenylamine	36.26	5.0	50	0	72.5	55-120	36.46	0.562	20	
Naphthalene	35.01	5.0	50	0	70	55-120	35.13	0.338	20	
Nitrobenzene	35.59	5.0	50	0	71.2	55-120	35.47	0.322	20	
Pentachlorophenol	82.71	5.0	100	0	82.7	55-120	80.62	2.57	20	
Phenanthrene	36.31	5.0	50	0	72.6	55-120	36.14	0.474	20	
Phenol	74.67	5.0	100	0	74.7	50-120	76.73	2.71	20	
Pyrene	38.78	5.0	50	0	77.6	55-120	37.91	2.28	20	
Surr: 2,4,6-Tribromophenol	*75.82*	5.0	*100*	0	*75.8*	*42-124*	72.83	*4.02*	*20*	
Surr: 2-Fluorobiphenyl	*76.92*	5.0	*100*	0	*76.9*	*48-120*	68.96	*10.9*	*20*	
Surr: 2-Fluorophenol	*70.84*	5.0	*100*	0	*70.8*	*20-120*	66.08	*6.96*	*20*	
Surr: 4-Terphenyl-d14	*82.48*	5.0	*100*	0	*82.5*	*51-135*	75.78	*8.47*	*20*	
Surr: Nitrobenzene-d5	*74.59*	5.0	*100*	0	*74.6*	*41-120*	70.47	*5.68*	*20*	
Surr: Phenol-d6	*73.62*	5.0	*100*	0	*73.6*	*20-120*	70.07	*4.94*	*20*	

The following samples were analyzed in this batch: 0808447-01D

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67271** Instrument ID **VOA1** Method: **SW8260**

MBLK Sample ID: **VBLKW-082808-R67271** Units: **µg/L** Analysis Date: **8/28/2008 11:58 AM**

Client ID: Run ID: **VOA1_080828A** SeqNo: **1480001** 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								
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	*53.86*	5.0	*50*	0	*108*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*52.67*	5.0	*50*	0	*105*	*72-125*	0			
Surr: Dibromofluoromethane	*53.07*	5.0	*50*	0	*106*	*71-125*	0			
Surr: Toluene-d8	*52.33*	5.0	*50*	0	*105*	*75-125*	0			

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Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67271** Instrument ID **VOA1** Method: **SW8260**

LCS Sample ID: **VLCSW-082808-R67271** Units: **µg/L** Analysis Date: **8/28/2008 11:06 AM**

Client ID: Run ID: **VOA1_080828A** SeqNo: **1479999** 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	48.42	5.0	50	0	96.8	80-120	0			
1,1,2,2-Tetrachloroethane	47.22	5.0	50	0	94.4	72-120	0			
1,1,2-Trichloroethane	48.36	5.0	50	0	96.7	80-120	0			
1,1-Dichloroethane	49.74	5.0	50	0	99.5	76-120	0			
1,1-Dichloroethene	49.09	5.0	50	0	98.2	73-124	0			
1,2-Dichloroethane	48.21	5.0	50	0	96.4	78-120	0			
2-Butanone	95.73	10	100	0	95.7	58-132	0			
2-Chloroethyl vinyl ether	96.27	10	100	0	96.3	74-120	0			
2-Hexanone	93.29	10	100	0	93.3	61-130	0			
4-Methyl-2-pentanone	92.5	10	100	0	92.5	65-127	0			
Acetone	85.83	10	100	0	85.8	59-137	0			
Benzene	46.72	5.0	50	0	93.4	73-121	0			
Bromodichloromethane	46.81	5.0	50	0	93.6	80-120	0			
Bromoform	47.28	5.0	50	0	94.6	79-120	0			
Bromomethane	58.96	5.0	50	0	118	66-137	0			
Carbon disulfide	90.45	10	100	0	90.4	68-141	0			
Carbon tetrachloride	47.05	5.0	50	0	94.1	75-124	0			
Chlorobenzene	48.28	5.0	50	0	96.6	80-120	0			
Chloroethane	49.6	5.0	50	0	99.2	76-121	0			
Chloroform	48.58	5.0	50	0	97.2	80-120	0			
Chloromethane	44.24	5.0	50	0	88.5	67-123	0			
cis-1,3-Dichloropropene	45.99	5.0	50	0	92	80-120	0			
Dibromochloromethane	48.32	5.0	50	0	96.6	80-120	0			
Ethylbenzene	48.09	5.0	50	0	96.2	80-120	0			
m,p-Xylene	97.7	10	100	0	97.7	78-121	0			
Methylene chloride	46.2	10	50	0	92.4	65-133	0			
Styrene	50.75	5.0	50	0	101	80-120	0			
Tetrachloroethene	47.81	5.0	50	0	95.6	79-120	0			
Toluene	47.84	5.0	50	0	95.7	80-120	0			
trans-1,3-Dichloropropene	46.15	5.0	50	0	92.3	80-120	0			
Trichloroethene	46.02	5.0	50	0	92	80-120	0			
Vinyl acetate	91.99	10	100	0	92	67-139	0			
Vinyl chloride	46.39	2.0	50	0	92.8	70-127	0			
Xylenes, Total	147.9	15	150	0	98.6	80-120	0			
Surr: 1,2-Dichloroethane-d4	*54.64*	5.0	*50*	0	*109*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*54.98*	5.0	*50*	0	*110*	*72-125*	0			
Surr: Dibromofluoromethane	*52.57*	5.0	*50*	0	*105*	*71-125*	0			
Surr: Toluene-d8	*53.14*	5.0	*50*	0	*106*	*75-125*	0			

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67271** Instrument ID **VOA1** Method: **SW8260**

MS Sample ID: **0808627-06AMS** Units: **µg/L** Analysis Date: **8/28/2008 03:03 PM**

Client ID: Run ID: **VOA1_080828A** SeqNo: **1480008** 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	45.92	5.0	50	0	91.8	80-120	0			
1,1,2,2-Tetrachloroethane	49.08	5.0	50	0	98.2	72-120	0			
1,1,2-Trichloroethane	48.76	5.0	50	0	97.5	80-120	0			
1,1-Dichloroethane	48.06	5.0	50	0	96.1	76-120	0			
1,1-Dichloroethene	43.76	5.0	50	0	87.5	73-124	0			
1,2-Dichloroethane	49.42	5.0	50	0	98.8	78-120	0			
2-Butanone	102.5	10	100	0	103	58-132	0			
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0			S
2-Hexanone	107.8	10	100	0	108	61-130	0			
4-Methyl-2-pentanone	105.3	10	100	0	105	65-127	0			
Acetone	100.7	10	100	3.737	97	59-137	0			
Benzene	46.44	5.0	50	0	92.9	73-121	0			
Bromodichloromethane	49.65	5.0	50	0	99.3	80-120	0			
Bromoform	49.32	5.0	50	0	98.6	79-120	0			
Bromomethane	52.71	5.0	50	0	105	66-137	0			
Carbon disulfide	86.56	10	100	0	86.6	68-141	0			
Carbon tetrachloride	45	5.0	50	0	90	75-124	0			
Chlorobenzene	46.09	5.0	50	0	92.2	80-120	0			
Chloroethane	43.6	5.0	50	0	87.2	76-121	0			
Chloroform	47.89	5.0	50	0	95.8	80-120	0			
Chloromethane	38.28	5.0	50	0	76.6	67-123	0			
cis-1,3-Dichloropropene	48.35	5.0	50	0	96.7	80-120	0			
Dibromochloromethane	50.05	5.0	50	0	100	80-120	0			
Ethylbenzene	46.95	5.0	50	0.1866	93.5	80-120	0			
m,p-Xylene	92.79	10	100	1.119	91.7	78-121	0			
Methylene chloride	46.72	10	50	0	93.4	65-133	0			
Styrene	44.75	5.0	50	0	89.5	80-120	0			
Tetrachloroethene	42.94	5.0	50	0	85.9	79-120	0			
Toluene	47.05	5.0	50	1.586	90.9	80-120	0			
trans-1,3-Dichloropropene	47.75	5.0	50	0	95.5	80-120	0			
Trichloroethene	46.39	5.0	50	0	92.8	80-120	0			
Vinyl acetate	102.3	10	100	0	102	67-139	0			
Vinyl chloride	41.12	2.0	50	0	82.2	70-127	0			
Xylenes, Total	138	15	150	1.119	91.3	80-120	0			
Surr: 1,2-Dichloroethane-d4	*54.66*	5.0	*50*	0	*109*	*70-125*	0			
Surr: 4-Bromofluorobenzene	*55.17*	5.0	*50*	0	*110*	*72-125*	0			
Surr: Dibromofluoromethane	*55.4*	5.0	*50*	0	*111*	*71-125*	0			
Surr: Toluene-d8	*53.05*	5.0	*50*	0	*106*	*75-125*	0			

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E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67271** Instrument ID **VOA1** Method: **SW8260**

MSD Sample ID: **0808627-06AMSD** Units: **µg/L** Analysis Date: **8/28/2008 03:29 PM**

Client ID: Run ID: **VOA1_080828A** SeqNo: **1480009** 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	41.94	5.0	50	0	83.9	80-120	45.92	9.07	20	
1,1,2,2-Tetrachloroethane	53.17	5.0	50	0	106	72-120	49.08	8.01	20	
1,1,2-Trichloroethane	50.71	5.0	50	0	101	80-120	48.76	3.92	20	
1,1-Dichloroethane	46.4	5.0	50	0	92.8	76-120	48.06	3.51	20	
1,1-Dichloroethene	41.39	5.0	50	0	82.8	73-124	43.76	5.59	20	
1,2-Dichloroethane	48.13	5.0	50	0	96.3	78-120	49.42	2.64	20	
2-Butanone	112.5	10	100	0	113	58-132	102.5	9.3	20	
2-Chloroethyl vinyl ether	ND	10	100	0	0	74-120	0	0	20	S
2-Hexanone	111.1	10	100	0	111	61-130	107.8	2.99	20	
4-Methyl-2-pentanone	112.2	10	100	0	112	65-127	105.3	6.35	20	
Acetone	108.2	10	100	3.737	104	59-137	100.7	7.13	20	
Benzene	45.28	5.0	50	0	90.6	73-121	46.44	2.53	20	
Bromodichloromethane	46.83	5.0	50	0	93.7	80-120	49.65	5.84	20	
Bromoform	50.69	5.0	50	0	101	79-120	49.32	2.75	20	
Bromomethane	52.06	5.0	50	0	104	66-137	52.71	1.24	20	
Carbon disulfide	85.97	10	100	0	86	68-141	86.56	0.686	20	
Carbon tetrachloride	39.27	5.0	50	0	78.5	75-124	45	13.6	20	
Chlorobenzene	45.26	5.0	50	0	90.5	80-120	46.09	1.8	20	
Chloroethane	44.84	5.0	50	0	89.7	76-121	43.6	2.79	20	
Chloroform	46.93	5.0	50	0	93.9	80-120	47.89	2.04	20	
Chloromethane	36.88	5.0	50	0	73.8	67-123	38.28	3.71	20	
cis-1,3-Dichloropropene	47.49	5.0	50	0	95	80-120	48.35	1.8	20	
Dibromochloromethane	50.22	5.0	50	0	100	80-120	50.05	0.344	20	
Ethylbenzene	46.01	5.0	50	0.1866	91.7	80-120	46.95	2.02	20	
m,p-Xylene	91.92	10	100	1.119	90.8	78-121	92.79	0.938	20	
Methylene chloride	46.42	10	50	0	92.8	65-133	46.72	0.647	20	
Styrene	47.71	5.0	50	0	95.4	80-120	44.75	6.41	20	
Tetrachloroethene	40.18	5.0	50	0	80.4	79-120	42.94	6.65	20	
Toluene	47.34	5.0	50	1.586	91.5	80-120	47.05	0.612	20	
trans-1,3-Dichloropropene	47.04	5.0	50	0	94.1	80-120	47.75	1.5	20	
Trichloroethene	43.51	5.0	50	0	87	80-120	46.39	6.39	20	
Vinyl acetate	101.4	10	100	0	101	67-139	102.3	0.936	20	
Vinyl chloride	38.99	2.0	50	0	78	70-127	41.12	5.32	20	
Xylenes, Total	139.1	15	150	1.119	92	80-120	138	0.743	20	
Surr: 1,2-Dichloroethane-d4	*51.43*	5.0	*50*	0	*103*	*70-125*	54.66	*6.1*	*20*	
Surr: 4-Bromofluorobenzene	*53.63*	5.0	*50*	0	*107*	*72-125*	55.17	*2.83*	*20*	
Surr: Dibromofluoromethane	*53.49*	5.0	*50*	0	*107*	*71-125*	55.4	*3.51*	*20*	
Surr: Toluene-d8	*54.15*	5.0	*50*	0	*108*	*75-125*	53.05	*2.05*	*20*	

The following samples were analyzed in this batch: 0808447-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
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R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
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E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R66876** Instrument ID **WetChem** Method: **SW9040**

LCS Sample ID: **WLCSW1-082008-R66876** Units: **pH units** Analysis Date: **8/20/2008 04:00 PM**
Client ID: Run ID: **WETCHEM_080820G** SeqNo: **1472036** 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: **0808447-01CDUP** Units: **pH units** Analysis Date: **8/20/2008 04:00 PM**
Client ID: **Injection Well** Run ID: **WETCHEM_080820G** SeqNo: **1472039** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.32	0.10	0	0	0	0-0	7.29	0.411	20	H

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R66965** Instrument ID **WetChem** Method: **SM2320B**

MBLK Sample ID: **WBLKW1-082108-R66965** Units: **mg/L** Analysis Date: **8/21/2008 05:30 PM**
Client ID: Run ID: **WETCHEM_080821I** SeqNo: **1473296** 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: **WLCSW1-082108-R66965** Units: **mg/L** Analysis Date: **8/21/2008 05:30 PM**
Client ID: Run ID: **WETCHEM_080821I** SeqNo: **1473297** 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)	1011	5.0	1000	0	101	80-120	0			
Alkalinity, Total (As CaCO3)	1011	5.0	1000	0	101	80-120	0			

DUP Sample ID: **0808436-02DDUP** Units: **mg/L** Analysis Date: **8/21/2008 05:30 PM**
Client ID: Run ID: **WETCHEM_080821I** SeqNo: **1473318** 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)	357	5.0	0	0	0	0-0	359	0.559	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)	357	5.0	0	0	0	0-0	359	0.559	20	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference >40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67012** Instrument ID **ICS3000** Method: **E300**

MBLK Sample ID: **WBLKW1-082008-R67012** Units: **mg/L** Analysis Date: **8/20/2008 11:47 AM**
Client ID: Run ID: **ICS3000_080820A** SeqNo: **1474281** 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)	*5.084*	0.10	*5*	0	*102*	*85-115*	0			

LCS Sample ID: **WLCSW1-082008-R67012** Units: **mg/L** Analysis Date: **8/20/2008 12:10 PM**
Client ID: Run ID: **ICS3000_080820A** SeqNo: **1474282** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.88	0.50	20	0	99.4	90-110	0			
Sulfate	19.89	0.50	20	0	99.5	90-110	0			
Surr: Selenate (surr)	*4.925*	0.10	*5*	0	*98.5*	*85-115*	0			

MS Sample ID: **0808436-03DMS** Units: **mg/L** Analysis Date: **8/20/2008 01:46 PM**
Client ID: Run ID: **ICS3000_080820A** SeqNo: **1474286** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	79.05	0.50	10	71.12	79.3	80-120	0			SEO
Sulfate	68.28	0.50	10	60.14	81.4	80-120	0			EO
Surr: Selenate (surr)	*4.676*	0.10	*5*	0	*93.5*	*85-115*	0			

DUP Sample ID: **0808436-03DDUP** Units: **mg/L** Analysis Date: **8/20/2008 01:22 PM**
Client ID: Run ID: **ICS3000_080820A** SeqNo: **1474285** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	69.26	0.50	0	0	0	0-0	71.12	2.65	20	E
Sulfate	59.16	0.50	0	0	0	0-0	60.14	1.64	20	E
Surr: Selenate (surr)	*4.502*	0.10	*5*	0	*90*	*85-115*	4.576	*1.63*	*20*	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67013** Instrument ID **Balance1** Method: **E160.1** **(Dissolve)**

MBLK Sample ID: **BLANK-R67013** Units: **mg/L** Analysis Date: **8/20/2008 04:00 PM**
Client ID: Run ID: **BALANCE1_080820E** SeqNo: **1474298** 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-R67013** Units: **mg/L** Analysis Date: **8/20/2008 04:00 PM**
Client ID: Run ID: **BALANCE1_080820E** SeqNo: **1474300** 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	1038	10	1000	0	104	85-115	0			

DUP Sample ID: **0808424-02ADUP** Units: **mg/L** Analysis Date: **8/20/2008 04:00 PM**
Client ID: Run ID: **BALANCE1_080820E** SeqNo: **1474292** 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	1508	10	0	0	0	0-0	1488	1.34	20	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: Navajo Refining Company
Work Order: 0808447
Project: Injection Well Quarterly

QC BATCH REPORT

Batch ID: **R67035** Instrument ID **WetChem** Method: **E120.1**

MBLK Sample ID: **WBLKW1-082208-R67035** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1474821** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	ND	1.0								

LCS Sample ID: **WLCSW1-082208-R67035** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1474822** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	1420	1.0	1413	0	100	80-120	0			

DUP Sample ID: **0808333-01CDUP** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1474836** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	711	1.0	0	0	0	0-0	716	0.701	20	

DUP Sample ID: **0808447-01CDUP** Units: **µmhos/cm** Analysis Date: **8/22/2008 04:00 PM**
Client ID: **Injection Well** Run ID: **WETCHEM_080822C** SeqNo: **1474837** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	4690	1.0	0	0	0	0-0	4710	0.426	20	

The following samples were analyzed in this batch: 0808447-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

☐ 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 #: 0808147

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	Injection Well Qrtly	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	P.O. Box 159	Address	P.O. Box 159	E Anions (300) Cl, SO4
				F Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G pH
Phone	(505) 748-3311	Phone	(505) 748-3311	H Conductivity
Fax	(505) 746-5421	Fax	(505) 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	Injection Well	8/19/08	1130	L	Y	9	X	X	X	X	X	X	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Aaron Strange

Shipment Method: Fed Ex

Required Turnaround Time: (Check Box) ☐ Other ☑ Std 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour

Results Due Date:

	Date:	Time:		
Relinquished by: Aaron Strange	8/19/08	1615	Received by:	Notes: 10 Day TAT.
Relinquished by:	8/20/08	8:55	Received by (Laboratory):	Cooler ID: / Cooler Temp: / QC Package: (Check One Box Below)
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	☑ Level II Std QC ☐ Level III Std QC/Raw Data ☐ Level IV SW846/CLP ☐ Other ☐ TRRP CheckList ☐ TRRP Level IV

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 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.

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ALS Group USA, Corp.

Sample Receipt Checklist

Client Name: NAVAJO REFINING

Date/Time Received: 8/20/2008 08:55

Work Order Number 0808447

Received by: RSZ

Checklist completed by [signature] 8-20-08
Signature Date

Reviewed by Initials [signature] Date 8/20/08

Matrix: 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):	0.6c	002	
Cooler(s)/Kit(s):	0394		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐

Adjusted? Checked by

Login Notes: Trip blank not on COC--logged in without analysis.

Client contacted: Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action

PURCHASE ORDER

The following number must appear on all related correspondence, shipping papers, and invoices:

P.O. NUMBER: 10-2114565

To: ALS Laboratory Group
3352 128th Ave.
Holland, MI 494249263
Ph: (616) 399-6070 Fax: (616) 399-6185

Bill To: **ALS Group USA, Corp.**
10450 Stancliff Rd, Suite 210
Houston, TX 77099
TEL 281-530-5656 FAX 281-530-5887

Ship To: ALS Laboratory Group
10450 Stancliff Rd, Suite 210

Houston, Texas 77099-4338
TEL (281) 530-5656 FAX (281) 530-5887

Acct #:

P.O. DATE	REQUISITIONER	Ship VIA	Department	TERMS
8/20/2008	rsanchez	UPS		NET 30

Item	Catalog No.	QTY	Unit Price	Total Price
Reactive Cyanide		2	$24.50	$49.00
Reactive Sulfide		2	$24.50	$49.00

Sales Tax:	$0.00
Shipping/Handling:	$0.00
Other:	$0.00
OrderAmount:	**$98.00**

Comments: 0808447

8/20/08
Authorized by Date

ALS Group USA, Corp.
Part of the ALS Laboratory Group
A Campbell Brothers Limited Company

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: 20-Aug-08
COC ID: 6639
Due Date 01-Sep-08

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	0808447	A Cyanide, Reactive (SW-846)
Work Order		Project Number		B Sulfide, Reactive (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C
Send Report To	Jeffrey L Croston	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	jeff.croston@alsenviro.com	eMail CC	glenda.ramos@alsenviro.com	J

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
0808447-01E (Injection Well)	Water	8/19/2008 11:30	(1) 1LPNEAT	X	X								

Comments:

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		
	8/20/08				

ALS Laboratory Group

Date: 22-Aug-08

Client: ALS Laboratory Group
Project: 0808447
Work Order: 0808386

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0808386-01	0808447-01E	Water		8/19/2008 11:30	8/21/2008 14:10	☐

ALS Laboratory Group

Date: *22-Aug-08*

Client: ALS Laboratory Group
Project: 0808447
Sample ID: 0808447-01E
Collection Date: 8/19/2008 11:30 AM

Work Order: 0808386
Lab ID: 0808386-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE			**EPA 7.3.3.2**			Analyst: **DB**
Cyanide, Reactive	ND		40.0	mg/Kg	1	8/22/2008
SULFIDE, REACTIVE			**EPA 7.3.4.2**			Analyst: **DB**
Sulfide, Reactive	ND		40.0	mg/Kg	1	8/22/2008

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

ALS Laboratory Group

Client: ALS Laboratory Group
Work Order: 0808386
Project: 0808447

Date: *22-Aug-08*

QC BATCH REPORT

Batch ID: **R61249** Instrument ID **WETCHEM** Method: **EPA 7.3.4.2**

MBLK Sample ID: **WBLKS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**

Client ID: Run ID: **WETCHEM_080822C** SeqNo: **1018085** 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: 0808386-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

Client: ALS Laboratory Group
Work Order: 0808386
Project: 0808447

QC BATCH REPORT

Batch ID: **R61250** Instrument ID **WETCHEM** Method: **EPA 7.3.3.2**

MBLK Sample ID: **WBLKS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: Run ID: **WETCHEM_080822D** SeqNo: **1018091** 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: **WLCSS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: Run ID: **WETCHEM_080822D** SeqNo: **1018092** 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	75-125	0			

LCSD Sample ID: **WLCSDS1-082208** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: Run ID: **WETCHEM_080822D** SeqNo: **1018100** 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	75-125	278.9	0	35	

MS Sample ID: **0808386-01A MS** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: **0808447-01E** Run ID: **WETCHEM_080822D** SeqNo: **1018096** 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: **0808386-01A MSD** Units: **mg/Kg** Analysis Date: **8/22/2008**
Client ID: **0808447-01E** Run ID: **WETCHEM_080822D** SeqNo: **1018097** 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: 0808386-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

0808389

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: 20-Aug-08
COC ID: 6639
Due Date 01-Sep-08

Subcontractor:
ALS Laboratory Group
3352 128th Ave.
Holland, MI 49424

TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

Customer Information		Project Information		Parameter/Method Request for Analysis
Purchase Order		Project Name	0808447	A Cyanide, Reactive (SW-846)
Work Order		Project Number		B Sulfide, Reactive (SW-846)
Company Name	ALS Group USA, Corp.	Bill To Company	ALS Group USA, Corp.	C
Send Report To	Jeffrey L Croston	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	jeff.croston@alsenviro.com	eMail CC	glenda.ramos@alsenviro.com	J

Sample ID	Matrix	Collection Date 24hr	Bottle	A	B	C	D	E	F	G	H	I	J
0808447-01E (Injection Well)	Water	8/19/2008 11:30	(1) 1LPNEAT	X	X								

Comments:

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
					Std
Relinquished by:	Date/Time	Received by:	Date/Time		
	8/2008		8/21/8 2:10p		

ALS Laboratory Group

Sample Receipt Checklist

Client Name ELAB-HOU

Date/Time Received: 8/21/2008 14:10

Work Order Number 0808386

Received by: ARB

Checklist completed by _____ 8/21/8 Reviewed by _____ 8/22/08

Signature Date Initials Date

Matrix: Water

Carrier name: UPS

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):	3.1 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 ☐

Adjusted? _____ Checked by _____

Login Notes:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

UPS Next Day Air Saver
SATURDAY DELIVERY
DOCUMENTS
02778
011108 P1
1825976
500
9 of
698174
SUB CONTRACT
TELEPHONE 281-530-5656
RICHARD SANCHEZ
ALS LABORATORY GROUP
1450 STANCLIFF RD STE # 210
HOUSTON TX 77099
TELEPHONE 616-399-6070
RECEIVING
ALS LABORATORY GROUP
3352 128TH AVE
HOLLAND MI 49424
(URC v.72.5A 10/2007)
0201902542009 1.07 S
United Parcel Service, Louisville, KY
WEIGHT 3 lb
DIMENSIONAL WEIGHT
LARGE PACKAGE
Saver
MI 495
1Z 698 174 23 1005 34
1Z 698 174 23 1005 3
SHIPMENT ID NUMBER 6981 7478 897
UPS Next Day Air Saver
Aug 21 08:24:22 2008 HIP
04659 US 07
ALS Laboratory Group
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel +1 281 530 5656
CUSTODY SEAL
Date: 8.20.08 Time: 1600
Name: R. SANCHEZ
Company: ALS
Seal Broken By: MB
Date: 8/21/08

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25184** InstrumentID: **VOA2**

MSD Sample ID: **0412122-01AMSD** Test Code: **SW8260** Units: **µg/L** Analysis Date: **12/10/04 15:56**

Client ID: Run ID: **VOA2_041210A** SeqNo: **586935** Prep Date: DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	4901	500	5000	0	98	75.2-120	4798	2.14	20	
1,1,2,2-Tetrachloroethane	3673	500	5000	0	73.5	72.4-121	3949	7.23	20	
1,1,2-Trichloroethane	5074	500	5000	0	101	80-120	4942	2.63	20	
1,1-Dichloroethane	4943	500	5000	0	98.9	76.9-120	4844	2.02	20	
1,1-Dichloroethene	4860	500	5000	0	97.2	72.6-123	4755	2.18	20	
1,2-Dichloroethane	5155	500	5000	0	103	80-120	4962	3.81	20	
2-Butanone	11480	1,000	10000	0	115	69-131	11580	0.868	20	
2-Chloroethyl vinyl ether	8419	1,000	10000	0	84.2	60-135	8304	1.37	20	
2-Hexanone	11740	1,000	10000	0	117	55.6-126	11630	0.973	20	
4-Methyl-2-pentanone	11100	1,000	10000	0	111	67.4-121	11200	0.93	20	
Acetone	11240	1,000	10000	0	112	64.4-140	10640	5.48	20	
Benzene	5163	500	5000	0	103	80-120	4919	4.82	20	
Bromodichloromethane	5176	500	5000	0	104	80-120	4991	3.63	20	
Bromoform	5440	500	5000	0	109	77.9-121	5184	4.82	20	
Bromomethane	4925	500	5000	0	98.5	63.3-137	4562	7.66	20	
Carbon disulfide	9210	1,000	10000	0	92.1	74.1-123	9132	0.851	20	
Carbon tetrachloride	4749	500	5000	0	95	74.7-120	4713	0.763	20	
Chlorobenzene	4736	500	5000	0	94.7	80-120	4596	3.01	20	
Chloroethane	4762	500	5000	0	95.2	74.7-126	4625	2.92	20	
Chloroform	9470	500	5000	4602	97.4	80-120	8788	7.47	20	
Chloromethane	4892	500	5000	0	97.8	64.5-132	4632	5.45	20	
cis-1,3-Dichloropropene	5058	500	5000	0	101	80-120	4838	4.44	20	
Dibromochloromethane	5191	500	5000	0	104	80-120	4989	3.97	20	
Ethylbenzene	5207	500	5000	0	104	80-120	5104	1.99	20	
m,p-Xylene	10210	1,000	10000	0	102	80-120	9965	2.46	20	
Methylene chloride	4799	1,000	5000	0	96	76.2-120	4625	3.7	20	
Styrene	5332	500	5000	0	107	80-120	5121	4.03	20	
Tetrachloroethene	5155	500	5000	0	103	68.5-130	5010	2.85	20	
Toluene	5106	500	5000	0	102	80-120	4924	3.63	20	
trans-1,3-Dichloropropene	5390	500	5000	0	108	80-120	5349	0.761	20	
Trichloroethene	6591	500	5000	0	132	78.9-120	5895	11.2	20	S
Vinyl acetate	613	1,000	10000	0	6.13	62.4-133	1690	0	20	JS
Vinyl chloride	4832	200	5000	0	96.6	72.7-128	4609	4.73	20	
Xylenes, Total	15030	1,500	15000	0	100	80-120	14660	2.5	20	
Surr: 1,2-Dichloroethane-d4	4254	500	5000	0	85.1	71-126	4231	0.551	20	
Surr: 4-Bromofluorobenzene	4444	500	5000	0	88.9	74-125	4306	3.16	20	
Surr: Dibromofluoromethane	4082	500	5000	0	81.6	73-126	4042	0.978	20	
Surr: Toluene-d8	4509	500	5000	0	90.2	75-125	4389	2.69	20	

The following samples were analyzed in this batch: 0412005-01A

ND - Not Detected at the Reporting Limit
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in assoc. Method Blank
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits
U - Analyzed for but not detected
O - Referenced analyte value is > 4 times amount spiked
P - Dual Column results percent difference > 40%
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R24953** InstrumentID: **WetChem**

LCS Sample ID: **WLCSW1-120104** Test Code: **E150.1** Units: **pH units** Analysis Date: **12/01/04 0:00**
Client ID: Run ID: **WETCHEM_041201B** SeqNo: **581999** 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	85-115		0		

DUP Sample ID: **0412005-01CDUP** Test Code: **E150.1** Units: **pH units** Analysis Date: **12/01/04 0:00**
Client ID: **Inj Wells** Run ID: **WETCHEM_041201B** SeqNo: **582003** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.17	0.10	0	0	0	0-0	7.19	0.279	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25032** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-120304** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203B** SeqNo: **583600** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	ND	1.0								

LCS Sample ID: **WLCSW1-120304** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203B** SeqNo: **583601** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	142	1.0	141.2	0	101	80-120		0		

