UIC - I - ___009___

GENERAL CORRESPONDENCE

YEAR(S):

2003 - Present

Chavez, Carl J, EMNRD

From: Robinson, Kelly [Kelly.Robinson@wnr.com]
Sent: Thursday, October 06, 2011 10:17 AM
To: Powell, Brandon, EMNRD; Kuehling, Monica, EMNRD
Cc: Chavez, Carl J, EMNRD; Schmaltz, Randy
Subject: Acidization Work Scheduled for the Bloomfield Refinery Injection Well

Good Morning Brandon and Monica,

As of 10am this morning, Western Refining Southwest, Inc. (Western) was able to finalize the schedule for acidizing the injection well at the Bloomfield Refinery. Halliburton is scheduled to arrive on-site between 9am and 10am tomorrow, October 7th, 2011. I will be the Western representative who will oversee these activities. If you have any questions regarding these schedule activities, please feel free to contact me at your convenience.

Following the well acidization activities, the injection well will be returned to normal operation. I will be contacting you again next week to schedule a time that meets your schedule for conducting the Annual Fall-Off Test.

Thank you for your time, and have a great day!

Sincerely,

Kelly R. Robinson
Environmental Supervisor

Western Refining Southwest, Inc.
111 County Road 4990
Bloomfield, NM87413

(o) 505-632-4166
(c) 505-801-5616
(f) 505-632-4024
(e) kelly.robinson@wnr.com

MEMORANDUM

TO: GLENN VON GONTEN

FROM: CARL CHAVEZ

SUBJECT: WEEKLY REPORT FOR THE ENVIRONMENTAL BUREAU
WEEK OF June 27, 2010

DATE: July 2, 2010

ADMINISTRATIVE

- Filing of correspondence, reports, etc. - ongoing.

REMEDIATION PLANS

- See "Abatement Plans" below.

ABATEMENT PLANS

- Enterprise Products Abatement Plan Submittals S. Carlsbad CS and Trunk "A"Terminal approval w/ conditions for landfarm work plan issued.

DISCHARGE PERMITS

- GW-001: Western Bloomfield Refinery

    - *Sent e-mail on June 29, 2010 to Western Refining requesting signed discharge permit with final fee... Waiting for Western to remit signed renewed discharge permit with final fee to OCD by July 15.*

    - *Sent reminder to H2S Contingency Plan and sharing of public notice information from Navajo Refining Company next week. Also advised that Western may want to schedule a meeting with the LEPC or local Fire Marshall to determine who does what in the event of a worst case scenario to educate the public. The Hazwoper evacuation plan was referenced.*

    - *Reviewed Facility-Wide Groundwater Monitoring Plan June 2010 received 6-30-2010.*

- GW-032: Western Gallup Refinery

    - *Completed "Major Modification" to discharge permit documents (Administratively Complete, Public Notice and Modified Discharge Permit) and*

(i.e., G-106 and 107 Forms). Additional testing 55-7 and stats analysis using deeper geothermal wells as data points. BLM wants OCD approval (see approval above) on water quality for their records allowing discharge into the unlined pit.

- **BW-028 NOV**

    - Scheduled meeting for July 7, 2010 to discuss status of OCD-EB reviews of NOVs from April 2010.

- **UICI-005 NOV**

    - *Received Annual Report on June 30, 2010 and currently conducting complete review of Key Energy Services, L.L.C. 2009 Annual Report in response to OCD NOV. The deadline was met with report going back to 2006. Key became the new owner of the well September 8, 1997. They apparently did not acquire the records from the seller (Sunco)....*

    - *Searched historical well files at OCD for GW-235 for NOV review, but was unsuccessful.*

    - *Processed Key Energy Services L.L.C. C-103 Sundry Notice with conditions for Fall-Off Test to commence 7/8/2010.*

- **UICI-009 Class I (NH) Well Western Refining Southwest, Bloomfield Refinery**

    - *Awaiting instructions from Mark Fesmire according to Mikal Altomare on how to proceed based on draft discharge permit posted on OCD Website on April 25, 2010 and alleged hearing request from Western. The final discharge permit is pending further instructions or order for issuance of final discharge permit. Glenn said he'd check with Mikal Altomare about this on 6/22/2010.*

GEOTHERMAL

Working Groups:

- *Reviewed California's recent Geothermal Regulatory changes for final recommendations to consider before 7/30/2010 and to submit to ECMD for consideration in the report to Governor. Particularly interested in technical recommendations, since OCD Engineering Bureau did not respond to first request for recommendations.*
- *Reviewing draft forms and resource webpage from Mikal A.*

PART 36 - SURFACE WASTE MANAGEMENT FACILITY PERMITS:

AUTHORIZATION TO MOVE PRODUCED WATER:

Chavez, Carl J, EMNRD

From: Altomare, Mikal, EMNRD
Sent: Friday, April 16, 2010 5:24 PM
To: Jones, William V., EMNRD; Chavez, Carl J, EMNRD; Macquesten, Gail, EMNRD
Subject: FW: Western Refining: Injection Well

Fyi – just received from counsel for WRSW. Stay tuned...

Mikal M. Altomare
Assistant General Counsel
Oil Conservation Division
Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Tel 505.476.3480 ~ Fax 505.476.3462
mikal.altomare@state.nm.us

From: Edmund H. Kendrick [mailto:EKendrick@montand.com]
Sent: Friday, April 16, 2010 5:23 PM
To: Altomare, Mikal, EMNRD
Subject: Western Refining: Injection Well

Mikal,

As we discussed on Tuesday (4/13), Western has gone ahead and provided public notice this week of the discharge permit renewal application. Western will be providing OCD with proof of that public notice shortly. Also Western has drafted a request for public hearing for review by Western management. I will forward that request to you as soon as possible on Monday (4/19).

Ned

Edmund H. Kendrick
Attorney at Law
Montgomery & Andrews, P.A.
325 Paseo de Peralta (87501)
P.O. Box 2307
Santa Fe, NM 87504-2307
ekendrick@montand.com
(505) 986-2527 (direct dial)
(505) 982-4289 (fax)

Chavez, Carl J, EMNRD

From: Altomare, Mikal, EMNRD
Sent: Monday, April 19, 2010 11:51 AM
To: VonGonten, Glenn, EMNRD; Macquesten, Gail, EMNRD; Chavez, Carl J, EMNRD; Perrin, Charlie, EMNRD
Subject: FW: Western Refining: Injection Well
Attachments: Letter to Mark Fesmire 4-19-10 (00180814).PDF

Fyi

Mikal M. Altomare
Assistant General Counsel
Oil Conservation Division
Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Tel 505.476.3480 ~ Fax 505.476.3462
mikal.altomare@state.nm.us

From: Edmund H. Kendrick [mailto:EKendrick@montand.com]
Sent: Monday, April 19, 2010 11:48 AM
To: Altomare, Mikal, EMNRD
Subject: Western Refining: Injection Well

Mikal,

Following up on my Friday (4/16) email, I am attaching Western's request for a public hearing on its discharge plan permit renewal application. The original is being hand delivered to Mr. Fesmire.

Ned

Edmund H. Kendrick
Attorney at Law
Montgomery & Andrews, P.A.
325 Paseo de Peralta (87501)
P.O. Box 2307
Santa Fe, NM 87504-2307
ekendrick@montand.com
(505) 986-2527 (direct dial)
(505) 982-4289 (fax)

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Tuesday, April 13, 2010 4:48 PM
To: 'Schmaltz, Randy'
Subject: RE: Bloomfield Inj Well Public Notice

Approved. Thank you.

Please note that OCD approval does not relieve Western Refining Southwest, Inc. Bloomfield Refinery of responsibility for compliance with any other federal, state, or local laws and/or regulations.

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: Schmaltz, Randy [mailto:Randy.Schmaltz@wnr.com]
Sent: Tuesday, April 13, 2010 4:44 PM
To: Chavez, Carl J, EMNRD
Subject: Bloomfield Inj Well Public Notice

Carl,

I have made the requested change to the notice. The Spanish version will replicate the English version. The change is highlighted in red.

Thanks for your help!

Randy Schmaltz
Environmental Manager

Western Refining Southwest, Inc.
Bloomfield Refinery
#50 County Road 4990
Bloomfield, New Mexico 87413
(505) 632-4171
(505) 320-6989
email: randy.schmaltz@wnr.com

NOTICE OF PUBLICATION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.23108 NMAC), the following discharge permit application(s) has been submitted to the Director of the New Mexico oil Conservation Division ("NMOCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(UICI – 009) Western Refining Southwest, Inc. - Bloomfield Refinery James R. Schmaltz, Environmental Manager, # 50 Road 4990 or PO Box 159, Bloomfield, New Mexico 87413 has submitted a renewal application for a Class 1 (non- hazardous) Injection Well Discharge Permit UIC- CLI- 009 (GW-130) for Disposal Well No. 1 (API#30-045-29002) located in the NE/4, SE/4 of Section 7, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The injection well is located within the refinery property approximately 1.05 miles south of the intersection of Hwy-544 and Hwy 550 on Hwy-550 turn East on Road 4990 about 0.5 mile to the refinery. Oil field exempt and non-exempt non-hazardous industrial waste water generated through refining operations and remediation activities will be injected into Disposal Well No. 1 for disposal into the Cliff House Formation in the injection intervals from 3276 to 3408 feet and Menefee Formation in the injection interval from 3435 to 3460 feet. The Total Dissolved Solids (TDS) concentration of injected waste fluid is about 15,600 mg/L. The TDS of the formation fluids is about 25,000 mg/L. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 10 to 30 feet below the ground surface, with a TDS concentration of about 200 mg/L. The discharge plan addresses well construction, operation, monitoring, associated surface facilities, and provides a contingency plan in the event of accidental spills, leaks, and other accidental discharges in order to protect fresh water.

The NMOCD has determined that the application is administratively complete and has prepared a draft permit. The NMOCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may be also be viewed at the NMOCD web site http://wwww.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact the address above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be hold. A hearing will be held if the Director determines that there is significant public interest.

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

Chavez, Carl J, EMNRD

From: Altomare, Mikal, EMNRD
Sent: Friday, April 09, 2010 4:04 PM
To: ekendrick@montand.com
Cc: Macquesten, Gail, EMNRD; Chavez, Carl J, EMNRD; Jones, William V., EMNRD; VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject: Western Refining Southwest, Inc. Class I Waste Disposal Well no. 1, pending renewal UIC-I-9
Attachments: 2010 4-9 letter to counsel Kendrick re permit renewal notice.pdf

Importance: High

Mr. Kendrick,

Please find attached correspondence of today's date which is also being sent by United States Mail.

Sincerely,
Mikal Altomare

Mikal M. Altomare
Assistant General Counsel
Oil Conservation Division
Energy, Minerals & Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
Tel 505.476.3480 ~ Fax 505.476.3462
mikal.altomare@state.nm.us

New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson
Governor

Jon Goldstein
Cabinet Secretary
Jim Noel
Deputy Cabinet Secretary

Mark Fesmire
Division Director
Oil Conservation Division

April 9, 2010

EDMUND H. KENDRICK
Montgomery & Andrews PA
P.O. Box 2307
Santa Fe, NM 87504-2307
Also via email: ekendrick@montand.com

Re: WESTERN REFINING SOUTHWEST, INC. – *(OGRID 037218)*
Class I Waste Disposal Well No. 1, API No. 30-045-29002
Discharge Plan Permit Renewal Application for UIC-I-9

Dear Mr. Kendrick,

This is in response to your correspondence dated March 25, 2010 regarding the request made by your client, Western Refining Southwest Inc. (WRSW), that the OCD withdraw public notice issued relating to the proposed Discharge Plan Permit Renewal of UIC-I-9.

In the OCD's view, there are two separate issues raised by the March 25, 2010 letter: the procedural issue of WRSW's notice obligations pursuant to WQCC Rules, and the substantive issue relating to what the appropriate maximum surface injection pressure is for this well should the permit be renewed by the OCD under WQCC Regulations. Vague reference was made to "other" substantive issues with the permit, but these were not specifically identified and are therefore not being addressed at this time. Each of the two issues specified in the March 25th letter is addressed in further detail, below.

PUBLIC NOTICE ISSUE:

As WRSW notes in its March 25th letter, WQCC Regulations require operators to provide public notice within 30 days of the OCD deeming an application for discharge permit renewal "administratively complete." 20.6.2.3108(C) NMAC. As you are aware, the OCD deemed WRSW's application for renewal of UIC-I-9 "administratively complete" on February 25, 2010, meaning WRSW's deadline to provide public notice was March 27, 2010. The OCD notes that WRSW waited until two days prior to its deadline to raise concerns regarding the notice.

WRSW's statement that it would be "impossible" to provide public notice in this case is incorrect. Despite WRSR's assertion to the contrary, WRSW is not required to specify a maximum surface injection pressure in the public notice made pursuant to WQCC Rules 20.6.2.3108(C) and (F). The Rules require only that it include the following:

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

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

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

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

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

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

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

See 20.6.2.3108(F) NMAC. Public notice made by the applicant does not need to "match" that made by the department. Indeed, the notice provided by the department is required by the WQCC Regulations to be more detailed as, when it is made in the way it was in this case, it constitutes *combined public notice* for purposes of Subsections "E" and "H" as provided by 20.6.2.3108(J) NMAC. While Subsection "E" only requires the department to provide the same above-enumerated information that the applicant is required to provide in its notice (as set out in Subsection "F"), Subsection "H" imposes an additional obligation on the department to provide more detailed and technically specific public notice than that required by Subsection "E" (or that which is required of the applicant) because the department must also make available a draft of the proposed permit. In this context, the department chooses to make the substance of its notice more technically detailed and specific than the minimum required by Subsection "F," and therefore, the public notice provided in this case by the department for WRSW's waste disposal well was technically detailed and included specifications such as the maximum surface injection pressure. In contrast, WRSW can (and could have) issue(d) public notice in this case <u>without</u> specifying the maximum surface injection pressure and will still meet the requirements of 20.6.2.3108(C) and (F) NMAC.

<u>SUBSTANTIVE PERMIT ISSUES:</u>

The March 25, 2010 correspondence goes into great detail regarding WRSW's objection to the reduction of the pressure limit for this well. As you know, the increased pressure of the reservoir is an issue of which WRSW has been aware since before the 2007 fall-off test (FOT), and which was specifically brought to the attention of WRSW by the OCD after the 2007 FOT. The OCD was assisted in the FOT data software evaluation by the EPA at the OCD's request in October of 2008. Further discussions continued into 2009 between the WRSW and OCD with the OCD discussing with WRSW the concerns of the OCD and the EPA regarding propagation of existing fractures and potential for new fractures at the current discharge permit limit. WRSW will recall that in June of 2009 a telephone conference call was conducted between WRSW and the OCD at which time this issue was specifically discussed. At that time WRSW informed the OCD that it felt that the pressure increase was due to a well bore "skin effect" problem and that it would like an opportunity to attempt stimulation of the well to address and overcome the "skin effect." The OCD advised WRSW at that time that neither it nor the EPA felt the problem was attributable to a wellbore "skin effect" as the FOT results were representative of the formation outward, away from the wellbore. However, the OCD agreed to give WRSW an opportunity to at least try the acid stimulation approach to see if it would be successful in remedying the situation. Also, during the June 2009 conference call with the OCD, WRSW acknowledged that if the acid stimulation was not successful it would then have to consider drilling another well for disposal.

In an email on June 18, 2009, the OCD further informed WRSW regarding additional concerns it had discussed with the EPA, and options for addressing those concerns. Also at that time the OCD informed WRSW that it appeared that WRSW was operating in violation of the conditions of its permit because, by continuing to inject at 1150 psig, WRSW was causing existing fractures to increase or actively inducing new fractures to grow or develop (a violation of the permit).

It appears that WRSW first attempted an acid stimulation in July 2009, which WRSW deemed unsuccessful, and that a second acid stimulation was then performed in September 2009. Our understanding is that the acid stimulation(s) yielded at best a short-lived and/or marginal improvement in the reduction of pressure and increase in injection rate, and that as of early February 2010, even at a reduced 50% rate of injection due to what WRSW has referred to as "idling of the facility," (which occurred in December of 2009) the well was again operating at a pressure approaching the maximum discharge permit limit. In fact, OCD reviewed the pressure, flow rate v. time chart from 1995 to 2010 and noticed that the operating pressure was approaching the 1150 psig discharge permit limit regardless of what the injection rate into the well was, indicating the formation was over-pressured or filled up. The radioactive survey and fall-off testing were conducted in September and October, 2009 with the FOT report being completed on November 18, 2009. An annual report was provided to the OCD by WRSW on January 29, 2010.

The OCD reviewed the FOT report results and annual report and concluded that the concerns regarding pressure were not assuaged by the data presented therein. On February 3, 2010 the OCD advised WRSW by email that it would be calculating the maximum allowable surface injection pressure for this well for purposes of the permit renewal by using the *pressure, flow rate v. time chart* from 1995 to 2010 for the history of the well operations and the FOT data completed in 2009, and requested some additional data from WRSW for purposes of performing these calculations. At that time, the OCD specifically informed WRSW that the new limit was likely to be significantly less than the current assigned limit. WRSW responded to the email by providing some of the requested materials for the calculations (the OCD was able to obtain the rest from OCD files), but at no time did WRSW comment regarding either the OCD's means for calculating the new maximum surface injection pressure limit or the fact that it was anticipated to be significantly less than before.

On February 22, 2010 the OCD informed WRSW via email that the OCD anticipated having a draft permit ready for dissemination later in the week and that it had completed the calculations for the maximum allowable surface injection pressure. The OCD advised that the new injection pressure limit for the UIC-I-9 renewal "...has been reduced to 600 psig in the discharge permit in order to prevent the half-fractures from growing in the present injection formation." On February 23, 2010, the OCD spoke with WRSW by telephone to further discuss the reduction in maximum surface injection pressure limit. The OCD advised WRSW regarding how the OCD arrived at the 600 psig figure and referred to and discussed a previously issued order under which WRSW was required to monitor and report fracturing, a step-rate test and a historical flow-rate, pressure v. time chart for the well, as well as the OCD's persisting concerns (including the concerns regarding fracturing). The OCD advised WRSW that the 600 psig was a final determination and that if WRSW disagreed, it could request a hearing on the matter.

Discharge permits for Class I nonhazardous waste disposal wells are issued and, when appropriate, renewed pursuant to Sections 20.6.2.3000-3999 (addressing discharge permits, generally) as well as

Sections 20.6.2.5000-5299 (addressing underground injection wells, specifically) of the WQCC Regulations, and must comply with both. Section 20.6.2.3109 NMAC sets out the basic framework for the approval, disapproval, renewal, modification and termination of discharge permits, and provides that "[t]he secretary shall, within 30 days after the administrative record is complete and all required information is available, approve, approve with conditions or disapprove the proposed discharge permit, modification or renewal based on the administrative record." *Emphasis added.* In order to be approved, in addition to meeting all other requirements, an operator seeking renewal of a Class I permit must establish in its application for renewal that "neither a hazard to public health nor undue risk to property will result" if approved. *Id.* at (C). *Emphasis added.* Subsection "H" specifically prohibits the approval of a discharge plan renewal which "may result in a hazard to public health." *Id.* at (H).

Indeed, even where an operator's permit is not on review for renewal, the department has the authority – and the duty – to require a modification of the permit (or if that is not adequate, to *terminate* that permit), where data submitted to the department reveals that the WQCC discharge permit regulations are being violated, or that continued operation under the current permit conditions may result in a hazard to public health or undue risk to property. Subsection "E" of Section 20.6.2.3109 NMAC provides in relevant part:

> If data submitted pursuant to any monitoring requirements specified in the discharge permit or other information available to the secretary indicates that this part is being or may be violated ....
>
> (3) The secretary may require modification, or may terminate a discharge permit for a class I non-hazardous waste injection well, ...pursuant to the requirements of Subsection I of 20.6.2.5101 NMAC.

20.6.2.3109(E) NMAC. *Emphasis added.*

Subsection I of 20.6.2.5101, referenced above, provides in relevant part:

> If data submitted pursuant to any monitoring requirements specified in the discharge permit or other information available to the secretary indicate that this Part are being or may be violated, the secretary may require modification or, if it is determined by the secretary that the modification may not be adequate, may terminate a discharge permit for a Class I non-hazardous waste injection Well, or Class III well or well field, that was approved pursuant to the requirements of this under Sections 20.6.2.5000 through 20.6.2.5299 NMAC for the following causes:
>
> (1) Noncompliance by the discharger with any condition of the discharge permit; or
>
> (2) The discharger's failure in the discharge permit application or during the discharge permit review process to disclose fully all relevant facts, or the discharger's misrepresentation of any relevant facts at any time; or
>
> (3) A determination that the permitted activity may cause a hazard to public health or undue risk to property and can only be regulated to acceptable levels by discharge permit modification or termination.

20.6.2.5101(I) NMAC. *Emphasis added.* Section 20.6.2.5206(A)(1) provides that "the maximum injection pressure at the wellhead shall not initiate new fractures or propagate existing fractures in the confining zone...," and Section 20.6.2.5206(B)(1) provides that "[e]xcept during well stimulation, the maximum

injection pressure shall not initiate new fractures or propagate existing fractures in the injection zone." Section 20.6.2.5206(A)(1) and (B)(1) NMAC.

The regulatory duties of the department include ensuring that any discharge permit issued or renewed meets the specific requirements set out in the WQCC regulations. This includes ensuring that any permit issued or renewed will not create a hazard to public health or an undue risk to property. If such circumstances exist with regard to a currently in-force permit, these duties include the duty to impose modifications – or if appropriate, to terminate the permitted activity - in order to "regulate the risk to acceptable levels." *Id.*

In this case, with regard to the application for renewal of UIC-I-9, the record reflects that WRSW is in fact violating Part 2 of the WQCC regulations. Specifically, the maximum injection pressure being used at the wellhead at this well (the 1150 psig for which it is currently permitted) is initiating new fractures and/or propagating existing fractures in the confining and/or injection zones at this location. Further, this poses a concern to all wells within one mile of the injection well that lack cement in the injection zone(s). WRSW was advised long ago that this was an issue and of concern for both the EPA and the OCD, and WRSW was given an opportunity to see if could remedy the pressure issue through well stimulation. The OCD has reviewed the most recent FOT data and has concluded that continued surface injection pressure greater than 637 psig may create a hazard to public health and/or an undue risk to property because continued injection at a rate above this parameter will result in continued fracturing, fracture growth, and possibly vertical fracturing to occur upward into regional aquifer systems, protectable ground water, and possibly even surface water discharges along the San Juan River. This continued fracturing will also constitute an ongoing violation of WQCC Section 20.6.2.5206 NMAC, as well as of the conditions of the discharge permit (which also prohibit injection at a rate that results in fracture creation or propagation).

The OCD has reviewed the current and historical data for this well and, applying a reasonable safety factor range to the upper-threshold determination of 637 psig as noted above, has determined that a safe surface injection pressure for this well would 600 psig or less, such that the risk of fracture propagation/creation would be cease if maintained at or below this level, but would be unacceptable above this pressure limit. This modification to the permit draft was made pursuant to the OCD's regulatory obligations and authority, and WRSW's request for a renewal of its permit was approved with conditions pursuant to Section 20.6.2.3109 NMAC. The OCD notes that based upon the most recent data for this well and the fact that WRSW is currently operating in violation of Section 20.6.2.5206 NMAC, even if the permit were not on review for renewal at this time, the department would be requiring a permit modification or termination pursuant to Sections 20.6.2.3109(E) and 20.6.2.5101(I) for the purpose of regulating this well to acceptable levels (such that the growth/creation of new fractures has ceased and the potential for a hazard to public health and/or undue risk to property has been minimized).

WRSW has proposed that the OCD withdraw the notice issued on February 25, 2010 so that it and the OCD can "meet and discuss any issues concerning an appropriate maximum injection pressure." However, it is important to recognize that, as discussed above, discharge permits are issued pursuant to this agency's regulatory authority and obligations. Permits are not contractual agreements between operators and the department, and do not represent the memorialization of a compromise between two parties. Rather, the OCD is obliged to review data and information submitted by parties within very specifically defined

parameters, to apply specific standards to that information, and to issue, decline to issue or issue modified versions of permits or even terminate the permit accordingly. Thus we respectfully decline WRSW's suggestion to meet to further discuss this matter.

That being said, the OCD feels that the matter has already been discussed in full between it and WRSW over the course of the past year, that it understands WRSW's position with regard to its perception that a higher injection pressure is justified, and, as the OCD has already advised WRSW, the OCD disagrees with the findings and conclusions of WRSW regarding this well. As you know, the OCD issued public notice regarding the draft permit. The public notice not only invited comments from interested parties, but also included a statement that interested parties could request a hearing regarding the proposed permit, and specification that such requests should be submitted in writing and should specify the basis for the request.

At this time, if WRSW feels that it would like to further address the contents of the proposed permit renewal for UIC-I-9, the appropriate course of action would be for WRSW to submit a written request for hearing as provided in the OCD's public notice. If WRSW has data or expert testimony it feels that the OCD has not considered or has failed to consider adequately in its review of the application for permit renewal, it can present such evidence at the hearing. WRSW also mentioned in the 3/25/10 letter, although not with any specificity, that there are "other" issues of concern with the permit draft. A hearing would also allow WRSW to address those concerns. Of course, WRSW will be required to take immediate steps to provide the public notice for which it has already technically missed the deadline.

If upon further reflection WRSW opts not to request a hearing, and prefers to simply allow the permit renewal process to proceed, if WRSW immediately remedies the applicant notice issue, the OCD will recalculate the public notice time period accordingly and proceed with issuance of the final permit thereafter. Conversely, if WRSW does not request a hearing and continues to refuse to fulfill its obligations for public notice, and if no public notice has been provided by WRSW by **Friday April 16, 2010**, the OCD will consider the application for renewal **withdrawn**, and the current permit, UIC-I-9, **expired**.

If WRSW is still concerned regarding meeting its obligations under the notice regulations and would like the OCD to review its public notice prior to publication, the OCD would be happy to review a draft and provide feedback regarding whether it appears to meet the requirements of the WQCC regulations. Please let us know if this is something with which WRSW would like assistance.

Sincerely,

Mikal Altomare
OCD Attorney

EC:
Carl Chavez, carl.chavez@state.nm.us
William Jones, William.v.jones@state.nm.us
Gail MacQuesten, Gail.macquesten@state.nm.us
Glenn von Gonten, glenn.vongonten@state.nm.us
Charlie Perrin, Charlie.perrin@state.nm.us

Western Refining

WNR LISTED NYSE

RECEIVED OCD

2010 APR -7 P 1:14

April 5, 2010

Mr. Carl Chavez
New Mexico Oil Conservation Division
1220 South St. Frances Dr.
Santa Fe, New Mexico 87505

Re: **Response to OCD February 3, 2010 Email**
UIC Class 1 Disposal Well UICI-009
Western Refining Southwest, Inc.
Class I Non-Hazardous Disposal Well
Waste Disposal Well No. 1, API No. 30-045-29002
2442 FSL and 1250 FEL UL: I Section 27, T29N, R11W

Dear Carl,

Western has prepared the following response to the issues listed in your email dated February 3, 2010.

FOT Issues:

Issue #1: First, the OCD alerted Western in a prior e-mail that the bottom hole gauges for the 2009 FOT should have been installed at least 48 hours before cessation of injection instead of two hours before shut-off.

Response #1: Western acknowledges this issue and will incorporate this change in future Fall Off tests.

Issue #2: OCD notices that fracture half-lengths were on the order of 3,000 ft, which is greater than the ½ mile that the UIC Class II Disposal Well was originally designed for. The well later became a UIC Class I Well and the AOR that OCD requires is 1 mile unless the operator can demonstrate an AOR less than 1 mile from actual formation hydrogeologic properties, etc. The OCD is aware of at least one well located at just greater than ½ mile from the Class I well, which lacks cement across the Mesa Verde Group.

Response #2: The report does calculate a fracture half length but does not attempt to describe the geometry of the fracture. The fracture half length or total length of all fractures in communication with the wellbore along with the effects of lenticular sands is calculated to describe the injection behavior of the well. Since the simple fracture half

length does not tell how many fractures nor the orientation of the fractures, there is no basis to deviate from the designated formula for estimating a radius to the edge of the injected fluid. The "Evaluation of Disposal Well #1" report prepared by William M. Cobb & Associates, Inc. also calculates the radius to the edge of the injected fluid (R_{waste}) which is 1,220 feet.

In calculating the radius to the edge of the injected fluid and the fracture half length, net pay (also known as the injection zone) of 106 feet was used. The actual radius will vary based on the net feet occupied by the injected fluid. The 106 feet used in the report is a conservative number causing the radius of the waste to be overstated at 1,220 feet. If any fluid moves into the Menefee formation immediately below the Cliff House injection zone, or if the effective net pay is more than 106 feet as indicated by the 1992 geologic report, then the radius would be further reduced and the requirement is still met.

The 1992 geologic report indicates that the Cliff House formation has an expected net thickness of 114 feet in the vicinity of the injection well. This zone consists of northwest trending shoreline type benches which contribute to the linear flow character seen in Disposal Well #1 and to the long fracture length. The report shows that expected net pay varies from a low of 107 feet to a high of 155 feet. Using these net pay numbers would reduce the calculated radius to the edge of the injected fluid (R_{waste}).

The 1992 geologic report notes that the Menefee, immediately below the Cliff House has an expected thickness of 600 feet and consists of sands deposited in channel or deltaic environments. This depositional environment would account for the linear flow observed and for fracture half lengths longer than expected based on the size of the 1996 frac job.

Issue #3: Well bore diagrams with cement evaluation were not provided by Western as required by the OCD in the June 24, 2009 e-mail with path forward based on formation pressure issues.

Response #3: Well bore diagrams that are available are attached. Although the Calvin #1 well construction diagram was not available, the information stated on Form C-103 dated December 17, 1962 shows that the 2nd stage cement was placed from 1,916 feet to approximately 916 feet. Thus, there is a good cement plug isolating the injection zone from the lower most groundwater aquifer. The Form C-103 is attached.

Issue #4: Western proposes to fracture the lower interval, install a filtration system, and stimulate the well again in the FOT report.

Response #4: Western has stimulated the well, and has installed the filtration system. Due to the results, the fracturing of the lower interval is not being considered at this time.

Issue #5: The operator did not provide the EPA 40 CFR 146.6(a)(2) formula and calculations to determine the radium of endangering influence from the injection well to ensure that it has not surpassed the 1-mile AOR.

Response #5: The radius of endangering influence was calculated using the 40 C.F.R. § 146.6 equations. Using the 556,032,672 gallon cumulative injection volume as of the 2009 Fall Off Test, the radius of endangering influence is 541 feet. When the cumulative injection volume reaches 1,200 million gallons, the radius of endangering influence will be 794 feet. The calculations are attached.

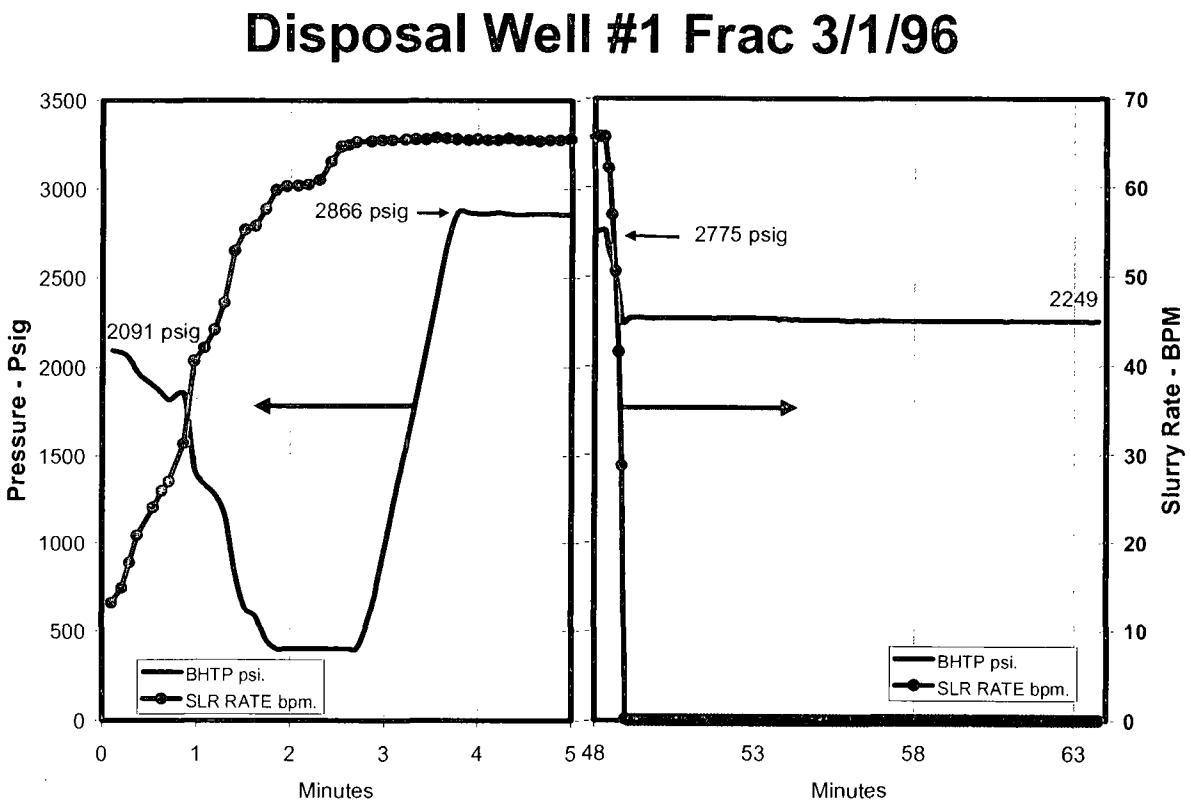
UIC Class 1 Disposal well Renewal Issues:

Issue #6: Based on the fracture ½ lengths from the FOT and lack of depressurization (~19 psig) during the 12 day fall-off, the OCD has alerted the operator that the formation appears to be overpressured at the permitted maximum injection pressure of 1150 psig. The OCD with the assistance of the EPA who evaluated the 2009 FOT, indicated that fractures would continue to grow under the existing OCD permit.

Response #6: In Western's opinion, there is no engineering basis to reduce the injection pressure. Based on actual data collected by Western, it is not possible for the fractures to be growing at this time.

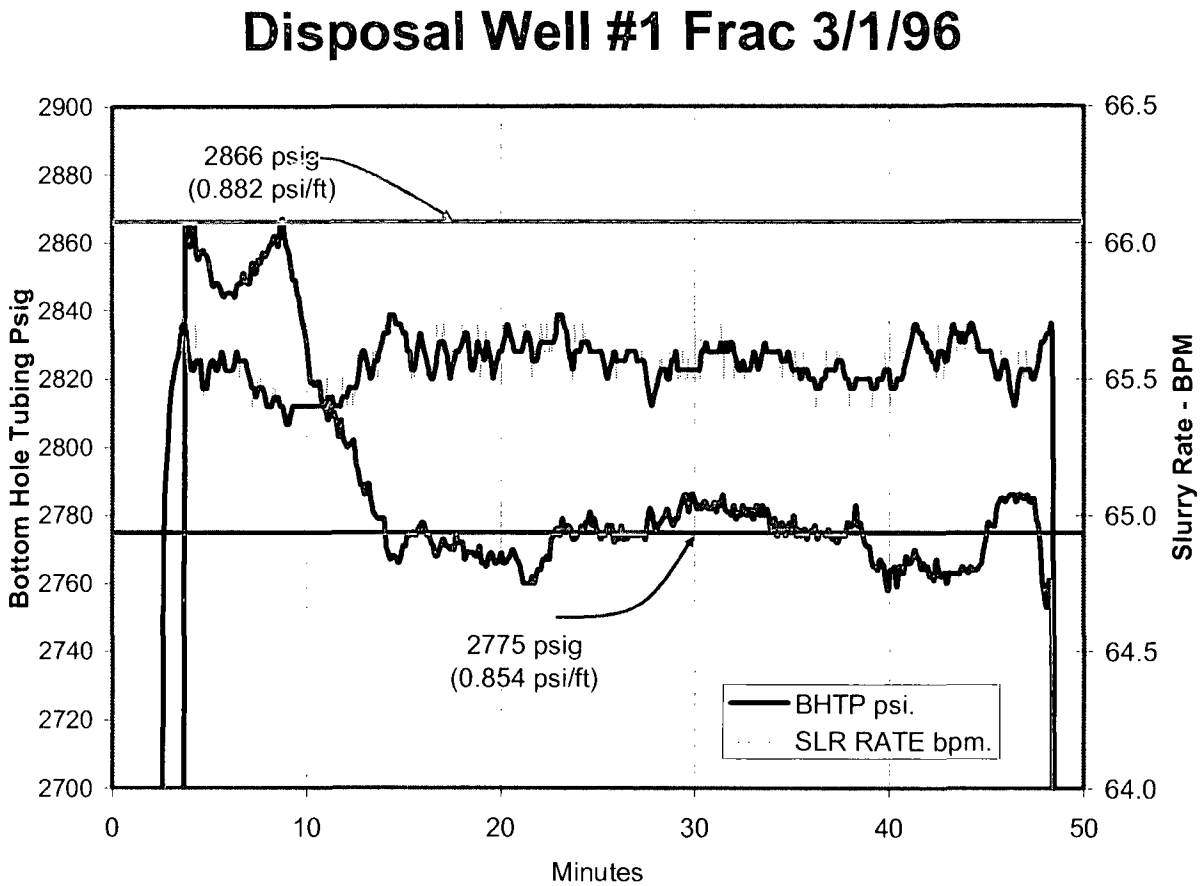
Figure 1

Fracture Treatment Data



BHTP – Bottom Hole Treating Pressure
BPM – Barrels Per Minute
SLR – Slurry Rate

Figure 2
Fracture Treatment Data



Figures 1 and 2, above, were generated using the same data from the March 1, 1996 Postfrac Treatment Summary. Figure 1 depicts the pressure and slurry rate versus time. To enhance detail, Figure 2 has a larger scale than Figure 1. These figures show the following:

1) the formation pressure at initiation of treatment was 2,091 psig (0.64 psi/ft) as seen in Figure 1;

2) the formation parting pressure was 2,866 psig (0.88 psi/ft) as seen in Figures 1 and 2; and

3) the propagation pressure is approximately 2,775 psig (0.85 psi/ft) as seen in Figures 1 and 2.

Figure 3

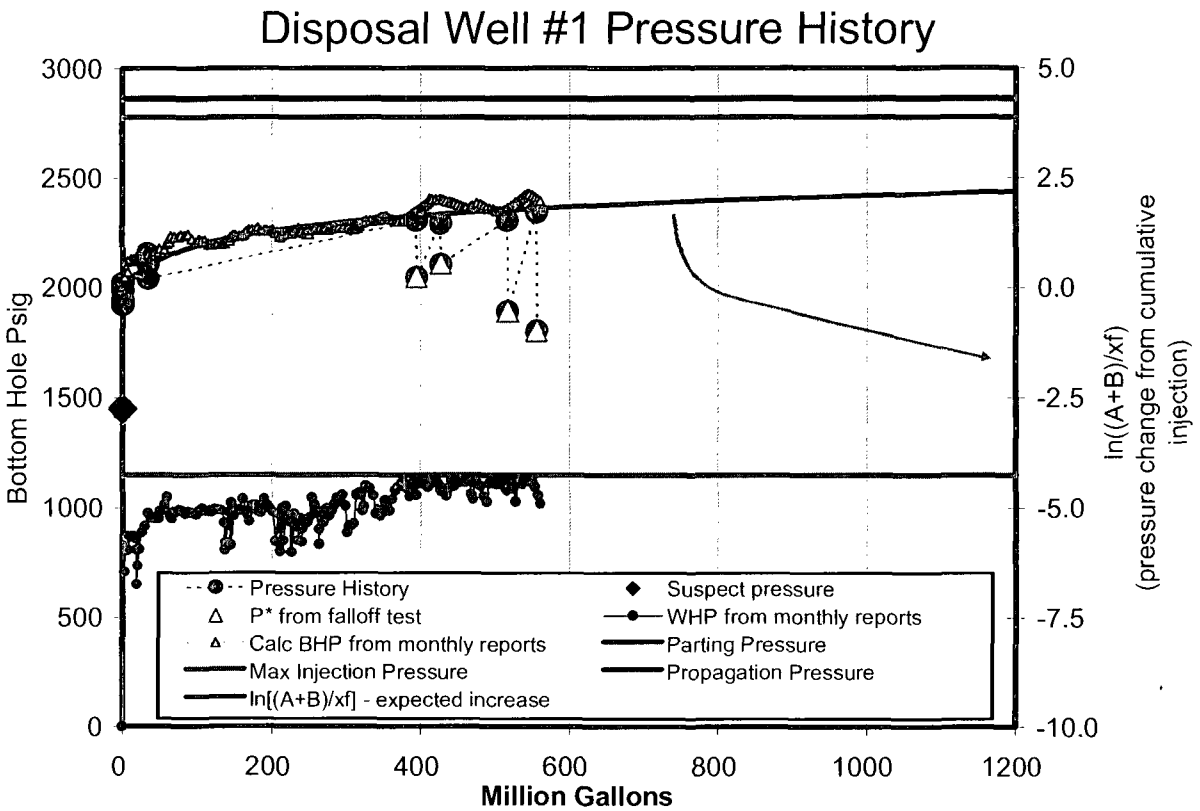


Figure 3, above, depicts bottom hole pressure and injection pressure history versus cumulative injection volume from initiation of injection to near present. The figure also depicts the formation pressure change from cumulative injection (black line), formation parting pressure (red line), propagation pressure (green) and permitted maximum injection pressure (blue line).

