DATE IN 1-7-10	SUSPENSE 1/23/10	ENGINEER Jones	LOGGED IN 1-7-10	TYPE SWD	APP NO. pTGW 1000754180

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

Noble Energy

ADMINISTRATIVE APPLICATION CHECKLIST Rio Bravo 27 #5

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

30-045-33583

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

See: SWD-924 IPI-268 (1165 PSIG)

[D] Other: Specify _____

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply

[A] ☒ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO N/A
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached N/A

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Melanie D Peterson	Melanie D Peterson	Geologist	1/7/2010
Print or Type Name	Signature	Title	Date

mdpeterson@nobleenergyinc.com
e-mail Address

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2010 JAN 7 PM 1 25

Application for Authorization to Inject

Rio Bravo 27-05 API# 30-045-33583

10007541 80

General Information:

Noble Energy Inc. is hereby, making an application for administrative approval to dispose of produced water by underground injection. The proposed disposal site is the Rio Bravo 27-05 with API # of 30-045-33583, located 1505' FNL & 1245' FWL, Sec. 27, Twn. 31N, Rng 13W, San Juan Co., NM. Produced water will be injected into the Mesa Verde Members between 3487'-3517'(Cliffhouse), 3536'- 3568' (Cliffhouse), 4200'-4286' (Pointlookout). The maximum injection pressure will be 1000 psi and the maximum injection rate will be 1200 barrels of water daily.

Upon approval of this application, an injection test will be conducted. If adequate rates are not found, it may be necessary to stimulate the proposed injection zone or perforate additional zones in the well. Also from the injection test, a maximum surface injection pressure (MSIP) will be determined and submitted to the NMOCD before injection commences.

To comply with the New Mexico Oil Conservation Rules, Noble Energy, Inc. is submitting the form C-108 for approval of the proposed SWD well.

Any change to the plans contained herein, will be approved by the New Mexico Oil Conservation Division prior to implementation.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance ___X___Disposal _____Storage
Application qualifies for administrative approval? ___X___Yes _____No

II. OPERATOR: ___Noble Energy Inc._____

ADDRESS: _____1625 Broadway Denver, CO 80202_____

CONTACT PARTY: ___Ji Rim or Melanie Peterson _____PHONE: ____303-228-4000__

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? _____Yes ____X____No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: _____Melanie D Peterson_____ TITLE: ___Geologist_____

SIGNATURE: Melanie D Peterson DATE: 12/14/09

E-MAIL ADDRESS: mdpeterson@nobleenergyinc.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

pNH12

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: Noble Energy Inc.

WELL NAME & NUMBER: Rio Bravo 27-5

WELL LOCATION: 1505' FNL & 1245' FWL | 27 | 31N | 14W

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC

See Attachment #1

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 13-1/2" Casing Size: 9-5/8"

Cemented with: 300 sx. *or* _____ ft^3

Top of Cement: Surface Method Determined: Cement circulated to surface

Intermediate Casing

Hole Size: 8-3/4" Casing Size: 7"

Cemented with: 336 sx (1st Stage) & 205 sx (2nd Stage) *or* _____ ft^3

Top of Cement: Surface Method Determined: Cement circulated to surface

Production Casing

Hole Size: 6-1/4" Casing Size: 4-1/2"

Cemented with: 160 sx. *or* _____ ft^3

Top of Cement: 4636' Method Determined: Cement Bond Log

Total Depth: 6675'

Injection Interval

3487'-3517'(Cliffhouse), 3536'- 3568' (Cliffhouse), 4200'-4286' (Pointlookout

(Perforated)

INJECTION WELL DATA SHEET

Tubing Size: 2-7/8" Internally Lined Tubing Lining Material: Plastic

Type of Packer: 7" Weatherford Aeroset 1X Retrievable Packer with on off tool

Packer Setting Depth: 3410' (70' above Top Injection Interval)

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _____Yes X No

   If no, for what purpose was the well originally drilled? Multiple Completion production well within the Fruitland and Dakota Formation.

2. Name of the Injection Formation: Mesa Verde Group: Cliffhouse and Point Lookout Formations

3. Name of Field or Pool (if applicable): Not Applicable

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. Fruitland Coal : 1672'-1796',

   Dakota: 6442'-6544', Dakota. Interval are not currently plugged but will be upon approval of SWD. Dakota will be plugged with ~100' (15 sx) of cement and Fruitland will be plugged by cement squeeze.

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Fruitland Coal : 1226'-1805 Pictured Cliffs : 1805'1999'

   Gallup Sandstone: 5771'-6258' Dakota Sandstone : 6392'- 6596'

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Application for Authorization to Inject

Rio Bravo 27-5 API# 30-045-33583

Part III. Well Data

A. Tabular Information

1. Name:	Rio Bravo 27-05
API:	30-045-33583
Location:	1505' FNL & 1245' FWL Sec. 27, Twn. 31N, Rng 13W San Juan Co., NM.
2. Surface Casing:	9-5/8" 36#, J-55, ST&C, land @ 332' Cemented with 300 sx, 15.2 ppg, circulate to surface. 13-1/2" Hole size @ 336'.
Intermediate Casing:	7" 23#, N-80, LT&C, land @ 4640', DV (Stage) Tool @ 2059', Cement 1st Stage with 336 sx, 12.5 ppg, circulate to surface, Cement 2nd Stage with 65 sx of lead slurry, 12.5 ppg and 140 sx of tail slurry, 12.5 ppg, circulate to surface. 8-3/4" Hole size @ 4650'.
Production Casing:	4-1/2" 11.6#, N-80, LT&C, land @ 6675' Cemented with 80 sx of lead slurry, 12.1 ppg and 80 sx of tail slurry, 12.5 ppg, NO cement to surface. TOC @ 4636' as per CBL, 11/07/06. 6-1/4" Hole size @ 6675'
3. Injection Tubing:	2-7/8", EUE, 6.4#, J-55, internally coated.
4. Packer:	7" Weatherford Aeroset 1X with on off tool, and chrome fittings, will be set @ 3350', 50' above top perforation.

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B. Additional Information

1. Injection Interval: Mesa Verde Members between 3487'-3517'(Cliffhouse), 3536'- 3568' (Cliffhouse), 4200'-4286' (Pointlookout).

2. Injection Intervals of Mesa Verde Members will be perforated.

3. The well, Rio Bravo 27-5 was originally drilled as a gas/oil producer for the Fruitland Coal and Dakota Formations. The Fruitland Formation perfs in the interval of 1630' to 1796' will be plugged by cement squeeze. Dakota Formation perfs in the interval of 6442'-6544' will be squeezed and plugged with a cement retainer set at approx 6380'. Attachment 1 is of the wellbore schematic with specific cementing details on the plugging procedure of the two currently open zones.

4. Only the injection interval within the Mesa Verde Members is to be perforated.

Part V. Well Data within One-half Mile Radius around the Proposed Injection Well

There are 3 wells within the one-half mile radius of the Rio Bravo 27-5 as shown in Attachment 2. The well data has been summarized and tabulated in Attachment 3. Attachment 3 also shows the cement top of the intermediate casing, which covers the proposed zones of interest for injection. The Rio Bravo 5 and Rio Bravo 27-12 have CBLs confirming isolation across the Mesa Verde group; however the Templeton 1-27 (also known as the Rio Bravo 1) does not have a CBL or a temperature log for verification. Per email correspondence with William Jones with New Mexico OCD on November 10, 2009, the % fill up from an offset well should be calculated to apply to the Templeton 1-27 in estimating top of cement. The offset well, Rio Bravo 27-15, was utilized for % fill up calculations, which yielded to be 20%. This factor was applied to the Templeton 1 and Nance 1, which resulted in top of cement 105' and 330' above the Cliff House formation. These calculations along with a wellbore schematic of the wells in discussion are in Attachment 4. The Nance 1-27 was added to the list since it is located very close to the one-half mile radius.

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Application for Authorization to Inject

Rio Bravo 27-5 API# 30-045-33583

Part VII. Proposed Operation

1. The Proposed injection well will be used to dispose of produced water from Noble Energy Inc. Average injection rate will be 650 BWPD with a maximum of 1200 BWPD.

2. The system will be closed.

3. The calculated formation fracture pressure gradient area is 0.66 psi/ft and formation pressure gradient is 0.49 psi/ft. This indicates that the Fracture pressure for Cliff House is 2252 psi at 3400' depth and the fracture pressure for Point Lookout is 2782 psi at 4200'. Maximum injection pressure for the well shall not exceed 1000 psi and the average injection pressure is predicted to be 700 psi.
Maximum surface injection pressure may change based on results from a step rate to be conducted prior to injection.

4. The source of water to be disposed of is from the Fruitland Coal, Point Lookout and Dakota formations. Producing wells with the byproduct of water to be disposed of are in within the immediate area of T30N and T31N R12W and R13W. Water analyses for the Fruitland, Point Lookout, and Dakota formations are within Attachment 5. The water to be injected is compatible with the formation water of the Cliffhouse, Menefee and Point Lookout disposal zones. A total dissolved solids (TDS) calculation for the uppermost portion of the Cliffhouse is included in Attachment 6. A water sample from the depth interval of 3484'-3517' will be taken and a water analysis of the Cliffhouse will be included once the zone is perforated in the proposed Rio Bravo 27-05 well. There is no current well in the area that a Cliffhouse sample can be taken from. Injection WILL NOT be commenced into the Cliffhouse until the sample is retrieved and is accepted by the NMOCD.

5. Within the surrounding area there is a SWD that is currently injecting into the Cliffhouse and Pointlookout Formations. Salty Dog 4, API#30-045-32334, is approximately 4.27 miles almost directly upslope from the proposed Rio Bravo 27-5.

6. The Mesa Verde Group is not capable of commercial production of oil or gas within 2 miles of the proposed disposal well.

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Rio Bravo 27-5 API# 30-045-33583

Part VIII. Geologic Data

The proposed injection intervals are within the Mesa Verde Members. The Ojo Alamo is one of the primary sources of drinking water in the region and has an interval that is suspected to be above the logs that were performed within this well. Since surface casing was set and cemented at 332' the Ojo Alamo is protected from possible contamination. The vertical distance between the Ojo Alamo Formation and the Mesa Verde is at least 3098'. The Kirtland Shale and Lewis shale serve as thick barriers also protecting against water migration to the surface. Fruitland and Pictured Cliffs Formations are sources of water in the peripheral portions of the basin, but within the county of San Juan the TDS count is too high to meet the water quality criteria of the USDW of 10,000 ppm (Kaiser et al., 1994). The water sample well from Big Jake 26-05 only further supports that finding, because it has a TDS of 10,700 ppm. There are no known groundwater resources below the Mesa Verde interval.

Contacts of formations and there depths within Rio Bravo 27-5 wellbore

Nacimiento	Surface
Ojo Alamo Sandstone	approx <300'
Kirtland Shale	approx <300'
Fruitland Coal	1226'
Pictured Cliffs Sandstone	1805'
Lewis Shale	1999'
Cliffhouse Sandstone	3398'
Menefee	3563'
Point Lookout	4199'
Mancos Shale	4579'
Gallup	5775'
Greenhorn Limestone	6272'
Graneros Shale	6333'
Dakota Sandstone	6400'
TD of Wellbore	6675'

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Rio Bravo 27-5 API# 30-045-33583

The lithology of the Mesa Verde Group is typical for what is seen within the surrounding vicinity. Mud logs and gamma rays that were run indicate that Cliffhouse Formation is transgressive event with overall fining upwards from medium to fine sands. Within the mud log report the Cliffhouse is described as sandstones that are brown, medium to fine grained with poor sorting and occasional mix of shales and silt. The lower portion of the Cliffhouse has a thick course event with a higher porosity on the density porosity log of 11 to 15%. There is also a drop in the neutron porosity log suggesting gas hydrogen content, but lack of crossover with the density porosity log signifies extremely high water saturation.
Donesalaar describes the Menefee Formation as having transitions from fluvial sandstone and shale to carbonaceous shale, coal and interbedded sandstones (Doneselaar, 1989). Logs within the vicinity of the Rio Bravo appear to match this description.
The Point Lookout Formation is a regressing sequence that does not have a clean contact with the Mancos. Instead, it has inhomogeneous prograding between fine grained sandstones and shales. The sands of the Point Lookout Formation are described as brown to tan, fine grained, well to poorly sorted including shales and some coals. Near the top of the formation are two larger fine grained intervals with porosities of 5 to 12%. As with the lower portion of the Cliff House, the neutron porosity drops, but does not cross the density porosity, indicating high water saturation.
The angle of strike is S34E or 146 degrees with a dip that is perpendicular to the NE of the strike and is 0.71 degrees. There is no evidence of surface or subsurface faulting within the vicinity.

Part IX. Stimulation Program

Injectivity tests will indicate whether matrix acidizing and/or fracturing will be necessary to permeate the formations. Pressures and rates will be maintained so that the fracture gradient (0.68 psi/ft) will not be exceeded.

Part X. Logging and Test Data.

All logs and test data for the injection well will be submitted to the New Mexico Oil Conservation Division in Aztec, NM.

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Application for Authorization to Inject

Rio Bravo 27-5 API# 30-045-33583

Part. XI. Fresh Water Samples

A records search of water wells located within one mile of the proposed disposal well was conducted and found 18 wells of which none of them appear to be active. The records search was performed using the New Mexico Office of the State Engineer website at http://www.ose.state.nm.us/. Upon further research of the wells within the area, it was determined that there are no chemical analysis availible to public as they are all privatly owned.

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Part XII Statement of Geologic and Engineering Data

I have examined all available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

Melanie D Peterson
Melanie Peterson, Geologist

12/14/09
Date

Ji Rim, Lead Engineer

12/14/09
Date

Attachment 1

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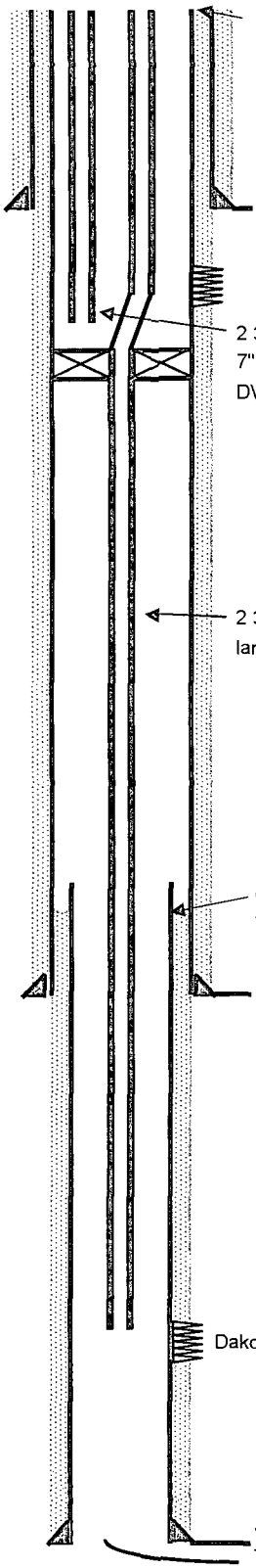
Rio Bravo 27-05
Current Schematic



Elevation: 5676'KB
TOC on 7", 1st stage circulated to surface. Cmt w/ 336 sx.
TOC on 7" 2nd stage circulated to surface. Cmt w/ 205 sx.
Confirmed with CBL to a depth of 275'

9 5/8" 36# J55 STC CSA 332'
Cement filled annulas to surface.

Fruitland Perforations @ 1630-1796' (gross)

2 3/8" tbg, J-55 4.7#, EUE (Fruitland String)
7" Weatherford (86-32) permament packer @ 2021'
DV Tool SA 2059.

2 3/8" tbg, J-55 4.7#, EUE (Dakota String)
landed @ ~6504'.

Chemical cut 4 1/2" casing @ 4339'
TOC on 4 1/2" CSG @ 4636' by CBL

7" 23# N-80 LTC CSA @ 4640'

Dakota perforations @ 6442' - 6544' (gross)

4 1/2" 11.6# N80 LTC CSA 6675' w/ 160 sx
TD: 6675'

Location: 1505' FNL, 1245' FWL,
Sec 27, T31N, R13W,
San Juan County, New Mexico

Field: La Plata
Basin Dakota/Blanco Mesa Verde

API #: 30-045-33583
Spud Date: October 2, 2006

Geoprognosis:

Fruitland Coal - 1226'
Pictured Cliffs - 1805'
Lewis - 1999'
Cliffhouse - 3398'
Menefee - 3517'
Point Lookout - 4199'
Gallup - 5771'
Dakota - 6392'

12/14/2009

Attachment 1

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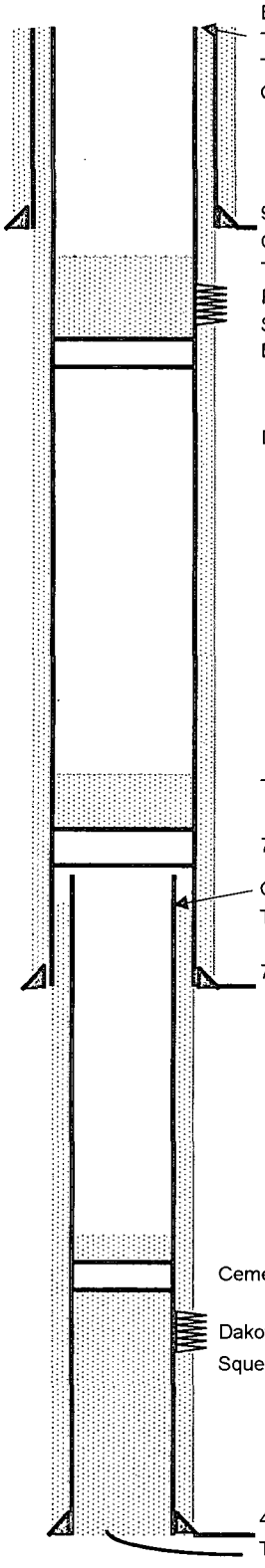
Rio Bravo 27-05
P&A Dakota & Fruitland
Schematic



Elevation: 5676'KB
TOC on 7", 1st stage circulated to surface. Cmt w/ 336 sx.
TOC on 7" 2nd stage circulated to surface. Cmt w/ 205 sx.
Confirmed with CBL to a depth of 275'

9 5/8" 36# J55 STC CSA 332'
Cement filled annulas to surface.
TOC @ 1600' where packer was set
Fruitland Perforations @ 1630-1796' (gross) - Squeezed
Squeezed with 164 sx of cement (200% excess)
Drillable BP @ 1900'

DV Tool SA 2059.

TOC @ 4310 by volume Calculations (0% excess)

7" CIBP @ 4335' w/ 5 sx cement on top

Chemical cut 4 1/2" casing @ 4339'
TOC on 4 1/2" CSG @ 4636' by CBL

7" 23# N-80 LTC CSA @ 4640'

Cement Retainer @ 6380' with 5 sx cement on top

Dakota perforations @ 6442' - 6544' (gross) - Squeezed
Squeezed and plugged with 55 sx of cement (160% excess)

4 1/2" 11.6# N80 LTC CSA 6675' w/ 160 sx
TD: 6675'

Location: 1505' FNL, 1245' FWL,
Sec 27, T31N, R13W,
San Juan County, New Mexico

Field: La Plata
Basin Dakota/Blanco Mesa Verde

API #: 30-045-33583
Spud Date: October 2, 2006

Geoprognosis:

Fruitland Coal - 1226'
Pictured Cliffs - 1805'
Lewis - 1999'
Cliffhouse - 3398'
Menefee - 3517'
Point Lookout - 4199'
Gallup - 5771'
Dakota - 6392'

12/14/2009

Attachment 1

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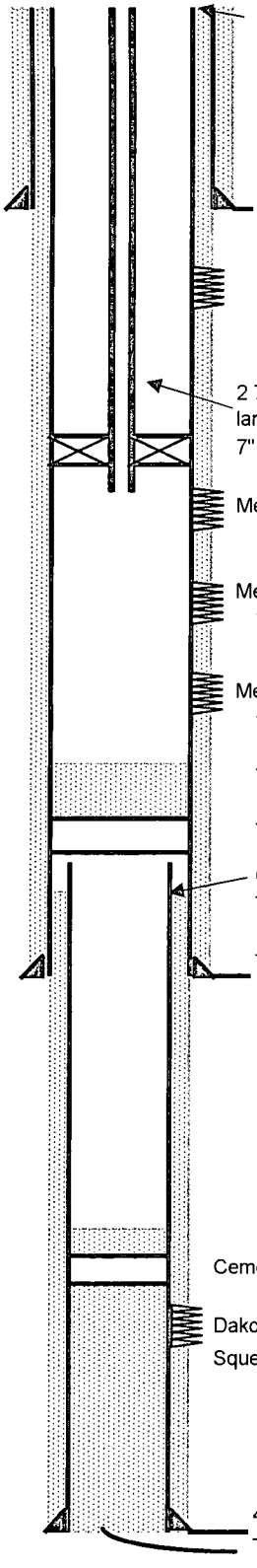
Rio Bravo 27-05
SWD Proposal Schematic



Elevation: 5676'KB
TOC on 7", 1st stage circulated to surface. Cmt w/ 336 sx.
TOC on 7" 2nd stage circulated to surface. Cmt w/ 205 sx.
Confirmed with CBL to a depth of 275'

9 5/8" 36# J55 STC CSA 332'
Cement filled annulas to surface.

Fruitland Perforations @ 1630-1796' (gross) - Squeezed
Squeezed with 164 sx of cement (200% excess)
DV Tool SA 2059.