DUP Sample ID: **0412005-01CDUP** Test Code: **E120.1** Units: **µmhos/cm** Analysis Date: **12/03/04 0:00**
Client ID: ***Inj Wells*** Run ID: **WETCHEM_041203B** SeqNo: **583639** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Specific Conductance	6390	1.0	0	0	0	0-0	6350	0.628	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25042** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-120304** Test Code: **E160.1** Units: **mg/L** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203D** SeqNo: **583929** 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: **WLCSW1-120304** Test Code: **E160.1** Units: **mg/L** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203D** SeqNo: **583930** 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	992	10	1000	0	99.2	80-120	0			

DUP Sample ID: **0412038-01EDUP** Test Code: **E160.1** Units: **mg/L** Analysis Date: **12/03/04 0:00**
Client ID: Run ID: **WETCHEM_041203D** SeqNo: **583942** 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	21880	10	0	0	0	0-0	21420	2.12	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25082** InstrumentID: **WetChem**

MBLK Sample ID: **WBLKW1-120604** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584614** 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: **WLCSW1-120604** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584615** 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)	1000	5.0	0	0.9809	0	0-0	0			
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0			
Alkalinity, Total (As CaCO3)	1000	5.0	1000	0	100	80-120	0			

LCSD Sample ID: **WLCSDW1-12060** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584638** 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)	961	5.0	0	0.9809	0	0-0	1000	3.98	0	
Alkalinity, Carbonate (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	0	
Alkalinity, Hydroxide (As CaCO3)	ND	5.0	0	0	0	0-0	0	0	0	
Alkalinity, Total (As CaCO3)	961	5.0	1000	0	96.1	80-120	1000	3.98	20	

DUP Sample ID: **0411319-04CDUP** Test Code: **E310.1** Units: **mg/L** Analysis Date: **12/06/04 0:00**
Client ID: Run ID: **WETCHEM_041206F** SeqNo: **584625** 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)	284	5.0	0	0	0	0-0	275	3.22	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)	284	5.0	0	0	0	0-0	275	3.22	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected *below quantitation limits*
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25133** InstrumentID: **IC201**

MBLK Sample ID: **WBLKW1-120804** Test Code: **E300** Units: **mg/L** Analysis Date: **12/09/04 0:01**
Client ID: Run ID: **IC201_041208A** SeqNo: **585675** 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	1.0								
Surr: Dichloroacetic acid (surr)	4.97	0.10	5	0	99.4	80-120	0			

LCS Sample ID: **WLCSW1-120804** Test Code: **E300** Units: **mg/L** Analysis Date: **12/09/04 0:29**
Client ID: Run ID: **IC201_041208A** SeqNo: **585676** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	8.79	0.50	10	0	87.9	80-120	0			
Sulfate	9.07	1.0	10	0	90.7	80-120	0			
Surr: Dichloroacetic acid (surr)	5.03	0.10	5	0	101	80-120	0			

LCSD Sample ID: **WLCSDW1-12080** Test Code: **E300** Units: **mg/L** Analysis Date: **12/09/04 0:58**
Client ID: Run ID: **IC201_041208A** SeqNo: **585677** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	8.72	0.50	10	0	87.2	80-120	8.79	0.8	20	
Sulfate	9.25	1.0	10	0	92.5	80-120	9.07	1.97	20	
Surr: Dichloroacetic acid (surr)	5.07	0.10	5	0	101	80-120	5.03	0.792	20	

MS Sample ID: **0412109-01EMS** Test Code: **E300** Units: **mg/L** Analysis Date: **12/08/04 21:38**
Client ID: Run ID: **IC201_041208A** SeqNo: **585655** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	45.15	0.50	10	34.02	111	75-125	0			
Sulfate	25.12	1.0	10	14.39	107	75-125	0			
Surr: Dichloroacetic acid (surr)	5.04	0.10	5	0	101	80-120	0			

MSD Sample ID: **0412109-01EMSD** Test Code: **E300** Units: **mg/L** Analysis Date: **12/08/04 22:07**
Client ID: Run ID: **IC201_041208A** SeqNo: **585696** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	45.28	0.50	10	34.02	113	75-125	45.15	0.288	20	
Sulfate	25.1	1.0	10	14.39	107	75-125	25.12	0.0796	20	
Surr: Dichloroacetic acid (surr)	4.93	0.10	5	0	98.6	80-120	5.04	2.21	20	

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: Navajo Refining Company
Work Order: 0412005
Project: Injection Wells

QC BATCH REPORT

Batch ID: **R25133** InstrumentID: **IC201**

DUP Sample ID: **0412109-01EDUP** Test Code: **E300** Units: **mg/L** Analysis Date: **12/08/04 17:50**

Client ID: Run ID: **IC201_041208A** SeqNo: **585641** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	33.91	0.50	0	0	0	0-0	34.02	0.324	20	
Sulfate	14.43	1.0	0	0	0	0-0	14.39	0.278	20	
Surr: Dichloroacetic acid (surr)	5.04	0.10	5	0	101	80-120	5.04	0	20	

The following samples were analyzed in this batch: 0412005-01C

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

e-Lab Analytical, Inc.
10450 Stancliff Rd. #210
Houston, Texas 77099
(Tel) 281.530.5656
(Fax) 281.530.5887

Chain of Custody Form

Page ____ of ____

e-Lab Analytical, Inc.
3352 128th Avenue
Holland, Michigan 49424
(Tel) 616.399.6070
(Fax) 616.399.6185

e-Lab Project Manager: | e-Lab Work Order #: 41005

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Injection Wells	A	VOC 8260
Work Order		Project Number		B	SVOC 8270
Company Name	Navajo Refining Company	Bill To Company	Navajo Refining Company	C	Total Metals 6020
Send Report To	Jeff Byrd	Invoice Attn	Jeff Byrd	D	RCI Profile
Address	PO Box 159	Address	PO Box 159	E	Anions: (Cl, SO4)
				F	Alkalinity
City/State/Zip	Artesia, NM 88211	City/State/Zip	Artesia, NM 88211	G	pH
Phone	(505) 748-3311	Phone	(505) 748-3311	H	Conductivity
Fax	(505) 746-5421	Fax	(505) 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	Inj Well	11/30	0730	C		10	X	X	X	X	X	Y	X	X	X		
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: [illegible]

Shipment Method: FedEx

Required Turnaround Time: (Check Box) ☐ STD 10 WK Days ☐ 5 WK Days ☐ 2 WK Days ☐ 24 Hour ☐ Other Std TAT

Results Due Date:

Relinquished by:	Date: 11/30	Time: 0730	Received by:	Notes:
Relinquished by:	Date:	Time:	Received by (Laboratory):	
Logged by (Laboratory):	Date: 12/1/04	Time: 09:05	Checked by (Laboratory):	

e-Lab 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 _____

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 e-Lab Analytical, Inc.

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e-Lab Analytical, Inc.

Sample Receipt Checklist

Client Name NAVAJO REFINING Date/Time Received: 12/1/2004 9:05:00 AM

Work Order Number 0412005 Received by: FSM

Checklist completed by [signature] 12/1/04 (Signature / Date) Reviewed by [initials] 12/2/04 (Initials / Date)

Matrix: W 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):	3.2c	002	
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐

Adjusted? _____ Checked by RNL

Login Notes:

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

W.O.# 044200

SHIP DATE: 30NOV2004
ACCOUNT # 113684186
ACTUAL WGT: 58.00 LBS

[illegible] E. MAIN STREET
ARTESIA NM 88210
5057483311

Part # 156148-434 NRIT 5/04

TO:

E-LAB
1092
SAMPLE RECEIVING
10450 STANCLIFF ROAD STE 210
HOUSTON TX 77099

2815305656
BILL RECIPIENT

Delivery Address Barcode

FedEx PRIORITY OVERNIGHT

WED
DELIVER BY:
01DEC2004

System # 2223500 30NOV2004
TRK# 7903 5210 7434 Form 0201

IAH A2

77099-TX-US A9 JGQA

QSU5 v5.2.00 2223500 2844 04/02

e-Lab Analytical, Inc

Date: *December 10, 2004*

CLIENT: e-Lab Analytical, Inc
Project: 0412005
Work Order: **0412024**

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
0412024-01	0412005-01E	Water		11/30/2004 07:30	12/2/2004 10:00	☐

e-Lab Analytical, Inc

Date: *December 10, 2004*

CLIENT: e-Lab Analytical, Inc
Project: 0412005

Work Order: 0412024

Lab ID: 0412024-01A
Client Sample ID: 0412005-01E

Collection Date: 11/30/2004 7:30:00 AM
Matrix: WATER

Analyses	Result	Report Limit	Qual	Units	Dilution Factor	Date Analyzed
CYANIDE, REACTIVE		**EPA 7.3.3.2**				Analyst: **BAT**
Cyanide, Reactive	ND	0.0300		mg/Kg	1	12/2/2004
FLASHPOINT, P-M CLOSED-CUP		**ASTM D93**				Analyst: **KAE**
Flashpoint, P-M Closed-cup	>196			°F	1	12/6/2004
SULFIDE, REACTIVE		**EPA 7.3.4.2**				Analyst: **BAT**
Sulfide, Reactive	ND	40.0		mg/Kg	1	12/2/2004

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
S - Spike Recovery outside accepted recovery limits
P - Dual Column results percent difference > 40%
E - Value above quantitation range
H - Analyzed outside of Hold Time

-Lab Analytical, Inc

CLIENT: e-Lab Analytical, Inc
Work Order: 0412024
Project: 0412005

Date: *Dec 10 2004*

QC BATCH REPORT

Batch ID: **R25689** InstrumentID: **WETCHEM**

MBLK Sample ID: **WBLKW1-041202** Test Code: **EPA 7.3.4.2** Units: **mg/Kg** Analysis Date **12/02/04 0:00**

Client ID: Run ID: **WETCHEM_041202H** SeqNo: **381679** 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: 0412024-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: e-Lab Analytical, Inc
Work Order: 0412024
Project: 0412005

QC BATCH REPORT

Batch ID: **R25698** InstrumentID: **WETCHEM**

MBLK Sample ID: **WBLKW1-041202** Test Code: **EPA 7.3.3.2** Units: **mg/Kg** Analysis Date **12/02/04 0:00**
Client ID: Run ID: **WETCHEM_041202I** SeqNo: **381814** 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	0.030								

LCS Sample ID: **WLCSW1-041202** Test Code: **EPA 7.3.3.2** Units: **mg/Kg** Analysis Date **12/02/04 0:00**
Client ID: Run ID: **WETCHEM_041202I** SeqNo: **381815** Prep Date: DF: **2500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Cyanide, Reactive	449.2	75	922	0	48.7	5-100		0		

The following samples were analyzed in this batch: 0412024-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

CLIENT: e-Lab Analytical, Inc
Work Order: 0412024
Project: 0412005

QC BATCH REPORT

Batch ID: **R25752** InstrumentID: **WETCHEM**

LCS Sample ID: **WLCSW1-120304** Test Code: **ASTM D93** Units: **°F** Analysis Date **12/06/04 0:00**

Client ID: Run ID: **WETCHEM_041206G** SeqNo: **382883** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Flashpoint, P-M Closed-cup	83	0	81	0	102	97-103	0	0	0	

The following samples were analyzed in this batch: 0412024-01A

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
O - Referenced analyte value is > 4 times amount spiked
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
P - Dual Column results percent difference > 40%
B - Analyte detected in assoc. Method Blank
U - Analyzed for but not detected
E - Value above quantitation range

0412024

Subcontractor:
e-Lab Analytical, Inc.
3352 128th Ave.
Holland, MI 49424
TEL: (616) 399-6070
FAX: (616) 399-6185
Acct #:

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Date: Dec 01, 2004
COC ID: 2225
Due Date: 12/13/2004

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	2107246	Project Name	0412005	A	Cyanide, Reactive (SW-846)
Work Order		Project Number		B	Sulfide, Reactive (SW-846)
Company Name	e-Lab Analytical, Inc.	Bill To Company	e-Lab Analytical, Inc.	C	Flashpoint (SW1010)
Send Report To	Jeffrey L. Croston	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				J	

Sample ID	Matrix	Collection Date	Bottle	A	B	C	D	E	F	G	H	I	J
0412005-01E (Inj Wells)	Water	11/30/2004 7:30	(1) 1LPNEAT	X	X	X							

Comments:

Relinquished by:	Date/Time	Received by:	Date/Time	Cooler IDs	Report/QC Level
	12/1/04 VPS		12-2-04 10:00		Std
Relinquished by:	Date/Time	Received by:	Date/Time		

EXHIBIT 3

TABLE VII TABULATION OF WELLS WITHIN 1 MILE OF THE INJECTION WELLS

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
1	30-015-00693	ASPEN OIL INC	36 17S 27E A	528	T/A	8/30/1941
		DELHI #001	330N 330E		O	
2	30-015-00694	DELHI OIL CORP.	36 17S 27E A	1993	P&A	6/24/1948
		STATE #013	990N 990E		O	6/24/1948
3	30-015-00646	ASPEN OIL INC	36 17S 27E A	540	T/A	4/21/1950
		DELHI #007	990N 330E		O	
4	30-015-00668	FAIRWAY RESOURCES OPERATING INC	36 17S 27E G	1736	SHUT IN	12/6/1947
		SOUTH RED LAKE GRAYBURG UNIT #010	1650N 2310E		O	
5	30-015-00690	ASPEN OIL INC	36 17S 27E G	532	ACTIVE	3/6/1949
		CONKLIN #002	1830N 2205E		O	
6	30-015-00667	FAIRWAY RESOURCES OPERATING INC	36 17S 27E G	1733	ACTIVE	3/23/1949
		SOUTH RED LAKE GRAYBURG UNIT #011	2310N 2310E		I	
7	30-015-00666	ASPEN OIL INC	36 17S 27E G	533	P&A	1/10/1942
		CONKLIN #001	2310N 2310E		O	9/10/2007
8	30-015-00689	ASPEN OIL INC	36 17S 27E H	557	ACTIVE	8/4/1950
		GATES STATE #001	1650N 330E		O	
9	30-015-00647	ASPEN OIL INC	36 17S 27E H	551	P&A	10/21/2003
		GATES STATE #002	1650N 990E		O	10/21/2003
10	30-015-00669	ASPEN OIL INC	36 17S 27E H	1804	P&A	5/6/2008
		HOMAN #001	2310N 330E		O	5/6/2008
11	30-015-00688	KERSEY & CO	36 17S 27E I	590	P&A	10/28/1941
		RAMAPO #001	2310S 330E		O	10/28/1941
12	30-015-00670	KERSEY & CO	36 17S 27E I	1857	P&A	1/3/1950
		RAMAPO #003	2970N 330E		O	1/3/1950
13	30-015-00687	KERSEY & CO	36 17S 27E I	1900	P&A	5/7/1948
		RAMAPO #002	2310S 990E		G	5/7/1948

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
14	30-015-00685	ARCO OIL & GAS	36 17S 27E I	5980	P&A	7/10/1989
		EMPIRE ABO UNIT G #020	1650S 330E		O	7/10/1989
15	30-015-00671	ROJO GRANDE COMPANY LLC	36 17S 27E J	591	ZONE ABAN	2/13/1942
		RAMAPO #003	2310S 2310E		O	1/24/2000
16	30-015-01221	MCQUADRANGLE, LC	36 17S 27E J	1790	ZONE ABAN	2/27/1948
		SOUTH RED LAKE GRAYBURG UNIT #023	2300S 2300E		O	8/13/2002
17		MARTIN YATES III	36 17S 27E J	5865		4/22/1961
		DOOLEY STATE #3				
18	30-015-05934	BP AMERICA PRODUCTION COMPANY	36 17S 27E J	5970	ACTIVE	2/26/1961
		EMPIRE ABO UNIT #019A	1650S 1650E		O	
19	30-015-01220	MCQUADRANGLE, LC	36 17S 27E K	1747	ZONE ABAN	2/3/1949
		SOUTH RED LAKE GRAYBURG UNIT #022	2310S 2330W		O	7/17/2002
20	30-015-00674	ROJO GRANDE COMPANY LLC	36 17S 27E K	514	ACTIVE	5/15/1947
		RAMAPO #002	2310S 2310W		O	
21	30-015-01219	MCQUADRANGLE, LC	36 17S 27E K	1710	ACTIVE	1/20/1948
		SOUTH RED LAKE GRAYBURG UNIT #021	2310S 1650W		I	
22	30-015-23913	MCQUADRANGLE, LC	36 17S 27E K	1785	ACTIVE	12/11/1981
		SOUTH RED LAKE GRAYBURG UNIT #043	1650S 1650W		O	
23		MARTIN YATES III	36 17S 27E K	5865	ACTIVE	4/19/1961
		DOOLEY STATE ABO #3			O	
24	30-015-00673	ROJO GRANDE COMPANY LLC	36 17S 27E K	510	ZONE ABAN	1/24/2000
		RAMAPO #001	1650S 2310W		O	1/24/2000
25	30-015-00682	ROJO GRANDE COMPANY LLC	36 17S 27E N	541	ZONE ABAN	1/24/2000
		RAMAPO #004	990S 1650W		O	1/24/2000
26	30-015-00683	FAIRWAY RESOURCES OPERATING INC	36 17S 27E N	1812	ACTIVE	4/16/1948
		SOUTH RED LAKE GRAYBURG UNIT #028	965S 1650W		I	
27	30-015-01218	BP AMERICA PRODUCTION COMPANY	36 17S 27E N	5925	T/A	2/2/1960
		EMPIRE ABO UNIT #018	330S 2310W		O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
28	30-015-00684	BURNHAM OIL COMPANY	36 17S 27E O	1500	P&A	5/13/1947
		STATE B-6961 NO. 1-A	990S 2310E		O	5/13/1947
29	30-015-01251	BP AMERICA PRODUCTION COMPANY	36 17S 27E O	6200	T/A	9/8/1959
		EMPIRE ABO UNIT #019	660S 1980E		O	
30			36 17S 27E I		MISPLOT OF 14	
31	30-015-00677	BP AMERICA PRODUCTION COMPANY	36 17S 27E P	6013	T/A	5/16/1960
		EMPIRE ABO UNIT #020	330S 990E		O	
32	30-015-01616	C F M OIL CO	30 17S 28E P	615	ACTIVE	3/7/1953
		BLAKE STATE #001	330S 990E		O	
33	30-015-01638	BEDINGFIELD, MALCO, RESLER	31 17S 28E A	2004	P&A	7/15/1952
		STATE NO. 1	330N 990E		O	7/15/1952
34	30-015-21594	FINNEY OIL COMPANY	31 17S 28E B	652	ACTIVE	11/15/1975
		POWCO STATE #001	330N 1650E		O	
35	30-015-01636	BEDINGFIELD, J E	31 17S 28E C	637	P&A	12/23/1952
		DELHI-STATE NO. 1	330N 2310E		O	12/23/1952
36	30-015-25621	FINNEY OIL COMPANY	31 17S 28E B	747	ACTIVE	7/15/1986
		POWCO STATE #002	980N 1620E		O	
37	30-015-01633	ASPEN OIL INC	31 17S 28E D	531	ACTIVE	6/23/1942
		ASTON & FAIR A #001	330N 330W		O	
38	30-015-01634	ASTON & FAIR	31 17S 28E D	525	NO COMPL	1/5/1946
		STATE 31 NO. 1X	350N 345W		O	
39	30-015-01645	MCLAUGHLIN, C T	31 17S 28E F	2307	P&A	2/16/1950
		BEDINGFIELD STATE 1 NO. 1	990N 990W		O	2/16/1950
40	30-015-02666	HANSON ENERGY	31 17S 28E E	1816	ACTIVE	5/29/1948
		HUDSON SAIKIN STATE #001	2310N 330W		O	
41	30-015-24887	HANSON ENERGY	31 17S 28E E	1950	ACTIVE	7/7/1984
		HUDSON SAIKIN STATE #002	2310N 990W		O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
42	30-015-01643	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022	31 17S 28E F 2310N 2260W	5971	T/A O	6/7/1960
43	30-015-01635	ASPEN OIL INC ASTON & FAIR #001Y	31 17S 28E F 2310N 2310W	1926	ACTIVE O	5/8/1948
44	30-015-01637	ASPEN OIL INC MALCO STATE #001	31 17S 28E G 2310N 2310E	1852	ACTIVE O	10/12/1953
45	30-015-01652	KERSEY & CO BOLING #001	31 17S 28E G 2288N 1625E	6025	ACTIVE O	8/10/1960
46	30-015-10537	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #004	31 17S 28E H 2277N 330E	6180	ACTIVE O	9/23/1965
47	30-015-10833	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #010	31 17S 28E I 1980S 660E	1945	ACTIVE O	6/17/1966
48	30-015-01644	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024A	31 17S 28E I 1650S 330E	6106	T/A O	4/29/1960
49	30-015-01642	HANSON ENERGY STATE FW #001	31 17S 28E J 1650S 2310E	1937	ACTIVE O	12/23/1962
50	30-015-01650	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023A	31 17S 28E J 1650S 1958E	6094	P&A O	9/17/2003 9/17/2003
51	30-015-01651	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022B	31 17S 28E K 1650S 2387W	6046	ACTIVE O	4/10/1960
52	30-015-01640	HANSON ENERGY RAMPO #002	31 17S 28E L 2310S 330W	1996	ACTIVE O	7/16/1955
53	30-015-01648	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021A	31 17S 28E L 1651S 1089E	5971	ZONE ABAN O	8/24/2002 8/24/2002
54	30-015-01639	HANSON ENERGY RAMPO #001	31 17S 28E M 990S 330W	1975	ACTIVE O	5/1/1948
55	30-015-01647	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021	31 17S 28E M 660S 660W	6006	P&A O	1/31/1960 7/23/2005

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
56	30-015-01646	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022A	31 17S 28E N 660S 2082W	6050	ACTIVE O	1/22/1960
57	30-015-10118	HANSON ENERGY STATE FV #001	31 17S 28E N 766S 2188W	1938	ACTIVE O	3/1/1963
58	30-015-01653	OTIS A ROBERTS PARKER-STATE NO. 1	31 17S 28E O 990S 1650E	742	P&A O	1/18/1942 1/18/1942
59	30-015-27592	NAVAJO REFINING CO. PIPELINE DIVISION WDW #001	31 17S 28E 660S 2310E	10200	ACTIVE I	8/4/1998
60	30-015-01649	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023	31 17S 28E O 660S 1939E	6094	ACTIVE O	2/24/1960
61	30-015-20042	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011	31 17S 28E P 990S 660E	2012	ACTIVE O	5/8/1967
62	30-015-01641	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	31 17S 28E P 660S 660E	6122	ACTIVE O	3/12/1960
63	30-015-01654	BEDINGFIELD, J E ASTON-STATE NO. 1	32 17S 28E D 330N 330W	651	P&A O	5/12/1953 5/12/1953
64	30-015-01671	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025B	32 17S 28E E 2280N 978W	6013	T/A O	9/13/1960
65	30-015-01657	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026	32 17S 28E F 2280N 1980W	6171	T/A O	8/24/1960
66	30-015-10818	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #008	32 17S 28E K 2310S 2105W	2003	P&A O	11/6/2006 11/6/2006
67	30-015-01661	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026B	32 17S 28E K 1650S 2310W	6083	ACTIVE O	3/27/1960
68	30-015-10795	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #009	32 17S 28E L 2310S 660W	1930	ACTIVE O	5/15/1966
69	30-015-01662	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025A	32 17S 28E L 1650S 990W	6075	ACTIVE O	4/13/1960

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
70	30-015-20043	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #012	32 17S 28E M 990S 760W	1998	T/A O	5/9/1967
71	30-015-01660	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025	32 17S 28E M 660S 660W	6132	SHUT IN O	3/5/1960
72	30-015-10834	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #013	32 17S 28E N 990S 2030W	1954	P&A O	9/15/2006 9/15/2006
73	30-015-01659	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026A	32 17S 28E N 660S 1980W	6172	ACTIVE O	2/14/1960
74	30-015-21539	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #261	32 17S 28E N 150S 1400W	6220	ACTIVE O	7/25/1975
75	30-015-22009	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #272	32 17S 28E O 330S 2481E	6370	ACTIVE O	7/18/1977
76	30-015-02606	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026E	5 18S 28E C 330N 1941W	6254	ACTIVE O	7/18/1960
77	30-015-22697	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #261A	5 18S 28E C 1080N 1914W	6350	ACTIVE O	1/4/1979
78	30-015-02607	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025C	5 18S 28E D 660N 660W	6273	ACTIVE O	3/27/1960
79	30-015-22750	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #251	5 18S 28E D 660N 150W	6250	SHUT IN O	1/12/1979
80	30-015-02608	CONOCOPHILLIPS COMPANY STATE E AI #001	5 18S 28E E 1660N 330W	6265	P&A O	1/13/2006 1/13/2006
81	30-015-24485	CONOCOPHILLIPS COMPANY ILLINOIS CAMP A COM #001	5 18S 28E E 1980N 990W	10450	ACTIVE G	8/10/1983
82	30-015-02602	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026D	5 18S 28E F 1650N 1650W	6265	ACTIVE O	12/30/1959
83	30-015-25522	I & W INC WALTER SOLT STATE #001	5 18S 28E L 2240S 400W	8500	ACTIVE S	8/12/1983

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
84	30-015-10244	MACK ENERGY CORP STATE AG #001	5 18S 28E L 2310S 330W	6365	ZONE ABAN O	3/27/2001 3/27/2001
87	30-015-20019	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #016	6 18S 28E A 330N 330E	3280	ACTIVE O	3/14/1967
88	30-015-02615	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024B	6 18S 28E A 660N 660E	6241	ACTIVE O	2/29/1960
89	30-015-02625	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023C	6 18S 28E B 470N 2170E	6194	T/A O	12/21/1959
90	30-015-21542	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231	6 18S 28E B 1260N 1580E	6250	ACTIVE O	11/1/1975
91	30-015-02621	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022E	6 18S 28E C 660N 1980W	6033	ACTIVE O	12/29/1959
92	30-015-21626	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231A	6 18S 28E G 1361N 2531E	6380	SHUT IN O	10/22/1975
93	30-015-02613	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021B	6 18S 28E D 990N 660W	6119	ACTIVE O	12/30/1959
94	30-015-23116	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #213	6 18S 28E E 2050N 100W	6225	ACTIVE O	6/2/1980
95	30-015-02619	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021C	6 18S 28E E 1990N 660W	6202	ACTIVE O	10/30/1959
96	30-015-22637	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #212	6 18S 28E E 2450N 400W	6267	ACTIVE O	12/28/1978
97	30-015-21395	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #211	6 18S 28E E 2630N 1300W	6200	ACTIVE O	2/11/1975
98	30-015-22012	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #222	6 18S 28E F 1350N 1572W	6303	ACTIVE O	3/13/1977
99	30-015-02626	SARKIN, DAVID C & OLIVER, HENRY F STATE NO. 1	6 18S 28E F 1650N 1650W	705	P&A O	2/21/1942 2/21/1942

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
100	30-015-10107	HANSON ENERGY STATE FX #001	6 18S 28E F 1874N 1874W	1985	ACTIVE O	8/8/1963
101	30-015-02620	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022D	6 18S 28E F 1990N 2082W	6206	ACTIVE O	11/26/1959
102	30-015-22527	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #223	6 18S 28E F 2630N 1930W	6250	ACTIVE O	5/19/1978
103	30-015-21746	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #221	6 18S 28E F 2610N 2713W	6305	ACTIVE O	4/23/1976
104	30-015-22913	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #235	6 18S 28E G 1750N 1600E	6300	ACTIVE O	7/8/1979
105	30-015-22593	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #234	6 18S 28E G 1900N 2441E	6260	SHUT IN O	8/27/1978
106	30-015-02614	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023B	6 18S 28E G 1980N 1980E	6242	ACTIVE O	1/26/1960
107	30-015-21737	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #232	6 18S 28E G 2253N 1576E	6345	SHUT IN O	4/13/1976
108			6 18S 28E H		MISPLOT OF 107	
109	30-015-22490	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #233	6 18S 28E G 2550N 2050E	6300	T/A O	6/5/1978
110	30-015-02616	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024C	6 18S 28E H 1650N 990E	6253	ACTIVE O	3/24/1960
111	30-015-23547	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #241	6 18S 28E H 1950N 660E	6386	ACTIVE O	4/12/1981
112	30-015-02617	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024K	6 18S 28E I 2310S 990E	6350	P&A O	12/12/2002 12/12/2002
113	30-015-22528	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #232A	6 18S 28E J 2300S 1570E	6350	T/A O	2/5/1979

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
114	30-015-02611	BARNEY COCKBURN	6 18S 28E J	2095	P&A	8/15/1949
		STATE NO. 1	2310S 2310E		O	8/15/1949
115	30-015-02628	BP AMERICA PRODUCTION COMPANY	6 18S 28E J	6310	ACTIVE	5/23/1979
		EMPIRE ABO UNIT #023D	2260S 2270E		O	
116	30-015-22491	BP AMERICA PRODUCTION COMPANY	6 18S 28E J	6350	T/A	8/13/1978
		EMPIRE ABO UNIT #231B	1700S 2350E		O	
117	30-015-02618	MILLER BROS OIL CO	6 18S 28E J	2396	P&A	3/21/1955
		CAPITOL STATE NO. 1	1647S 2076E		G	3/21/1955
118	30-015-02623	BP AMERICA PRODUCTION COMPANY	6 18S 28E K	6210	ACTIVE	2/22/1960
		EMPIRE ABO UNIT #022F	2248S 2075W		O	
119			6 18S 28E K		MISPLOT	
120		NAVAJO REFINING COMPANY	6 18S 28E L			
		WDW-2 (ORIGINAL LOCATION)				
121	30-015-02622	BP AMERICA PRODUCTION COMPANY	6 18S 28E L	6194	ACTIVE	1/23/1960
		EMPIRE ABO UNIT #021D	2219S 660W		O	
122	30-015-23548	BP AMERICA PRODUCTION COMPANY	6 18S 28E L	6312	ACTIVE	7/17/1980
		EMPIRE ABO UNIT #211A	1950S 1000W		O	
123	30-015-02627	PENROC OIL CORP	6 18S 28E M	6225	ACTIVE	10/21/1960
		STATE M-AI #002	949S 990W		O	
124	30-015-26943	MEWBOURNE OIL CO	6 18S 28E M	10200	ACTIVE	4/16/1992
		CHALK BLUFF 6 STATE #001	990S 730W		G	
125	30-015-02610	BP AMERICA PRODUCTION COMPANY	6 18S 28E N	6243	ACTIVE	8/5/1960
		EMPIRE ABO UNIT #022C	955S 1750W		O	
126	30-015-02624	PAN AMERICAN PETROLEUM CO	6 18S 28E O	6412	P&A	5/1/1961
		STATE CD NO. 1	968S 2270E		O	5/1/1961
127	30-015-25503	DICKSON PETROLEUM CO	6 18S 28E P	1750	P&A	12/30/1985
		KIMBERLY STATE NO. 1	660S 330E		O	12/30/1985