At approximately 530 million cumulative gallons, the corresponding pressures from the graph are:

- Formation Parting Pressure 2,866 psig
- Propagation Pressure 2,775 psig
- Bottom Hole Pressure 2,450 psig
- Injection Pressure ~1,150 psig

To propagate a fracture, bottom hole pressure would have to be in excess of the propagation pressure. The bottom hole pressure, which corresponds to the permitted maximum injection pressure (1,150 psig), is approximately 2,450 psig. When approaching the permitted maximum injection pressure, there is an approximate 325 psi cushion between the bottom hole pressure and the propagation pressure. This confirms that historical bottom hole pressures are below 2,500 psig and cannot be propagating fractures. It is not possible for the fractures to be growing at this time.

When fluid is injected into a zone, the pressure will increase unless the zone is frictionless and infinitely large. As such, Western recognizes that some increase in average reservoir pressure has occurred and/or will occur. The formation pressure change from the cumulative injection curve shows that the predicted formation pressure at 1,200 million gallons will be less that 2,500 psig. This curve confirms that formation pressure will not approach progagation pressure within the Discharge Plan Renewal permit period (5 years).

The formation pressure of 2,091 psig at the initiation of the May 1, 1996 fracture treatment is indicative of a tight formation. Due to the tight formation, the 0.2 psi per foot "rule of thumb" does not logically apply. If the maximum injection pressure is reduced to 600 psi, flow to the formation is not possible because formation pressure would be higher than the combined injection pressure plus hydrostatic pressure.

The "lack of depressurization (~19 psig)" is a function of final flow rate prior to test, of the reservoir geometry, and of total injected fluid pad size. With linear flow systems, the expected pressure change will normally be less than for a radial flow system. It is possible to generate a higher pressure drop during a fall off test. To do so, would require that flow rates prior to the fall off test be increased significantly in excess of normal water disposal rates. Examination of the linear flow pressure buildup equation,

$$X_f\sqrt{k} = \frac{4.064qB}{m_L h}\sqrt{\left(\frac{\mu}{\phi c_t}\right)}$$

shows this to be the case. In this equation, all variables are constant except for the flow rate, q, and the linear build-up slope, m_L. To increase the pressure drop, the flowrate must increase so that m_L will increase. With the gauges used, high quality pressure data is obtained and can be adequately analyzed. As such, Western Refining sees no purpose in increasing injection rates prior to conducting fall off tests.

Issue #7: Western has attempted to stimulate the well a couple of times to improve the injection flow rate and lower the injection pressure, which helped, but after reviewing the annual report when operations were idled during the month of December 2009, the flow rate decreased by about 50% to 36 gpm from about 90 gpm at an average injection pressure of 957 psig, which indicates even at a 50% reduction in flow, the pressure is still near 1000 psig (close to the permit pressure). Western added a filtration system in December of 2009 and in the annual report for 2009 wants to continue under the discharge permit as it exists. This may work during the idling of the plant? The operator acknowledges that it would still be required to comply with the discharge permit and run annual FOTs. The annual FOTs may continue to show over pressurization of the formation with negative skin and increased fracture ½ lengths?

Response #7: In Western's opinion, there is no engineering basis to reduce the injection pressure because the formation is not and has not been over-pressured. Thus, the fracture ½ lengths have not increased. See the discussion above in Response #6.

Path Forward:

Issue #8: OCD requires ASAP the injection flow rate vs. pressure vs. time plot for the entire history of well operations for UIC Class I Disposal Well by COB next week. OCD will use this to derive the maximum allowable surface injection pressure for the UIC Class I Disposal Well discharge permit renewal. However, the pressure will likely be significantly less; however, the proposed work below may solve the problem. If the operator is displeased with the allowable pressure, it may seek an OCD hearing to divulge the technical basis for allowing the existing permit pressure to remain. The operator may want to perform another Step-Rate Test to determine if a higher pressure may be allowed?

Response #8: Western has provided this information in the "Evaluation of Disposal Well # 1", report, Figure 7 and again in the "2009 Annual Bottomhole Pressure Surveys and Pressure Falloff Tests for Waste Disposal Well #1", Figure 11. See discussion above. The plot has been updated to show parting pressure and propagation pressure.

Issue #9: Western will need to proceed with the recommendations made in the 2009 FOT Report, of which, the filtration system has already been installed.

Response #9: No recommendations were made in the 2009 FOT report, however recommendation were made in the "Evaluation of Disposal Well #1" report. Western has installed the filtration system, and has re-stimulated the well as recommended. Due to the results, Western is not considering the fracture treatment at this time.

If you need more information, please contact me at (505) 632-4171.

Sincerely,

James R. Schmaltz
Environmental Manager
Western Refining Southwest, Inc. – Bloomfield Refinery

cc: Allen Hains – Western Refining El Paso

WELL BORE DIAGRAMS

Wells within One Mile of Disposal Well #1

Map Seq.	Miles to DW1	WELLNAME	#	APINO	Status	Pen. Ini. Zone	WB Dgrm	Source	Notes	Perf Top	Perf Bottom	Total Depth	P&A Date	ULSTR	OPERATOR	RESERVOIR
1	0.00	DISPOSAL	1	30-045-29002	INJ	Yes	Yes		Cement to surface	3276	3514	3514		I-27-29N-11W	WESTERN REFINING	MESAVERDE
2	0.11	DAVIS GAS COM F	1	30-045-07825	P&A	Yes	Yes	5/31/68 Pan Am Ltr	Cement to surface	6157	6298	6298	Jan-94	I-27-29N-11W	BP AMERICA	DAKOTA
3	0.12	DAVIS GAS COM G	1	30-045-23554	Shallow	No	Yes	C-103	Cement to surface	2827	2839	2839		I-27-29N-11W	XTO ENERGY, INC	CHACRA
4	0.15	DAVIS GAS COM F	1R	30-045-30833	Deep	Yes	No	C-103	TOC @ 1388 ft	5314	5646	6177		I-27-29N-11W	XTO ENERGY, INC	GALLUP
5	0.16	Davis Pooled Unit	1	30-045-07812	P&A	No	No		plugged & abandoned			1717	Oct-82	I-27-29N-11W	Pre-Ongard	PICTURED CLIFFS
6	0.18	JACQUE	1	30-045-34463	CBM	No	No		Above injection zone	1543	1714	1714		I-27-29N-11W	HOLCOMB O&G	FRUITLAND COAL
6b	0.22	DAVIS GAS COM H	1	30-045-23553	Aban Loc	No	No	C-103	abandoned location	0	0	0		H-27-29N-11W	PRE-ONGARD WELL OPERATOR	
7	0.23	JACQUE	2	30-045-34409	CBM	No	No		Above injection zone	1483	1689	1689		H-27-29N-11W	HOLCOMB O&G	FRUITLAND COAL
8	0.23	Davis PU/FB Umbarger	2	30-045-07883	P&A	No	No		plugged & abandoned			1800	Aug-55	H-27-29N-11W	Pre-Ongard	
9	0.24	DAVIS GAS COM F	1E	30-045-24084	Shallow	Yes	Yes	C-103	Cement to surface	2701	2810	6262		H-27-29N-11W	XTO ENERGY, INC	CHACRA
9b	0.33	MANGUM	001S	30-045-34266	Aban Loc	No	No	C-103	abandoned location	0	0	0		F-27-29N-11W	HOLCOMB OIL & GAS INC	
	0.35	AUSTIN A DAVIS	1	30-045-25745	Aban Loc	No	No	6/20/84 ltr	abandoned location			0		E-26-29N-11W	AMOCO PRODUCTION CO	
10	0.41	CONGRESS	18	30-045-25673	Shallow	Yes	Yes	C-103	Cement to surface	1680	1770	5808		K-27-29N-11W	Burlington	PICTURED CLIFFS
11	0.49	LAUREN KELLY	1	30-045-27361	Shallow	No	No		Above injection zone	1326	1354	1354		F-27-29N-11W	MANANA GAS INC	FRUITLAND SAND
12	0.49	MANGUM	1E	30-045-24673	Deep	Yes	Yes	C-103	Cement to surface	6024	6160	6160		F-27-29N-11W	Burlington	DAKOTA
13	0.51	CALVIN	1	30-045-12003	Deep	Yes	Yes	C-103	**TOC @ 5400' and 1916' to surface**	6176	6348	6348		M-26-29N-11W	Burlington	DAKOTA
14	0.52	MARIAN S	1	30-045-27365	Shallow	No	No	C-105	865 cuft cement	2578	2710	2710		F-27-29N-11W	MANANA GAS INC	CHACRA
	0.54	DAVIS GAS COM I	1	30-045-23552	Aban Loc	No	No	C-103	abandoned location			0		F-26-29N-11W	AMOCO PRODUCTION CO	
15	0.55	MANGUM	1	30-045-07835	CBM	Yes	Yes		**TOC 4950' then 1830' to surface**	1388	1661	6214		L-27-29N-11W	Burlington	FRUITLAND COAL
16	0.56	Black Diamond	1	30-045-07896	P&A	No	No		plugged & abandoned			800	Nov-78	C-27-29N-11W	Pre-Ongard	
17	0.57	DAVIS GAS COM J	1	30-045-25329	CBM	Yes	Yes	C-105	Cement to surface	1462	1645	4030		F-26-29N-11W	HOLCOMB O&G	FRUITLAND COAL
18	0.58	SULLIVAN GAS COM D	1E	30-045-24083	Deep	Yes	No	C-103	Cement to surface	6086	6242	6242		F-26-29N-11W	XTO ENERGY, INC	DAKOTA
19	0.60	CONGRESS	16	30-045-25657	Deep	Yes	No	C-104	2962 cuft - circ to surface	6086	6148	6148		A-34-29N-11W	Burlington	GALLUP
20	0.64	CALVIN	100	30-045-31118	CBM	No	No		Above injection zone	1468	1760	1760		N-26-29N-11W	Burlington	FRUITLAND COAL
21	0.64	SUMMIT	9	30-045-24574	Shallow	No	Yes		Above injection zone	2747	2857	2857		A-34-29N-11W	Burlington	CHACRA
22	0.64	CONGRESS	9	30-045-24572	Shallow	No	No		Above injection zone	2746	2869	2869		N-26-29N-11W	ENERGEN	CHACRA
23	0.64	Garland "B"	1	30-045-07903	P&A	No	No		plugged & abandoned	1664	1747	1747	Jun-75	M-27-29N-11W	Pre-Ongard	PICTURED CLIFFS

Wells within One Mile of Disposal Well #1

Map Seq.	Miles to DW1	WELLNAME	#	APINO	Status	Pen. Inj. Zone	WB Dgrm	Source	Notes	Perf Top	Perf Bottom	Total Depth	P&A Date	ULSTR	OPERATOR	RESERVOIR
24	0.65	SUMMIT	15	30-045-25707	Deep	Yes	No	C-104	2389 cuft cement (2 stages)	5326	5970	5970		C-34-29N-11W	ENERGEN	GALLUP
25	0.65	GARLAND	3	30-045-24573	Shallow	No	No		Above injection zone	2668	2790	2790		M-27-29N-11W	ENERGEN	CHACRA
26	0.67	CALVIN	3	30-045-25612	Deep	Yes	Yes	C-103	circulated cement on 2nd stage to surf.	5295	5870	5870		K-26-29N-11W	Burlington	GALLUP
27	0.68	GARLAND B	1R	30-045-21732	Shallow	No	Yes		Above injection zone	1648	1678	1678		M-27-29N-11W	Burlington	PICTURED CLIFFS
28	0.70	NANCY HARTMAN	2	30-045-26721	Shallow	No	No		Above injection zone	2627	2754	2754		P-22-29N-11W	MANANA GAS INC	CHACRA
29	0.71	GRACE PEARCE	1	30-045-07959	P&A	No	Yes		plugged & abandoned	1380	1466	1466	Mar-00	O-22-29N-11W	JOHN C PICKETT	FRUITLAND SAND
30	0.72	HARTMAN	1	30-045-07961	P&A	Yes	Yes	P&A rpt	plugged & abandoned	6072	6274	6274	Jun-99	P-22-29N-11W	MANANA GAS INC	DAKOTA
31	0.73	Davis	1	30-045-07776	P&A	No	No		Above injection zone			1917	Nov-58	M-26-29N-11W	Pre-Ongard	(N/A)
32	0.75	MARY JANE	1	30-045-26731	Shallow	No	Yes		Above injection zone	2622	2732	2732		N-22-29N-11W	MANANA GAS INC	CHACRA
33	0.76	ROYAL FLUSH	1	30-045-34312	CBM	No	No		Above injection zone	1440	1608	1608		N-22-29N-11W	MANANA GAS INC	FRUITLAND COAL
34	0.79	COOK	1	30-045-07940	Deep	Yes	Yes	5/21/04 rpt	Cement to surface	6052	6226	6226		N-22-29N-11W	MANANA GAS INC	DAKOTA
35	0.79	COOK	2	30-045-13089	Shallow	No	No		Above injection zone	1390	1410	1410		N-22-29N-11W	MANANA GAS INC	FRUITLAND SAND
36	0.82	SHELLY	2	30-045-20755	Shallow	No	No		Above injection zone	1726	1736	1736		G-34-29N-11W	CHAPARRAL O&G	PICTURED CLIFFS
37	0.82	HARE	3	30-545-02123	Dry	No	No		Above injection zone			2335		M-23-29N-11W	Pre-Ongard	FARMINGTON
38	0.84	CALVIN	1F	30-045-33093	Deep	Yes	No	3160-05	Cement to surface	6172	6430	6430		J-26-29N-11W	Burlington	DAKOTA
39	0.85	SULLIVAN GAS COM D	1	30-045-07733	Deep	Yes	Yes	C-103	Cement to surface	6047	6160	6160		B-26-29N-11W	XTO ENERGY, INC	DAKOTA
40	0.85	ELLEDGE FEDERAL 34	11	30-045-24834	Shallow	No	No		Above injection zone	1060	1064	1525		D-34-29N-11W	MCELVAIN O&G	FARMINGTON,NORTH
41	0.89	CONGRESS	7E	30-045-24835	Deep	Yes	Yes	WB dia.	3 stages; TOC 250'	6202	6347	6347		F-34-29N-11W	Burlington	DAKOTA
42	0.90	HARE	4	30-545-02124	Dry	No	No		Above injection zone			2015		O-23-29N-11W	Pre-Ongard	FARMINGTON
43	0.90	CONGRESS	4E	30-045-24837	Shallow	Yes	Yes		Cement circulated to surface	2784	2906	6328		E-35-29N-11W	Burlington	CHACRA
44	0.90	CONGRESS	15	30-045-25675	Deep	Yes	Yes	9-331	Cement to surface	5369	5943	5943		C-35-29N-11W	Burlington	GALLUP
45	0.90	ASHCROFT SWD	1	30-045-30788	INJ	Yes	Yes	C-101	TOC 3300'	6952	7070	7382		B-26-29N-11W	XTO ENERGY, INC	MORRISON BLUFF EN
46	0.90	LEA ANN	1	30-045-20752	P&A	No	No		Above injection zone	1776	1790	1790	Dec-99	E-35-29N-11W	CHAPARRAL O&G	PICTURED CLIFFS
47	0.94	CONGRESS	5	30-045-07672	Deep	Yes	Yes		**TOC 4424' & 1957' to surface**	6171	6340	6340		G-34-29N-11W	Burlington	DAKOTA
48	0.94	Viles EE	1	30-045-07751	Dry	No	No		Above injection zone			870		P-28-29N-11W	Pre-Ongard	
49	0.95	Sullivan	1X	30-045-29107	P&A	No	No		Above injection zone			900	Jun-55	G-26-29N-11W	Pre-Ongard	PICTURED CLIFFS
	0.96	CHAPARRAL	2	30-045-33570	LOC	No	No		location			0		F-34-29N-11W	CHAPARRAL OIL & GAS CO	

Wells within One Mile of Disposal Well #1

Map Seq.	Miles to DW1	WELLNAME	#	APINO	Status	Pen. Inj. Zone	WB Dgrm	Source	Notes	Perf Top	Perf Bottom	Total Depth	P&A Date	ULSTR	OPERATOR	RESERVOIR
50	0.97	Madsen Selby Pooled Unit	2	30-045-07895	P&A	No	No		Above injection zone			1600	May-78	A-28-29N-11W	Pre-Ongard	PICTURED CLIFFS
51	0.97	Masden-Selby	3	30-045-07762	P&A	No	No		Above injection zone			600	Jun-78	A-28-29N-11W	Pre-Ongard	
52	0.97	MASDEN GAS COM	1	30-045-07894	Deep	Yes	No	C-103	Cement circulated to surface	6023	6125	6125		A-28-29N-11W	XTO ENERGY, INC	DAKOTA
53	0.97	Sullivan	1	30-045-07870	P&A	No	No	C-103	plugged & abandoned			1420	Aug-53	G-26-29N-11W	Pre-Ongard	PICTURED CLIFFS
54	0.98	CONGRESS	1	30-045-07674	P&A	No	No	ltr	plugged & abandoned			PC	Oct-53	J-34-29N-11W	Congress Oil Company	PICTURED CLIFFS
55	0.98	EARL B SULLIVAN	1	30-045-23163	Shallow	No	No	C-105	**335 SX @ 2860' did not circ. 100 SX down braidenhead**	2750	2761	2861		B-26-29N-11W	XTO ENERGY, INC	CHACRA
56	0.99	STATE GAS COM BS	1	30-045-23550	CBM	No	Yes		Above injection zone	1470	1648	2761		K-23-29N-11W	HOLCOMB O&G	FRUITLAND COAL
57	0.99	PEARCE GAS COM	1	30-045-07985	P&A	Yes	No	C-101	Cement to surface	6154	6182	6182	Mar-97	K-23-29N-11W	BP AMERICA	DAKOTA
58	0.99	CHAPARRAL	1	30-045-20609	Shallow	No	No		Above injection zone	1712	1731	1731		E-34-29N-11W	CHAPARRAL O&G	PICTURED CLIFFS
61	0.99	SUMMIT	001	30-045-02152	Dry	No	No		Above injection zone					__-34-29N-11W	Pre-Ongard	
59	0.99	CONGRESS	2	30-545-02151	Dry	No	No		Above injection zone			Frtlnd		__-34-29N-11W	Pre-Ongard	FRUITLAND SAND

	Total Wells			0 to 1/2 Miles			1/2 to 1 Miles		
	Total Wells	Pen Inj. Zone		0 to 1/2 mile Wells	Pen Inj. Zone		1/2 to 1 Mile Wells	Pen Inj. Zone	
Status		Yes	No		Yes	No		Yes	No
P&A	15	3	12	3	1	2	12	2	10
Aban Loc	4	0	4	3	0	3	1	0	1
Loc	1	0	1	0	0	0	1	0	1
Dry	5	0	5	0	0	0	5	0	5
INJ	2	2	0	1	1	0	1	1	0
CBM	7	2	5	2	0	2	5	2	3
Shallow	17	3	14	4	2	2	13	1	12
Deep	14	14	0	2	2	0	12	11	1
Total	**65**	**24**	**41**	**15**	**6**	**9**	**50**	**17**	**33**

Mary Jane #1

Current

Otero Chacra

SW Section 22, T-29-N, R-11-W, San Juan County, NM

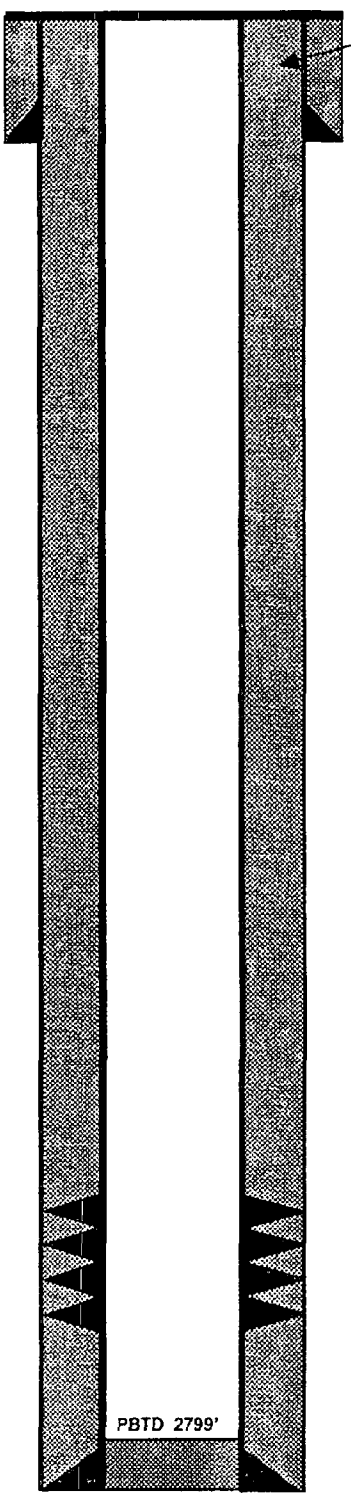
API #30-045-26731

Today's Date: 6/4/01

Spud: 8/26/86

Completed: 10/16/86

Elevation: 5430' GL



8-3/4" hole

TOC circulated to Surface,
(Calc, 75%)

7" 23# H-55 Csg set @ 279'
230 sxs, 253 cf (Circulated to Surface)

Ojo Alamo @ 350'

Kirtland / Fruitland @ 1305'

Pictured Cliffs @ 1612'

Chacra @ 2260'

6-1/4" hole

Chacra Perforations:
2622' – 2732'

4-1/2" 10.5# Casing set @ 2845'
Cmt w/ 250 sxs (600 cf)

WELL HISTORY

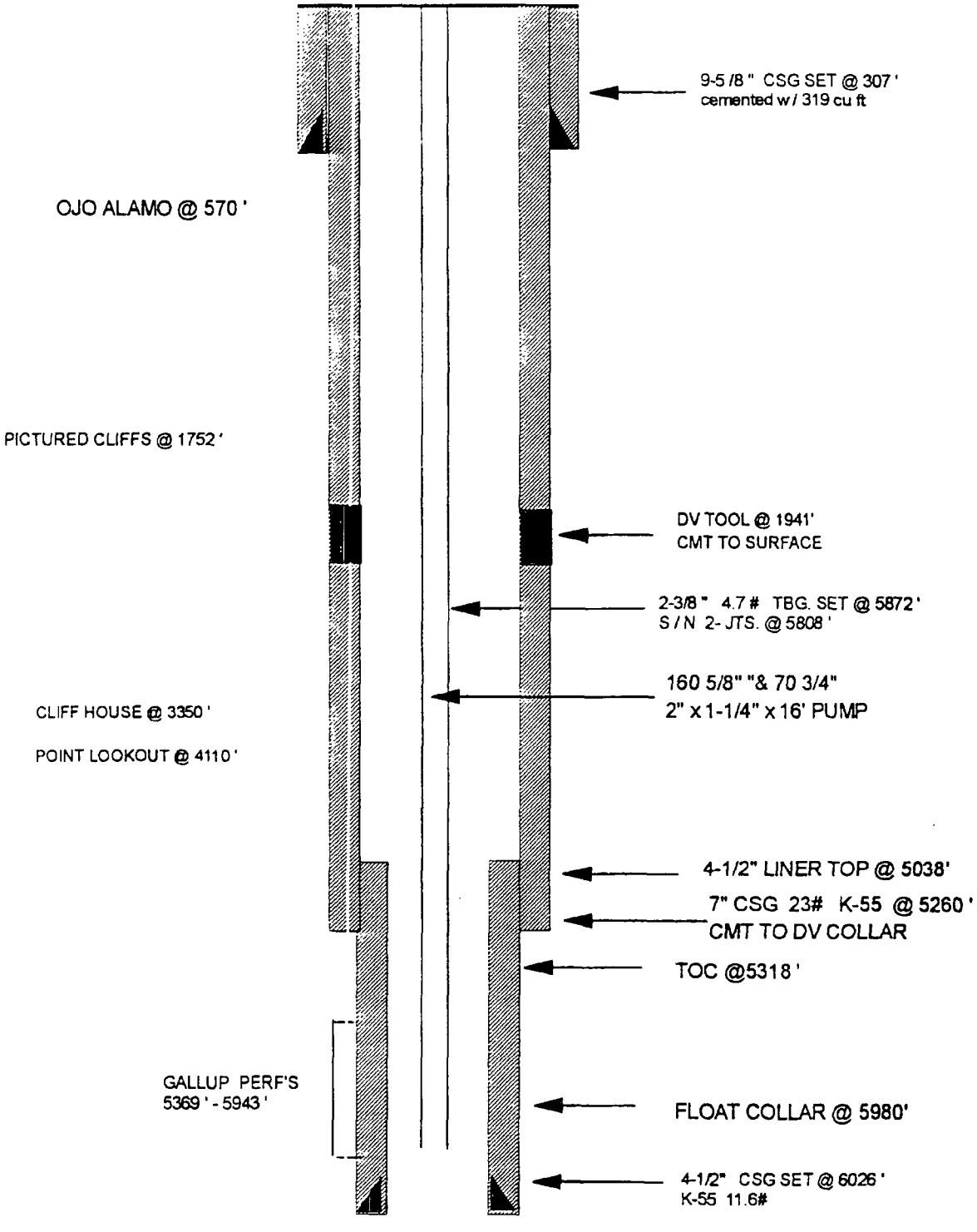
Current - No tubing in well.

Objective – Run 2-3/8" tubing. Check fill to bail if necessary. Acidize perfs if necessary.

CONGRESS #15

CURRENT
ARMENTA GALLUP

UNIT C, SEC 35, T29N, R11W, SAN JUAN COUNTY, NM

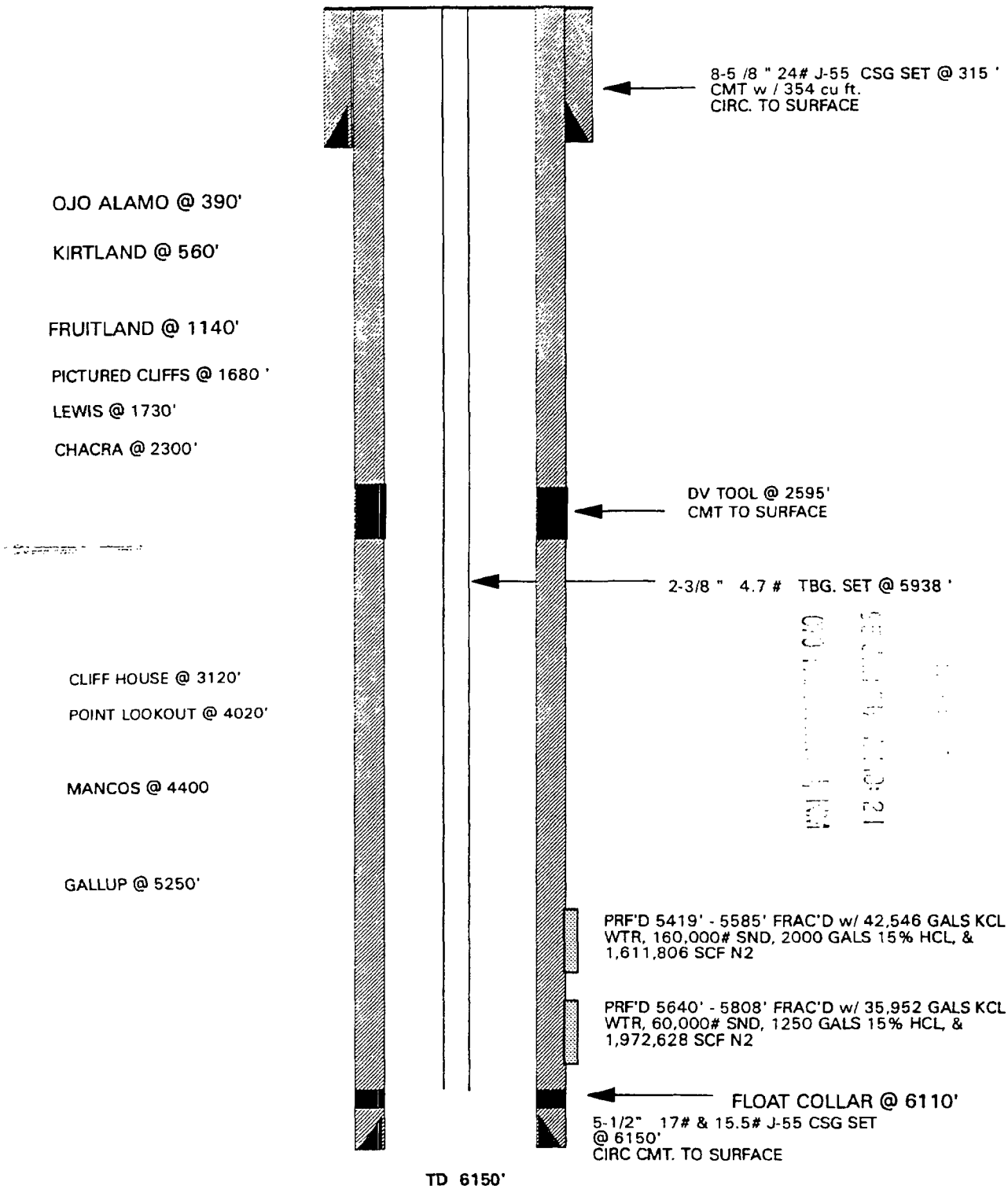


TD 6030'

CONGRESS #18

CURRENT
ARMENTA GALLUP

UNIT K, SEC 27, T29N, R11W, SAN JUAN COUNTY, NM



DCV ENGINEERING 1-16-95

CURRENT SCHEMATIC

ConocoPhillips — **CONGRESS #18**

District	Field Name		API / UWI	County	State/Province	Edit
SOUTH	ARMENTA GALLUP	#3188	3004525673	SAN JUAN	NEW MEXICO	

Original Spud Date	Surface Legal Location	E/W Dist (ft)	E/W Ref	N/S Dist (ft)	N/S Ref
5/7/1983	2127'FSL & 1931'FWL,27-029N-011W	1,931.00	W	2,127.00	S

Well Config: - 3004525673000 - 7/10/2009 6:50:13 AM

Schematic - Actual

Frm Final

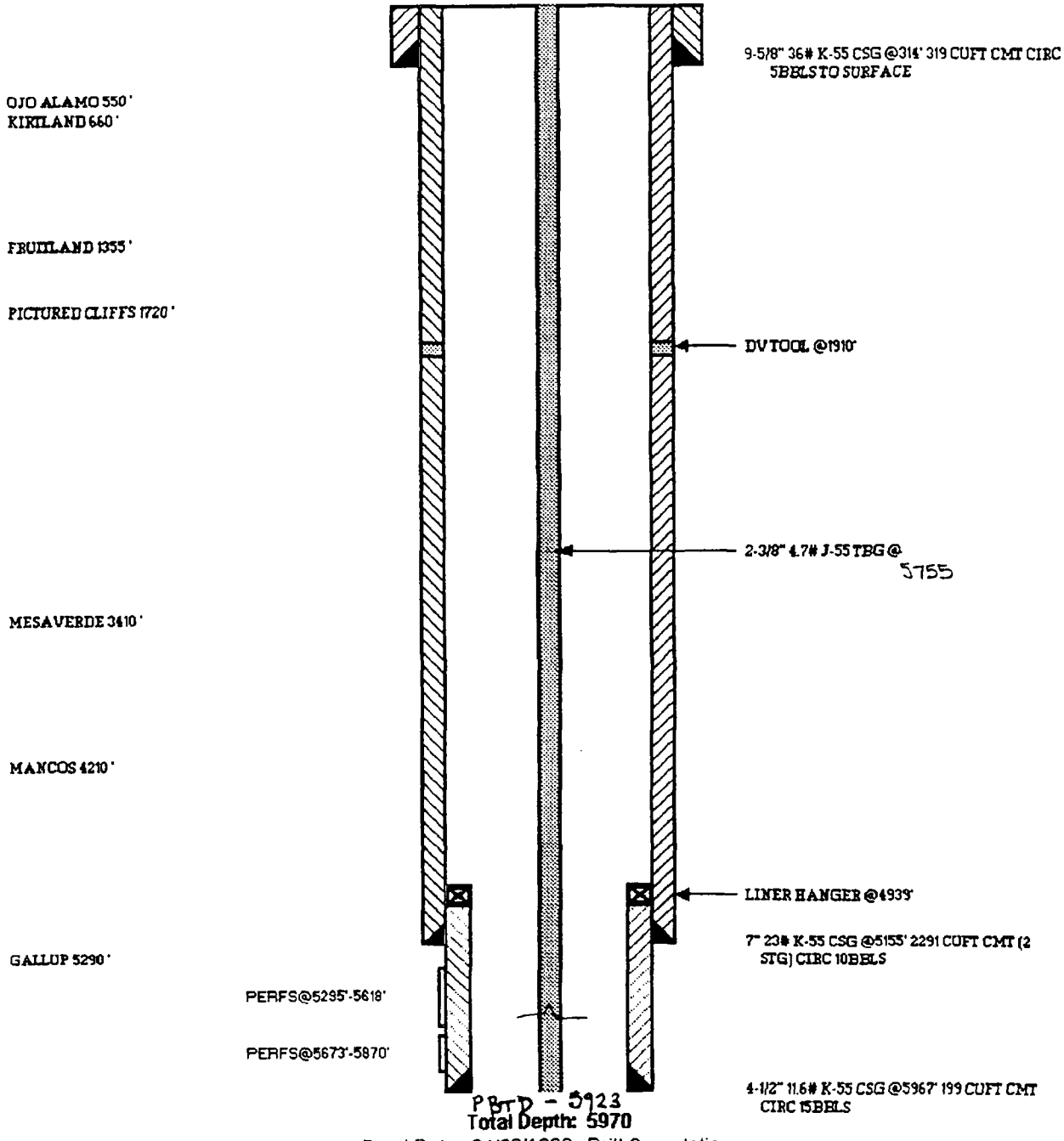
0
12 — Surface Casing Cement, 12-309, 5/8/1983, Cement w/ 300 sx Class B. Circulated to surface.
308 — Surface Casing, 8 5/8in, 8.097in, 12 ftKB, 309 ftKB
309
315
390 — OJO ALAMO, 390
560 — KIRTLAND, 560
Tubing Joints, 2 3/8in, 4.70lbs/ft, J-55, 12 ftKB, 1,750 ftKB
1,140 — FRUITLAND, 1,140
1,680 — PICTURED CLIFFS, 1,680
~~Pictured Cliffs, 12/18/2003,~~ Frac'd w/ 73,000# 20/40 Arizona sand, 24,340 gals of 20# linear gel, and 183,800 scf N2. (70Q)
1,730 — Pictured Cliffs, 1,680-1,770, 12/9/2003
1,748 — A 2004 slickline states that seating nipple is at 1748'.
1,750 — Pup Joint, 2 3/8in, 4.70lbs/ft, J-55, 1,750 ftKB, 1,752 ftKB
1,752
Tubing Joint, 2 3/8in, 4.70lbs/ft, J-55, 1,752 ftKB, 1,784 ftKB
1,770 — LEWIS, 1,730
1,784 — Seating Nipple, 2 3/8in, 4.70lbs/ft, J-55, 1,784 ftKB, 1,785 ftKB
1,785 — Muleshoe, 2 3/8in, 4.70lbs/ft, J-55, 1,785 ftKB, 1,786 ftKB
1,786
2,300
2,592 — Production Casing Cement, 12-2,595, 5/15/1983, Cement w/ 650 sx 65/35 poz followed by 100 sx Class B. Circulated 10-12 bbls to surface.
2,595 — CHACRA, 2,300
3,120 — CLIFF HOUSE, 3,120
4,020 — POINT LOOKOUT, 4,020
4,400 — MANCOS, 4,400
4,495
5,226 — Fill, 5,226-5,325, Tagged by 5/8/09 wireline.
5,250 — PBTD, 5,325, CIBP
5,325 — CIBP, 5,325-5,327
Upper Gallup, 6/18/1983, Frac'd w/ 160,000# 20/40 sand, 42,546 gals of 2% KCL water, and 1,611,806 scf N2. Flush included. (70Q)
5,327
5,419 — Upper Gallup, 5,419-5,585, 6/16/1983
5,585 — Lower Gallup, 6/16/1983, Frac'd w/ 60,000# 20/40 sand, 35,952 gals of 2% KCL water, and 1,972,628 scf N2. Flush included. (70Q)
5,648 — Lower Gallup, 5,648-5,808, 6/15/1983
5,808 — GALLUP, 5,250
Junk, 6,039-6,110
6,039 — Production Casing Cement, 4,100-6,150, 5/15/1983, Cement w/ 560 sx 65/35 poz followed by 165 sx 50/50 poz. TOC @ 4100' from 6/14/1983 CBL.
6,110 — Plugback, 6,110-6,150, 5/15/1983
6,113 — Production Casing, 5 1/2in, 4.892in, 12 ftKB, Adjusted casing components from records to match TD., 6,150 ftKB
6,149
6,150 — TD, 6,150, 5/14/1983

32454A CALVIN 3

CURRENT

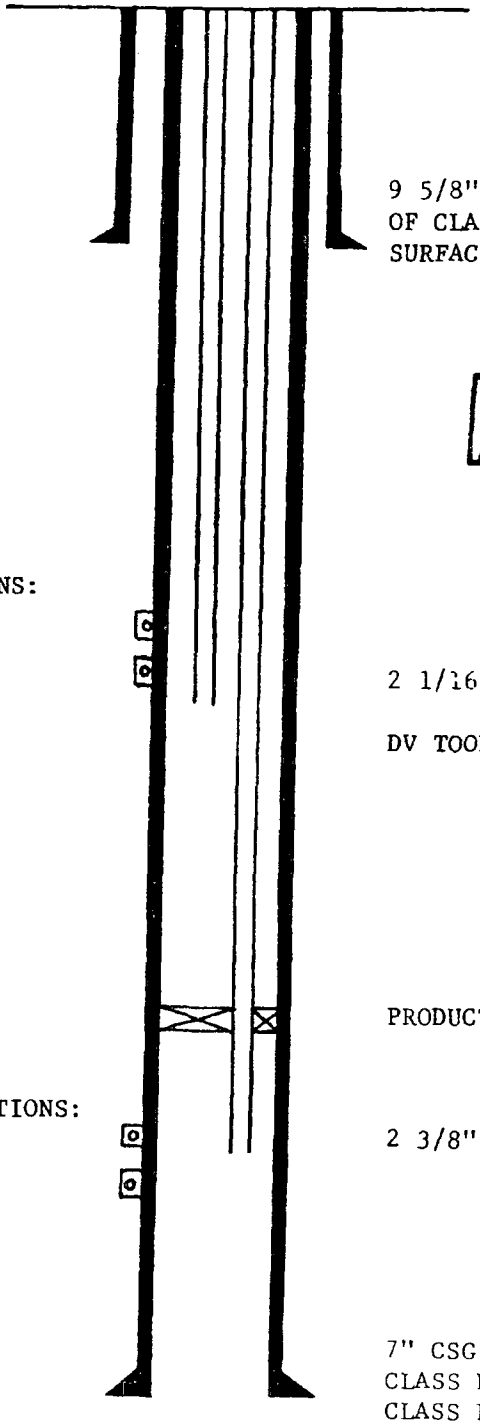
ARMENTA GALLUP

Unit K, Section 26, 029N, 011W, SAN JUAN, NM



Spud Date: 04/29/1983 Drill Completion:

Well Completion: 05/30/1983 Well Recompletion: 05/08/1992



9 5/8" CSG SET @ 316' X 413 FT^3 OF CLASS B "NEAT" CMT TOP AT SURFACE

CHACRA PERFORATIONS:
2631'-2670'
2734'-2772'

2 1/16" CHACRA TBG @ 2765'

DV TOOL SET @ 2917'

PRODUCTION PKR AT 3500'

MESAVERDE PERFORATIONS:
3970'-4002'
4008'-4030'

2 3/8" MESAVERDE TBG @ 4022'

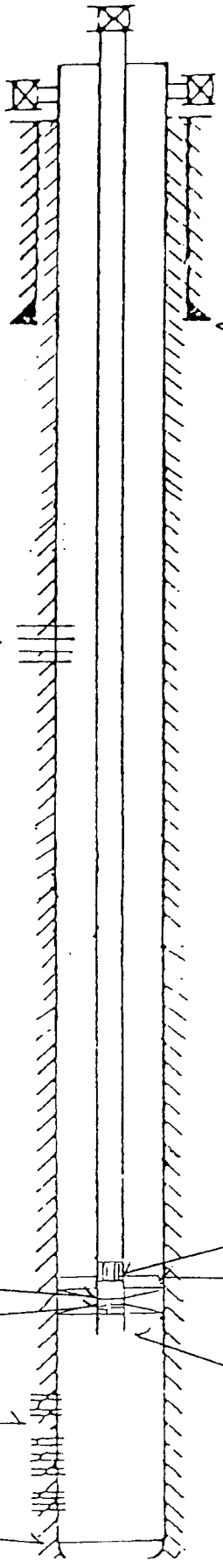
TD 4330'
PBD 4289'

7" CSG SET @ 4330' X 590 FT^3 OF CLASS B "NEAT" CMT X 847 FT^3 OF CLASS B 50:50 POZ, 6% GEL X 2% MED TUFF PLUG X .8% FLA. CMT TOP AT SURFACE.