2 7/8" internally coated tbg, J-55 6.4#, EUE
landed @ ~3480'.
7" Weatherford Arrowset 1X Ret Packer w/ on off tool @ 3410'

Mesaverde (Cliffhouse) perforations @3487' to 3517' (gross)
*30' net perf interval @ 4spf 120° phase, 120 total shots

Mesaverde (Menefee) perforations @3536' to 3568' (gross)
*32' net perf interval @ 4spf 120° phase, 128 total shots

Mesaverde (Point Lookout) Perforations @ 4200' - 4286' (gross)
*86' net perf interval @ 4spf 120° phase, 344 total shots

TOC @ 4310 by volume Calculations (0% excess)

7" CIBP @ 4335' w/ 5 sx cement on top

Chemical cut 4 1/2" casing @ 4339'
TOC on 4 1/2" CSG @ 4636' by CBL

7" 23# N-80 LTC CSA @ 4640'

Cement Retainer @ 6380' with 5 sx cement on top

Dakota perforations @ 6442' - 6544' (gross) - Squeezed
Squeezed and plugged with 55 sx of cement (160% excess)

4 1/2" 11.6# N80 LTC CSA 6675' w/ 160 sx
TD: 6675'

Location: 1505' FNL, 1245' FWL,
Sec 27, T31N, R13W,
San Juan County, New Mexico

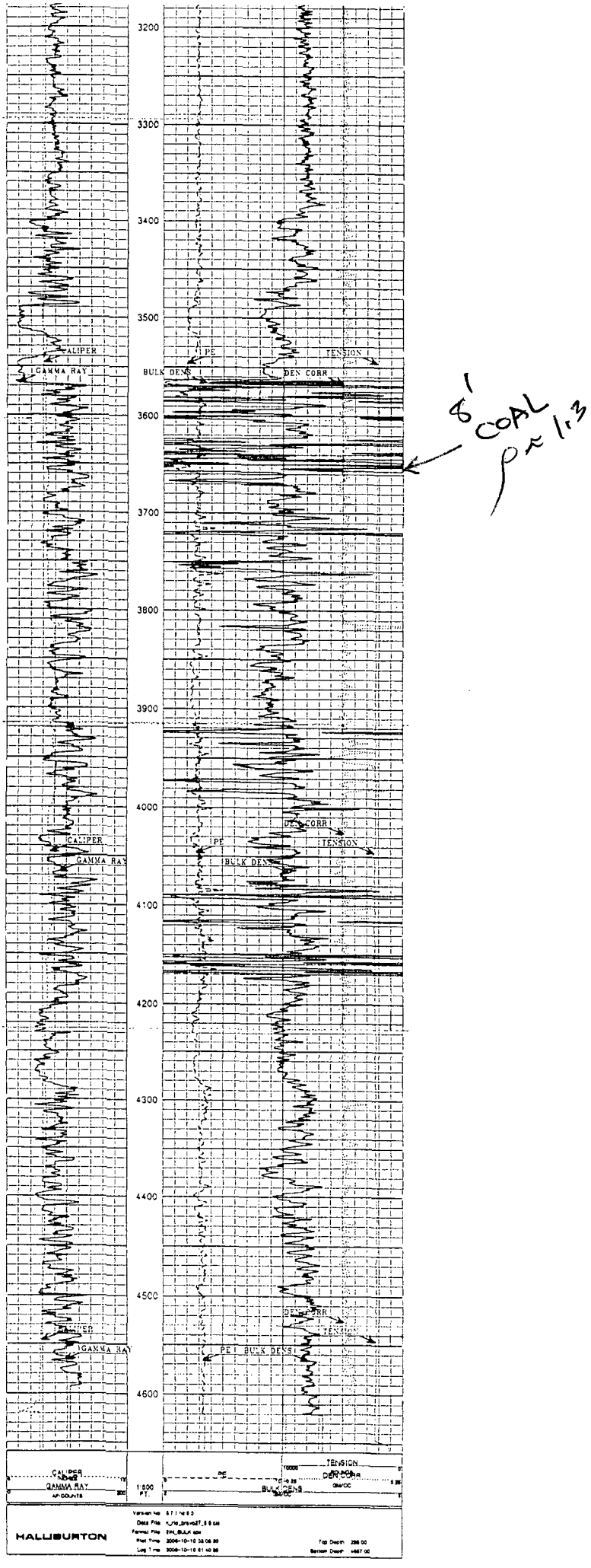
Field: La Plata
Basin Dakota/Blanco Mesa Verde

API #: 30-045-33583
Spud Date: October 2, 2006

Geoprognosis:

Fruitland Coal - 1226'
Pictured Cliffs - 1805'
Lewis - 1999'
Cliffhouse - 3398'
Menefee - 3517'
Point Lookout - 4199'
Gallup - 5771'
Dakota - 6392'

12/14/2009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CALIPER
GAMMA RAY
PE
BULK DENS
DEN CORR
TENSION
8' COAL
ρ ≈ 1.3
1:500
HALLIBURTON

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
DEEP RESISTIVITY LOG

COMPANY: PATINA OIL & GAS CORPORATION
WELL: RIO BRAVO 27 No. 3
FIELD: BASIN FRUITLAND COAL / BASIN DK
COUNTY: SAN JUAN STATE: NM

RCVD OCT30'06
OIL CONS. DIV.
DIST. 3

Service Ticket No.: 4888403	API Serial No.: 300453384300	PSM Version: XL v4.64

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLES			RESISTIVITY SCALE CHANGES			
Date / Sample No.			Type Log	Depth	Scale Up Hole	Scale Down Hole
Depth - Driller						
Type Fluid						
In Hole						
Dens / Visc						
PH / Fluid Loss						

			RESISTIVITY EQUIPMENT DATA				
Source of Sample			Run No.	Tool Type & No	Pad Type	Tool Pos	Other
Rm @ Meas. Temp	@	@	ONE	HRI #1338008	N/A	1.5 S.O	N/A
Rmf @ Meas. Temp	@	@	TWO	HRI #1338008	N/A	FREE	N/A
Rmc @ Meas. Temp	@	@					
Source Rmf / Rmc							
Rm @ BHT	@	@					
Rmf @ BHT	@	@					
Rmc @ BHT	@	@					

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No	TWO	Run No		Run No	TWO	Run No	TWO
Serial No	A196	Serial No		Serial No	1382P048	Serial No.	108716
Model No	NGRT-A	Model No		Model No	SDL_DA	Model No	DSN_II
Diameter	3.626"	No. of Cent.		Diameter	4.5"	Diameter	3.626"
Detector Model No.	102-A	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT.			Source Type	Cs137	Source Type	Am241Be
Length	4"	LSA (Y/N)		Serial No	2647GW	Serial No	DSN-34
Distance to Source	10"	SSDA (Y/N)		Strength	1.6 Ci	Strength	18.5 Ci

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	T.D	CSG	REC	0	200				30%	-10%	2.65	30%	-10%	SAND
TWO	T.D	CSG	REC	0	200				30%	-10%	2.65	30%	-10%	SAND

DIRECTIONAL INFORMATION

Maximum Deviation		deg @		KOP	

Remarks:

RUN 1- HRI/SDL/DSN/GR RAN IN COMBINATION.
ANNULAR HOLE VOLUME CALCULATED FOR 7.0" CASING.
ANNULAR HOLE VOLUME = 881 CU/FT.
DFL ANOMALIES AT 1650' NOTED ON DOWNLOG.
RUN 2- HRI/SDL/DSN/GR RAN IN COMBINATION.
ANNULAR HOLE VOLUME CALCULATED FOR 4.5" CASING. ANNULAR HOLE VOLUME = 277 CU/FT.
BOREHOLE RUGOSITY, TENSION PULLS AND WASHOUTS MAY AFFECT TOOL RESPONSE.
CALIPER CLOSED AT CASING SHOE DUE TO TENSION PULL.
TODAY'S CREW IS-- R. RUSSELL & R. ARANDA. RIG-- BEARCAT No. 2.
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, FARMINGTON, NM.

Current EXCELL-2000 Parameter Values

Depth: 4262.000
Date: 20-Oct-2006 12:32:
Service Number: 2100
Software Version: 5.7

Mnemonic	Tool	Parameter Description	Value	Units
PERF	DITSHD	PERFORATED INTERVAL	NO	
TD	DITSHD	TOTAL DEPTH	6665.	FT
CS_ANT	DITSHD	CASING DEPTH (FOR ANNOTATION)	4634.	FT
ANTSPA	DITSHD	ANNOTATION LABEL SPACING	500.	Ft
D4IN	D4TS	USE D4TG FOR INCLINATION?	NO	
GR_OK	GAMMA	DO GAMMA CALCULATIONS?	YES	
CASED	SHARED	CASED HOLE?	NO	
CASEOD	SHARED	CASING DIAMETER (OD)	4.5	Inches
MUDWT	SHARED	BOREHOLE FLUID WEIGHT	8.699999	Pounds/Gal.
GRSO	GAMMA	GAMMA RAY STANDOFF	0.	Inches
BS	SHARED	BIT SIZE	6.25	Inches
DSN_OK	DSN_II	DO DSN II CALCULATIONS?	YES	
DRILL	DSN_II	TPL - NEUTRON IN SLEEVE?	NO	
BADHOL	DSN_II	DSN BAD HOLE CORRECTION	NO	
NLITH	DSN_II	NEUTRON LITHOLOGY	SAND	
DSNSO	DSN_II	DSN STANDOFF	0.	Inches
DSNTMP	DSN_II	DSN II TEMPERATURE CORRECTION	NONE	
DSNPRS	DSN_II	DSN II PRESSURE CORRECTION	NONE	
SDL_OK	SDL_DA	DO SDL CALCULATIONS?	YES	
EVR_OK	SDL_DA	DO SDL EVR CALCULATIONS?	YES	
AIR	SDL_DA	AIR FILLED BOREHOLE?	NO	
LOGB	SDL_DA	LOGGING CAL BLOCKS?	NO	
SDLTC	SDL_DA	SDL TEMPERATURE CORRECTION?	YES	
MUDT	SDL_DA	MUD CORRECTION TYPE?	NONE	
RHOMAT	SDL_DA	MATRIX DENSITY	2.65	Grams/CC
RHOFLU	SDL_DA	FLUID DENSITY	1.	Grams/CC
CAL_OK	CAL_DA	DO CALIPER CALCULATIONS?	YES	
AHVOK	CAL_DA	DO ANNULAR VOLUME CALCULATION?	YES	
HRI_OK	HRIDE	DO HRI INDUCTION CALCULATION?	YES	
DFL_OK	HRIDE	DO DFL CALCULATIONS?	YES	
PYRITE	HRIDE	PYRITE SWITCH	NO	OHMM
CASING	HRIDE	CASING DEPTH	0.	Feet
HRIDSP	HRIDE	SPIKE REDUCTION FILTER TYPE?	DELT	
HRITC	HRIDE	HRI TEMPERATURE CORRECTION	NONE	
CTEM	HRIDE	CONST TEMPERATURE	75.	DegF
BHT	HRIDE	BOTTOM HOLE TEMPERATURE	175.	Degrees F.
TSURF	HRIDE	SURFACE TEMPERATURE	60.	Degrees F
BHD	HRIDE	BOTTOM HOLE DEPTH	10000.	Feet
SP	HRIDE	USE DIGITAL SP?	NO	
SP_OF	HRIDE	SPONTANEOUS POTENTIAL OFFSET	0.	
RMUD	HRIDE	MUD RESIST AT SURFACE (0=Air)	3.63	OHMM
TRM	HRIDE	TEMPERATURE OF MUD	68.	DEGF
RRMIN	HRIDE	MINIMUM RESISTIVITY FOR MAP?	0.2	OHMM
RRMAX	HRIDE	MAXIMUM RESISTIVITY FOR MAP?	200.	OHMM

BULK DENSITY PRESENTATION
MAIN LOG SECTION
2"=100'

HALLIBURTON

Version No: 6.7.1 hd 8.0
Data File: n_rio_bravo27_3 6 sis
Format File: SIN_BULK sps
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Log Time: 2006-10-10 01:40:56
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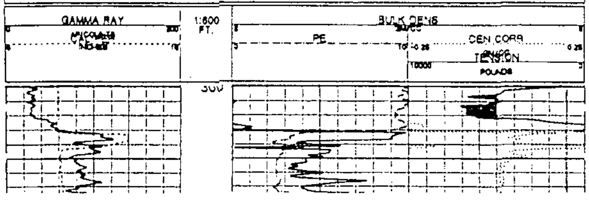

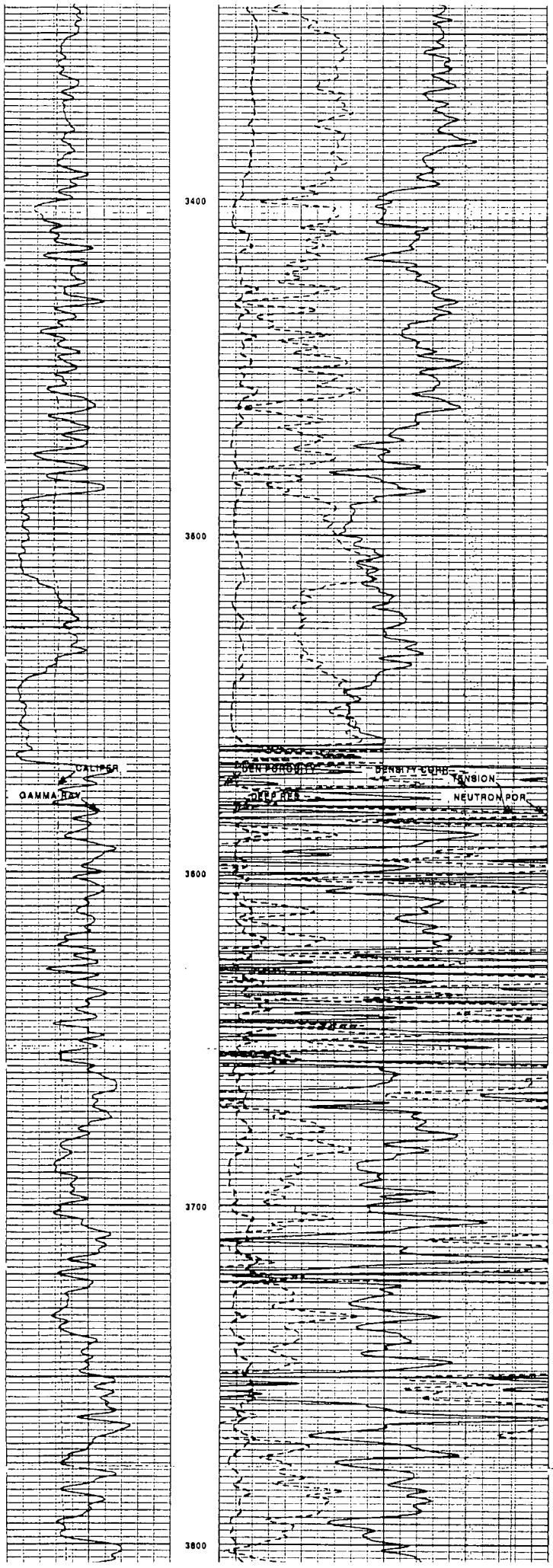
3400
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3600
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CALIPER
GAMMA RAY
DENSITY CURR
TENSION
NEUTRON POR

HALLIBURTON

HIGH RESOLUTION INDUCTION LOG

COMPANY PATINA OIL & GAS CORPORATION
WELL RIO BRAVO 27 No. 5
FIELD BASIN FRUITLAND COAL / BASIN
COUNTY SAN JUAN STATE NM

COMPANY PATINA OIL & GAS CORPORATION
WELL RIO BRAVO 27 No. 5
FIELD BASIN FRUITLAND COAL / BASIN DK
COUNTY SAN JUAN STATE NM

Other Services: RCVD OCT30'06 OIL CONS. DIV. DIST. 3

Sect 27 Twp 31N Rge 13W

Permanent Datum GROUND LEVEL Elev. 5617
Log measured from KB 12 above perm. datum
Drilling measured from KELLY BUSHING
Elev.: KB 5685, DF 5684, GL 5617

Service Ticket No.: 4409433	API Serial No.: 300453363300	PCM Version: KUV4.84

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLES			RESISTIVITY SCALE CHANGES			
Date / Sample No.			Type Log	Depth	Scale Up Hole	Scale Down Hole
Depth - Driller						
Type Fluid						
in Hole						
Dens. / Visc.						
Ph / Fluid Loss						
Source of Sample						

			RESISTIVITY EQUIPMENT DATA				
			Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Rm @ Meas. Temp	@	@					
Rmf @ Meas. Temp	@	@	ONE	HRI #1338208	N/A	1.5 S.O.	N/A
Rmc @ Meas. Temp	@	@	TWO	HRI #1338208	N/A	FREE	N/A
Source Rmf / Rmc							
Rm @ BHT	@	@					
Rmf @ BHT	@	@					
Rmc @ BHT	@	@					

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	TWO	Run No.		Run No.	TWO	Run No.	TWO
Serial No.	A186	Serial No.		Serial No.	1380P049	Serial No.	108718
Model No.	NGRT-A	Model No.		Model No.	SDL_DA	Model No.	DSN_II
Diameter	3.625"	No. of Cent.		Diameter	4.5"	Diameter	3.625"
Detector Model No.	102-A	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT.			Source Type	Cs137	Source Type	Am241Be
Length	4"	LSA (Y/N)		Serial No.	2647 GW	Serial No.	DSN-34
Distance to Source	10	FWDA (Y/N)		Strength	1.5 Ci	Strength	18.5 Ci

LOGGING DATA

GENERAL				GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale			Scale			Scale		
No.	From	To	Ft/Min	L	R	L	R	Matrix	L	R	Matrix	L	R	Matrix
ONE	T.D.	CSG	REC	0	200				30%	-10%	2.65	30%	-10%	SAND
TWO	T.D.	CSG	REC	0	200				30%	-10%	2.65	30%	-10%	SAND

DIRECTIONAL INFORMATION

Maximum Deviation		deg @		KOP

Remarks:

RUN 1- HRI/SDL/DSN/GR RAN IN COMBINATION.
ANNULAR HOLE VOLUME CALCULATED FOR 7.0" CASING.
ANNULAR HOLE VOLUME = 881 CU/FT.
DFL ANOMALIES AT 1650' NOTED ON DOWNLOG.
RUN 2- HRI/SDL/DSN/GR RAN IN COMBINATION.
ANNULAR HOLE VOLUME CALCULATED FOR 4.5" CASING. ANNULAR HOLE VOLUME = 277 CU/FT.
BOREHOLE RUGOSITY, TENSION PULLS AND WASHOUTS MAY AFFECT TOOL RESPONSE.
CALIPER CLOSED AT CASING SHOE DUE TO TENSION PULL.
TODAY'S CREW IS-- R. RUSSELL & R. ARANDA. RIG-- BEARCAT No. 2.
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, FARMINGTON, NM.

Current EXCELL-2000 Parameter Values
Depth: 4262.000
Date: 20-Oct-2006 12:32:
Service Number: 2100
Software Version: 5.7

Mnemonic	Tool	Parameter Description	Value	Units
PERF	DITSHD	PERFORATED INTERVAL	NO	
TD	DITSHD	TOTAL DEPTH	6665.	FT
CS_ANT	DITSHD	CASING DEPTH (FOR ANNOTATION)	4634.	FT
ANTSPA	DITSHD	ANNOTATION LABEL SPACING	500.	Ft
D4IN	D4TS	USE D4TG FOR INCLINATION?	NO	
GR_OK	GAMMA	DO GAMMA CALCULATIONS?	YES	
CASED	SHARED	CASED HOLE?	NO	
CASEOD	SHARED	CASING DIAMETER (OD)	4.5	Inches
MUDWT	SHARED	BOREHOLE FLUID WEIGHT	8.699998	Pounds/Gal.
GRSO	GAMMA	GAMMA RAY STANDOFF	0.	Inches
BS	SHARED	BIT SIZE	6.25	Inches
DSN_OK	DSN_II	DO DSN II CALCULATIONS?	YES	
DRILL	DSN_II	TPL - NEUTRON IN SLEEVE?	NO	
BADHOL	DSN_II	DSN BAD HOLE CORRECTION	NO	
NLITH	DSN_II	NEUTRON LITHOLOGY	SAND	
DSNSO	DSN_II	DSN STANDOFF	0.	Inches
DSNTMP	DSN_II	DSN II TEMPERATURE CORRECTION	NONE	
DSNPRS	DSN_II	DSN II PRESSURE CORRECTION	NONE	
SDL_OK	SDL_DA	DO SDL CALCULATIONS?	YES	
EVR_OK	SDL_DA	DO SDL EVR CALCULATIONS?	YES	
AIR	SDL_DA	AIR FILLED BOREHOLE?	NO	
LOGB	SDL_DA	LOGGING CAL BLOCKS?	NO	
SDLTC	SDL_DA	SDL TEMPERATURE CORRECTION?	YES	
MUDT	SDL_DA	MUD CORRECTION TYPE?	NONE	
RHOMAT	SDL_DA	MATRIX DENSITY	2.65	Grams/CC
RHOFLU	SDL_DA	FLUID DENSITY	1.	Grams/CC
CAL_OK	CAL_DA	DO CALIPER CALCULATIONS?	YES	
AHVOK	CAL_DA	DO ANNULAR VOLUME CALCULATION?	YES	
HRI_OK	HRIDE	DO HRI INDUCTION CALCULATION?	YES	
DFL_OK	HRIDE	DO DFL CALCULATIONS?	YES	
PYRITE	HRIDE	PYRITE SWITCH	NO	OHMM
CASING	HRIDE	CASING DEPTH	0.	Feet
HRIDSP	HRIDE	SPIKE REDUCTION FILTER TYPE?	DELT	
HRITC	HRIDE	HRI TEMPERATURE CORRECTION	NONE	
CTEM	HRIDE	CONST TEMPERATURE	75.	DegF
BHT	HRIDE	BOTTOM HOLE TEMPERATURE	175.	Degrees F.
TSURF	HRIDE	SURFACE TEMPERATURE	60.	Degrees F
BHD	HRIDE	BOTTOM HOLE DEPTH	10000.	Feet
SP	HRIDE	USE DIGITAL SP?	NO	
SP_OF	HRIDE	SPONTANEOUS POTENTIAL OFFSET	0.	
RMUD	HRIDE	MUD RESIST AT SURFACE (0=Air)	3.63	OHMM
TRM	HRIDE	TEMPERATURE OF MUD	69.	DEGF
RAMIN	HRIDE	MINIMUM RESISTIVITY FOR MAP?	0.2	OHMM
RAMAX	HRIDE	MAXIMUM RESISTIVITY FOR MAP?	200.	OHMM

INDUCTION-CONDUCTIVITY PRESENTATION
MAIN LOG SECTION
2"=100'

HALLIBURTON

Version No: 5.7 | hs:3.5
Data File: n_rio_bravo27_5.6.sis
Format File: SIN_HRI_RUN1.sps
Plot Time: 2006-10-20 03:08:39
Log Time: 2006-10-20 01:45:29
Top Depth: 300.00
Bottom Depth: 4467.65