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
128	30-015-02612	D & H OIL CO	6 18S 28E P	2246	P&A	5/13/1952
		STATE NO. 1	330S 330E		O	5/13/1952
129	30-015-01215	BP AMERICA PRODUCTION COMPANY	1 18S 27E A	6118	ACTIVE	11/5/1959
		EMPIRE ABO UNIT #020D	667N 666E		O	
130	30-015-00708	BP AMERICA PRODUCTION COMPANY	1 18S 27E B	6078	ACTIVE	7/7/1959
		EMPIRE ABO UNIT #019B	660N 1980E		O	
131		MALCO REFINERIES	1 18S 27E C	1840	P&A	5/10/1948
		HILL #4				5/10/1948
132			1 18S 27E C		MISPLOT	
133	30-015-00710	BP AMERICA PRODUCTION COMPANY	1 18S 27E C	6173	P&A	7/21/2004
		EMPIRE ABO UNIT #018C	660N 1980W		O	7/21/2004
134	30-015-26741	MEWBOURNE OIL CO	1 18S 27E F	10140	ACTIVE	8/24/1991
		CHALK BLUFF FEDERAL COM #002	1650N 1350W		G	
135	30-015-00706	BP AMERICA PRODUCTION COMPANY	1 18S 27E F	6087	ACTIVE	5/31/1959
		EMPIRE ABO UNIT #018A	2310N 1980W		O	
136	30-015-00709	BP AMERICA PRODUCTION COMPANY	1 18S 27E G	6205	ACTIVE	8/2/1959
		EMPIRE ABO UNIT #019C	1980N 1980E		O	
137			1 18S 27E G		MISPLOT	
138	30-015-21552	BP AMERICA PRODUCTION COMPANY	1 18S 27E G	6259	ACTIVE	9/7/1975
		EMPIRE ABO UNIT #191	2500N 2500E		O	
139	30-015-00711	BP AMERICA PRODUCTION COMPANY	1 18S 27E H	6218	ACTIVE	10/13/1959
		EMPIRE ABO UNIT #020C	1980N 660E		O	
140	30-015-21783	BP AMERICA PRODUCTION COMPANY	1 18S 27E H	6296	ACTIVE	5/13/1976
		EMPIRE ABO UNIT #202	2490N 1299E		O	
141	30-015-22656	BP AMERICA PRODUCTION COMPANY	1 18S 27E H	6225	ACTIVE	10/10/1978
		EMPIRE ABO UNIT #203	2400N 700E		O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
142		MANHATTAN OIL CRONIN #1	1 18S 27E H	2900	P&A	7/1/1927 7/1/2027
143	30-015-21553	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #201	1 18S 27E H 2501N 20E	6225	ACTIVE O	7/19/1975
144	30-015-27163	MEWBOURNE OIL CO CHALK BLUFF FEDERAL COM #003	1 18S 27E I 1980S 990E	10150	ACTIVE G	1/16/1993
145	30-015-00697	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020K	1 18S 27E I 1980S 660E	6185	P&A O	1/5/2003 1/5/2003
146	30-015-22657	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #193	1 18S 27E J 2490S 2200E	6225	ACTIVE O	10/26/1978
147	30-015-00696	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019Q	1 18S 27E J 1980S 1980E	6180	ACTIVE O	8/20/1959
148	30-015-22560	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #192	1 18S 27E J 220S 1390E	6250	ACTIVE O	6/25/1978
149	30-015-21873	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #191A	1 18S 27E J 1526S 1470E	6350	ACTIVE O	9/23/1976
150	30-015-22658	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #194	1 18S 27E J 1500S 2130E	6325	ACTIVE O	11/14/1978
151	30-015-22559	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #184	1 18S 27E K 2290S 2445W	6200	SHUT IN O	7/25/1978
152	30-015-22096	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #183	1 18S 27E K 2370S 1510W	6210	ACTIVE O	7/24/1977
153	30-015-21554	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #181	1 18S 27E K 1367S 1440W	6203	P&A O	4/17/2003 4/17/2003
154	30-015-00707	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018B	1 18S 27E K 1980S 1980W	6163	ACTIVE O	5/22/1959
155	30-015-21792	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #182	1 18S 27E K 1533S 2370W	6369	ACTIVE O	6/1/1976

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
156	30-015-00713	BP AMERICA PRODUCTION COMPANY	1 18S 27E N	6174	P&A	9/27/2003
		EMPIRE ABO UNIT #018D	995S 1644W		O	9/27/2003
157	30-015-26575	NAVAJO REFINING COMPANY	1 18S 27E N	10120	T/A	3/7/1991
		WDW-3 (PROPOSED)	790S 2250W		G	
158	30-015-20394	HUMBLE OIL & REFINING CO	1 18S 27E O	6300	P&A	4/9/1971
		EMPIRE ABO FEDERAL NO. 5	953S 2197E		O	4/9/1971
159	30-015-00698	ARCO PERMIAN	1 18S 27E O	6365	P&A	11/8/1959
		EMPIRE ABO UNIT #191	660S 1980E		S	11/8/1959
160	30-015-00699	BP AMERICA PRODUCTION COMPANY	1 18S 27E P	6250	ACTIVE	12/2/1961
		EMPIRE ABO UNIT #020B	940S 330E		O	
161	30-015-26404	DEVON ENERGY PRODUCTION COMPANY L	12 18S 27E A	10141	T/A	9/13/1990
		FEDERAL T #001	660N 990E		G	
162	30-015-25099	HARLOW ENTERPRISES LLC	12 18S 27E H	1652	ACTIVE	9/11/1985
		COMSTOCK FEDERAL #006	1809N 990E		O	
165	30-015-25997	EASTLAND OIL CO	7 18S 28E C	1690	ACTIVE	2/23/1987
		LAUREL STATE #001	940N 1757W		O	
166	30-015-25675	EASTLAND OIL CO	7 18S 28E E	1690	ACTIVE	11/10/1988
		LAUREL STATE #002	940N 1757W		O	
167	30-015-25236	MOREXCO INC	7 18S 28E F	10400	ACTIVE	6/10/1985
		STATE BY #001	1980N 1980W		O	
168	30-015-22636	DYAD PE	7 18S 28E J		ABAN LOCATION	
		PRE-ONGUARD WELL #213	1950N 1300W		O	
169	30-015-22635	DYAD PE	8 18S 28E J		ABAN LOCATION	
		PRE-ONGUARD WELL #212	1900N 100W		O	
170	30-015-24372	DYAD PE	8 18S 28E J		ABAN LOCATION	
		PRE-ONGUARD WELL #001	1980S 990E		O	
171	30-015-27636	PHILLIPS PETROLEUM	7 18S 28E H		ABAN LOCATION	
		CHALK BLUFF 6 STATE #002	2310N 810E		O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
353	30-015-27286	MEWBOURNE OIL CO	36 17S 27E M	10060	ACTIVE	3/30/1993
		CHALK BLUFF 36 STATE #001	660S 990W		O	
354	30-015-24612	PRONGHORN MANAGEMENT CORP	36 17S 27E M	1451	ACTIVE	10/11/1983
		STATE M #001	790S 990W		O	
355	30-015-00676	BP AMERICA PRODUCTION COMPANY	36 17S 27E M	5797	ACTIVE	
		EMPIRE ABO UNIT #017	330N 990W		O	
356	30-015-10184	ASPEN OIL INC	36 17S 27E M	1343	ACTIVE	
		STATE #006	330S 920W		O	
358	30-015-21623	ASPEN OIL INC	36 17S 27E M	1366	ACTIVE	
		STATE #007	360S 455W		O	
359	30-015-00662	ACREY, B L & F D	36 17S 27E M	592	P&A	10/15/1942
		STATE NO. 2	330S 330W		O	10/15/1942
595	30-015-02605	BP AMERICA PRODUCTION UNIT	5 18S 28E B	6261	ACTIVE	3/30/1960
		EMPIRE ABO UNIT NO. 27 E	930N 2271E		O	
748	30-015-00715	MCQUADRANGLE, LC	1 18S 27E D	1835	ACTIVE	
		SOUTH RED LAKE GRAYBURG UNIT #037	330N 330W		I	
748	30-015-00701	FAIRWAY RESOURCES OPERATING LLC	1 18S 27E D	1835	ACTIVE	
		SOUTH RED LAKE GRAYBURG UNIT 37 WIW	330N 330W		O	
749	30-015-00712	ARCO OIL & GAS	1 18S 27E D	5900	P&A	1/24/1987
		EMPIRE ABO UNIT I NO. 17	647N 667W		O	1/24/1987
750		JONES	1 18S 27E E	481	P&A	5/10/1939
		BRAINARD	1650N 330W		O	5/10/1939
751	30-015-00704	ARCO OIL & GAS	1 18S 27E E	5960	P&A	3/26/1959
		EMPIRE ABO UNIT J NO. 17	1980N 660W		O	3/26/1959
752	30-015-00703	BP AMERICA PRODUCTION COMPANY	1 18S 27E L	6091	ACTIVE	5/22/1995
		EMPIRE ABO UNIT #017A	1980S 660W		O	
753	30-015-22815	BP AMERICA PRODUCTION COMPANY	1 18S 27E M	6300	ACTIVE	5/22/1979
		EMPIRE ABO UNIT #171	670S 330W		O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
754			1 18S 27E M		MISPLOT OF 756	
755	30-015-00714	VALLEY REFINING CO HILL #1	1 18S 27E N	2404	P&A	12/20/1943 12/20/1943
756	30-015-00705	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #017B	1 18S 27E M 990S 660W	6150	P&A O	6/25/1959 7/21/2004
757		BRAINARD & GUY STATE 2	2 18S 27E A 330N 610E	530	NO COMPL	1/31/1942 1/31/1942
758	30-015-00721	FAIRWAY RESOURCES OPERATING LLC SOUTH RED LAKE GRAYBURG UNIT #036	2 18S 27E A 330N 990E	1705	SHUT IN O	11/6/1947
765	30-015-00724	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016B	2 18S 27E A 990N 330E	5920	ACTIVE O	
766	30-015-00737	FAIRWAY RESOURCES OPERATING LLC SOUTH RED LAKE GRAYBURG UNIT #038	2 18S 27E B 905N 1601E	1722	ACTIVE O	5/23/1948
772	30-015-00745	MACK ENERGY CORPORATION STATE H #001	2 18S 27E H 1980N 660E	6140	P&A O	3/7/2008 3/7/2008
773	30-015-00742	S&J OPERATING COMPANY SOUTH RED LAKE GRAYBURG UNIT 39 WIW	2 18S 27E H 1650N 990E	1742	P&A O	2/8/1991 2/8/1991
774	30-015-00740	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #040	2 18S 27E G 1650N 2197E	1707	P&A I	7/10/2002 7/10/2002
778		RUTTER & WILBANKS HUDSON #2	2 18S 27E G 2310N 1650E		 O	1/1/1957
779	30-015-00741	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015B	2 18S 27E G 2310N 1980E	5880	ACTIVE O	6/6/1959
781		MALCO REFINING CO STATE B-2	2 18S 27E J 2310S 2310E	4164	P&A O	1/1/1947 1/1/1947
785	30-015-00717	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016	2 18S 27E I 1980S 660E	6114	ACTIVE O	2/6/1995

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
786	30-015-00716	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015	2 18S 27E J 1980S 1830E	6100	ACTIVE O	3/23/1959
789	30-015-22896	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143A	2 18S 27E K 1820S 2550W	6108	ACTIVE O	5/13/1979
791	30-015-22914	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #161	2 18S 27E I 1310S 590E	6225	ACTIVE O	9/13/1979
792			2 18S 27E O		MISPLOT OF 814	
793	30-015-22609	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143	2 18S 27E N 1200S 1900W	6093	ACTIVE O	12/20/1978
795			2 18S 27E P		MISPLOT OF 765	
796	30-015-21544	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #151	2 18S 27E O 1110S 1322E	6285	T/A O	11/4/1975
797	30-015-22885	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #155	2 18S 27E O 1040S 2025E	6202	T/A O	5/1/1979
799	30-015-00722	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016A	2 18S 27E P 660S 660E	6115	T/A O	1/20/1959
800	30-015-22808	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #156	2 18S 27E O 600S 1330E	6225	T/A O	4/12/1979
801	30-015-00731	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015A	2 18S 27E O 660S 1980E	6220	ACTIVE O	11/19/1958
802	30-015-22669	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #154	2 18S 27E O 800S 2500E	6200	T/A O	12/4/1978
805	30-015-22013	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #153	2 18S 27E O 90S 1456E	6303	T/A O	4/20/1977
806	30-015-21825	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #152	2 18S 27E O 320S 2602E	6335	T/A O	6/17/1976

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
807	30-015-22608	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #142	2 18S 27E N 100S 1950W	6200	ACTIVE O	1/12/1979
808	30-015-21807	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #132	2 18S 27E M 275S 1243W	6200	ACTIVE O	7/1/1976
812	30-015-00730	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #014	2 18S 27E N 660S 1980W	6112	ACTIVE O	10/21/1958
813	30-015-00720	BP AMERICA PRODUCTION COMPANY RIVERWOLF UNIT #004	2 18S 27E A 990N 1650E	5881	ACTIVE O	10/21/1959
814	30-015-22051	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #141A	2 18S 27E K 1370S 2445W	6203	ACTIVE O	5/17/1977
836	30-015-00869	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016C	11 18S 27E A 330N 653E	6211	P&A O	10/25/2004 10/25/2004
837	30-015-22568	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #151B	11 18S 27E B 400N 1450E	6310	P&A O	8/16/2006 8/16/2006
838	30-015-22838	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #153B	11 18S 27E B 200N 1925E	6252	ACTIVE O	5/6/1979
839	30-015-00868	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015C	11 18S 27E B 660N 1980E	6260	P&A O	7/16/2004 7/16/2004
840	30-015-22569	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #152B	11 18S 27E B 560N 2588E	6300	T/A O	8/23/1978
841	30-015-22834	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #141B	11 18S 27E C 225N 2280W	6225	ACTIVE O	5/21/1979
842	30-015-00864	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 14	11 18S 27E C 660N 1980W	6315	P&A O	9/5/1957 9/5/1957
843	30-015-22833	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #133B	11 18S 27E D 450N 1175W	6225	ACTIVE O	5/23/1979
844	30-015-00867	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 13	11 18S 27E D 660N 660W	6114	P&A O	4/26/1958 4/26/1958

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
846	30-015-22556	ARCO OIL & GAS	11 18S 27E D	6325	P&A	7/10/1978
		EMPIRE ABO UNIT M NO. 131	1100N 1200W		O	7/10/1978
848	30-015-20510	AMOCO PRODUCTION CO	11 18S 27E F	10168	P&A	10/16/1971
		MALCO S NO. 1	1650N 1653W		O	10/16/1971
849	30-015-00865	ARCO OIL & GAS	11 18S 27E F	6208	P&A	2/3/1961
		EMPIRE ABO UNIT N NO. 14	1650N 1980W		O	2/3/1961
850	30-015-00866	ARCO OIL & GAS	11 18S 27E E	6120	P&A	3/27/1958
		EMPIRE ABO UNIT N NO. 131	1980N 660W		O	3/27/1958
851	30-015-00870	AMOCO PRODUCTION CO	11 18S 27E J	7270	P&A	9/1/1956
		SMITH-MCPHERSON NO. 1	1980S 1980E		O	9/1/1956
852	30-015-01201	OSCAR HOWARD	11 18S 27E N	1828	P&A	
		AN ETZ #3				4/15/2027
853	30-015-01202	OSCAR HOWARD	11 18S 27E O	1827	P&A	
		AN ETZ #2				2/4/2027
854	30.015-00863	B.R. POLK, JR.	11 18S 27E N	1794	P&A	10/14/1949
		VICKERS #1				10/14/1949
855	30-015-24857	CHESAPEAKE OPERATING INC	11 18S 27E M	11915	ACTIVE	5/18/1984
		FEDERAL DH GAS COM #001	700S 990W		G	
856	30-015-20535	ROBERT G COX	12 18S 27E D	6248	P&A	8/7/1973
		FEDERAL EA 2	330N 455W		O	8/7/1973
857	30-015-00871	RHONDA OPERATING CO	12 18S 27E D	6253	P&A	4/12/1994
		FEDERAL EA #001	330N 330W		O	4/12/1994
858	30-015-23115	RHONDA OPERATING CO	12 18S 27E D	6295	D&A	3/16/1980
		FEDERAL EA NO. 3	330N 380W		O	3/16/1980
859	30-015-25738	HARLOW ENTERPRISES LLC	12 18S 27E G	1586	ACTIVE	4/25/1987
		COMSTOCK FEDERAL #009	2310N 2310E		O	
860	30-015-25270	BILL MILLER	12 18S 27E F	1600	ACTIVE	4/23/1985
		CHUKKA FEDERAL #001	2310N 2310W		O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
861	30-015-20894	NAVAJO REFINING COMPANY WDW #002	12 18S 27E E 1980N 660W	10372	ACTIVE I	7/18/1973
862	30-015-00874	HARLOW ENTERPRISES LLC COMSTOCK FEDERAL #007	12 18S 27E J 2310S 2355E	3664	ACTIVE O	6/29/1948
863	30-015-00872	MCKEE-JONES MAGRUDER NO. 1	12 18S 27E L 310S 990W	594	D&A O	2/18/1943
864	30-015-25201	HARLOW ENTERPRISES LLC COMSTOCK FEDERAL #002	12 18S 27E K 1650S 1770W	1600	ACTIVE O	3/16/1985
865	30-015-25649	FRED POOL DRILLING CO COMSTOCK FEDERAL NO. 8	12 18S 27E L 1650S 990W	2000	D&A O	10/10/1986
866	30-015-25545	HARLOW ENTERPRISES LLC COMSTOCK FEDERAL #003	12 18S 27E M 990S 990W	1530	ACTIVE O	5/19/1986
867	30.015-00873	R.E. McKEE ET AL MAGRUDER #2	12 18S 27E M	2510	P&A	2/27/1945 2/27/1945
868	30-015-26017	EASTLAND OIL CO COMSTOCK FEDERAL #010	12 18S 27E N 990S 1650W	2040	P&A O	1/23/2003 1/23/2003
869	30-015-25100	HARLOW ENTERPRISES LLC COMSTOCK FEDERAL #001	12 18S 27E N 330S 1650W	2400	ACTIVE O	12/10/1984
870	30-015-25202	HARLOW ENTERPRISES LLC COMSTOCK FEDERAL #005	12 18S 27E O 330S 2310E	1625	ACTIVE O	4/19/1985
871	30-015-06171	PILCHER OIL & GAS MICHAEL CRONIN NO. 3	12 18S 27E I 1069S 251E	2200	P&A O	5/20/2026
872		PILCHER OIL & GAS MICHAEL CRONIN #1	12 18S 27E P	2002	P&A	2/15/1932 2/15/1932
873	30-015-00875	CITIES SERVICE OIL CO MAGRUDER NO. B-4	12 18S 27E P 330S 330E	2000	P&A O	7/30/1952 7/30/1952
874	30-015-00876	ROBERT E MCKEE MAGRUDER NO. 5	12 18S 27E P 100S 500E	1994	P&A O	2/8/1954 2/8/1954

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
875	30-015-06170	PILCHER OIL & GAS	12 18S 27E P	2004	P&A	
		MICHAEL CRONIN NO. 2	200S 200E		O	2/22/2026
876	30-015-01200	HASSENFUSH-DONNELLY	13 18S 27E A	2030	P&A	
		STATE NO. 1	0 0		O	1/1/2026
877	30-015-06137	EASTLAND OIL CO	13 18S 27E A	2696	D&A	
		STATE NO. 2	250N 990E		O	1/1/2026
878	30-015-25394	BILL MILLER	13 18S 27E C	1613	ACTIVE	9/28/1985
		ARTESIA STATE #002	330N 2310W		O	
879	30-015-25241	BILL MILLER	13 18S 27E C	1575	ACTIVE	4/13/1985
		ARTESIA STATE #001	330N 1650W		O	
880	30-015-00884	DALE RESLER	13 18S 27E C	2047	P&A	1/29/1945
		STATE NO. 3	990N 1650W		O	1/29/1945
881	30-015-25370	CBS OPERATING CORP	13 18S 27E D	1608	ACTIVE	8/27/1985
		ARTESIA STATE UNIT #002A	480N 940W		O	
882	30-015-00883	CBS OPERATING CORP	13 18S 27E D	1950	ACTIVE	12/11/1944
		ARTESIA STATE UNIT #001	990N 990W		O	
883	30-015-00880	DALE RESLER - JONES	13 18S 27E E	2353	P&A	1/26/1945
		STATE NO. 1	1650N 990W		O	1/26/1945
884	30-015-24881	DAVID G HAMMOND	13 18S 27E F	3020	ACTIVE	6/18/1984
		ANADARKO 13 FEDERAL #001	1880N 1830W		O	
885	30-015-00888	RALPH NIX & JERRY CURTIS	13 18S 27E F	2000	P&A	11/28/1954
		PAGE NO. 1	1980N 1650W		O	11/28/1954
886	30-015-00879	DALE RESLER	13 18S 27E F	2000	D&A	3/14/1945
		JONES-GOVT NO. 1	2310N 1650W		O	3/14/1945
888	30-015-25078	DICKSON PETROLEUM, INC	13 18S 27E G	2150	D&A	12/30/1984
		ANADARKO 13 FEDERAL NO. 1	1724N 2279E		O	12/30/1984
895	30-015-00891	ANADARKO PETROLEUM CORP	14 18S 27E A	2060	P&A	6/30/1944
		ARTESIA STATE UNIT TRACT 4 NO. 1	990N 330E		O	6/30/1944

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896	30-015-00893	RESLER	14 18S 27E G	2375	D&A	1/1/1900
		STATE NO. 1	1650N 1650E		O	1/1/1900
897	30-015-00895	CBS OPERATING CORP	14 18S 27E H	1888	ACTIVE	2/8/1945
		ARTESIA STATE UNIT #001B	1650N 330E		O	
901	30-015-00695	WILLIAM & EDWARD HUDSON	1 18S 27E L	1763	D&A	6/18/1948
		HILL NO. 1	1650S 330W		O	6/18/1948
910	30-015-00744	COMPTON-SMITH	2 18S 27E J	1080	P&A	
		STATE 1	2310S 1640E		O	
911	30-015-31123	SOUTHWESTERN ENERGY PRODUCTION C	36 17S 27E H	10050	ACTIVE	
		NO BLUFF 36 STATE COM #002	1980N 760E		G	
912	30-015-31036	ASPEN OIL COMPANY	36 17S 27E H	614	ACTIVE	
		GATES STATE #003	2310N 990E		O	
916	30-015-31592	ROJO GRANDE COMPANY LLC	36 17S 27E N	612	P&A	12/21/2001
		RAMAPO #007	330S 2310E		O	12/21/2001
917	30-015-30784	SDX RESOURCES INC	31 17S 28E A	3300	ACTIVE	
		NW STATE #012	330N 480E		O	
918	30-015-30893	SDX RESOURCES INC	31 17S 28E A	2808	ACTIVE	
		NW STATE #028	973N 959E		O	
919	30-015-32162	SDX RESOURCES INC	31 17S 28E D	3460	ACTIVE	4/3/2003
		ENRON STATE #004	460N 990W		O	
920	30-015-30783	SDX RESOURCES INC	31 17S 28E H	3205	ACTIVE	
		NW STATE #011	1650N 330E		O	
921	30-015-30849	SDX RESOURCES INC	31 17S 28E I	3195	ACTIVE	
		NW STATE #009	2310S 270E		O	
922	30-015-30760	SDX RESOURCES INC	31 17S 28E P	3210	ACTIVE	
		NW STATE #010	735S 330E		O	
923	30-015-31920	SDX RESOURCES INC	32 17S 28E D	4030	ACTIVE	
		ENRON STATE #002	990N 990W		O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
924	30-015-30781	SDX RESOURCES INC NW STATE #005	32 17S 28E K 1900S 2146W	3190	ACTIVE I	
925	30-015-30777	SDX RESOURCES INC NW STATE #006	32 17S 28E L 2310S 990W	3204	ACTIVE O	
926	30-015-30685	SDX RESOURCES INC NW STATE #007	32 17S 28E M 990S 990W	3220	ACTIVE O	
927	30-015-30815	SDX RESOURCES INC NW STATE #008	32 17S 28E N 1090S 2126W	3310	ACTIVE I	
928	30-015-32310	MARBOB ENERGY CORP AAO FEDERAL #004	1 18S 27E A 990N 990E	4000	ACTIVE O	5/4/2004
929	30-015-32309	MARBOB ENERGY CORP AAO FEDERAL #003	1 18S 27E B 330N 1690E	4125	ACTIVE O	4/10/2003
930	30-015-32308	MARBOB ENERGY CORP AAO FEDERAL #002	1 18S 27E C 430N 2310W	4150	ACTIVE O	9/19/2002
931	30-015-32307	MARBOB ENERGY CORP AAO FEDERAL #001	1 18S 27E D 330N 990W	3851	ACTIVE O	12/10/2002
932	30-015-22816	ARCO OIL & GAS EMPIRE ABO UNIT L #192	1 18S 27E O 1120S 1440E	6350	ABAN LOCATION O	6/28/1980 6/23/1980
933	30-015-20388	ARCO OIL & GAS EMPIRE ABO #5	1 18S 27E N 990S 2297E	6300	SAME AS 158 O	12/31/9999
934	30-015-27719	MEWBOURNE OIL CO CHALK BLUFF 12 FED #001	12 18S 27E 1650S 990E		ABAN LOCATION G	
935	30-015-27437	YATES PETROLEUM CORPORATION BEAUREGARD ANP STATE COM #001	14 18S 27E B 660N 1980E	0	ABAN LOCATION G	
936	30-015-31086	MARBOB ENERGY CORP LP STATE #001	5 18S 28E E 1650N 990W	4503	P&A O	3/11/2008 3/11/2008
937	30-015-31109	MARBOB ENERGY CORP LP STATE #002	5 18S 28E E 2301N 230W	0	PROPOSED O	

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
938	30-015-30785	SDX RESOURCES INC NW STATE #015	6 18S 28E A 430N 330E	3225	ACTIVE O	
939	30-015-00264	BARNEY COCKBURN CAPITAL STATE NO. 1	6 18S 28E J 2310S 2310E	2095	SAME AS 114 O	5/23/1979
940	30-015-31087	MARBOB ENERGY CORP LP STATE #003	6 18S 28E M 990S 330W	4466	P&A O	7/15/2000 3/17/2008
941	30-015-31088	MARBOB ENERGY CORP LP STATE #004	6 18S 28E M 330S 990W	0	PROPOSED O	
942	30-015-06250	BP AMERICA PRODUCTION COMPANY	6 18S 28E O 470S 2170E	0	SAME AS 89 O	
943	30-015-31319	EASTLAND OIL CO LAUREL STATE #003	7 18S 28E E 2310N 330W	1630	ACTIVE O	1/31/2001
944	30-015-26575	NAVAJO REFINING COMPANY WDW-3 (ORIGINAL LOC.)	6 18S 28E D 778N 995W		ACTIVE I	
945	30-015-32959	MARBOB ENERGY CORP AAO FEDERAL #005	1 18S 27E E 1650N 875W	3900	ACTIVE O	10/12/2004
946	30-015-33473	MARBOB ENERGY CORP AAO FEDERAL #007	1 18S 27E G 1750N 1650S	4100	ACTIVE O	4/4/2005
947	30-015-33784	MARBOB ENERGY CORP AAO FEDERAL #008	1 18S 27E H 1650N 330W	4310	ACTIVE O	2/25/2005
948	30-015-34071	MARBOB ENERGY CORP AAO FEDERAL #006	1 18S 27E F 2169N 1963W	4000	ACTIVE O	8/5/2005
949	30-015-34387	MARBOB ENERGY CORP AAO FEDERAL #009	1 18S 27E L 1980S 630W	3950	ACTIVE O	1/17/2006
950	30-015-34555	MARBOB ENERGY CORP AAO FEDERAL #011	1 18S 27E M 890S 660W	4100	ACTIVE O	3/9/2006
951	30-015-34576	MARBOB ENERGY CORP AAO FEDERAL #010	1 18S 27E K 2060S 2160W	4000	ACTIVE O	10/26/2006

ID NO	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
952	30-015-34998	MARBOB ENERGY CORP AAO FEDERAL #012	1 18S 27E N 890S 1650W	4075	ACTIVE O	9/21/2006
953	30-015-34028	BP AMERICA PRODUCTION COMPANY SLIDER 6 STATE NO. 001	6 18S 28E G 2285N 1366E	10433	P&A O	12/17/2006 12/17/2006
954	30-015-35050	SDX RESOURCES INC ENRON STATE NO 012	32 17S 28E D 330N 500W	3810	ACTIVE O	12/21/2006
955	30-015-34632	YATES PETROLEUM CORP VIOLET BIV STATE COM #1	14 18S 27E A 660N 990E	10500	EXT PERMIT TO DRILL O	2/20/2009
956	30-015-33994	EDGE PETROLEUM OPERATING COMPANY, RED LAKE 36 A STATE #2	36 17S 27E A 915N 420E	3650	ACTIVE O	4/20/2005
957	30-015-36116	FAIRWAY RESOURCES OPERATING LLC SOUTH RED LAKE UNIT II #57	36 17S 27E G 2305N 1650E	2100	PERMIT TO DRILL O	3/1/2008
958	30-015-32946	MARBOB ENERGY CORPORATION SCBP STATE #1	2 18S 27E J 2210S 1650E	3880	ACTIVE O	4/26/2005
959	30-015-35814	MACK ENERGY CORPORATION STATE H NO 2	2 18S 27E H 2063N 441E	7545	ACTIVE O	1/11/2008

TABLE VIII

Well Changes in the Combined One Mile Area of Review for Navajo's WDW-1, WDW-2, and WDW-3