CENTRALIZERS SET ABOVE FLOAT AND SHOE AT 4264' AND EVERY SECOND JOINT TO 2897'. DV TOOL IS SET AT 2917'

Amoco Production Company	SCALE:
DAVIS GAS COM "I" & "J" NO. 1	DRG. NO.

SUPRON ENERGY CORPORATION
Congress No. 4-E
1725 ft./N ; 1015 ft./W line
Sec. 35, T-29N, R-11W
San Juan County, New Mexico



8-5/8", 24.00#, H-40 csg set at 323 ft. RKB. Cmtd. w/215 sacks. Circulated to surface.

Chacra Perforations:
11 holes 2784 - 2906 ft. R.K.B.

Sliding sleeve

2-3/8" X 6' tubing sub

Baker Model R-3 Double-Grip pkr. Set at 6168 ft. R.K.B.

1.81" "F" nipple

2-3/8" EUE, 4.70# tbg. set at 6199 ft. R.K.B.

Dakota Perforations:
32 holes 6216 - 6328 ft. R.K.B.

Float collar at 6464 ft. RKB.

4½", 10.50#, K-55 csg. set at 6508 ft. RKB. Cmtd. w/1275 sx in

CONGRESS #7E

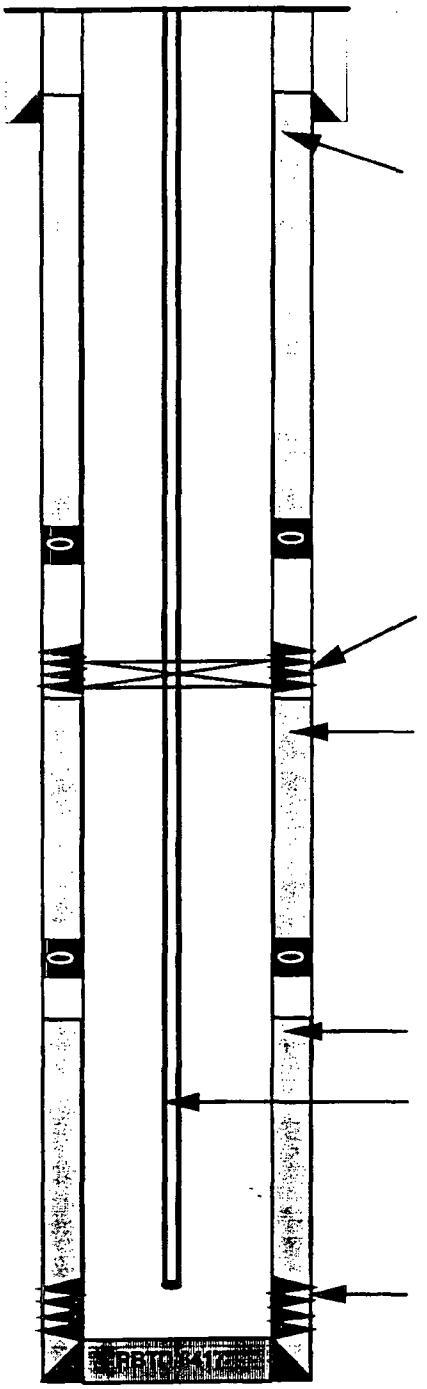
CURRENT - 11-4-94

CH--DK Commingle

1615' FNL, 1760' FWL,
Section 34, T-29-N, R-11-W, San Juan County, NM

Spud: 3-10-81

Completed : 6-25-81



8-5/8" 24# H-40 Csg set @ 291'
Circulated 220 sx cmt to surface

Top of Cmt @ 250' (TS)

Ojo Alamo (Base) @ 535'

Kirtland @ 712'

Fruitland @ 1441'

Pictured Cliffs @ 1706'

Stage Collar @ 2391'
Cmt 3rd stage w/600 sx

Chacra Perforations 2723' – 2845'

Chacra @ 2718'

Packer @ 2857'

Stg. 1 TOC @ 2953' (est.)

Cliff House @ 3295'

Point Lookout @4015'

Stage Collar @ 4324'
Cmt 2nd stage w/ 300 sx

Stg. 1 TOC @ 4942' (est.)

Gallup @ 5324'

~~2-7/8", 6.5#~~, J-55,set @ ~~3272'~~
2 3/8, 4.7 6263

Greenhorn @ 6142'
Dakota @ 6181'

Dakota Perforations 6202' – 6347'

4 1/2", 10.5#, K55, Csg set @ 6461'
cemented w/ 350 sx – stg. 1

TD 6461'

Mangum #1-E

Current

Basing Dakota / AIN #3236701

1520' FNL & 1735' FEL, Sec. 27, T-29-N, R-11-W, San Juan County, NM

Long: N:36^ 42.03' / Lat: W:107^ 58.902' / API #30-045-24673

Today's Date: **7/19/04**

Spud: 2/27/81
Completed: 4/21/81
Elevation: 5422' GL
5434' KB

Ojo Alamo @ 375'

Kirtland @ 490'

Fruitland @ 1320'

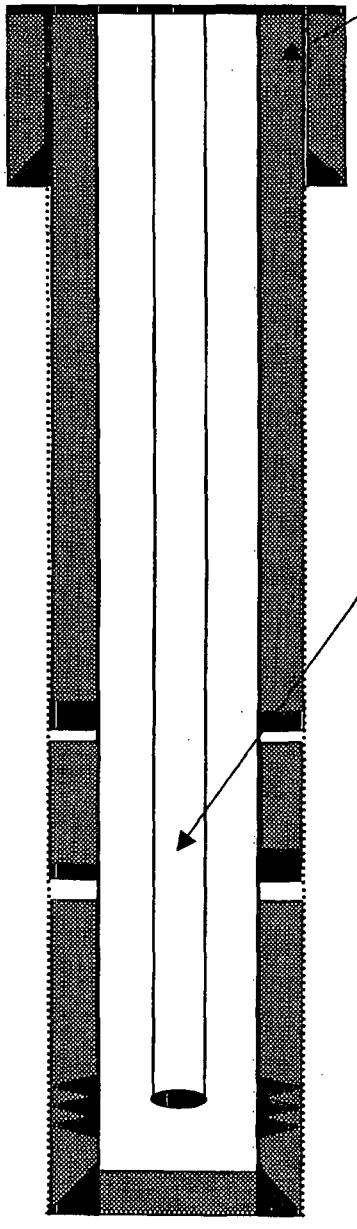
Pictured Cliffs @ 1580'

Chacra @ 2590'

Mesaverde @ 3158'

Gallup @ 5175'

Dakota @ 6020'



WELL HISTORY

No workovers reported.

TD 6240'
PBTD 6224'

Summit #9

920' FNL, 835' FEL
Unit A, Section 34, T29N, R11W
San Juan County, NM
36 deg 41.24 min 107 deg 58.39 min

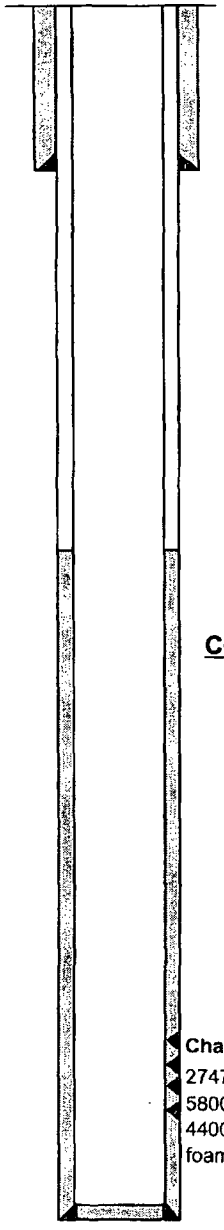
GL: 5,602' KB: 5,615'

Current Wellbore

Surface Casing:
Hole Size - 12-1/4"
CSG - 7-5/8" 26.4# K-55
Set @ 270'
CMT Top @ Surface

Production Casing:
Hole Size - 6-3/4"
Csg - 2-7/8" 6.5# J-55
Set @ 2,977'
CMT Top @ 600' TS

Tubing
None



Current Completions:

Chacra
2747' - 2857'
58000# 10/20 sand
44000 gal 70Q
foamed KCl

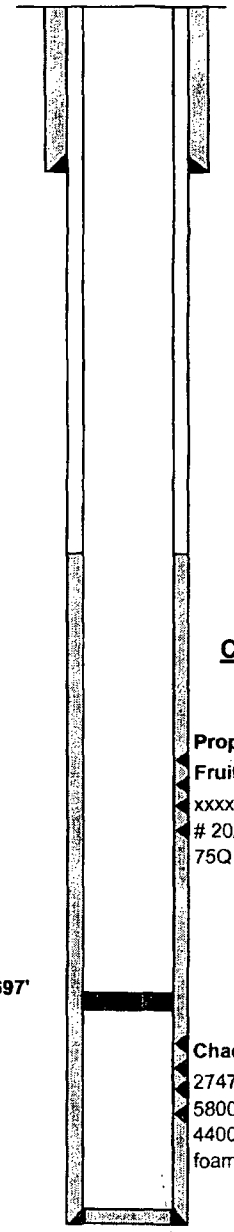
PBTD= 2,948'
TD= 2,985'

Proposed Wellbore

Surface Casing:
Hole Size - 12-1/4"
CSG - 7-5/8" 26.4# K-55
Set @ 270'
CMT Top @ Surface

Ojo Alamo **718**
Fruitland 1500
Pictured Cliffs 1751
Chacra 2739

Production Casing:
Hole Size - 6-3/4"
Csg - 2-7/8" 6.5# J-55
Set @ 2,977'
CMT Top @ 600' TS



Proposed Completion:

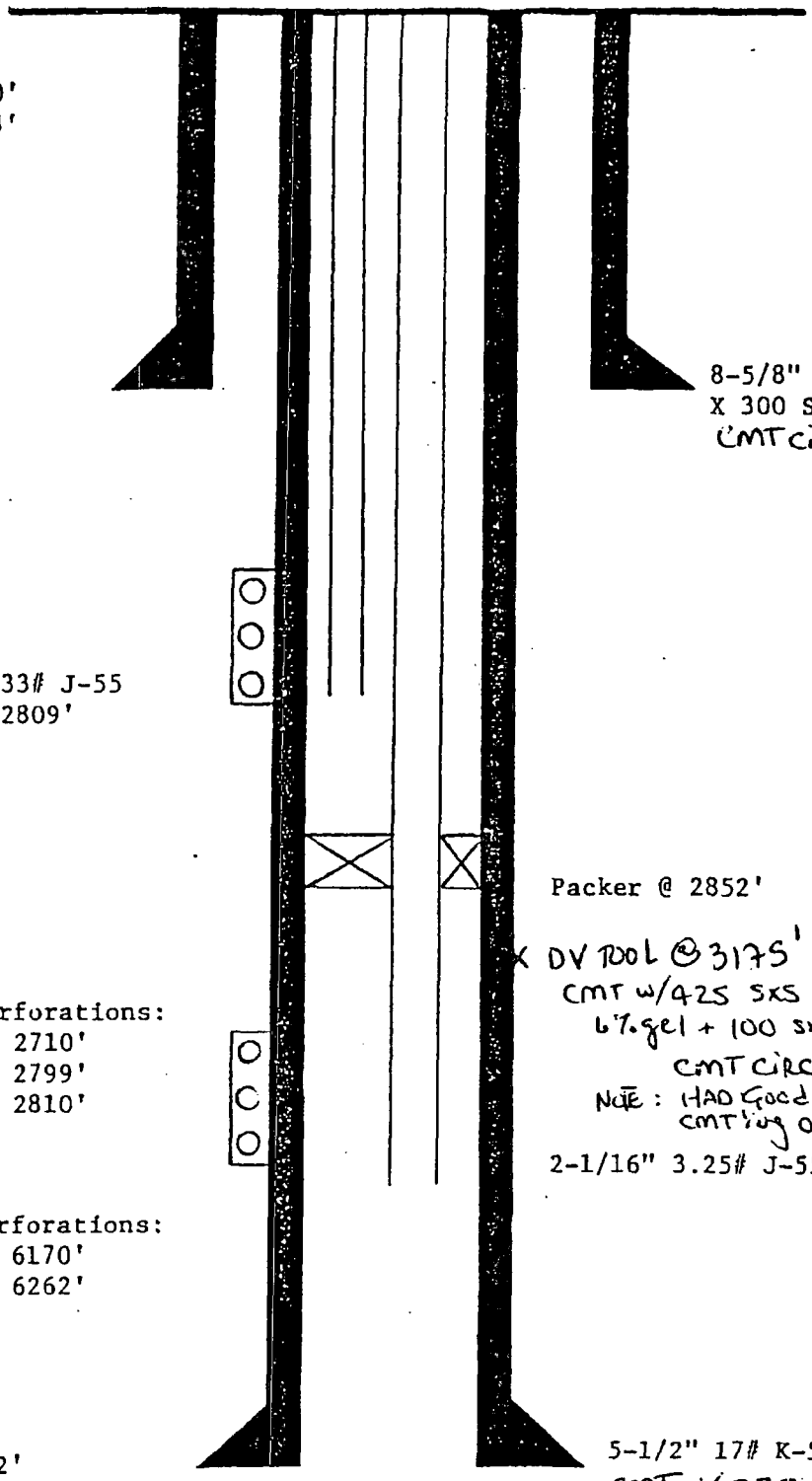
Proposed:
Fruitland Coal
xxxx' - xxxx'
20/40 sand 0 gal
75Q foamed 25# LG

CIBP @ 2697'

Chacra
2747' - 2857'
58000# 20/40 sand
44000 gal 70Q
foamed KCl

PBTD= 2,948'
TD= 2,985'

ARI 1/25/2005



GL: 5510'
KB: 5523'

8-5/8" 24# K-55 CSA 306'
X 300 Sx Cmt
CMT circ'd TO SURFACE

1-1/4" 2.33# J-55
Tubing @ 2809'

Packer @ 2852'

DV TOOL @ 3175'
CMT w/425 SXS B 50/50 Poz +
6% gel + 100 SXS B NEAT
CMT CIRC'd to SURF (?)
NOTE: HAD Good CIRCULATION during
CMTing OPERATIONS

2-1/16" 3.25# J-55 Tubing @ 6268'

Chacra Perforations:
2701' - 2710'
2793' - 2799'
2802' - 2810'

Dakota Perforations:
6163' - 6170'
6224' - 6262'

TD: 6392'
PBD: 6310'

5-1/2" 17# K-55 CSA 6388'
CMT w/ 375 SXS CLASS B 50/50
Poz +6% gel + 100 SXS B
NEAT
NOTE: HAD Good Circulation
during CMTing OPERS.

Amoco Production Company	SCALE:
(DK) (CK) Davis Gas Com E #1E / Davis Gas Com H #1	DRG.

12/04/94

L. L. McCONNELL No. 14

Current Completion

WELL:
L. L. McConnell No. 14
API No. 30-039-25249

LOCATION:
855' FNL & 790' FWL
Sec. 29, T25N, R3W
Rio Arriba County, NM

ELEVATION: 7394' KB

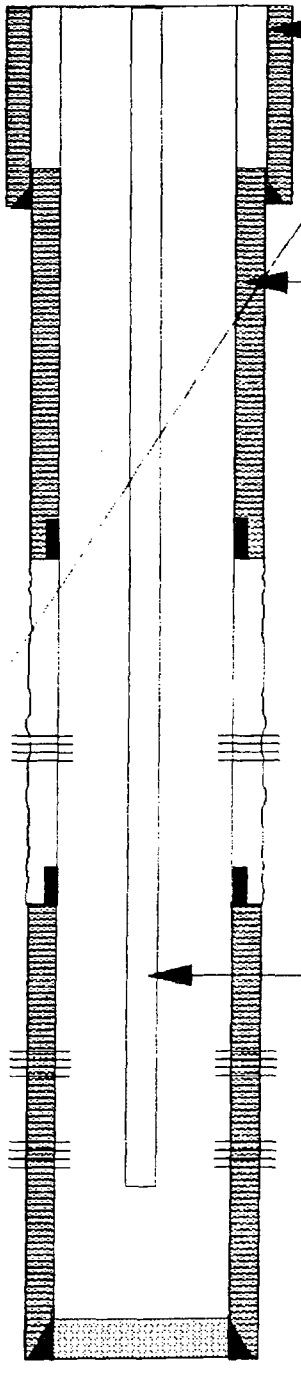
FORMATION TOPS:
Ojo Alamo 3398'
Fruitland 3260'
Pictured Cliffs 3780'
Lewis 3844'
Chacra 4678'
Menefee 5446'
Pt. Lookout 5950'
Mancos 6091'
Gallup 6915'
Greenhorn 7916'
Graneros 7974'
Dakota 7985'
Morrison 8224'

PROPOSED MESA VERDE PERFORATIONS:

5493'-98', 5514'-18', 5936'-47',
5960'-64', 5972'-78', 5986'-95'

GALLUP PERFORATIONS (1990):
7112'-26', 7140 -56', 7168'-84',
7198'-7205', 7212'-19', 7270'-82',
7288'-92', 7302'-12', 7362'-78',
7403'-08', 7412'-18', 7426'-36'
w/ 1 JSPF, 123 Ft of Holes.
Frac w/ 436,000# SND

DAKOTA PERFORATIONS (1990):
8008'-30', 8086'-90', 8160'-90'
w/ 2 JSPF, 56 Ft. of Holes.
Frac w/ 244,000# SND



8-5/8", 24#, WC-50 CSG.
Set @ 493'
w/ 400 SKS CMT.
TOC = 0 (Circ.)

5-1/2", 17#, WC-70, WC-50, & J-55 LTC CSG.
Set @ 8350'
CMT 1st Stage 600 SKS (Circ. 21 SKS)
2nd Stage Not Pumped
3rd stage 650 SKS (Did Not Circ.)
TOC @ 400' (Temp. Survey)

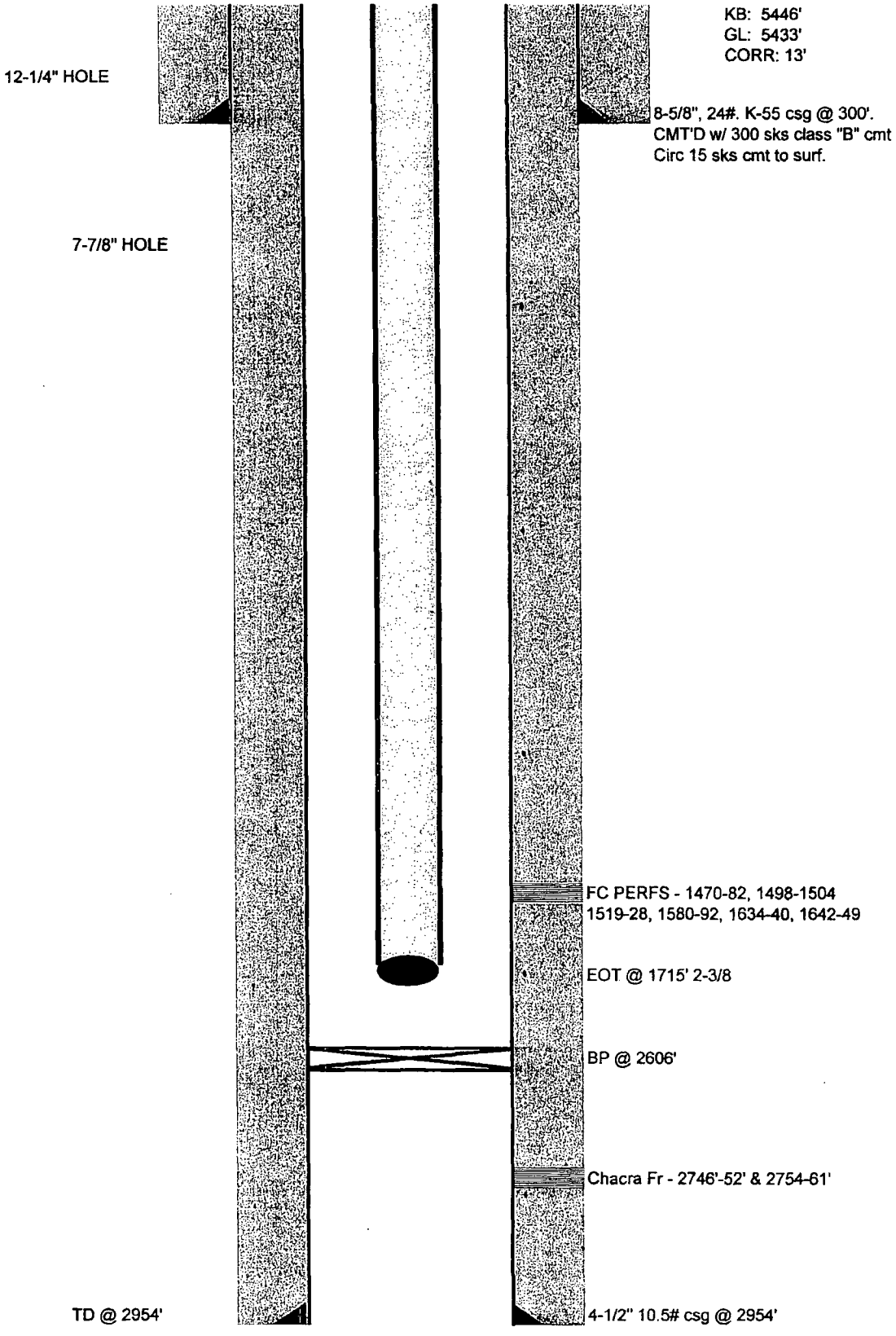
#2 DV Tool @ 3935'

#1 DV Tool @ 6188'

2-7/8" Tbg, Set @ 8212'
Pumping 2-1/2" x 1-1/2"

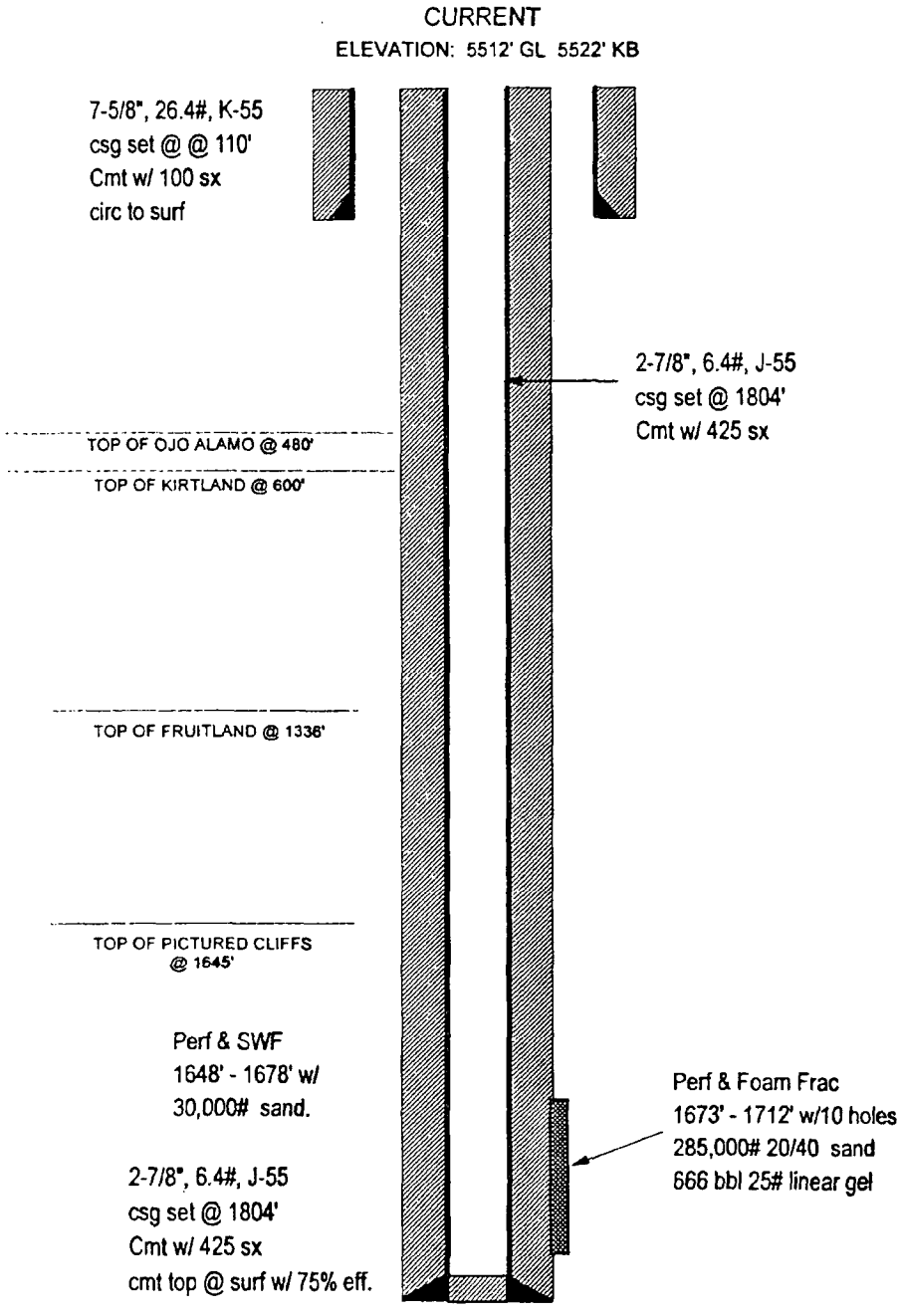
PBTD - 8343'
TD - 8350'

WELL: State Gas Com BS #1	**COUNTY: San Juan / API #: 30-045-02355**	
FIELD: Basin Fruitland	**STATE: NM**	**SPUD DATE: 11/12/1979**
FORMATION: Fruitland Coal	**LOCATION:1450' FSL & 1755' FWL, Unit K Sec. 23-T29N-R11W**	
TD: 2954'	**PBTD: 2500'**	**ELEVATION: 5433'**



Garland B 1R

Section 27M, T-29-N, R-11-W
San Juan County, NM
FULCHER KUTZ PICTURED CLIFFS
WELLBORE SCHEMATIC



BURLINGTON RESOURCES
dla:9/21/99

Hartman #1

Current

Basin Dakota

SE, Section 22, T-29-N, R-11-W, San Juan County, NM

Today's Date: 9/4/98

Spud: 3/13/60
Completed: 4/25/60
Elevation: 5436' (GL)

Ojo Alamo @ 354'

Kirtland @ 667'

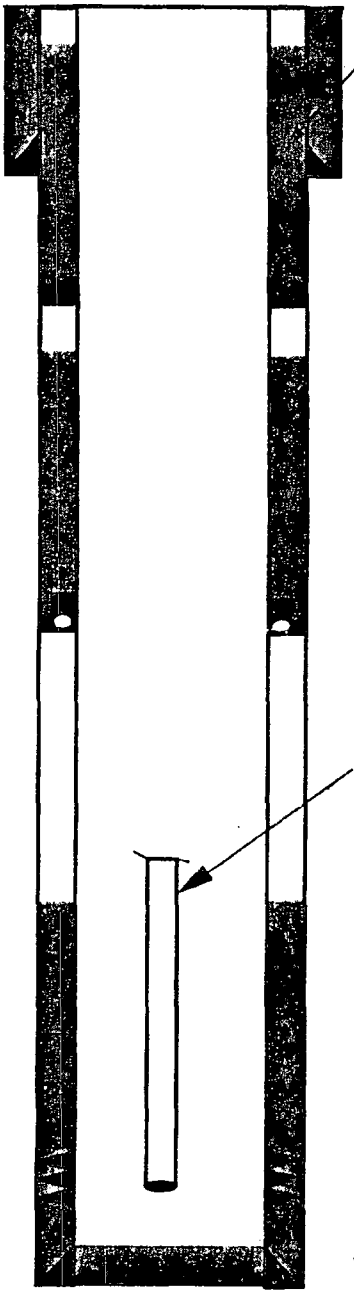
Fruitland @ 1410'

Pictured Cliffs @ 1640'

Mesaverde @ 3240'

Gallup @ 5210'

Dakota @ 6068'



200 sxs (236cf) Squeezed into bradenhead, displaced to 50'; Calculated Bottom of Cmt @ 694' (75%)

9-5/8" 33# Csg set @ 404'
300 sxs cement (Circulated to Surface)

WORKOVER HISTORY

May 96: 4-1/2" casing collapsed, 2-3/8" tbg stuck; Free point tbg apprx., 4000', back off tbg, attempt to fish, unable to recover any tubing.

Top of Cmt @ 964'
(Calc, 75%)

DV tool @ 1795'
Cmt w/340 cf

2-3/8" 4.7# tubing @ 6232'
Freepoint and backed off at 4000'

TOC @ 5174' (Calc, 75%)

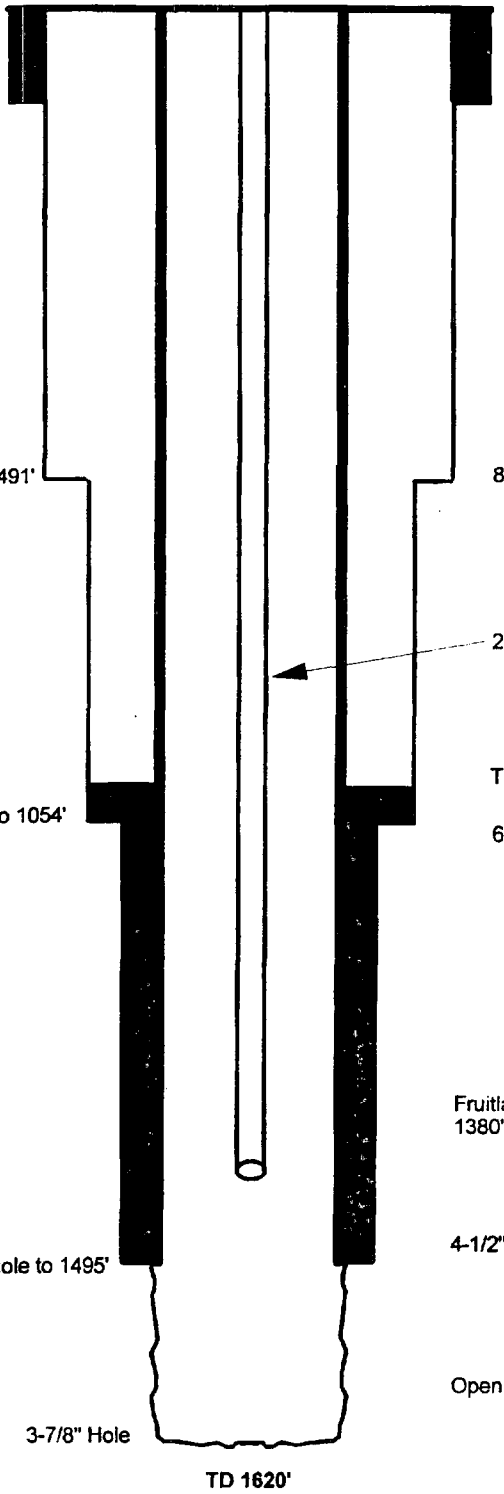
Dakota Perforations: 6072' - 6274'

4-1/2" 11.6# Casing set @ 6310'
Cmt w/350 sxs + 50 sxs latex (465 cf)

TD 6310'

Grace Pearce #1
Current
Fruitland
SE, Section 22, T-29-N, R-11-W, San Juan County, NM

Today's Date: 3/2/99
Spud: 6/19/58
Completed: 8/6/58
Elevation: 5425' (GL)



10-3/4" 32# Casing Set @ 131'
Cmt w/ 50 sxs (Circulated to Surface)

Well History

Casing leak at unknown depth.

Ojo Alamo @ 449'

Kirtland @ 560'

Fruitland @ 1388'

8-5/8" Casing @ 491' Then *Pulled*

2-3/8" Tubing @ 1345' ?

TOC @ 1028' (Calc, 75%)

6-5/8" Casing @ 1055' Then Pulled

Fruitland Perforations:
1380' - 1466'

4-1/2" 11.5# Casing set @ 1495'
Cmt with 50 sxs (59 cf)

Open Hole 1495' to 1620' ??

Cook #1

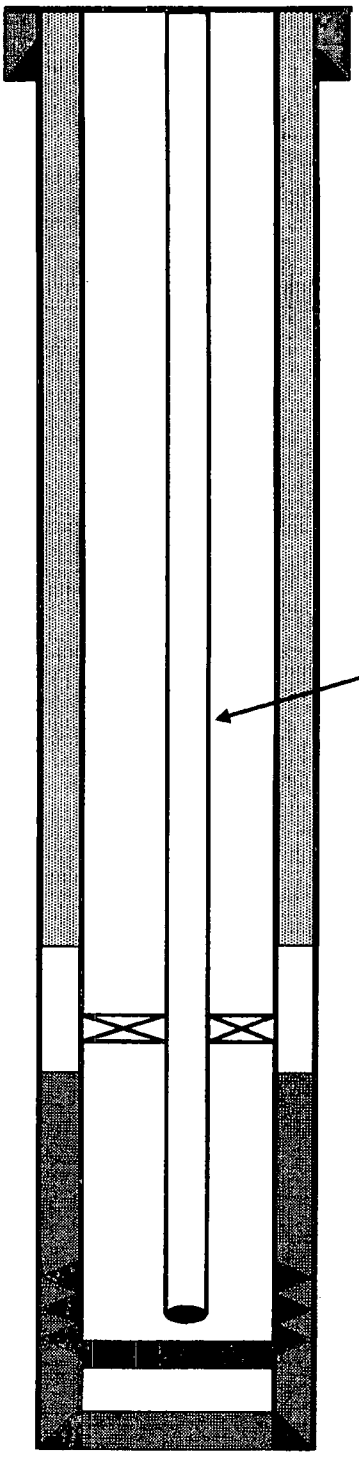
Current

Basin Dakota API #30-045-07940

SW Section 22, T-29-N, R-11-W, San Juan County, NM

Today's Date: 4/27/04
Spud: 1/4/60
Completed: 3/14/60
Elevation: 5442' DF

12-1/4" hole



9-5/8" 32.3# J-55 Casing set @ 404'
Cement w/312 sxs (cement circulated to surface)

WELL HISTORY

April 1996: Casing repair workover. Cemented from 3620' to surface, filling the 5-1/2" annulus (reports from Kimbell's files, Jon Stickland 817-335-2591).

June 2001: Tubing repair workover; replaced bad joints and acidized perforations.

February 2004: Casing evaluation workover. Found multiple casing leaks from 4140' to 4481'. Lost RBP in bad casing at 5129', then pushed to bottom at 6219'. Set 5-1/2" packer at 4488' with tubing at 6208'.

Ojo Alamo @ 400' (est.)

Kirtland @ 530' (est.)

Fruitland @ 1200' (est.)

Pictured Cliffs @ 1660' (est.)

2-3/8" Tubing at 6208'
(total of 195 joints with 54 below Model R packer at 4488' and 141 joints above.

Chacra @ 2325' (est.)

Mesaverde @ 3250' (est.)

Casing repair from 3620' to surface, circulate cement to surface.

TOC @ 5048' (Calc, 75%)

Gallup @ 5245' (est.)