GAMMA RAY	1:600	DEEP COND	
0 APICOUNTS 300	FT.	400 MMHO 0	
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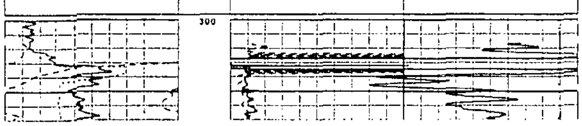
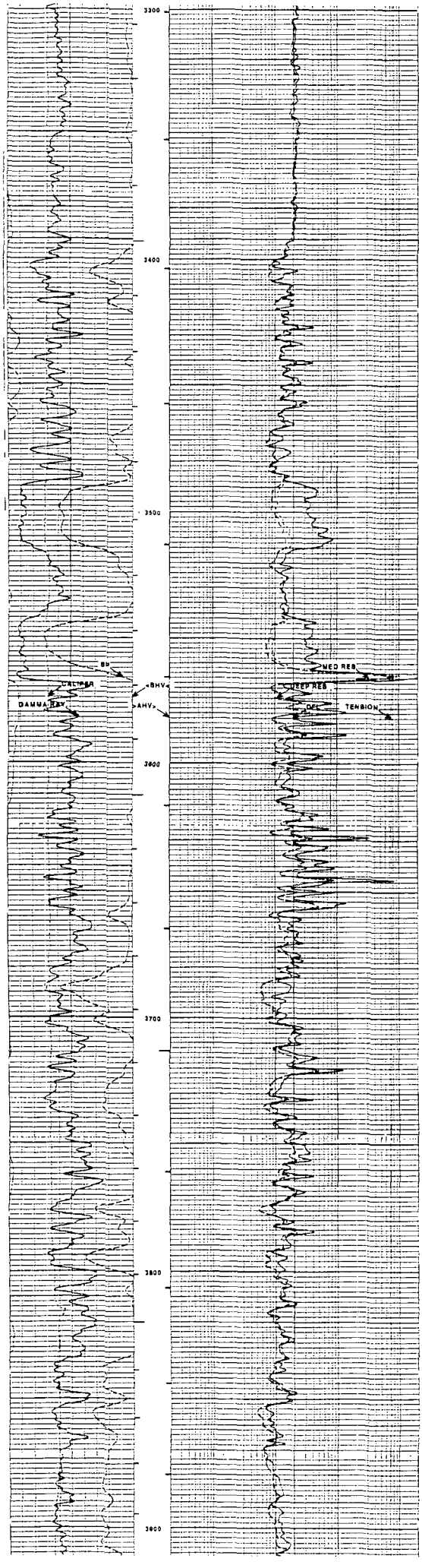
CALIPER 6 INCHES 16		DFL 0 OHMM 100	

300

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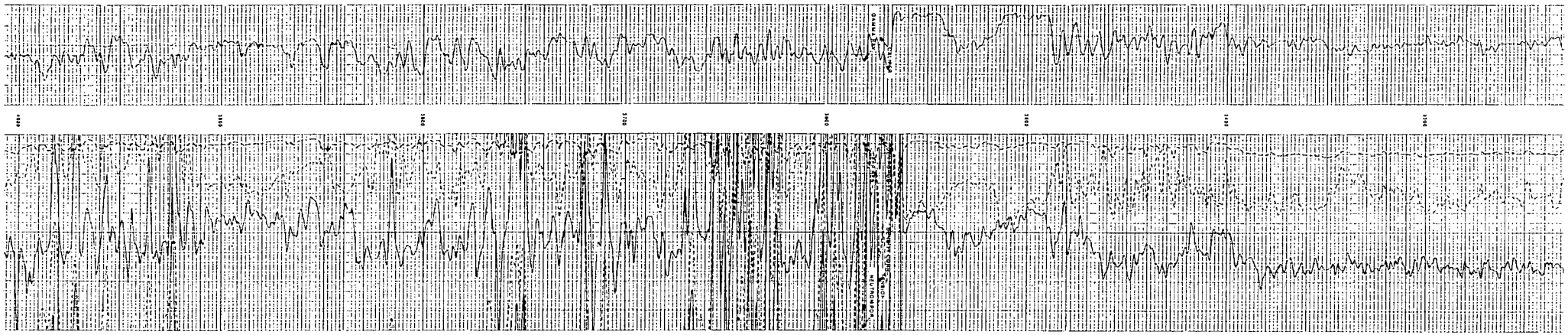


Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED
2009 SEP 28 PM 2 10

Form C-103
June 19, 2008

WELL API NO.	30-045-33583
5. Indicate Type of Lease	STATE ☐ FEE ☒
6. State Oil & Gas Lease No.	25016
7. Lease Name or Unit Agreement Name	RIO BRAVO 27
8. Well Number	05
9. OGRID Number	234550
10. Pool name or Wildcat	BASIN DK/BASIN FRUITLAND COAL

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☐ Gas Well ☒ Other

2. Name of Operator
NOBLE ENERGY, INC.

3. Address of Operator
5802 US HIGHWAY 64 FARMINGTON, NEW MEXICO 87041

4. Well Location
Unit Letter E : 1505 feet from the NORTH line and 1245 feet from the WEST line
Section 27 Township 31N Range 13W NMPM SAN JUAN County, NEW MEXICO

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
5673' GL

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	P AND A	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPL	☐	CASING/CEMENT JOB	☐		
DOWNHOLE COMMINGLE	☐						
OTHER: CONVERT GAS WELL TO A SALT WATER INJECTION WELL	☒			OTHER:	☐		

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

NOBLE ENERGY, INC. RESPECTFULLY MAKES THIS REQUEST AS THE NOTICE OF INTENT TO CONVERT THE SUBJECT WELL FROM AN UNECONOMIC PRODUCING GAS WELL INTO A SALT WATER INJECTION WELL.

The following documents are attached:

1. Procedures for the conversion
2. Well Plat
3. Proposed Injection Facility Diagram
4. Topographical map
5. Down-hole well bore schematic

NOBLE ENERGY, INC. proposes the conversion to begin by October 1, 2009, upon approval from the NMOCD.

Spud Date: Rig Release Date:

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

SIGNATURE TITLE REGULATORY COMPLIANCE DATE 09/22/2009

Type or print name JEAN M. MUSE E-mail address: jmuse@nobleenergyinc.com PHONE: 303-228-4316

For State Use Only

APPROVED BY: TITLE DATE

Conditions of Approval (if any):

noble energy

Squeeze Fruitland & Plug Dakota

WELL NAME:	Rio Bravo 27-05	**DATE:**	
LOCATION:	NE/SW/NW Sec 27 T31N R13W	**API:**	30-045-33583
COUNTY:	San Juan		
STATE:	New Mexico		
FIELD:	La Plata		
OBJECTIVE:	Squeeze Fruitland Perforations & Plug Dakota		
TARGET FORMATION:	Fruitland Coal / Dakota	**DEPTH:**	1226' / 6392'
COMPLETION STATUS:	Multiple - FC / Dakota		
TOTAL DEPTH:	6675'		
PLUG BACK TD:	6675'		

DISCUSSION: This well was spud on 10/2/2006 and was intially completed as a multiple completion in the Dakota (6442' - 6544') and the Fruitland (1630' - 1796'). The fruitland is no longer economical and needs to be plugged by cement squeeze. The Dakota has minimal economic life remaining and will be plugged. This will allow for future plans of converting the well into a SWD well into the Mesaverde.

PROCEDURE:

1) Install and test rig anchors.Comply with all NMOCD, BLM, & Noble Energy's safety rules and regulations.
2) MIRU workover rig
3) Release rods and TOH laying down rods and pump.
4) ND wellhead and NU BOP. Test 3k psi BOP.
5) TOH with 2 3/8" tubing (Fruitland string)
6) TOH with 2 3/8" tubing (Dakota string)
7) PU packer plucker and TIH
8) Retrieve 7" Weatherford (86-32) permament packer @ 2021'.
9) TOH with packer and tbg
10) Blowdown well & kill with water as necessary.
11) RU wireline and set cement retainer @ 6380'
12) TIH with stinger and tbg
13) Sting into retainer.
14) RU cementing unit and mix 60 sx of Class B cement.
15) Begin squeeze into Dakota with 55sx and establish rate into perforations.
16) Sting out of retainer.

17) Pump the remaining 5 sx of cement on top of retainer. Circulate tbg clean.
18) TOH with tbg and stinger.
19) RIH with 7" wireline CIBP and set at 4335'.
20) TIH with open ended tubing and tag CIBP. Load casing with water and pressure test to 2000 psi.
21) RU cementing unit and mix 5 sx of class B cement. Spot or Tag plug as appropiate.
22) Spot 5 sx of Class B cement above CIBP to provide base for disposal.
23) TOH with open ended tbg.
24) RU wireline and RIH with 7" wireline drillable BP and set @ 1900'. Dump bail 2 sx cement on top of BP.
25) TIH with packer to below Fruitland perforations and set packer @ 1850'
26) Pressure test BP to 2000 psi.
27) Release packer and pull up to 1600' and reset packer, above Fruitland perforations.
28) RU cementing unit and mix 164 sx class B cement.
29) Begin squeeze into Dakota with 164sx and establish rate into perforations.
30) Leave SI overnight to WOC
31) Release packer and TOH.
32) Check with district before proceeding.

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
PO Drawer DD, Artesia, NM 88211-0719

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

Form C-102
Revised February 21, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹API Number	²Pool Code	³Pool Name
	71599 / 71629	BASIN DAKOTA / BASIN FRUITLAND COAL

⁴Property Code	⁵Property Name	⁶Well Number
	RIO BRAVO 27	05

⁷OGRID No.	⁸Operator Name	⁹Elevation
173252	PATINA SAN JUAN, INC.	5673'

¹⁰ Surface Location

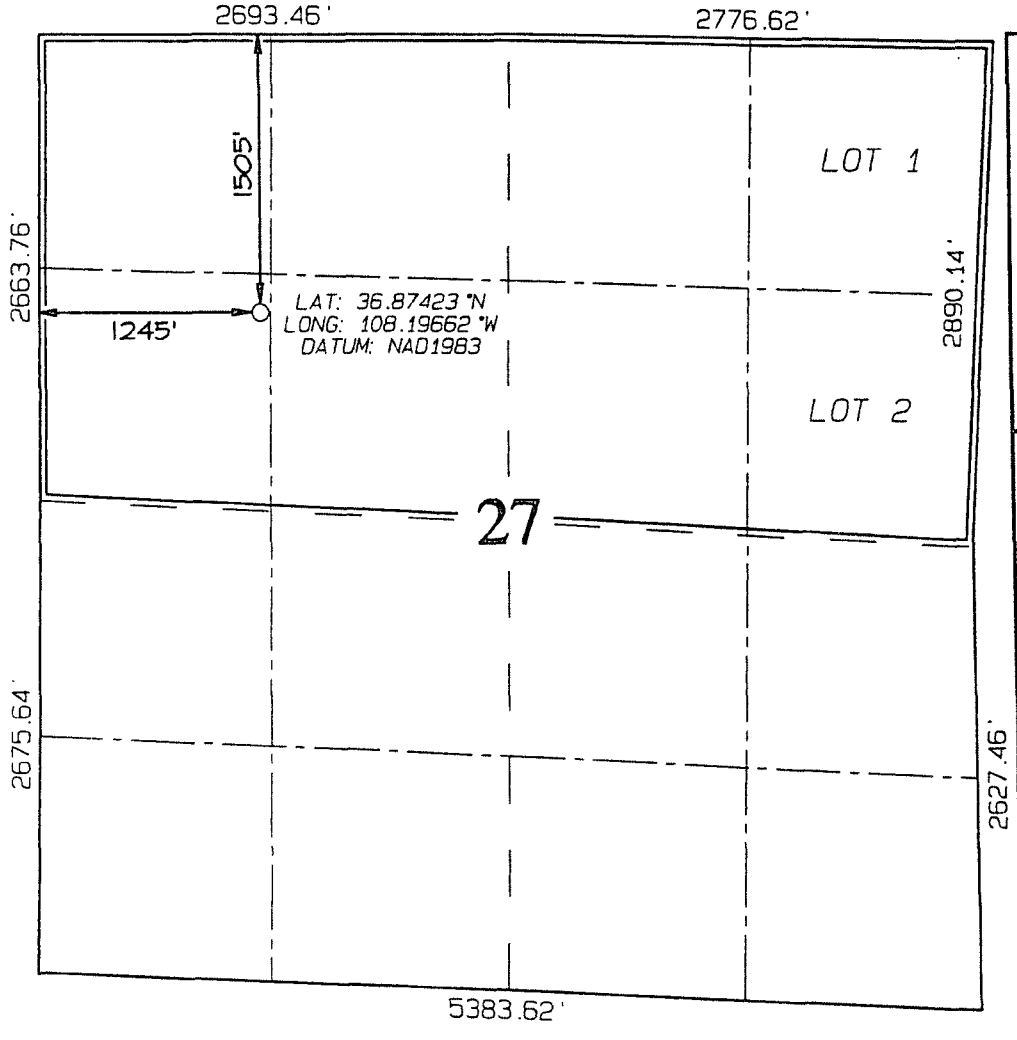
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	27	31N	13W		1505	NORTH	1245	WEST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
329.25 Acres - (N/2)			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief

Signature

Printed Name

Title

Date

¹⁸ SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Survey Date: JANUARY 25, 2006

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

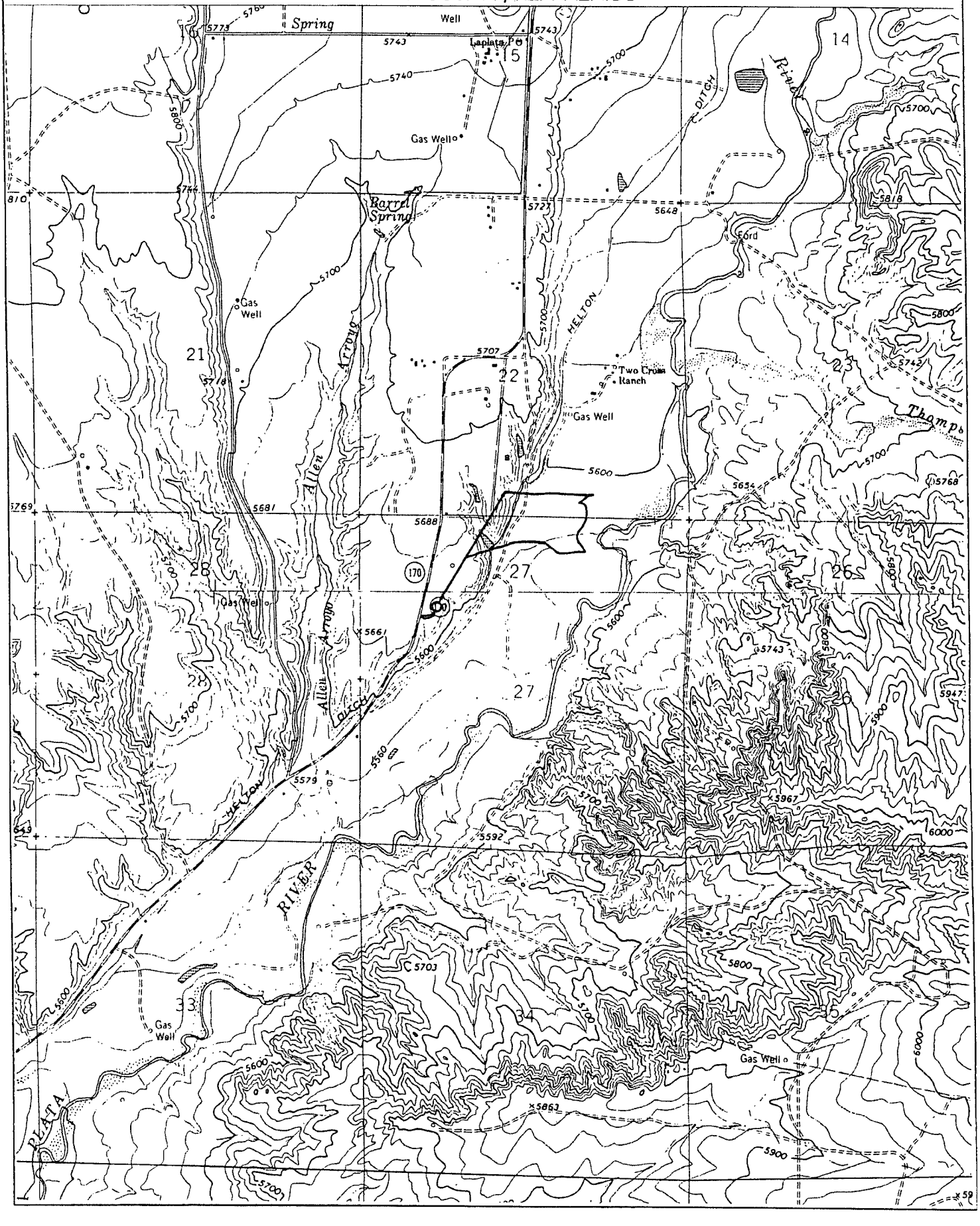
JASON C. EDWARDS

Certificate Number 15269

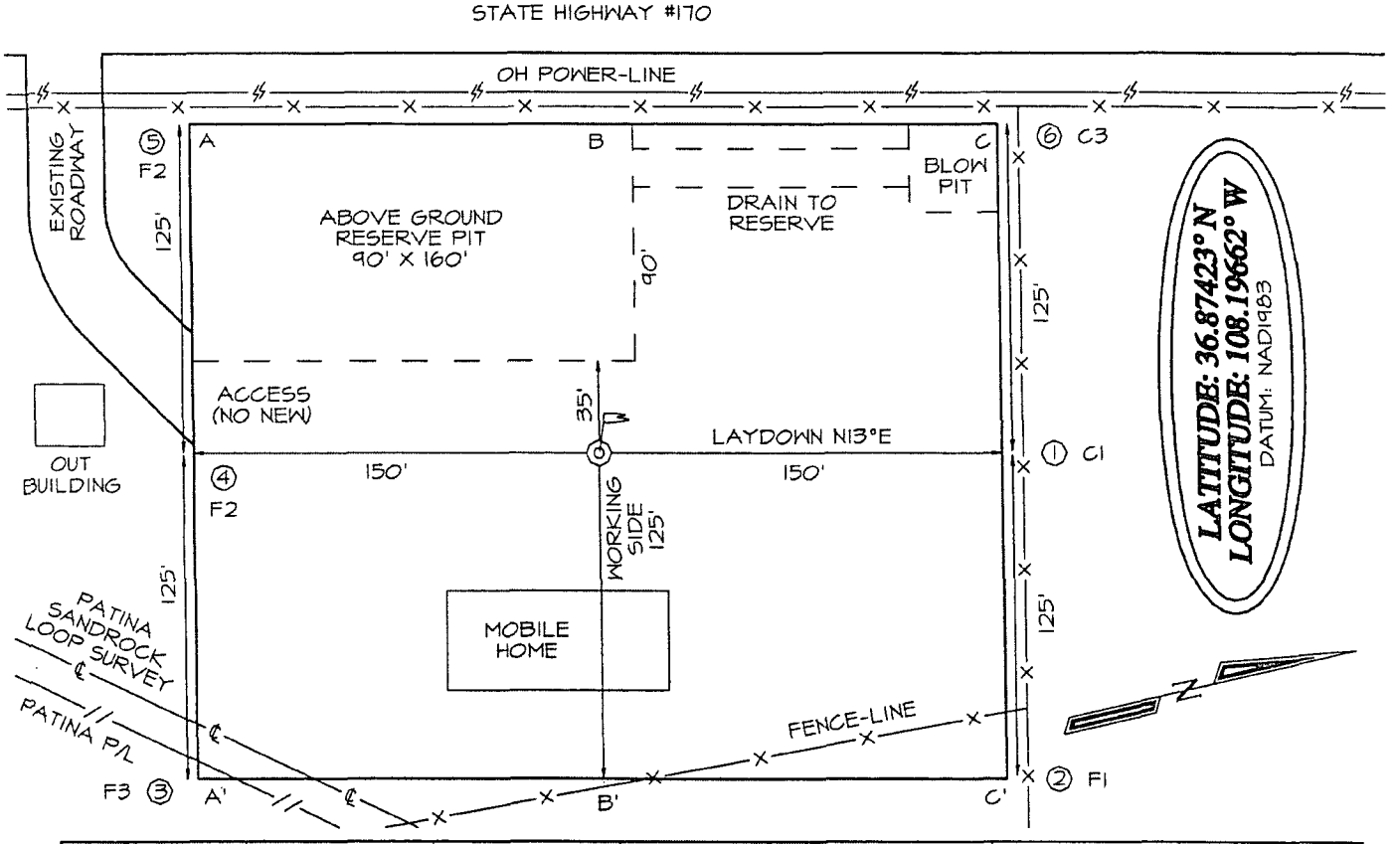
PATIN, SAN JUAN, INC. RIO BRAVO 27 #05

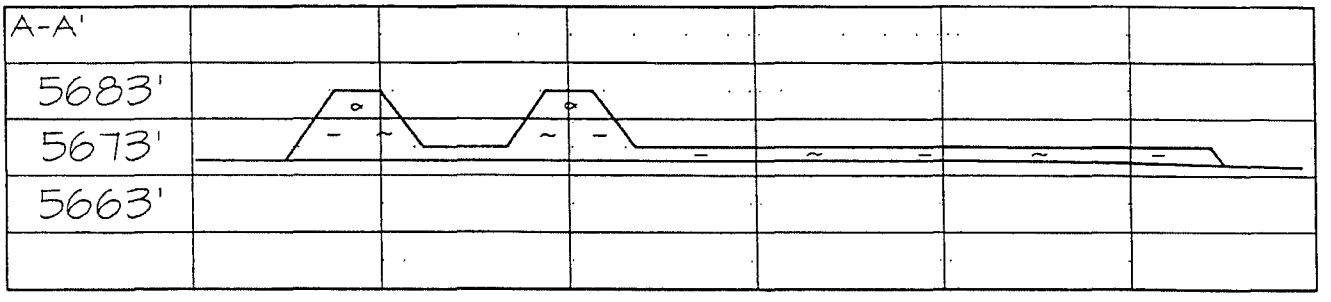
1505' FNL & 1245' FWL, SECTION 27, T31N, R13W, N.M.P.M.