ID	API No.	Unit	Sect	Town	Range	Footages	Well Name	Operator	Changes
1	30 015 00693	A	36	17S	27E	330 FNL & 330 FEL	Delhi No 001	Aspen Oil Inc	Change of Owner: Pronghorn Management Corp to Aspen Oil Company Inc.
3	30 015 00646	A	36	17S	27E	990 FNL & 330 FEL	Delhi No 007	Aspen Oil Inc	Change of Owner: Pronghorn Management Corp to Aspen Oil Company Inc. Recomp Well:
4	30 015 00668	G	36	17S	27E	1650 FNL & 2310 FEL	South Red Lake II Unit #10	Fairway Resources Operating LLC	Change of Owner: McQuadrangle LC to Fairway Resources Operating LLC
5	30 015 00690	G	36	17S	27E	1830 FNL & 2205 FEL	Conklin No 2	Aspen Oil Inc	Change of Owner: Pronghorn Management Corp to Aspen Oil Company Inc.
6	30 015 00667	G	36	17S	27E	2310 FNL & 2310 FEL	South Red Lake II Unit #11	Fairway Resources Operating LLC	Change of Owner: McQuadrangle LC to Fairway Resources Operating LLC
7	30 015 00666	G	36	17S	27E	2310 FNL & 2310 FEL	Conklin State #1	Aspen Oil Inc	Change of Owner: Pronghorn Management Corp to Aspen Oil Company Inc. P&A Well: Fill hole to surf with concrete
8	30 015 00689	H	36	17S	27E	1650 FNL & 330 FEL	Gates State #1	Aspen Oil Inc	Change of Owner: CE Larle & BM Muncy JR to Aspen Oil Company Inc.
9	30 015 00647	H	36	17S	27E	1650 FNL & 990 FEL	Gates State #2	Aspen Oil Inc	P&A Well: 7" Casing pulled from 120. The hole was filled from 380' to surf with 29 cuyd of concrete
10	30 015 00669	H	36	17S	27E	2310 FNL & 330 FEL	Homan #1	Aspen Oil Inc	Change of Owner: Pronghorn Management Corp to Aspen Oil Company Inc. P&A Well: cmt plug 1450'-1400, cir cmt plug 580'-surf
26	30 015 00683	N	36	17S	27E	965 FSL & 1650 FWL	South Red Lake II Unit #28	Fairway Resources Operating LLC	Change of Owner: McQuadrangle LC to Fairway Resources Operating LLC
27	30 015 01218	N	36	17S	27E	330 FSL & 2310 FWL	Empire Abo Unit No. 18	BP America Production Company	T&A Well: Tested Casing to 500 psi w/CIBP 5846'+35' cmt, bad casing 5552'-5560'
34	30 015 21594	B	31	17S	28E	330 FNL & 1650 FEL	Powco State No 001	Finney Oil Company	Change of Owner Rodney B. Webb dba Webb Oil Co to Darrel Finney dba Finney Oil Company
36	30 015 25621	B	31	17S	28E	980 FNL & 1620 FEL	Powco State No 002	Finney Oil Company	Change of Owner Rodney B. Webb dba-Webb Oil Co to Darrel Finney dba Finney Oil Company
37	30 015 01633	D	31	17S	28E	330 FNL & 330 FWL	Aston & Fair A No 001	Aspen Oil Inc	Put back into Prod.
43	30 015 01635	F	31	17S	28E	2310 FNL & 2310 FWL	Aston & Fair No 001Y	Aspen Oil Inc	Recomp Well: New Perf at 590'-600'
44	30 015 01637	G	31	17S	28E	2310 FNL & 2310 FEL	Malco State No 001	Aspen Oil Inc	Recomp Well: New Perf at 610'-615'
50	30 015 01650	J	31	17S	28E	1650 FSL & 1958 FWL	Empire ABO Unit No. 023A	BP America Production Company	P&A Well: CIBP 5563'+8 sks cmt+ mud 9.5 ppg, 25 sks cmt plug 2997'-3230', 25 sks cmt plug 1060' to 1290', 25 sks cir cmt 370' to surf
55	30 015 01647	M	31	17S	28E	660 FSL & 660 FWL	Empire ABO Unit No. 021	BP America Production Company	P&A Well: CIBP 5726'+35' sks cmt+ mud 9.5 ppg, 25 sks cmt plug 3608'-3708', 25 sks cmt plug 946' to 1046', 25 sks cmt plug 400' to 500', 10 sks cmt plug+sqz 60' to surf
56	30 015 01646	N	31	17S	28E	660 FSL & 2082 FEL	Empire ABO Unit No. 22A	BP America Production Company	Put back into Prod.
66	30 015 10818	K	32	17S	28E	2310 FSL & 2105 FWL	Northwest Artesia Unit No 008	SDX Resources Inc	P&A Well: CIBP 1800'+25 sks cmt+ mud 9 ppg, 35 sks cmt plug+sqz 1240'-1080', 70 sks cmt plug+sqz 512' to 200', 15 sks cmt plug+sqz 60' to surf
68	30 015 10795	L	32	17S	28E	2310 FSL & 660 FWL	Northwest Artesia Unit No. 009	SDX Resources Inc	Well put back into Prod: Producing from Same Zone
72	30 015 10834	N	32	17S	28E	990 FSL & 2030 FWL	Northwest Artesia Unit No. 013	SDX Resources Inc	P&A Well: CIBP 1856'+25 sks cmt+ mud 9 ppg, 35 sks cmt plug+sqz
73	30 015 01659	N	32	17S	28E	660 FNL & 1980 FWL	Empire ABO Unit No. 026A	BP America Production Company	Recomp Well: New Perf in ABO 5651'-6118'
74	30 015 21539	N	32	17S	28E	150 FSL & 1400 FWL	Empire ABO Unit No. 261	BP America Production Company	Recomp Well: New Perf in ABO 5690'-5954'
75	30 015 22009	O	32	17S	28E	330 FSL & 2481 FWL	Empire ABO Unit No. 272	BP America Production Company	Recomp Well: New Perf in ABO 5714'-6120'
76	30 015 02606	C	05	18S	28E	330 FNL & 1941 FWL	Empire ABO Unit No. 026E	BP America Production Company	Recomp Well: New Perf in ABO 5662'-5907'
78	30 015 02607	D	05	18S	28E	660 FNL & 660 FWL	Empire ABO Unit No. 025C	BP America Production Company	Recomp Well: New Perf in ABO 5760"
80	30 015 02608	E	05	18S	28E	1660 FNL & 330 FWL	State E Al No 001	Conoco Phillips Company	P&A Well: CIBP 6000'+20 sks cmt+ mud, 25 sks cmt plug 3642'-3542', 45 sks cmt plug+sqz 3380'-3249', 45 sks cmt plug+sqz 1199'-1065', 25 sks cmt plug+sqz 900', 175 sks cmt cir 500' to surf, 85 sks cmt sqz 100' to surf
88	30 015 02615	A	06	18S	28E	660 FNL & 660 FEL	Empire ABO Unit No. 24B	BP America Production Company	Recomp Well: PBTD 6205' CIBP 6091', New Perf in ABO 5794'-5924'
90	30 015 21542	B	06	18S	28E	1260 FNL & 1580 FEL	Empire ABO Unit No 231	BP America Production Company	Recomp Well: PBTD 6222' New Perf in ABO 5850'-6018'
94	30 015 23116	E	06	18S	28E	2050 FNL & 100 FWL	Empire ABO Unit No. 213	BP America Production Company	Recomp Well: New Perf in ABO 5606'-5796'
96	30 015 22637	E	06	18S	28E	2450 FNL & 400 FWL	Empire ABO Unit No 212	BP America Production Company	Recomp Well: PBTD 6203' New Perf in ABO 5588'-6080'

TABLE VIII

Well Changes in the Combined One Mile Area of Review for Navajo's WDW-1, WDW-2, and WDW-3

ID	API No.	Unit	Sect	Town	Range	Footages	Well Name	Operator	Changes
106	30 015 02614	G	06	18S	28E	1980 FNL & 1980 FEL	Empire ABO Unit No. 23B	BP America Production Company	Recomp Well: PBTD 6240', New Perf in ABO 5842'-6142'
109	30 015 22490	G	06	18S	28E	2550 FNL & 2050 FEL	Empire ABO Unit No 233	BP America Production Company	Test Well Casing and TA
112	30 015 02617	I	06	18S	28E	2310 FSL & 990 FEL	Empire ABO Unit No. 24K	BP America Production Company	P&A Well: CIBP 6220'+25 sks cmt, 25sks cmt plug+sqz 3642'-3395', 160sks cmt plug+sqz 771'-220', cir 35sks cmt fom 60' to surf
113	30 015 22528	J	06	18S	28E	2300 FSL & 1570 FEL	Empire ABO Unit No 232A	BP America Production Company	Test Well Casing and TA
115	30 015 02628	J	06	18S	28E	2260 FSL & 2270 FEL	Empire ABO Unit No. 23D	BP America Production Company	Recomp Well: PBTD 6300' CIBP 6074', New Perf in ABO 5918'-6030'
116	30 015 22491	J	06	18S	28E	1700 FSL & 2350 FEL	Empire ABO Unit No 231B	BP America Production Company	Test Well Casing and TA
122	30 015 23548	L	06	18S	28E	1950 FSL & 1000 FWL	Empire ABO Unit No. 211A	BP America Production Company	Resumed Production
133	30 015 00710	C	01	18S	27E	991 FSL & 660 FWL	Empire ABO Unit No 018C	BP America Production Company	P&A Well: CIBP 5360'+25 sks cmt+9.5 ppg mud, 25sks cmt plug 3350'-2990', 25sks cmt plug 1615'-1255', 25sks cir cmt plug 360' surf
145	30 015 00697	I	01	18S	27E	1980 FSL & 660 FWL	Empire ABO Unit No. 020K	BP America Production Company	P&A Well: CIBP 5840'+25 sks cmt, 35sks cmt plug+sqz 3039'-2737', 50sks cmt plug+sqz 2300'-1425', cir 95sks cmt to surf
153	30 015 21554	K	01	18S	27E	1387 FSL & 1440 FWL	Empire ABO Unit No. 181	BP America Production Company	P&A Well: CIBP 5940'+25 sks cmt+9.5 ppg mud, 25sks cmt plug 3000'-2900', 25sks cmt plug 1050'-950', 10sks cir cmt plug 60' surf
156	30 015 00713	N	01	18S	27E	995 FSL & 1644 FWL	Empire ABO Unit No. 018D	BP America Production Company	P&A Well: CIBP 5934'+25 sks cmt+9.5 ppg mud, 25sks cmt plug 3788'-3688', 25sks cmt plug 1520'-1420', 25sks sqz cmt plug 635'-535', cir cmt 60'-surf
161	30 015 26404	A	12	18S	27E	660 FNL & 990 FEL	Federal T #1	Devon Energy Production Company, LP	Change of Owner: Mewbourne Oil Co to Devon Energy Production Company LP
162	30 015 25099	H	12	18S	27E	1809 FNL & 990 FEL	Comstock Federal No 6	Harlow Enterprises LLC	Change of Owner Eastland Oil Co to Harlow Enterprises LLC
355	30 015 00676	M	36	17S	27E	330 FSL & 990 FWL	Empire Abo Unit No. 17	BP America Production Company	Prod: Return well to production
356	30 015 10184	M	36	17S	27E	330 FSL & 920 FWL	State No 6	Aspen Oil Inc	Change of Owner: Pronghorn Management Corp to Aspen Oil Company Inc.
358	30 015 21623	M	36	17S	27E	360 FSL & 455 FWL	State No 7	Aspen Oil Inc	Change of Owner: Pronghorn Management Corp to Aspen Oil Company Inc.
748	30 015 00715	D	01	18S	27E	330 FNL & 330 FWL	S Red Lake II Unit No 037	Fairway Resources Operating LLC	Change of Owner: McQuadrangle LC to Fairway Resources LLC
752	30 015 00703	L	01	18S	27E	1980 FSL & 660 FWL	Empire ABO Unit No. 017A	BP America Production Company	Recomp Well: PBD 6101', CIBP 5823', New Vert Perf in Abo 5472'-5736'
756	30 015 00705	M	01	18S	27E	660 FNL & 1980 FWL	Empire ABO Unit No 017B	BP America Production Company	P&A Well: CIBP 6000'+25 sks cmt+9.5 ppg mud, 25sks cmt plug 3707'-3607', 25sks cmt plug 1446'-1546', 35sks cir cmt plug surf-654'
758	30 015 00721	A	02	18S	27E	330 FNL & 990 FEL	Red Lake Unit II No 36	Fairway Resources Operating LLC	Change of Owner: McQuadrangle LC to Fairway Resources Operating LLC
765	30 015 00724	A	02	18S	27E	990 FNL & 330 FEL	Empire Abo Unit No. 16B	BP America Production Company	Recomp Well: New Perf in ABO 5444'-5786'
766	30 015 00737	B	02	18S	27E	905 FNL & 1610 FEL	South Red Lake II Unit #38	Fairway Resources Operating LLC	Change of Owner: McQuadrangle LC to Fairway Resources Operating LLC Recomp Well: Plugback 75 sks cmt 1430'-1530' & complete in Grayburg
772	30 015 00745	H	02	18S	27E	1980 FNL & 660 FEL	State H No 1	Mack Energy Corporation	Change of Owner: H&S Oil LLC to Mack Energy Corporation P&A Well: CIBP 5300'+35 sks cmt+ mud 9.5 ppg, 25 sks cmt plug 2872'-2504', 25 sks cmt plug 1267' to 899', 15 sks cmt plug 164' to surf
786	30 015 00716	J	02	18S	27E	1980 FSL & 1980 FEL	Empire Abo Unit No. 15	BP America Production Company	Recomp Well: New Perf in ABO 5348'-6000'
800	30 015 22808	O	02	18S	27E	600 FSL & 1330 FEL	Empire Abo Unit No. 156	BP America Production Company	T&A Well: Tested Casing to 580 psi w/Packer @ 5854'
812	30 015 00730	N	02	18S	27E	660 FSL & 1980 FWL	Empire Abo Unit No 14	BP America Production Company	Recomp Well: New Perf in ABO 5815'-6040'
836	30 015 00869	A	11	18S	27E	330 FNL & 653 FEL	Empire Abo Unit No. 16C	BP America Production Company	P&A Well: CIBP 6130'+35 sks cmt+ mud 9.5 ppg, 25 sks cmt plug+sqz 3186'-3586', 140 sks cmt plug+sqz 595' to 1585', 35 sks cmt plug+sqz surf to 435'
837	30 015 22568	B	11	18S	27E	400 FNL & 1450 FEL	Empire Abo Unit No. 151B	BP America Production Company	P&A Well: CIBP 6050'+25 sks cmt+ mud 9.5 ppg, 25 sks cmt plug 4054'-3810', 25 sks cmt plug 3470' to 3243', 25 sks cmt plug 1060' to 810', 50 sks cmt plug+sqz 460' to surf
838	30 015 22838	B	11	18S	27E	200 FNL & 1925 FEL	Empire Abo Unit No. 153B	BP America Production Company	Return to Prod: Lower Abo 6124'-6142'
839	30 015 00868	B	11	18S	27E	660 FNL & 1980 FEL	Empire Abo Unit No. 15C	BP America Production Company	P&A Well: CIBP 6050'+10 sks cmt+ mud 9.5 ppg, 35 sks cmt plug+sqz 5300'-5100', 35 sks cmt plug+sqz 3770' to 3516', 170 sks cmt plug+sqz 1000' to 750', 140 sks cmt plug+sqz 645' to 500', 10 sks cmt plug+sqz 60' to surf
841	30 015 22834	C	11	18S	27E	225 FNL & 2280 FWL	Empire Abo Unit No. 141B	BP America Production Company	Recomp Well: New Perf in ABO 5961'-6030'
843	30 015 22833	D	11	18S	27E	450 FNL & 1175 FWL	Empire Abo Unit No. 133B	BP America Production Company	Recomp Well: New Perf in ABO 5966'-6064'

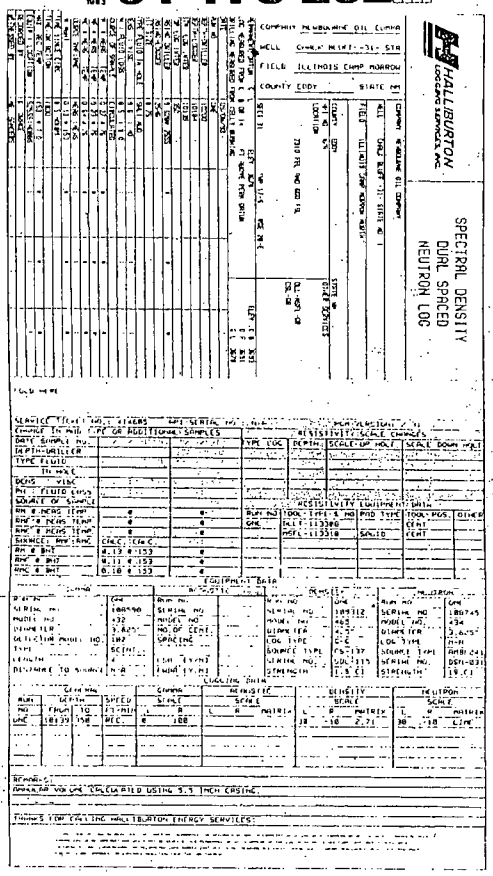
TABLE VIII

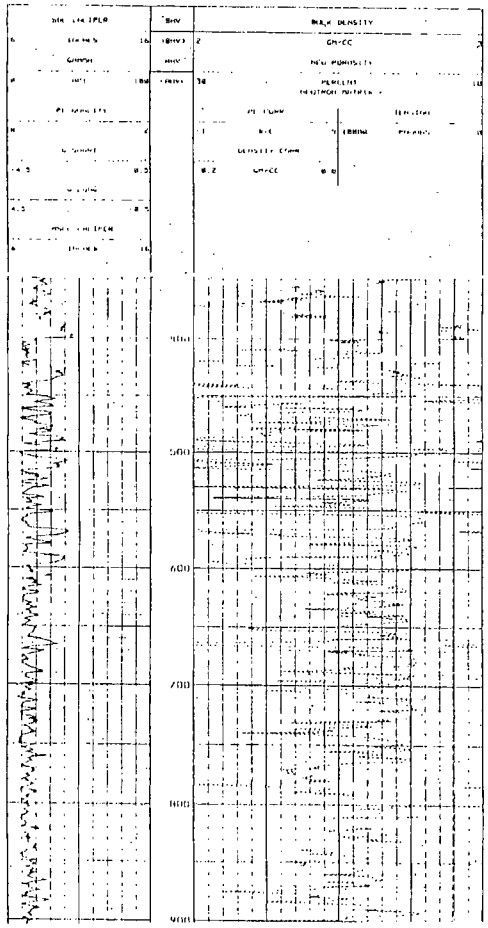
Well Changes in the Combined One Mile Area of Review for Navajo's WDW-1, WDW-2, and WDW-3

ID	API No.	Unit	Sect	Town	Range	Footages	Well Name	Operator	Changes
855	30 015 24857	M	11	18S	27E	700 FSL & 990 FWL	Federal DH Gas Com No 1	Chesapeake Operating Inc	Change of Owner: Ricks Exploration Inc to Concho Exploration Inc. to Chesapeake Operating Inc
859	30 015 25738	G	12	18S	27E	2310 FNL & 2310 FEL	Comstock Federal No 9	Harlow Enterprises LLC	Change of Owner Eastland Oil Co to Harlow Enterprises LLC
860	30 015 25270	F	12	18S	27E	2310 FNL & 2310 FWL	Chukka Federal No 1	Bill Miller	Change of Owner Eastland Oil Co to Bill Miller
862	30 015 00874	J	12	18S	27E	2310 FSL & 2355 FEL	Comstock Federal No 7	Harlow Enterprises LLC	Change of Owner Eastland Oil Co to Harlow Enterprises LLC
864	30 015 25201	K	12	18S	27E	1650 FSL & 1770 FWL	Comstock Federal No 2	Harlow Enterprises LLC	Change of Owner Eastland Oil Co to Harlow Enterprises LLC
866	30 015 25545	M	12	18S	27E	990 FSL & 990 FWL	Comstock Federal No 3	Harlow Enterprises LLC	Change of Owner Eastland Oil Co to Harlow Enterprises LLC
868	30 015 26017	N	12	18S	27E	990 FSL & 1650 FWL	Comstock Federal No 10	Eastland Oil Company	P&A Well: CIBP 1434'+25 sks cmt 1150' + mud 9.3 ppg, 40 sks cmt plug 592'-surf
869	30 015 25100	N	12	18S	27E	330 FSL & 1650 FWL	Comstock Federal No 1	Harlow Enterprises LLC	Change of Owner Eastland Oil Co to Harlow Enterprises LLC
870	30 015 25202	O	12	18S	27E	330 FSL & 2310 FEL	Comstock Federal No 5	Harlow Enterprises LLC	Change of Owner Eastland Oil Co to Harlow Enterprises LLC
878	30 015 25394	C	13	18S	27E	330 FNL & 2310 FWL	Artesia State 002	Bill Miller	Change of Owner Eastland Oil Co to Bill Miller
879	30 015 25241	C	13	18S	27E	330 FNL & 1650 FWL	Artesia State 001	Bill Miller	Change of Owner Eastland Oil Co to Bill Miller
912	30 015 31036	H	36	17S	27E	231 FNL & 990 FEL	Gates State No 3	Aspen Oil Inc	Change of Owner CE Lane & BM Muncy JR to Aspen Oil Company Inc Recomp Well
919	30 015 32162	D	31	17S	28E	460 FNL & 990 FWL	Enron State No 004	SDX Resources Inc.	Recomp Well: New Perf at 2080'-2298'
924	30 015 30781	K	32	17S	28E	1900 FSL & 2146 FWL	NW State No. 005	SDX Resources Inc.	Conv to SWD: New Perf at 2464'-2674'
927	30 015 30815	N	32	17S	28E	1090 FSL & 2126 FWL	NW State No. 008	SDX Resources Inc.	Conv to SWD:
928	30 015 32310	A	01	18S	27E	990 FNL & 990 FEL	AAO Federal No 004	Marbob Energy Corp.	Recomp Well: New Perf San Andres 2134'-2849'
929	30 015 32309	2	01	18S	27E	330 FNL & 1690 FEL	AAO Federal No 003	Marbob Energy Corp.	Recomp Well: New Perf San Andres 2092'-2807'
930	30 015 32308	3	01	18S	27E	430 FNL & 2310 FWL	AAO Federal No 002	Marbob Energy Corp.	Recomp Well: New Perf San Andres 1967'-3115', Old Perf Glorieta 3373'-3699'
931	30 015 32307	4	01	18S	27E	330 FNL & 990 FWL	AAO Federal No 001	Marbob Energy Corp.	Recomp Well: CIBP 3250', New Perf in San Andres 2356'-2900'; 2974'-3071'
936	30 015 31086	E	05	18S	28E	1650 FNL & 990 FWL	LP State No. 001	Marbob Energy Corp.	P&A Well: CIBP 3685'+25 sks cmt+ mud 9 ppg, 25 sks cmt plug 2167'-1831', 25 sks cmt plug 619' to 60', 15 sks cmt plug 60' to surf
940	30 015 31087	M	06	18S	28E	990 FSL & 330 FWL	LP State No. 003	Marbob Energy Corp.	P&A Well: CIBP 3750'+25 sks cmt 3043', CIBP 3200'&1700', CIBP 1460'+25 sks cmt, CIBP 620'+65sks cmt plug to surf
944	30 015 26575	N	01	18S	27E	790 FSL & 2250 FWL	Chalk Bluff Fed Com 1 / WDW-3	Navajo Refining Co. Pipeline Division	Well Completed in the Wolfcamp 7660'-8620' Injecting
945	30 015 32959	E	01	18S	27E	1650 FNL & 875 FWL	AAO Federal No 005	Marbob Energy Corp.	NEW ~4000'
946	30 015 33473	G	01	18S	27E	1750 FNL & 1650 FEL	AAO Federal No 007	Marbob Energy Corp.	NEW ~4000'
947	30 015 33784	H	01	18S	27E	1650 FNL & 330 FEL	AAO Federal No 008	Marbob Energy Corp.	NEW ~4000'
948	30 015 34071	F	01	18S	27E	2169 FNL & 1963 FWL	AAO Federal No 006	Marbob Energy Corp.	NEW ~4000'
949	30 015 34387	L	01	18S	27E	1980 FSL & 630 FWL	AAO Federal No 009	Marbob Energy Corp.	NEW ~4000'
950	30 015 34555	M	01	18S	27E	890 FSL & 660 FWL	AAO Federal No 011	Marbob Energy Corp.	NEW ~4000'
951	30 015 34576	K	01	18S	27E	2060 FSL & 2160 FWL	AAO Federal No 010	Marbob Energy Corp.	NEW ~4000'
952	30 015 34998	N	01	18S	27E	890 FSL & 1650 FWL	AAO Federal No 012	Marbob Energy Corp.	NEW ~4000'
953	30 015 34028	G	06	18S	28E	2285 FNL & 1366 FEL	Slider 6 State No. 001	BP America Production Company	P&A Well: CIBP 10050'+25 sks cmt 9899', CIBP 7364'+25 sks cmt, 25 sks cmt plug 7364'-7081', 75 sks cmt plug 6909'-6185', 25 sks cmt plug 5361'-5101', 75 sks cmt plug 3640'-2828', 30 sks cmt plug 2600'-2437', 30 sk cmt plug 1596-1475', 155 sks cmt cir 521' to surf
954	30 015 35050	D	32	17S	28E	330 FNL & 500 FWL	Enron State No 012	SDX Resources Inc.	NEW ~4000'
955	30 015 34632	A	14	18S	27E	660 FNL & 990 FEL	Violet BIV State Com 001	Yates Petroleum Corp	NEW: Permit to Drill by 2/20/09
956	30 015 33994	A	36	17S	27E	915 FNL & 420 FEL	Red Lake 36 State No 2	Edge Petroleum Operating Company Inc	NEW ~3650'
957	30 015 36116	G	36	17S	27E	2305 FNL & 1650 FEL	South Red Lake II Unit No 57	Fairway Resources Operating LLC	NEW ~2100'
958	30 015 32946	J	02	18S	27E	2210 FSL & 1650 FEL	SCBP State No 1	Marbob Energy Corp.	NEW ~3880' Perf: 1975'-2664', 3342'-3638'
959	30 015 35814	H	02	18S	27E	2063 FNL & 441 FEL	State H No 2	Mack Energy Corporation	NEW: ~7545' PBTD: 5265' Perf: 6134.5'-6434' w/CIBP 6020' Perf: 5391'-5957.5' w/ CIBP 5300' Perf: 4118.5'-4197'