Dakota @ 6050'

Dakota Perforations:
6052' – 6226'

RBP pushed down to 6219'

8-3/4" Hole

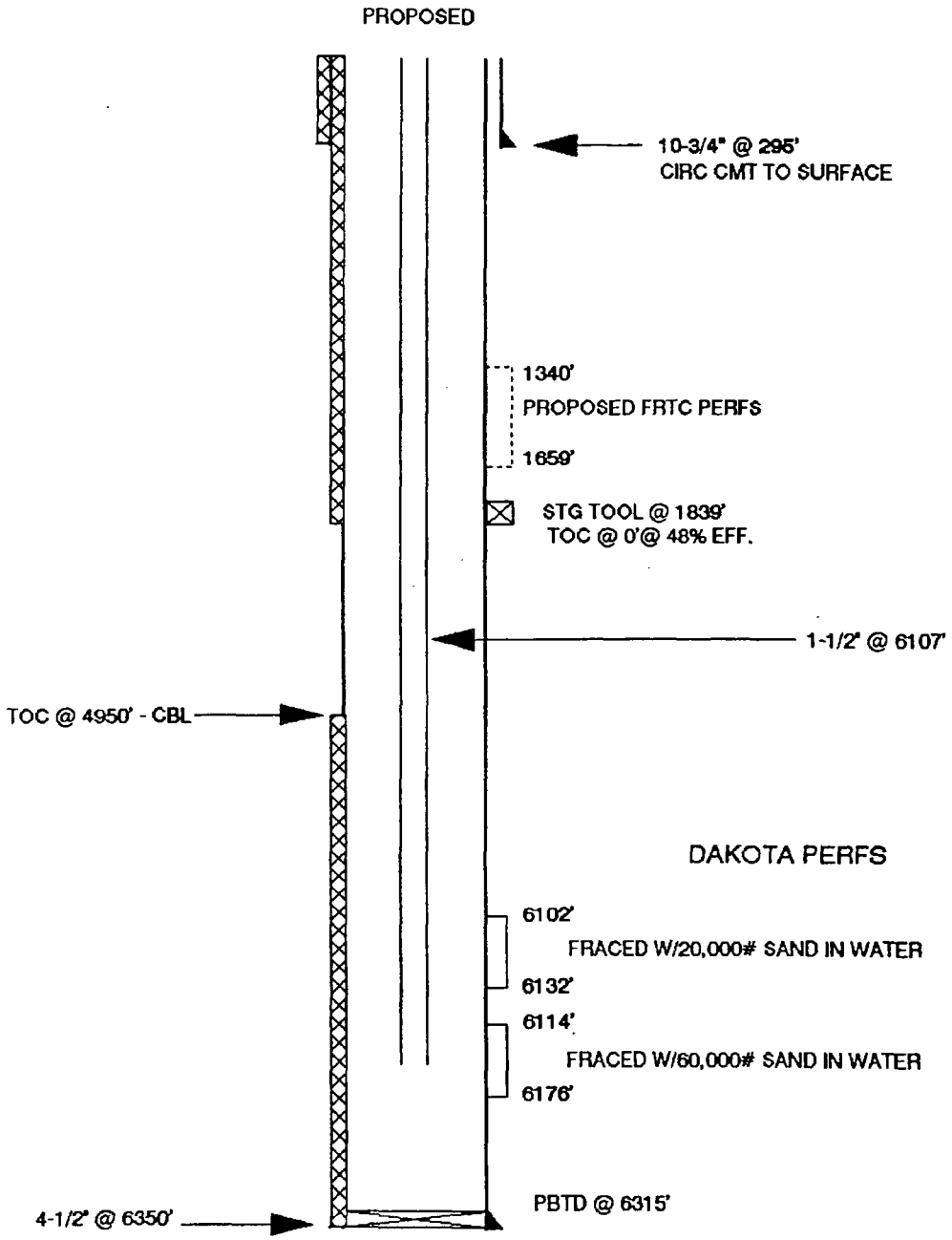
5-1/2" J-55 15# Casing set @ 6314'
Cement with 350 sxs

PBTD 6305'

TD 6314'

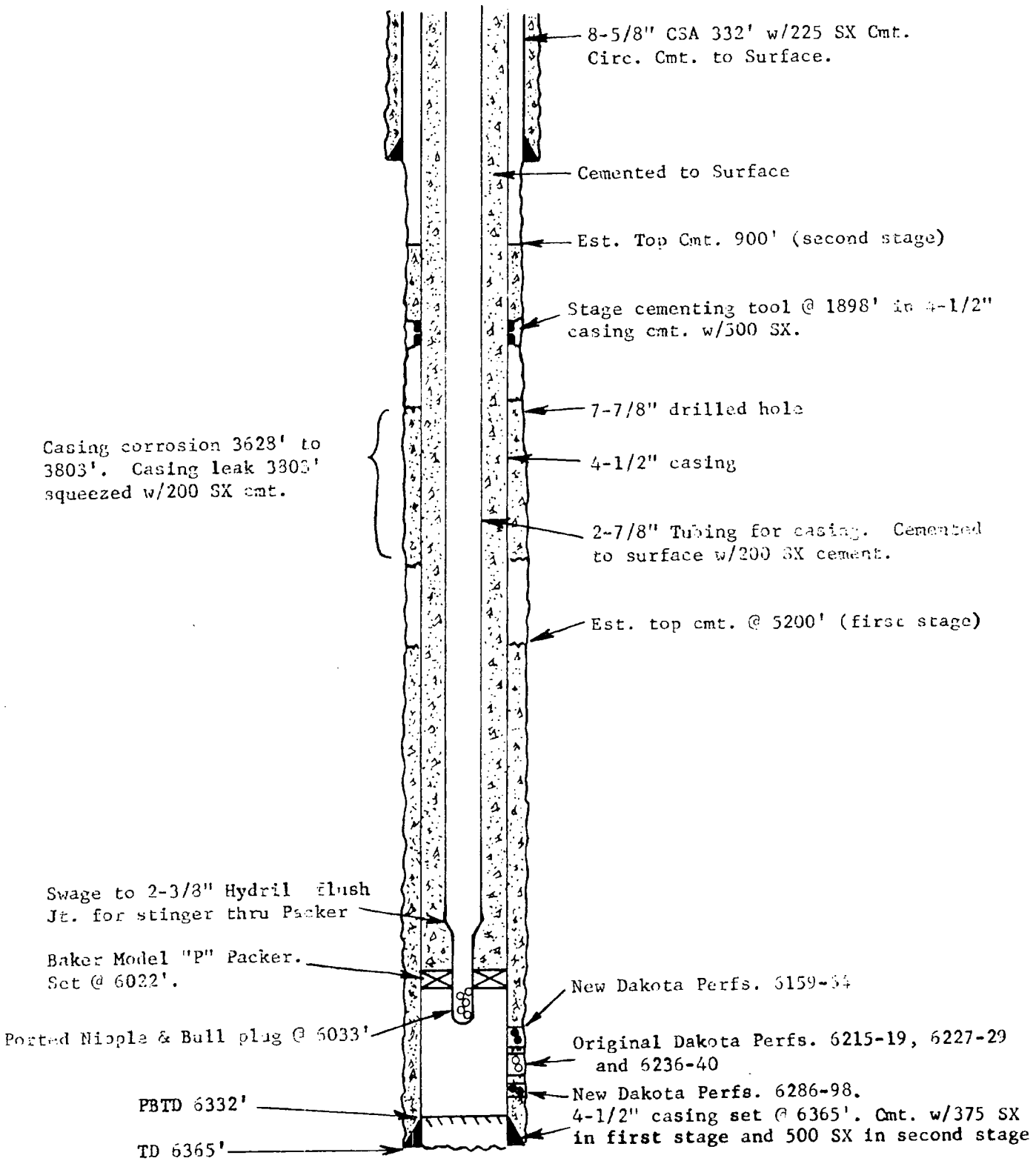
MANGUM #1 FRTC

UNIT L SECTION 27 T29N R11W
SAN JUAN COUNTY, NEW MEXICO



Pan American Petroleum Corporation
Davis Gas Com. "F" No. 1
Basin Dakota Field
San Juan Co., New Mexico

Elev. 5565 RDB
5554 GL



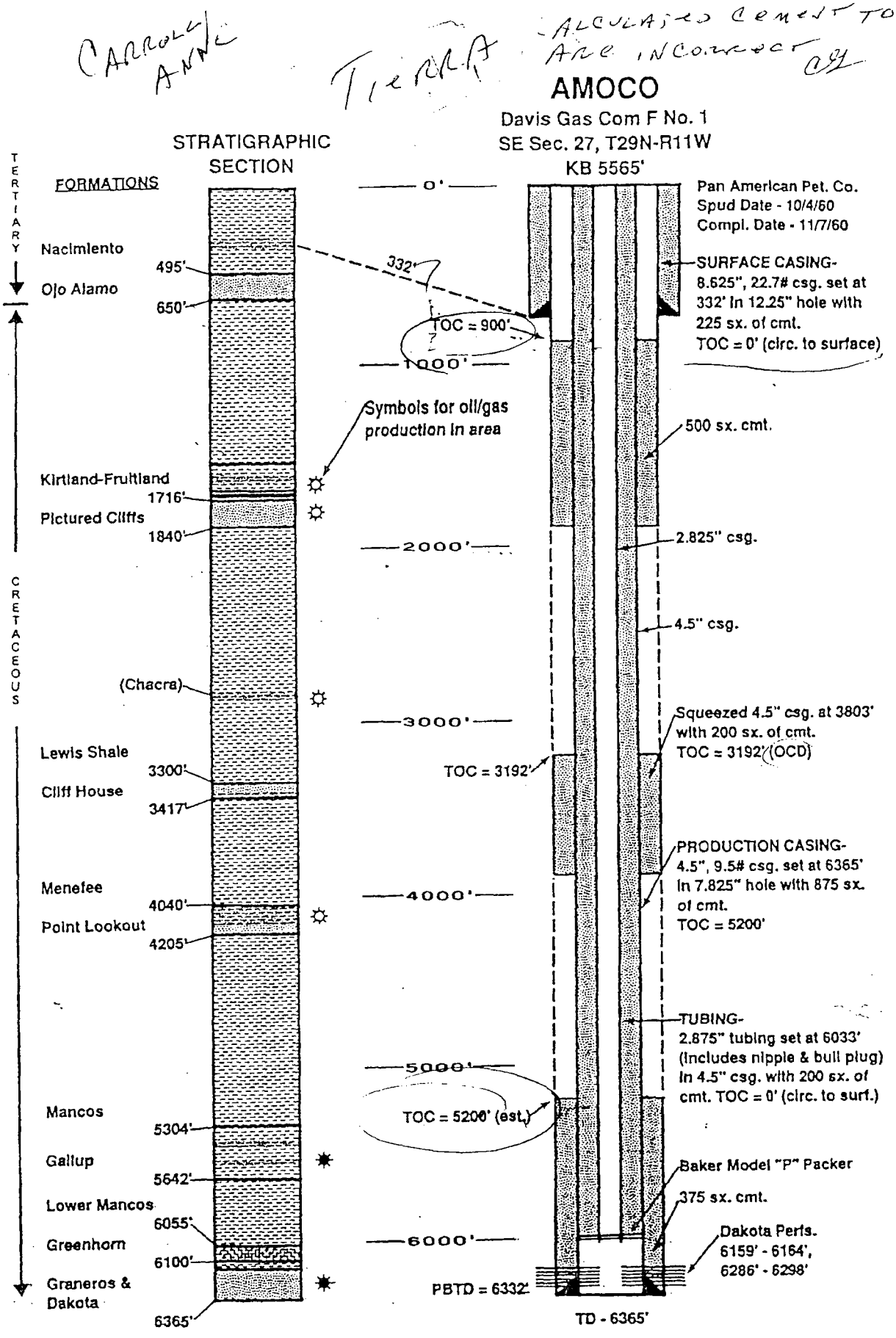
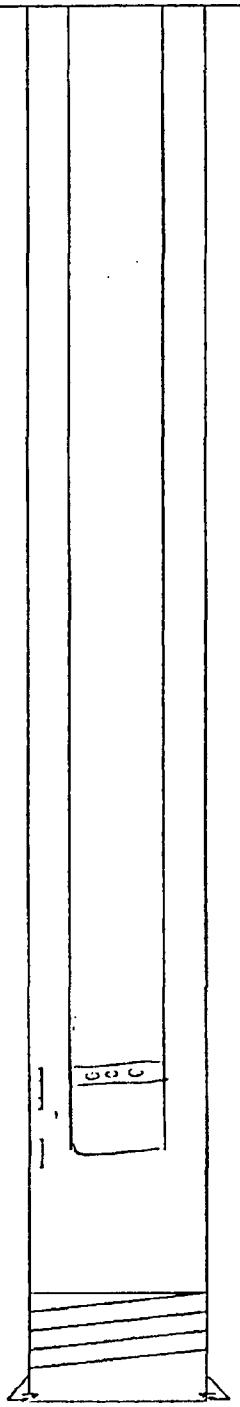


Figure 3. Wellbore diagram of the present day Amoco Davis Gas Com "F" No. 1 well and corresponding stratigraphy. Producing zones in the immediate area are also shown along the stratigraphic column.

SULLIVAN GAS COM D #1
LOCATION, B26-29N-11W
SINGLE DK
ORIGINAL COMPLETION 11/64
ELEVATION GL 5434 KB 5448
LAST FILE UPDATE 5/94 BY CSW



BOT OF 8.625 IN OD CSA 653
24 LB/FT, J-55 CASING, W/600 SKS
CIR TO SURFACE

PC AT 1600

MV AT 3200

DV TOOL @4363

GP AT 5205

DK-4SPF PERF 6047-6055
6064-6075

DK AT 6122

6135-6160

BOT OF 2.375 IN OD TBG AT 6149

PERF SUB & ORANGED PEEL
ANCHOR ON BTM

PBTD AT 6222 FT.

TOTAL DEPTH 6260 FT.

BOT OF 4.5 IN OD CSA 6259
10.5 LB/FT, J-55 CASING
W/1500 SKS
CIR TO SURFACE

FILENAME:
04507733

Spud: 09/05/62
1st Delivered: 01/18/63
Elevation: 5600' (GL)
5611' (KB)

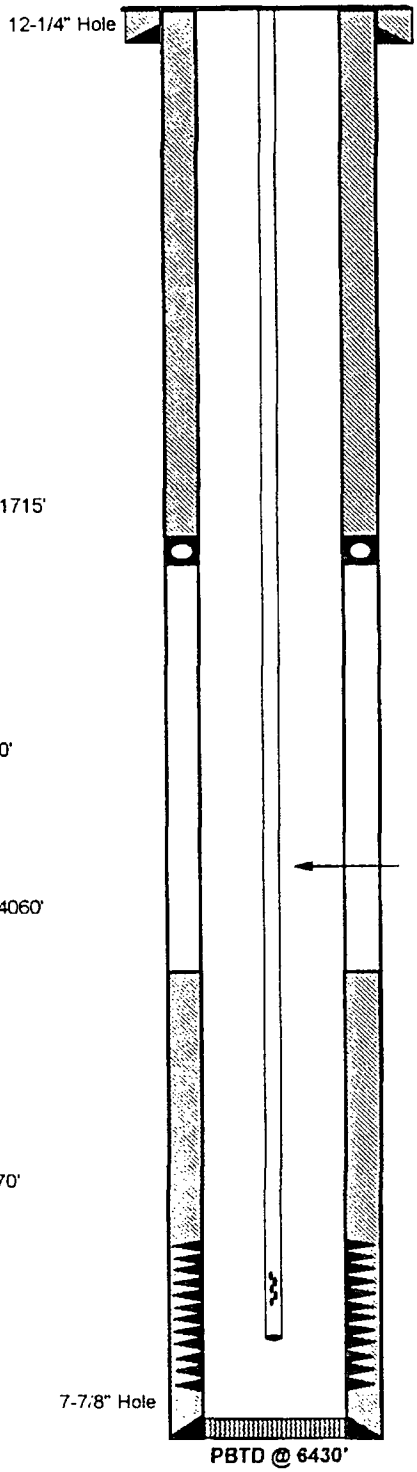
Workovers
4/15/80: Ran wireline in tubing, tagged btm @ 6257' (KB). Tried to set tubing stop at tubing perf top, could not set stop. Stop did set @ 6142', too high to be effective w/plunger. Retrieved stop. MOL.
7/8/80: Attempt to POOH w/tbg. (60,000# on tbg. string), tbg. would not come out. ND BOP, NUWH. MOL.
3/27/97: Wireline run, 1.901 GR to 6269', 1.50" impression block to 6269'. Indicates sand fill.

CONGRESS #5

Current -- 4/17/97

DPNO: 32208A

2510' FNL, 1570' FEL
Unit G, Sec. 34, T29N, R11W, SJC, NM
Lat/Long: 36°40.97", 107°58.49"



12-1/4" Hole

8-5/8", 24#, J55 csg. set @ 285'
Cmt. w/200 sxs Cl. B w/2% CaCl2.
Circulate to surface.

Fruitland @ 1480'

Pictured Cliffs @ 1715'

DV tool @ 1957'

Cliffhouse @ 3290'

Menefee @ 3415'

2-3/8", 4.7#, J55, EUE tbg. set @ 6275'
w/perforated joint on end. Perfs @ 6250'-6260'.

Point Lookout @ 4060'

TOC @ 4424' (Calc. 75% Effic.)

Gallup @ 5305'

Greenhorn @ 6070'

Dakota @ 6170'

Dakota perfs @ 6171'-6204' - Frac'd w/25,000# 20/40 sd, 27,500 gl. wtr. w/1% CaCl2 & 7# J-2.
6250'-6286' - Frac w/60,000# 20j/40 sd, 64,000 gl. 1% CaCl2. wtr.
6308'-6340' - Frac'd w/40,000# 20/40 sd, 31,180 gl.

7-7/8" Hole

4-1/2", 10.5#, J55 csg. set @ 6462' (KB)
1st: 560 cf. Diamix w/2% gel, 1/4# Strata-Crete/sx, tail w/50 sxs B w/1% D-15.
2nd: 1000 cf HYS-400, tail w/50 sxs Neat. Sufficient to circulate to surface.

PBTD @ 6430'
TD @ 6470'

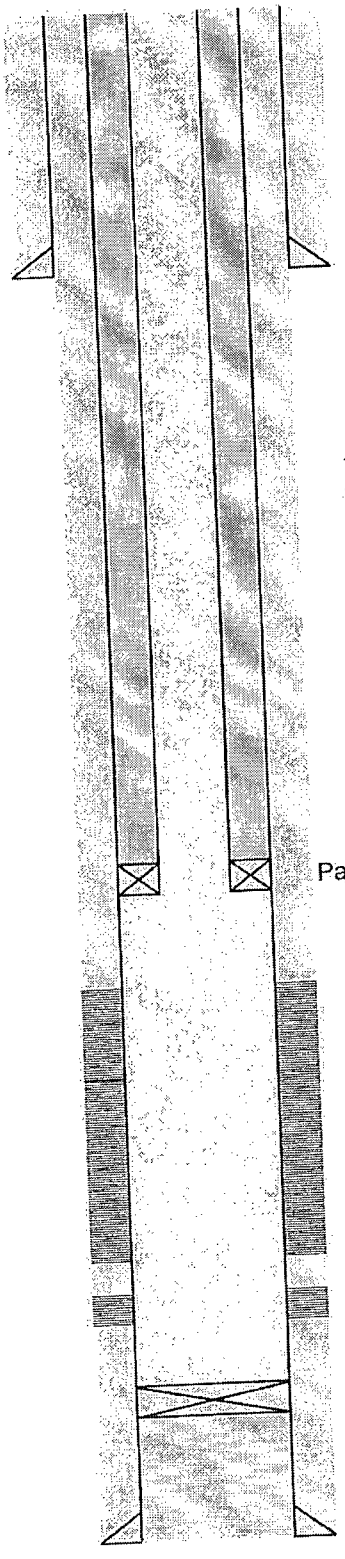
APPENDIX A

WESTERN REFINING DISPOSAL WELL #1
NW, SW SECTION 26, T29N, R11W
API NO.: 30-045-29002

SUBSURFACE — HOUSTON, TX · SOUTH BEND, IN · BATON ROUGE, LA

FIGURE 1
DISPOSAL WELL #1 WELL SCHEMATIC
Western Refining Inc.
Bloomfield, NM

Date:	4/26/2006	Approved By:	rls	Job No.:	70F6830
Drawn By:	rls	Checked By:		Scale:	N/A



8-5/8", 48#/ft, Surface Casing @ 830'
TOC: Surface
Hole Size: 11.0"

Tubing: 2-7/8", Acid Resistant Fluoroline Cement Lined
Wt of Tubing: 6.5 #/ft
Wt of Tubing Lined: 7.55 #/ft
Tubing ID: 2.128"
Tubing Drift ID: 2.000"
Minimum ID @ Packer: ~1.87" estimated

Packer: Unknown Packer Type @ 3221'
Could be a Guiberson or similar model Uni-6

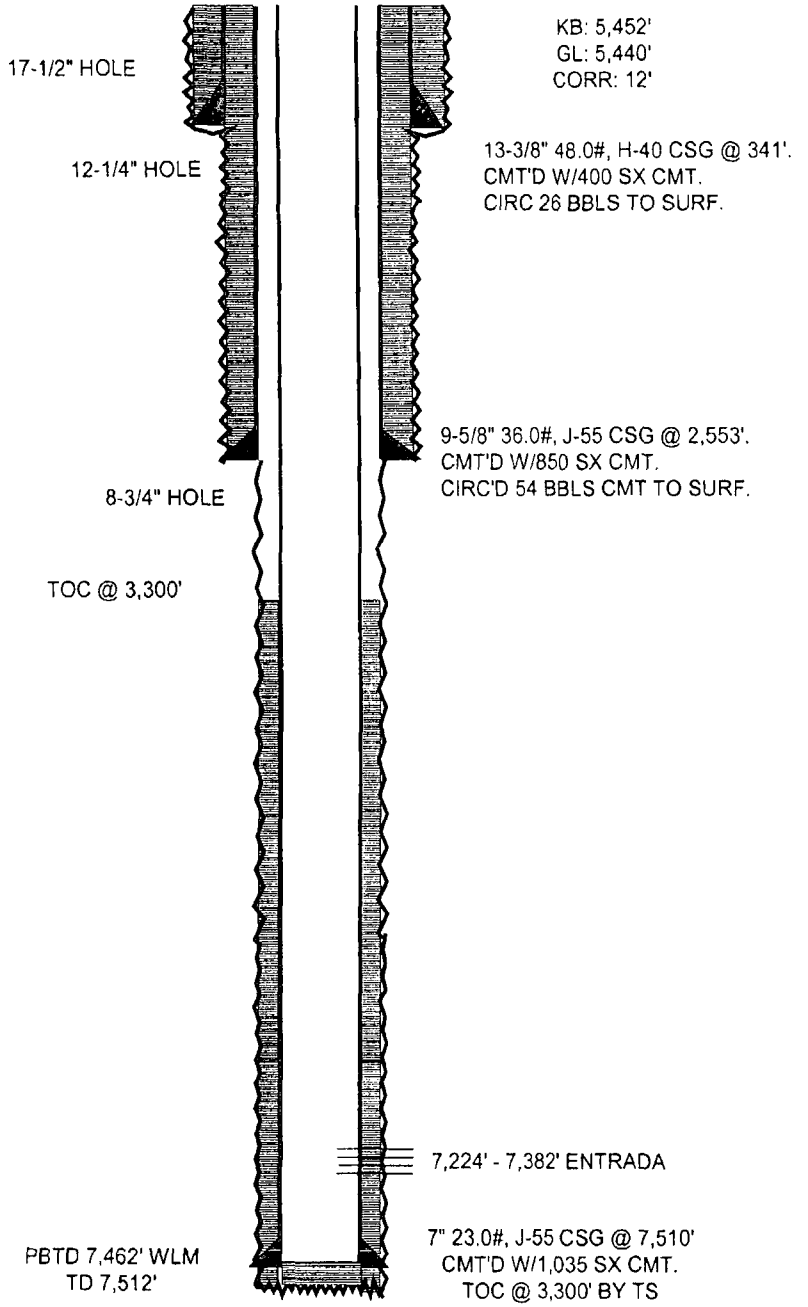
Perforations: 3276' - 3408' 4JSPF 0.5 EHD
Top of the Cliff House Formation: 3276'

Fill was cleaned out of well on 4/20/06
Fill was orginally tagged at 3325'

Perforations: 3435' - 3460' 4JSPF 0.5 EHD
Top of the Menefee Formation: 3400'

RBP: 3520'

5-1/2", 15.5#/ft, Production Casing @3600'
TOC: Surface
Hole Size: 7-7/8"



ASHCROFT SWD #1

WELLBORE DIAGRAM

DATA

LOCATION: 998' FNL & 2,114' FEL, UNIT B, SEC 26, T29N, R11W
COUNTY/STATE: SAN JUAN CO., NM
FIELD: ENTRADA
FORMATION: ENTRADA
API#: 30-045-30788 **XTO WELL #:** 72320
SPUD DATE: 12/19/01 **COMPLETION DATE:** NA
IP: NA
PRODUCTION METHOD: NA
PROD TUBING: NA
PERFS: 7,224' – 7,312' & 7,330' – 7,382' 4 JSPF (TTL 560 0.43" HOLES)

HISTORY

12/20/01 BEARCAT DRLG CO. RIG #2 SPUDDED HOLE FOR XTO ENERGY, CO. ON 12/19/01.
12/21/01 BIT #1 DRLD 9-7/8" PILOT HOLE THROUGH BOULDERS TO 165'. BIT #2 DRLD 12-1/4" PILOT HOLE THROUGH BOULDERS TO 165'. BIT #3 STD DRLG 17-1/2" HOLE.
12/22/01 DRLD 17-1/2" HOLE TO 341'. SET 13-3/8", 48.0#, H-40 CSG @ 341'. CMT'D W/400 SX TYPE III CMT W/3% $CaCl_2$ + 1 /4#/SX CELLOFLAKE. MIXED @ 14.6 PPG & 1.41 CU FT/SX. CIRC 26 BBLS CMT TO SURF.
12/27/01 DRLD 12-1/4" HOLE TO 555'. HIT 50 BPH WTR FLOW.
12/28/01 DRLD 12-1/4" HOLE TO 1,062'. KO FLWG GAS & WTR ON BIT TRIP @ 1,062'. WEIGHTED UP MUD TO 11.9 PPG.
01/04/02 DRLD 12-1/4" HOLE TO 2,556'. SET 9-5/8" 36.0#, J-55, STC CSG @ 2,553'. BJ SERVICES CMT'D W/500 SX PREMIUM LITE FM CMT (65/35/6) W/2% KCL & 1/4 #/SX CELLOFLAKE LEAD SLURRY (MIXED @ 12.5 PPG, 1.96 CUFT/SX YIELD) FOLLOWED BY 350 SX TYPE III CMT W/3% $CaCl_2$ & 1/4 #/SX CELLOFLAKE TAIL SLURRY (MIXED @ 14.5 PPG, 1.41 CU FT/SX YIELD). CIRC 54 BBLS CMT TO SURF.
01/11/02 DRLD 8-3/4" HOLE TO 5,534'. LOST CIRC. MIXED MUD & LCM. RE-GAINED CIRC.
01/15/02 DRLD 8-3/4" HOLE TO 6,610'. LOST CIRC. MIXED MUD & LCM. RE-GAINED CIRC.
01/20/02 TD 8-3/4" HOLE @ 7,512' ON 01/19/02. SCHLUMBERGER RAN OPENHOLE LOGS: PLATFORM EXPRESS AI/CAL/GR/SP & TLD/CN/Pe & MICRO LOG. FMI LOG.
01/22/02 SET 7", 23#, J-55 CSG @ 7,510'. BJ SERVICES CMT'D W/835 SX PREMIUM LITE FM CEMENT (65/35/6) W/2% KCl, 1/4 #/SX CELLOFLAKE, 0.6% CD-32, 0.5% FL-52 & 4% PHENOSEAL (MIXED @ 11.9 PPG & 2.23 CUFT/SX) LEAD SLURRY FOLLOWED BY 200 SX CLASS H CEMENT W/2% KCl, 0.6% FL-62,1/4 #/SX CELLOFLAKE & 4% PHENOSEAL (MIXED @ 15.6 PPG & 1.21 CUFT/SX.) TAIL SLURRY. DID NOT CIRC CMT TO SURF. REL RIG 01/22/02. TOC @ 3,300' BY TEMP SURVEY.
04/07/02 PRESS TSTD 7" PROD CSG TO 1,000 PSIG FOR 30". HELD OK.
04/09/02 COMPUTALOG RAN GR/CCL LOG FR/7,462' (WLM PBTD) - 7,050'. PERF'D ENTRADA 4 JSPF FR/7,382'-7,330' (TTL 208 - 0.43" HOLES).
04/10/02 TIH W/PKR TO 7,394'. SPOTTED 250 GALS 7-1/2% HCL ACID ACROSS PERFS. PUH & SET PKR @ 7,108'. BD ENTRADA PERFS @ 2,653 PSIG. EIR W/WTR 2.6 BPM @ 1,750 PSIG. PPD 10 BW. SD. ISIP 1,400 PSIG. ACIDIZED ENTRADA PERFS FR/7,330'-82' W/1,450 GALS 7-1/2% HCL ACID. AIR 7.3 BPM. ATP 3,500 PSIG. ISDP 1,550 PSIG. 15" SIP 1,226 PSIG.

CALVIN #1 FORM C-103
December 17, 1962

NEW MEXICO OIL CONSERVATION COMMISSION

FORM C-103
(Rev 3-55)

MISCELLANEOUS REPORTS ON WELLS

(Submit to appropriate District Office as per Commission Rule 1106)

Name of Company	Address
Southern Union Production Company	P. O. Box 808, Farmington, New Mexico

Lease	Well No.	Unit Letter	Section	Township	Range
Calvin	1	M	26	29North	11 West

Date Work Performed	Pool	County
November 12, 1962	Basin Dakota	San Juan

THIS IS A REPORT OF: *(Check appropriate block)*

☐ Beginning Drilling Operations ☒ Casing Test and Cement Job ☒ Other *(Explain)*: Completion Details

☐ Plugging ☐ Remedial Work

Detailed account of work done, nature and quantity of materials used, and results obtained.

1. Drilled 7-7/8" hole with mud to 6455 ft.
2. Ran 208 jts., 4-1/2", 10.5#, J-55 csg. set at 6453' - D. V. tool @ 1916'.
3. Cemented 1st stage 20 bbls mud krill ahead of cement, 220 sx. 50-50 pozmix, 6% gel 12-1/2# gilsonite/sk, 10# salt/sk followed by 65 sx latex. Plug down 4:00 P.M. 11-12-62.
4. Cemented 2nd stage w/209 sx 40% Diacel "D", 12-1/2# gilsonite/sk, 2% C.C. Plug down 5:30 P.M. 11/12/62.
5. Ran cement bond log. Top good cement @ 5400' on 1st stage cement on 11-13-62.
6. Perf. 1 shot/ft. 6176, 6184, 6196, 6210, 6262, 6268, 6284, 6289, 6336, 6345, 6348, 6204, 6211, 6258, 6265, 6272, 6275, 6295, 6339 & 6342.
7. Sand-water frac w/100,000# 20-40 sand and 202,500 gallons 1% HCL water.
8. Ran 193 jts. 2" tbg. landed at 6254 on 11/21/62.

RECEIVED
DEC 17 1962
OIL CON. COM.
DIST. 3

Witnessed by	Position	Company
Thomas E. Fenne	Ass't. Drlg. Supt.	Southern Union Production Co.

FILL IN BELOW FOR REMEDIAL WORK REPORTS *ONLY*

ORIGINAL WELL DATA

D F Elev.	T D	PBTD	Producing Interval	Completion Date
5587	6455	6418	6179-6348	11-21-62

Tubing Diameter	Tubing Depth	Oil String Diameter	Oil String Depth
2-3/8"	6250		

Perforated Interval(s) One hole entries: 6268, 6284, 6289, 6336, 6345
6179, 6181, 6199, 6201, 6204, 6211, 6258, 6262, 6265, 6267, 6275, 6295, 6339, 6342 & 6348

Open Hole Interval	Producing Formation(s)
NONE	Dakota

RESULTS OF WORKOVER

Test	Date of Test	Oil Production BPD	Gas Production MCFPD	Water Production BPD	GOR Cubic feet/Bbl	Gas Well Potential MCFPD
Before Workover						
After Workover						

OIL CONSERVATION COMMISSION

I hereby certify that the information given above is true and complete to the best of my knowledge.

Approved by: Original Signed By A. R. KENDRICK	Name: T. E. Fenne
Title: PETROLEUM ENGINEER DIST. NO. 3	Position: Ass't. Drilling Superintendent
Date: DEC 17 1962	Company: Southern Union Production Company

RADIUS OF ENDANGERING INFLUENCE CALCULATIONS

Western Refining Disposal Well #1
2009 Annual Fall-Off Test
Radius of Endangering Influence Calculation
Using 40 C.F.R. § 146.6 equations

1. $r = \sqrt{\frac{2.25KHt}{S10^{X}}}$ radius of endangering influence equation

2. $X = \frac{4\pi KH(h_w - h_{bo})(S_p G_b)}{2.3Q}$

3. $K = \frac{Q}{4\pi s r_w}$ hydraulic conductivity equation

Where:

r	Radius of endangering influence from injection well (length - feet)
K	the hydraulic conductivity (length/time - ft/day)
H	Thickness of the injection zone (length - feet)
h_{bo}	Observed original hydrostatic head of injection zone (length - feet) measured from the base of the lowermost underground source of drinking water)
h_w	Hydrostatic head of underground drinking water (length - feet) measured from the base of the lowest underground source of drinking water
π	3.142 (dimensionless)
Q	Injection rate (volume/time - cuft/day)
r_w	the radius of the well (length - ft). Include fracture half length as equivalent wellbore radius for linear flow in a fractured well.
t	time of injection (time - days)
s	the drawdown (length - ft)
S	Storage coefficient (dimensionless), nominally 0.1 if unconfined or 0.001 if confined
S_pG_b	Specific gravity of fluid in the injection zone (dimensionless)
t	Time of injection (dime – days)
X_f	Fracture half length (length – feet) – for well with linear flow

Assumptions:

1. The injection zone is homogenous and isotropic
2. The injection zone has infinite areal extent
3. The injection well penetrates the entire thickness of the injection zone
4. The well diameter is a fractured well with linear flow properties. R_w becomes the fracture half length, X_f.
5. The emplacement of fluid into the injection zone crates instantaneous increase in pressure

6. Specific gravity of the injected fluid is 1.00 (water).
7. The lowermost source of drinking water is the base of the Ojo Alamo formation at 734 feet depth with a normal pressure gradient. Ojo Alamo formation is 165 feet thick and assumed to be saturated with water
8. The observed original hydrostatic head of the injection zone is 320 psig surface pressure or 1473 feet of head at the depth of the lower most underground source of drinking water.

Radius of Endangering Influence at 556,032,672 Gallons of Injection Fluids

Q	69.1	GPM - Average Injection Rate
Q	2369.143	BWPD
Q	13301.75	cuft/day
gradient	0.433	psi/ft
p_i	4199	feet – original head lowest perforation
p_{wf}	2344.6	psi – final bottom-hole flowing pressure @ 3250 feet
p_{wf}	5625	feet – final bottom-hole head
s	1426	feet – (final head less original head)
r_w	3480	ft ($r_w = x_f$ - fractured well with linear flow)

$$K = \frac{Q}{4\pi s r_w} = \frac{13301.75}{4\pi(1426)(3480)} = 0.00021328$$

K	0.00021328	ft/day – from equation 3
H	106	feet (injection interval)
h_w	165 feet	(165 feet thick Ojo Alamo – assume formation is saturated with water –from 16 Sep 1992 report)
h_{bo}	1473 feet	(320 psi – surface pressure plus 734 feet of head to lowermost source of drinking water – Ojo Alamo)

$$X = \frac{4\pi KH(h_w - h_{bo})(S_p G_b)}{2.3Q} = \frac{4\pi(0.00021328)(106)(165-1473)(1.0)}{2.3(13301.75)} = -0.01215$$

X	-0.01215	from equation 2
V		556,032,672 gallons (injected fluid as of 2009 falloff test)
t	5588	days at final injection rate
S	0.001	confined dimensionless storage (Heath, 1989)

$$r = \sqrt{\frac{2.25KHt}{S10^X}} = \sqrt{\frac{2.25(0.00021328)(106)(5588)}{(0.001)10^{-0.01215}}} = 541 \text{ feet}$$

r = 541 feet - from equation 1 when confined

Radius of Endangering Influence at 1,200,000,000 Gallons of Injection Fluids

X	-0.01215	from equation 2
V		1,200,000,000 gallons
t	12,060	days at final injection rate
S	0.001	confined dimensionless storage (Heath, 1989)

$$r = \sqrt{\frac{2.25KHt}{S10^{X}}} = \sqrt{\frac{2.25(0.00021328)(106)(12060)}{(0.001)10^{-0.01215}}} = 794 \text{ feet}$$

r = 794 feet - from equation 1 when confined

MONTGOMERY & ANDREWS
LAW FIRM

EDMUND H. KENDRICK
Direct: (505) 986-2527
Email: ekendrick@montand.com
Reply To: Santa Fe Office
www.montand.com

March 25, 2010

VIA EMAIL AND HAND DELIVERY

Mr. Glenn von Gonten
Acting Environmental Bureau Chief
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: Request to Withdraw Public Notice
Discharge Plan Permit (UICI-009 [I-009])
Western Refining Southwest, Inc.
Class I Non-Hazardous Disposal Well
Waste Disposal Well No. 1, API No. 30-045-29002
2442 FSL and 1250 FEL UL: I Section 27, T29N, R11W
San Juan County, New Mexico

Dear Mr. von Gonten,

Western Refining Southwest, Inc. (Western) respectfully requests that the public notice be withdrawn in this matter because the Notice of Publication, Draft Discharge Plan Permit and the New Mexico Oil Conservation Division (OCD) letter dated February 25, 2010 determining "administrative completeness" do not accurately reflect Western's application. The letter states "The New Mexico Oil Conservation Division (OCD) **has received Western Refining Southwest, Inc's application** for Disposal Well No. 1 **to inject** oil field exempt/non-exempt non-hazardous wastes into the Cliff House and Menefee Formations at the intervals from 3276 to 3408 feet and 3435 to 3460 feet, respectively **at a maximum injection pressure of 600 psig.**" (Emphasis added.) The 600 psig maximum injection pressure is also referenced in the Notice of Publication and Draft Discharge Plan Permit. The letter is presented for reference in Attachment A.

Western's application, dated October 2, 2008, did not reduce the injection pressure from 1,150 to 600 psig. Furthermore, Western was not notified of the reduction to 600 psig until February 23, 2010, when Western received an email to that effect from OCD. Western was unable to respond to the email before OCD issued the public notice, two days later. The OCD email is also included in Attachment A.

REPLY TO:
325 Paseo de Peralta
Santa Fe, New Mexico 87501
Telephone (505) 982-3873 • Fax (505) 982-4289

Post Office Box 2307
Santa Fe, New Mexico 87504-2307

6301 Indian School Road NE, Suite 400
Albuquerque, New Mexico 87110
Telephone (505) 884-4200 • Fax (505) 888-8929

Post Office Box 36210
Albuquerque, New Mexico 87176-6210

Permitted Maximum Injection Pressure History

According to available records, the initial discussions with the OCD Aztec Office indicated that the injection pressure would be limited initially to 0.2 psi/ft or about 690 psi, "the rule of thumb" for estimating reservoir parting (i.e., fracture) pressure. Western understands that OCD requires additional testing before the agency can allow the maximum injection pressure to be increased above the initial "rule of thumb" level. That, in fact, is what happened. Upon completion of additional testing on two occasions, OCD approved the permitted maximum injection pressure to increase to 955 psig in 1994 and to 1,150 psig in 1996. Presently, the permitted maximum injection pressure is 1,150 psig.

Below is a brief history of the permitted maximum injection pressure.

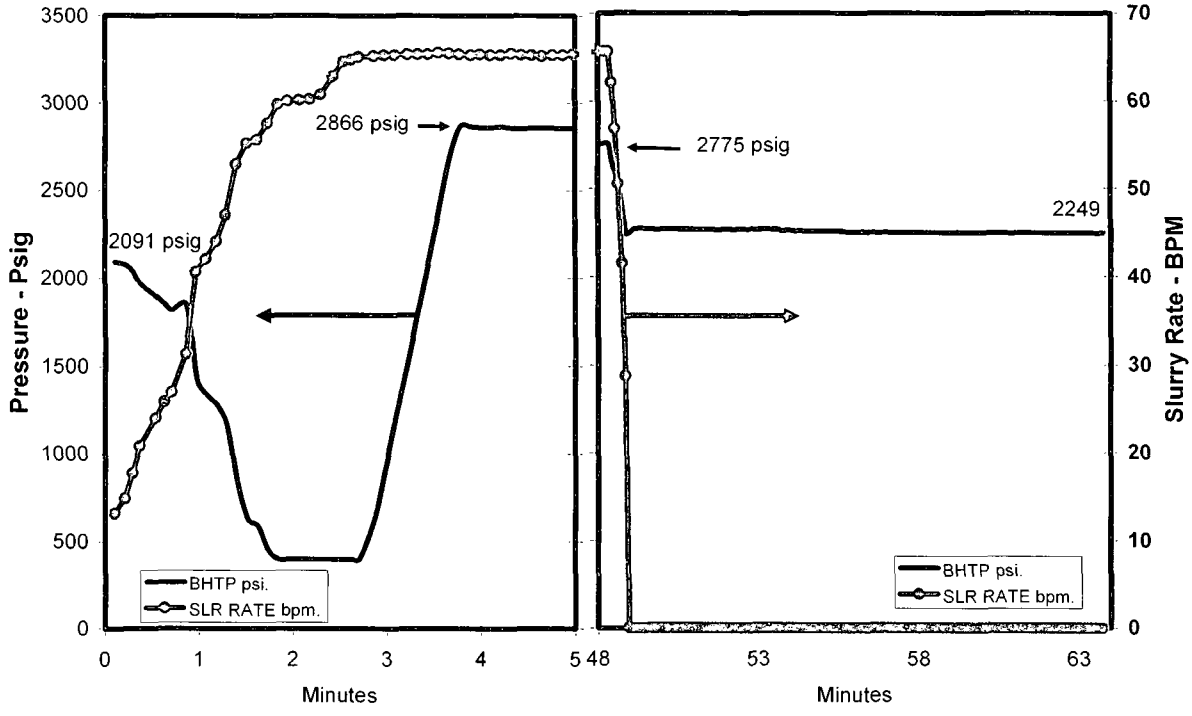
• June 28, 1994	Increase Pressure Increase to 955 psig.
• July 16, 1996	Increase Pressure Increase to 1150 psig.
• September 16, 1999	Discharge Plan Renewal Application – No Change
• June 30, 2003	Discharge Plan Renewal Application – No Change
• March 23, 2004	Discharge Plan Renewal – 1150 psig
• October 2, 2008	Discharge Plan Renewal Application – No Change

The pressure history documents are included in Attachment B.

Engineering Basis for 1,150 psig Maximum Injection Pressure

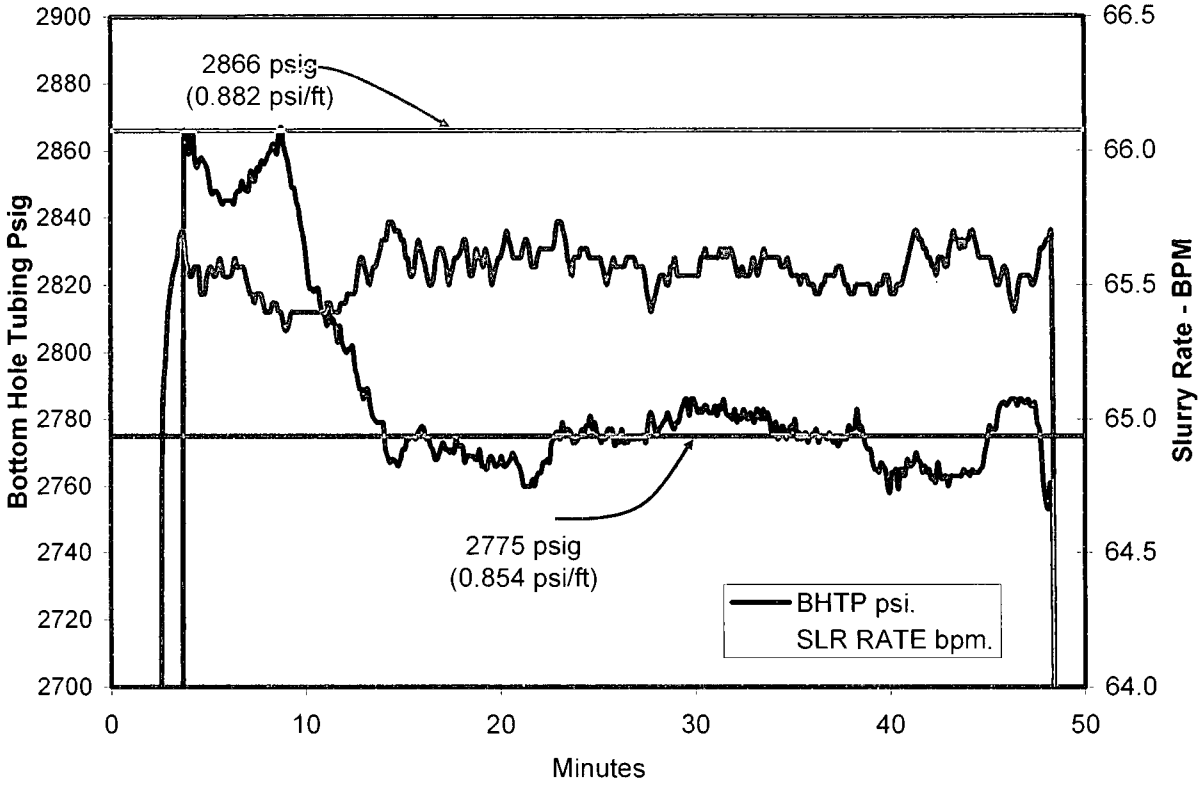
In Western's opinion, there is no engineering basis to reduce the injection pressure. Based on actual data collected by Western, it is not possible for the fractures to be growing at this time.