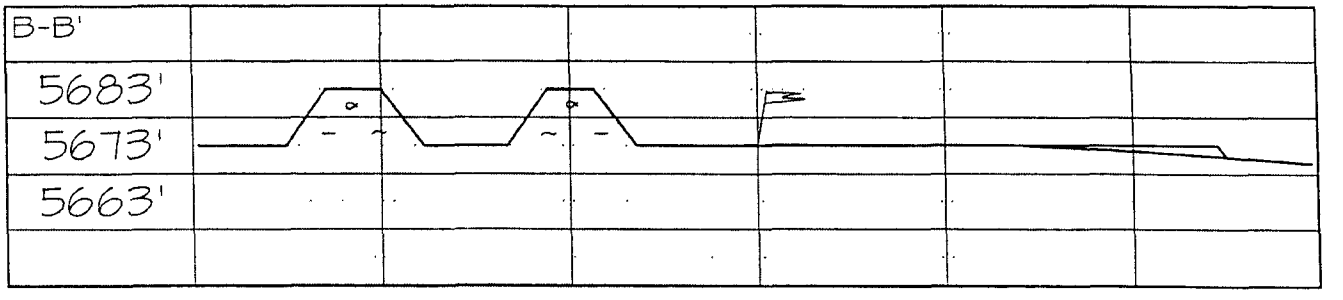
SAN JUAN COUNTY, NEW MEXICO

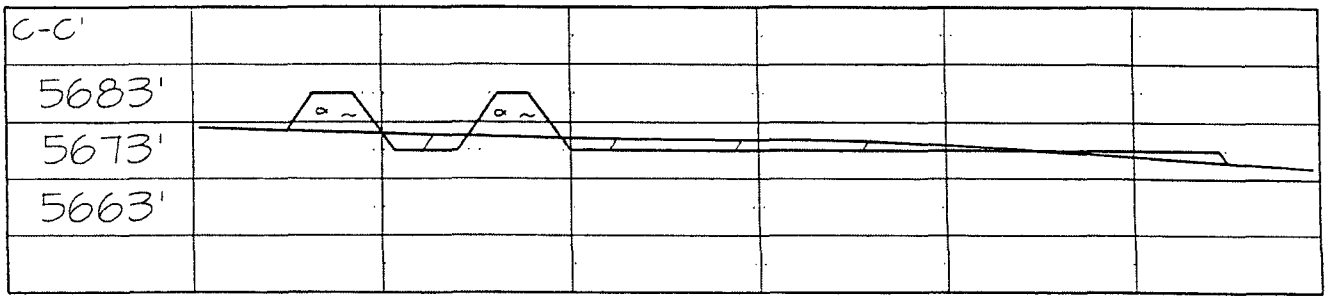


PATINA SAN JUAN, INC. RIO BRAVO 2 '05
1505' FNL & 1245' FWL, SECTION 27, T31N, R13W, NMPM
SAN JUAN COUNTY, NEW MEXICO ELEVATION: 5673'



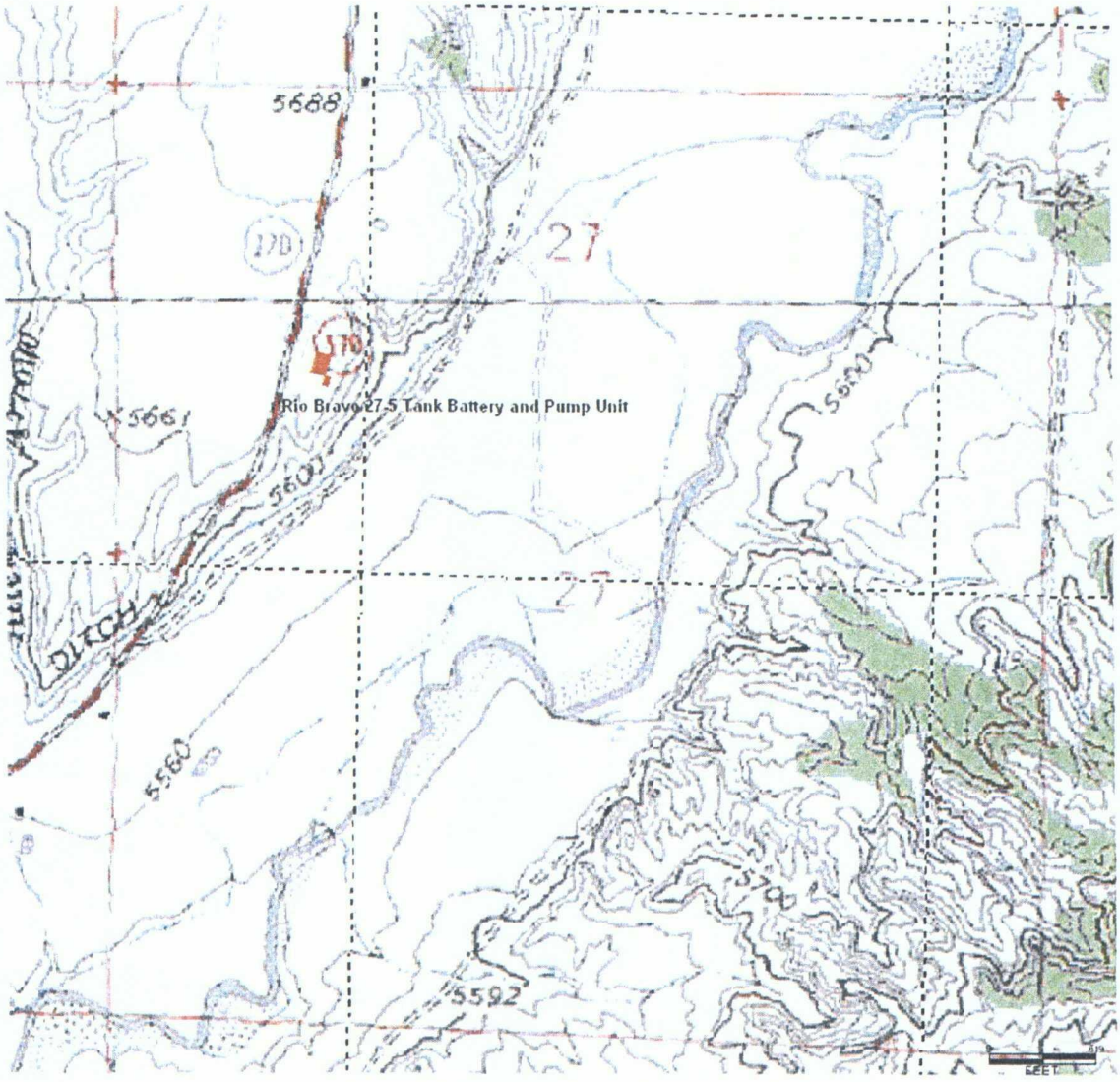




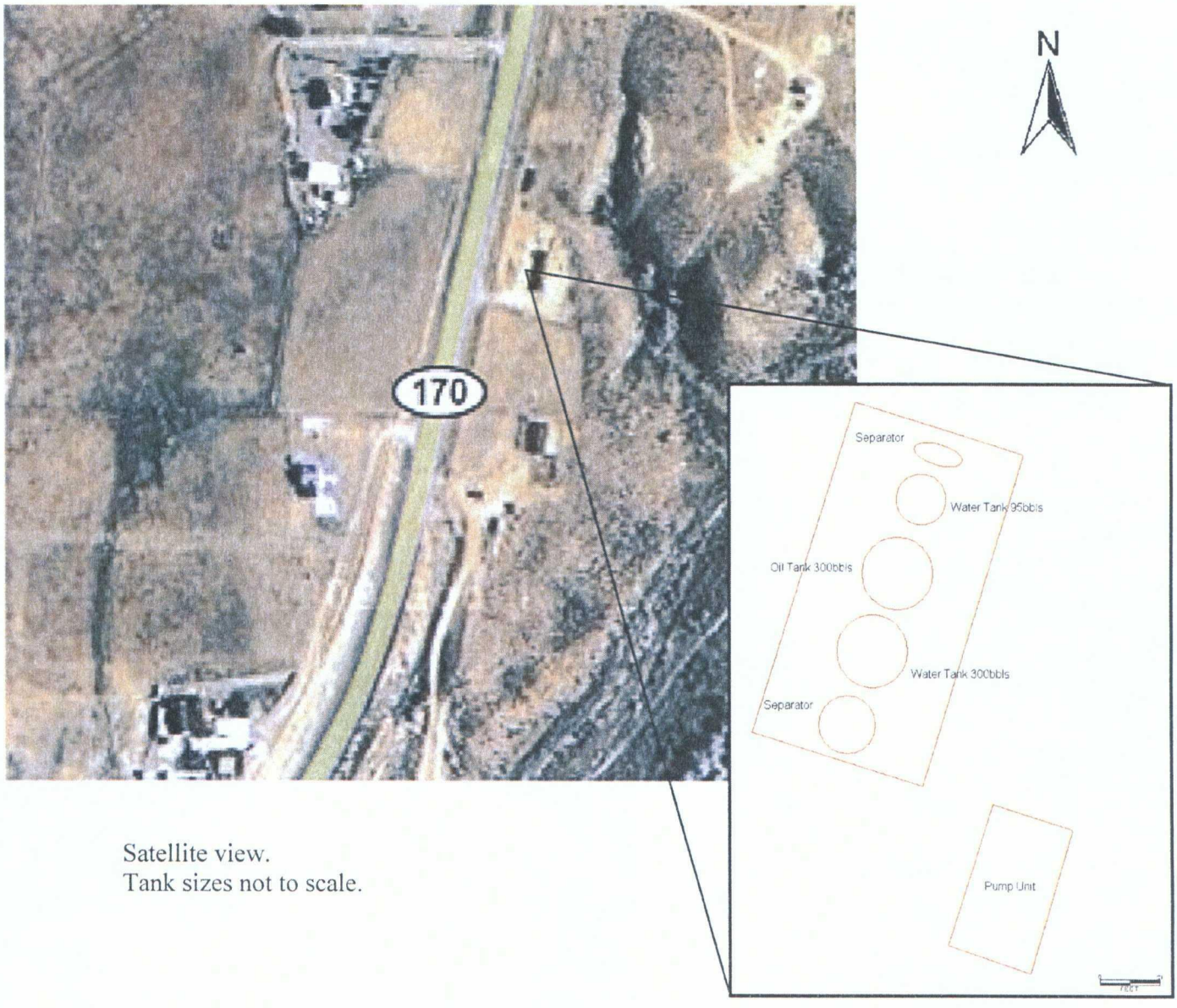


FILENAME: 31132TET	SHEET 2 OF 3	NCE SURVEYS, INC.	DRAWN BY: EDO	CHECKED BY: JCE

Rio Bravo 27-5 located within T31N R13W Sec. 27. Unit includes Tank Battery and Pump Unit



Congressional View



Satellite view.
Tank sizes not to scale.

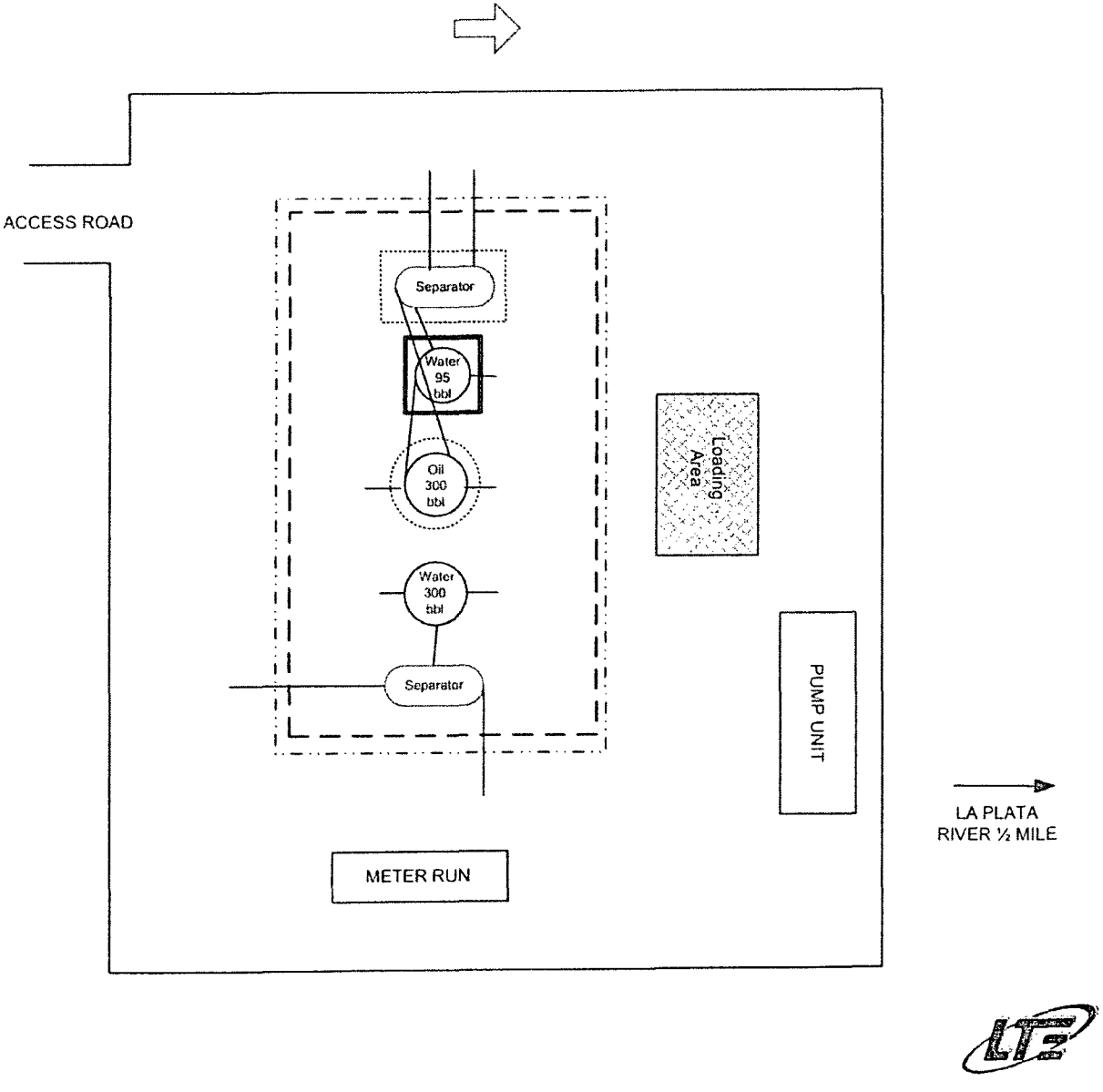
NOBLE ENERGY PRODUCTION, INC.

SITE ID: 303340
RIO BRAVO 27-05
SEC: 27 T31N R13W

NOT TO SCALE

LEGEND

- FENCE
- BERM
- ABOVEGROUND PIPING
- RAISED PAD
- DEPRESSION
- WELL HEAD
- DIRECTION OF FLOW
- bbl BARREL(S)

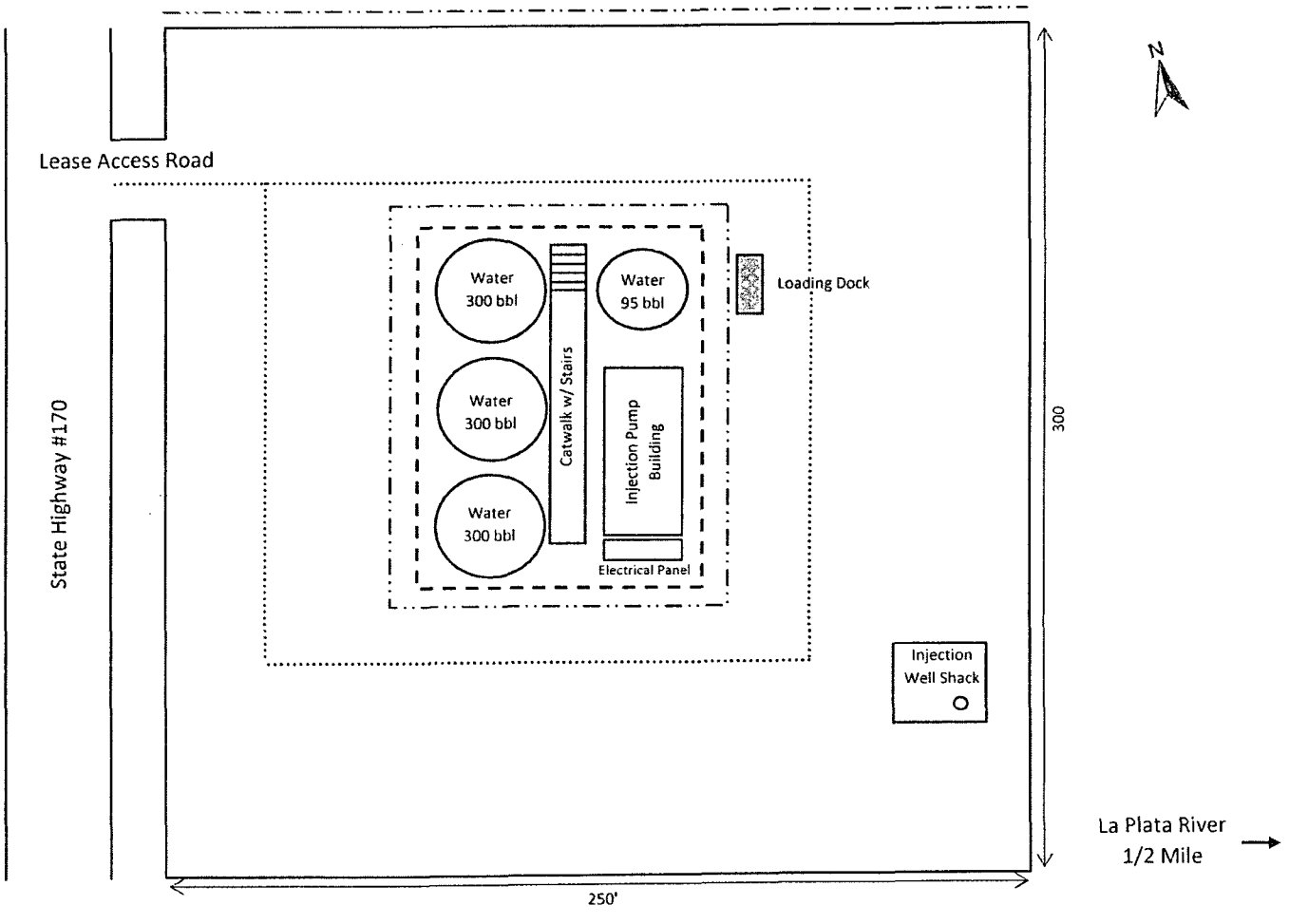


noble energy

Rio Bravo 27-05 Proposed Injection Facility Plat

Scenario #1

1) 3 - 12'X15' 300 bbl water tanks
2) 1 - Underground 95 bbl water pit tank
3) 1 - 10'X30' building for pump
4) 1 - 30' catwalk w/ stairs
5) 1 - 6'X4' building for well
6) Lining placed within limits of burm



Legend

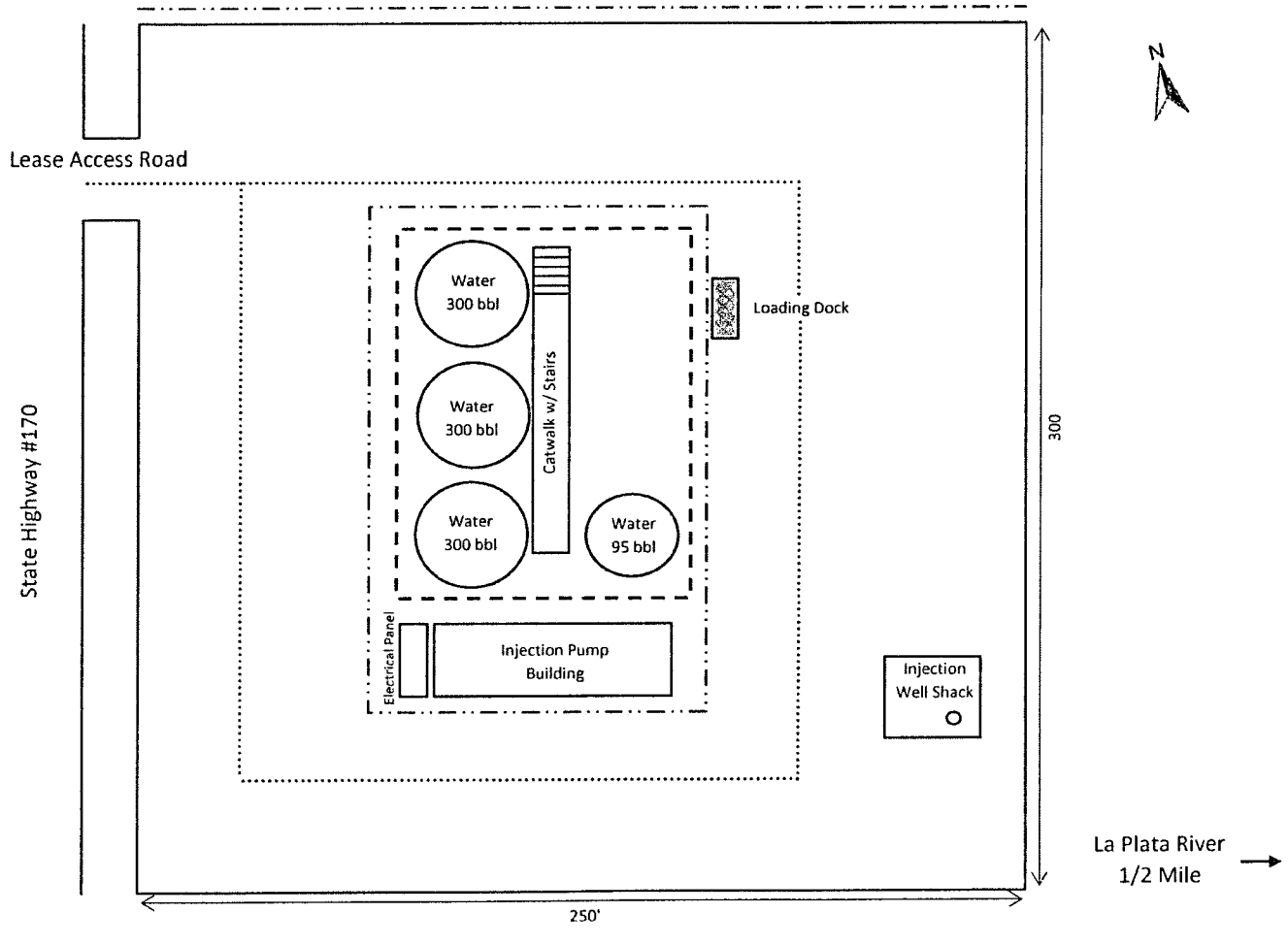
- O Well Location
- —·—·— Chainlink Fence
- - - - Burm
- ····· Road