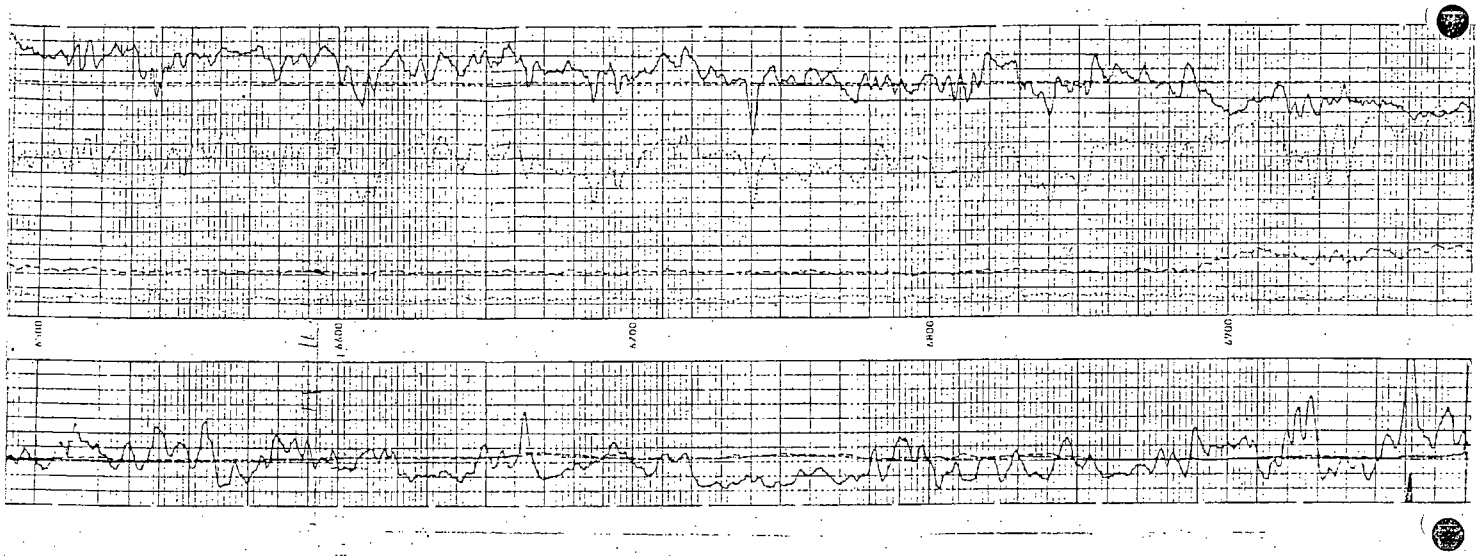
DK-406385

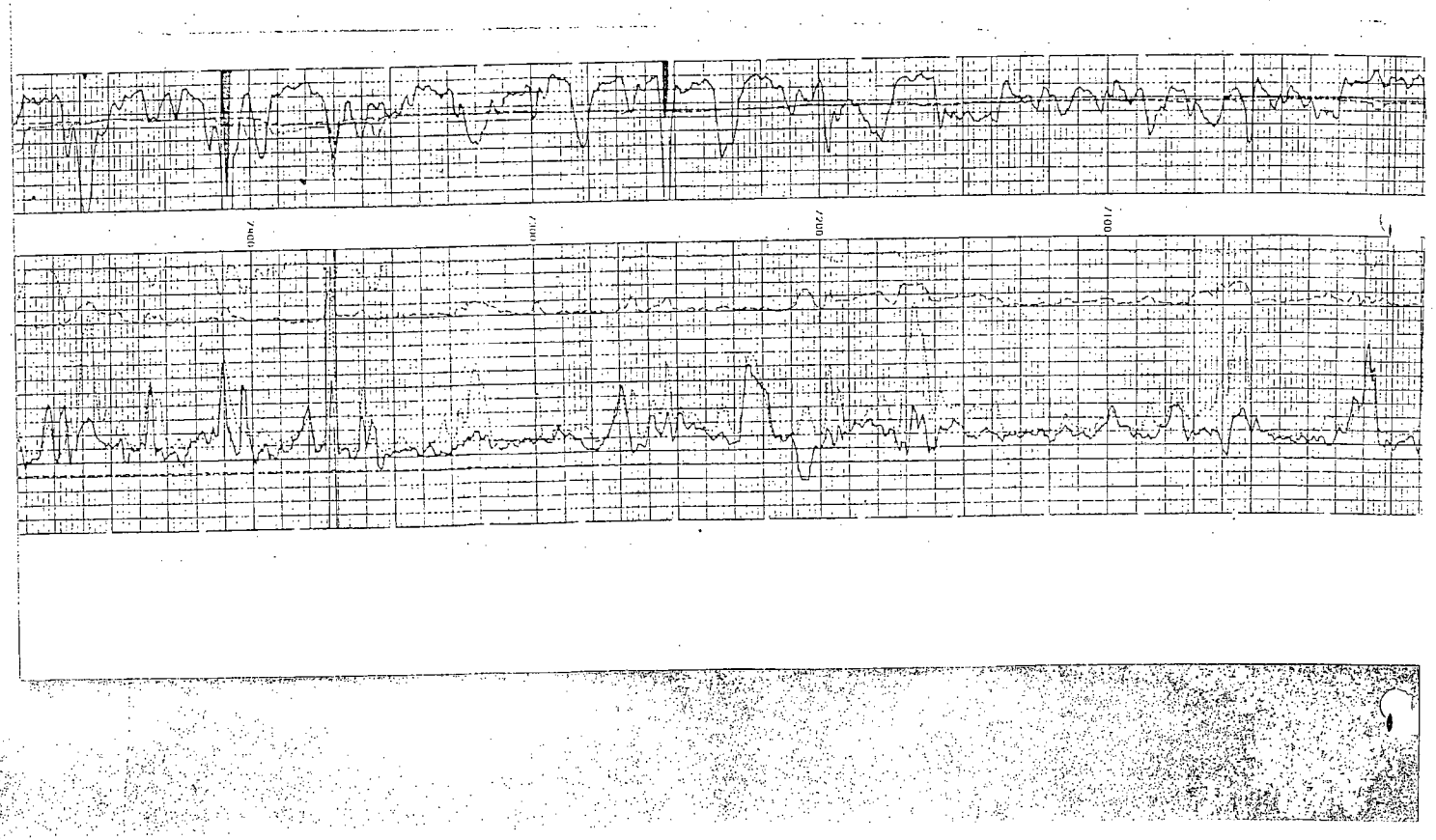
31-17S-28E





APPENDIX J

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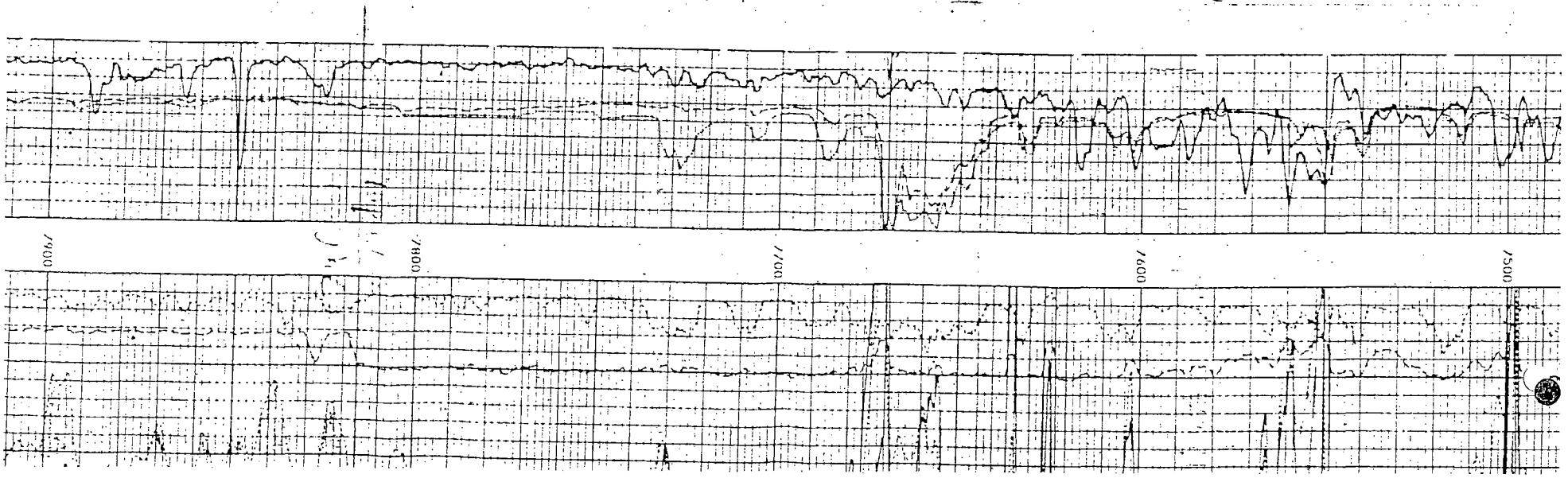
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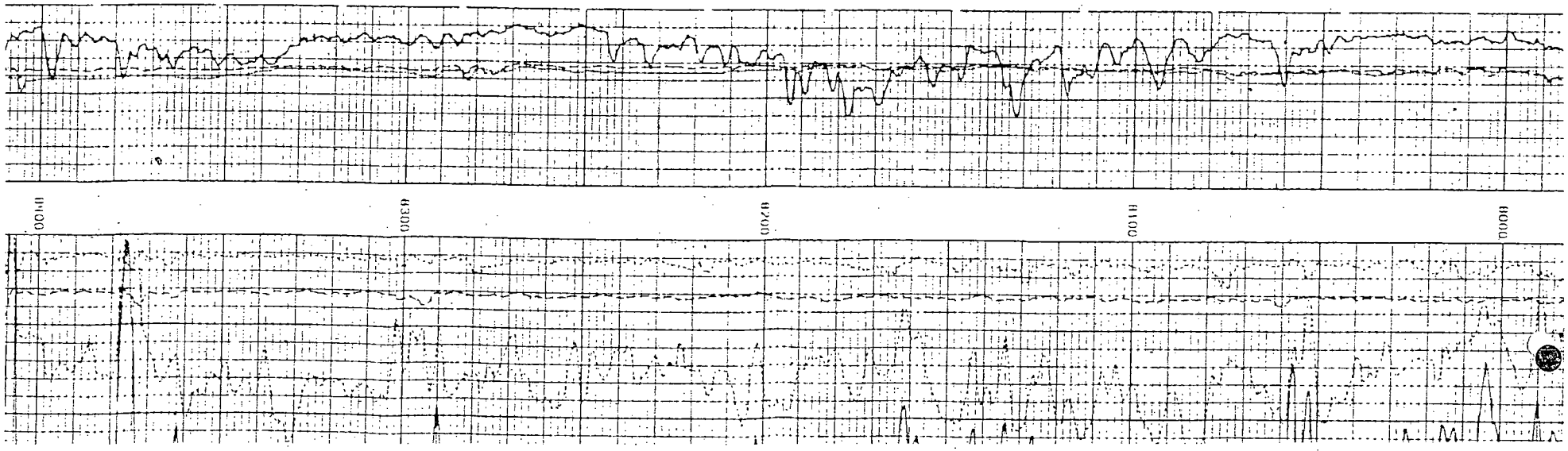
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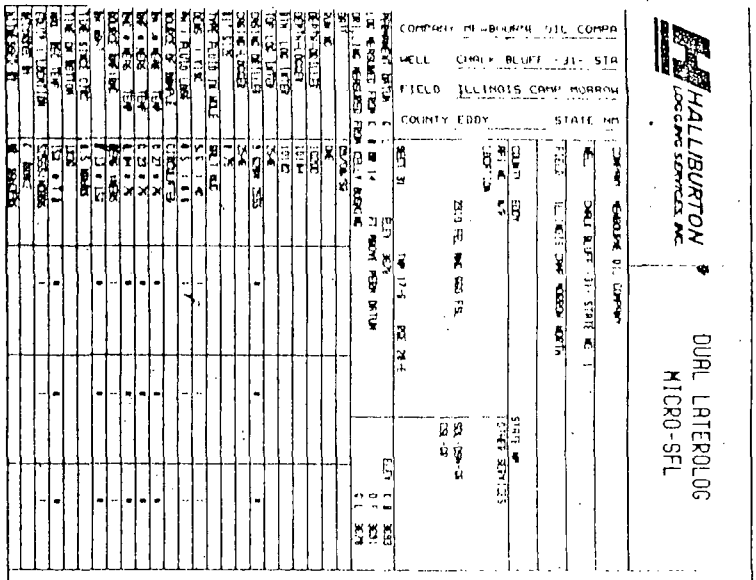
NM-406384

TRACED (c) 1993

31-17S-28E



COMPANY MEWBOURNE OIL COMPA
WELL CINDY BLUFF 31 STA
FIELD ILLINOIS CAMP MORROW
COUNTY EDDY STATE NM

HALLIBURTON LOGGING SERVICES INC.

DUAL LATEROLOG
MICRO-SFL

FOLD HERE

SERVICE TICKET NO.: 414685 API SERIAL NO.: N/A PDS VERSION: 2.31

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLES	/ /	/ /
DATE/SAMPLE NO.		
DEPTH-DRILLER		
TYPE FLUID IN HOLE		
DENS. / VISC	:	:
PH / FLUID LOSS	:	:
SOURCE OF SAMPLE		
RM @ MEAS TEMP	@	@
RMF @ MEAS TEMP	@	@
RMC @ MEAS TEMP	@	@
SOURCE: RMF/RMC	CALC CALC	
RM @ BHT	0.13 @ 153	@
RMF @ BHT	0.11 @ 153	@
RMC @ BHT	0.18 @ 153	@

RESISTIVITY SCALE CHANGES

TYPE LOG	DEPTH	SCALE UP HOLE	SCALE DOWN HOLE

RESISTIVITY EQUIPMENT DATA

RUN NO	TOOL TYPE & NO	PAD TYPE	TOOL POS.	STANDOFF
ONE	DLLT 113308		CENT	
	MSFL 113310	SOLID	CENT	

EQUIPMENT DATA

GAMMA		ACOUSTIC					
RUN NO	ONE	RUN NO					
SERIAL NO	108510	SERIAL NO					
MODEL NO	432	MODEL NO					
DIAMETER	3.625	NO OF CENT.					
DETECTOR MODEL NO	182	SPACING					
TYPE	SCINT						
LENGTH	4'	LSA (Y/N)					
DISTANCE TO SOURCE	N/A	TSPA (Y/N)					

	DLL	MSFL	
SERIAL NO	108510	108510	
MODEL NO	465	466	
DIAMETER	4.5	4.5	1 5/8
COL TYPE	C/O	C/O	1 5/8
LOG TYPE			
SOURCE TYPE	CS 137	CS 137	AMBIENT
SERIAL NO	SDL 115	SERIAL NO	
STRENGTH	1.5 CI	STRENGTH	10 CI

LOGGING DATA

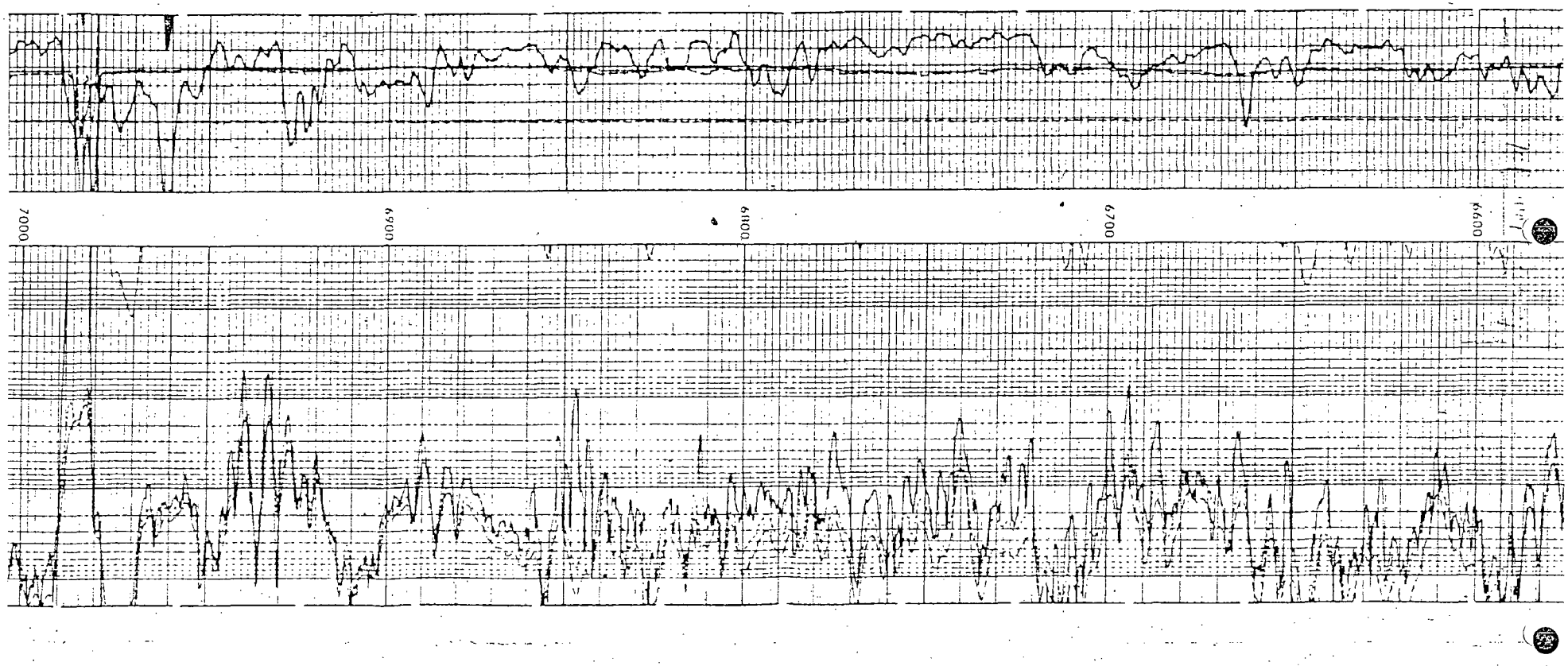
RUN NO	DEPTH FROM	DEPTH TO	SPEED FT/MIN	GAMMA SCALE L	GAMMA SCALE R	ACOUSTIC SCALE L	ACOUSTIC SCALE R	ACOUSTIC MATRIX	DENSITY SCALE L	DENSITY SCALE R	DENSITY MATRIX	NEUTRON SCALE L	NEUTRON SCALE R	NEUTRON MATRIX
ONE	10102	2546	REC	0	100				30	10	2.71	30	-10	LIME

REMARKS:
ANNULAR VOLUME CALCULATED USING 5.5 INCH CASING

THANKS FOR CALLING HALLIBURTON ENERGY SERVICES!

APPENDIX J

SDL CALIPER			DEEP LL		
6	INCHES	16	.2	OHM-M	2000
	GAMMA			SHALLOW LL	
0	API	100	.2	OHM-M	2000
	TENSION				
10000	POUNDS	0			
	MSFL CALIPER				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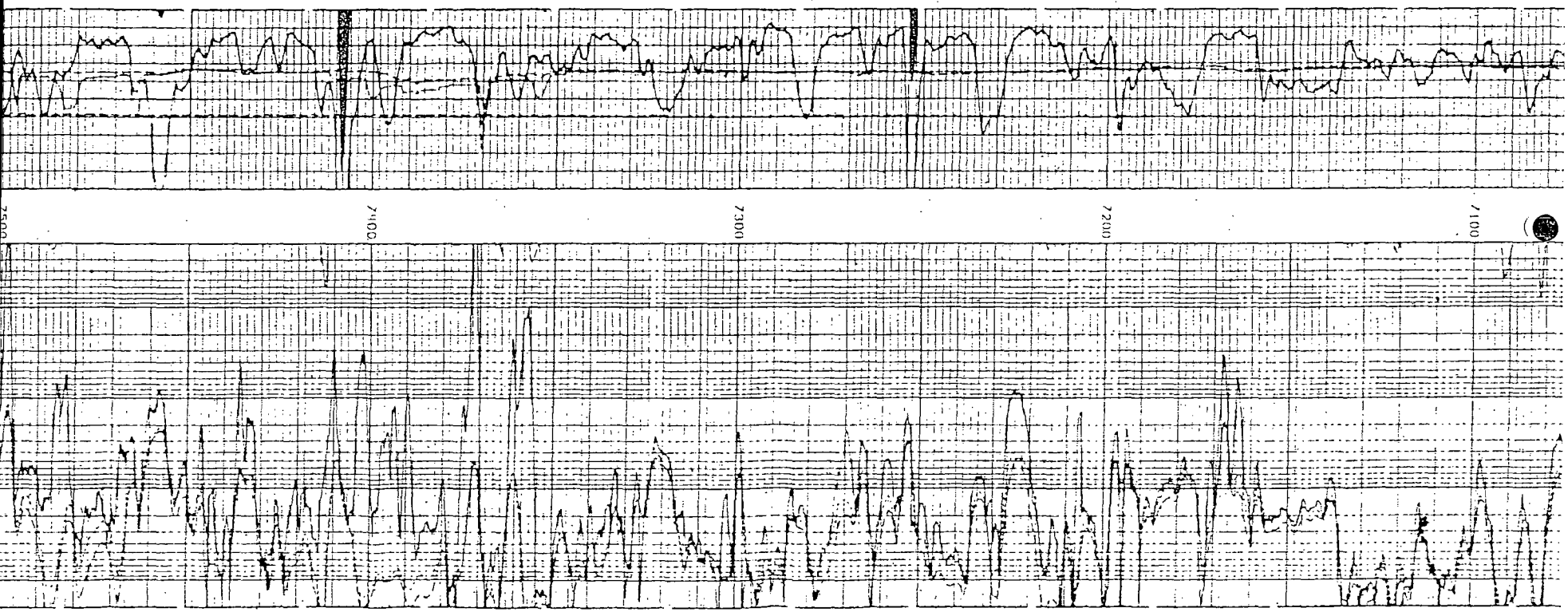
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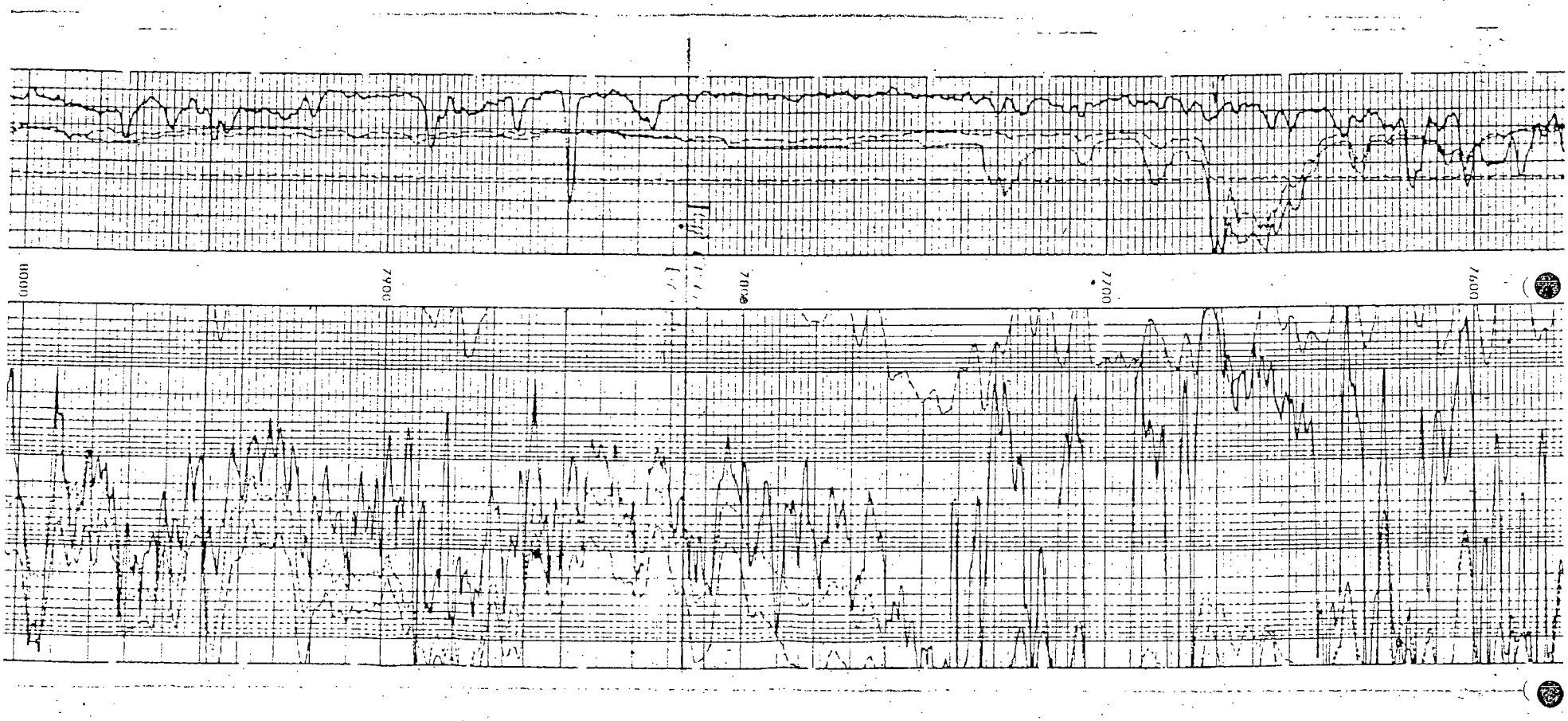
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Schlumberger

861

COMPANY AMOCO PRODUCTION COMPANY

WELL DIAMOND FEDERAL GAS COM. # 1

FIELD SCOGGINS DRAW MORROW

COUNTY EDDY STATE NEW MEXICO

Location: 1980' FNL & 660' FWL

Other Services: CNL-FDC

Sec. 12 Twp. 18-S Rge. 27-E

COUNTY EDDY
FIELD SCOGGINS DRAW
LOCATION DIAMOND FEDERAL
GAS COM. # 1
COMPANY AMOCO PROD. CO.

Permanent Datum: G.L. Elev.: 3610
Log Measured From: R.K.B. 13 Ft. Above Perm. Datum
Drilling Measured From: R.K.B.

Elev.: K.B. 3623
D.F. 3622
G.L. 3610

Date	8-27-73			
Run No.	ONE			
Depth—Driller	10373			
Depth—Logger	10370			
Bot. Log Interval	10366			
Top Log Interval	1897			
Casing—Driller	8.5/08 1895	@	@	@
Casing—Logger	1892			
Bit Size	7 7/8			
Type Fluid in Hole	FRESH MUD			
Fluid Level	FULL			
Dens. / Visc.	9 / 39			
pH / Fluid Loss	11 / 8 cc	cc	cc	cc
Source of Sample	FLOWLINE			
Rm @ Meas. Temp.	1.6 @ 90 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.70 @ 75 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	3.2 @ 90 °F	@ °F	@ °F	@ °F
Source Rmf / Rmc	M / C			
Rm @ BHT	1.06 @ 152°	@ °F	@ °F	@ °F
Time Since Circ.	14 HOURS			
Max. Rec. Temp.	152 °F		°F	°F
Equip. Location	2666 / HOBBS			
Recorded By	CREEK			
Witnessed By	KLAAR			

Reproduced By
Electrical Log Services
Midland, Texas 79701

24

REFERENCE W 8664H

P1

21 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

API NO 30-015-20824

CASING RECORD

PERFORATING RECORD

ACID FRAC SHOT

IP

GOR GR

TP CP

REMARKS:

REPRODUCTION FOR RESALE PROHIBITED

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Item / Sample No.			
Depth—Driller			
Type Fluid in Hole			
Dens. / Visc.			
pH / Fluid Loss	/ cc		/ cc
Source of Sample			
Rm @ Meas. Temp.	@ °F	@ °F	
Rmf @ Meas. Temp.	@ °F	@ °F	
Rmc @ Meas. Temp.	@ °F	@ °F	
Source Rmf / Rmc			
Rm @ BHT	@ °F	@ °F	
Rmf @ BHT	@ °F	@ °F	
Rmc @ BHT	@ °F	@ °F	

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

EQUIPMENT DATA

Run No.	ONE
Panel No.	C-133
Cart. No.	C-
Sonde No.	0-242
Aux. Panel No.	
G R Cart. No.	
G R. Panel No.	
TTR No.	
Cent. Device	YES
Stand off - Inches	1 2
Time Const. - Sec.	
Speed - F.P.M.	60/180

REMARKS

Service Order No. 90116
API Serial No.

☐ Surface determined sonde errors used.
☐ Sonde errors corrected for: Inch
borehole signed at Rig =
☒ Induction were set in hole at depth of 9150 feet.

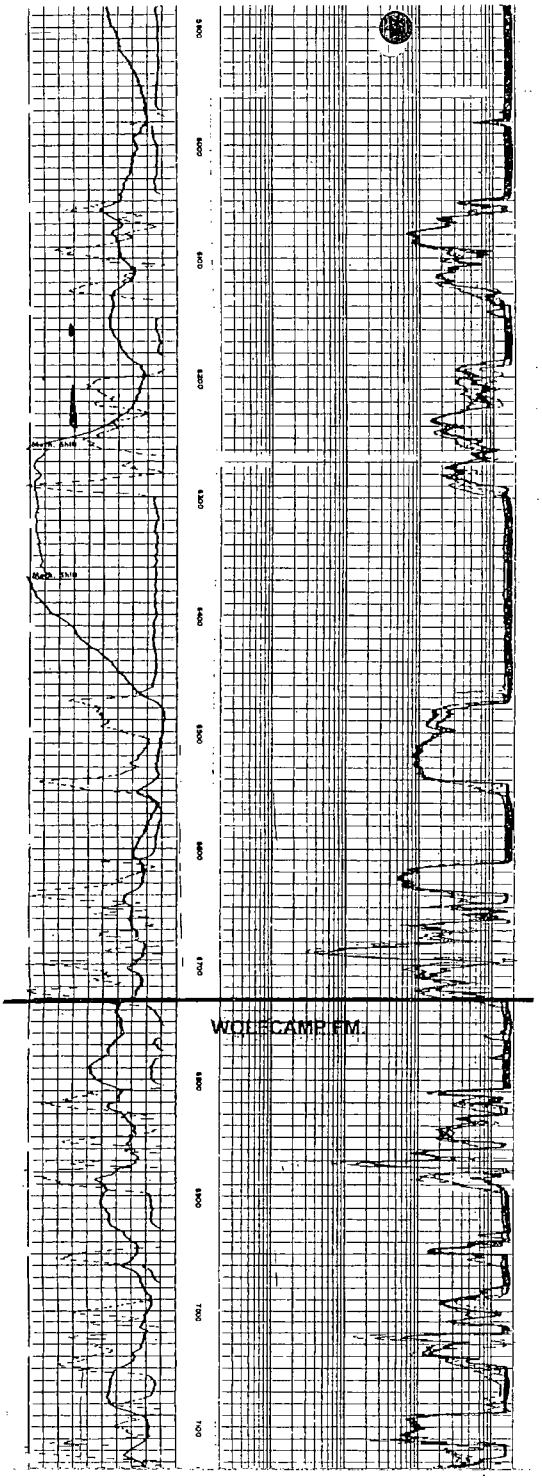
CALIBRATION DATA

CALIBRATION:	BACKGND. CPS	SOURCE CPS	GALV. INCR. DIVISION	SENS. TAP (FOR CAL)	SENS. TAP (RECORD)	TIME CONST.
GAMMA RAY						

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

SPONTANEOUS POTENTIAL MILLIVOLTS	SCALE	RESISTIVITY OHMS. M²/M
10		DEEP INDUCTION LOG 0.2 1.0 10 100 1000 2000
R_{XO}/R_T		MEDIUM INDUCTION LOG 0.2 1.0 10 100 1000 2000
		LATEROLOG – 8 0.2 1.0 10 100 1000 2000
		CALIPER (CAL) 6 16

APPENDIX J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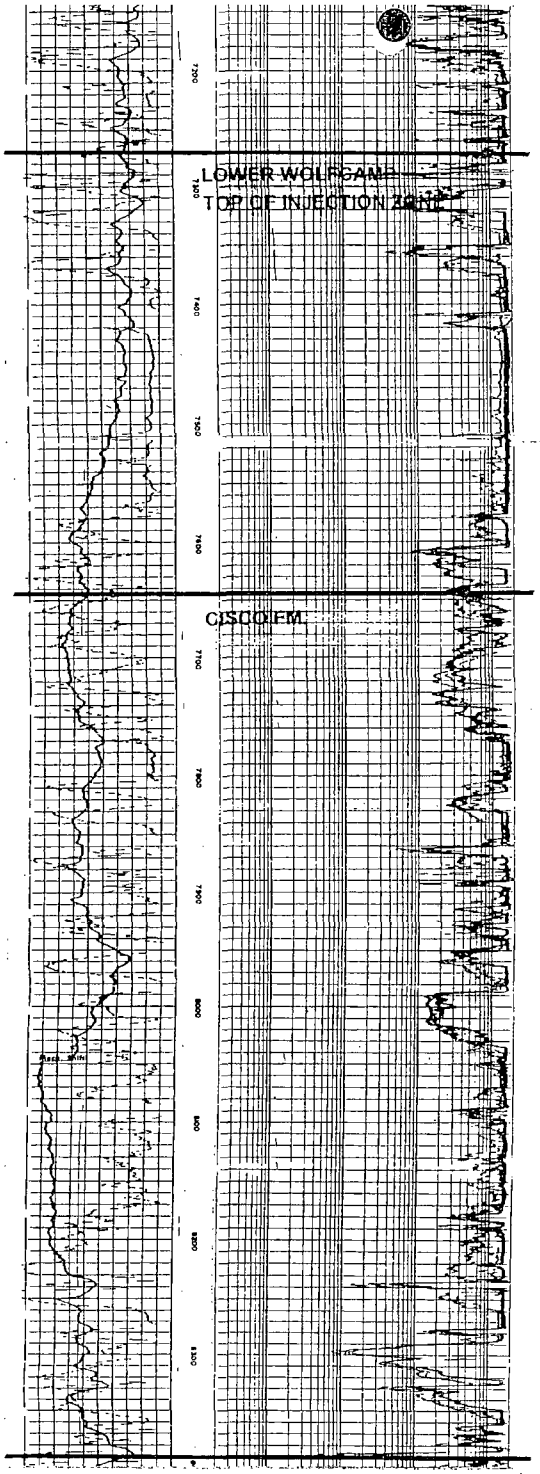
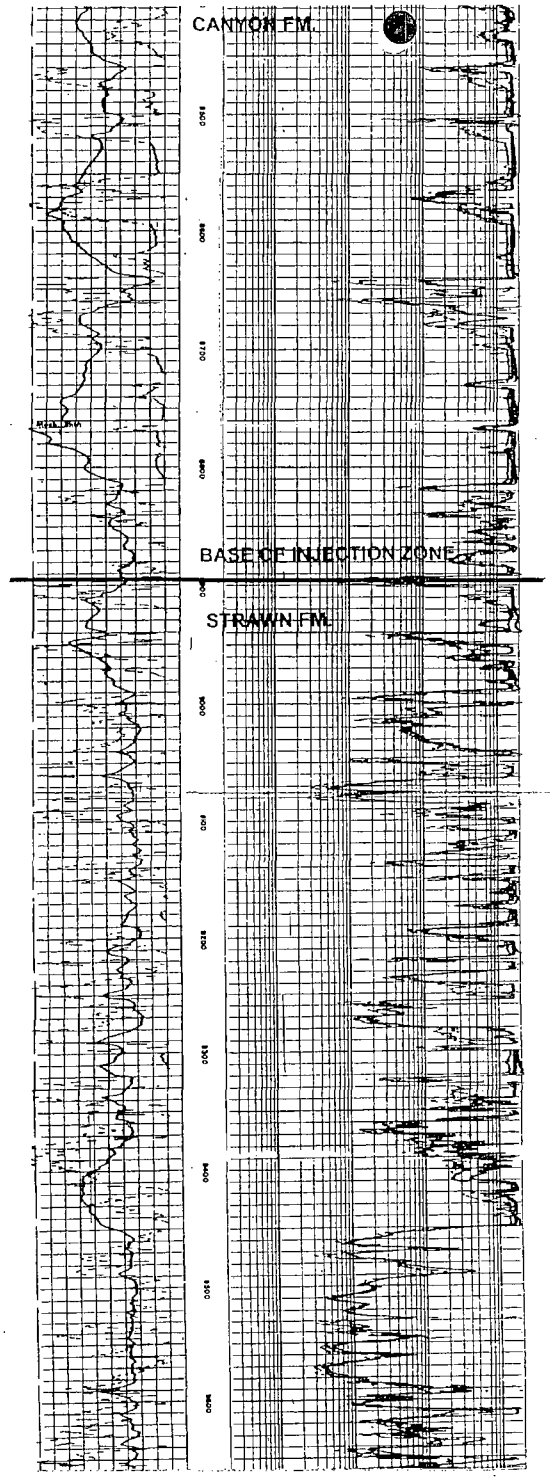

LOWER WOLFCAMP
TOP OF INJECTION ZONE
CISCO/PM


CANYON FM.
BASE OF INJECTION ZONE
STRAWN FM.