Figure 1
Fracture Treatment Data
Disposal Well #1 Frac 3/1/96



BHTP – Bottom Hole Treating Pressure
BPM – Barrels Per Minute
SLR – Slurry Rate

Figure 2
Fracture Treatment Data
Disposal Well #1 Frac 3/1/96



Figures 1 and 2, above, were generated using the same data from the March 1, 1996 Postfrac Treatment Summary. Figure 1 depicts the pressure and slurry rate versus time. To enhance detail, Figure 2 has a larger scale than Figure 1. These figures show the following:

1) the formation pressure at initiation of treatment was 2091 psig (0.64 psi/ft) as seen in Figure 1;

2) the formation parting pressure was 2866 psig (0.88 psi/ft) as seen in Figures 1 and 2; and

3) the propagation pressure is approximately 2775 psig (0.85 psi/ft) as seen in Figures 1 and 2.

Figure 3

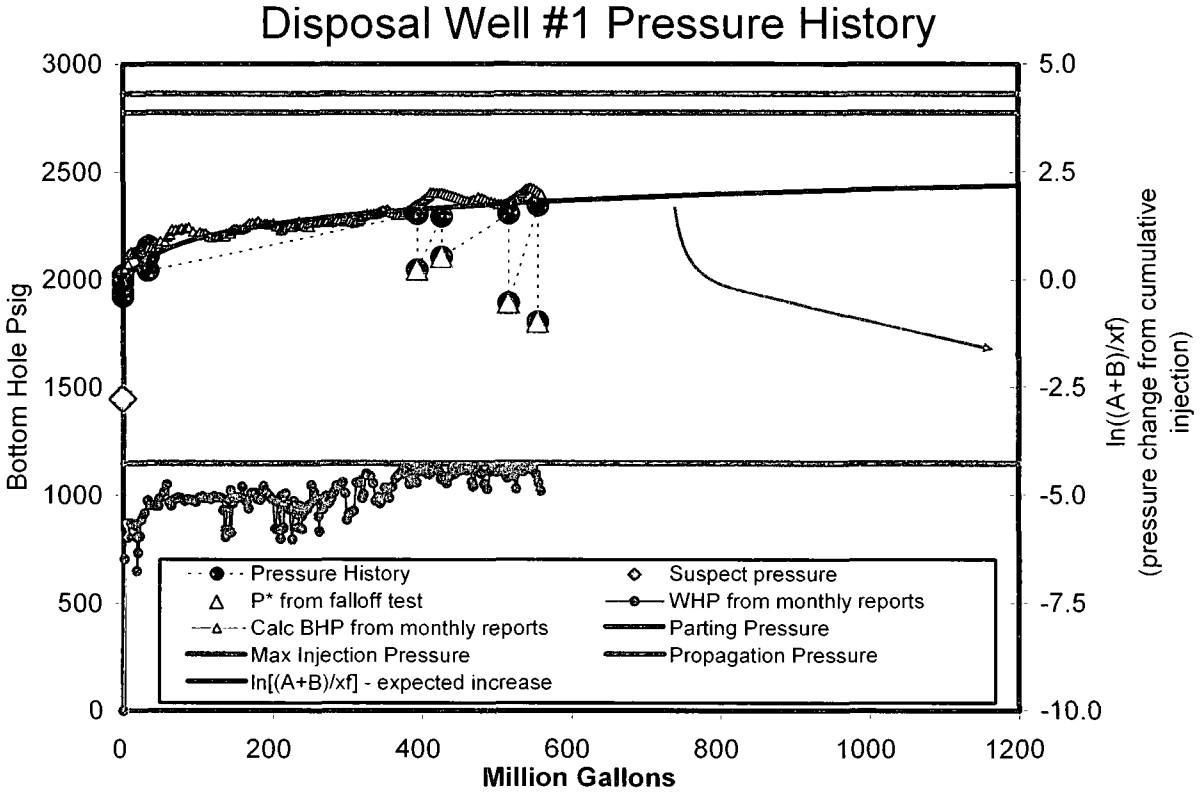


Figure 3, above, depicts bottom hole pressure and injection pressure history versus cumulative injection volume from initiation of injection to near present. The figure also depicts the formation pressure change from cumulative injection (black line), formation parting pressure (red line), propagation pressure (green) and permitted maximum injection pressure (blue line).

At approximately 530 million cumulative gallons, the corresponding pressures from the graph are:

- Formation Parting Pressure 2,866 psig
- Propagation Pressure 2,775 psig
- Bottom Hole Pressure 2,450 psig
- Injection Pressure ~1,150 psig

To propagate a fracture, bottom hole pressure would have to be in excess of the propagation pressure. The bottom hole pressure, which corresponds to the permitted maximum injection pressure (1,150 psig), is approximately 2,450 psig. When approaching the permitted maximum injection pressure, there is an approximate 325 psi cushion between the bottom hole pressure and the

propagation pressure. This confirms that historical bottom hole pressures are below 2,500 psig and cannot be propagating fractures. It is not possible for the fractures to be growing at this time.

When fluid is injected into a zone, the pressure will increase unless the zone is frictionless and infinitely large. As such, Western recognizes that some increase in average reservoir pressure has occurred and/or will occur. The formation pressure change from the cumulative injection curve shows that the predicted formation pressure at 1,200 million gallons will be less that 2,500 psig. This curve confirms that formation pressure will not approach progagation pressure within the Discharge Plan Renewal permit period (5 years).

The formation pressure of 2,091 psi at the initiation of the May 1, 1996 fracture treatment is indicative of a tight formation. Due to the tight formation, the 0.2 psi per foot "rule of thumb" does not logically apply. If the maximum injection pressure is reduced to 600 psi, flow to the formation is not possible because formation pressure would be higher than the combined injection pressure plus hydrostatic pressure.

Request to Withdraw the Current Public Notice

Western is concerned that applicable Water Quality Control Commission (WQCC) regulations may require Western to provide public notice of its application for a permit renewal within 30 days of OCD deeming the application to be administratively complete. However, it is impossible for Western to provide such public notice for two reasons. First, if Western's public notice matches OCD's February 25, 2010 public notice, Western's public notice would be inaccurate. Western's public notice would contain a maximum surface injection pressure of 600 psig, which does not match Western's application. Second, if Western's public notice matches its application and contains a maximum surface injection pressure of 1,150 psig, Western's public notice would not match OCD's public notice and would create needless confusion.

Consequently, Western respectfully requests that OCD withdraw its February 25, 2010 public notice. Such withdrawal of the public notice would enable OCD and Western to meet and discuss any issues concerning an appropriate maximum injection pressure. Western has other concerns with the draft permit renewal that it would like to discuss with OCD. Western's goal is to resolve any such issues with OCD so that OCD could then reissue a public notice that reflects an agreement of the parties.

If you have any questions about this request, please contact me at (505) 986-2527.

Sincerely,

Edmund H. Kendrick

EHK/dho
Attachments

cc: Mr. Carl Chavez (via email w/encl.); carlj.chavez@state.nm.us
Gail MacQuesten (via email w/encl); gail.macquesten@state.nm.us

Attachment A

- 2010-02-25 OCD Discharge Permit Renewal Admin Complete
- 2010-02-22 OCD Email

New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson
Governor

Jon Goldstein
Cabinet Secretary

Mark Fesmire
Division Director
Oil Conservation Division

February 25, 2010

Mr. James R. Schmaltz
Western Refining Southwest, Inc.
#50 Road 4990, P.O. Box 159
Bloomfield, New Mexico 87413

Re: Discharge Plan Permit (UICI-009 [I-009])
Western Refining Southwest, Inc.
Class I Non-Hazardous Oil Field Waste Disposal Well
Waste Disposal Well No. 1, API No. 30-045-29002
2442 FSL and 1250 FEL UL: I Section 27, T29 N, R 11 W
San Juan County, New Mexico

Dear Mr. Schmaltz:

The New Mexico Oil Conservation Division (OCD) has received Western Refining Southwest, Inc's application for Waste Disposal Well No. 1 to inject oil field exempt/non-exempt non-hazardous wastes into the Cliff House and Menefee Formations at the intervals from 3276 to 3408 feet and 3435 to 3460 feet, respectively at a maximum surface injection pressure of 600 psig. The Class I waste disposal injection well is located in the NE/4 SE/4 of Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The initial submittal provided the required information in order to deem the application "administratively" complete.

Therefore, the New Mexico Water Quality Control Commission regulations (WQCC) notice requirements of 20.6.2.3108 NMAC must be satisfied and demonstrated to the OCD. OCD will provide public notice pursuant to the WQCC notice requirements of 20.6.2.3108 NMAC to determine if there is any public interest.

Please contact me at (505) 476-3490 or carlj.chavez@state.nm.us if you have questions. Thank you for your cooperation during this discharge permit review.

Sincerely,

Carl J. Chávez
Environmental Engineer

CJC/cjc

xc: OCD District III Office, Aztec

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Monday, February 22, 2010 1:28 PM
To: 'Schmaltz, Randy'
Cc: 'Allen.Hains@wnr.com'; Monzeglio, Hope, NMENV; Cobrain, Dave, NMENV; Sanchez, Daniel J., EMNRD; Jones, William V., EMNRD; VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject: Re: Western Refining Southwest, Inc. Status of OCD Discharge Permits: Bloomfield Refinery (GW-001) & UIC Class I Disposal Well (UICI-009)

Randy, et al.:

FYI, the OCD will likely be processing Western Refining Southwest, Inc.'s (WRSWI) two OCD Discharge Permit Applications (see above subject) this week.

The landfill issues for GW-001 are resolved in the discharge permit along with the active status and closure plan issues.

The maximum allowable surface injection pressure for UICI-009 has been reduced to 600 psig in the discharge permit in order to prevent the half-fractures from growing in the present injection formation. WRSWI will likely need to change its dewatering w/ SVE remediation project at the river terrace as a result of this pressure reduction in order to comply with the change.

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")

Attachment B

- 1994-06-28 OCD Injection Pressure Increase
- 1996-07-16 OCD Injection Pressure Increase
- 1999-09-16 Giant Renewal Application
- 2003-06-30 Giant Renewal Application
- 2004-03-23 OCD Discharge Permit Renewal
- 2008-10-02 Western Renewal Application

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

DRUG FREE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 28, 1994

Tierra Environmental Corporation
909 W. Apache
Farmington, NM 87401

Attention: Connie Dinning

RE: Injection Pressure Increase
Bloomfield Refining SWD Well No. 1,
San Juan County, New Mexico

Dear Ms. Dinning:

Reference is made to your request dated May 13, 1994 to increase the surface injection pressure on the Bloomfield Refining SWD Well No. 1. This request is based on a step rate test conducted on this well on January 22, 1994. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

Well and Location	Maximum Injection Surface Pressure
Bloomfield Refining SWD No. 1 Unit I, Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico.	955 PSIG

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay
Director

WJL/DRC/amg

cc: Oil Conservation Division - Aztec
File: SWD-528
D. Catanach

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

July 16, 1996

Giant Refining Company
P.O. Box 159
Bloomfield, New Mexico 87413-0159

Attn: Mr. Lynn Shelton

RE: Injection Pressure Increase, Bloomfield Refining Well No.1
San Juan County, New Mexico

Dear Mr. Shelton:

Reference is made to your request dated May 3, 1996 to increase the surface injection pressure on the above referenced well. This request is based on a step rate test conducted on March 1, 1996. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

Well and Location	*Maximum Surface Injection Pressure*
Bloomfield Refining Well No.1	1150 PSIG
Located in Unit Letter 'I', Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay
Director

WJL/BES
cc: Oil Conservation Division - Aztec
Files:SWD-528; PSI-X 1st QTR-97

GIANT
INDUSTRIES, INC.

111 Road 4990
Bloomfield, New Mexico 87413

505
632.8006

September 16, 1999

Mr. Wayne Price
NMOCD
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: **Discharge Plan GW-130 Renewal**
SWD Well #WD-1
San Juan County, New Mexico

Dear Mr. Price:

Giant Refining Company – Bloomfield submits this notice of application for renewal of Discharge Plan GW-130, SWD Well #WD-1 at this site.

No elements of the discharge plan have been changed.

Enclosed is a check for $50.00 to cover the filing fee.

If you need additional information, please contact me at (505) 632 4168.

Sincerely:

Lynn Shelton
Environmental Manager
Giant Refining Company – Bloomfield

Enclosure

Cc: John Stokes, Vice President, Giant Refining Company
Sarah Allen, Corporate Counsel, Giant Industries, Inc.
Denny Foust, NMOCD, Aztec

GIANT
REFINING COMPANY

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Frances Dr.
Santa Fe, New Mexico 87505

June 30, 2003

Via: Certified Mail # 7099 3220 0010 2242 6225

Re: **Discharge Plan GW-130 Renewal**
SWD Well #WD-1
San Juan County, New Mexico

Dear Mr. Price,

Giant Refining Company – Bloomfield Refinery submits this notice of application for renewal of Discharge Plan GW-130, SWD Well #WD-1 at this site.

No elements of the discharge plan have been changed.

Enclosed is s check for $100.00 to cover the filing fee.

If you need more information, please contact me at (505) 632-4171.

Sincerely,

Randy Schmaltz
Environmental Supervisor
Giant Refining Company – Bloomfield

Cc: Chad King, Bloomfield Refinery Manager
Ed Riege, Giant Refining Environmental Superintendent
Denny Foust, New Mexico Oil Conservation Division – Aztec

PHONE
505-632-8013
FAX
505-632-3911

50 ROAD 4990
P.O. BOX 159
BLOOMFIELD
NEW MEXICO
87413

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor

March 23, 2004

Joanna Prukop
Cabinet Secretary
Acting Director
Oil Conservation Division

CERTIFIED MAIL
RETURN RECEIPT NO. 7923 4399

Mr. James (Randy) Schmaltz
Environmental Supervisor
Giant Refining Co.
P.O. Box 159
Bloomfield, NM 87413

RE: Discharge Permit Renewal
Bloomfield Refinery Class I (Non-Hazardous) Disposal Well UIC-CL1-009 (GW130)
San Juan County, New Mexico

Dear Mr. Schmaltz:

The groundwater discharge permit renewal application for the Bloomfield Refinery Class I (Non-Hazardous) Disposal Well operated by Giant Refining Co. located in the NE/4, SE/4 of Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico is hereby approved under the conditions contained in the enclosed attachment. Enclosed are two copies of the conditions of approval. Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 30 days of receipt of this letter.

The original discharge permit application was submitted on September 16, 1992 and approved on November 05, 1993. The discharge permit renewal application, dated June 30, 2003 submitted pursuant to Sections 5101 of the New Mexico Water Quality Control Commission (WQCC) Regulations also includes all earlier applications and all conditions later placed on those approvals. The discharge permit is renewed pursuant to Section 5101 and 3109 Please note Section 3109.G., which provides for possible future amendment of the permit. Please be advised that approval of this permit does not relieve Giant Refining Company of liability should operations result in pollution of surface or ground waters, or the environment.

Please be advised that all exposed pits, including lined pits and open top tanks (exceeding 16 feet in diameter) shall be screened, netted, or otherwise rendered nonhazardous to wildlife including migratory birds.

Please note that Section 3104. of the regulations requires that "when a permit has been approved discharges must be consistent with the terms and conditions of the permit." Pursuant to Section 3107.C., Giant Refining Company is required to notify the Director of

Oil Conservation Division * 1220 South St. Francis Drive * Santa Fe, New Mexico 87505
Phone: (505) 476-3440 * Fax (505) 476-3462 * http://www.emnrd.state.nm.us

any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

Pursuant to Section 3109.H.4., this approval is for a period of five years. This approval will expire November 04, 2008 and an application for renewal should be submitted in ample time before that date. Pursuant to Section 5101.F. of the regulations, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit application for the Giant Refining Company Bloomfield Refinery Class I (Non-Hazardous) Disposal Well is subject to the WQCC Regulation 3114. Every billable facility submitting a discharge permit will be assessed a fee equal to the filing fee of $100 plus a renewal fee of $4500.00 for class I wells. The OCD has not received the $4500.00 flat fee. The flat fee may be paid in a single payment due on the date of the discharge permit approval or in five equal installments over the expected duration of the discharge permit. Installment payments shall be remitted yearly, with the first installment due on the date of the discharge permit approval and subsequent installments due on this date of each calendar year.

Please make all checks payable to: Water Quality Management Fund
C/o: Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505.

If you have any questions, please contact Wayne Price of my staff at (505-476-3487) or E-mail wprice@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Roger Anderson
Environmental Bureau Chief
RCA/lwp
Attachment-1
xc: OCD Aztec Office

ATTACHMENT TO THE DISCHARGE PERMIT UIC-CL1-009 (old GW-130)
Giant Refining Company Bloomfield Refinery Class I (Non-Hazardous) Disposal Well
DISCHARGE PERMIT APPROVAL CONDITIONS
March 23, 2004

1. Payment of Discharge Permit Fees: The $100.00 filing fee has been received by OCD. The $4500.00 flat fee shall be submitted upon receipt of this approval. The required flat fee may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the permit, with the first payment due upon receipt of this approval.

2. Giant Refining Company Commitments: Giant Refining Company will abide by all commitments submitted in the discharge permit renewal application dated June 30, 2003 and these conditions for approval.

3. Authorization to Inject and Maximum Injection Pressure: Giant Refining Company is authorized to inject subject to the discharge permit commitments and conditions contained within. The maximum operating injection pressure at the wellhead will be 1150 psi as allowed in the amended Administrative Order SWD-528. The injection well or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection well to no more than 1150 psi. The pressure limiting device shall monthly be demonstrated to operate to the satisfaction of the OCD.

   Giant Refining Company shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the ground surface.

4. Mechanical Integrity Testing: In accordance with OCD testing procedures, a mechanical integrity test will be conducted on the well annually and any time the tubing is pulled or the packer is reseated. A pressure recorder will be used and copies of the chart submitted to the OCD Santa Fe Office and the OCD Aztec District Office within 30 days following the test date. The OCD will be notified prior to the test so that they may witness the test. Mechanical integrity testing charts will be maintained at Giant Refining Company for the life of the well

5. Annulus: The casing-tubing annulus will be filled with an inert fluid and a minimum pressure of 100 psi maintained. Fluid levels shall be checked and reported at the time of performing the mechanical integrity test.

6. Continuous Monitoring and Recording: Continuous monitoring and recording devices will be installed and mechanical charts made of injection pressure, flow rate, flow volume, annular pressure and nitrogen usage. Mechanical charts are to be maintained at Giant Refining Company for the life of the well.

7. Maintenance Records: All routine maintenance work on the well will be recorded and maintained at Giant Refining Company for the life of the well.

8. Wastes Permitted for Injection: Injection will be limited to exempt and non-hazardous oilfield wastes generated exclusively by Giant Refining Company Refining Company. All non-exempt non-hazardous oil field waste will be tested for the constituents listed below in number 9.

9. Chemical Analysis of Injection Fluids: The following analyses of injection fluids will be conducted on a quarterly basis:

   a. Aromatic and halogenated volatile hydrocarbon scan by EPA method 8260C GC/MS including MTBE. Semi-Volatile Organics GC/MS EPA method 8270B including 1 and 2-methylnaphthalene.

   b. General water chemistry to include calcium, potassium, magnesium, sodium, bicarbonate, carbonate, chloride, sulfate total dissolved solids (TDS), pH, and conductivity.

   c. Total heavy metals using the ICAP scan (EPA method 6010/ICPMS) and Mercury using Cold Vapor (EPA method 7470).

   d. EPA RCRA Characteristics for Ignitability, Corrosivity and Reactivity.

Records of all analyses will be maintained at Giant Refining Company for the life of the well.

10. Quarterly Reporting: The following reports will be signed and certified in accordance with WQCC section 5101.G. and submitted quarterly to both the OCD Santa Fe and Aztec Offices:

   a. Results of the chemical analysis of the injection fluids (number 9).
   b. Monthly average, maximum and minimum values for injection pressures; flow rate and flow volume; and, annular pressure.
   c. Monthly volumes of injected fluids.

11. Drum Storage: All drums containing materials other than fresh water must be stored on an impermeable pad with curbing. All empty drums will be stored on their sides with the bungs in and lined up on a horizontal permitees. Chemicals in other containers such as sacks or buckets will also be stored on an impermeable pad and curb type containment.

12. Process Areas: All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device incorporated into the design.

13. Above Ground Tanks: All above ground tanks which contain fluids other than fresh water must be bermed to contain a volume of one-third more than the total volume of the largest tank or of all interconnected tanks. All new tanks or existing tanks that undergo a major modification, as determined by the Division, must be placed within an impermeable bermed enclosure.

14. Above Ground Saddle Tanks: Above ground saddle tanks must have impermeable pad and curb type containment unless they contain fresh water or fluids that are gases at atmospheric temperature and pressure.

15. Labeling: All tanks, drums and containers should be clearly labeled to identify their contents and other emergency notification information.

16. Below Grade Tanks/Sumps/Pits/Ponds: All below grade tanks, sumps, pits and ponds must be approved by the OCD prior to installation or upon modification and must incorporate secondary containment and leak-detection into the design, unless approved otherwise. All below grade tanks, sumps and pits must be tested annually or as specified below, see additional conditions, except systems that have secondary containment with leak detection. These systems with leak detection shall have a monthly inspection of the leak detection to determine if the primary containment is leaking. Results of tests and inspections shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Any system found to be leaking shall be reported pursuant to Item # 20. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure and/or visual inspection of cleaned out tanks and/or sumps, or other OCD approved methods. The OCD will be notified at least 72 hours prior to all testing.

17. Underground Process/Wastewater Lines: All underground process/wastewater pipelines must be approved by the OCD prior to installation and must be tested to demonstrate their mechanical integrity every five (5) years. Results of such tests shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD. The OCD will be notified at least 72 hours prior to all testing.

18. Well Workover Operations: OCD approval will be obtained from the Director prior to performing remedial work or any other workover. Approval will be requested on OCD Form C-103 "Sundry Notices and Reports on Wells" (OCD Rule 1103.A.) with appropriate copies sent to the OCD Aztec District Office.

19. Housekeeping: All systems designed for spill collection/prevention will be inspected weekly and after each storm event to ensure proper operation and to prevent overtopping or system failure. A record of inspections will be retained on site for a period of five years.

20. Spill Reporting: All spills/releases shall be reported pursuant to OCD Rule 116. and WQCC 1203. to the OCD Aztec District Office.

    Giant Refining Company shall immediately notify the Supervisor of the Aztec District Office and the Environmental Bureau of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

21. Transfer of Discharge Permit: The OCD will be notified prior to any transfer of ownership, control, or possession of the well and associated facilities. A written commitment to comply with the terms and conditions of the previously approved discharge permit and a bond must be submitted by the purchaser and approved by the OCD prior to transfer.

22. Closure: The OCD will be notified when operations of the well are discontinued for a period in excess of six months. Prior to closure of the well and associated facilities a closure permit will be submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.

23. Plugging Bond and /or Letter of Credit: Giant Refining Company shall have in effect a Division approved plugging bond and/or letter of credit for the estimated amount required to plug the well according to the proposed closure permit and adjusted for inflation. The required plugging bond and/or letter of credit shall be adjusted at the time of discharge permit renewal. Please submit the new estimate before November 04, 2008.

24. Training: All personnel associated with operations at the Giant Refining Company Class I disposal well will have appropriate training in accepting, processing, and disposing of Class I non-exempt non-hazardous oil field waste to insure proper disposal. All training documentation shall be maintained at Giant Refining Company for the life of the well.

25. OCD Inspections: Additional requirements may be placed on the well and associated facilities based upon results from OCD inspections.

27. Certification: Giant Refining Company by the officer whose signature appears below, accepts this permit and agrees to comply with all terms and conditions contained herein. Giant Refining Company further acknowledges that these conditions and requirements of this permit modification may be changed administratively by the Division for good cause shown as necessary to protect fresh water, human health and the environment.

Conditions accepted by: Giant Refining Company

Chad King
Company Representative- print name

Chad King Date 4/6/04
Company Representative Sign

Title Refinery Manager

Western Refining

BLOOMFIELD REFINERY

WNR LISTED NYSE

RECEIVED

2008 OCT 6 PM 3 33

Carl Chavez
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Dr
Santa Fe, NM 87505

Certified Mail: 7006 0810 0003 7020 7148

October 2, 2008

RE: Bloomfield Refinery – Western Refining Southwest, Inc.
Renewal Application for Class I
Non-Hazardous Injection Well
UICL-9
EPA ID #NMD089416416

To: CARL
I APPROVED THIS
PROCESS & PROCEDURE

Mr. Chavez,

Bloomfield Refinery submits this notice of application for renewal of the Discharge Permit for the Bloomfield Refinery Class I (Non-Hazardous) Disposal Well UICL-9 operated by Western Refining Southwest, Inc. The well is located in the NE/4, SE/4 of Section 27, Township 29 North, Range 11West, NMPM, San Juan County, New Mexico.

No elements of the Discharge Plan have been changed.

Enclosed is a check for $100.00 for the filing fee.

If you need more information, please contact me at (505) 632-4171.

Sincerely,

James R. Schmaltz
Environmental Manager
Western Refining Southwest, Inc. - Bloomfield Refinery

Cc: Wayne Price– NMOCD Santa Fe
Brandon Powell – NMOCD Aztec District Office
Todd Doyle – Bloomfield Refinery

Attachment C

- 1996-03-01 Giant Postfrac Treatment Summary

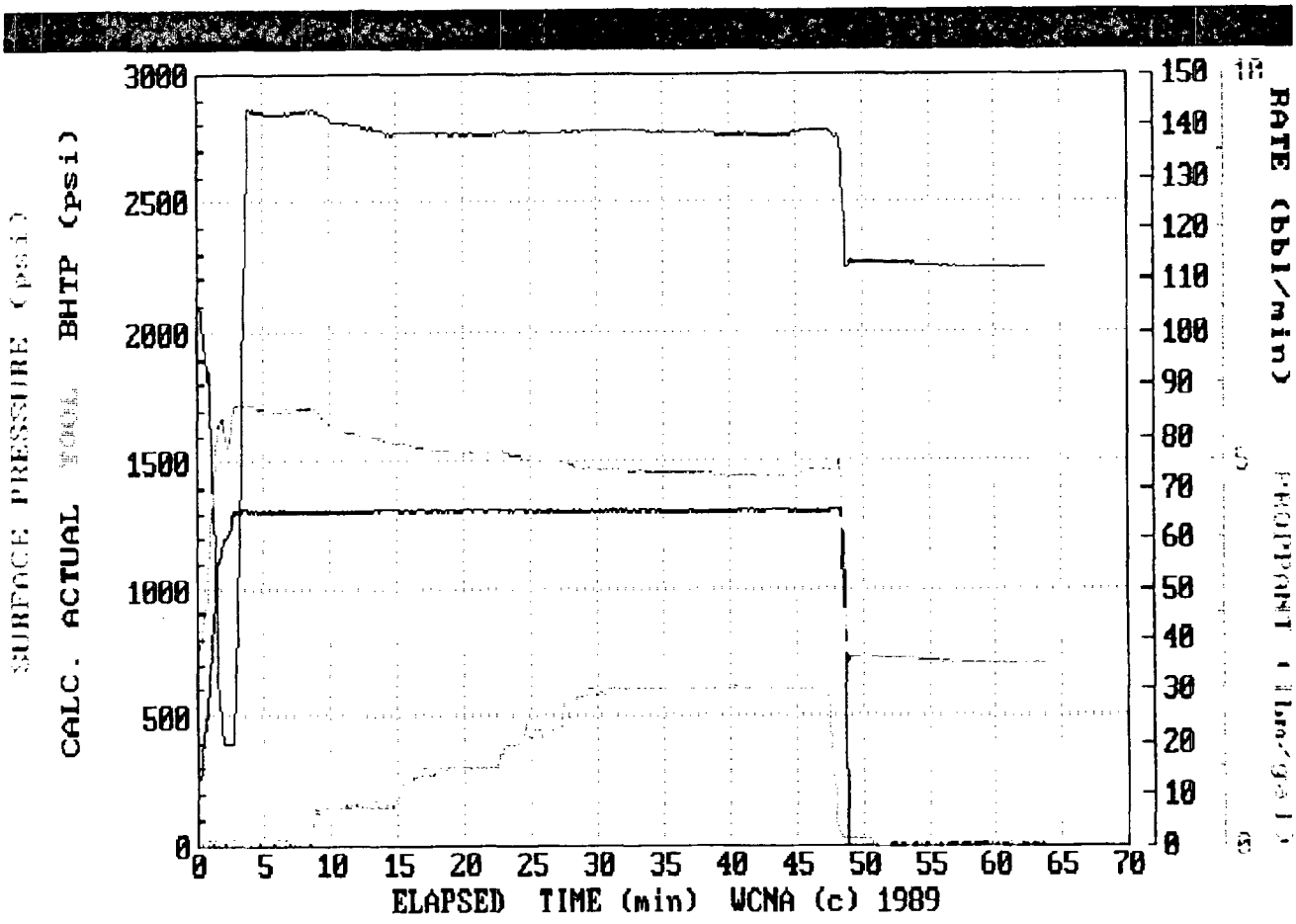
BJ SERVICES

GIANT REFINERY
BLOOMFIELD WD #1
SEC.27,T29N,R11W
SAN JUAN COUNTY, NM
MESA VERDA FORMATION

POSTFRAC
TREATMENT SUMMARY

MARCH 1, 1996
FARMINGTON, NM
(505) 327-6222

1996 STIMULATION SERVICES


CALC. ACTUAL BHTP (psi)
RATE (bbl/min)
3000
2500
2000
1500
1000
500
0
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70
ELAPSED TIME (min) WCNA (c) 1989

The Western Company — Treatment Report

Date March 1, 1996 | District Farmington NM | F.Receipt 398367 | Operator Giant Refinery
Lease Bloomfield WD | Well No. 1 | Field Blanco | Location SEC.27,T29N,R11W
County San Juan | State New Mexico | Stage Number 1 | This Zone ☒ | This Well ☒

WELL DATA

OG ☐ NG ☐ NO ☐ OO ☐ WD ☐ IW ☐ Misc. ☐ Depth TD/PB 3,600' Formation Mesa Verde
Tubing Size N/A Wt. N/A Set at: N/A Type Packer N/A Set at N/A
Casing Size 5 1/2" Wt. 15.5# Set From SURFACE To TD Liner Size N/A Wt.
Liner Set From To Open Hole: Size N/A From To
Casing Perforation: Size .45 Holes Per Foot 4 Intervals 3,276' - 3,514' 316 HOLES
Previous Treatment N/A Prior Production N/A

TREATMENT DATA

Pad Used: Yes ☒ No ☐ Pad Type Slick Water
Treat. Fluid Type: Foam ☐ Water ☒ Acid ☐ Oil ☐ Vol. 130,410 Gal.
Base Fluid type H2O Base Fluid Vol. 123,354 Gal.
Foam Qual. N/A % Mitchell ☐ Slurry ☐ Surface ☐ Downhole ☐ Total Prop Qty. 153,940 Lbs.
Prop Type: Sand ☒ WP-1 ☐ WP-3 ☐ Baux. ☐ Other
Prop Mesh Sizes, Types and Quantities 20/40 Arizona 153,940
Hole Loaded With H2O Treat Via: Tubing ☐ Casing ☒ Anul. ☐ Tubing & Anul. ☐
Ball Sealers: N/A In Stages of
Types and Number of Pumps Used 6 PACESETTER 1000'S
Auxiliary Materials 54# XCIDE-207 / 89 G. FRW-30

PROCEDURE SUMMARY

PUMP:21,588 G. PAD/19,824 G. 1/2#/21,000 G. 1#/11,214 G. 1 1/2#
47,040 G. 2#/ 3,150 G. FLUSH.

LIQUID/GAS PUMPED AND CAPACITIES IN BBLS

Tubing Cap.	N/A
Casing Cap.	78
Annular Cap.	N/A
Open Hole Cap.	N/A
Fluid to Load	N/A
Pad Volume	514
Treating Fluid	2516
Flush	75
Over Flush	N/A
Fluid to Recover	2937
Total N2	N/A
Total CO2	N/A

Time AM/PM	Treating Press.-Psi		Surface Slurry bbls Pumped		Slurry Rate BPM	Surface CO2 bbls Pumped		CO2 Rate BPM	Surface N2 MSCF Pumped		N2 Rate SCFM	Comments Safety Meeting/Test Lines
	STP	Annulus	Stage	Total		Stage	Total		Stage	Total		
PM5:50	0		0	0	60							START PAD
5:58	1700		514	514	65							START 1/2#
6:05	1580		486	1000	65							START 1#
6:14	1510		525	1525	66							START 1 1/2#
6:18	1500		285	1810	65							START 2#
6:37	1470		220	3030	65							START FLUSH
6:38	1000		75	3105	40							SHUT DOWN 5 MINS-720
												10 MINS-710

Treating Pressure: Min 1470 Max. 1700 Avg. 1500 Customer Representative Paul Thomson
Inj. Rate on Treating Fluid 65 Rate on Flush 65 Western Representative Harry Mitchell
Avg. Inj. Rate 65 I.S.D.P. 750 Flush Dens. lbs/gal 8.34 Distribution NORMAL

Job Number

Final Shut-in Pressure 700 In 15 Minutes
Operator's Maximum Pressure (psi) 3500
Recommendation ID# FM050525

BJ Services Company
Additive Schedule

Operator: GIANT
Well Information: BLOOMFIELD WD#1

Date: 3/1/96
GIANTWD1

Additive: FRW-30				Planned Additive Rates					VOLUME GONE
PPG	VOLUME	LOAD	AMOUNT	50 BPM	55 BPM	60 BPM	65 BPM	70 BPM	
0.00	26000	0.75	19.50	1.58	1.73	1.89	2.05	2.20	19.50
0.50	20000	0.75	15.00	1.54	1.69	1.85	2.00	2.16	34.50
1.00	20000	0.75	15.00	1.51	1.66	1.81	1.96	2.11	49.50
1.50	20000	0.75	15.00	1.47	1.62	1.77	1.92	2.06	64.50
2.00	45000	0.75	33.75	1.44	1.59	1.73	1.88	2.02	98.25
0.00	3150	0.75	2.36	1.58	1.73	1.89	2.05	2.20	100.61

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
0.11	770	2091	591	771	13.2	0.0	6	0
0.22	799	2078	578	798	14.9	0.0	7	0
0.30	844	2040	540	844	17.8	0.0	7	0
0.38	877	1969	469	878	20.9	0.0	7	0
0.55	923	1895	395	922	24.1	0.0	14	0
0.64	958	1851	351	959	26.0	0.0	14	0
0.72	973	1818	318	973	27.1	0.1	14	0
0.87	1212	1849	349	1207	31.4	0.1	23	0
0.98	1326	1424	100	1327	40.7	0.0	27	0
1.09	1338	1337	100	1338	42.2	0.0	31	0
1.20	1421	1278	100	1418	44.2	0.1	36	0
1.30	1520	1165	100	1514	47.2	0.1	41	100
1.41	1643	837	100	1639	53.0	0.0	47	100
1.52	1645	630	100	1640	55.4	0.0	53	100
1.63	1633	590	100	1628	55.8	0.1	59	100
1.74	1670	455	100	1660	57.7	0.0	65	200
1.85	1660	400	100	1654	59.9	0.0	71	200
1.96	1626	400	100	1619	60.3	0.0	78	200
2.08	1586	400	100	1578	60.4	0.0	85	200
2.19	1554	400	100	1543	60.5	0.0	92	200
2.31	1586	400	100	1576	61.0	0.0	99	200
2.44	1638	400	100	1625	63.1	0.1	107	300
2.55	1684	400	100	1667	64.8	0.1	114	300
2.63	1697	400	100	1683	65.0	0.1	115	300
2.71	1716	400	100	1704	65.3	0.1	115	300
2.87	1724	632	132	1709	65.4	0.1	135	400
2.98	1724	911	411	1710	65.5	0.0	142	400
3.09	1730	1197	697	1711	65.5	0.1	149	400
3.23	1729	1543	1043	1712	65.6	0.1	157	400
3.34	1728	1832	1332	1709	65.6	0.0	165	500
3.45	1722	2111	1611	1706	65.6	0.0	172	500
3.56	1730	2398	1898	1714	65.8	0.0	179	500
3.67	1728	2688	2188	1714	65.7	0.0	186	500
3.78	1722	2866	2366	1709	65.6	0.0	194	600
3.90	1721	2865	2365	1703	65.5	0.0	201	600
4.00	1716	2859	2359	1699	65.6	0.1	208	600
4.11	1716	2860	2360	1697	65.5	0.1	216	600
4.22	1720	2866	2366	1699	65.5	0.1	222	700
4.33	1714	2857	2357	1699	65.7	0.0	230	700
4.44	1710	2855	2355	1698	65.5	0.1	237	700
4.55	1712	2857	2357	1696	65.5	0.0	244	700
4.66	1712	2858	2358	1693	65.4	0.0	251	800
4.77	1711	2857	2357	1693	65.5	0.1	258	800
4.88	1709	2856	2356	1690	65.5	0.1	265	800
4.99	1708	2854	2354	1690	65.6	0.1	272	800
5.11	1702	2849	2349	1690	65.6	0.1	280	900
5.22	1701	2847	2347	1690	65.5	0.0	287	900
5.33	1702	2848	2348	1689	65.5	0.1	294	900
5.44	1703	2848	2348	1690	65.6	0.0	301	900
5.54	1702	2847	2347	1690	65.6	0.0	308	1000
5.65	1700	2845	2345	1684	65.6	0.0	315	1000
5.76	1699	2844	2344	1686	65.5	0.0	322	1000
5.85	1699	2845	2345	1684	65.5	0.1	324	1000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	65.5	0.1	324	1000