noble energy

Rio Bravo 27-05 Proposed Injection Facility Plat

Scenario #2

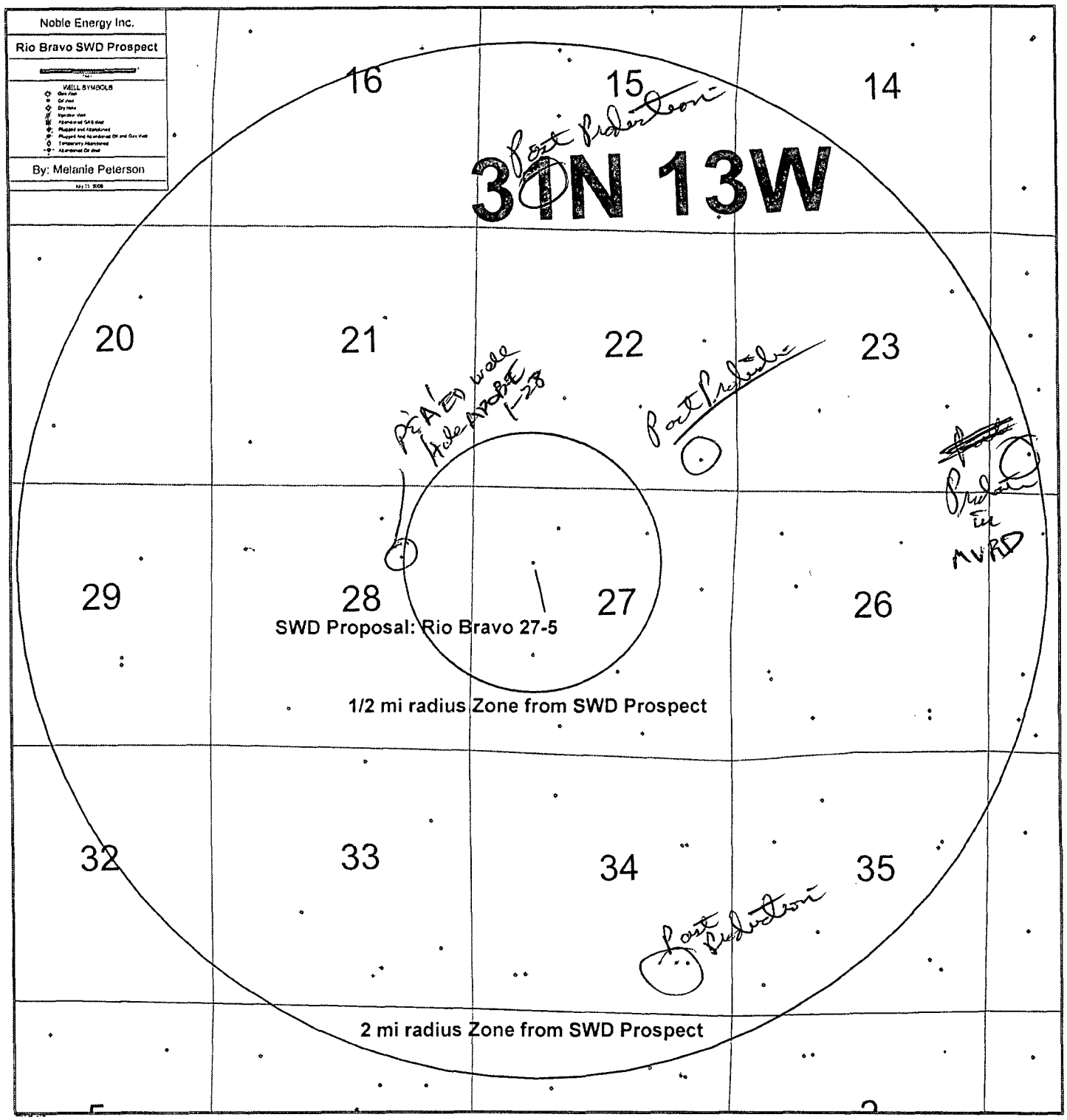
1) 3 - 12'X15' 300 bbl water tanks
2) 1 - Underground 95 bbl water pit tank
2) 1 - 10'X30' building for pump
3) 1 - 30' catwalk w/ stairs
4) 1 - 6'X4' building for well
6) Lining placed within limits of burm



Legend

- O Well Location
- —·—·— Chainlink Fence
- - - - Burm
- ····· Road

Attachment 2



Part VI - Attachment 3

Wells Located within 1/2 mile radius of proposed SWD well

Count	UWI (APINum)	Well Label	Operator	Spud Date	Completion	Status	Mesa Verde Penetration?	TWN	RNG	Sec	Spot Call	NS Foot	NS Dir	EW Foot	EW Dir	TD
1	30045243220001	RIO BRAVO 1	NOBLE ENERGY LIMITED LIABILITY CORP	10/20/1999	10/23/1999	GAS	No	31N	13W	27	SE NW NE	890	FNL	1820	FEL	6630
2	30045335830000	RIO BRAVO 5	NOBLE ENERGY LIMITED LIABILITY CORP	10/2/2006	1/22/2007	GAS	No	31N	13W	27	NE SW NW	1505	FNL	1245	FWL	6675
3	30045339820000	RIO BRAVO 27 12	NOBLE ENERGY LIMITED LIABILITY CORP	10/23/2006	2/8/2007	GAS	No	31N	13W	27	NE NW SW	1995	FSL	1255	FWL	6385
4	30045104120000	TEMPLETON 1-27	NOBLE ENERGY LIMITED LIABILITY CORP	10/25/1961	12/14/1961	GAS	No	31N	13W	27	NE NW	810	FNL	1760	FWL	6543
5	30045243220000	TEMPLETON 1-E	PATINA SAN JUAN INCORPORATED	7/8/1980	12/26/1980	GAS	No	31N	13W	27	SE NW NE	890	FNL	1820	FEL	6630
6	30045103680000	HALE ADOBE 1-28	SNYDER OIL CORPORATION	12/9/1960	2/27/1961	P&A	No	31N	13W	28	SW NE	1450	FNL	1450	FEL	6510

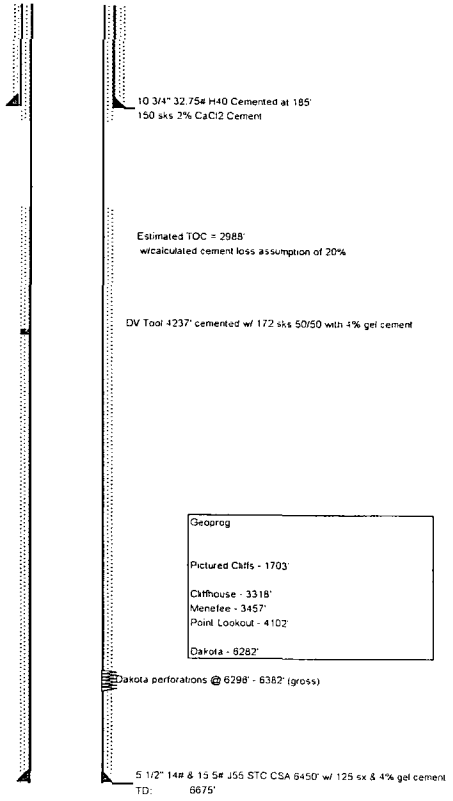
Wells located within 1/2 to 2 mile radius of proposed SWD well

Count	UWI (APINum)	Well Label	Operator	Spud Date	Completion	Status	Mesa Verde Penetration?	TWN	RNG	Sec	Spot Call	NS Foot	NS Dir	EW Foot	EW Dir	TD
1	30045326900000	ALAMO 22 08	NOBLE ENERGY LIMITED LIABILITY CORP	12/22/2005	2/16/2006	GAS		31N	13W	22	NE	2235	FNL	660	FEL	6434
2	30045326860000	ALAMO 22 16	PATINA SAN JUAN INCORPORATED	4/16/2005	7/19/2005	GAS	Yes: No Current Production	31N	13W	22	SE	660	FSL	780	FEL	6590
3	30045106110000	BARKER DOME UNIT 1	QUESTAR EXPLORATION & PRODUCTION CO	7/30/1965	9/4/1965	GAS	No	31N	13W	23	NE NE	1190	FNL	790	FEL	6755
4	30045300500000	BIG JAKE 1	PATINA SAN JUAN INCORPORATED	4/30/2001	8/6/2001	P&A	No	31N	13W	26	SE NW SW	1770	FSL	800	FWL	2095
5	30045333370000	BIG JAKE FEDERAL 26 05	NOBLE ENERGY LIMITED LIABILITY CORP	6/11/2006	3/19/2007	GAS	No	31N	13W	26	NE SW NW	1920	FNL	1265	FWL	6657
6	30045334850000	BIG JAKE FEDERAL 26 14	NOBLE ENERGY LIMITED LIABILITY CORP	3/16/2006	6/28/2006	GAS	No	31N	13W	26	NW SE SW	770	FSL	1650	FWL	6915
7	30045131420000	COMPASS 1-22	PATINA SAN JUAN INCORPORATED	3/25/1961	5/5/1961	P&A	No	31N	13W	22	NW SE	1690	FSL	1986	FEL	6511
8	30045106680000	E A WESTBROOK 1	GOLDEN RULE	1/1/1941	7/25/1941	P&A	No	31N	13W	15	SE SE SE	330	FSL	330	FEL	346
9	30045131390000	ELLIOTT 1	PAUL C M	12/10/1960	2/6/1961	P&A	No	31N	13W	20	SW NE	1450	FNL	1450	FEL	6754
10	30045264050000	EMERALD CITY 1E	DUGAN PRODUCTION CORPORATION	6/20/1985	8/20/1985	GAS	No	31N	13W	15	NW SE NW	1850	FNL	1850	FWL	6885
11	30045103110000	FED 1	ANDERSON OIL LIMITED LLP	4/9/1962	5/13/1962	GAS	No	31N	13W	29	NW SE	1800	FSL	1830	FEL	6420
12	30045244630000	FEDERAL 4	ANDERSON OIL LIMITED LLP	10/15/1980	7/29/1981	GAS	No	31N	13W	29	SE NW SE	1660	FSL	1830	FEL	1700
13	30045344860000	FEDERAL A 1E	BURLINGTON RESOURCES O&G CO LP	5/21/2008	5/1/2009	GAS	No	31N	13W	25	SE NW SW	1600	FSL	730	FWL	6965
14	30045250790000	FEDERAL-A 1-E	UNION TEXAS PET CORP	7/11/1981	10/7/1981	P&A	No	31N	13W	25	SE NW NW	800	FNL	1080	FWL	6854
15	30045250790001	FEDERAL-A 3	UNION TEXAS PET CORP	8/2/1983	9/21/1983	P&A	No	31N	13W	25	SE NW NW	800	FNL	1080	FWL	6854
16	30045100650000	FEDERAL-LEA 1	BURLINGTON RESOURCES O&G CO LP	9/16/1963	10/29/1963	GAS	No	31N	13W	34	SW SW	790	FSL	1140	FWL	6680
17	30045103900000	FEDERAL-SENTER 1	BURLINGTON RESOURCES O&G CO LP	10/6/1963	2/20/1964	P&A	No	31N	13W	26	NW NE	1020	FNL	1810	FEL	6850
18	30045107320000	GABERHART 1	STILES ENERGY CORP	7/1/1944	11/30/1944	P&A	No	31N	13W	15	NW NE SW	2310	FSL	1650	FWL	820
19	30045100880000	GOVT 1-35	NOBLE ENERGY LIMITED LIABILITY CORP	5/9/1959	7/20/1959	GAS	No	31N	13W	35	SW NE SW	1470	FSL	1775	FWL	6880
20	30045102610000	GOVT 3	GLAD OIL & GAS CO	1/1/1922	12/12/1922	P&A	No	31N	13W	25	C SW SW	356	FSL	1000	FWL	502
21	30045101740000	GOVT-KAUF 1-33	NOBLE ENERGY LIMITED LIABILITY CORP	12/13/1960	2/2/1961	GAS	No	31N	13W	33	SE NE	1450	FNL	790	FEL	6320
22	30045131430000	GOVT-LANGENDORF 1-34	NOBLE ENERGY LIMITED LIABILITY CORP	10/18/1960	11/26/1960	GAS	No	31N	13W	34	SE NE	1750	FNL	990	FEL	6577
23	30045101610000	GOVT-PAYNE 2-35	NOBLE ENERGY LIMITED LIABILITY CORP	3/13/1960	5/2/1960	GAS	No	31N	13W	35	SE NE	1850	FNL	890	FEL	6898
24	30045104880000	HALL 1	DUGAN PRODUCTION CORPORATION	12/17/1961	1/27/1962	GAS	No	31N	13W	20	SE SW	1190	FSL	1500	FWL	6520
25	30045102640000	HARRIS 1	FULLER PRODUCTION INCORPORATED	9/30/1960	11/19/1960	GAS	No	31N	13W	28	SE SW	790	FSL	1600	FWL	6475
26	30045131410000	JOHNSON 1	FULLER PRODUCTION INCORPORATED	12/13/1960	2/24/1961	GAS	No	31N	13W	21	SW SW	885	FSL	800	FWL	6690

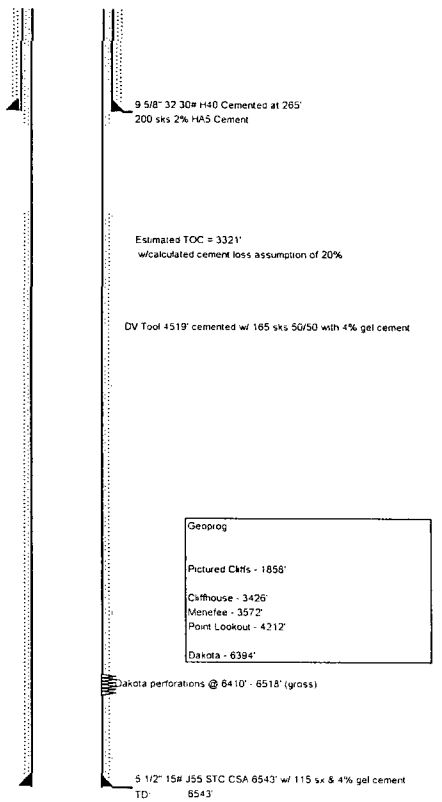
27	30045241570000	JOHNSON 1-E	P-R-O MANAGEMENT INCORPORATED	3/4/1980	6/28/1980	GAS	No	31N	13W	21	NW SE SE	1120	FSL	1120	FEL	6657
28	30045259720000	KAUFMAN COM 1-E	NOBLE ENERGY LIMITED LIABILITY CORP	5/18/1984	6/19/1984	GAS	No	31N	13W	33	NE SW SE	857	FSL	1827	FEL	6500
29	30045105300000	LA ROSE 1	DUGAN PRODUCTION CORPORATION	4/15/1961	6/9/1961	GAS	No	31N	13W	22	NE SW	1850	FSL	1850	FWL	6620
30	30045243480000	LANGENDORF 1-E	COLUMBUS ENERGY CORPORATION	6/1/1980	9/13/1980	PAOGW	Yes: No Current Production	31N	13W	34	NW SE SE	1100	FSL	1100	FEL	6835
31	30045259260000	LANGENDORF 2	CONSOLIDATED OIL&GAS	3/22/1984	4/13/1984	GAS	No	31N	13W	34	NW SE SE	1110	FSL	875	FEL	2155
32	30045262750001	LANGENDORF 3	GREYSTONE ENERGY INC	5/18/2000	5/23/2000	INJ	No	31N	13W	34	NE SW SE	1097	FSL	1439	FEL	4700
33	30045262750000	LANGENDORF 3	NOBLE ENERGY LIMITED LIABILITY CORP	6/8/1985	6/22/1985	INJ	No	31N	13W	34	NE SW SE	1097	FSL	1439	FEL	4700
34	30045259800000	LEA FEDERAL 1-E	BURLINGTON RESOURCES O&G CO LP	6/18/1984	7/13/1984	GAS	No	31N	13W	34	SW NE NW	830	FNL	1758	FWL	6545
35	30045337310000	LEA FEDERAL 100	BURLINGTON RESOURCES O&G CO LP	7/14/2006	12/20/2006	GAS	No	31N	13W	34	NE SW SW	735	FSL	895	FWL	2120
36	30045106860000	MCCARTY 1	FULLER PRODUCTION INCORPORATED	9/30/1960	12/9/1960	GAS	No	31N	13W	14	SE SW	790	FSL	1600	FWL	6662
37	30045259260001	MCCLINTOCK 1	NOBLE ENERGY LIMITED LIABILITY CORP	3/18/2000	4/19/2000	GAS	No	31N	13W	34	NW SE SE	1110	FSL	875	FEL	2155
38	30045318210000	MCCLINTOCK 1S	NOBLE ENERGY LIMITED LIABILITY CORP	5/23/2005	7/25/2005	GAS	No	31N	13W	34	NE	1735	FNL	885	FEL	2140
39	30045100580000	MISHON 1	WILLIAMS H L	1/1/1925	12/24/1925	P&A	No	31N	13W	33	C SW SE	356	FSL	1000	FWL	20
40	30045103100000	NANCE 1-27	NOBLE ENERGY LIMITED LIABILITY CORP	8/9/1961	9/2/1961	GAS	No	31N	13W	27	NW SE	1760	FSL	2310	FEL	6450
41	30045258940000	NANCE 1-E	NOBLE ENERGY LIMITED LIABILITY CORP	4/8/1984	5/23/1984	GAS	No	31N	13W	27	SW SE SW	590	FSL	1850	FWL	6570
42	30045101130000	PARKER 1	FULLER PRODUCTION INCORPORATED	3/31/1960	5/17/1960	GAS	No	31N	13W	33	NE SW	1980	FSL	1850	FWL	6362
43	30045258820000	PAYNE 2-E	NOBLE ENERGY LIMITED LIABILITY CORP	3/1/1984	5/31/1984	GAS	No	31N	13W	35	NE SW NW	1700	FNL	900	FWL	6800
44	30045103010000	PAYNE 3	NOBLE ENERGY LIMITED LIABILITY CORP	2/9/1960	4/16/1960	GAS	No	31N	13W	26	SE NW SW	1650	FSL	840	FWL	6760
45	30045259530000	PAYNE 3-E	NOBLE ENERGY LIMITED LIABILITY CORP	4/30/1984	6/26/1984	GAS	No	31N	13W	26	SE NW NW	850	FNL	940	FWL	6686
46	30045105190000	PHILLIP 1-23	BURLINGTON RESOURCES O&G CO LP	1/18/1963	3/1/1963	GAS	No	31N	13W	23	NE SE	1750	FSL	875	FEL	6645
47	30045241980000	PHILLIPS 1-E	BURLINGTON RESOURCES O&G CO LP	2/26/1980	5/14/1980	TA	No	31N	13W	23	SW NE SW	1650	FSL	1700	FWL	6850
48	30045106990000	PRICE 1-15	BENSON-MONTIN-GREER DRILLING CORPORA	7/9/1961	9/2/1961	P&A	Yes: No Current Production	31N	13W	15	SE SW	895	FSL	1470	FWL	6673
49	30045327680000	QUIETMAN FEDERAL 28 5	NOBLE ENERGY LIMITED LIABILITY CORP	10/11/2007	12/12/2007	GAS	No	31N	13W	28	NE SW NW	1335	FNL	870	FWL	6615
50	30045339390000	QUIETMAN FEDERAL 28-2	NOBLE ENERGY LIMITED LIABILITY CORP	9/29/2007	11/26/2007	GAS	No	31N	13W	28	E2 NW NE	660	FNL	1875	FEL	6560
51	30045264060000	RAINBOW SEEKER 1	DUGAN PRODUCTION CORPORATION	9/13/1985	1/28/1986	GAS	No	31N	13W	29	NE SW NE	1510	FNL	1450	FEL	6570
52	30045337060000	RIO BRAVO 27 15	NOBLE ENERGY LIMITED LIABILITY CORP	12/10/2006	1/26/2007	GAS	No	31N	13W	27	SE SW SE	500	FSL	1800	FEL	6492
53	30045326910000	RIO BRAVO 8	NOBLE ENERGY LIMITED LIABILITY CORP	2/28/2006	10/6/2006	GAS	No	31N	13W	27	NE	1980	FNL	660	FEL	6535
54	30045310710000	SENTER 1C	NOBLE ENERGY LIMITED LIABILITY CORP	6/20/2002	8/13/2002	GAS	Yes: Currently Producing	31N	13W	24	NE SW SW	810	FSL	805	FWL	6870
55	30045346370000	SENTER FEDERAL 100	BURLNGTN RE OG CO LP	9/23/2008	5/1/2009	GAS	No	31N	13W	26	NW SE SE	760	FSL	1210	FEL	2417
56	30045260230000	SENTER FEDERAL 1E	BURLINGTON RESOURCES O&G CO LP	8/10/1984	9/26/1984	GAS	No	31N	13W	26	NW SE SE	851	FSL	1177	FEL	7010
57	30045131400000	STANDARD-NICKELS 1	FULLER PRODUCTION INCORPORATED	11/29/1961	1/26/1962	GAS	No	31N	13W	21	SW NE	1850	FNL	1850	FEL	6728
58	30045107730000	STILES 1	STILES ENERGY CORP	6/27/1940	9/15/1940	P&A	No	31N	13W	15	NW SE NW	1650	FNL	1650	FWL	500
59	30045338230000	TRUE FEDERAL GRIT 3 3	NOBLE ENERGY LIMITED LIABILITY CORP	11/24/2006	4/24/2007	GAS	No	31N	13W	35	SW NE NW	825	FNL	1860	FWL	6820
60	30045318200000	TRUE GRIT 2	NOBLE ENERGY LIMITED LIABILITY CORP	2/16/2005	4/11/2005	GAS	No	31N	13W	35	NW SE NE	1955	FNL	975	FEL	2290
61	30045335120000	TRUE GRIT FEDERAL 3 13	NOBLE ENERGY LIMITED LIABILITY CORP	5/27/2006	8/2/2006	GAS	No	31N	13W	35	SE SW SW	600	FSL	675	FWL	6665
62	30045326890000	VALANCE 33 2	NOBLE ENERGY LIMITED LIABILITY CORP	9/19/2006	3/8/2007	GAS	No	31N	13W	33	E2 NW NE	320	FNL	2145	FEL	6335
63	30045335710000	VALANCE FEDERAL 33 16	NOBLE ENERGY LIMITED LIABILITY CORP	5/9/2006	9/24/2006	GAS	No	31N	13W	33	C SE SE	1200	FSL	660	FEL	6451