AQ 861

Schlumberger — COMPENSATED NEUTRON FORMATION DENSITY

COMPANY AMOCO PRODUCTION COMPANY

WELL DIAMOND FEDERAL GAS COMM #1

FIELD SCOGGINS DRAW MORROW

COUNTY EDDY STATE NEW MEXICO

Location: 1980' FNL & 660' FWL

Sec 12 Twp 18-S Rge 27-E

Other Services: DIL

Permanent Datum: G.L. Elev. 3610

Log Measured From: R.K.B. 13 Ft. Above Perm. Datum

Drilling Measured From: R.K.B.

Elev.: K.B. 3623 D.F. 3622 G.L. 3610

Date	8-27-79			
Run No.	ONE			
Depth-Driller	10322			
Depth-Logger	10320			
Btm. Log Interval	10319			
Top Log Interval	0			
Casing-Driller	8 5/8@1995	@	@	@
Casing-Logger	1992			
Bit Size	7 7/8			
Type Fluid in Hole	FRESH MUD			
Fluid Level	FULL			
Density / Visc.	9 / 39			
pH / Fluid Loss	11 / 8 cc	cc	cc	cc
Source of Sample	FLOWLINE			
Rm @ Meas. Temp.	1.8 @ 90 °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.70 @ 72 °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	3.2 @ 90 °F	@ °F	@ °F	@ °F
Source: Rmf / Rmc	FI / C			
Rm @ BHT	1.07 @ 152 °F	@ °F	@ °F	@ °F
Time Since Circ.	5 HOURS			
Max. Rec. Temp.	152 °F	°F	°F	°F
Equip. Location	7646 LUDERS			
Recorded By	CREEK			
Witnessed By	KLAAR			

Reproduced By
Electrical Log Services
Midland, Texas 79701

REFERENCE W 8664S

P I

24 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD

API NO. 30-015-20894

CASING RECORD

PERFORATING RECORD

ACID FRAC SHOT

I P

GOR GP

T P C P

REMARKS

REPRODUCTION FOR RESALE PROHIBITED

CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES

Sample No.				
Depth-Driller				
Source of Field				
Source of Sample				
Rm @ Meas. Temp.	@ °F		@ °F	
Rmf @ Meas. Temp.	@ °F		@ °F	
Rmc @ Meas. Temp.	@ °F			
Rm @ BHT	@ °F			
Density / Visc.				
Fluid Loss	cc		cc	
Chlorides by Vol.				
Oil by Vol.				
Solids by Vol.				
Ca++ by Sp. Gr.				

SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

EQUIPMENT DATA

Run No.	One
Rec. Fld.	D-336
Rec. Cart.	A-117
Rec. Shid	D-1032
Rec. Sde	E-203
Rec. Source	136
Rec. Calib.	E-2472
Aux. Fld.	A-130
Aux. Cart.	A-2
Aux. Source	E-134
Aux. Calib.	A-77
R Cart.	12-27
TB	
Aux. Pot.	E-267

LOGGING DATA

CNP

Matrix	Auto Hole Size Corr.	Hole Size Setting (if not auto)	Porosity Scale	From	To
LIME	☒ Yes ☐ No		30 -10	TD	CSG
	☐ Yes ☐ No				
	☐ Yes ☐ No				
	☐ Yes ☐ No				

FDC

Liquid Density	*Grain Density	Hole Fluid	Porosity Scale	From	To
1.0	2.71	LIQUID	30 -10	TD	CSG

REMARKS

Service Order No. 90310

API Serial No.

CASING DATA

Run No.	From	To	Bit Size	Csg Size	Csg Wt	From	To
2	1037	10322	7 7/8	5 1/2		1995	SURF

CALIBRATION DATA

Run No.	Gamma Ray API Scale	Gamma Ray Background CPS	Gamma Ray Total CPS	CNL–Before Log–ACPS Long Spacing	CNL–Before Log–ACPS Short Spacing	CNL–After Log–ACPS Long Spacing	CNL–After Log–ACPS Short Spacing
1	165	100	550	440	960	440	860
2							
3							
4							

Run No.	FDC–Before Log–ACPS P1	FDC–Before Log–ACPS P2	FDC–After Log–ACPS P1	FDC–After Log–ACPS P2
1	464	744	472	759
2				
3				
4				

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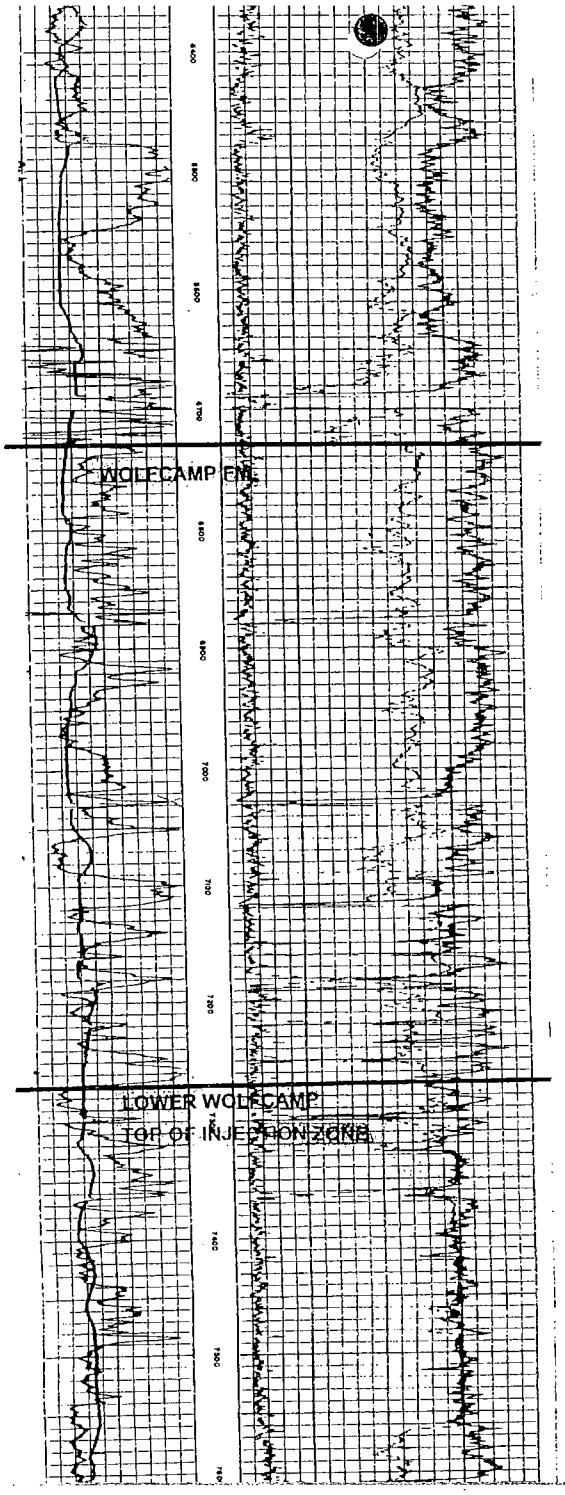
CALIPER
HOLE DIAM. IN INCHES
6 16

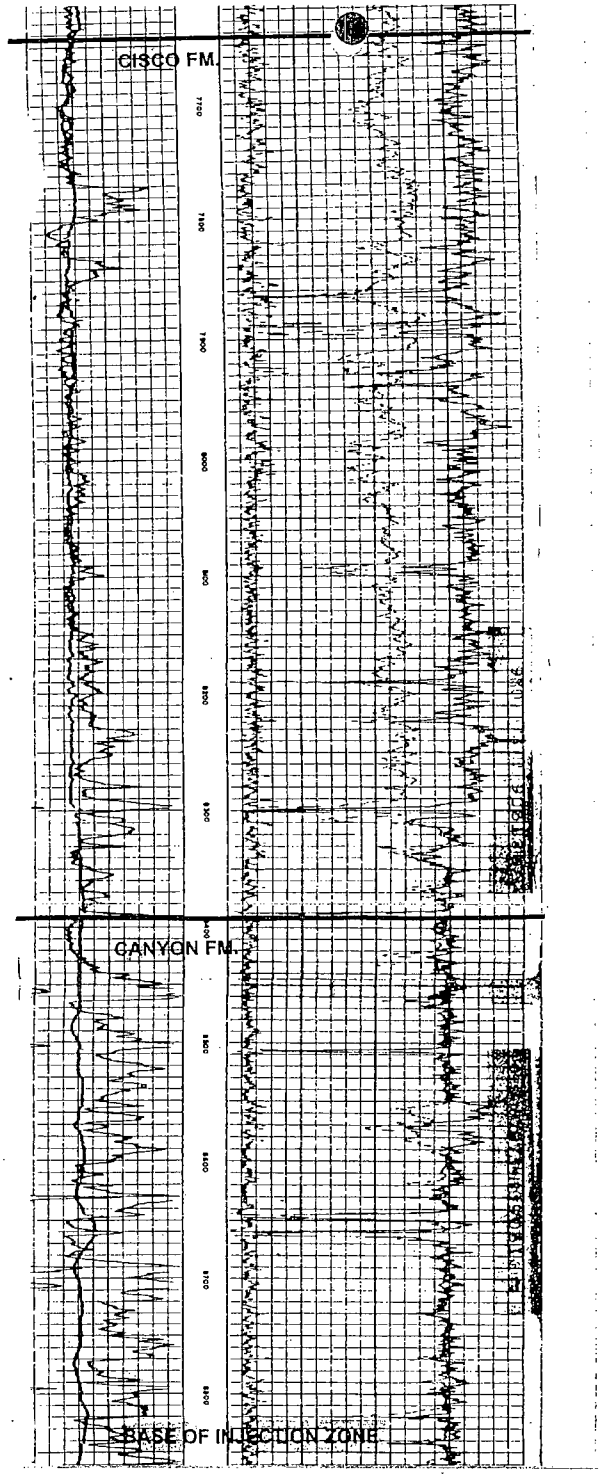
DRHO

CNL POROSITY—%
30 20 10 0 -10

0 1.25

APPENDIX J


WOLFCAMP FM.
LOWER WOLFCAMP
TOP OF INJECTION ZONE


CISCO FM.
CANYON FM.
BASE OF INJECTION ZONE

EDDY SEC 1-18S-27E

157

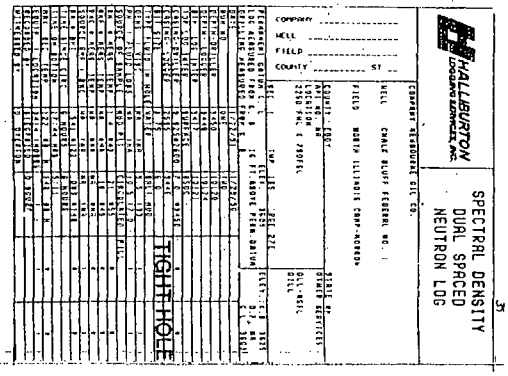
Petroleum Information

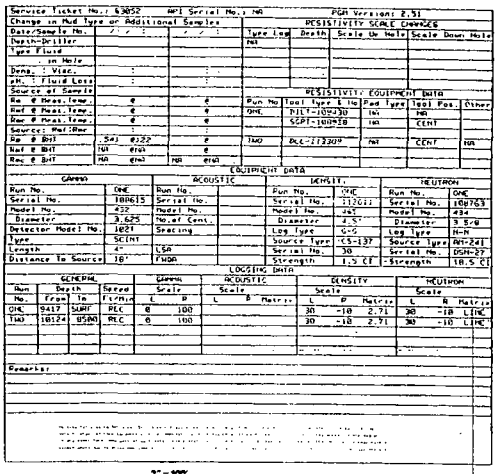
DENVER, COLORADO 80201

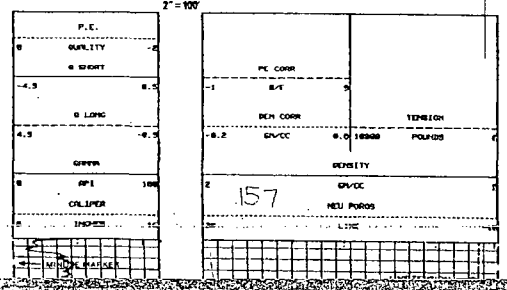
REFERENCE Y 4949N

API NO. 30 015 26575

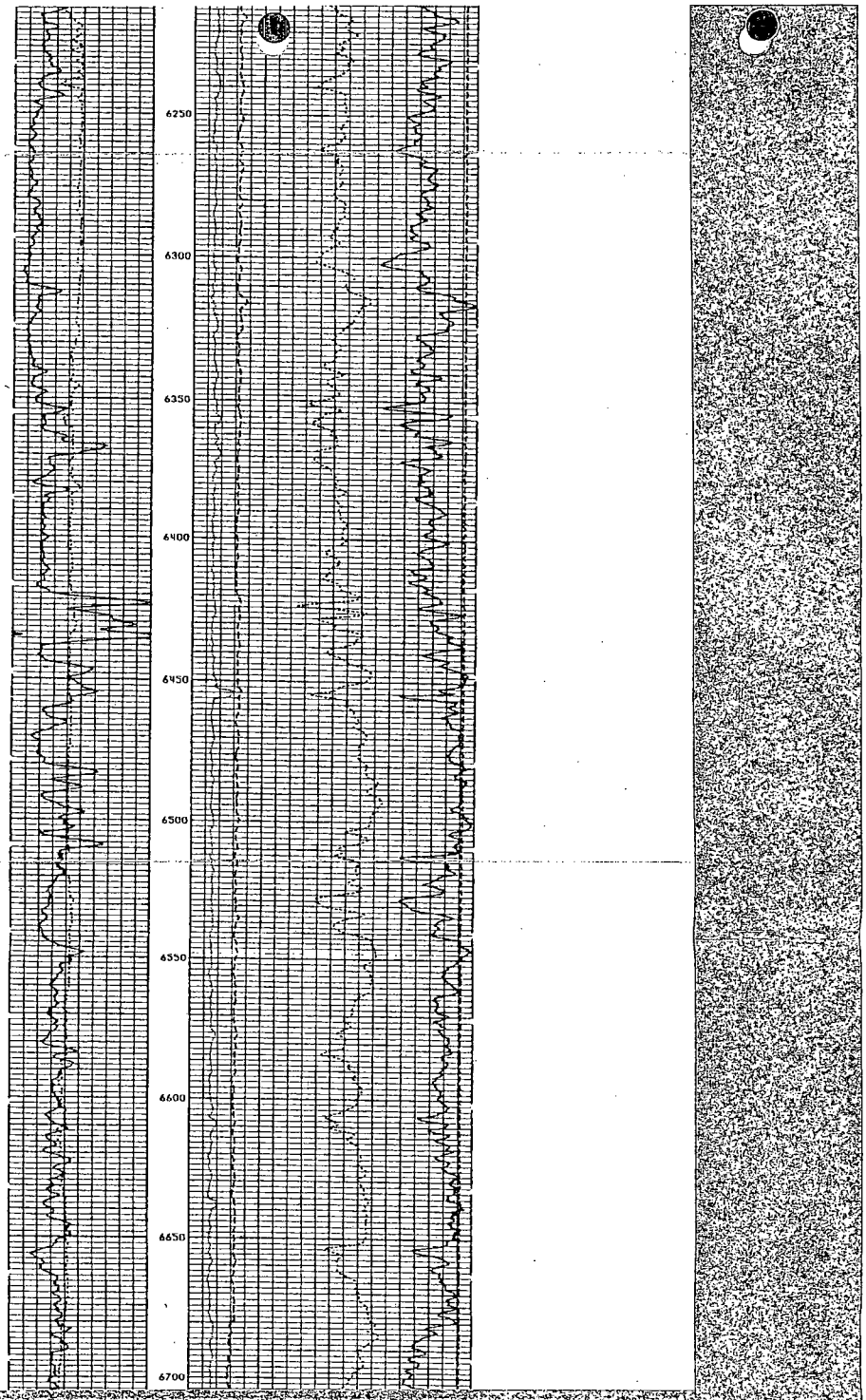
REPRODUCTION FOR RESALE IN WHOLE OR PART PROHIBITED







APPENDIX J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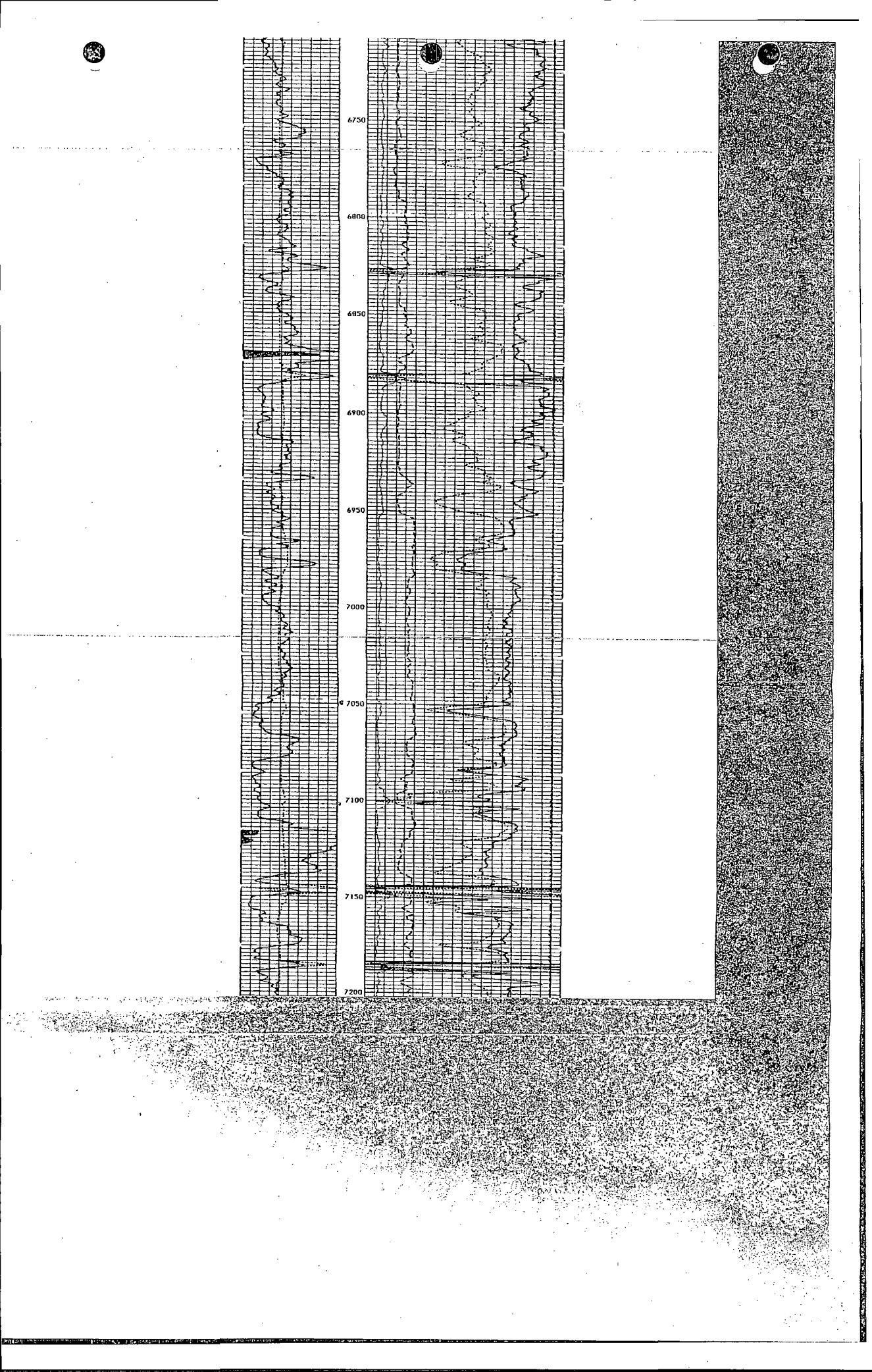
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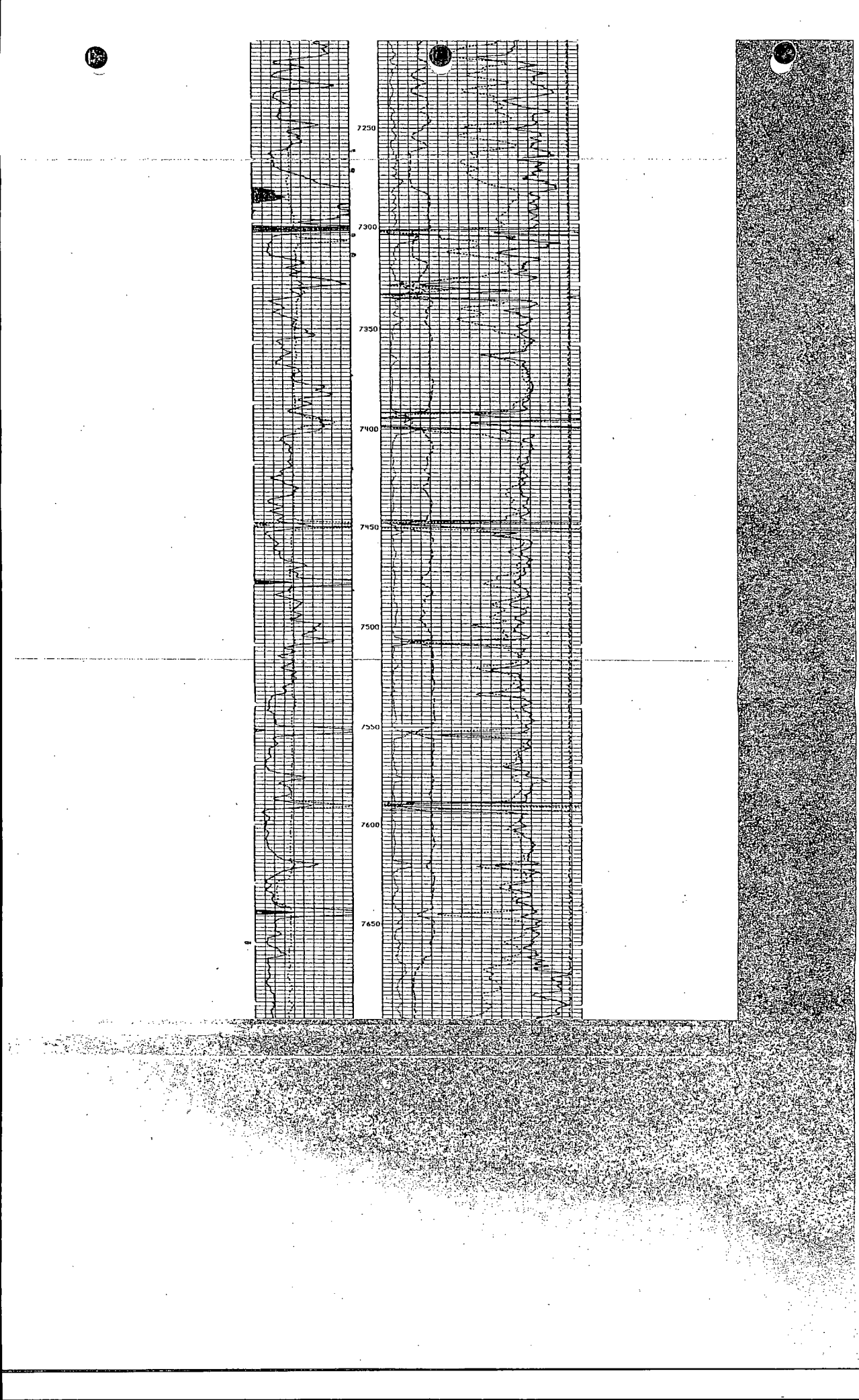
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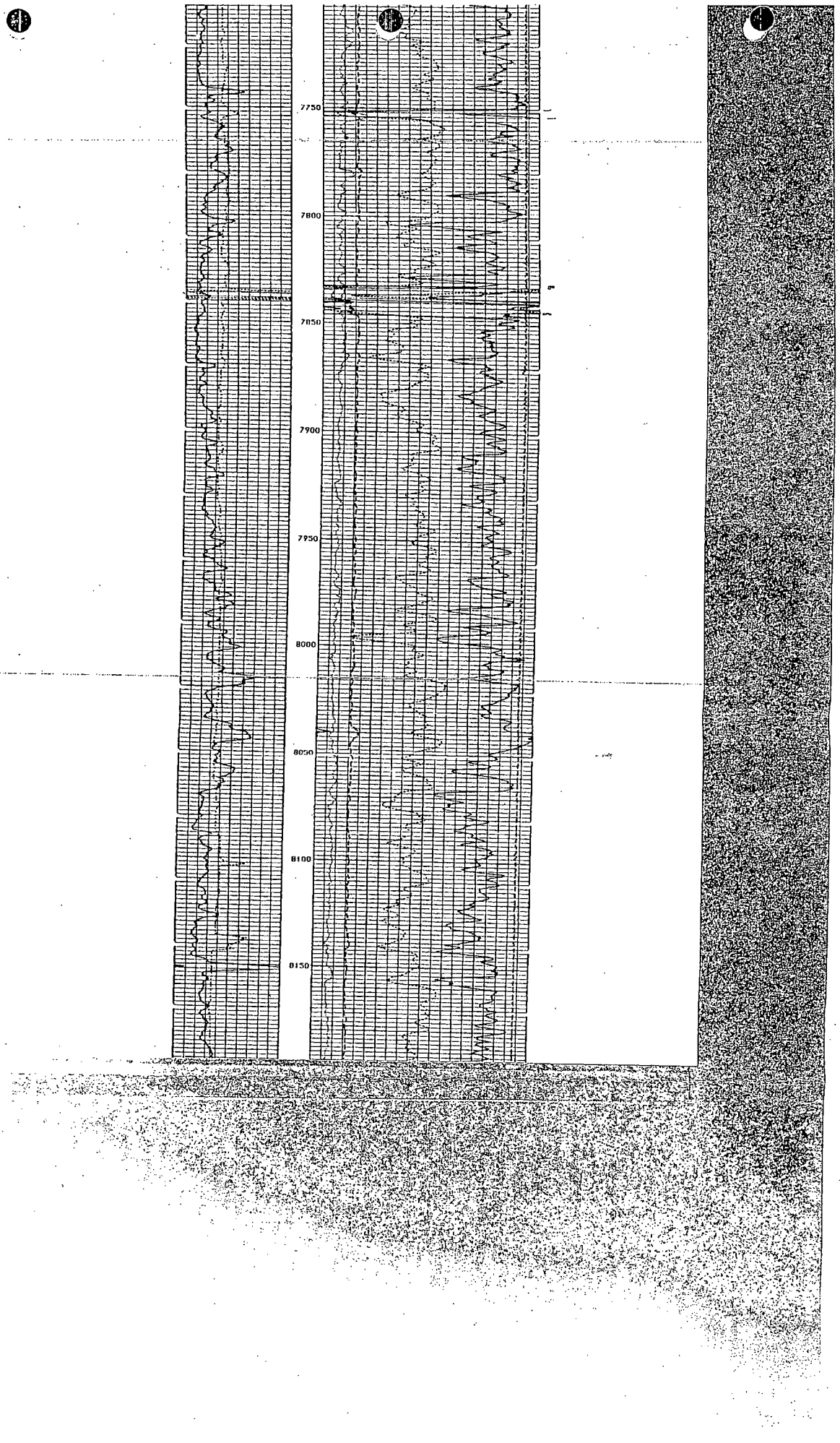
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EDDY SEC 1-18S-27E