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
6.09	1700	2845	2345	1690	65.6	0.1	344	1100
6.20	1698	2844	2344	1686	65.6	0.1	351	1100
6.32	1701	2847	2347	1690	65.6	0.0	358	1100
6.42	1702	2848	2348	1690	65.5	0.0	365	1200
6.53	1702	2848	2348	1690	65.6	0.1	372	1200
6.64	1705	2851	2351	1690	65.6	0.1	379	1200
6.75	1702	2849	2349	1690	65.5	0.0	387	1200
6.86	1702	2848	2348	1688	65.5	0.0	394	1300
6.97	1701	2848	2348	1690	65.5	0.1	401	1300
7.08	1706	2854	2354	1690	65.4	0.1	408	1300
7.20	1704	2851	2351	1690	65.5	0.0	415	1300
7.31	1705	2851	2351	1690	65.4	0.0	422	1400
7.41	1710	2855	2355	1692	65.5	0.0	429	1400
7.52	1709	2854	2354	1691	65.5	0.0	437	1400
7.63	1711	2857	2357	1696	65.4	0.1	444	1400
7.75	1710	2856	2356	1696	65.4	0.1	451	1500
7.87	1710	2857	2357	1697	65.4	0.1	459	1500
7.98	1712	2859	2359	1700	65.4	0.0	466	1500
8.10	1713	2860	2360	1700	65.4	0.1	474	1600
8.22	1716	2862	2362	1700	65.5	0.0	481	1600
8.33	1714	2861	2361	1700	65.4	0.0	489	1600
8.44	1712	2859	2359	1700	65.4	0.0	496	1600
8.55	1717	2865	2365	1700	65.4	0.1	503	1700
8.65	1717	2867	2367	1700	65.4	0.2	510	1700
8.77	1708	2862	2362	1693	65.3	0.5	517	1900
8.87	1701	2859	2359	1689	65.3	0.4	524	2000
8.98	1697	2857	2357	1681	65.4	0.4	531	2100
9.09	1690	2853	2353	1675	65.4	0.5	538	2300
9.20	1682	2849	2349	1668	65.4	0.5	545	2400
9.31	1679	2849	2349	1662	65.4	0.5	552	2600
9.42	1671	2845	2345	1655	65.4	0.5	559	2800
9.53	1665	2843	2343	1649	65.4	0.5	566	2900
9.64	1656	2838	2338	1640	65.4	0.5	573	3100
9.75	1650	2835	2335	1635	65.4	0.5	581	3200
9.86	1644	2831	2331	1627	65.4	0.5	588	3400
9.97	1636	2824	2324	1620	65.4	0.5	595	3600
10.09	1631	2819	2319	1617	65.4	0.5	603	3700
10.20	1630	2819	2319	1614	65.4	0.5	610	3900
10.31	1629	2818	2318	1614	65.4	0.5	617	4000
10.42	1630	2819	2319	1617	65.4	0.5	624	4200
10.53	1630	2819	2319	1611	65.4	0.5	631	4300
10.65	1625	2814	2314	1609	65.4	0.5	639	4500
10.76	1623	2812	2312	1609	65.4	0.5	646	4700
10.87	1622	2811	2311	1605	65.4	0.5	653	4800
10.98	1620	2808	2308	1608	65.5	0.5	660	5000
11.09	1622	2812	2312	1607	65.4	0.6	667	5100
11.20	1620	2809	2309	1603	65.4	0.5	674	5300
11.31	1620	2810	2310	1602	65.4	0.5	681	5400
11.41	1617	2807	2307	1600	65.4	0.5	688	5600
11.53	1614	2803	2303	1601	65.4	0.5	696	5800
11.65	1618	2808	2308	1602	65.4	0.6	703	6000
11.75	1613	2803	2303	1601	65.5	0.5	710	6100
11.86	1609	2800	2300	1597	65.4	0.5	717	6300
[illegible]	[illegible]	[illegible]	[illegible]	1598	65.4	0.6	725	6500

THE WESTERN COMPANY OF ORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
12.08	1609	2801	2301	1597	65.5	0.6	732	6600
12.19	1609	2801	2301	1593	65.5	0.5	739	6800
12.30	1610	2802	2302	1592	65.4	0.5	746	7000
12.41	1604	2795	2295	1591	65.5	0.5	753	7100
12.54	1603	2793	2293	1589	65.6	0.5	761	7300
12.64	1599	2789	2289	1582	65.6	0.5	768	7500
12.76	1599	2789	2289	1581	65.6	0.5	775	7600
12.86	1597	2786	2286	1581	65.6	0.5	782	7800
12.97	1600	2789	2289	1581	65.5	0.5	790	8000
13.08	1600	2789	2289	1581	65.5	0.5	797	8100
13.19	1595	2784	2284	1581	65.5	0.6	804	8300
13.31	1592	2781	2281	1580	65.6	0.6	811	8500
13.42	1592	2780	2280	1579	65.6	0.5	818	8600
13.53	1589	2779	2279	1580	65.5	0.5	825	8800
13.64	1591	2779	2279	1580	65.7	0.5	833	8900
13.76	1591	2779	2279	1580	65.7	0.5	840	9100
13.87	1590	2779	2279	1579	65.6	0.5	847	9300
13.98	1583	2771	2271	1572	65.7	0.5	855	9400
14.09	1582	2769	2269	1572	65.7	0.5	862	9600
14.19	1580	2767	2267	1570	65.8	0.5	869	9800
14.31	1580	2768	2268	1570	65.7	0.6	876	10000
14.41	1580	2768	2268	1569	65.7	0.6	883	10100
14.52	1579	2767	2267	1568	65.7	0.5	890	10300
14.63	1578	2766	2266	1566	65.7	0.5	897	10500
14.74	1579	2768	2268	1567	65.7	0.6	904	10600
14.85	1580	2771	2271	1568	65.6	0.6	912	10800
14.97	1580	2771	2271	1569	65.7	0.7	919	11000
15.08	1579	2774	2274	1569	65.5	0.7	926	11200
15.19	1579	2774	2274	1567	65.6	0.7	933	11400
15.29	1577	2775	2275	1566	65.5	0.8	940	11700
15.41	1574	2775	2275	1566	65.5	0.8	947	11900
15.53	1573	2774	2274	1562	65.7	0.8	955	12200
15.63	1573	2776	2276	1561	65.7	0.8	962	12400
15.74	1571	2777	2277	1558	65.6	0.8	969	12600
15.85	1569	2778	2278	1559	65.6	0.8	977	12900
15.96	1566	2777	2277	1552	65.6	0.9	984	13100
16.07	1560	2774	2274	1549	65.5	0.9	991	13400
16.18	1560	2775	2275	1551	65.5	0.8	998	13700
16.27	1555	2772	2272	1546	65.5	0.9	1000	13700
16.40	1553	2771	2271	1543	65.5	0.9	1012	14200
16.51	1550	2768	2268	1540	65.6	0.9	1019	14400
16.62	1550	2768	2268	1540	65.7	0.9	1026	14700
16.73	1550	2770	2270	1540	65.6	0.9	1033	15000
16.84	1551	2772	2272	1540	65.6	1.0	1041	15300
16.95	1550	2773	2273	1540	65.7	1.0	1048	15500
17.06	1545	2771	2271	1537	65.5	1.0	1055	15800
17.17	1545	2771	2271	1535	65.5	1.0	1062	16100
17.28	1544	2770	2270	1536	65.5	0.9	1069	16400
17.38	1545	2771	2271	1533	65.6	0.9	1076	16700
17.49	1544	2770	2270	1535	65.6	0.9	1083	16900
17.60	1547	2774	2274	1538	65.6	0.9	1090	17200
17.71	1546	2772	2272	1536	65.6	0.9	1097	17500
17.82	1545	2772	2272	1539	65.7	1.0	1104	17800
17.93	1541	2770	2270	1533	65.5	1.0	1111	18100

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
18.04	1540	2767	2267	1532	65.7	1.0	1118	18400
18.15	1541	2769	2269	1532	65.6	1.0	1126	18700
18.26	1540	2769	2269	1531	65.5	1.0	1133	19000
18.37	1540	2769	2269	1530	65.5	1.0	1140	19200
18.48	1540	2769	2269	1530	65.6	0.9	1147	19500
18.58	1539	2768	2268	1532	65.6	1.0	1154	19800
18.69	1539	2768	2268	1530	65.7	1.0	1161	20100
18.80	1540	2771	2271	1530	65.5	1.0	1168	20400
18.91	1535	2766	2266	1528	65.6	1.0	1175	20700
19.03	1535	2766	2266	1527	65.6	1.0	1183	21000
19.16	1534	2765	2265	1525	65.7	1.0	1191	21300
19.27	1536	2768	2268	1526	65.5	1.0	1198	21600
19.38	1537	2769	2269	1527	65.5	1.0	1205	21900
19.49	1536	2768	2268	1525	65.5	1.0	1212	22200
19.60	1534	2766	2266	1524	65.6	1.0	1219	22500
19.70	1535	2766	2266	1526	65.6	1.0	1227	22800
19.81	1535	2767	2267	1525	65.6	1.0	1234	23100
19.93	1537	2769	2269	1527	65.6	1.0	1241	23400
20.04	1536	2766	2266	1529	65.7	1.0	1248	23700
20.15	1535	2766	2266	1525	65.7	1.0	1255	23900
20.26	1536	2767	2267	1527	65.7	1.0	1262	24200
20.37	1537	2768	2268	1527	65.6	1.0	1270	24500
20.48	1539	2770	2270	1530	65.6	1.0	1277	24800
20.59	1538	2769	2269	1528	65.6	0.9	1284	25100
20.70	1536	2767	2267	1528	65.6	1.0	1292	25400
20.82	1535	2766	2266	1526	65.6	1.0	1299	25700
20.94	1533	2763	2263	1527	65.6	1.0	1307	26000
21.07	1530	2760	2260	1525	65.7	1.0	1315	26400
21.18	1530	2760	2260	1521	65.7	1.0	1322	26600
21.29	1529	2760	2260	1522	65.6	1.0	1330	26900
21.40	1529	2760	2260	1520	65.6	1.0	1337	27200
21.52	1530	2762	2262	1522	65.5	1.0	1344	27500
21.63	1529	2760	2260	1522	65.6	1.0	1351	27800
21.74	1532	2763	2263	1526	65.6	1.0	1359	28100
21.85	1533	2764	2264	1525	65.6	1.0	1366	28400
21.93	1533	2764	2264	1524	65.7	1.0	1368	28500
22.06	1535	2767	2267	1526	65.6	1.0	1380	29000
22.17	1536	2767	2267	1529	65.6	1.0	1387	29300
22.28	1538	2768	2268	1530	65.7	1.0	1394	29600
22.39	1536	2767	2267	1527	65.6	1.0	1401	29900
22.50	1540	2773	2273	1531	65.6	1.1	1408	30200
22.61	1540	2774	2274	1531	65.7	1.2	1415	30600
22.72	1541	2776	2276	1530	65.7	1.2	1422	30900
22.83	1540	2776	2276	1531	65.8	1.2	1430	31300
22.94	1535	2774	2274	1528	65.7	1.3	1437	31600
23.05	1538	2779	2279	1529	65.7	1.3	1444	32000
23.16	1533	2776	2276	1529	65.7	1.3	1451	32400
23.27	1530	2777	2277	1523	65.6	1.3	1458	32800
23.38	1527	2777	2277	1520	65.5	1.3	1465	33100
23.49	1525	2776	2276	1517	65.6	1.3	1472	33500
23.60	1519	2773	2273	1512	65.5	1.3	1480	33900
23.71	1519	2773	2273	1511	65.7	1.3	1487	34300
23.82	1520	2775	2275	1513	65.6	1.3	1491	34500
[illegible]	[illegible]	[illegible]	[illegible]	1511	65.6	1.3	1502	35100

THE WESTERN COMPANY OF ..RTH AMERICA - REAL TIME ..ITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
24.06	1519	2777	2277	1512	65.6	1.4	1509	35500
24.16	1517	2775	2275	1510	65.7	1.4	1516	35900
24.27	1519	2778	2278	1510	65.6	1.4	1523	36300
24.38	1517	2778	2278	1510	65.6	1.4	1531	36700
24.49	1518	2781	2281	1511	65.6	1.6	1538	37100
24.60	1513	2777	2277	1509	65.6	1.5	1545	37600
24.71	1513	2779	2279	1506	65.6	1.4	1552	38000
24.82	1510	2776	2276	1503	65.6	1.4	1559	38400
24.94	1508	2775	2275	1503	65.6	1.4	1567	38800
25.05	1505	2773	2273	1500	65.6	1.5	1574	39200
25.16	1504	2775	2275	1498	65.5	1.5	1581	39700
25.27	1503	2774	2274	1500	65.5	1.5	1588	40100
25.38	1505	2777	2277	1498	65.5	1.5	1595	40500
25.49	1505	2777	2277	1500	65.6	1.5	1602	40900
25.60	1505	2777	2277	1499	65.6	1.5	1609	41400
25.72	1501	2772	2272	1498	65.6	1.4	1617	41800
25.85	1503	2775	2275	1496	65.5	1.5	1626	42300
25.96	1501	2773	2273	1498	65.6	1.5	1633	42700
26.05	1501	2774	2274	1497	65.6	1.5	1633	42700
26.13	1503	2777	2277	1496	65.5	1.5	1633	42700
26.22	1500	2773	2273	1497	65.6	1.5	1633	42700
26.31	1500	2773	2273	1496	65.6	1.5	1633	42700
26.40	1500	2773	2273	1493	65.6	1.5	1633	42700
26.52	1501	2774	2274	1496	65.6	1.5	1633	42700
26.61	1500	2774	2274	1497	65.6	1.5	1633	42700
26.91	1500	2775	2275	1493	65.5	1.5	1694	46400
27.01	1500	2774	2274	1491	65.6	1.5	1701	46800
27.12	1501	2775	2275	1495	65.6	1.5	1708	47300
27.24	1500	2775	2275	1491	65.5	1.5	1716	47700
27.35	1497	2773	2273	1494	65.5	1.6	1723	48100
27.46	1500	2779	2279	1496	65.4	1.9	1730	48700
27.57	1500	2782	2282	1497	65.4	1.9	1737	49200
27.68	1497	2781	2281	1490	65.4	1.8	1744	49700
27.78	1494	2778	2278	1486	65.5	1.7	1751	50100
27.89	1490	2775	2275	1487	65.5	1.6	1758	50600
28.01	1489	2777	2277	1484	65.5	1.8	1766	51100
28.12	1489	2778	2278	1485	65.6	1.8	1773	51600
28.24	1486	2779	2279	1481	65.5	1.8	1781	52200
28.35	1485	2780	2280	1478	65.5	1.9	1788	52700
28.46	1483	2782	2282	1478	65.5	1.9	1795	53200
28.57	1480	2780	2280	1476	65.5	1.9	1802	53800
28.68	1479	2778	2278	1476	65.7	1.9	1810	54300
28.79	1476	2777	2277	1470	65.5	1.9	1817	54900
28.90	1477	2779	2279	1471	65.6	1.9	1824	55400
29.01	1475	2779	2279	1472	65.5	1.8	1831	55900
29.12	1476	2782	2282	1471	65.5	1.9	1838	56400
29.23	1477	2784	2284	1469	65.6	2.0	1845	57000
29.34	1477	2786	2286	1472	65.5	2.0	1852	57500
29.46	1476	2786	2286	1471	65.5	2.0	1860	58200
29.57	1471	2781	2281	1470	65.6	2.0	1867	58700
29.68	1474	2786	2286	1470	65.5	2.0	1874	59300
29.79	1474	2786	2286	1471	65.5	2.0	1882	59900
29.90	1471	2782	2282	1466	65.6	1.9	1889	60400
30.01	1468	2780	2280	1462	65.6	2.0	1896	60900

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
30.12	1470	2783	2283	1468	65.5	2.0	1903	61500
30.23	1470	2782	2282	1468	65.7	2.0	1910	62000
30.34	1470	2784	2284	1466	65.6	2.0	1917	62600
30.45	1471	2784	2284	1467	65.6	1.9	1924	63100
30.56	1470	2782	2282	1469	65.6	1.9	1931	63700
30.67	1471	2782	2282	1467	65.6	1.9	1938	64200
30.78	1470	2782	2282	1469	65.6	2.0	1946	64800
30.89	1473	2784	2284	1471	65.6	2.0	1953	65300
31.00	1470	2781	2281	1470	65.6	2.0	1960	65900
31.11	1472	2784	2284	1468	65.6	2.0	1967	66400
31.23	1471	2783	2283	1468	65.7	2.0	1975	67000
31.33	1473	2786	2286	1470	65.5	2.0	1982	67600
31.44	1470	2782	2282	1467	65.7	2.0	1989	68100
31.56	1468	2781	2281	1464	65.6	2.0	1996	68700
31.66	1468	2781	2281	1462	65.6	2.0	2003	69200
31.79	1467	2780	2280	1464	65.7	2.0	2011	69800
31.89	1468	2783	2283	1460	65.5	2.0	2018	70400
32.01	1464	2779	2279	1459	65.5	2.0	2026	71000
32.12	1467	2781	2281	1460	65.6	2.0	2033	71600
32.23	1465	2780	2280	1460	65.5	2.0	2040	72100
32.35	1468	2783	2283	1460	65.6	2.0	2049	72700
32.46	1466	2781	2281	1459	65.5	2.0	2055	73300
32.57	1465	2780	2280	1459	65.5	2.0	2062	73800
32.68	1468	2782	2282	1462	65.6	2.0	2069	74400
32.81	1465	2780	2280	1460	65.6	2.0	2077	75000
32.92	1464	2779	2279	1459	65.6	2.0	2085	75600
33.03	1468	2783	2283	1463	65.5	2.0	2092	76100
33.14	1467	2782	2282	1462	65.5	2.0	2099	76700
33.25	1466	2780	2280	1460	65.7	2.0	2106	77300
33.36	1468	2783	2283	1461	65.6	2.0	2113	77800
33.47	1466	2780	2280	1459	65.6	2.0	2120	78400
33.58	1467	2782	2282	1459	65.6	2.0	2127	78900
33.69	1465	2780	2280	1457	65.6	2.0	2135	79500
33.80	1461	2776	2276	1456	65.6	2.0	2142	80000
33.91	1463	2778	2278	1457	65.6	2.0	2149	80600
34.02	1464	2779	2279	1460	65.6	2.0	2156	81200
34.13	1460	2774	2274	1457	65.6	2.0	2163	81700
34.23	1462	2776	2276	1455	65.6	2.0	2170	82300
34.34	1462	2778	2278	1458	65.5	2.0	2177	82800
34.45	1462	2777	2277	1457	65.6	2.0	2184	83400
34.56	1460	2774	2274	1458	65.6	2.0	2191	83900
34.67	1462	2776	2276	1458	65.6	2.0	2198	84500
34.78	1463	2778	2278	1459	65.5	2.0	2206	85100
34.89	1462	2777	2277	1460	65.5	2.0	2213	85600
35.00	1465	2780	2280	1456	65.6	2.0	2220	86200
35.11	1459	2774	2274	1455	65.5	2.0	2227	86700
35.22	1460	2776	2276	1457	65.5	2.0	2234	87300
35.33	1459	2774	2274	1454	65.5	2.0	2241	87800
35.44	1460	2775	2275	1456	65.6	2.0	2248	88400
35.55	1460	2776	2276	1458	65.5	2.0	2255	89000
35.66	1458	2773	2273	1455	65.5	2.0	2262	89500
35.77	1459	2775	2275	1455	65.5	2.0	2269	90100
35.88	1460	2776	2276	1453	65.5	2.0	2277	90600
35.98	1461	2776	2276	1455	65.5	2.0	2284	91200

THE WESTERN COMPANY OF ORTH AMERICA - REAL TIME ITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
36.10	1461	2777	2277	1455	65.4	2.0	2291	91700
36.20	1458	2773	2273	1455	65.5	2.0	2298	92300
36.31	1459	2775	2275	1455	65.5	2.0	2305	92800
36.42	1459	2775	2275	1453	65.5	2.0	2312	93400
36.53	1460	2775	2275	1454	65.5	2.0	2319	94000
36.65	1459	2774	2274	1455	65.6	2.0	2327	94600
36.76	1460	2776	2276	1457	65.5	2.0	2334	95100
36.87	1458	2774	2274	1455	65.5	2.0	2341	95700
36.98	1459	2773	2273	1455	65.6	2.0	2348	96200
37.09	1458	2774	2274	1454	65.5	2.0	2355	96800
37.20	1458	2772	2272	1457	65.6	2.0	2362	97300
37.31	1458	2773	2273	1450	65.6	2.0	2370	97900
37.42	1460	2775	2275	1454	65.5	2.0	2377	98500
37.53	1459	2774	2274	1454	65.5	2.0	2384	99000
37.64	1459	2774	2274	1457	65.5	2.0	2391	99600
37.75	1463	2778	2278	1459	65.5	2.0	2398	100100
37.86	1461	2777	2277	1459	65.4	2.0	2405	100700
37.97	1461	2777	2277	1457	65.5	2.0	2412	101200
38.08	1463	2778	2278	1460	65.5	2.0	2419	101800
38.19	1467	2783	2283	1462	65.5	2.0	2426	102400
38.29	1462	2777	2277	1459	65.5	2.0	2433	102900
38.40	1462	2778	2278	1460	65.5	2.0	2441	103500
38.51	1460	2775	2275	1456	65.5	2.0	2448	104000
38.62	1457	2772	2272	1451	65.5	2.0	2455	104600
38.74	1455	2771	2271	1452	65.5	2.0	2463	105200
38.85	1455	2771	2271	1450	65.5	2.0	2470	105700
38.97	1451	2767	2267	1450	65.4	2.0	2477	106400
39.08	1450	2765	2265	1449	65.5	2.0	2485	106900
39.19	1449	2765	2265	1446	65.5	2.0	2492	107500
39.30	1449	2764	2264	1446	65.5	2.0	2499	108000
39.41	1452	2767	2267	1445	65.5	2.0	2506	108600
39.52	1450	2766	2266	1445	65.5	2.0	2513	109100
39.63	1450	2765	2265	1444	65.6	2.0	2520	109700
39.74	1445	2760	2260	1442	65.5	2.0	2527	110300
39.85	1442	2758	2258	1440	65.5	2.0	2534	110800
39.96	1448	2764	2264	1444	65.4	2.0	2541	111400
40.07	1449	2764	2264	1444	65.5	2.0	2549	111900
40.18	1449	2765	2265	1440	65.5	2.0	2556	112500
40.29	1444	2759	2259	1440	65.5	2.0	2563	113000
40.40	1448	2765	2265	1441	65.5	2.1	2570	113600
40.51	1449	2765	2265	1444	65.5	2.0	2577	114200
40.63	1448	2763	2263	1442	65.6	2.0	2585	114800
40.74	1452	2768	2268	1448	65.6	2.0	2592	115400
40.86	1451	2766	2266	1449	65.6	2.0	2600	116000
40.97	1451	2766	2266	1447	65.7	2.0	2607	116500
41.08	1452	2767	2267	1449	65.7	2.0	2614	117100
41.19	1455	2770	2270	1450	65.7	2.0	2621	117600
41.31	1453	2768	2268	1448	65.7	2.0	2629	118200
41.42	1451	2767	2267	1449	65.6	2.0	2636	118800
41.54	1450	2764	2264	1450	65.7	2.0	2644	119400
41.65	1451	2766	2266	1446	65.6	2.0	2651	120000
41.76	1450	2764	2264	1449	65.6	2.0	2658	120600
41.87	1450	2765	2265	1445	65.6	2.0	2666	121100
41.98	1447	2762	2262	1446	65.6	2.0	2673	121700

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
42.09	1448	2763	2263	1447	65.5	2.0	2680	122200
42.20	1447	2761	2261	1444	65.6	2.0	2687	122800
42.31	1451	2767	2267	1449	65.5	2.0	2694	123400
42.42	1450	2764	2264	1444	65.7	2.0	2701	124000
42.53	1447	2762	2262	1443	65.6	2.0	2708	124500
42.64	1448	2763	2263	1445	65.5	2.0	2716	125100
42.75	1449	2763	2263	1445	65.6	2.0	2723	125600
42.86	1446	2760	2260	1443	65.6	2.0	2730	126200
42.97	1449	2763	2263	1447	65.7	2.0	2737	126800
43.08	1450	2763	2263	1448	65.7	2.0	2744	127300
43.19	1449	2763	2263	1440	65.7	2.0	2751	127900
43.30	1449	2763	2263	1441	65.6	2.0	2758	128400
43.41	1449	2763	2263	1444	65.7	2.0	2765	129000
43.52	1449	2763	2263	1444	65.6	2.0	2773	129600
43.63	1451	2765	2265	1446	65.7	2.0	2780	130100
43.74	1449	2764	2264	1443	65.6	2.0	2787	130700
43.85	1450	2764	2264	1443	65.7	2.0	2794	131200
43.96	1449	2763	2263	1445	65.7	2.0	2801	131800
44.07	1451	2765	2265	1448	65.7	2.0	2808	132400
44.18	1450	2764	2264	1446	65.7	2.0	2815	132900
44.29	1449	2764	2264	1446	65.6	2.0	2823	133500
44.40	1449	2764	2264	1441	65.6	2.0	2830	134100
44.51	1450	2765	2265	1448	65.6	2.0	2837	134600
44.62	1451	2766	2266	1452	65.6	2.0	2844	135200
44.73	1455	2770	2270	1452	65.6	2.0	2851	135700
44.84	1459	2773	2273	1457	65.6	2.0	2858	136300
44.95	1464	2778	2278	1459	65.6	2.0	2865	136900
45.07	1462	2777	2277	1461	65.6	2.0	2873	137500
45.18	1462	2777	2277	1459	65.5	2.0	2880	138000
45.29	1461	2777	2277	1461	65.5	2.0	2888	138600
45.40	1466	2782	2282	1463	65.5	2.0	2895	139200
45.52	1469	2784	2284	1466	65.5	2.0	2903	139800
45.63	1470	2785	2285	1468	65.6	2.0	2910	140400
45.75	1470	2785	2285	1466	65.6	2.0	2917	140900
45.86	1469	2784	2284	1469	65.5	2.0	2924	141500
45.96	1470	2785	2285	1469	65.5	2.0	2931	142000
46.07	1470	2786	2286	1470	65.4	2.0	2939	142600
46.18	1470	2786	2286	1469	65.4	2.0	2946	143200
46.30	1470	2786	2286	1470	65.4	2.0	2953	143800
46.41	1469	2784	2284	1468	65.5	2.0	2961	144300
46.52	1471	2786	2286	1470	65.6	2.0	2968	144900
46.63	1470	2786	2286	1469	65.5	2.0	2975	145500
46.75	1470	2785	2285	1464	65.5	2.0	2983	146100
46.86	1470	2785	2285	1466	65.6	2.0	2990	146600
46.98	1470	2786	2286	1468	65.5	2.0	2998	147200
47.09	1468	2784	2284	1462	65.5	2.0	3005	147800
47.20	1468	2784	2284	1462	65.5	2.0	3012	148400
47.32	1470	2785	2285	1467	65.5	1.9	3019	148900
47.43	1466	2779	2279	1463	65.6	1.8	3027	149500
47.54	1468	2777	2277	1465	65.6	1.6	3034	149900
47.66	1467	2769	2269	1464	65.7	1.3	3042	150300
47.77	1465	2760	2260	1464	65.6	0.9	3049	150600
47.88	1471	2753	2253	1470	65.7	0.6	3056	150800
						0.3	3063	150900

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
48.10	1506	2761	2261	1498	65.7	0.2	3070	151000
48.21	1515	2755	2255	1509	65.7	0.1	3077	151100
48.33	1384	2645	2145	1377	62.2	0.1	3084	151100
48.44	1297	2594	2094	1295	56.9	0.1	3091	151100
48.54	1161	2501	2001	1159	50.6	0.1	3096	151200
48.65	999	2396	1896	997	41.6	0.1	3101	151200
48.76	780	2245	1745	781	28.8	0.1	3105	151200
48.87	706	2245	1745	710	0.1	0.1	3105	151200
48.98	728	2267	1767	732	0.0	0.1	3105	151200
49.09	730	2269	1769	731	0.0	0.1	3105	151200
49.19	734	2273	1773	735	0.0	0.1	3105	151200
49.30	733	2272	1772	733	0.0	0.1	3105	151200
49.41	731	2270	1770	729	0.0	0.1	3105	151200
49.51	730	2269	1769	730	0.0	0.1	3105	151200
49.63	731	2270	1770	729	0.0	0.1	3105	151200
49.74	727	2266	1766	727	0.0	0.1	3105	151200
49.85	730	2269	1769	729	0.0	0.1	3105	151200
49.97	730	2269	1769	730	0.0	0.1	3105	151200
50.07	730	2269	1769	730	0.0	0.1	3105	151200
50.18	730	2269	1769	730	0.0	0.1	3105	151200
50.29	730	2269	1769	729	0.0	0.1	3105	151200
50.40	730	2269	1769	730	0.0	0.1	3105	151200
50.50	730	2269	1769	730	0.0	0.1	3105	151200
50.61	730	2269	1769	718	0.0	0.1	3105	151200
50.72	730	2269	1769	710	0.0	0.0	3105	151200
50.83	730	2269	1769	713	0.0	0.0	3105	151200
50.93	730	2269	1769	711	0.0	0.0	3105	151200
51.04	728	2267	1767	711	0.0	0.0	3105	151200
51.15	730	2269	1769	710	0.0	0.0	3105	151200
51.26	730	2269	1769	710	0.0	0.0	3105	151200
51.37	730	2269	1769	711	0.0	0.0	3105	151200
51.47	729	2268	1768	710	0.0	0.0	3105	151200
51.58	727	2266	1766	710	0.0	0.0	3105	151200
51.69	727	2266	1766	713	0.0	0.0	3105	151200
51.80	729	2268	1768	710	0.0	0.0	3105	151200
51.90	730	2269	1769	710	0.0	0.0	3105	151200
52.01	730	2269	1769	711	0.0	0.0	3105	151200
52.12	727	2266	1766	710	0.0	0.0	3105	151200
52.24	730	2269	1769	710	0.0	0.0	3105	151200
52.35	730	2269	1769	711	0.0	0.0	3105	151200
52.46	730	2269	1769	710	0.0	0.0	3105	151200
52.57	728	2267	1767	710	0.0	0.0	3105	151200
52.68	730	2269	1769	710	0.0	0.0	3105	151200
52.78	728	2267	1767	710	0.0	0.0	3105	151200
52.89	729	2268	1768	710	0.0	0.0	3105	151200
53.00	730	2269	1769	710	0.0	0.0	3105	151200
53.11	730	2269	1769	710	0.0	0.0	3105	151200
53.21	730	2269	1769	710	0.0	0.0	3105	151200
53.32	729	2268	1768	710	0.0	0.0	3105	151200
53.43	729	2268	1768	710	0.0	0.0	3105	151200
53.54	729	2268	1768	710	0.0	0.0	3105	151200
53.64	720	2259	1759	710	0.0	0.0	3105	151200
53.75	725	2264	1764	710	0.0	0.0	3105	151200
53.86	726	2265	1765	709	0.0	0.0	3105	151200

THE WESTERN COMPANY OF ..ORTH AMERICA - REAL TIME M. ..ITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
53.97	721	2260	1760	708	0.0	0.0	3105	151200
54.09	720	2259	1759	706	0.0	0.0	3105	151200
54.19	721	2260	1760	709	0.0	0.0	3105	151200
54.30	720	2259	1759	705	0.0	0.0	3105	151200
54.41	720	2259	1759	705	0.0	0.0	3105	151200
54.51	720	2259	1759	705	0.0	0.0	3105	151200
54.62	720	2259	1759	700	0.0	0.0	3105	151200
54.73	720	2259	1759	702	0.0	0.0	3105	151200
54.85	720	2259	1759	701	0.0	0.0	3105	151200
54.96	720	2259	1759	700	0.0	0.0	3105	151200
55.07	719	2258	1758	700	0.0	0.0	3105	151200
55.18	719	2258	1758	700	0.0	0.0	3105	151200
55.29	720	2259	1759	700	0.0	0.0	3105	151200
55.40	720	2259	1759	701	0.0	0.0	3105	151200
55.50	718	2257	1757	700	0.0	0.0	3105	151200
55.61	715	2254	1754	700	0.0	0.0	3105	151200
55.72	713	2252	1752	700	0.0	0.0	3105	151200
55.83	712	2251	1751	700	0.0	0.0	3105	151200
55.93	712	2251	1751	700	0.0	0.0	3105	151200
56.04	714	2253	1753	700	0.0	0.0	3105	151200
56.15	715	2254	1754	700	0.0	0.0	3105	151200
56.26	713	2252	1752	700	0.0	0.0	3105	151200
56.36	711	2250	1750	700	0.0	0.0	3105	151200
56.48	714	2253	1753	700	0.0	0.0	3105	151200
56.59	711	2250	1750	700	0.0	0.0	3105	151200
56.71	711	2250	1750	700	0.0	0.0	3105	151200
56.83	714	2253	1753	700	0.0	0.0	3105	151200
56.93	714	2253	1753	700	0.0	0.0	3105	151200
57.04	710	2249	1749	699	0.0	0.0	3105	151200
57.15	711	2250	1750	699	0.0	0.0	3105	151200
57.27	711	2250	1750	700	0.0	0.0	3105	151200
57.37	710	2249	1749	700	0.0	0.0	3105	151200
57.48	710	2249	1749	698	0.0	0.0	3105	151200
57.59	711	2250	1750	700	0.0	0.0	3105	151200
57.70	710	2249	1749	700	0.0	0.0	3105	151200
57.81	710	2249	1749	700	0.0	0.0	3105	151200
57.92	711	2250	1750	700	0.0	0.0	3105	151200
58.03	710	2249	1749	699	0.0	0.0	3105	151200
58.14	710	2249	1749	699	0.0	0.0	3105	151200
58.25	710	2249	1749	699	0.0	0.0	3105	151200
58.36	710	2249	1749	698	0.0	0.0	3105	151200
58.47	710	2249	1749	699	0.0	0.0	3105	151200
58.59	710	2249	1749	700	0.0	0.0	3105	151200
58.71	710	2249	1749	700	0.0	0.0	3105	151200
58.81	710	2249	1749	699	0.0	0.0	3105	151200
58.92	710	2249	1749	700	0.0	0.0	3105	151200
59.03	710	2249	1749	698	0.0	0.0	3105	151200
59.14	711	2250	1750	697	0.0	0.0	3105	151200
59.24	710	2249	1749	698	0.0	0.0	3105	151200
59.35	710	2249	1749	695	0.0	0.0	3105	151200
59.46	710	2249	1749	695	0.0	0.0	3105	151200
59.58	710	2249	1749	691	0.0	0.0	3105	151200
59.68	710	2249	1749	692	0.0	0.0	3105	151200
[illegible]	[illegible]	[illegible]	[illegible]	699	0.0	0.0	3105	151200

THE WESTERN COMPANY OF ORTH AMERICA - REAL TIME . ITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
59.90	710	2249	1749	692	0.0	0.0	3105	151200
60.01	710	2249	1749	695	0.0	0.0	3105	151200
60.11	710	2249	1749	694	0.0	0.0	3105	151200
60.22	710	2249	1749	692	0.0	0.0	3105	151200
60.33	710	2249	1749	693	0.0	0.0	3105	151200
60.44	710	2249	1749	697	0.0	0.0	3105	151200
60.55	710	2249	1749	694	0.0	0.0	3105	151200
60.66	710	2249	1749	692	0.0	0.0	3105	151200
60.77	710	2249	1749	691	0.0	0.0	3105	151200
60.87	709	2248	1748	692	0.0	0.0	3105	151200
60.98	710	2249	1749	694	0.0	0.0	3105	151200
61.09	710	2249	1749	691	0.0	0.0	3105	151200
61.20	710	2249	1749	696	0.0	0.0	3105	151200
61.30	710	2249	1749	693	0.0	0.0	3105	151200
61.42	710	2249	1749	697	0.0	0.0	3105	151200
61.54	710	2249	1749	693	0.0	0.0	3105	151200
61.65	710	2249	1749	693	0.0	0.0	3105	151200
61.75	710	2249	1749	694	0.0	0.0	3105	151200
61.86	710	2249	1749	698	0.0	0.0	3105	151200
61.97	710	2249	1749	696	0.0	0.0	3105	151200
62.08	710	2249	1749	698	0.0	0.0	3105	151200
62.18	710	2249	1749	692	0.0	0.0	3105	151200
62.29	710	2249	1749	696	0.0	0.0	3105	151200
62.40	710	2249	1749	694	0.0	0.0	3105	151200
62.51	710	2249	1749	695	0.0	0.1	3105	151200
62.62	710	2249	1749	693	0.0	0.0	3105	151200
62.73	710	2249	1749	694	0.0	0.0	3105	151200
62.83	710	2249	1749	691	0.0	0.0	3105	151200
62.96	710	2249	1749	698	0.0	0.0	3105	151200
63.07	710	2249	1749	699	0.0	0.0	3105	151200
63.17	710	2249	1749	696	0.0	0.0	3105	151200
63.29	710	2249	1749	692	0.0	0.0	3105	151200
63.41	710	2249	1749	693	0.0	0.0	3105	151200
63.53	709	2248	1748	697	0.0	0.0	3105	151200
63.65	710	2249	1749	693	0.0	0.0	3105	151200
63.75	710	2249	1749	690	0.0	0.0	3105	151200

Chavez, Carl J, EMNRD

From:	David Ortiz [DOrtiz@montand.com]
Sent:	Thursday, March 25, 2010 11:03 AM
To:	VonGonten, Glenn, EMNRD; Chavez, Carl J, EMNRD; Macquesten, Gail, EMNRD
Subject:	Notification: message "Request to Withdraw Public Notice for Western Refining Discharge Plan Permit (UICI-009 [I-009]) "
Attachments:	Attachments - Letter to Glenn von Gonten 3-25-10 (00174259).PDF; Letter to Glenn von Gonten 3-25-10 (00174258).PDF

Mr. von Gonten,

Per yours and Mr. Kendrick's request I am resending you the letter in two parts. Also, below are Mr. Kendrick's initial comments he sent you in his earlier email.

Dear Mr. von Gonten:

I am attaching a copy of the referenced letter that is being hand delivered to you this morning. Western Refining would appreciate the opportunity to meet with you, Mr. Chavez and Ms. Macquesten to discuss the data relevant to a determination of an appropriate injection pressure for the well. Thank you for your consideration.

Sincerely,

Ned Kendrick

David H. Ortiz
Assistant to Stephen S. Hamilton, Edmund H. Kendrick & Louis W. Rose
Montgomery & Andrews, P.A.
P.O. Box 2307
Santa Fe, NM 87504-2307
(505) 986-2641 (direct line)
(505) 982-4289 (fax)
dortiz@montand.com

RECEIVED THIS MESSAGE IN ERROR, PLEASE ADVISE THE SENDER BY REPLY E-MAIL TO DOrtiz@montand.com, AND DELETE THE MESSAGE. THANK YOU.

Attachment A

- 2010-02-25 OCD Discharge Permit Renewal Admin Complete
- 2010-02-22 OCD Email

New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson
Governor

Jon Goldstein
Cabinet Secretary

Mark Fesmire
Division Director
Oil Conservation Division

February 25, 2010

Mr. James R. Schmaltz
Western Refining Southwest, Inc.
#50 Road 4990, P.O. Box 159
Bloomfield, New Mexico 87413

Re: **Discharge Plan Permit (UIC1-009 [I-009])**
Western Refining Southwest, Inc.
Class I Non-Hazardous Oil Field Waste Disposal Well
Waste Disposal Well No. 1, API No. 30-045-29002
2442 FSL and 1250 FEL UL: I Section 27, T29 N, R 11 W
San Juan County, New Mexico

Dear Mr. Schmaltz:

The New Mexico Oil Conservation Division (OCD) has received Western Refining Southwest, Inc's application for Waste Disposal Well No. 1 to inject oil field exempt/non-exempt non-hazardous wastes into the Cliff House and Menefee Formations at the intervals from 3276 to 3408 feet and 3435 to 3460 feet, respectively at a maximum surface injection pressure of 600 psig. The Class I waste disposal injection well is located in the NE/4 SE/4 of Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico. The initial submittal provided the required information in order to deem the application "administratively" complete.

Therefore, the New Mexico Water Quality Control Commission regulations (WQCC) notice requirements of 20.6.2.3108 NMAC must be satisfied and demonstrated to the OCD. OCD will provide public notice pursuant to the WQCC notice requirements of 20.6.2.3108 NMAC to determine if there is any public interest.

Please contact me at (505) 476-3490 or carlj.chavez@state.nm.us if you have questions. Thank you for your cooperation during this discharge permit review.

Sincerely,

Carl J. Chávez
Environmental Engineer

CJC/cjc

xc: OCD District III Office, Aztec

Chavez, Carl J, EMNRD

From:	Chavez, Carl J, EMNRD
Sent:	Monday, February 22, 2010 1:28 PM
To:	'Schmaltz, Randy'
Cc:	'Allen.Hains@wnr.com'; Monzeglio, Hope, NMENV; Cobrain, Dave, NMENV; Sanchez, Daniel J., EMNRD; Jones, William V., EMNRD; VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject:	Re: Western Refining Southwest, Inc. Status of OCD Discharge Permits: Bloomfield Refinery (GW-001) & UIC Class I Disposal Well (UICI-009)

Randy, et al.:

FYI, the OCD will likely be processing Western Refining Southwest, Inc.'s (WRSWI) two OCD Discharge Permit Applications (see above subject) this week.

The landfill issues for GW-001 are resolved in the discharge permit along with the active status and closure plan issues.

The maximum allowable surface injection pressure for UICI-009 has been reduced to 600 psig in the discharge permit in order to prevent the half-fractures from growing in the present injection formation. WRSWI will likely need to change its dewatering w/ SVE remediation project at the river terrace as a result of this pressure reduction in order to comply with the change.