Attachment 4

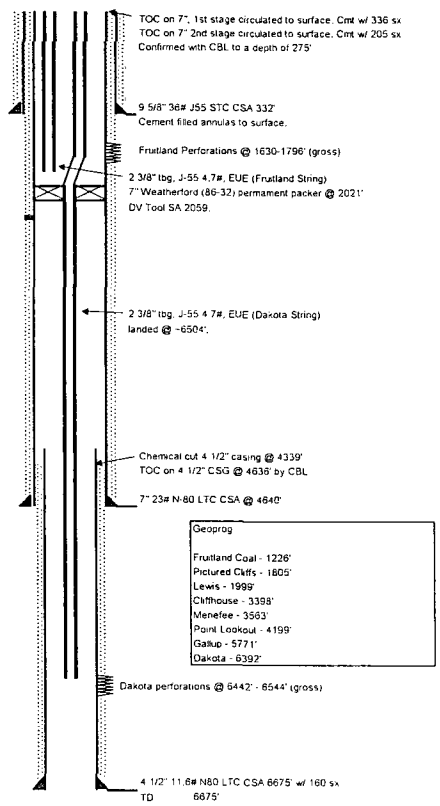
Nance 1-27



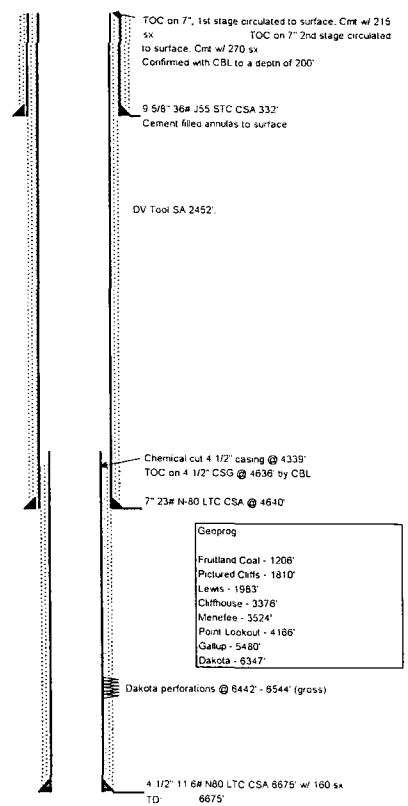
Templeton 1



Rio Bravo 27-05 Current Schematic



Rio Bravo 27-15



12/14/2009

Part VI - Attachment 3
Construction of wells within 1/2 mile radius of proposed SWD

Count	1	2	3	4	5
UWI (APINum)	30045335830000	30045243220001	30045339820000	30045104120000	30045103680000
Well Label	RIO BRAVO 5	RIO BRAVO 1	RIO BRAVO 27 12	TEMPLETON 1-27	HALE ADOBE 1-28
Operator	NOBLE ENERGY LIMITED LIABILITY CORP	NOBLE ENERGY LIMITED LIABILITY CORP	NOBLE ENERGY LIMITED LIABILITY CORP	NOBLE ENERGY LIMITED LIABILITY CORP	SNYDER OIL CORPORATION
Spud Date	10/2/2006	10/20/1999	10/23/2006	10/25/1961	12/9/1960
Completion	1/22/2007	10/23/1999	2/8/2007	12/14/1961	2/27/1961
Status	GAS	GAS	GAS	GAS	P&A
Mesa Verde Penetration?	No	No	No	No	No
TWN	31N	31N	31N	31N	31N
RNG	13W	13W	13W	13W	13W
Sec	27	27	27	27	28
Spot Call	NE SW NW	SE NW NE	NE NW SW	NE NW	SW NE
NS Foot	1505	890	1995	810	1450
NS Dir	FNL	FNL	FSL	FNL	FNL
EW Foot	1245	1820	1255	1760	1450
EW Dir	FWL	FEL	FWL	FWL	FEL
TD	6675	6630	6385	6543	6510
Zone(s)	Fruitland Coal and Dakota	Fruitland Coal (Gas), Dakota (Zone Permanently Plugged), Gallop (Zone Permanently Plugged)	Fruitland Coal and Dakota	Dakota	Dakota
Perfs	1630'-1796' & 6442'-6544'	1558'-1728', 6314'-6563' (plugged), & 5676'-5706' (plugged)	1530'-11682' & 6273'-6348'	6410'-5418'	6376'-6453'
Surface Casing	9.625" @ 332'	8.625" @ 263'	9.625" @ 332'	9.625" @ 265'	9.625" @ 193'
Surface Cement	300 sx circulated	250 sx circulated	300 sx circulated	200 sx	200 sx circulated
Intermediate Casing	7" @ 4640'	None	7" @ 4500'	None	None
Intermediate Cement	DV Tool @ 2059' 1st Stage - 336 sx circulated 2nd Stage - 205 sx circulated	None	DV Tool @ 1991' 1st Stage - 260 sx circulated 2nd Stage - 200 sx circulated	None	None
TOC at Intermediate CSG	275'	same well as Templeton 1	3050'	3321'	P&A'ed. Plugged MV, PC and FT perfs
TOC determined by	CBL	same well as Templeton 1	CBL	Calculation	Report submitted to State
Production Casing	4.5" @ 6675'	5.5" @ 6630'	4.5" @ 6385'	5.5" @ 6543'	5.5" @ 6493'
Production Cement	160 sx TOC @ 4636' per CBL (11/07/06)	DV Tools @ 4571' & 2283' 1st Stage - 425 sx 2nd Stage - 525 sx TOC @ 3815' per CBL 3rd Stage - 775 sx TOC @ 816' per CBL Addl 30 sx squeezed into Dakota Lower portion plugged See Wellbore Diagram	155 sx TOC @ 3140' per CBL (11/17/06)	Stage Collar @ 4519' 1st Stage - 115 sx 2nd Stage - 165 sx	180 sx Csg Cut & well P&A'd See Wellbore Diagram

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

5. LEASE DESIGNATION AND SERIAL NO.: SF-078463A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: N/A

1. OIL WELL ☐ GAS WELL ☒ OTHER

7. UNIT AGREEMENT NAME: N/A

2. NAME OF OPERATOR: Snyder Oil Corporation (505) 632-8056

8. FARM OR LEASE NAME: Hale-Adobe 1-28

3. ADDRESS OF OPERATOR: P.O. 2038 Farmington, NM 87499

9. WELL NO.: 1036800

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface

1450' FNL & 1450' FEL, Sec 28, T31N, R13W, NMPM

10. FIELD AND POOL, OR WILDCAT: Basin Dakota

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

12. COUNTY OR PARISH: San Juan

13. STATE: NM

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☒
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Well Plugged: Abandoned January 21, 1994
per the attached report.

RECEIVED
FEB 01 1994
OIL CON. DIV.
DIST. 3

94 JAN 31 PM 1:29
070 FARMINGTON, NM

18. I hereby certify that the foregoing is true and correct

SIGNED Wayne Converse TITLE Engineer DATE 1/28/94

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

APPROVED
FEB 07 1994
DISTRICT MANAGER

*See Instructions on Reverse Side
NMOCD

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Snyder Oil Corporation
Hale Adobe #1-28 (Dk)
1450' FNL, 1450' FEL
Sec. 28, T31N, R13W
San Juan County, NM
SF 078463A

PLUG AND ABANDONMENT REPORT

Cementing Summary:

Plug #1 from 6397' to 6035' with 41 sxs Class B cement.
Plug #2 from 5568' to 5418' with 17 sxs Class B cement.
Plug #3 with retainer at 3341' from 3340' to 3191', pump 17 sxs Class B cement on top of cement retainer.
Plug #4 with retainer at 1750', pump 155 sxs Class B cement, squeeze 145 sxs below and spot 10 sxs on top of CR to 1662'.
Plug #5 from 1463' to 1313' with 17 sxs Class B cement. POH with tubing.
Plug #6 from 250' to surface with 95 sxs Class B cement, circulate good cement out bradenhead.

Plugging Summary:

1-18-94 Drive rig and equipment to location. Rig up and open up well. Lay bleed line to pit and bleed well down. Attempt to ND wellhead, jam nuts locked up on wellhead, spray with WD-40. Shut in well; SDFN.

1-19-94 Safety meeting. Open up well; blow well to flow back tank. Pump 60 bbl water down casing to kill well. ND well head, back out jam nuts, NU BOP. PU 2" work tubing and RIH open ended to 6408', unable to go deeper. POH to 6397'. Procedure change approved by R. Snow with BLM, (water between plugs). Plug #1 from 6397' to 6035' with 41 sxs Class B cement. POH to 5000' and WOC. RIH and tag cement at 6045'. POH to 5984'; circulate hole clean with 97 bbl water. Attempt to pressure test casing to 500#, did not hold. POH to 5568'. Shut in well and SDFN.

1-20-94 Safety meeting. Open up well and establish circulation. Plug #2 from 5568' to 5418' with 17 sxs Class B cement. POH with tubing. Perforate 4 holes at 3407'. PU 5-1/2" cement retainer and RIH; set CR at 3341'; attempt to pump into holes, pressured up to 1200#. Procedure change approved by W. Townsend with BLM. Sting out of retainer. Plug #3 with retainer at 3341' from 3340' to 3191', pump 17 sxs Class B cement on top of cement retainer. POH with setting tool. Perforate 4 holes at 1808'. PU 5-1/2" cement retainer and RIH; set CR at 1750'; establish rate into holes 1-1/2 bpm at 600#. Plug #4 with retainer at 1750', pump 155 sxs Class B cement, squeeze 145 sxs below and spot 10 sxs on top of CR to 1662'. POH to 1463'. Plug #5 from 1463' to 1313' with 17 sxs Class B cement. POH with tubing. Perforate 2 holes at 250'. POH with wireline. Pump 11 bbl water to establish circulation out bradenhead. Shut in well and SDFN.

1-21-94 Safety meeting. Open up well and establish circulation out bradenhead. Plug #6 from 250' to surface with 95 sxs Class B cement, circulate good cement out bradenhead. Shut in well and WOC. Dig out wellhead, ND BOP, cut off wellhead. Install P&A marker with 25 sxs cement. Rig down and move off location.

R. Snow with BLM was on location.

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or deepen or reentry to a different reservoir. USE "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation & Serial No.: ~~82~~-078463A SF

6. If Indian, Allottee or Tribe Name: N/A

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

7. If Unit or CA, Agreement Designation: N/A

2. Name of Operator
Snyder Oil Corporation (505) 632 - 8056

8. Well Name & No.: Hale-Adobe #1

9. API Well No.: 1C3C2CC

3. Address and Phone No.
P.O. Box 2038 Farmington, New Mexico 87499

10. Field and Pool, or Exploration Area: Basin Dakota

4. Location of Well (Footage, Sec., T.,R.,M., or Survey Description)
1450' FNL & 1450' FEL, Sec 28,T31N, R13W, NMPM G

11. County or Parish, State
San Juan County, New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☒ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☐ Other ----------	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log Form)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

It is proposed to P&A this well due to the uneconomical nature of the production. The Dakota zone will be abandoned and the proposed procedure is stated on the following attachment. Work will proceed as soon as an approval is received.

RECEIVED
JAN 03 1994
OIL CON. DIV.
DIST. 3

SEE ATTACHED FOR CONDITIONS OF APPROVAL

14. I hereby certify that the foregoing is true and correct

Signed Joe A. Williams Title Consulting Engineer for Snyder Oil Corporation Date 11-15-93

(This space for Federal or State office use)

Approved by Se Title APPROVED Date DEC 27 1993

DISTRICT MANAGER

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

NMOCD

November 10, 1993 SNYDER OIL CO.

Hale-Adobe #1-28 (Dk)
NE, Sec. 28, T31N, R13W
San Juan County, New Mexico

PLUG AND ABANDONMENT PROCEDURE:

1. MOL and RUSU. Comply to all NMOCD, BLM and Snyder safety rules and regulations.

2. Blow well down; kill with water if necessary; a 8.3 ppg wellbore fluid exceeds the exposed reservoir's pressure. ND wellhead and NU BOP and stripping head; test BOP.

3. PU 2" tubing work string; RIH open ended and set at 6453' (Dakota perfs); Plug #1 from 6453' to 6300' with 41 sxs Class B cement (100% excess); POH to 5902'. Load well and circulate clean; pressure test casing to 500#.

4. Plug #2 from 5565' to 5465' with 17 sxs Class B cement (top Gallup at 5515'). POH with tubing.

5. Perforate 4 holes at 3407'. PU 5-1/2" cement retainer and RIH, set at 3350' (Mesaverde top at 3357'); pump into holes. Plug #3 under CR at 3350' from 3407' to 3307' with 50 sxs Class B cement (100% excess), squeeze 40 sxs below CR then spot 10 sxs on top. POH with setting tool.

6. Perforate 4 holes at 2020', (50' below PC top); PU 5-1/2" cement retainer and RIH; set at 1970'. Establish rate into holes.

7. Plug #4 from 2020' to 1550' with 138 sxs Class B cement outside the casing (covers Fruitland top, 100% excess) and 17 sxs inside casing covers PC top). POH to 1650'.

8. Plug #5 from 1650' to 1550' with 17 sxs Class B cement inside casing (Fruitland top); POH and LD tubing.

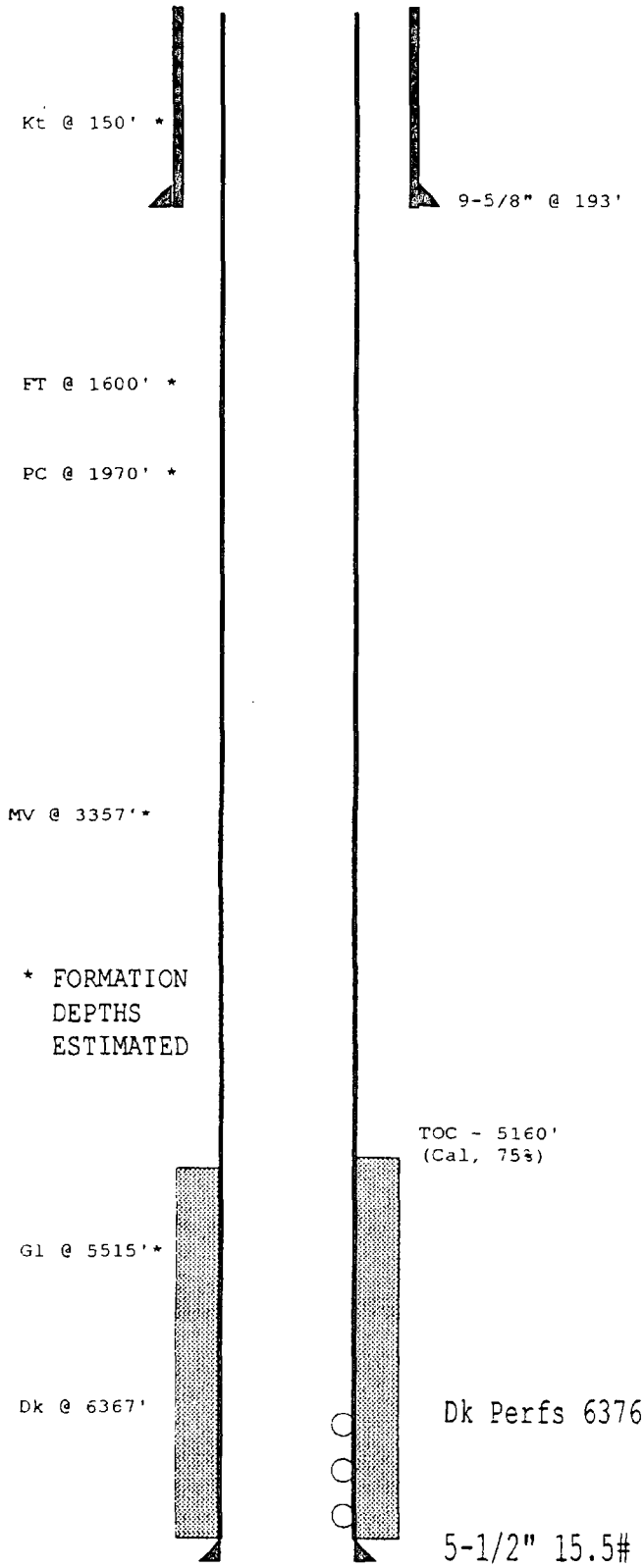
9. Perforate 2 holes at 250' (Ojo Alamo not present). Establish circulation out bradenhead. Plug #6 from 250' to surface with approximately 87 sxs Class B cement, circulate good cement to surface; shut in well and WOC.

10. ND BOP and cut off wellhead below ground level and install dry hole marker. RD and MOSU. Restore location.

EXISTING WELL

10 NOV 93

OA - NOT PRESENT

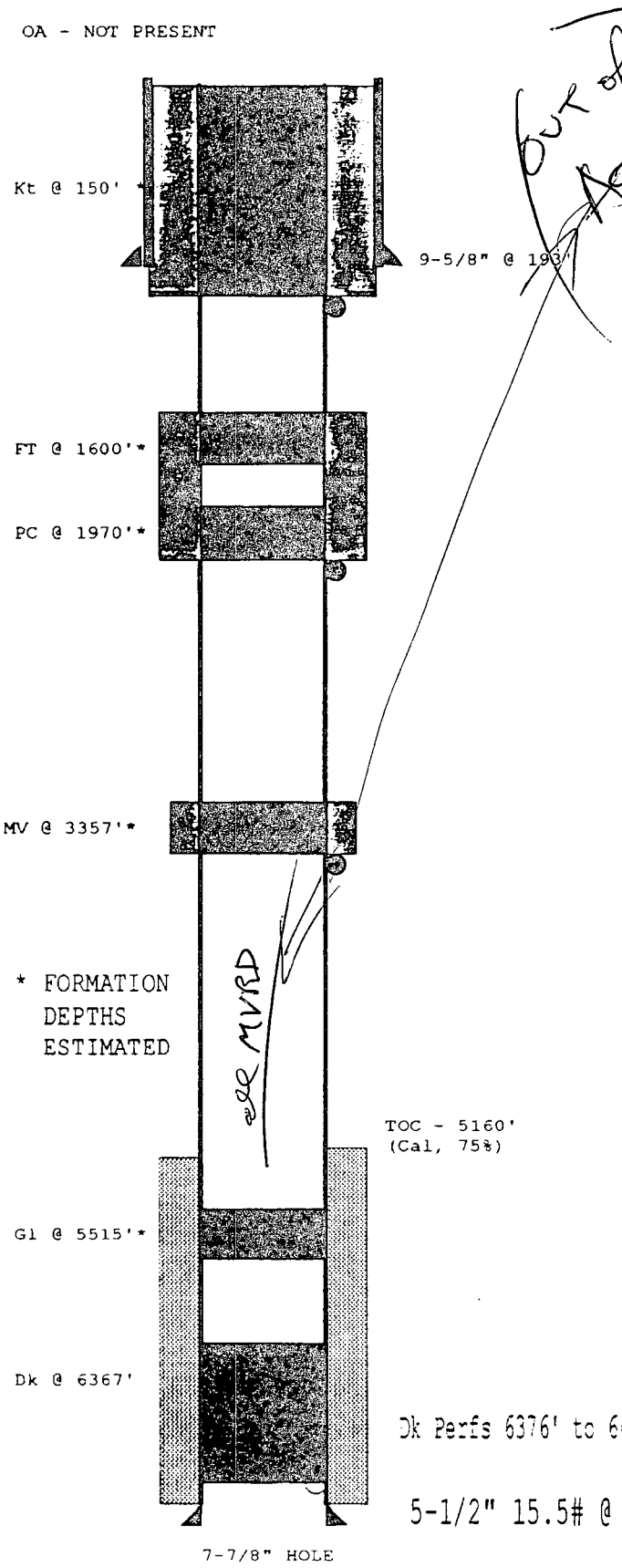


SNYDER OIL COMPANY
HALE - ADOBE #1-28
NE, Sec. 28, 31N, 13W
San Juan County, NM

1993 WORKOVER
FOUND CASING LEAKS
TUBING REMOVED

PLUGGED WELL

10 NOV 93



SNYDER OIL COMPANY
HALE - ADOBE #1-28
NE, Sec. 28, 31N, 13W
San Juan County, NM

PERFORATE @ 250'
PLUG #6 250' TO SURFACE
87 SXS CEMENT

PLUG #5 1650' - 1550' INSIDE
17 SXS CEMENT

PERFORATE @ 2020' CMT RT @ 1970'
PLUG #4 2020' - 1550' OUTSIDE
138 SXS CEMENT
2020' - 1920' INSIDE
17 SXS CEMENT

PERFORATE @ 3407' CMT RT @ 3350'
PLUG #3 3407' - 3307'
50 SXS CEMENT

PLUG #2 5515' - 5415'
17 SXS CEMENT

PLUG #1 6300' - 6453'
41 SXS CEMENT

Dk Perfs 6376' to 6453'

5-1/2" 15.5# @ 6493

IN REPLY REFER TO:
(07337)

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT
FARMINGTON DISTRICT OFFICE
1235 La Plata Highway
Farmington, New Mexico 87401

Attachment to Notice of

Intention to Abandon

Re: Permanent Abandonment

Well: 1-28 Hale-Adobe

CONDITIONS OF APPROVAL

1. Plugging operations authorized are subject to the attached "General Requirements for Permanent Abandonment of Wells on Federal and Indian Leases."

2. Mike Flaniken with the Farmington Office is to be notified at least 24 hours before the plugging operations commence (505) 599-8907.

3. The following modifications to your plugging program are to be made (when applicable):

1.) Move PC and Fruitland cement plugs. (Top of PC @ 1758', Top of Fruitland @ 1410')

Perforate @ 1808'; place a cement plug on the outside of the casing from 1808' to 1360' plus 100 % excess.

Place plugs on the inside of the casing from 1,808' to 1,708' and from 1760' to 1360' plus 50' linear feet excess for each plug.

Office Hours: 7:45 a.m. to 4:30 p.m.

RECEIVED
OIL CON. DIV.

RIO BRAVO 27-15

EXCESS CEMENT CALCULATION

- Per Caliper run on the Open Hole Log
  annular volume ~ 766 ft^3
  this is from ~~334'~~ (shoe of surface casing)
  to 4581' (TD of the 7" casing).
  In order to bring this volume to surface, take
  $\frac{0.1668\ ft^3}{ft}$ (vol. between 7" & 9 5/8" casing)
  and multiply by 334'

$$\frac{0.1668\ ft^3}{\cancel{ft}} * 334\cancel{ft} = 58\ ft^3$$

Total Estimated Annular Volume (surface to 4581')
= 766 ft^3 + 58 ft^3 = 822 ft^3

Cement Volume calculation

- Per cement pumped on the job,
  (215 sks) * (2.03 ft^3/sks) = 436 ft^3
  (120 sks) * (2.15 ft^3/sks) = 258 ft^3
  (150 sks) * (2.05 ft^3/sks) = 308 ft^3
  1002 ft^3
  Approximately 16 BBL were reported to have returned to pit and circulation
  36 BBL ~ 202 ft^3
  So, 1002 ft^3 - 202 ft^3 = 800 ft^3

822 and 800 are within the margin of error so we assume minimum cement loss to the formation.