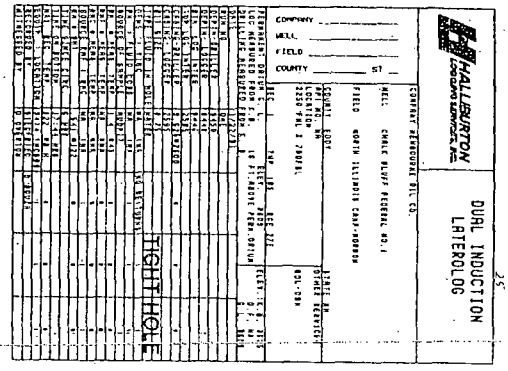
Petroleum Information

DENVER, COLORADO 80201

REFERENCE Y 49491

25 API NO. 30 015 26575

REPRODUCTION FOR RESALE IN WHOLE OR PART PROHIBITED



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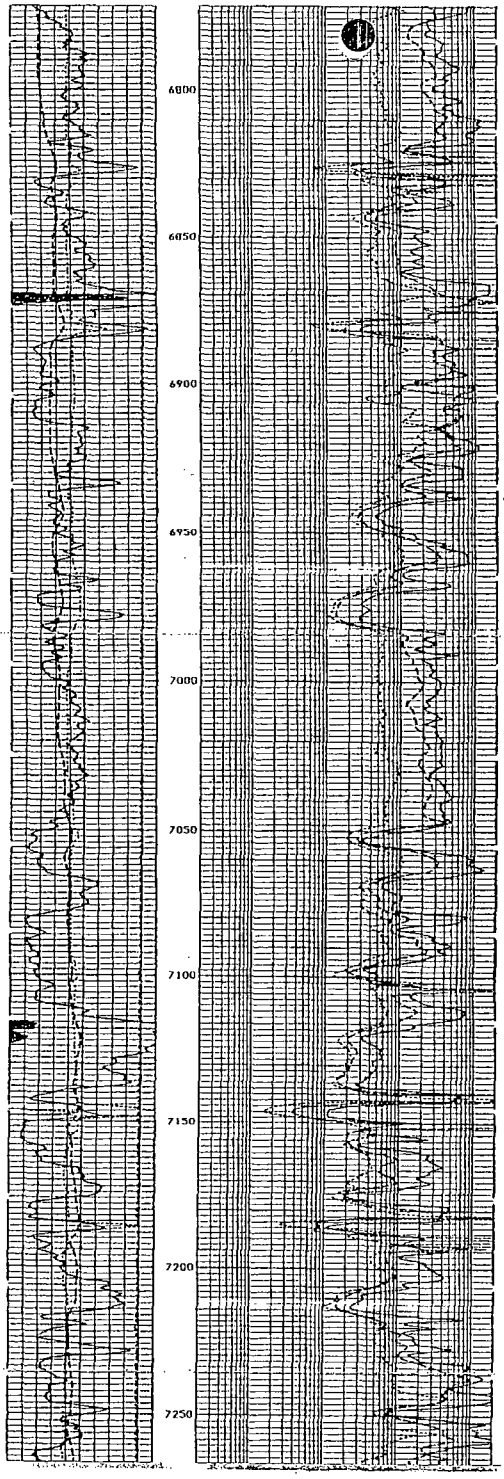
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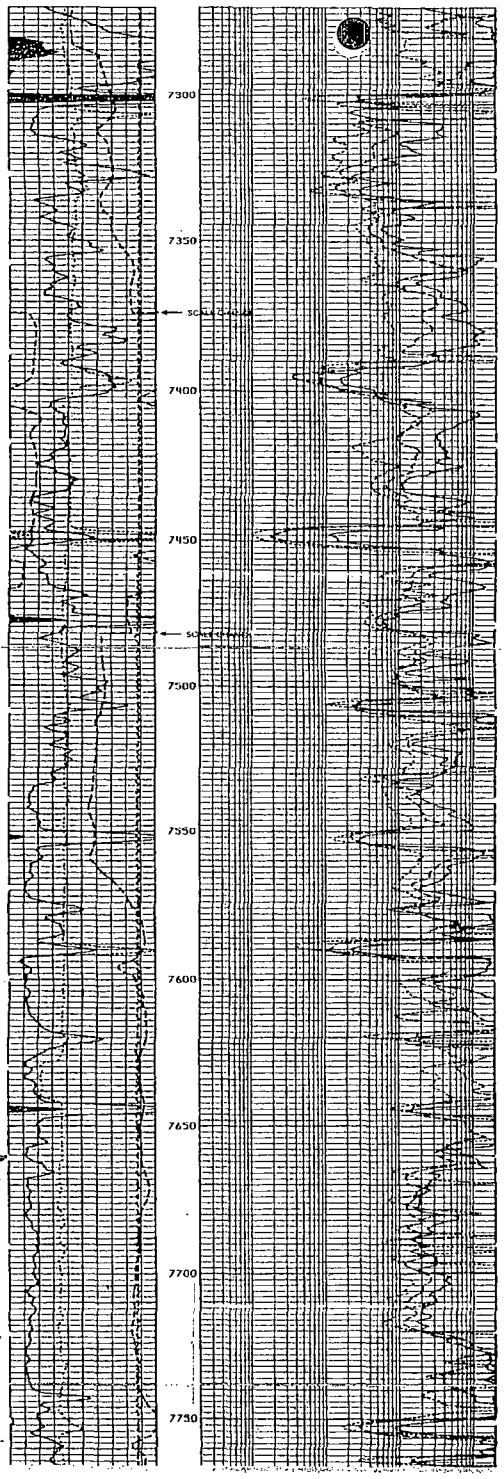
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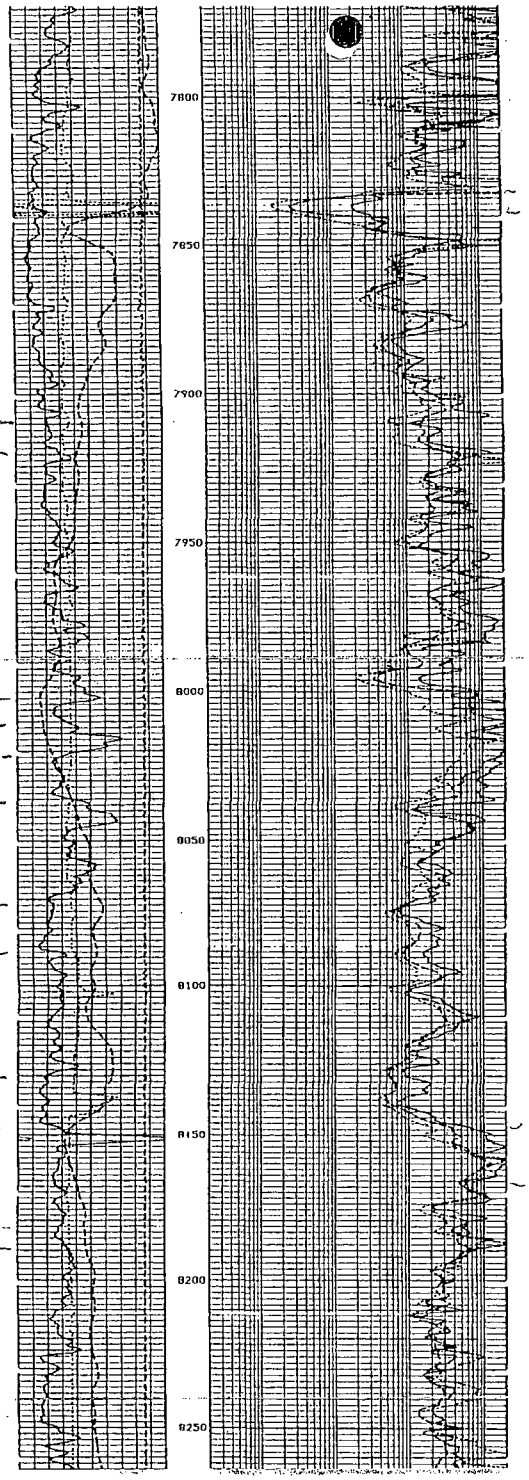
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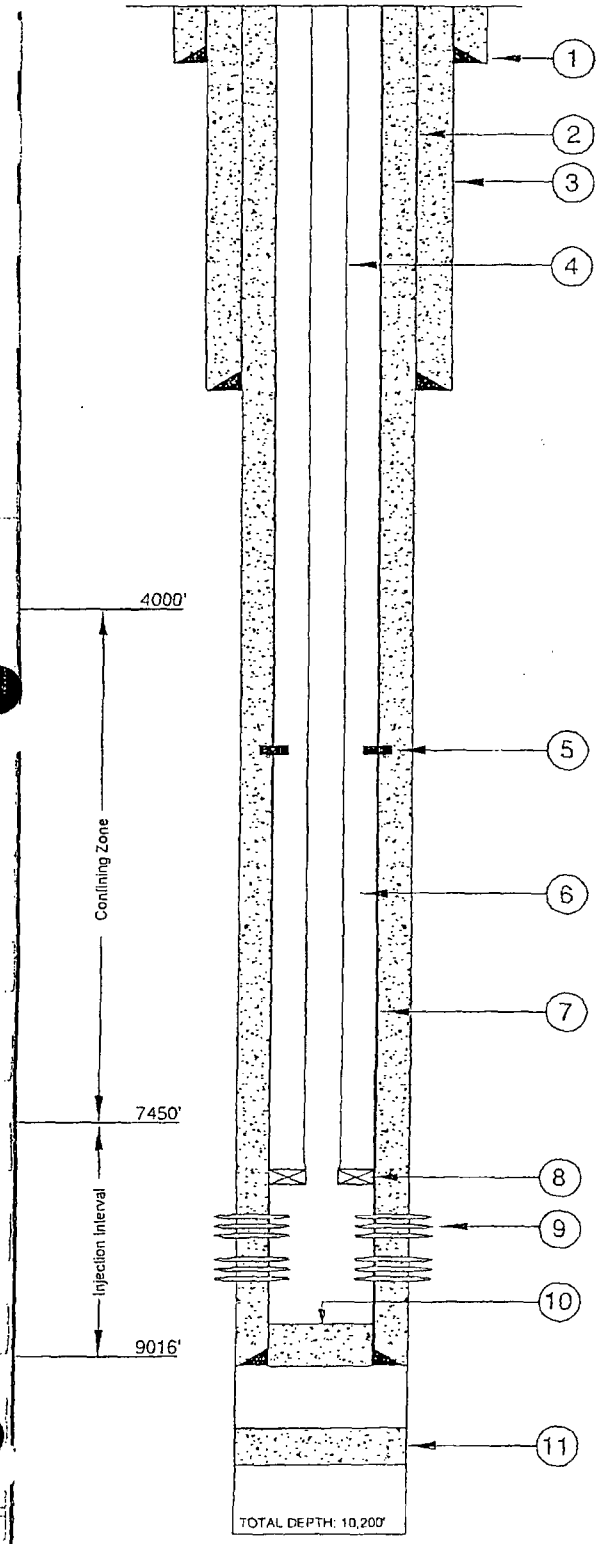
EXHIBIT 4



BELOW GROUND DETAILS

All depths are referenced to the Kelly bushing elevation of 12.5' above ground level. Ground level elevation is 3,678' above mean sea level.

1. Surface Casing: 13 ⅜", 48 lb/ft, J-55, ST&C set at 390' in a 17 ½" hole. Cemented with 150 sx Class C with 3 % calcium chloride, 375 sx Class C Litewate w/3 % calcium chloride and ½ lb/sx flocele. Circulated 86 sx to surface.

2. Intermediate Casing: 9 ⅝", 36 lb/ft, J-55, ST&C set at 2,555' in a 12 ¼ " hole. Cemented w/800 sx of Class C Lite w/ ½ lb/sx flocele and 2 lb/sx Gilsonite and 12 % salt. Followed by 200 sx of Class C w/2 % calcium chloride. Circulated 133 sx to surface.

3. Base of the USDW at 493'.

4. Injection Tubing: 4 ½", 11.6 lb/ft, N-80, SMLS, R3, LT&C set at 7,879'.

5. DV Tool: at 5,498'.

6. Annulus Fluid: 8.7 lb/gal brine water mixed w/UniChem Techni-Hib 370 corrosion inhibitor.

7. Protection Casing: 7", 29 lb/ft, N-80, LT&C: 9094' to 7031'. 7", 29 lb/ft, P-110, LT&C: 7031' to 5845'. 7", 26 lb/ft, P-110, LT&C; 5845' to surface. Casing cemented in two stages as follows:

   First Stage - 600 sx modified Class H w/0.4 % CFR-3, 5 lb/sx Gilsonite, 0.5% Halad-344, and 1 lb/sx salt mixed at 13.0 ppg. Opened DV tool at 5498' and circulated 142 sx to surface.

   Second Stage - Lead Slurry: 220 sx Interfill "C" (35:65:6) mixed at 11.7 ppg. Tail Slurry: 550 sx modified Class H w/0.4 % CFR-3, 5 lb/sx, Gilsonite, 0.5 % Halad-344, 0.1% HR-7, and 1 lb/sx mixed at 13.0 ppg. Circulated 75 sx to surface. Top out w/20 sx permium plus 3 % calcium chloride.

8. Packer: 7" x 3.5" EVI Oil Tools (Arrow), Model X-1 retrievable packer set at 7879'. Minimum I.D. is 3.0". Wireline re-entry guide on bottom. To release: turn ¼ turn to the right and pick up.

9. Perforations (2 SPF):

   Upper Zone - 7924-7942', 7974-8030', 8050-8056', 8066-8080', 8118-8127', 8132-8140', 8160-8164', 8170-8188'.

   Lower Zone - 8220-8254', 8260-8270', 8280-8302', 8360-8366', 8370-8378', 8400-8410', 8419-8423', 8430-8446', 8460-8464', 8470-8476'.

10. PBTD: 9004'.

11. Cement Plug: 45 sx Class H from 9624' to 9734'.

SUBSURFACE

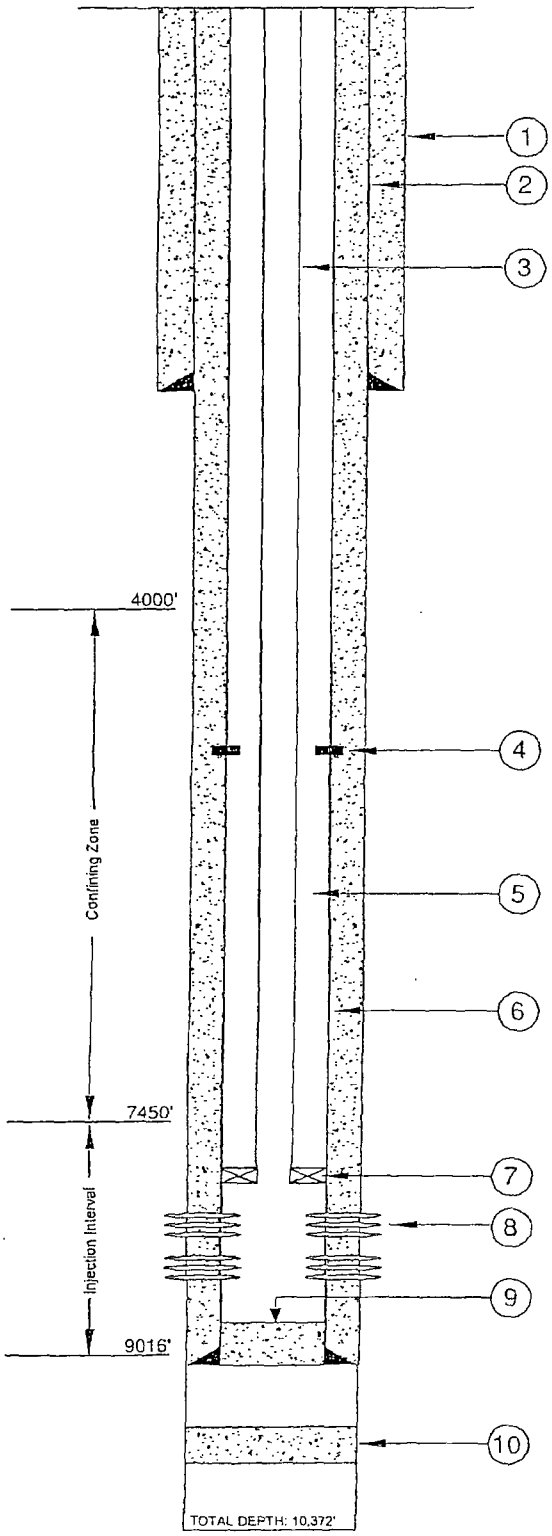
HOUSTON, TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

FIGURE 1

NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO

BELOW GROUND DETAILS
WASTE DISPOSAL WELL NO. 1

DATE: 07/13/01	CHECKED BY:	JOB NO: 7005256
DRAWN BY: WDL	APPROVED BY:	DWG. NO:



BELOW GROUND DETAILS

All depths are referenced to the Kelly bushing elevation of 13' above ground level. Ground level elevation is 3610' above mean sea level.

1. Base of the USDW at 473'.
2. Surface Casing: 8 5/8", 32 lb/ft, set at 1995' in an 11" hole. Cemented to surface with 800 sacks of cement.
3. Injection Tubing: 3 ½", 9.2 lb/ft, J-55, smls, NUE 10 rd. set at 7528'.
4. DV Tool: at 5,785'.
5. Annulus Fluid: 8.7 lb/gal brine water mixed w/UniChem Techni-Hib 370 corrosion inhibitor.
6. Protection Casing: 5 ½", 17 lb/ft, L-80, LT&C: 8869' to the surface and set in a 7 7/8" hole. Casing cemented in two stages as follows:

   First Stage - 575 sacks of modified Class "H" with 0.4 % CFR-3, 5 lb/sk Gilsonite, 0.5 % Halad-344, and 3 lb/sk salt. Mixed at 13.0 ppg. Opened DV tool at 5785 and circulated 20 sacks to surface.

   Second Stage - Lead Slurry: 300 sacks of Interfill "C" (35:65:6) mixed at 11.7 ppg. Tail slurry: 695 sacks modified Class "H" with 0.4% CFR-3, 5 lb/sk Gilsonite, 0.5 % Halad-344 and 3 lb/sk salt mixed at 13.0 ppg. Circulated 150 sacks to surface. Topped out with 10 yards of Redi-mix.
7. Packer: 5 ½" x 2 7/8" Weatherford Completion Tools (Arrow) Model X-1 retrievable packer set at 7528'. Minimum ID is 2.4375". Wireline re-entry guide is on bottom. To release: turn ¼ turn to the right and pick up.
8. Perforations (2 SPF):

   Zone 1: 7570-7620', 7676-7736'

   Zone 2: 7826-7834', 7858-7880', 7886-7904', 7916-7936', 7944-7964', 7990-8042', 8096-8116', 8191-8201', 8304-8319',8395-8399'.
9. PBTD: 8770'
10. Cement Plug: 45 sacks from 9675' to 9775'.

SUBSURFACE

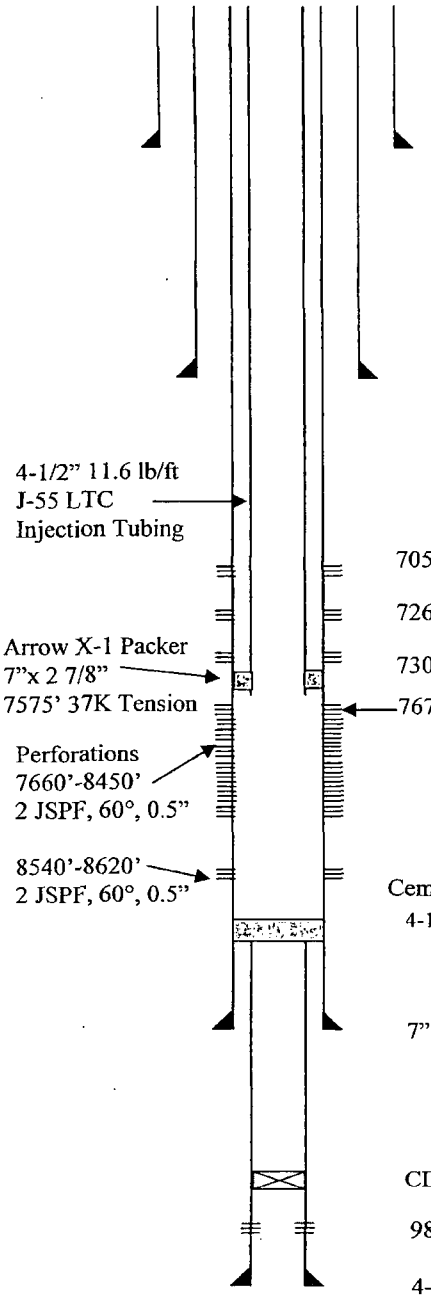
HOUSTON, TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

FIGURE 2

NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO

BELOW GROUND DETAILS
WASTE DISPOSAL WELL NO. 2

DATE: 07/13/01	CHECKED BY:	JOB NO: 70D5256
DRAWN BY: WDL	APPROVED BY:	DWG. NO:



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 3
Injection Well / WDW-3
Navajo Refining

DATED: 12/14/05	APPROVED BY:	JOB NO. 70F5826
DRAWN BY: JDB	CHECKED BY:	SCALE: N/A

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, May 21, 2009 2:52 PM
To: 'Moore, Darrell'
Cc: 'Ken Davis'; Rusty Smith; Lackey, Johnny
Subject: RE:

Darrell, et al.:

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What does the OCD consider sufficient when there are different radial flow periods, such as you find in naturally fractured or induced fractured formations?

A minimum of at least 72 hours or until you see a boundary.

What exactly does the OCD need for confirmation? Would rate data submitted with the report be confirmation?

A plot or graph.

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Is this what the OCD wants or can a shorter fall-off period be used?

Minimum day fall-off period needed for test.

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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: Tuesday, May 19, 2009 8:03 AM
To: Chavez, Carl J, EMNRD
Cc: 'Ken Davis'; Rusty Smith; Lackey, Johnny
Subject:

Carl

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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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ARTESIA, NEW MEXICO 88211-0159
TELEPHONE (575) 748-3311

FAX
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May 19, 2009

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Oil Conservation Division, Environmental Bureau
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Santa Fe, New Mexico 87505

Re: Navajo Refining APT, PFO & MIT Test Plan (UICI-8) and Request for Extension on WDWs 1, 2 & 3

Dear Carl:

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For convenience, we have sent Subsurface a copy of this letter. Please send them a copy of your response. If it would be more convenient to call them, you can contact Ken Davis with Subsurface at 713-880-4640. Or you can contact me at 575-748-3311.

Very truly yours,
NAVAJO REFINING COMPANY,LLC

Darrell Moore
Environmental Manager for Water and Waste

Cc: Subsurface Technology Inc.

Chavez, Carl J, EMNRD

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In order to do this we would have to have all the rate data available before starting the falloff testing to construct a real-time Horner plot or Log-Log plot and analyze the data as we collect it. In most cases the rate data can only be obtained at some point toward the end of the testing.

Section VI item 4 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for PVT data.
The data may or may not be available as this data will not exist for older wells where the OCD has not required it. Can the data be estimated where it does exist?

Section VI item 9 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for AOR data.
Is the OCD requesting this data before the testing to be included in the test plan?

Section VII items 2 &3 of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for conformation.
How would the does the OCD want conformation in the test plan stated?

Section IX item 18 sub-item (h) of the UIC Well Fall-Off Test Guidance (December 3, 2007) document asks for a Hall plot.
What is the Hall plot to be used for? In generally this plot is used for injection wells in water floods for Enhanced Oil Recovery (EOR) and is a cheap qualitative approach to determine near wellbore damage and has very little usefulness in determining pressure build in a reservoir.

For convenience, we have sent Subsurface a copy of this letter. Please send them a copy of your response. If it would be more convenient to call them, you can contact Ken Davis with Subsurface at 713-880-4640. Or you can contact me at 575-748-3311.

Very truly yours,
NAVAJO REFINING COMPANY,LLC

Darrell Moore

Darrell Moore
Environmental Manager for Water and Waste

Cc: Subsurface Technology Inc.

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Friday, May 01, 2009 2:23 PM
To: 'Moore, Darrell'; Griswold, Jim, EMNRD
Cc: 'Ken Davis'; 'Rusty Smith'; Jones, William V., EMNRD
Subject: Navajo Refining Company's Fall-Off Test Plan (UICI-8) (WDW-1, WDW-2 & WDW-3)

Darrell:

The Fall-Off Test Plan cannot be approved in its present form as it does not fully address Section III (Developing a Test Plan) and the items listed in Sections: V (General Test Operational Considerations), VI (Background Information), VII (Conducting the Fall-Off Test), VIII (Evaluation of the Test Results), and IX (Report Components) of the OCD UIC Class I Well Fall-Off Guidance (guidance). The OCD notices that the test plan does follow the itemized elements provided in each section of the guidance. The test plan did not have a proposed schedule to be approved by the OCD for fall-off testing.

In general, the test plan proposes one fall-off test from one well and each well alternating every year thereafter, which does not meet the Federal UIC Regulations requirement. Annual falloff testing for a non-hazardous Class I well is a federal requirement under 40 CFR §146.13(d)(1). A Class I UIO permit requires that an annual falloff test be conducted to satisfy this requirement. The test plan fails to include the supporting documentation that is required in each of the sections for an approvable test plan.

OCD review comments:

Section V: Only 4 items appear to have been addressed in the test plan.

Section VI: Zero items appear to have been addressed and Information is supposed to be submitted up front with the test plan, and not as proposed in your test plan submittal. The operator needs to reference applicable items in the "Tables" section of the report if any tables 3 & 4 or figures satisfy each item in the applicable section. Some water quality tables are provided, but neither are referenced in the applicable section nor do they satisfy completely water quality data for the injected fluids in this section.

Section VII

Test plan is not consistent with guidance.

Section VIII

Test plan is not completely consistent with guidance.

Section IX

The test plan was missing this section. Simply cutting and pasting the report components into the test plan to report or referencing all of this section in the test plan to ensure when reports are received they contain the basic elements of the guidance would have sufficed.

The majority of this information is to be submitted within 30 days of completion of the fall-off test. Some of the tables and figures at the back of the test plan may assist the operator with the submittal of the final report components. The operator may copy and paste this section into Section IX of the test plan in order for the OCD to confirm that the operator will submit what is specified in the test plan guidance to the OCD in the final report. The OCD observes that some tables and figures at the back of the report may help the operator to address this section for the final report to the OCD.

The OCD requires that you look over the guidance and submit a test plan that follows the basic guidance for the test plan within 30 days or by June 1, 2009. The OCD realizes that there are some sections that you could simply refer to a well diagram to address each item, but you need to correctly reference the applicable table or figure to enter a value or pertinent information, and you need to ensure that it addresses each test plan item. Statements stating that logs exist somewhere in the file are not acceptable for an approvable test plan. Alternative procedures that will produce valid test

results and satisfy the requirements of OCD and the regulations will be considered by the OCD, but you need to specify that it is an alternative to each guidance item.

You may provide separate test plans for each of the 3 UIC Class I Disposal Wells, or submit one test plan that will address each well individually.

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
Website: http://www.emnrd.state.nm.us/ocd/index.htm
(Pollution Prevention Guidance is under "Publications")

From: Chavez, Carl J, EMNRD
Sent: Friday, May 01, 2009 8:16 AM
To: 'Moore, Darrell'; Griswold, Jim, EMNRD; Jones, Brad A., EMNRD
Cc: 'Ken Davis'; Rusty Smith; Jones, William V., EMNRD
Subject: RE: Fall off tests on Injection Wells

Darrell:

I'm looking this over this a.m.

You will recall that OCD had some concerns based on last years fall-off test and requested a test plan.

The test plan must meet the minimum criteria specified for a test plan under the UIC Guidance for Fall-Off at http://www.emnrd.state.nm.us/ocd/documents/UICGuidance.pdf. If the report submitted by Navajo Refining Company does not address each of the elements provided in this guidance, it cannot be approved.

In addition, a fall-off test will be required at each UIC Class I Disposal Well this year. Consequently, Navajo Refining Company will need to run three separate fall-off tests at each of its wells. I will get something to you this morning. 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")

From: Moore, Darrell [mailto:Darrell.Moore@hollycorp.com]
Sent: Friday, May 01, 2009 7:39 AM
To: Griswold, Jim, EMNRD; Chavez, Carl J, EMNRD; Jones, Brad A., EMNRD
Cc: 'Ken Davis'; Rusty Smith
Subject: RE: Fall off tests on Injection Wells

Jim

Im just following up on the status of your reviewing our plan to perform fall-off tests on our Injection wells. It has been over a year since we tested these wells.

From: Griswold, Jim, EMNRD [mailto:Jim.Griswold@state.nm.us]
Sent: Wednesday, April 01, 2009 8:44 AM
To: Moore, Darrell
Subject: RE: Fall off tests on Injection Wells

Mr. Moore,

I began looking at the files for WDW-1, -2, and -3 yesterday. Is the 2008 plan you are referring to that submitted by Subsurface Construction Corp. dated October 2008, Project # 70G6142?

Jim Griswold

From: Moore, Darrell [mailto:Darrell.Moore@hollycorp.com]
Sent: Friday, March 27, 2009 7:26 AM
To: Chavez, Carl J, EMNRD; Jones, Brad A., EMNRD
Cc: Griswold, Jim, EMNRD; 'Ken Davis'; Rusty Smith
Subject: RE: Fall off tests on Injection Wells

Is he reviewing it now? What time frame are we looking at?

From: Chavez, Carl J, EMNRD [mailto:CarlJ.Chavez@state.nm.us]
Sent: Thursday, March 26, 2009 5:55 PM
To: Jones, Brad A., EMNRD; Moore, Darrell
Cc: Griswold, Jim, EMNRD
Subject: RE: Fall off tests on Injection Wells

Darrell:

I recommend that you not schedule the fall-off test until after Jim Griswold can review the test plan and approve it if it is approvable. The test plan was developed after your last Fall-Off test where the OCD had some concerns about the way you conducted it. 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")

From: Jones, Brad A., EMNRD
Sent: Thursday, March 26, 2009 1:20 PM
To: Chavez, Carl J, EMNRD; Moore, Darrell
Subject: FW: Fall off tests on Injection Wells

Carl,

Could you assist Darrell in this matter, since I'm not up to speed with Navajo's permits? Thanks.

Brad

From: Moore, Darrell [mailto:Darrell.Moore@hollycorp.com]
Sent: Thursday, March 26, 2009 8:22 AM
To: Jones, Brad A., EMNRD
Cc: 'Ken Davis'; Rusty Smith
Subject: Fall off tests on Injection Wells

Brad

As you know, we have three injection wells that OCD requires us to perform pressure fall off (PFO) tests on annually. We sent a PFO plan to Carl last year that detailed the test plan. Do we need to resend another PFO plan this year? Is that one sufficient? We plan on doing the tests basically the same as last years plan. We are working on getting these tests done the second week of April so we need some guidance from you pretty quick. Thanks for your attention.