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")

Attachment B

- 1994-06-28 OCD Injection Pressure Increase
- 1996-07-16 OCD Injection Pressure Increase
- 1999-09-16 Giant Renewal Application
- 2003-06-30 Giant Renewal Application
- 2004-03-23 OCD Discharge Permit Renewal
- 2008-10-02 Western Renewal Application

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

DRUG FREE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 28, 1994

Tierra Environmental Corporation
909 W. Apache
Farmington, NM 87401

Attention: Connie Dinning

RE: Injection Pressure Increase
Bloomfield Refining SWD Well No. 1,
San Juan County, New Mexico

Dear Ms. Dinning:

Reference is made to your request dated May 13, 1994 to increase the surface injection pressure on the Bloomfield Refining SWD Well No. 1. This request is based on a step rate test conducted on this well on January 22, 1994. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

Well and Location	Maximum Injection Surface Pressure
Bloomfield Refining SWD No. 1 Unit I, Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico.	955 PSIG

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay
Director

WJL/DRC/amg

cc: Oil Conservation Division - Aztec
File: SWD-528
D. Catanach

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

July 16, 1996

Giant Refining Company
P.O. Box 159
Bloomfield, New Mexico 87413-0159

Attn: Mr. Lynn Shelton

RE: Injection Pressure Increase, Bloomfield Refining Well No.1
San Juan County, New Mexico

Dear Mr. Shelton:

Reference is made to your request dated May 3, 1996 to increase the surface injection pressure on the above referenced well. This request is based on a step rate test conducted on March 1, 1996. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

Well and Location	*Maximum Surface Injection Pressure*
Bloomfield Refining Well No.1	1150 PSIG
Located in Unit Letter 'I', Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay
Director

WJL/BES
cc: Oil Conservation Division - Aztec
Files: SWD-528; PSI-X 1st QTR-97

GIANT
INDUSTRIES, INC.

111 Road 4990
Bloomfield, New Mexico 87413

505
632.8006

September 16, 1999

Mr. Wayne Price
NMOCD
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: **Discharge Plan GW-130 Renewal**
SWD Well #WD-1
San Juan County, New Mexico

Dear Mr. Price:

Giant Refining Company – Bloomfield submits this notice of application for renewal of Discharge Plan GW-130, SWD Well #WD-1 at this site.

No elements of the discharge plan have been changed.

Enclosed is a check for $50.00 to cover the filing fee.

If you need additional information, please contact me at (505) 632 4168.

Sincerely:

Lynn Shelton
Environmental Manager
Giant Refining Company – Bloomfield

Enclosure

Cc: John Stokes, Vice President, Giant Refining Company
Sarah Allen, Corporate Counsel, Giant Industries, Inc.
Denny Foust, NMOCD, Aztec

GIANT
REFINING COMPANY

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Frances Dr.
Santa Fe, New Mexico 87505

June 30, 2003

Via: Certified Mail # 7099 3220 0010 2242 6225

Re: **Discharge Plan GW-130 Renewal**
SWD Well #WD-1
San Juan County, New Mexico

Dear Mr. Price,

Giant Refining Company – Bloomfield Refinery submits this notice of application for renewal of Discharge Plan GW-130, SWD Well #WD-1 at this site.

No elements of the discharge plan have been changed.

Enclosed is s check for $100.00 to cover the filing fee.

If you need more information, please contact me at (505) 632-4171.

Sincerely,

Randy Schmaltz
Environmental Supervisor
Giant Refining Company – Bloomfield

Cc: Chad King, Bloomfield Refinery Manager
Ed Riege, Giant Refining Environmental Superintendent
Denny Foust, New Mexico Oil Conservation Division – Aztec

PHONE
505-632-8013
FAX
505-632-3911

50 ROAD 4990
P.O. BOX 159
BLOOMFIELD
NEW MEXICO
87413

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor

March 23, 2004

Joanna Prukop
Cabinet Secretary
Acting Director
Oil Conservation Division

CERTIFIED MAIL
RETURN RECEIPT NO. 7923 4399

Mr. James (Randy) Schmaltz
Environmental Supervisor
Giant Refining Co.
P.O. Box 159
Bloomfield, NM 87413

RE: Discharge Permit Renewal
Bloomfield Refinery Class I (Non-Hazardous) Disposal Well UIC-CL1-009 (GW130)
San Juan County, New Mexico

Dear Mr. Schmaltz:

The groundwater discharge permit renewal application for the Bloomfield Refinery Class I (Non-Hazardous) Disposal Well operated by Giant Refining Co. located in the NE/4, SE/4 of Section 27, Township 29 North, Range 11 West, NMPM, San Juan County, New Mexico is hereby approved under the conditions contained in the enclosed attachment. Enclosed are two copies of the conditions of approval. Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 30 days of receipt of this letter.

The original discharge permit application was submitted on September 16, 1992 and approved on November 05, 1993. The discharge permit renewal application, dated June 30, 2003 submitted pursuant to Sections 5101 of the New Mexico Water Quality Control Commission (WQCC) Regulations also includes all earlier applications and all conditions later placed on those approvals. The discharge permit is renewed pursuant to Section 5101 and 3109 Please note Section 3109.G., which provides for possible future amendment of the permit. Please be advised that approval of this permit does not relieve Giant Refining Company of liability should operations result in pollution of surface or ground waters, or the environment.

Please be advised that all exposed pits, including lined pits and open top tanks (exceeding 16 feet in diameter) shall be screened, netted, or otherwise rendered nonhazardous to wildlife including migratory birds.

Please note that Section 3104. of the regulations requires that "when a permit has been approved discharges must be consistent with the terms and conditions of the permit." Pursuant to Section 3107.C., Giant Refining Company is required to notify the Director of

Oil Conservation Division * 1220 South St. Francis Drive * Santa Fe, New Mexico 87505
Phone: (505) 476-3440 * Fax (505) 476-3462 * http://www.emnrd.state.nm.us

any facility expansion, production increase, or process modification that would result in any change in the discharge of water quality or volume.

Pursuant to Section 3109.H.4., this approval is for a period of five years. This approval will expire November 04, 2008 and an application for renewal should be submitted in ample time before that date. Pursuant to Section 5101.F. of the regulations, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved.

The discharge permit application for the Giant Refining Company Bloomfield Refinery Class I (Non-Hazardous) Disposal Well is subject to the WQCC Regulation 3114. Every billable facility submitting a discharge permit will be assessed a fee equal to the filing fee of $100 plus a renewal fee of $4500.00 for class I wells. The OCD has not received the $4500.00 flat fee. The flat fee may be paid in a single payment due on the date of the discharge permit approval or in five equal installments over the expected duration of the discharge permit. Installment payments shall be remitted yearly, with the first installment due on the date of the discharge permit approval and subsequent installments due on this date of each calendar year.

Please make all checks payable to: Water Quality Management Fund
C/o: Oil Conservation Division
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505.

If you have any questions, please contact Wayne Price of my staff at (505-476-3487) or E-mail wprice@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Roger Anderson
Environmental Bureau Chief
RCA/lwp
Attachment-1
xc: OCD Aztec Office

ATTACHMENT TO THE DISCHARGE PERMIT UIC-CL1-009 (old GW-130)
Giant Refining Company Bloomfield Refinery Class I (Non-Hazardous) Disposal Well
DISCHARGE PERMIT APPROVAL CONDITIONS
March 23, 2004

1. Payment of Discharge Permit Fees: The $100.00 filing fee has been received by OCD. The $4500.00 flat fee shall be submitted upon receipt of this approval. The required flat fee may be paid in a single payment due at the time of approval, or in equal annual installments over the duration of the permit, with the first payment due upon receipt of this approval.

2. Giant Refining Company Commitments: Giant Refining Company will abide by all commitments submitted in the discharge permit renewal application dated June 30, 2003 and these conditions for approval.

3. Authorization to Inject and Maximum Injection Pressure: Giant Refining Company is authorized to inject subject to the discharge permit commitments and conditions contained within. The maximum operating injection pressure at the wellhead will be 1150 psi as allowed in the amended Administrative Order SWD-528. The injection well or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection well to no more than 1150 psi. The pressure limiting device shall monthly be demonstrated to operate to the satisfaction of the OCD.

   Giant Refining Company shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the ground surface.

4. Mechanical Integrity Testing: In accordance with OCD testing procedures, a mechanical integrity test will be conducted on the well annually and any time the tubing is pulled or the packer is reseated. A pressure recorder will be used and copies of the chart submitted to the OCD Santa Fe Office and the OCD Aztec District Office within 30 days following the test date. The OCD will be notified prior to the test so that they may witness the test. Mechanical integrity testing charts will be maintained at Giant Refining Company for the life of the well

5. Annulus: The casing-tubing annulus will be filled with an inert fluid and a minimum pressure of 100 psi maintained. Fluid levels shall be checked and reported at the time of performing the mechanical integrity test.

6. Continuous Monitoring and Recording: Continuous monitoring and recording devices will be installed and mechanical charts made of injection pressure, flow rate, flow volume, annular pressure and nitrogen usage. Mechanical charts are to be maintained at Giant Refining Company for the life of the well.

7. Maintenance Records: All routine maintenance work on the well will be recorded and maintained at Giant Refining Company for the life of the well.

8. Wastes Permitted for Injection: Injection will be limited to exempt and non-hazardous oilfield wastes generated exclusively by Giant Refining Company Refining Company. All non-exempt non-hazardous oil field waste will be tested for the constituents listed below in number 9.

9. Chemical Analysis of Injection Fluids: The following analyses of injection fluids will be conducted on a quarterly basis:

   a. Aromatic and halogenated volatile hydrocarbon scan by EPA method 8260C GC/MS including MTBE. Semi-Volatile Organics GC/MS EPA method 8270B including 1 and 2-methylnaphthalene.

   b. General water chemistry to include calcium, potassium, magnesium, sodium, bicarbonate, carbonate, chloride, sulfate total dissolved solids (TDS), pH, and conductivity.

   c. Total heavy metals using the ICAP scan (EPA method 6010/ICPMS) and Mercury using Cold Vapor (EPA method 7470).

   d. EPA RCRA Characteristics for Ignitability, Corrosivity and Reactivity.

Records of all analyses will be maintained at Giant Refining Company for the life of the well.

10. Quarterly Reporting: The following reports will be signed and certified in accordance with WQCC section 5101.G. and submitted quarterly to both the OCD Santa Fe and Aztec Offices:

   a. Results of the chemical analysis of the injection fluids (number 9).
   b. Monthly average, maximum and minimum values for injection pressures; flow rate and flow volume; and, annular pressure.
   c. Monthly volumes of injected fluids.

11. Drum Storage: All drums containing materials other than fresh water must be stored on an impermeable pad with curbing. All empty drums will be stored on their sides with the bungs in and lined up on a horizontal permitees. Chemicals in other containers such as sacks or buckets will also be stored on an impermeable pad and curb type containment.

12. Process Areas: All process and maintenance areas which show evidence that leaks and spills are reaching the ground surface must be either paved and curbed or have some type of spill collection device incorporated into the design.

13. Above Ground Tanks: All above ground tanks which contain fluids other than fresh water must be bermed to contain a volume of one-third more than the total volume of the largest tank or of all interconnected tanks. All new tanks or existing tanks that undergo a major modification, as determined by the Division, must be placed within an impermeable bermed enclosure.

14. Above Ground Saddle Tanks: Above ground saddle tanks must have impermeable pad and curb type containment unless they contain fresh water or fluids that are gases at atmospheric temperature and pressure.

15. Labeling: All tanks, drums and containers should be clearly labeled to identify their contents and other emergency notification information.

16. Below Grade Tanks/Sumps/Pits/Ponds: All below grade tanks, sumps, pits and ponds must be approved by the OCD prior to installation or upon modification and must incorporate secondary containment and leak-detection into the design, unless approved otherwise. All below grade tanks, sumps and pits must be tested annually or as specified below, see additional conditions, except systems that have secondary containment with leak detection. These systems with leak detection shall have a monthly inspection of the leak detection to determine if the primary containment is leaking. Results of tests and inspections shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Any system found to be leaking shall be reported pursuant to Item # 20. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure and/or visual inspection of cleaned out tanks and/or sumps, or other OCD approved methods. The OCD will be notified at least 72 hours prior to all testing.

17. Underground Process/Wastewater Lines: All underground process/wastewater pipelines must be approved by the OCD prior to installation and must be tested to demonstrate their mechanical integrity every five (5) years. Results of such tests shall be maintained at the facility covered by this discharge plan and available for NMOCD inspection. Permit holders may propose various methods for testing such as pressure testing to 3 pounds per square inch above normal operating pressure or other means acceptable to the OCD. The OCD will be notified at least 72 hours prior to all testing.

18. Well Workover Operations: OCD approval will be obtained from the Director prior to performing remedial work or any other workover. Approval will be requested on OCD Form C-103 "Sundry Notices and Reports on Wells" (OCD Rule 1103.A.) with appropriate copies sent to the OCD Aztec District Office.

19. Housekeeping: All systems designed for spill collection/prevention will be inspected weekly and after each storm event to ensure proper operation and to prevent overtopping or system failure. A record of inspections will be retained on site for a period of five years.

20. Spill Reporting: All spills/releases shall be reported pursuant to OCD Rule 116. and WQCC 1203. to the OCD Aztec District Office.

    Giant Refining Company shall immediately notify the Supervisor of the Aztec District Office and the Environmental Bureau of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

21. Transfer of Discharge Permit: The OCD will be notified prior to any transfer of ownership, control, or possession of the well and associated facilities. A written commitment to comply with the terms and conditions of the previously approved discharge permit and a bond must be submitted by the purchaser and approved by the OCD prior to transfer.

22. Closure: The OCD will be notified when operations of the well are discontinued for a period in excess of six months. Prior to closure of the well and associated facilities a closure permit will be submitted for approval by the Director. Closure and waste disposal will be in accordance with the statutes, rules and regulations in effect at the time of closure.

23. Plugging Bond and /or Letter of Credit: Giant Refining Company shall have in effect a Division approved plugging bond and/or letter of credit for the estimated amount required to plug the well according to the proposed closure permit and adjusted for inflation. The required plugging bond and/or letter of credit shall be adjusted at the time of discharge permit renewal. Please submit the new estimate before November 04, 2008.

24. Training: All personnel associated with operations at the Giant Refining Company Class I disposal well will have appropriate training in accepting, processing, and disposing of Class I non-exempt non-hazardous oil field waste to insure proper disposal. All training documentation shall be maintained at Giant Refining Company for the life of the well.

25. OCD Inspections: Additional requirements may be placed on the well and associated facilities based upon results from OCD inspections.

27. Certification: Giant Refining Company by the officer whose signature appears below, accepts this permit and agrees to comply with all terms and conditions contained herein. Giant Refining Company further acknowledges that these conditions and requirements of this permit modification may be changed administratively by the Division for good cause shown as necessary to protect fresh water, human health and the environment.

Conditions accepted by: Giant Refining Company

Chad King
Company Representative- print name

Chad King Date 4/6/04
Company Representative/Sign

Title Refinery Manager

Western Refining

BLOOMFIELD REFINERY

WNR NYSE

RECEIVED

2008 OCT 6 PM 3 33

Carl Chavez
New Mexico Oil Conservation Division
Environmental Bureau
1220 South St. Francis Dr
Santa Fe, NM 87505

Certified Mail: 7006 0810 0003 7020 7148

October 2, 2008

To: CARL
I APPROVED THIS
PROCESS & PROCEDURE

RE: Bloomfield Refinery – Western Refining Southwest, Inc.
Renewal Application for Class I
Non-Hazardous Injection Well
UICL-9
EPA ID #NMD089416416

Mr. Chavez,

Bloomfield Refinery submits this notice of application for renewal of the Discharge Permit for the Bloomfield Refinery Class I (Non-Hazardous) Disposal Well UICL-9 operated by Western Refining Southwest, Inc. The well is located in the NE/4, SE/4 of Section 27, Township 29 North, Range 11West, NMPM, San Juan County, New Mexico.

No elements of the Discharge Plan have been changed.

Enclosed is a check for $100.00 for the filing fee.

If you need more information, please contact me at (505) 632-4171.

Sincerely,

James R. Schmaltz
Environmental Manager
Western Refining Southwest, Inc. - Bloomfield Refinery

Cc: Wayne Price– NMOCD Santa Fe
Brandon Powell – NMOCD Aztec District Office
Todd Doyle – Bloomfield Refinery

Attachment C

- 1996-03-01 Giant Postfrac Treatment Summary

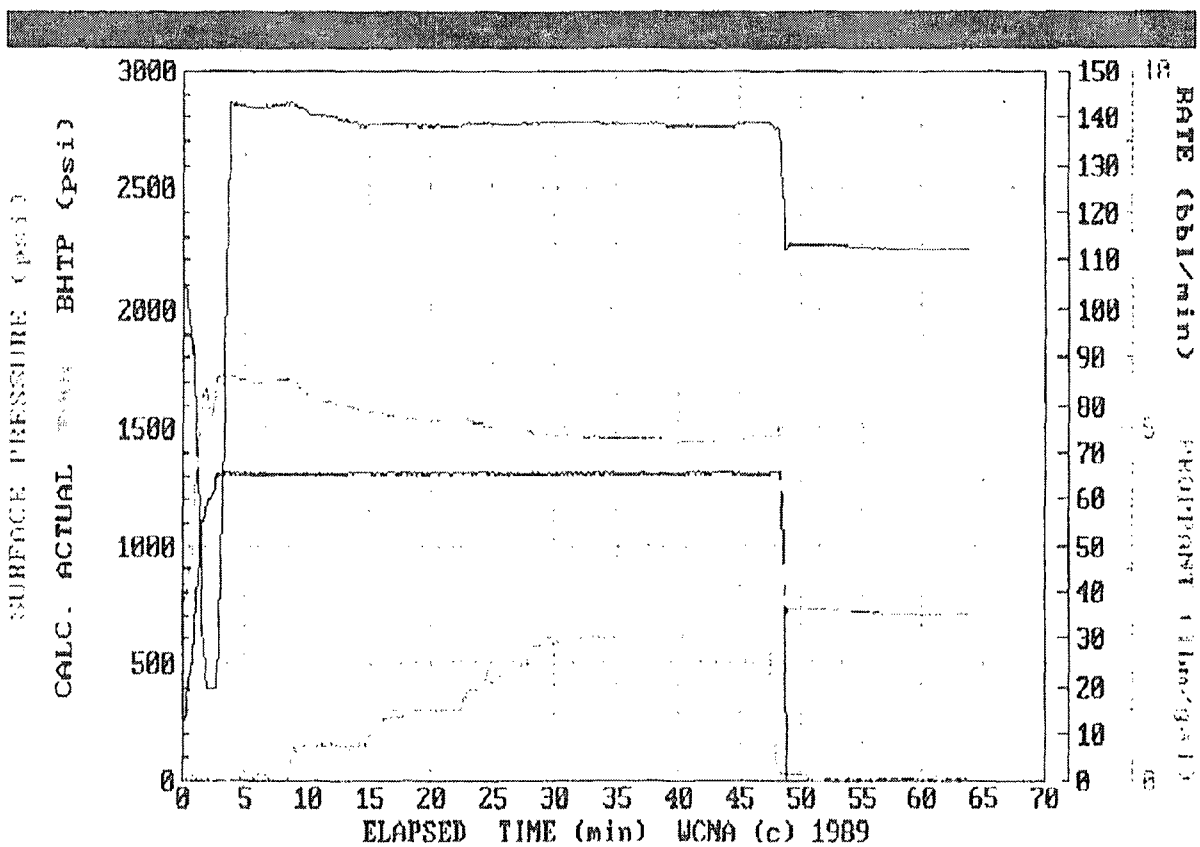
BJ SERVICES

GIANT REFINERY
BLOOMFIELD WD #1
SEC.27,T29N,R11W
SAN JUAN COUNTY, NM
MESA VERDA FORMATION

POSTFRAC
TREATMENT SUMMARY

MARCH 1, 1996
FARMINGTON, NM
(505) 327-6222

1996 STIMULATION SERVICES


CALC. ACTUAL BHTP (psi)
RATE (bbl/min)
3000
2500
2000
1500
1000
500
0
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70
ELAPSED TIME (min) WCNA (c) 1989

The Western Company — Treatment Report

Date March 1, 1996 | District Farmington NM | F.Receipt 398367 | Operator Giant Refinery

Lease Bloomfield WD | Well No. 1 | Field Blanco | Location SEC.27,T29N,R11W

County San Juan | State New Mexico | Stage Number 1 | This Zone ☒ | This Well ☒

WELL DATA

OG ☐ NG ☐ NO ☐ OO ☐ WD ☐ IW ☐ Misc. ☐ Depth TD/PB 3,600' Formation Mesa Verde

Tubing Size N/A Wt. N/A Set at: N/A Type Packer N/A Set at N/A

Casing Size 5 1/2" Wt. 15.5# Set From SURFACE To TD Liner Size N/A Wt.

Liner Set From To Open Hole: Size N/A From To

Casing Perforation: Size .45 Holes Per Foot 4 Intervals 3,276' - 3,514' 316 HOLES

Previous Treatment N/A Prior Production N/A

TREATMENT DATA

Pad Used: Yes ☒ No ☐ Pad Type Slick Water

Treat. Fluid Type: Foam ☐ Water ☒ Acid ☐ Oil ☐ Vol. 130,410 Gal.

Base Fluid type H2O Base Fluid Vol. 123,354 Gal.

Foam Qual. N/A % Mitchell ☐ Slurry ☐ Surface ☐ Downhole ☐ Total Prop Qty. 153,940 Lbs.

Prop Type: Sand ☒ WP-1 ☐ WP-3 ☐ Baux. ☐ Other

Prop Mesh Sizes, Types and Quantities 20/40 Arizona 153,940

Hole Loaded With H2O Treat Via: Tubing ☐ Casing ☒ Anul. ☐ Tubing & Anul. ☐

Ball Sealers: N/A In Stages of

Types and Number of Pumps Used 6 PACESETTER 1000'S

Auxiliary Materials 54# XCIDE-207 / 89 G. FRW-30

PROCEDURE SUMMARY

PUMP:21,588 G. PAD/19,824 G. 1/2#/21,000 G. 1#/11,214 G. 1 1/2#
47,040 G. 2#/ 3,150 G. FLUSH.

LIQUID/GAS PUMPED AND CAPACITIES IN BBLS.

Tubing Cap.	N/A
Casing Cap.	78
Annular Cap.	N/A
Open Hole Cap.	N/A
Fluid to Load	N/A
Pad Volume	514
Treating Fluid	2516
Flush	75
Over Flush	N/A
Fluid to Recover	2937
Total N2	N/A
Total CO2	N/A

Time AM/PM	Treating Press.-Psi		Surface Slurry bbls Pumped		Slurry Rate BPM	Surface CO2 bbls Pumped		CO2 Rate BPM	Surface N2 MSCF Pumped		N2 Rate SCFM	Comments Safety Meeting/Test Lines
	STP	Annulus	Stage	Total		Stage	Total		Stage	Total		
PM5:50	0		0	0	60							START PAD
5:58	1700		514	514	65							START 1/2#
6:05	1580		486	1000	65							START 1#
6:14	1510		525	1525	66							START 1 1/2#
6:18	1500		285	1810	65							START 2#
6:37	1470		220	3030	65							START FLUSH
6:38	1000		75	3105	40							SHUT DOWN 5 MINS-720
												10 MINS-710

Treating Pressure: Min 1470 Max. 1700 Avg. 1500 Customer Representative Paul Thomson

Inj. Rate on Treating Fluid 65 Rate on Flush 65 Western Representative Harry Mitchell

Avg. Inj. Rate 65 I.S.D.P. 750 Flush Dens. lbs/gal 8.34 Distribution NORMAL

Job Number

Final Shut-in Pressure 700 In 15 Minutes

Operator's Maximum Pressure (psi) 3500

Recommendation ID # PM050525

BJ Services Company
Additive Schedule

Operator: GIANT
Well Information: BLOOMFIELD WD#1

Date: 3/1/96
GIANTWD1

Additive: FRW-30				Planned Additive Rates					
PPG	VOLUME	LOAD	AMOUNT	50 BPM	55 BPM	60 BPM	65 BPM	70 BPM	VOLUME CONE
0.00	26000	0.75	19.50	1.58	1.73	1.89	2.05	2.20	19.50
0.50	20000	0.75	15.00	1.54	1.69	1.85	2.00	2.16	34.50
1.00	20000	0.75	15.00	1.51	1.66	1.81	1.96	2.11	49.50
1.50	20000	0.75	15.00	1.47	1.62	1.77	1.92	2.06	64.50
2.00	45000	0.75	33.75	1.44	1.59	1.73	1.88	2.02	98.25
0.00	3150	0.75	2.36	1.58	1.73	1.89	2.05	2.20	100.61

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
0.11	770	2091	591	771	13.2	0.0	6	0
0.22	799	2078	578	798	14.9	0.0	7	0
0.30	844	2040	540	844	17.8	0.0	7	0
0.38	877	1969	469	878	20.9	0.0	7	0
0.55	923	1895	395	922	24.1	0.0	14	0
0.64	958	1851	351	959	26.0	0.0	14	0
0.72	973	1818	318	973	27.1	0.1	14	0
0.87	1212	1849	349	1207	31.4	0.1	23	0
0.98	1326	1424	100	1327	40.7	0.0	27	0
1.09	1338	1337	100	1338	42.2	0.0	31	0
1.20	1421	1278	100	1418	44.2	0.1	36	0
1.30	1520	1165	100	1514	47.2	0.1	41	100
1.41	1643	837	100	1639	53.0	0.0	47	100
1.52	1645	630	100	1640	55.4	0.0	53	100
1.63	1633	590	100	1628	55.8	0.1	59	100
1.74	1670	455	100	1660	57.7	0.0	65	200
1.85	1660	400	100	1654	59.9	0.0	71	200
1.96	1626	400	100	1619	60.3	0.0	78	200
2.08	1586	400	100	1578	60.4	0.0	85	200
2.19	1554	400	100	1543	60.5	0.0	92	200
2.31	1586	400	100	1576	61.0	0.0	99	200
2.44	1638	400	100	1625	63.1	0.1	107	300
2.55	1684	400	100	1667	64.8	0.1	114	300
2.63	1697	400	100	1683	65.0	0.1	115	300
2.71	1716	400	100	1704	65.3	0.1	115	300
2.87	1724	632	132	1709	65.4	0.1	135	400
2.98	1724	911	411	1710	65.5	0.0	142	400
3.09	1730	1197	697	1711	65.5	0.1	149	400
3.23	1729	1543	1043	1712	65.6	0.1	157	400
3.34	1728	1832	1332	1709	65.6	0.0	165	500
3.45	1722	2111	1611	1706	65.6	0.0	172	500
3.56	1730	2398	1898	1714	65.8	0.0	179	500
3.67	1728	2688	2188	1714	65.7	0.0	186	500
3.78	1722	2866	2366	1709	65.6	0.0	194	600
3.90	1721	2865	2365	1703	65.5	0.0	201	600
4.00	1716	2859	2359	1699	65.6	0.1	208	600
4.11	1716	2860	2360	1697	65.5	0.1	216	600
4.22	1720	2866	2366	1699	65.5	0.1	222	700
4.33	1714	2857	2357	1699	65.7	0.0	230	700
4.44	1710	2855	2355	1698	65.5	0.1	237	700
4.55	1712	2857	2357	1696	65.5	0.0	244	700
4.66	1712	2858	2358	1693	65.4	0.0	251	800
4.77	1711	2857	2357	1693	65.5	0.1	258	800
4.88	1709	2856	2356	1690	65.5	0.1	265	800
4.99	1708	2854	2354	1690	65.6	0.1	272	800
5.11	1702	2849	2349	1690	65.6	0.1	280	900
5.22	1701	2847	2347	1690	65.5	0.0	287	900
5.33	1702	2848	2348	1689	65.5	0.1	294	900
5.44	1703	2848	2348	1690	65.6	0.0	301	900
5.54	1702	2847	2347	1690	65.6	0.0	308	1000
5.65	1700	2845	2345	1684	65.6	0.0	315	1000
5.76	1699	2844	2344	1686	65.5	0.0	322	1000
5.85	1699	2845	2345	1684	65.5	0.1	324	1000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.1	324	1000

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
6.09	1700	2845	2345	1690	65.6	0.1	344	1100
6.20	1698	2844	2344	1686	65.6	0.1	351	1100
6.32	1701	2847	2347	1690	65.6	0.0	358	1100
6.42	1702	2848	2348	1690	65.5	0.0	365	1200
6.53	1702	2848	2348	1690	65.6	0.1	372	1200
6.64	1705	2851	2351	1690	65.6	0.1	379	1200
6.75	1702	2849	2349	1690	65.5	0.0	387	1200
6.86	1702	2848	2348	1688	65.5	0.0	394	1300
6.97	1701	2848	2348	1690	65.5	0.1	401	1300
7.08	1706	2854	2354	1690	65.4	0.1	408	1300
7.20	1704	2851	2351	1690	65.5	0.0	415	1300
7.31	1705	2851	2351	1690	65.4	0.0	422	1400
7.41	1710	2855	2355	1692	65.5	0.0	429	1400
7.52	1709	2854	2354	1691	65.5	0.0	437	1400
7.63	1711	2857	2357	1696	65.4	0.1	444	1400
7.75	1710	2856	2356	1696	65.4	0.1	451	1500
7.87	1710	2857	2357	1697	65.4	0.1	459	1500
7.98	1712	2859	2359	1700	65.4	0.0	466	1500
8.10	1713	2860	2360	1700	65.4	0.1	474	1600
8.22	1716	2862	2362	1700	65.5	0.0	481	1600
8.33	1714	2861	2361	1700	65.4	0.0	489	1600
8.44	1712	2859	2359	1700	65.4	0.0	496	1600
8.55	1717	2865	2365	1700	65.4	0.1	503	1700
8.65	1717	2867	2367	1700	65.4	0.2	510	1700
8.77	1708	2862	2362	1693	65.3	0.5	517	1900
8.87	1701	2859	2359	1689	65.3	0.4	524	2000
8.98	1697	2857	2357	1681	65.4	0.4	531	2100
9.09	1690	2853	2353	1675	65.4	0.5	538	2300
9.20	1682	2849	2349	1668	65.4	0.5	545	2400
9.31	1679	2849	2349	1662	65.4	0.5	552	2600
9.42	1671	2845	2345	1655	65.4	0.5	559	2800
9.53	1665	2843	2343	1649	65.4	0.5	566	2900
9.64	1656	2838	2338	1640	65.4	0.5	573	3100
9.75	1650	2835	2335	1635	65.4	0.5	581	3200
9.86	1644	2831	2331	1627	65.4	0.5	588	3400
9.97	1636	2824	2324	1620	65.4	0.5	595	3600
10.09	1631	2819	2319	1617	65.4	0.5	603	3700
10.20	1630	2819	2319	1614	65.4	0.5	610	3900
10.31	1629	2818	2318	1614	65.4	0.5	617	4000
10.42	1630	2819	2319	1617	65.4	0.5	624	4200
10.53	1630	2819	2319	1611	65.4	0.5	631	4300
10.65	1625	2814	2314	1609	65.4	0.5	639	4500
10.76	1623	2812	2312	1609	65.4	0.5	646	4700
10.87	1622	2811	2311	1605	65.4	0.5	653	4800
10.98	1620	2808	2308	1608	65.5	0.5	660	5000
11.09	1622	2812	2312	1607	65.4	0.6	667	5100
11.20	1620	2809	2309	1603	65.4	0.5	674	5300
11.31	1620	2810	2310	1602	65.4	0.5	681	5400
11.41	1617	2807	2307	1600	65.4	0.5	688	5600
11.53	1614	2803	2303	1601	65.4	0.5	696	5800
11.65	1618	2808	2308	1602	65.4	0.6	703	6000
11.75	1613	2803	2303	1601	65.5	0.5	710	6100
11.86	1609	2800	2300	1597	65.4	0.5	717	6300
[illegible]	[illegible]	[illegible]	[illegible]	1598	65.4	0.6	725	6500

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
12.08	1609	2801	2301	1597	65.5	0.6	732	6600
12.19	1609	2801	2301	1593	65.5	0.5	739	6800
12.30	1610	2802	2302	1592	65.4	0.5	746	7000
12.41	1604	2795	2295	1591	65.5	0.5	753	7100
12.54	1603	2793	2293	1589	65.6	0.5	761	7300
12.64	1599	2789	2289	1582	65.6	0.5	768	7500
12.76	1599	2789	2289	1581	65.6	0.5	775	7600
12.86	1597	2786	2286	1581	65.6	0.5	782	7800
12.97	1600	2789	2289	1581	65.5	0.5	790	8000
13.08	1600	2789	2289	1581	65.5	0.5	797	8100
13.19	1595	2784	2284	1581	65.5	0.6	804	8300
13.31	1592	2781	2281	1580	65.6	0.6	811	8500
13.42	1592	2780	2280	1579	65.6	0.5	818	8600
13.53	1589	2779	2279	1580	65.5	0.5	825	8800
13.64	1591	2779	2279	1580	65.7	0.5	833	8900
13.76	1591	2779	2279	1580	65.7	0.5	840	9100
13.87	1590	2779	2279	1579	65.6	0.5	847	9300
13.98	1583	2771	2271	1572	65.7	0.5	855	9400
14.09	1582	2769	2269	1572	65.7	0.5	862	9600
14.19	1580	2767	2267	1570	65.8	0.5	869	9800
14.31	1580	2768	2268	1570	65.7	0.6	876	10000
14.41	1580	2768	2268	1569	65.7	0.6	883	10100
14.52	1579	2767	2267	1568	65.7	0.5	890	10300
14.63	1578	2766	2266	1566	65.7	0.5	897	10500
14.74	1579	2768	2268	1567	65.7	0.6	904	10600
14.85	1580	2771	2271	1568	65.6	0.6	912	10800
14.97	1580	2771	2271	1569	65.7	0.7	919	11000
15.08	1579	2774	2274	1569	65.5	0.7	926	11200
15.19	1579	2774	2274	1567	65.6	0.7	933	11400
15.29	1577	2775	2275	1566	65.5	0.8	940	11700
15.41	1574	2775	2275	1566	65.5	0.8	947	11900
15.53	1573	2774	2274	1562	65.7	0.8	955	12200
15.63	1573	2776	2276	1561	65.7	0.8	962	12400
15.74	1571	2777	2277	1558	65.6	0.8	969	12600
15.85	1569	2778	2278	1559	65.6	0.8	977	12900
15.96	1566	2777	2277	1552	65.6	0.9	984	13100
16.07	1560	2774	2274	1549	65.5	0.9	991	13400
16.18	1560	2775	2275	1551	65.5	0.8	998	13700
16.27	1555	2772	2272	1546	65.5	0.9	1000	13700
16.40	1553	2771	2271	1543	65.5	0.9	1012	14200
16.51	1550	2768	2268	1540	65.6	0.9	1019	14400
16.62	1550	2768	2268	1540	65.7	0.9	1026	14700
16.73	1550	2770	2270	1540	65.6	0.9	1033	15000
16.84	1551	2772	2272	1540	65.6	1.0	1041	15300
16.95	1550	2773	2273	1540	65.7	1.0	1048	15500
17.06	1545	2771	2271	1537	65.5	1.0	1055	15800
17.17	1545	2771	2271	1535	65.5	1.0	1062	16100
17.28	1544	2770	2270	1536	65.5	0.9	1069	16400
17.38	1545	2771	2271	1533	65.6	0.9	1076	16700
17.49	1544	2770	2270	1535	65.6	0.9	1083	16900
17.60	1547	2774	2274	1538	65.6	0.9	1090	17200
17.71	1546	2772	2272	1536	65.6	0.9	1097	17500
17.82	1545	2772	2272	1539	65.7	1.0	1104	17800
17.93	1541	2770	2270	1533	65.5	1.0	1111	18100

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
18.04	1540	2767	2267	1532	65.7	1.0	1118	18400
18.15	1541	2769	2269	1532	65.6	1.0	1126	18700
18.26	1540	2769	2269	1531	65.5	1.0	1133	19000
18.37	1540	2769	2269	1530	65.5	1.0	1140	19200
18.48	1540	2769	2269	1530	65.6	0.9	1147	19500
18.58	1539	2768	2268	1532	65.6	1.0	1154	19800
18.69	1539	2768	2268	1530	65.7	1.0	1161	20100
18.80	1540	2771	2271	1530	65.5	1.0	1168	20400
18.91	1535	2766	2266	1528	65.6	1.0	1175	20700
19.03	1535	2766	2266	1527	65.6	1.0	1183	21000
19.16	1534	2765	2265	1525	65.7	1.0	1191	21300
19.27	1536	2768	2268	1526	65.5	1.0	1198	21600
19.38	1537	2769	2269	1527	65.5	1.0	1205	21900
19.49	1536	2768	2268	1525	65.5	1.0	1212	22200
19.60	1534	2766	2266	1524	65.6	1.0	1219	22500
19.70	1535	2766	2266	1526	65.6	1.0	1227	22800
19.81	1535	2767	2267	1525	65.6	1.0	1234	23100
19.93	1537	2769	2269	1527	65.6	1.0	1241	23400
20.04	1536	2766	2266	1529	65.7	1.0	1248	23700
20.15	1535	2766	2266	1525	65.7	1.0	1255	23900
20.26	1536	2767	2267	1527	65.7	1.0	1262	24200
20.37	1537	2768	2268	1527	65.6	1.0	1270	24500
20.48	1539	2770	2270	1530	65.6	1.0	1277	24800
20.59	1538	2769	2269	1528	65.6	0.9	1284	25100
20.70	1536	2767	2267	1528	65.6	1.0	1292	25400
20.82	1535	2766	2266	1526	65.6	1.0	1299	25700
20.94	1533	2763	2263	1527	65.6	1.0	1307	26000
21.07	1530	2760	2260	1525	65.7	1.0	1315	26400
21.18	1530	2760	2260	1521	65.7	1.0	1322	26600
21.29	1529	2760	2260	1522	65.6	1.0	1330	26900
21.40	1529	2760	2260	1520	65.6	1.0	1337	27200
21.52	1530	2762	2262	1522	65.5	1.0	1344	27500
21.63	1529	2760	2260	1522	65.6	1.0	1351	27800
21.74	1532	2763	2263	1526	65.6	1.0	1359	28100
21.85	1533	2764	2264	1525	65.6	1.0	1366	28400
21.93	1533	2764	2264	1524	65.7	1.0	1368	28500
22.06	1535	2767	2267	1526	65.6	1.0	1380	29000
22.17	1536	2767	2267	1529	65.6	1.0	1387	29300
22.28	1538	2768	2268	1530	65.7	1.0	1394	29600
22.39	1536	2767	2267	1527	65.6	1.0	1401	29900
22.50	1540	2773	2273	1531	65.6	1.1	1408	30200
22.61	1540	2774	2274	1531	65.7	1.2	1415	30600
22.72	1541	2776	2276	1530	65.7	1.2	1422	30900
22.83	1540	2776	2276	1531	65.8	1.2	1430	31300
22.94	1535	2774	2274	1528	65.7	1.3	1437	31600
23.05	1538	2779	2279	1529	65.7	1.3	1444	32000
23.16	1533	2776	2276	1529	65.7	1.3	1451	32400
23.27	1530	2777	2277	1523	65.6	1.3	1458	32800
23.38	1527	2777	2277	1520	65.5	1.3	1465	33100
23.49	1525	2776	2276	1517	65.6	1.3	1472	33500
23.60	1519	2773	2273	1512	65.5	1.3	1480	33900
23.71	1519	2773	2273	1511	65.7	1.3	1487	34300
23.82	1520	2775	2275	1513	65.6	1.3	1491	34500
[illegible]	[illegible]	[illegible]	[illegible]	1511	65.6	1.3	1502	35100