Since the Nance 1 and Templeton 1 do not have caliper logs to obtain annular volumes, Borehole washout from the Rio Bravo 27-15 was calculated to apply to the Nance 1 and Templeton 1.

Borehole Washout % calculation

- calculate annular volume between 7" casing and 8 3/4" hole.

$$\left(\frac{0.1503\ ft^3}{ft}\right) * (4581' - 324') = 638\ ft^3$$

638 ft^3 if there was no washout.

But caliper log calculated 766 ft^3

So, Borehole breakout is

$(766 - 638)\ ft^3 = 128\ ft^3$

To calculate %

$$\frac{128\ ft^3}{638\ ft^3} = 20\%$$

Now use 20% to estimate TOC in Nance 1 and Templeton 1.

Label this factor as $F_{BH} = 20\%$

Templeton 1

Assume 1.51 yield for the 165 sks of 50/50 Poz 4% gel since we cannot find it in the records.

Calculate volume occupied by cement pumped.

$$\frac{165 \text{ sks}}{} \Big| \frac{1.51 \text{ ft}^3}{\text{sks}} = 249 \text{ ft}^3$$

Take Borehole volume factor, F_{BH}

$$\frac{249 \text{ ft}^3}{1.2} = 208 \text{ ft}^3$$

$$\frac{208 \text{ ft}^3}{} \Big| \frac{\text{ft}}{0.1733 \text{ ft}^3} = 1198'$$

Estimated TOC ~ 4519' − 1198' = 3321'

This is ~ 105' above the Cliff House.

Nance 1

Assume 1.51 yield for the 172 sks of 50/50 Poz w/ 4% gel since we cannot find it in the records.

Calculate volume occupied by cement pumped.

$$\frac{172 \text{ SKS}}{\frac{1.51 \text{ ft}^3}{\text{SKS}}} = 260 \text{ ft}^3$$

Take Borehole volume factor, F_{BH}

$$\frac{260 \text{ ft}^3}{1.2} = 216 \text{ ft}^3$$

$$\frac{216 \text{ ft}^3}{\frac{\text{ft}}{0.1733 \text{ ft}^3}} = 1249'$$

Estimated TOC ~ 4237' − 1249' = 2988'

This is 330' above the Cliff House.

NO. OF COPIES RECEIVED		
DISTRIBUTION		
SANTA FE		
FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease
State [ ] Fee [X]

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL [ ] GAS WELL [X] OTHER-

7. Unit Agreement Name

2. Name of Operator
~~Continental~~ Operated Oil & Gas, Inc.

8. Farm or Lease Name
Templeton

3. Address of Operator
P.O. Box 2038 Farmington, New Mexico 87401

9. Well No.
1-E

4. Location of Well
UNIT LETTER B, 890 FEET FROM THE North LINE AND 1820 FEET FROM THE East LINE, SECTION 27 TOWNSHIP 31-N RANGE 13-W NMPM.

10. Field and Pool, or Wildcat
Basin Dakota

15. Elevation (*Show whether DF, RT, GR, etc.*)
5580' GL

12. County
San Juan

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [ ]
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [X]	
OTHER [ ]		OTHER [ ]	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

7-9-80 Drilled 263' of 12 1/4 hole. Ran 6 jts of 8 5/8" 24# V-55 csg. Cemented w/250 SX Class B + 2% Ba Cl and 1/4# Celloflake a sack. Circulate 4 bbl to surface.
7-27-80 Drilled 6630' of 7 7/8" hole. Schlumberger ran IES, FDC/CNL/GR Caliper.
8-4-80 Ran 10 joints of 5 1/2" N-80 17# CSG and 160 joints of 5 1/2" 15.5# K-55 csg. Cemented 1st stage w/425 sacks 50/50 poz + 2% Gel and 6% Halad 9 and 1/4# Flocele a sack. Cement 2nd satage w/425 sacks 50/50 poz and 2% Gel + 1/4# Flocele a sack. Cemented 3rd stage w/425 sacks 65/35 .6% Halad 9 and 1/4# Flocele a sack, followed w/ 350 sacks 50/50 poz and 2% Gel and .6% Halad 9 + 1/4# Flocele a sack. Circulate 40 Bbls cemet to surface. Plug Down @ 4:30 PM

425 SX
425 SX
DV @ 4,571
DV @ 2283
425+350 SX

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

SIGNED [signature] TITLE Drilling Superintendent DATE 8-6-80

APPROVED BY Original Signed by FRANK T. CHAVEZ TITLE SUPERVISOR DISTRICT # 3 DATE AUG 9 1980

CONDITIONS OF APPROVAL, IF ANY:

Attachment 5

envirotech
Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Noble Energy	Project #:	04010-0014
Sample ID:	Jacquez 1-A MV	Date Reported:	08-04-09
Laboratory Number:	51055	Date Sampled:	08-03-09
Chain of Custody:	7563	Date Received:	08-03-09
Sample Matrix:	Aqueous	Date Extracted:	N/A
Preservative:		Date Analyzed:	08-03-09
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**6.35**	s.u.		
Conductivity @ 25° C	**57,800**	umhos/cm		
Total Dissolved Solids @ 180C	**37,000**	mg/L		
Total Dissolved Solids (Calc)	**36,560**	mg/L		
SAR	**168.6**	ratio		
Total Alkalinity as CaCO3	**280**	mg/L		
Total Hardness as CaCO3	**1,270**	mg/L		
Bicarbonate as CaCO3	**280**	mg/L	4.59	meq/L
Carbonate as CaCO3	**<0.1**	mg/L	0.00	meq/L
Hydroxide as CaCO3	**<0.1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**2.50**	mg/L	0.04	meq/L
Nitrite Nitrogen	**0.182**	mg/L	0.00	meq/L
Chloride	**22,000**	mg/L	620.62	meq/L
Fluoride	**0.840**	mg/L	0.04	meq/L
Phosphate	**6.00**	mg/L	0.19	meq/L
Sulfate	**35.0**	mg/L	0.73	meq/L
Iron	**14.9**	mg/L	0.53	meq/L
Calcium	**338**	mg/L	16.87	meq/L
Magnesium	**103**	mg/L	8.48	meq/L
Potassium	**100**	mg/L	2.56	meq/L
Sodium	**13,800**	mg/L	600.30	meq/L
Cations			628.20	meq/L
Anions			626.22	meq/L
Cation/Anion Difference			**0.32%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Jaquez #1-A MV.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

Attachment 5

envirotech
Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Noble Energy	Project #:	04010-0014
Sample ID:	Big Jake 26-05 Fruitland Coal	Date Reported:	08-03-09
Laboratory Number:	51043	Date Sampled:	07-31-09
Chain of Custody:	7544	Date Received:	07-31-09
Sample Matrix:	Aqueous	Date Extracted:	N/A
Preservative:		Date Analyzed:	07-31-09
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**7.26**	s.u.		
Conductivity @ 25° C	**18,800**	umhos/cm		
Total Dissolved Solids @ 180C	**10,700**	mg/L		
Total Dissolved Solids (Calc)	**10,670**	mg/L		
SAR	**96.4**	ratio		
Total Alkalinity as CaCO3	**722**	mg/L		
Total Hardness as CaCO3	**334**	mg/L		
Bicarbonate as CaCO3	**722**	mg/L	11.83	meq/L
Carbonate as CaCO3	**<0.1**	mg/L	0.00	meq/L
Hydroxide as CaCO3	**<0.1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**0.80**	mg/L	0.01	meq/L
Nitrite Nitrogen	**0.026**	mg/L	0.00	meq/L
Chloride	**6,050**	mg/L	170.67	meq/L
Fluoride	**1.60**	mg/L	0.08	meq/L
Phosphate	**6.50**	mg/L	0.21	meq/L
Sulfate	**0.300**	mg/L	0.01	meq/L
Iron	**1.08**	mg/L	0.04	meq/L
Calcium	**100**	mg/L	4.99	meq/L
Magnesium	**20.5**	mg/L	1.69	meq/L
Potassium	**4.00**	mg/L	0.10	meq/L
Sodium	**4,050**	mg/L	176.18	meq/L
Cations			182.95	meq/L
Anions			182.81	meq/L
Cation/Anion Difference			**0.08%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Big Jake #26-05.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505)632-0615 Fr (800)362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

Attachment 5

envirotech
Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Noble Energy	Project #:	04010-0014
Sample ID:	Big Jake 26-05 Dakota	Date Reported:	08-03-09
Laboratory Number:	51044	Date Sampled:	07-31-09
Chain of Custody:	7544	Date Received:	07-31-09
Sample Matrix:	Aqueous	Date Extracted:	N/A
Preservative:		Date Analyzed:	07-31-09
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	**6.54**	s.u.		
Conductivity @ 25° C	**13,300**	umhos/cm		
Total Dissolved Solids @ 180C	**7,970**	mg/L		
Total Dissolved Solids (Calc)	**8,070**	mg/L		
SAR	**31.6**	ratio		
Total Alkalinity as CaCO3	**356**	mg/L		
Total Hardness as CaCO3	**1,180**	mg/L		
Bicarbonate as CaCO3	**356**	mg/L	5.83	meq/L
Carbonate as CaCO3	**<0.1**	mg/L	0.00	meq/L
Hydroxide as CaCO3	**<0.1**	mg/L	0.00	meq/L
Nitrate Nitrogen	**1.10**	mg/L	0.02	meq/L
Nitrite Nitrogen	**0.032**	mg/L	0.00	meq/L
Chloride	**4,500**	mg/L	126.95	meq/L
Fluoride	**1.20**	mg/L	0.06	meq/L
Phosphate	**3.60**	mg/L	0.11	meq/L
Sulfate	**190**	mg/L	3.96	meq/L
Iron	**52.5**	mg/L	1.88	meq/L
Calcium	**472**	mg/L	23.55	meq/L
Magnesium	**<0.1**	mg/L	0.00	meq/L
Potassium	**195**	mg/L	4.99	meq/L
Sodium	**2,490**	mg/L	108.32	meq/L
Cations			136.86	meq/L
Anions			136.93	meq/L
Cation/Anion Difference			**0.05%**	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Big Jake #26-05.**

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Noble Energy Inc	Project #:	04010-0014
Sample ID:	Alamo 22-16 Pond	Date Reported:	03-10-10
Laboratory Number:	53306	Date Sampled:	03-09-10
Chain of Custody:	8836	Date Received:	03-09-10
Sample Matrix:	Aqueous	Date Analyzed:	03-09-10
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	7.43	s.u.		
Conductivity @ 25° C	1,940	umhos/cm		
Total Dissolved Solids @ 180C	1,710	mg/L		
Total Dissolved Solids (Calc)	1,350	mg/L		
SAR	1.6	ratio		
Total Alkalinity as CaCO3	378	mg/L		
Total Hardness as CaCO3	850	mg/L		
Bicarbonate as CaCO3	378	mg/L	6.20	meq/L
Carbonate as CaCO3	<0.1	mg/L	0.00	meq/L
Hydroxide as CaCO3	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	<0.01	mg/L	0.00	meq/L
Nitrite Nitrogen	0.003	mg/L	0.00	meq/L
Chloride	32.0	mg/L	0.90	meq/L
Fluoride	0.810	mg/L	0.04	meq/L
Phosphate	0.400	mg/L	0.01	meq/L
Sulfate	695	mg/L	14.47	meq/L
Iron	0.350	mg/L	0.01	meq/L
Calcium	200	mg/L	9.98	meq/L
Magnesium	85.2	mg/L	7.01	meq/L
Potassium	4.26	mg/L	0.11	meq/L
Sodium	104	mg/L	4.52	meq/L
Cations			21.62	meq/L
Anions			21.62	meq/L
Cation/Anion Difference			0.00%	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: Rio Bravo #27-05

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

envirotech
Analytical Laboratory

CATION / ANION ANALYSIS

Client:	Noble Energy Inc	Project #:	04010-0014
Sample ID:	Rio Bravo Pond	Date Reported:	03-10-10
Laboratory Number:	53307	Date Sampled:	03-09-10
Chain of Custody:	8836	Date Received:	03-09-10
Sample Matrix:	Aqueous	Date Analyzed:	03-09-10
Preservative:	Cool		
Condition:	Intact		

Parameter	Analytical Result	Units		
pH	7.46	s.u.		
Conductivity @ 25° C	1,990	umhos/cm		
Total Dissolved Solids @ 180C	1,670	mg/L		
Total Dissolved Solids (Calc)	1,410	mg/L		
SAR	1.7	ratio		
Total Alkalinity as CaCO3	403	mg/L		
Total Hardness as CaCO3	864	mg/L		
Bicarbonate as CaCO3	403	mg/L	6.61	meq/L
Carbonate as CaCO3	<0.1	mg/L	0.00	meq/L
Hydroxide as CaCO3	<0.1	mg/L	0.00	meq/L
Nitrate Nitrogen	0.100	mg/L	0.00	meq/L
Nitrite Nitrogen	0.004	mg/L	0.00	meq/L
Chloride	34.0	mg/L	0.96	meq/L
Fluoride	0.860	mg/L	0.05	meq/L
Phosphate	0.400	mg/L	0.01	meq/L
Sulfate	715	mg/L	14.89	meq/L
Iron	0.096	mg/L	0.00	meq/L
Calcium	202	mg/L	10.08	meq/L
Magnesium	87.7	mg/L	7.22	meq/L
Potassium	3.78	mg/L	0.10	meq/L
Sodium	118	mg/L	5.13	meq/L
Cations			22.53	meq/L
Anions			22.51	meq/L
Cation/Anion Difference			0.07%	

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: Rio Bravo #27-05

Analyst

Review

5796 US Highway 64, Farmington, NM 87401 | Ph (505) 632-0615 Fr (800) 362-1879 Fx (505) 632-1865 lab@envirotech-inc.com envirotech-inc.com

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Friday, October 23, 2009 10:48 AM
To: 'MDPeterson@nobleenergyinc.com'; 'ADuncan@nobleenergyinc.com'
Subject: Disposal Proposal from Noble Energy Inc. : Rio Bravo 27-5 30-045-33583

Hello Melanie or Aaron:
Please let your regulatory people know to send in the C-108 form for Mesaverde disposal into this well – if you still need it for disposal?
Currently most of us agree that the Menefee sand and Cliff House sand intervals may be just above 10,000 tds – or calculating that way. The Point Lookout stringers may have some gas in them or be actually fresher than the upper stuff – so maybe some sort of perf/swab test in this lower interval may be warranted. Please let me know if you have opinions on the PLO gas content?

COPIED BELOW IS OTHER DISCUSSION I THINK PERTINENT:
You can apply for the Point Lookout as long as the PLO is not a producing gas interval within a few miles. If this is a depleted gas well in the PLO, then you should have your attorney set the case for hearing to ask for approval that way – we don't routinely allow injection into depleted gas intervals because of potential waste issues.

(If you were considering drilling a deeper Entrada disposal well) To save you that cost, consider re-entering and deepening an old Dkta well and installing a liner from the Dkta to TD. You could use tapered injection tubing or even apply to inject into the top of that liner.

As far as cement coverage on surrounding wells within ½ mile of the proposed disposal well – you need all intervals isolated with cement to a factor of safety above and below.

Disclaimer:
Despite anything you hear from an OCD employee including myself, you should always consult all applicable Rules and also consult with your attorney prior to making a decision. You have the right to have an Examiner hearing if issues are in dispute.

Regards,

William V. Jones PE
New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505
505-476-3448

Jones, William V., EMNRD

From: MDPeterson@nobleenergyinc.com
Sent: Thursday, August 20, 2009 8:25 AM
To: Hayden, Steven, EMNRD; Jones, William V., EMNRD; EMNRD" <TerryG.Warnell@state.nm.us/@samedan.com
Cc: ADuncan@nobleenergyinc.com
Subject: Pickett Plots
Attachments: Rio Bravo 27-5_Picket Plots.ppt

Steve,
I apologize for not writing sooner. Yesterday was a day full of meetings. Thank you very much for the help. As promised, I created a couple of Pickett Plots. Deep resistivity was used because it represents actual formation resistivity as opposed to shallow resistivity which represents mud water used by the surface crew. There was grouping indicating that the unit within question is fully saturated. I created two lines, one on both extremes of the grouping to determine the highest and lowest possible value for the depths between 3488 to 3516. As you can see from the plots, the range of ppm using the Picket Plot is between 11,500-18,000.

We look forward to seeing the results created by the person that you are working with in Santa Fe and being able to move forward with a decision for the project.

Just a heads up on the temperature. Bottom hole temp for the well during the logging run at 4650 ft was 127 F which converts to 52.7 C. Using the standard method to determine the temp gradient, the reservoir temp was found to be 110.6 F or 43.596 C at 3512 ft depth.
Temp Gradient = 52.7 C- 15.5C/4650 Ft = **.008 C/ft**
Temperature at 3512 ft depth = (depth * Temp Gradient) + Surface Temperature = (3512 ft * .008 C/ft) + 15.5C = **43.596 C**

Thank you,
Melanie Peterson

"Hayden, Steven, EMNRD" <steven.hayden@state.nm.us>

08/19/2009 08:26 AM

To <MDPeterson@nobleenergyinc.com>, "Jones, William V., EMNRD" <William.V.Jones@state.nm.us>, "Warnell, Terry G, EMNRD" <TerryG.Warnell@state.nm.us>
cc
Subject RE: Proposed Noble SWD Well - San Juan Basin

Based on the Menefee top in the #8-Coal at 3517' and a few feet of finer grained seds above I have interpreted the lower sand in the #5 as Menefee, possibly stacked tidal channels. It would be strange to have a double shoreface next to, and even deeper than, a lagoon with coal. That would be the opposite of ravinement. Looking at the Quietman Federal #2 a mile to the west of the #5, we again see a thin Cliffhouse from 3538' to 3564' which agrees with the #8 well. This has a top coal at 3590 and fines upward to 3565'. These bracket the #5 on the east and west reinforcing the interpretation the lower sand in the #5 is Menefee.

The Cliffhouse can vary from not present to hundreds of feet thick across the basin, depending on the relative rates of transgression vs sedimentation. I would call the lower sand upper Menefee.

I don't have a program to do these calculations and use a worksheet that was developed by the BLM. I get RWA for the #5 at 25°C of

1.34 and in the #8 of 1.28. This surprised me because just looking at the R curves, I would have expected the result to be different. I will get the pro in Santa Fe to run this also.

We don't generally use the SP calculations here because the systems don't have much shale and most people don't think it works as well in coarser-grained environments.

Steve Hayden 505 334 6178-Office
District Geologist 505 320 0545-Mobile
NM OCD District 3 505 334 6170-Fax
1000 Rio Brazos Rd.
Aztec, NM 87410

From: MDPeterson@nobleenergyinc.com [mailto:MDPeterson@nobleenergyinc.com]
Sent: Tuesday, August 18, 2009 4:18 PM
To: Hayden, Steven, EMNRD; Warnell, Terry G, EMNRD; Jones, William V., EMNRD; ADuncan@nobleenergyinc.com
Subject: RE: Proposed Noble SWD Well - San Juan Basin

Forgive me, because I am very new to this area, still learning and I really am trying to get this right. If I am picking formation tops incorrectly then I want to fix that as quick as I can. All of the prior picks that I am working with and the picks that I obtained from the state led me to believe that the bottom of the Cliffhouse was after the second thick sandstone. I would like to get this right, so if you could help me out that would be great. Several papers that I have read have also referred to the bottom of the Cliffhouse as having a thicker shoreface, lagoon, thick shoreface and then interbedding of shales and sands moving up in succession. I also have a paper by Donselaar from 1989 that the Menefee as shows a upward transition from fluvial sandstone to shale to carbonaceous shale to coal and interbedded sandstones. I assumed that when the coals and interbedded sands stopped that this meant the contact for Cliffhouse. Am I wrong about that? It doesn't mention that the Menefee has a thick sand interval. What is the formation that is at the depth of 3537' to 3568'? From what I can tell it looks like a very clean sandstone like the interval between 3486 to 3516'.

Thank you,
Melanie

"Hayden, Steven, EMNRD"
<steven.hayden@state.nm.us>

08/18/2009 03:33 PM

To <MDPeterson@nobleenergyinc.com>
cc "Warnell, Terry G, EMNRD" <TerryG.Warnell@state.nm.us>, "Jones, William V., EMNRD" <William.V.Jones@state.nm.us>, <ADuncan@nobleenergyinc.com>
Subject RE: Proposed Noble SWD Well - San Juan Basin

Absolutely not. The Menefee starts with the finer grained sediments and coals. The highest coal is at 3517'.

Steve Hayden 505 334 6178-Office
District Geologist 505 320 0545-Mobile
NM OCD District 3 505 334 6170-Fax
1000 Rio Brazos Rd.
Aztec, NM 87410

From: MDPeterson@nobleenergyinc.com [mailto:MDPeterson@nobleenergyinc.com]
Sent: Tuesday, August 18, 2009 3:32 PM
To: Hayden, Steven, EMNRD
Cc: Warnell, Terry G, EMNRD; Jones, William V., EMNRD; ADuncan@nobleenergyinc.com
Subject: RE: Proposed Noble SWD Well - San Juan Basin

Sorry, I should have zoomed out farther in the powerlog screenshot. You couldn't get a good picture of the Cliffhouse with the Menefee. Here is a better one and you can clearly see the Menefee at 3561. The interval for the clean sands of the Cliffhouse is between 3486' and 3560. I am positive that I used the Rio Bravo 27-5 for the calculations. Would you want me to send the LAS file? We used the 3512' as our depth because it is still within the clean sands and it also had the highest resistivity for that interval. As you guys already know, the higher the resistivity the lower the TDS count, so I wanted to make sure to get the lowest TDS count by using the highest resistivity.

I will get right on making a Picket Plot and send you the data soon as it is done.

Thanks for the help again,
Melanie

"Hayden, Steven, EMNRD"
<steven.hayden@state.nm.us>

08/18/2009 02:09 PM

To "Jones, William V., EMNRD" <William.V.Jones@state.nm.us>, "Warnell, Terry G, EMNRD" <TerryG.Warnell@state.nm.us>
cc <MDPeterson@nobleenergyinc.com>,
Subject RE: Proposed Noble SWD Well - San Juan Basin

It appears they used the Rio Bravo 27 #8 for their calculations. I pick the Menefee top at 3510' and it the first coal top is at 3517'. By picking their CH reading at 3512 they eliminated the Resistivity crossover from the thin Cliff House present from 3486' to 3510'. I used deep R of 6, which was high for the interval and shallow R of 20 which was a little low. This makes my result possibly a little high.