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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SUBSURFACE

WELL BUILD-UP/FALL-OFF TEST PLAN
MEWBOURNE WELL NO. 1
CHUKKA WELL NO. 2
AND
GAINES WELL NO. 3

HOLLY CORPORATION INC.
NAVAJO REFINING
Artesia, New Mexico

Subsurface Project No. 70G6142

October 2008

Prepared By:

SUBSURFACE CONSTRUCTION CORP.
6925 Portwest Dr., Suite 110
Houston, Texas 77024

WELL BUILD-UP/FALL-OFF TEST PLAN
NAVAJO REFINERY
ARTESIA, NM
MEWBOURNE WELL NO. 1 (UIC-CLI-008-1)
CHUKKA WELL NO. 2 (UIC-CLI-008-2
GAINES WELL NO 3 (UIC-CLI-008-3)

General Test Operational Consideration

The falloff testing will be performed on Gaines Well No. 3 in the first year, then on the Mewbourne Well No. 1 in the second year, completing the process with Chukka Well No. 2 in the third year. This cycle will be repeated every three years.

This sequence will be repeated for each well on a yearly basis. For example, in 2009 the reservoir (Wolfcamp/Cisco/Canyon) will be tested via the Gaines Well No. 3, in 2010 via the Mewbourne Well No. 1, and in 2011 via the Chukka Well No. 2. This represents a fair approximation of the reservoir buildup pressure over time as all three wells inject into the Wolfcamp/Cisco/Canyon formations. The 2008 falloff tests show that the wells communicate, which will allow a fair representation of the reservoir pressure (reference to "2008 Annual Bottom-Hole Pressure Survey and Pressure Falloff Test for Mewbourne Well No.1, Chukka Well No. 2, and Gaines Well No. 3"). Communication between the wells shows that the reservoir is continuous between each well and that results from one well should be sufficient to represent the general reservoir characteristic and pressure buildup over time. See Table 5 for comparisons of reservoir values over time.

The process of performing buildup/falloff test on each individual well under the same conditions would likely yield similar results for each test, adding unneeded, costly redundancy. The request by Navajo Refining to perform one buildup/falloff test a year alternating between the well is justified having shown that the wells are communicating as represented in the data obtained during the 2008 buildup/falloff testing. The mechanical integrity testing will continue to be performed annually on each well as required.

The procedure for the target well will consist of the following. A constant rate will be maintained in the first targeted well for 24 hours prior to shut in with one offset well shut in and the other offset under a constant injection rate. Tandem bottom-hole memory

gauges will be lowered into the targeted well (two memory gauges per well, one primary, and one backup), and allowed to stabilize for one hour. Just before the targeted well is shut in, the two offset wells will be set to maintain a low constant injection rate. The targeted well will be shut in for a minimum of 72 hours, with both of the offset wells maintaining a low constant injection rate. At the end of the falloff test, the bottom-hole pressure gauges will be pulled from the well making gradient stops every 1,000 feet.

The injection build-up period will consist of no less than 72 hours at a constant rate. The pressure falloff sequence will be maintained for at a minimum, the same amount of time. Due to refinery expansion, the refinery does not have the storage capacity to shut in more than two wells for 24 hours and will have to maintain a constant injection into the two offset wells while performing a falloff in the adjacent well.

The memory gauges that will be used are quartz or sapphire gauges that will have a resolution of 0.0002% (FS) or 0.0003% (FS) respectively. The pressure range of the gauges will be from 0 - 10,000 psi minimum. These are typical bottom-hole memory gauges, with the best accuracy available in the area. The gauges will be lowered to the top of the injection interval at 7,924 feet in Mewbourne Well No. 1, 7,820 feet in Chukka Well No. 2, and 7,660 feet in Gaines Well No. 3. The recording period will be set to record pressures at a minimum of every 10 seconds, which should allow for a minimum of a 10-day recording period.

The fluid that will be used for the injection test is the refinery's brine waste water (effluent). A current waste analysis of the fluid will be included in the final report.

A crown valve has been installed on each of the three wells. A wireline lubricator will be installed into the crown valve before running into the wellbore with the memory gauges. The wells will be shut in through two inline gate valves. The first valve is located in the injection line just prior to the wellhead (wing valve), and the other is located behind the filter pods, and is mechanically operated from the control room at the plant (primary and secondary shut-in valves). The instantaneous shut in of the wells will be accomplished by the mechanical operated valve (MOV) behind the filter pods.

Background Information

All background information will be included in the final report encompassing a log of the events (Chronology of Field Activity), an overview of the Geology, a current one mile area of review (AOR) update, falloff analysis including injection data (rate and volume history), gauge calibration certificates, bottom-hole pressure analysis, well schematic, electric logs (if necessary), reservoir fluid description, and injection fluid analysis. The procedure for the buildup/falloff testing will also be included in the final report. An AOR update will be completed prior to the build-up/falloff testing to ascertain any changes, which have occurred in the AOR that might have an effect on the testing. Historically, there has not been any production or injection in the current injection interval within a one mile radius of Mewborune Well No. 1, Chukka Well No. 2, or Gaines Well No. 3.

Navajo Refining has been running buildup/falloff tests on Mewborune Well No. 1, Chukka Well No. 2 since 2000 using sapphire gauges. The tests were performed to comply with EPA directives for UIC non-hazardous Class I injection wells. April 1, 2008 through April 4, 2008 buildup/falloff tests were conducted on Mewborne Well No. 1, Chukka Well No. 2, and Gaines Well No. 3 concurrently, and the injection rates were varied at the end of the testing to ascertain that the wells were hydraulically connected. The 24-hour buildup portion of the testing was done at a constant injection rate in each of the offset wells. The falloff portion of the testing was terminated after 24 hours. The Mewbourne Well No. 1 had a permeability of 2,010 md (height of 175 ft, reservoir viscosity 0.72 cp), for a radius of investigation of 8,455 ft and a skin of 262. The Chukka Well No. 2 had a permeability of 1,091 md (height of 175 ft, reservoir viscosity 0.72 cp), for a radius of investigation of 6,221 ft and a skin of 155. The Gaines Well No. 3 had a permeability of 1,322 md (height of 175 ft, reservoir viscosity 0.72 cp), for a radius of investigation of 7,008 ft and a skin of 107. The pressure data at the end of the testing shows that the wells were hydraulically connected with pressure responses relative to changes in the offset wells injection rate (reference "2008 Annual Bottom-Hole Pressure Survey and Pressure Falloff Test for Mewbourne Well No.1, Chukka Well No. 2, and Gaines Well No. 3" for additional information). A summary of the historical reservoir data is presented in Table 5.

Figures 1 through 3 are the well schematics for Mewborune Well No. 1, Chukka Well No. 2, or Gaines Well No. 3. Table 2 is a summary of the injection intervals for each well. Table 3 is a summary of the injection fluid analysis. Table 4 is a summary of the formation fluids. The majority of the background information can also be found in the permit application that was submitted to the State of New Mexico Oil Conservation Division for each well, and reference data for this request can be found in the "2008 Annual Bottom-Hole Pressure Survey and Pressure Falloff Test for Mewbourne Well No.1, Chukka Well No. 2, and Gaines Well No. 3".

Conduct Annulus Pressure Testing

Utilizing the Navajo annulus monitoring system on each well, an annulus pressure test (APT) will be run at a minimum pressure of 300 psi for a period of no less than 30 minutes. The annulus pressure data will be recorded using a digital surface readout pressure recorder or plant recording equipment (RTU/PLC). Each well will be tested annually apart from the buildup/falloff testing of the reservoir.

Conducting the Falloff Testing

This is the generalized procedure that will be used to perform the buildup/falloff testing at Navajo Refining facility in Artesia, New Mexico:

Day 1

- Inject into one of the offset wells at a low constant rate.
- Shut in the remaining offset well.
- Inject into the target well for the buildup portion of the testing, at a constant rate, for a minimum of 72 hours.

Day 4

- Move in and rig up slick line unit on target well. Make a gauge ring run into the well and tag the bottom of fill. Pull out of the hole with the gauge ring and run tandem memory tools into the well. The memory tools will be set at top of the perforations. Allow the pressure to stabilize for approximately one hour. After

setting the memory tools in place, shut in the target well for a minimum of 72 hours.

- Start injection into each of the offset wells at a minimum constant rate just before shut in of the targeted well and maintain a constant rate for duration of the falloff testing period.

Day 7

- End the 72 hour pressure falloff test, making gradient stops every 1,000 feet while pulling the memory gauges from the wellbore.
- Turn over the targeted well to the refinery operations.
- Turn over the offset wells to the refinery operations.

Evaluation of the Test Results

The falloff analysis will be completed by a qualified engineer using PanSystem®2006 Edinburgh Petroleum Services Ltd. transient pressure analysis program and reviewed for accuracy by a licensed professional engineer (PE). The falloff analysis will include the following:

- A log-log plot with a derivative diagnostic plot used to identify flow regimes;
- A wellbore storage portion and infinite acting portion of the plot;
- A semi-log plot with wellbore storage, p*, and slope;
- An expanded portion of the semi-log plot showing the infinite acting pressure portion (radial flow);
- The geological parameters, height, porosity, compressibility of the rock for the falloff analysis will be based on historical data, loss and local geology developed for the permit application;
- The viscosity of the formation used for the calculations based on historical data;
- A summary of all the equations used for the analysis;
- An explanation of any temperature or pressure anomalies;

The injection records prior to the testing will be included in the analysis. All records from the testing shall be kept on file for no less than 5 years.

Table 1 is a summary of Well Data. Table 2 is a summary of the local geology for injection intervals. Table 3 is a summary of injected waste water. Table 4 is a summary of formation fluids. Table 5 is a summary of pressure fall-off test results.

TABLES

SUBSURFACE

Well Data Table 1

	Mewbourne Well No. 1	Chukka Well No. 2	Gaines Well No. 3
Tubing	4.5", 11.6 lb/ft, N-80, SMLS, R3, LT&C 7879'	3.5", 9.2 lb/ft, J-55, NUE 10RD 7528'	4.5", 11.6 lb/ft, J-55, LT&C, 8RD 7575'
Packer	7"x 3.5", EVI Oil Tools (Arrow), X-1, ID 3", 7879'	5.5"x 2.875" Weatherford (Arrow), X-1, ID 2.4375", 7528'	7"x 2.875" Kenco Tools (Arrow), X-1, ID 2.4375" 7575'
Perforations	Upper: 7924 – 42; 7974 – 8030; 8050 – 56; 8066 – 80; 8118 – 27; 8132 – 40; 8160 – 64; 8170 – 88 Lower: 8220 - 54; 8260 - 70; 8280 - 8302; 8360 - 66; 8370 - 78; 8400 - 10; 8419 - 23; 8430 - 46; 8460 - 64; 8470 - 76	Upper: 7570 – 7620; 7676 – 7736 Lower: 7826 - 34; 7858 - 80; 7886 - 7904; 7916 - 36; 7944 - 64; 7990 - 8042; 8096 - 8116; 8191 - 8201; 8304 - 19; 8395 - 99	Upper: 7660 – 8450 Lower: 8540 - 8620
Protection Casing	7", 29 lb/ft, N-80, LT&C, 9094 - 7031	5.5", 17 lb/ft, L-80, LT&C	7", 29 lb/ft, N-80, LT&C
Cement Top Protection Casing	Surface	Surface	900'
PBTD / TD	9004' / 10,200'	8770' / 10,372'	9022' / 10,119'
Formation	Wolfcamp / Cisco / Canyon	Wolfcamp / Cisco / Canyon	Wolfcamp / Cisco / Canyon
Inj. Interval	7450' – 9016'	7270' – 8894'	7303' – 8894'
OCD UIC Permit Number	UIC-CLI-008-1	UIC-CLI-008-2	UIC-CLI-008-3
API Number	30-015-27592	30-015-20894	30-015-26575

Geology Information Table 2

Injection Zone Formation	Mewbourn Well No. 1 (KB height = 3693 feet)		Chukka Well No. 2 (KB height = 3623 feet)		Gaines Well No. 3 (KB height = 3625 feet)	
	Measured Depth below KB (feet)	Subsea Depth (feet)	Measured Depth below KB (feet)	Subsea Depth (feet)	Measured Depth below KB (feet)	Subsea Depth (feet)
Lower Wolfcamp	7450	-3757	7270	-3647	7303	-3678
Cisco	7816	-4123	7645	-4022	7650	-4025
Canyon	8475	-4782	8390	-4767	8390	-4765
Base of Injection Zone (base of Canyon)	9016	-5323	8894	-5271	8894	-5269

Injected Brine Waste Water Table 3

Chemical Date	Refinery Waste Water Jan 22, 1998	Refinery Waste Water June 14, 1999
Calcium (mg/L)	48	21
Magnesium (mg/L)	98	31
Potassium (mg/L)	51	18
Sodium (mg/L)	1200	424
Chloride (mg/L)	1100	630
Fluoride (mg/L)	3.9	74
Nitrate-N (mg/L)	<0.01	<10
Sulfate (mg/L)	1500	570
Alkalinity (CaCO3) (mg/L)	100	40
pH (s.u.)	6.0 – 9.0	6.0 – 9.0
Specific Gravity (g/L)	1.00 – 1.01	1.00 – 1.01

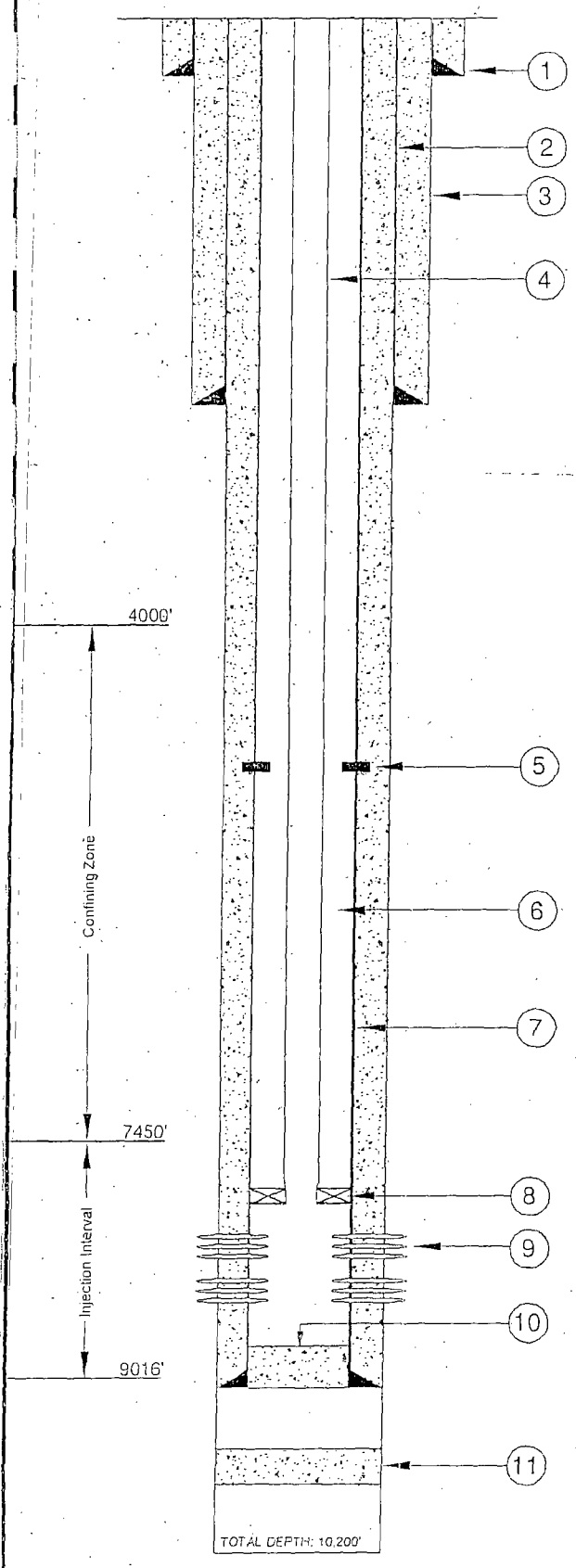
Formation Fluids Table 4

Chemical	Mewbourn 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

Summary of Pressure Fall-off Test Results Table 5

Test No.	Test Date	P_{static} (psia)	kh/μ (md-ft/cp)	V_{well} (10^6 gal)	V_{total} (10^6 gal)
WDW-1 (Static Pressure Ref Depth 7924 ft)					
1	07/31/98	2913.7	537,308	0.0	0.0
2	04/19/00	3073.7	479,925	95.4	108.6
3	12/18/00	3202.9	413,013	196.5	240.3
4	01/14/01	3207.8	405,663	204.7	253.2
5	05/17/01	3243.6	357,754	247.9	303.7
6	08/30/01	3254.8	354,579	276.4	349.5
7	02/14/02	3332.9	398,234	333.1	424.3
8	03/26/03	3370.33	452,416	466.6	631.7
9	08/26/03	3380.97	484,330	506.6	702.5
10	04/05/06	3422.45	751,105	842.4	1208.9
11	04/04/08	3443.53	351,832	1087.0	2714.6
WDW-2 (Static Pressure Ref Depth 7570 ft)					
1	06/05/99	2973.0	1,527,413	0.0	0.0
2	01/13/01	3207.7	713,248	48.7	253.0
3	02/02/01	3213.6	713,575	50.8	262.5
4	05/18/01	3243.6	712,844	56.3	304.4
5	08/29/01	3258.7	572,135	73.4	349.3
6	02/15/02	3311.7	874,047	91.5	424.3
7	03/22/03	3342.48	854,309	165.1	631.7
8	08/27/03	3349.14	837,073	195.9	702.5
9	04/06/06	3395.12	707,786	366.5	1208.9
10	04/03/08	3494.13	265,300	409.4	2714.6
WDW-3 (Static Pressure Ref Depth 7660 ft)					
1	11/05/06	3324.93	1,601,204	0.0	0.0
2	04/02/08	3326.72	321,411	9.3	2714.6

FIGURES



BELOW GROUND DETAILS

All depths are referenced to the Kelly bushing elevation of 12.5' above ground level. Ground level elevation is 3,678' above mean sea level.

1. Surface Casing: 13 ⅜", 48 lb/ft, J-55, ST&C set at 390' in a 17 ½" hole. Cemented with 150 sx Class C with 3 % calcium chloride, 375 sx Class C Litewate w/3 % calcium chloride and ½ lb/sx flocele. Circulated 86 sx to surface.

2. Intermediate Casing: 9 ⅝", 36 lb/ft, J-55, ST&C set at 2,555' in a 12 ¼ " hole. Cemented w/800 sx of Class C Lite w/ ½ lb/sx flocele and 2 lb/sx Gilsonite and 12 % salt. Followed by 200 sx of Class C w/2 % calcium chloride. Circulated 133 sx to surface.

3. Base of the USDW at 493'.

4. Injection Tubing: 4 ½", 11.6 lb/ft, N-80, SMLS, R3, LT&C set at 7,879'.

5. DV Tool: at 5,498'.

6. Annulus Fluid: 8.7 lb/gal brine water mixed w/UniChem Techni-Hib 370 corrosion inhibitor.

7. Protection Casing: 7", 29 lb/ft, N-80, LT&C: 9094' to 7031'. 7", 29 lb/ft, P-110, LT&C: 7031' to 5845'. 7", 26 lb/ft, P-110, LT&C; 5845' to surface. Casing cemented in two stages as follows:

   First Stage - 600 sx modified Class H w/0.4 % CFR-3, 5 lb/sx Gilsonite, 0.5 % Halad-344, and 1 lb/sx salt mixed at 13.0 ppg. Opened DV tool at 5498' and circulated 142 sx to surface.

   Second Stage - Lead Slurry: 220 sx Interfill "C" (35:65:6) mixed at 11.7 ppg. Tail Slurry: 550 sx modified Class H w/0.4 % CFR-3, 5 lb/sx, Gilsonite, 0.5 % Halad-344, 0.1 % HR-7, and 1 lb/sx mixed at 13.0 ppg. Circulated 75 sx to surface. Top out w/20 sx permium plus 3 % calcium chloride.

8. Packer: 7" x 3.5" EVI Oil Tools (Arrow), Model X-1 retrievable packer set at 7879'. Minimum I.D. is 3.0". Wireline re-entry guide on bottom. To release: turn ¼ turn to the right and pick up.

9. Perforations (2 SPF):

   Upper Zone - 7924-7942', 7974-8030', 8050-8056', 8066-8080', 8118-8127', 8132-8140', 8160-8164', 8170-8188'.

   Lower Zone - 8220-8254', 8260-8270', 8280-8302', 8360-8366', 8370-8378', 8400-8410', 8419-8423', 8430-8446', 8460-8464', 8470-8476'.

10. PBTD: 9004'.

11. Cement Plug: 45 sx Class H from 9624' to 9734'.

SUBSURFACE

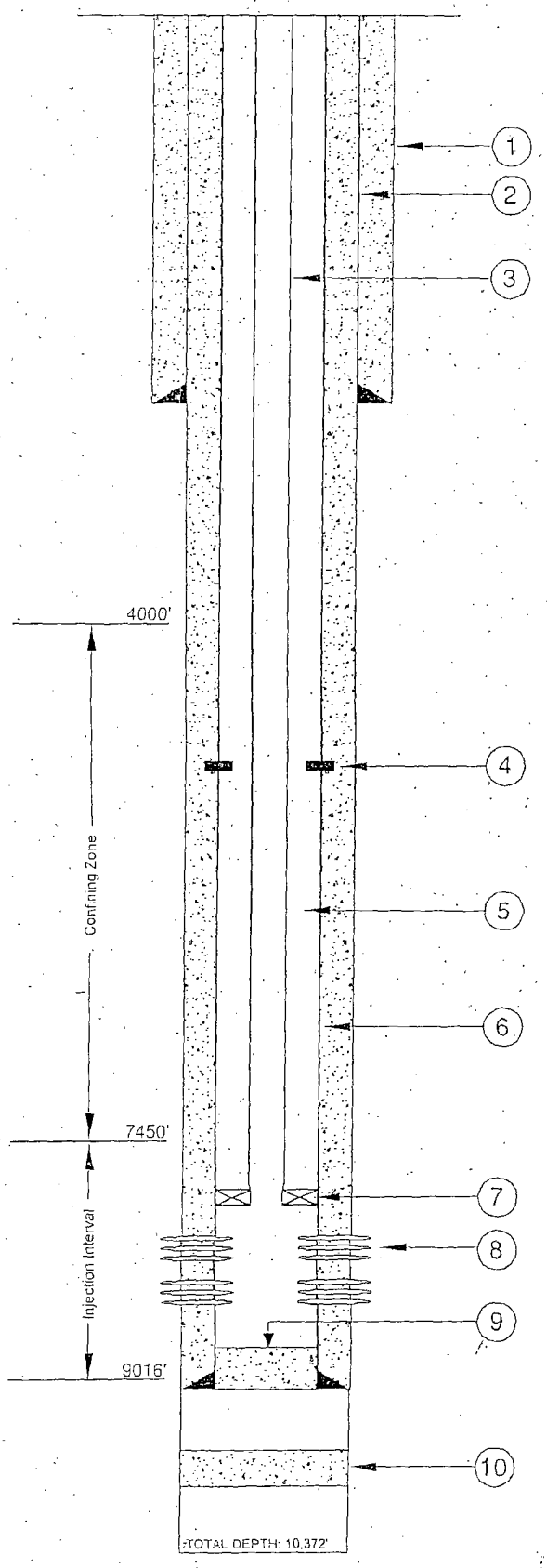
HOUSTON, TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

FIGURE 1

NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO

BELOW GROUND DETAILS
WASTE DISPOSAL WELL NO. 1

DATE: 07/13/01	CHECKED BY:	JOB NO: 7005256
DRAWN BY: WDL	APPROVED BY:	DWG. NO:



BELOW GROUND DETAILS

All depths are referenced to the Kelly bushing elevation of 13' above ground level. Ground level elevation is 3610' above mean sea level.

1. Base of the USDW at 473'.
2. Surface Casing: 8 5/8", 32 lb/ft, set at 1995' in an 11" hole. Cemented to surface with 800 sacks of cement.
3. Injection Tubing: 3 ½", 9.2 lb/ft, J-55, smls, NUE 10 rd. set at 7528'.
4. DV Tool: at 5,785'.
5. Annulus Fluid: 8.7 lb/gal brine water mixed w/UniChem Techni-Hib 370 corrosion inhibitor.
6. Protection Casing: 5 ½", 17 lb/ft, L-80, LT&C: 8869' to the surface and set in a 7 7/8" hole. Casing cemented in two stages as follows:

   First Stage - 575 sacks of modified Class "H" with 0.4 % CFR-3, 5 lb/sk Gilsonite, 0.5 % Halad-344, and 3 lb/sk salt. Mixed at 13.0 ppg. Opened DV tool at 5785 and circulated 20 sacks to surface.

   Second Stage - Lead Slurry: 300 sacks of Interfill "C" (35:65:6) mixed at 11.7 ppg. Tail slurry: 695 sacks modified Class "H" with 0.4% CFR-3, 5 lb/sk Gilsonite, 0.5 % Halad-344 and 3 lb/sk salt mixed at 13.0 ppg. Circulated 150 sacks to surface. Topped out with 10 yards of Redi-mix.
7. Packer: 5 ½" x 2 7/8" Weatherford Completion Tools (Arrow) Model X-1 retrievable packer set at 7528'. Minimum ID is 2.4375". Wireline re-entry guide is on bottom. To release: turn ¼ turn to the right and pick up.
8. Perforations (2 SPF):

   Zone 1: 7570-7620', 7676-7736'

   Zone 2: 7826-7834', 7858-7880', 7886-7904', 7916-7936', 7944-7964', 7990-8042', 8096-8116', 8191-8201', 8304-8319',8395-8399'.
9. PBTD: 8770'
10. Cement Plug: 45 sacks from 9675' to 9775'.

SUBSURFACE

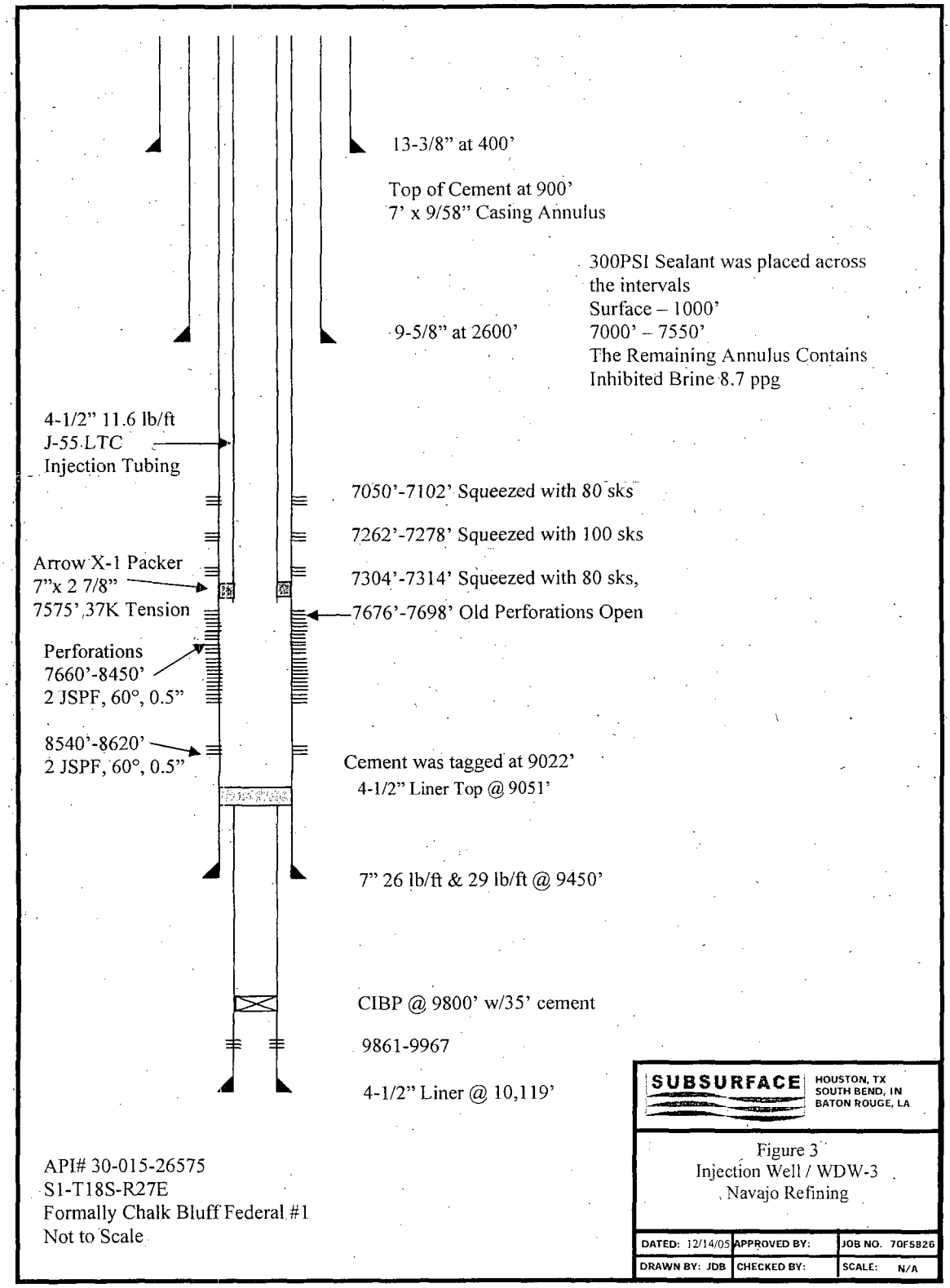
HOUSTON, TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

FIGURE 2

NAVAJO REFINING COMPANY
ARTESIA, NEW MEXICO

BELOW GROUND DETAILS
WASTE DISPOSAL WELL NO. 2

DATE: 07/13/01	CHECKED BY:	JOB NO: 70D5255
DRAWN BY: WDL	APPROVED BY:	DWG. NO:


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 3
Injection Well / WDW-3
Navajo Refining
DATED: 12/14/05
APPROVED BY:
JOB NO. 70F5826
DRAWN BY: JDB
CHECKED BY:
SCALE: N/A

HOUSTON, TX • BATON ROUGE, LA • SOUTH BEND, IN