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
24.06	1519	2777	2277	1512	65.6	1.4	1509	35500
24.16	1517	2775	2275	1510	65.7	1.4	1516	35900
24.27	1519	2778	2278	1510	65.6	1.4	1523	36300
24.38	1517	2778	2278	1510	65.6	1.4	1531	36700
24.49	1518	2781	2281	1511	65.6	1.6	1538	37100
24.60	1513	2777	2277	1509	65.6	1.5	1545	37600
24.71	1513	2779	2279	1506	65.6	1.4	1552	38000
24.82	1510	2776	2276	1503	65.6	1.4	1559	38400
24.94	1508	2775	2275	1503	65.6	1.4	1567	38800
25.05	1505	2773	2273	1500	65.6	1.5	1574	39200
25.16	1504	2775	2275	1498	65.5	1.5	1581	39700
25.27	1503	2774	2274	1500	65.5	1.5	1588	40100
25.38	1505	2777	2277	1498	65.5	1.5	1595	40500
25.49	1505	2777	2277	1500	65.6	1.5	1602	40900
25.60	1505	2777	2277	1499	65.6	1.5	1609	41400
25.72	1501	2772	2272	1498	65.6	1.4	1617	41800
25.85	1503	2775	2275	1496	65.5	1.5	1626	42300
25.96	1501	2773	2273	1498	65.6	1.5	1633	42700
26.05	1501	2774	2274	1497	65.6	1.5	1633	42700
26.13	1503	2777	2277	1496	65.5	1.5	1633	42700
26.22	1500	2773	2273	1497	65.6	1.5	1633	42700
26.31	1500	2773	2273	1496	65.6	1.5	1633	42700
26.40	1500	2773	2273	1493	65.6	1.5	1633	42700
26.52	1501	2774	2274	1496	65.6	1.5	1633	42700
26.61	1500	2774	2274	1497	65.6	1.5	1633	42700
26.91	1500	2775	2275	1493	65.5	1.5	1694	46400
27.01	1500	2774	2274	1491	65.6	1.5	1701	46800
27.12	1501	2775	2275	1495	65.6	1.5	1708	47300
27.24	1500	2775	2275	1491	65.5	1.5	1716	47700
27.35	1497	2773	2273	1494	65.5	1.6	1723	48100
27.46	1500	2779	2279	1496	65.4	1.9	1730	48700
27.57	1500	2782	2282	1497	65.4	1.9	1737	49200
27.68	1497	2781	2281	1490	65.4	1.8	1744	49700
27.78	1494	2778	2278	1486	65.5	1.7	1751	50100
27.89	1490	2775	2275	1487	65.5	1.6	1758	50600
28.01	1489	2777	2277	1484	65.5	1.8	1766	51100
28.12	1489	2778	2278	1485	65.6	1.8	1773	51600
28.24	1486	2779	2279	1481	65.5	1.8	1781	52200
28.35	1485	2780	2280	1478	65.5	1.9	1788	52700
28.46	1483	2782	2282	1478	65.5	1.9	1795	53200
28.57	1480	2780	2280	1476	65.5	1.9	1802	53800
28.68	1479	2778	2278	1476	65.7	1.9	1810	54300
28.79	1476	2777	2277	1470	65.5	1.9	1817	54900
28.90	1477	2779	2279	1471	65.6	1.9	1824	55400
29.01	1475	2779	2279	1472	65.5	1.8	1831	55900
29.12	1476	2782	2282	1471	65.5	1.9	1838	56400
29.23	1477	2784	2284	1469	65.6	2.0	1845	57000
29.34	1477	2786	2286	1472	65.5	2.0	1852	57500
29.46	1476	2786	2286	1471	65.5	2.0	1860	58200
29.57	1471	2781	2281	1470	65.6	2.0	1867	58700
29.68	1474	2786	2286	1470	65.5	2.0	1874	59300
29.79	1474	2786	2286	1471	65.5	2.0	1882	59900
29.90	1471	2782	2282	1466	65.6	1.9	1889	60400
30.01	1468	2780	2280	1462	65.6	2.0	1896	60900

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
30.12	1470	2783	2283	1468	65.5	2.0	1903	61500
30.23	1470	2782	2282	1468	65.7	2.0	1910	62000
30.34	1470	2784	2284	1466	65.6	2.0	1917	62600
30.45	1471	2784	2284	1467	65.6	1.9	1924	63100
30.56	1470	2782	2282	1469	65.6	1.9	1931	63700
30.67	1471	2782	2282	1467	65.6	1.9	1938	64200
30.78	1470	2782	2282	1469	65.6	2.0	1946	64800
30.89	1473	2784	2284	1471	65.6	2.0	1953	65300
31.00	1470	2781	2281	1470	65.6	2.0	1960	65900
31.11	1472	2784	2284	1468	65.6	2.0	1967	66400
31.23	1471	2783	2283	1468	65.7	2.0	1975	67000
31.33	1473	2786	2286	1470	65.5	2.0	1982	67600
31.44	1470	2782	2282	1467	65.7	2.0	1989	68100
31.56	1468	2781	2281	1464	65.6	2.0	1996	68700
31.66	1468	2781	2281	1462	65.6	2.0	2003	69200
31.79	1467	2780	2280	1464	65.7	2.0	2011	69800
31.89	1468	2783	2283	1460	65.5	2.0	2018	70400
32.01	1464	2779	2279	1459	65.5	2.0	2026	71000
32.12	1467	2781	2281	1460	65.6	2.0	2033	71600
32.23	1465	2780	2280	1460	65.5	2.0	2040	72100
32.35	1468	2783	2283	1460	65.6	2.0	2049	72700
32.46	1466	2781	2281	1459	65.5	2.0	2055	73300
32.57	1465	2780	2280	1459	65.5	2.0	2062	73800
32.68	1468	2782	2282	1462	65.6	2.0	2069	74400
32.81	1465	2780	2280	1460	65.6	2.0	2077	75000
32.92	1464	2779	2279	1459	65.6	2.0	2085	75600
33.03	1468	2783	2283	1463	65.5	2.0	2092	76100
33.14	1467	2782	2282	1462	65.5	2.0	2099	76700
33.25	1466	2780	2280	1460	65.7	2.0	2106	77300
33.36	1468	2783	2283	1461	65.6	2.0	2113	77800
33.47	1466	2780	2280	1459	65.6	2.0	2120	78400
33.58	1467	2782	2282	1459	65.6	2.0	2127	78900
33.69	1465	2780	2280	1457	65.6	2.0	2135	79500
33.80	1461	2776	2276	1456	65.6	2.0	2142	80000
33.91	1463	2778	2278	1457	65.6	2.0	2149	80600
34.02	1464	2779	2279	1460	65.6	2.0	2156	81200
34.13	1460	2774	2274	1457	65.6	2.0	2163	81700
34.23	1462	2776	2276	1455	65.6	2.0	2170	82300
34.34	1462	2778	2278	1458	65.5	2.0	2177	82800
34.45	1462	2777	2277	1457	65.6	2.0	2184	83400
34.56	1460	2774	2274	1458	65.6	2.0	2191	83900
34.67	1462	2776	2276	1458	65.6	2.0	2198	84500
34.78	1463	2778	2278	1459	65.5	2.0	2206	85100
34.89	1462	2777	2277	1460	65.5	2.0	2213	85600
35.00	1465	2780	2280	1456	65.6	2.0	2220	86200
35.11	1459	2774	2274	1455	65.5	2.0	2227	86700
35.22	1460	2776	2276	1457	65.5	2.0	2234	87300
35.33	1459	2774	2274	1454	65.5	2.0	2241	87800
35.44	1460	2775	2275	1456	65.6	2.0	2248	88400
35.55	1460	2776	2276	1458	65.5	2.0	2255	89000
35.66	1458	2773	2273	1455	65.5	2.0	2262	89500
35.77	1459	2775	2275	1455	65.5	2.0	2269	90100
35.88	1460	2776	2276	1453	65.5	2.0	2277	90600
35.98	1457	2776	2276	1455	65.5	2.0	2284	91200

THE WESTERN COMPANY OF ORTH AMERICA - REAL TIME ITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
36.10	1461	2777	2277	1455	65.4	2.0	2291	91700
36.20	1458	2773	2273	1455	65.5	2.0	2298	92300
36.31	1459	2775	2275	1455	65.5	2.0	2305	92800
36.42	1459	2775	2275	1453	65.5	2.0	2312	93400
36.53	1460	2775	2275	1454	65.5	2.0	2319	94000
36.65	1459	2774	2274	1455	65.6	2.0	2327	94600
36.76	1460	2776	2276	1457	65.5	2.0	2334	95100
36.87	1458	2774	2274	1455	65.5	2.0	2341	95700
36.98	1459	2773	2273	1455	65.6	2.0	2348	96200
37.09	1458	2774	2274	1454	65.5	2.0	2355	96800
37.20	1458	2772	2272	1457	65.6	2.0	2362	97300
37.31	1458	2773	2273	1450	65.6	2.0	2370	97900
37.42	1460	2775	2275	1454	65.5	2.0	2377	98500
37.53	1459	2774	2274	1454	65.5	2.0	2384	99000
37.64	1459	2774	2274	1457	65.5	2.0	2391	99600
37.75	1463	2778	2278	1459	65.5	2.0	2398	100100
37.86	1461	2777	2277	1459	65.4	2.0	2405	100700
37.97	1461	2777	2277	1457	65.5	2.0	2412	101200
38.08	1463	2778	2278	1460	65.5	2.0	2419	101800
38.19	1467	2783	2283	1462	65.5	2.0	2426	102400
38.29	1462	2777	2277	1459	65.5	2.0	2433	102900
38.40	1462	2778	2278	1460	65.5	2.0	2441	103500
38.51	1460	2775	2275	1456	65.5	2.0	2448	104000
38.62	1457	2772	2272	1451	65.5	2.0	2455	104600
38.74	1455	2771	2271	1452	65.5	2.0	2463	105200
38.85	1455	2771	2271	1450	65.5	2.0	2470	105700
38.97	1451	2767	2267	1450	65.4	2.0	2477	106400
39.08	1450	2765	2265	1449	65.5	2.0	2485	106900
39.19	1449	2765	2265	1446	65.5	2.0	2492	107500
39.30	1449	2764	2264	1446	65.5	2.0	2499	108000
39.41	1452	2767	2267	1445	65.5	2.0	2506	108600
39.52	1450	2766	2266	1445	65.5	2.0	2513	109100
39.63	1450	2765	2265	1444	65.6	2.0	2520	109700
39.74	1445	2760	2260	1442	65.5	2.0	2527	110300
39.85	1442	2758	2258	1440	65.5	2.0	2534	110800
39.96	1448	2764	2264	1444	65.4	2.0	2541	111400
40.07	1449	2764	2264	1444	65.5	2.0	2549	111900
40.18	1449	2765	2265	1440	65.5	2.0	2556	112500
40.29	1444	2759	2259	1440	65.5	2.0	2563	113000
40.40	1448	2765	2265	1441	65.5	2.1	2570	113600
40.51	1449	2765	2265	1444	65.5	2.0	2577	114200
40.63	1448	2763	2263	1442	65.6	2.0	2585	114800
40.74	1452	2768	2268	1448	65.6	2.0	2592	115400
40.86	1451	2766	2266	1449	65.6	2.0	2600	116000
40.97	1451	2766	2266	1447	65.7	2.0	2607	116500
41.08	1452	2767	2267	1449	65.7	2.0	2614	117100
41.19	1455	2770	2270	1450	65.7	2.0	2621	117600
41.31	1453	2768	2268	1448	65.7	2.0	2629	118200
41.42	1451	2767	2267	1449	65.6	2.0	2636	118800
41.54	1450	2764	2264	1450	65.7	2.0	2644	119400
41.65	1451	2766	2266	1446	65.6	2.0	2651	120000
41.76	1450	2764	2264	1449	65.6	2.0	2658	120600
41.87	1450	2765	2265	1445	65.6	2.0	2666	121100
41.98	1447	2762	2262	1446	65.6	2.0	2673	121700

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
42.09	1448	2763	2263	1447	65.5	2.0	2680	122200
42.20	1447	2761	2261	1444	65.6	2.0	2687	122800
42.31	1451	2767	2267	1449	65.5	2.0	2694	123400
42.42	1450	2764	2264	1444	65.7	2.0	2701	124000
42.53	1447	2762	2262	1443	65.6	2.0	2708	124500
42.64	1448	2763	2263	1445	65.5	2.0	2716	125100
42.75	1449	2763	2263	1445	65.6	2.0	2723	125600
42.86	1446	2760	2260	1443	65.6	2.0	2730	126200
42.97	1449	2763	2263	1447	65.7	2.0	2737	126800
43.08	1450	2763	2263	1448	65.7	2.0	2744	127300
43.19	1449	2763	2263	1440	65.7	2.0	2751	127900
43.30	1449	2763	2263	1441	65.6	2.0	2758	128400
43.41	1449	2763	2263	1444	65.7	2.0	2765	129000
43.52	1449	2763	2263	1444	65.6	2.0	2773	129600
43.63	1451	2765	2265	1446	65.7	2.0	2780	130100
43.74	1449	2764	2264	1443	65.6	2.0	2787	130700
43.85	1450	2764	2264	1443	65.7	2.0	2794	131200
43.96	1449	2763	2263	1445	65.7	2.0	2801	131800
44.07	1451	2765	2265	1448	65.7	2.0	2808	132400
44.18	1450	2764	2264	1446	65.7	2.0	2815	132900
44.29	1449	2764	2264	1446	65.6	2.0	2823	133500
44.40	1449	2764	2264	1441	65.6	2.0	2830	134100
44.51	1450	2765	2265	1448	65.6	2.0	2837	134600
44.62	1451	2766	2266	1452	65.6	2.0	2844	135200
44.73	1455	2770	2270	1452	65.6	2.0	2851	135700
44.84	1459	2773	2273	1457	65.6	2.0	2858	136300
44.95	1464	2778	2278	1459	65.6	2.0	2865	136900
45.07	1462	2777	2277	1461	65.6	2.0	2873	137500
45.18	1462	2777	2277	1459	65.5	2.0	2880	138000
45.29	1461	2777	2277	1461	65.5	2.0	2888	138600
45.40	1466	2782	2282	1463	65.5	2.0	2895	139200
45.52	1469	2784	2284	1466	65.5	2.0	2903	139800
45.63	1470	2785	2285	1468	65.6	2.0	2910	140400
45.75	1470	2785	2285	1466	65.6	2.0	2917	140900
45.86	1469	2784	2284	1469	65.5	2.0	2924	141500
45.96	1470	2785	2285	1469	65.5	2.0	2931	142000
46.07	1470	2786	2286	1470	65.4	2.0	2939	142600
46.18	1470	2786	2286	1469	65.4	2.0	2946	143200
46.30	1470	2786	2286	1470	65.4	2.0	2953	143800
46.41	1469	2784	2284	1468	65.5	2.0	2961	144300
46.52	1471	2786	2286	1470	65.6	2.0	2968	144900
46.63	1470	2786	2286	1469	65.5	2.0	2975	145500
46.75	1470	2785	2285	1464	65.5	2.0	2983	146100
46.86	1470	2785	2285	1466	65.6	2.0	2990	146600
46.98	1470	2786	2286	1468	65.5	2.0	2998	147200
47.09	1468	2784	2284	1462	65.5	2.0	3005	147800
47.20	1468	2784	2284	1462	65.5	2.0	3012	148400
47.32	1470	2785	2285	1467	65.5	1.9	3019	148900
47.43	1466	2779	2279	1463	65.6	1.8	3027	149500
47.54	1468	2777	2277	1465	65.6	1.6	3034	149900
47.66	1467	2769	2269	1464	65.7	1.3	3042	150300
47.77	1465	2760	2260	1464	65.6	0.9	3049	150600
47.88	1471	2753	2253	1470	65.7	0.6	3056	150800
							3063	150900

THE WESTERN COMPANY OF NORTH AMERICA - REAL TIME MONITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
48.10	1506	2761	2261	1498	65.7	0.2	3070	151000
48.21	1515	2755	2255	1509	65.7	0.1	3077	151100
48.33	1384	2645	2145	1377	62.2	0.1	3084	151100
48.44	1297	2594	2094	1295	56.9	0.1	3091	151100
48.54	1161	2501	2001	1159	50.6	0.1	3096	151200
48.65	999	2396	1896	997	41.6	0.1	3101	151200
48.76	780	2245	1745	781	28.8	0.1	3105	151200
48.87	706	2245	1745	710	0.1	0.1	3105	151200
48.98	728	2267	1767	732	0.0	0.1	3105	151200
49.09	730	2269	1769	731	0.0	0.1	3105	151200
49.19	734	2273	1773	735	0.0	0.1	3105	151200
49.30	733	2272	1772	733	0.0	0.1	3105	151200
49.41	731	2270	1770	729	0.0	0.1	3105	151200
49.51	730	2269	1769	730	0.0	0.1	3105	151200
49.63	731	2270	1770	729	0.0	0.1	3105	151200
49.74	727	2266	1766	727	0.0	0.1	3105	151200
49.85	730	2269	1769	729	0.0	0.1	3105	151200
49.97	730	2269	1769	730	0.0	0.1	3105	151200
50.07	730	2269	1769	730	0.0	0.1	3105	151200
50.18	730	2269	1769	730	0.0	0.1	3105	151200
50.29	730	2269	1769	729	0.0	0.1	3105	151200
50.40	730	2269	1769	730	0.0	0.1	3105	151200
50.50	730	2269	1769	730	0.0	0.1	3105	151200
50.61	730	2269	1769	718	0.0	0.1	3105	151200
50.72	730	2269	1769	710	0.0	0.0	3105	151200
50.83	730	2269	1769	713	0.0	0.0	3105	151200
50.93	730	2269	1769	711	0.0	0.0	3105	151200
51.04	728	2267	1767	711	0.0	0.0	3105	151200
51.15	730	2269	1769	710	0.0	0.0	3105	151200
51.26	730	2269	1769	710	0.0	0.0	3105	151200
51.37	730	2269	1769	711	0.0	0.0	3105	151200
51.47	729	2268	1768	710	0.0	0.0	3105	151200
51.58	727	2266	1766	710	0.0	0.0	3105	151200
51.69	727	2266	1766	713	0.0	0.0	3105	151200
51.80	729	2268	1768	710	0.0	0.0	3105	151200
51.90	730	2269	1769	710	0.0	0.0	3105	151200
52.01	730	2269	1769	711	0.0	0.0	3105	151200
52.12	727	2266	1766	710	0.0	0.0	3105	151200
52.24	730	2269	1769	710	0.0	0.0	3105	151200
52.35	730	2269	1769	711	0.0	0.0	3105	151200
52.46	730	2269	1769	710	0.0	0.0	3105	151200
52.57	728	2267	1767	710	0.0	0.0	3105	151200
52.68	730	2269	1769	710	0.0	0.0	3105	151200
52.78	728	2267	1767	710	0.0	0.0	3105	151200
52.89	729	2268	1768	710	0.0	0.0	3105	151200
53.00	730	2269	1769	710	0.0	0.0	3105	151200
53.11	730	2269	1769	710	0.0	0.0	3105	151200
53.21	730	2269	1769	710	0.0	0.0	3105	151200
53.32	729	2268	1768	710	0.0	0.0	3105	151200
53.43	729	2268	1768	710	0.0	0.0	3105	151200
53.54	729	2268	1768	710	0.0	0.0	3105	151200
53.64	720	2259	1759	710	0.0	0.0	3105	151200
53.75	725	2264	1764	710	0.0	0.0	3105	151200
53.86	726	2265	1765	709	0.0	0.0	3105	151200

THE WESTERN COMPANY OF ..ORTH AMERICA - REAL TIME M. .ITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
53.97	721	2260	1760	708	0.0	0.0	3105	151200
54.09	720	2259	1759	706	0.0	0.0	3105	151200
54.19	721	2260	1760	709	0.0	0.0	3105	151200
54.30	720	2259	1759	705	0.0	0.0	3105	151200
54.41	720	2259	1759	705	0.0	0.0	3105	151200
54.51	720	2259	1759	705	0.0	0.0	3105	151200
54.62	720	2259	1759	700	0.0	0.0	3105	151200
54.73	720	2259	1759	702	0.0	0.0	3105	151200
54.85	720	2259	1759	701	0.0	0.0	3105	151200
54.96	720	2259	1759	700	0.0	0.0	3105	151200
55.07	719	2258	1758	700	0.0	0.0	3105	151200
55.18	719	2258	1758	700	0.0	0.0	3105	151200
55.29	720	2259	1759	700	0.0	0.0	3105	151200
55.40	720	2259	1759	701	0.0	0.0	3105	151200
55.50	718	2257	1757	700	0.0	0.0	3105	151200
55.61	715	2254	1754	700	0.0	0.0	3105	151200
55.72	713	2252	1752	700	0.0	0.0	3105	151200
55.83	712	2251	1751	700	0.0	0.0	3105	151200
55.93	712	2251	1751	700	0.0	0.0	3105	151200
56.04	714	2253	1753	700	0.0	0.0	3105	151200
56.15	715	2254	1754	700	0.0	0.0	3105	151200
56.26	713	2252	1752	700	0.0	0.0	3105	151200
56.36	711	2250	1750	700	0.0	0.0	3105	151200
56.48	714	2253	1753	700	0.0	0.0	3105	151200
56.59	711	2250	1750	700	0.0	0.0	3105	151200
56.71	711	2250	1750	700	0.0	0.0	3105	151200
56.83	714	2253	1753	700	0.0	0.0	3105	151200
56.93	714	2253	1753	700	0.0	0.0	3105	151200
57.04	710	2249	1749	699	0.0	0.0	3105	151200
57.15	711	2250	1750	699	0.0	0.0	3105	151200
57.27	711	2250	1750	700	0.0	0.0	3105	151200
57.37	710	2249	1749	700	0.0	0.0	3105	151200
57.48	710	2249	1749	698	0.0	0.0	3105	151200
57.59	711	2250	1750	700	0.0	0.0	3105	151200
57.70	710	2249	1749	700	0.0	0.0	3105	151200
57.81	710	2249	1749	700	0.0	0.0	3105	151200
57.92	711	2250	1750	700	0.0	0.0	3105	151200
58.03	710	2249	1749	699	0.0	0.0	3105	151200
58.14	710	2249	1749	699	0.0	0.0	3105	151200
58.25	710	2249	1749	699	0.0	0.0	3105	151200
58.36	710	2249	1749	698	0.0	0.0	3105	151200
58.47	710	2249	1749	699	0.0	0.0	3105	151200
58.59	710	2249	1749	700	0.0	0.0	3105	151200
58.71	710	2249	1749	700	0.0	0.0	3105	151200
58.81	710	2249	1749	699	0.0	0.0	3105	151200
58.92	710	2249	1749	700	0.0	0.0	3105	151200
59.03	710	2249	1749	698	0.0	0.0	3105	151200
59.14	711	2250	1750	697	0.0	0.0	3105	151200
59.24	710	2249	1749	698	0.0	0.0	3105	151200
59.35	710	2249	1749	695	0.0	0.0	3105	151200
59.46	710	2249	1749	695	0.0	0.0	3105	151200
59.58	710	2249	1749	691	0.0	0.0	3105	151200
59.68	710	2249	1749	692	0.0	0.0	3105	151200
[illegible]	[illegible]	[illegible]	[illegible]	690	0.0	0.0	3105	151200

THE WESTERN COMPANY OF ORTH AMERICA - REAL TIME . ITORING SYSTEM

GIANT REFINERY BLOOMFIELD WD #1 MESA VERDE FORMATION SLICK WATER 3-1-96

ET min.	STP psi.	BHTP psi.	NET P psi.	PRESS 2 psi.	SLR RATE bpm.	PROP lb/gal	Cumm Volume	Cumm Proppant
59.90	710	2249	1749	692	0.0	0.0	3105	151200
60.01	710	2249	1749	695	0.0	0.0	3105	151200
60.11	710	2249	1749	694	0.0	0.0	3105	151200
60.22	710	2249	1749	692	0.0	0.0	3105	151200
60.33	710	2249	1749	693	0.0	0.0	3105	151200
60.44	710	2249	1749	697	0.0	0.0	3105	151200
60.55	710	2249	1749	694	0.0	0.0	3105	151200
60.66	710	2249	1749	692	0.0	0.0	3105	151200
60.77	710	2249	1749	691	0.0	0.0	3105	151200
60.87	709	2248	1748	692	0.0	0.0	3105	151200
60.98	710	2249	1749	694	0.0	0.0	3105	151200
61.09	710	2249	1749	691	0.0	0.0	3105	151200
61.20	710	2249	1749	696	0.0	0.0	3105	151200
61.30	710	2249	1749	693	0.0	0.0	3105	151200
61.42	710	2249	1749	697	0.0	0.0	3105	151200
61.54	710	2249	1749	693	0.0	0.0	3105	151200
61.65	710	2249	1749	693	0.0	0.0	3105	151200
61.75	710	2249	1749	694	0.0	0.0	3105	151200
61.86	710	2249	1749	698	0.0	0.0	3105	151200
61.97	710	2249	1749	696	0.0	0.0	3105	151200
62.08	710	2249	1749	698	0.0	0.0	3105	151200
62.18	710	2249	1749	692	0.0	0.0	3105	151200
62.29	710	2249	1749	696	0.0	0.0	3105	151200
62.40	710	2249	1749	694	0.0	0.0	3105	151200
62.51	710	2249	1749	695	0.0	0.1	3105	151200
62.62	710	2249	1749	693	0.0	0.0	3105	151200
62.73	710	2249	1749	694	0.0	0.0	3105	151200
62.83	710	2249	1749	691	0.0	0.0	3105	151200
62.96	710	2249	1749	698	0.0	0.0	3105	151200
63.07	710	2249	1749	699	0.0	0.0	3105	151200
63.17	710	2249	1749	696	0.0	0.0	3105	151200
63.29	710	2249	1749	692	0.0	0.0	3105	151200
63.41	710	2249	1749	693	0.0	0.0	3105	151200
63.53	709	2248	1748	697	0.0	0.0	3105	151200
63.65	710	2249	1749	693	0.0	0.0	3105	151200
63.75	710	2249	1749	690	0.0	0.0	3105	151200

MONTGOMERY & ANDREWS
LAW FIRM

EDMUND H. KENDRICK
Direct: (505) 986-2527
Email: ekendrick@montand.com
Reply To: Santa Fe Office
www.montand.com

March 25, 2010
VIA EMAIL AND HAND DELIVERY

Mr. Glenn von Gonten
Acting Environmental Bureau Chief
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re: ***Request to Withdraw Public Notice***
Discharge Plan Permit (UICI-009 [I-009])
Western Refining Southwest, Inc.
Class I Non-Hazardous Disposal Well
Waste Disposal Well No. 1, API No. 30-045-29002
2442 FSL and 1250 FEL UL: I Section 27, T29N, R11W
San Juan County, New Mexico

Dear Mr. von Gonten,

Western Refining Southwest, Inc. (Western) respectfully requests that the public notice be withdrawn in this matter because the Notice of Publication, Draft Discharge Plan Permit and the New Mexico Oil Conservation Division (OCD) letter dated February 25, 2010 determining "administrative completeness" do not accurately reflect Western's application. The letter states "The New Mexico Oil Conservation Division (OCD) **has received Western Refining Southwest, Inc's application** for Disposal Well No. 1 **to inject** oil field exempt/non-exempt non-hazardous wastes into the Cliff House and Menefee Formations at the intervals from 3276 to 3408 feet and 3435 to 3460 feet, respectively **at a maximum injection pressure of 600 psig.**" (Emphasis added.) The 600 psig maximum injection pressure is also referenced in the Notice of Publication and Draft Discharge Plan Permit. The letter is presented for reference in Attachment A.

Western's application, dated October 2, 2008, did not reduce the injection pressure from 1,150 to 600 psig. Furthermore, Western was not notified of the reduction to 600 psig until February 23, 2010, when Western received an email to that effect from OCD. Western was unable to respond to the email before OCD issued the public notice, two days later. The OCD email is also included in Attachment A.

REPLY TO:
325 Paseo de Peralta
Santa Fe, New Mexico 87501
Telephone (505) 982-3873 • Fax (505) 982-4289

Post Office Box 2307
Santa Fe, New Mexico 87504-2307

6301 Indian School Road NE, Suite 400
Albuquerque, New Mexico 87110
Telephone (505) 884-4200 • Fax (505) 888-8929

Post Office Box 36210
Albuquerque, New Mexico 87176-6210

Permitted Maximum Injection Pressure History

According to available records, the initial discussions with the OCD Aztec Office indicated that the injection pressure would be limited initially to 0.2 psi/ft or about 690 psi, "the rule of thumb" for estimating reservoir parting (i.e., fracture) pressure. Western understands that OCD requires additional testing before the agency can allow the maximum injection pressure to be increased above the initial "rule of thumb" level. That, in fact, is what happened. Upon completion of additional testing on two occasions, OCD approved the permitted maximum injection pressure to increase to 955 psig in 1994 and to 1,150 psig in 1996. Presently, the permitted maximum injection pressure is 1,150 psig.

Below is a brief history of the permitted maximum injection pressure.

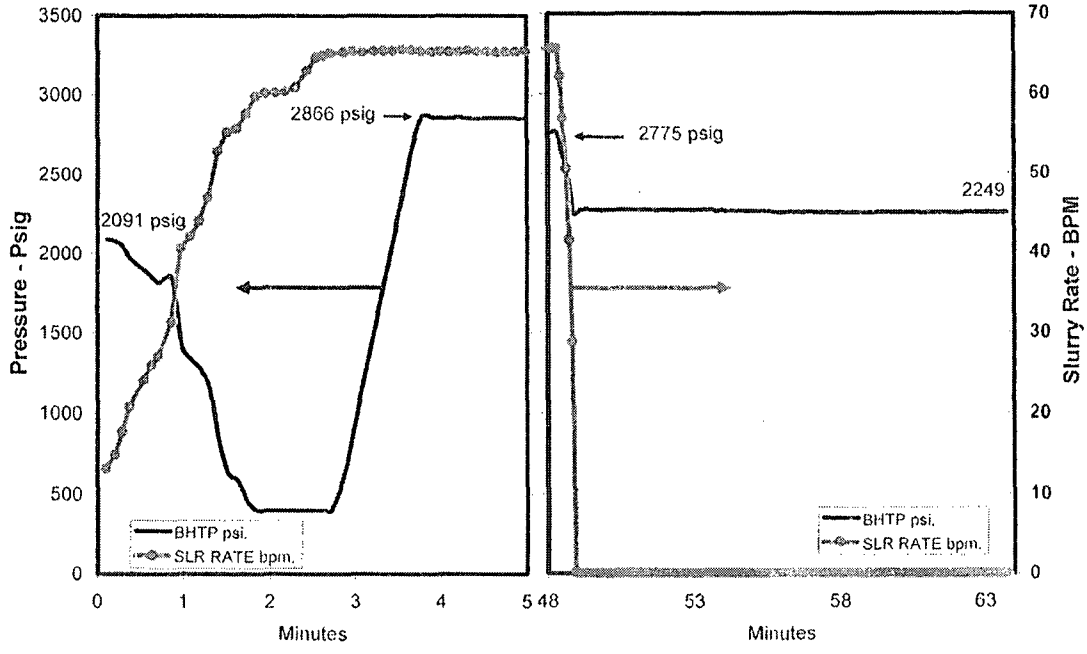
• June 28, 1994	Increase Pressure Increase to 955 psig.
• July 16, 1996	Increase Pressure Increase to 1150 psig.
• September 16, 1999	Discharge Plan Renewal Application – No Change
• June 30, 2003	Discharge Plan Renewal Application – No Change
• March 23, 2004	Discharge Plan Renewal – 1150 psig
• October 2, 2008	Discharge Plan Renewal Application – No Change

The pressure history documents are included in Attachment B.

Engineering Basis for 1,150 psig Maximum Injection Pressure

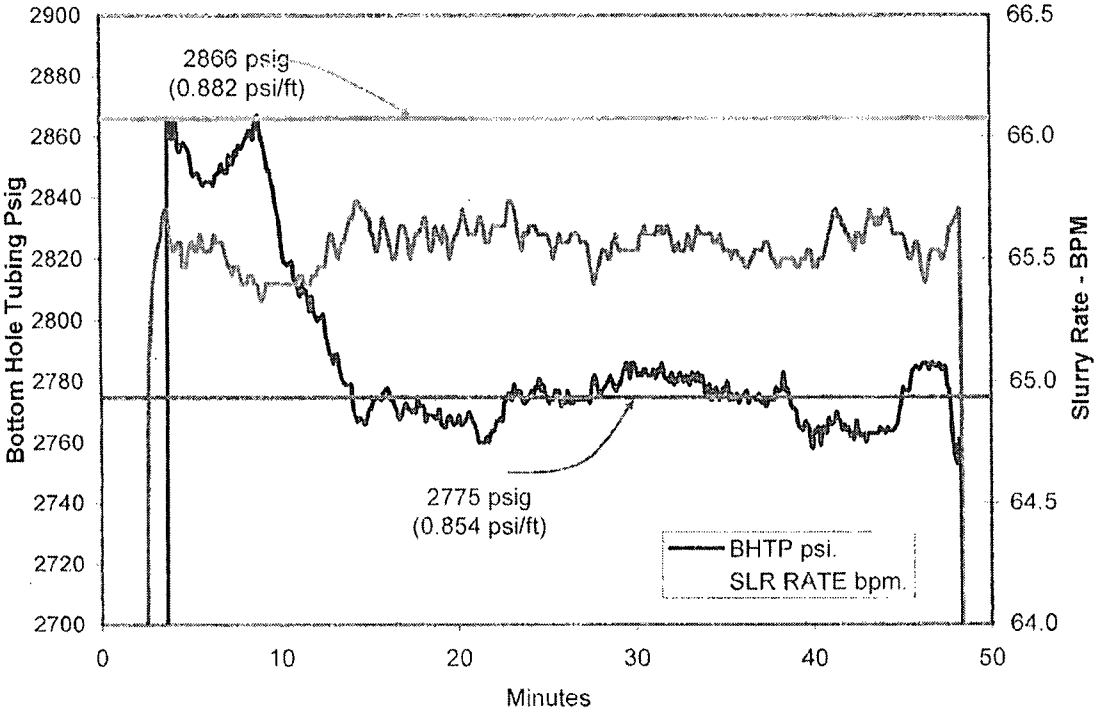
In Western's opinion, there is no engineering basis to reduce the injection pressure. Based on actual data collected by Western, it is not possible for the fractures to be growing at this time.

Figure 1
Fracture Treatment Data
Disposal Well #1 Frac 3/1/96



BHTP – Bottom Hole Treating Pressure
BPM – Barrels Per Minute
SLR – Slurry Rate

Figure 2
Fracture Treatment Data
Disposal Well #1 Frac 3/1/96



Figures 1 and 2, above, were generated using the same data from the March 1, 1996 Postfrac Treatment Summary. Figure 1 depicts the pressure and slurry rate versus time. To enhance detail, Figure 2 has a larger scale than Figure 1. These figures show the following:

1) the formation pressure at initiation of treatment was 2091 psig (0.64 psi/ft) as seen in Figure 1;

2) the formation parting pressure was 2866 psig (0.88 psi/ft) as seen in Figures 1 and 2; and

3) the propagation pressure is approximately 2775 psig (0.85 psi/ft) as seen in Figures 1 and 2.

Figure 3

Disposal Well #1 Pressure History

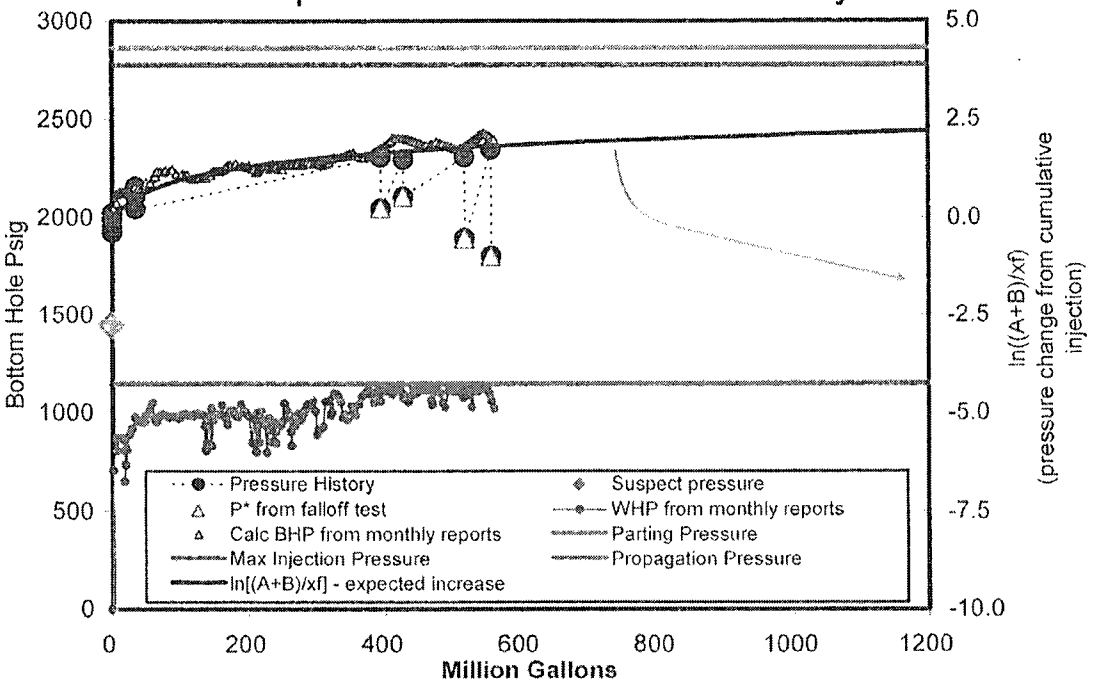


Figure 3, above, depicts bottom hole pressure and injection pressure history versus cumulative injection volume from initiation of injection to near present. The figure also depicts the formation pressure change from cumulative injection (black line), formation parting pressure (red line), propagation pressure (green) and permitted maximum injection pressure (blue line).

At approximately 530 million cumulative gallons, the corresponding pressures from the graph are:

- Formation Parting Pressure 2,866 psig
- Propagation Pressure 2,775 psig
- Bottom Hole Pressure 2,450 psig
- Injection Pressure ~1,150 psig

To propagate a fracture, bottom hole pressure would have to be in excess of the propagation pressure. The bottom hole pressure, which corresponds to the permitted maximum injection pressure (1,150 psig), is approximately 2,450 psig. When approaching the permitted maximum injection pressure, there is an approximate 325 psi cushion between the bottom hole pressure and the

propagation pressure. This confirms that historical bottom hole pressures are below 2,500 psig and cannot be propagating fractures. It is not possible for the fractures to be growing at this time.

When fluid is injected into a zone, the pressure will increase unless the zone is frictionless and infinitely large. As such, Western recognizes that some increase in average reservoir pressure has occurred and/or will occur. The formation pressure change from the cumulative injection curve shows that the predicted formation pressure at 1,200 million gallons will be less that 2,500 psig. This curve confirms that formation pressure will not approach progagation pressure within the Discharge Plan Renewal permit period (5 years).

The formation pressure of 2,091 psi at the initiation of the May 1, 1996 fracture treatment is indicative of a tight formation. Due to the tight formation, the 0.2 psi per foot "rule of thumb" does not logically apply. If the maximum injection pressure is reduced to 600 psi, flow to the formation is not possible because formation pressure would be higher than the combined injection pressure plus hydrostatic pressure.

Request to Withdraw the Current Public Notice

Western is concerned that applicable Water Quality Control Commission (WQCC) regulations may require Western to provide public notice of its application for a permit renewal within 30 days of OCD deeming the application to be administratively complete. However, it is impossible for Western to provide such public notice for two reasons. First, if Western's public notice matches OCD's February 25, 2010 public notice, Western's public notice would be inaccurate. Western's public notice would contain a maximum surface injection pressure of 600 psig, which does not match Western's application. Second, if Western's public notice matches its application and contains a maximum surface injection pressure of 1,150 psig, Western's public notice would not match OCD's public notice and would create needless confusion.

Consequently, Western respectfully requests that OCD withdraw its February 25, 2010 public notice. Such withdrawal of the public notice would enable OCD and Western to meet and discuss any issues concerning an appropriate maximum injection pressure. Western has other concerns with the draft permit renewal that it would like to discuss with OCD. Western's goal is to resolve any such issues with OCD so that OCD could then reissue a public notice that reflects an agreement of the parties.

If you have any questions about this request, please contact me at (505) 986-2527.

Sincerely,

Edmund H. Kendrick

EHK/dho
Attachments

cc: Mr. Carl Chavez (via email w/encl.); carlj.chavez@state.nm.us
Gail MacQuesten (via email w/encl); gail.macquesten@state.nm.us

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Monday, February 22, 2010 1:28 PM
To: 'Schmaltz, Randy'
Cc: 'Allen.Hains@wnr.com'; Monzeglio, Hope, NMENV; Cobrain, Dave, NMENV; Sanchez, Daniel J., EMNRD; Jones, William V., EMNRD; VonGonten, Glenn, EMNRD; Perrin, Charlie, EMNRD
Subject: Re: Western Refining Southwest, Inc. Status of OCD Discharge Permits: Bloomfield Refinery (GW-001) & UIC Class I Disposal Well (UICI-009)

Randy, et al.:

FYI, the OCD will likely be processing Western Refining Southwest, Inc.'s (WRSWI) two OCD Discharge Permit Applications (see above subject) this week.

The landfill issues for GW-001 are resolved in the discharge permit along with the active status and closure plan issues.

The maximum allowable surface injection pressure for UICI-009 has been reduced to 600 psig in the discharge permit in order to prevent the half-fractures from growing in the present injection formation. WRSWI will likely need to change its dewatering w/ SVE remediation project at the river terrace as a result of this pressure reduction in order to comply with the change.

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")