Whenever looking at the upper MV you need to be selective as to the picks for tops. When the gamma goes down and the R goes up you are probably into the Menefee. The CH is strictly a shoreline sand that may not even be present as the sea was in transgression and ravinement often wiped it out.

Steve Hayden
District Geologist
NM OCD District 3
1000 Rio Brazos Rd.
505 334 6178-Office
505 320 0545-Mobile
505 334 6170-Fax

----- Forwarded by Aaron Duncan/Denver/NobleEnergy/Samedan on 07/30/2009 11:07 AM -----

"Jones, William V., EMNRD"
<William.V.Jones@state.nm.us>

07/30/2009 10:36 AM

To <ADuncan@nobleenergyinc.com>

cc "Hayden, Steven, EMNRD" <steven.hayden@state.nm.us>, <MDPeterson@nobleenergyinc.com>, "Warnell, Terry G, EMNRD" <TerryG.Warnell@state.nm.us>, "Ezeanyim, Richard, EMNRD" <richard.ezeanyim@state.nm.us>, "Perrin, Charlie, EMNRD" <charlie.perrin@state.nm.us>

Subject Proposed Noble SWD Well - San Juan Basin

Hello Aaron:
Looks like the well you are looking at MAY be too low in salts in the Cliff house – but you could apply for the Point Lookout as long as the PLO is not a producing gas interval within a few miles. If this is a depleted gas well in the PLO, then you should have your attorney set the case for hearing to ask for approval that way – we don't routinely allow injection into depleted gas intervals because of potential waste issues. Talk to Steve Hayden in Aztec about the Cliff House salts issue. I recommend you consider doing an injection test into the PLO first before applying, Steve says it appears to be tight. You can ask Charlie or Kelly in Aztec for permission to do this.

To save you the cost of a new drill:
If you can find an inactive well drilled to the Dakota and with at least 5-1/2 inch casing, then I recommend (you consider) drilling it out to the Entrada and cementing a 3-1/2 inch liner from the Dkta through the Entrada. After the liner is properly tested, we (might) allow Noble to run a tubing with packer to the top of the liner and inject that way. But since this is rarely done, first apply for this as a permit to deepen to the BLM/OCD offices and also apply for the SWD permit. Others here and in Aztec/Farmington may have a problem with this. You would need to show in your injection permit what geologic intervals are covered by the proposed liner and what their production potential is and also show how you would test the liner for leaks (MIT testing) periodically.

As far as cement coverage on surrounding wells within ½ mile of the proposed disposal well – you need all intervals isolated with cement to a factor of safety above and below. If we choose to protect the Cliff House from injection and you have an Area of Review well with cement above and below the Mvrd but not OVER the Mvrd – then you would need to drill out and replug that well to isolate the Cliff house from the PLO (if the PLO is your disposal zone).

We prefer you to pick the Entrada (Morrison, Bluff, Entrada) as an injection interval in the San Juan Basin. However, because of State of NM rules and also of EPA rules defining "Fresh Water", the Entrada, Cliff house or any other interval picked for disposal purposes MUST have insitu waters with over 10,000 mg/l of TDS. We like to use open hole logs to infer this salinity – swabbing samples would probably take too long to get to insitu waters and may require a good perf and breakdown first – so this would be costly and it would also be challenged if log calculations indicate otherwise.

Disclaimer:
Despite anything you hear from an OCD employee including myself, you should always consult all applicable Rules and also consult with your attorney prior to making a decision. You have the right to have an Examiner hearing if issues are in dispute.

William V. Jones PE
New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505
505-476-3448

From: ADuncan@nobleenergyinc.com [mailto:ADuncan@nobleenergyinc.com]
Sent: Thursday, July 30, 2009 9:01 AM
To: Jones, William V., EMNRD
Subject: Salt Water Disposal Well - SJ

Will,

Thank you for returning my call. We are looking converting a gas well into a SWD in San Juan county. Below are some well details and specific questions regarding zonal isolation.

Well: Rio Bravo 27-05
API: 30-045-33583
Target Injection site: Cliffhouse & Point Lookout

What isolation of the Mesaverde needs to be done on the nearby wells (1/2 mile radius)?

Do the surrounding wells need a particular amount of cement covering the Mesaverde, and if so is it a particular amount above and below formation tops?

Also I have learned that sometimes the Mesaverde is difficult to inject into due the total dissolved solids. The hearing is only required if the TDS is below the 10,000 mg/L, correct?

And if this option ends up not being favorable, a new drill into the Entrada will be considered. Just from your experience, is there any common problems with this zone that may lead to difficulty in obtaining approval?

Thank you,

Aaron Duncan.

Jones, William V., EMNRD

From: MDPeterson@nobleenergyinc.com
Sent: Tuesday, August 18, 2009 1:12 PM
To: Hayden, Steven, EMNRD; Jones, William V., EMNRD
Cc: ADuncan@nobleenergyinc.com
Subject: Fw: Proposed Noble SWD Well - San Juan Basin
Attachments: Rio Bravo 27-5 TDS Calc.doc

William and Steve,
We are still in the process of evaluating what our best options are for a disposal well and are still looking at the possibility of disposing in the Mesa Verde. We recently performed a study to estimate the TDS content for the Cliffhouse Formation. We used three methods based off of the log responses and were getting a value between 10,000 and 18,000 ppm. We used Archie's equation and the true resistivity, the spontaneous potential curve and also powerlog. Powerlog is a program we have in our office that utilizes LAS files to input for the equations and charts. Below is a word file to show the process that we took to determine those values. Within the interval in question there is a gap between the shallow resistivity and deep resistivity that is showing the difference in salinity between the fresher mud water used to drill(shallow resistivity) and the formation water (deep resistivity). We chose to use the highest value for the deep resistivity (11 ohms) within the Cliffhouse formation for the log for our equations. Steve, I know you had come up with the 4700 ppm and had told me how you did it, but I couldn't remember or duplicate it. Could you tell us how you did it and what the reasoning was? If the TDS values of 10,000 to 18,000 ppm, determined by various equations within the word file being sent, and a water sample that is above 10,000 ppm from the well in question, would that be definitive enough for the application to be accepted?

Thanks guys for the help,

Melanie Peterson

----- Forwarded by Melanie Peterson/Denver/NobleEnergy/Samedan on 08/18/2009 12:53 PM -----

Aaron Duncan/Denver/NobleEnergy/Samedan

07/30/2009 11:07 AM

To Melanie Peterson/Denver/NobleEnergy/Samedan@Samedan
cc
Subject Fw: Proposed Noble SWD Well - San Juan Basin

----- Forwarded by Aaron Duncan/Denver/NobleEnergy/Samedan on 07/30/2009 11:07 AM -----

"Jones, William V., EMNRD" <William.V.Jones@state.nm.us>

07/30/2009 10:36 AM

To <ADuncan@nobleenergyinc.com>
cc "Hayden, Steven, EMNRD" <steven.hayden@state.nm.us>, <MDPeterson@nobleenergyinc.com>, "Warnell, Terry G, EMNRD" <TerryG.Warnell@state.nm.us>, "Ezeanyim, Richard, EMNRD" <richard.ezeanyim@state.nm.us>, "Perrin, Charlie, EMNRD" <charlie.perrin@state.nm.us>
Subject Proposed Noble SWD Well - San Juan Basin

Hello Aaron:
Looks like the well you are looking at MAY be too low in salts in the Cliff house – but you could apply for the Point Lookout as long as the PLO is not a producing gas interval within a few miles. If this is a depleted gas well in the PLO, then you should have your attorney set the case for hearing to ask for approval that way – we don't routinely allow injection into depleted gas intervals because of potential waste issues. Talk to Steve Hayden in Aztec about the Cliff House salts issue. I recommend you consider doing

an injection test into the PLO first before applying, Steve says it appears to be tight. You can ask Charlie or Kelly in Aztec for permission to do this.

To save you the cost of a new drill:
If you can find an inactive well drilled to the Dakota and with at least 5-1/2 inch casing, then I recommend (you consider) drilling it out to the Entrada and cementing a 3-1/2 inch liner from the Dkta through the Entrada. After the liner is properly tested, we (might) allow Noble to run a tubing with packer to the top of the liner and inject that way. But since this is rarely done, first apply for this as a permit to deepen to the BLM/OCD offices and also apply for the SWD permit. Others here and in Aztec/Farmington may have a problem with this. You would need to show in your injection permit what geologic intervals are covered by the proposed liner and what their production potential is and also show how you would test the liner for leaks (MIT testing) periodically.

As far as cement coverage on surrounding wells within ½ mile of the proposed disposal well – you need all intervals isolated with cement to a factor of safety above and below. If we choose to protect the Cliff House from injection and you have an Area of Review well with cement above and below the Mvrd but not OVER the Mvrd – then you would need to drill out and replug that well to isolate the Cliff house from the PLO (if the PLO is your disposal zone).

We prefer you to pick the Entrada (Morrison, Bluff, Entrada) as an injection interval in the San Juan Basin. However, because of State of NM rules and also of EPA rules defining "Fresh Water", the Entrada, Cliff house or any other interval picked for disposal purposes MUST have insitu waters with over 10,000 mg/l of TDS. We like to use open hole logs to infer this salinity – swabbing samples would probably take too long to get to insitu waters and may require a good perf and breakdown first – so this would be costly and it would also be challenged if log calculations indicate otherwise.

Disclaimer:
Despite anything you hear from an OCD employee including myself, you should always consult all applicable Rules and also consult with your attorney prior to making a decision. You have the right to have an Examiner hearing if issues are in dispute.

William V. Jones PE
New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505
505-476-3448

From: ADuncan@nobleenergyinc.com [mailto:ADuncan@nobleenergyinc.com]
Sent: Thursday, July 30, 2009 9:01 AM
To: Jones, William V., EMNRD
Subject: Salt Water Disposal Well - SJ

Will,

Thank you for returning my call. We are looking converting a gas well into a SWD in San Juan county. Below are some well details and specific questions regarding zonal isolation.

Well: Rio Bravo 27-05
API: 30-045-33583
Target Injection site: Cliffhouse & Point Lookout

What isolation of the Mesaverde needs to be done on the nearby wells (1/2 mile radius)?

Do the surrounding wells need a particular amount of cement covering the Mesaverde, and if so is it a particular amount above and below formation tops?

Also I have learned that sometimes the Mesaverde is difficult to inject into due the total dissolved solids. The hearing is only required if the TDS is below the 10,000 mg/L, correct?

And if this option ends up not being favorable, a new drill into the Entrada will be considered. Just from your experience, is there any common problems with this zone that may lead to difficulty in obtaining approval?

Thank you,

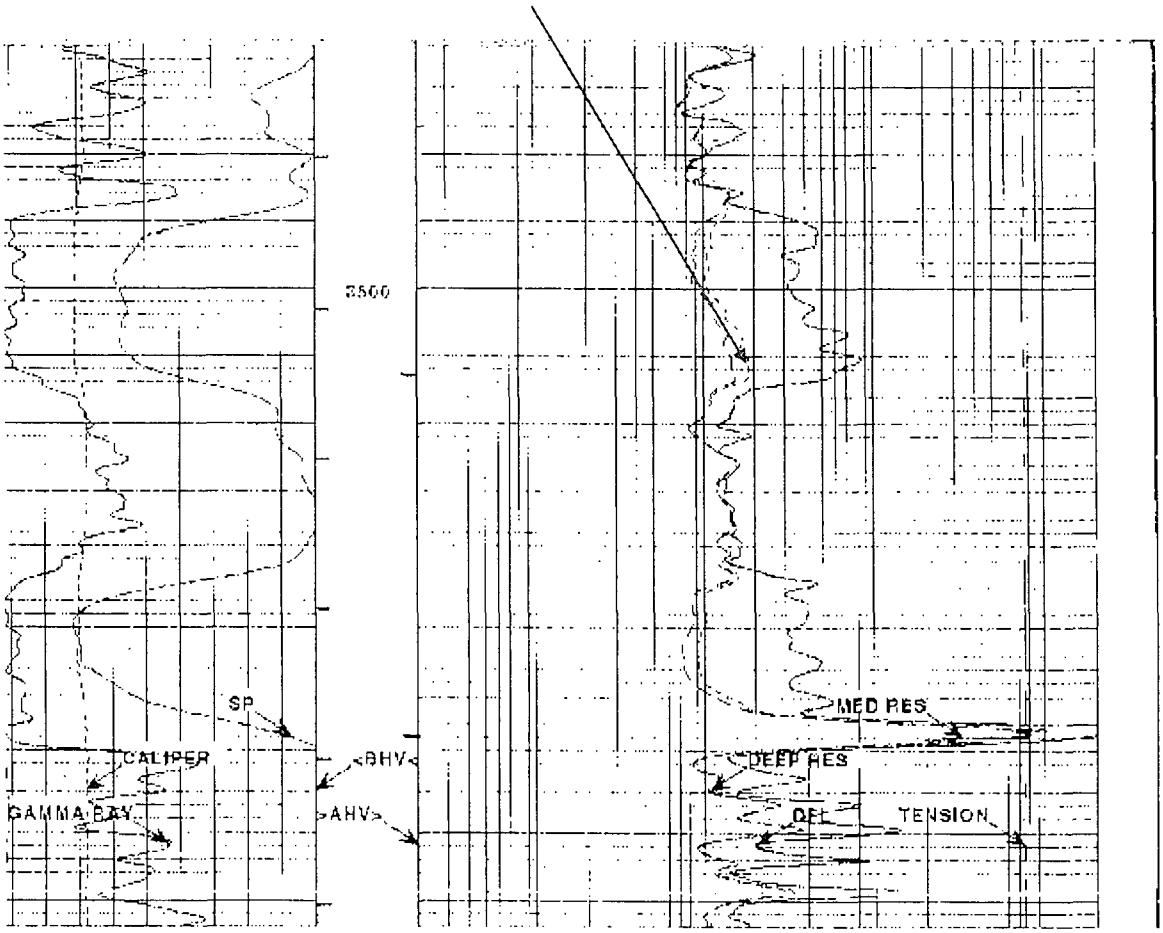
Aaron Duncan.

Two methods used for TDS calculation:

1. $S_w = [\ (a / \Phi^m)*(R_w / R_t)\ ]^{(1/n)}$

Knowns:

$Sw=$ 100%, a=1, m=1.82, n=2, $R_{t=11}$, $\Phi_{=12\%}$



Rewrite the equation to determine R_w

$R_w = R_t * \Phi^m$

$= 11 * (.12^{1.82})$

$= .232$

Correction for temperature at depth: 3512 ft

Knowns:

BHT = 127°F @ 4650 ft., depth: 3512 ft, surface temp= 60°F

Temperature Gradient = (BHT-ST)/BH Depth

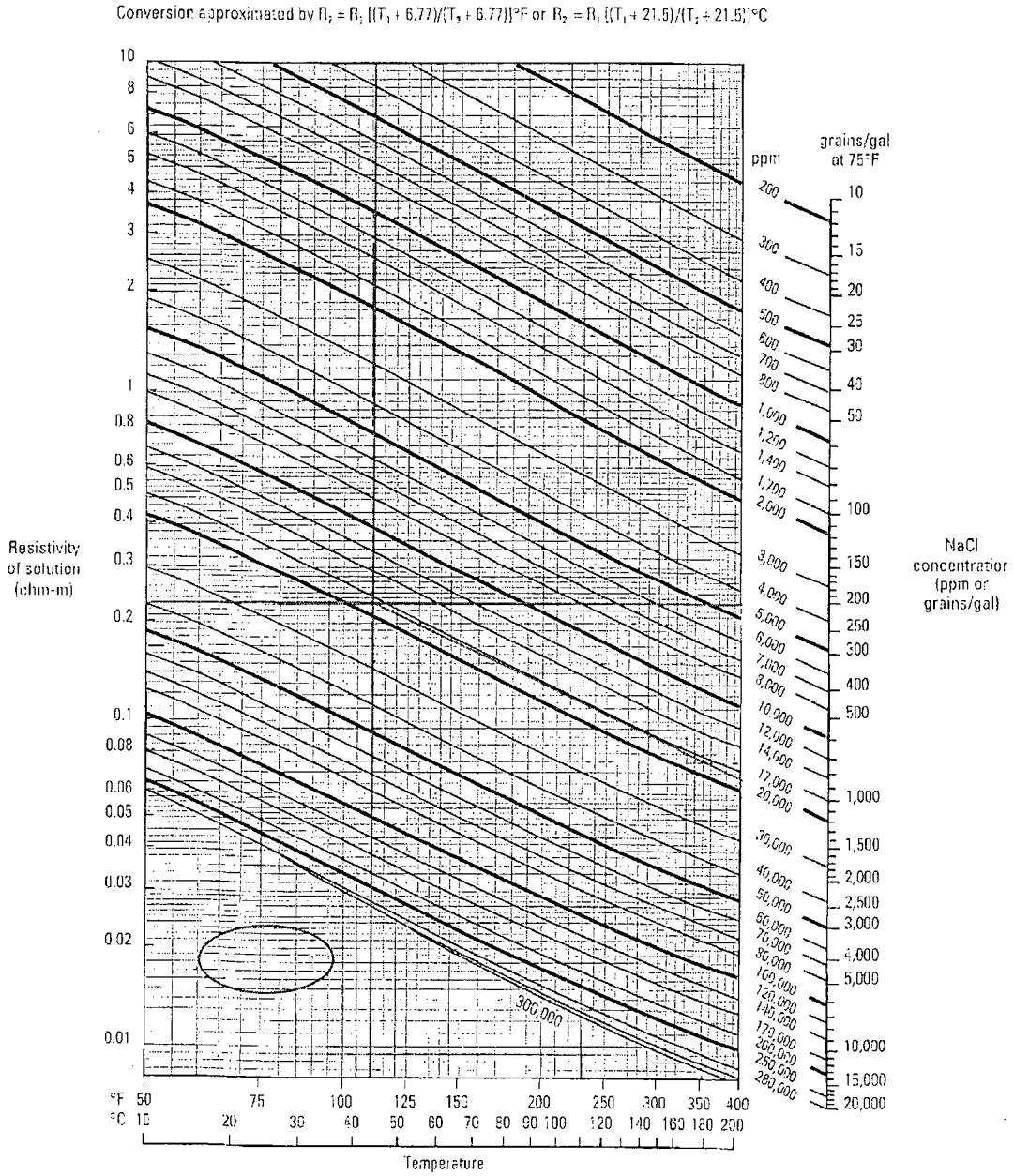
=(127-60)/4650

= 0.014409

Temp at 3512ft = (Temp Grad * Depth) + ST

= (0.014409*3512) + 60°F

= 110.6°F



2. R_{weq} Determination from E_{ssp}

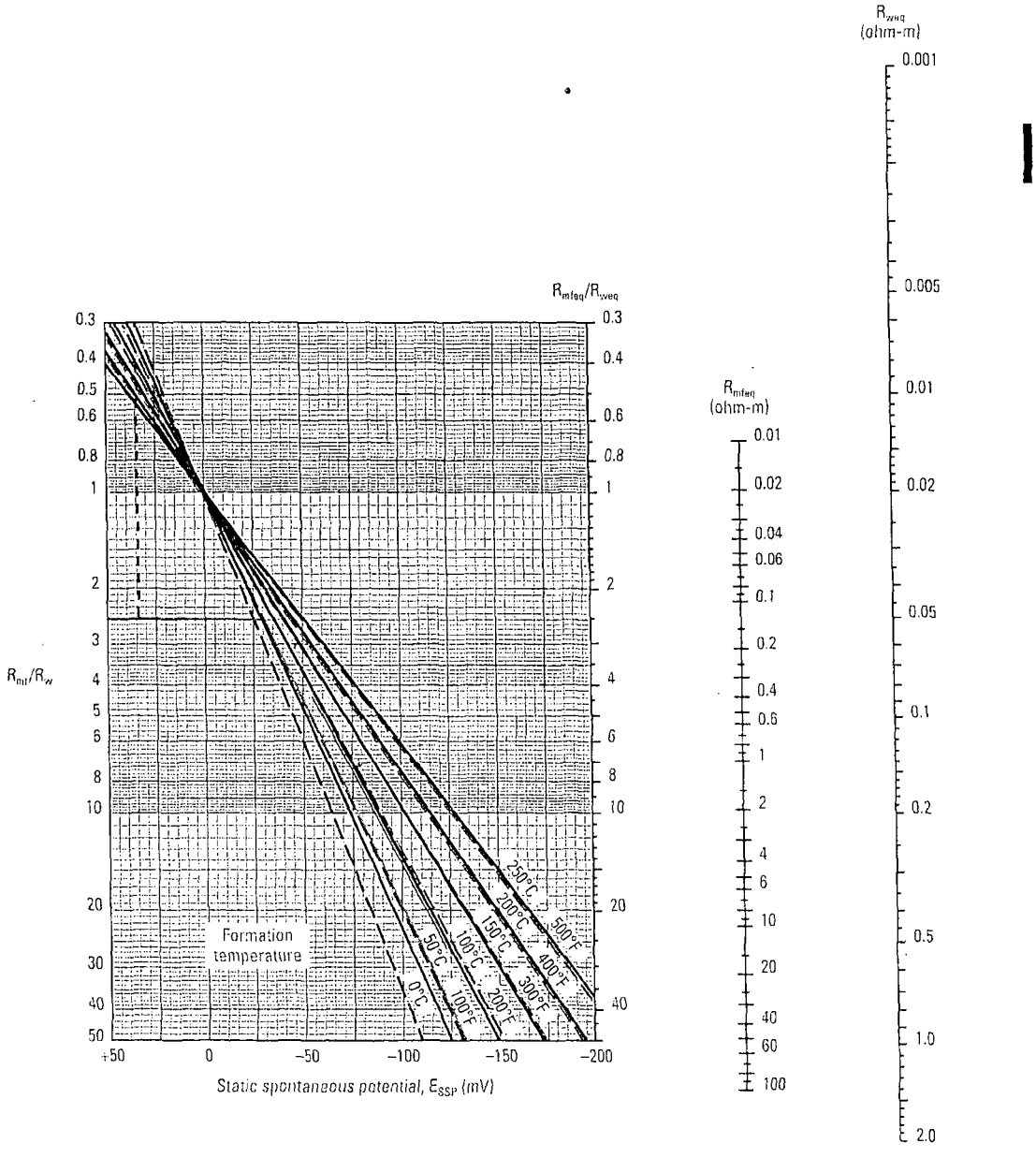
Knowns:

SP = 67 mv deflection, Rmf: 4.63 @ 61 °F

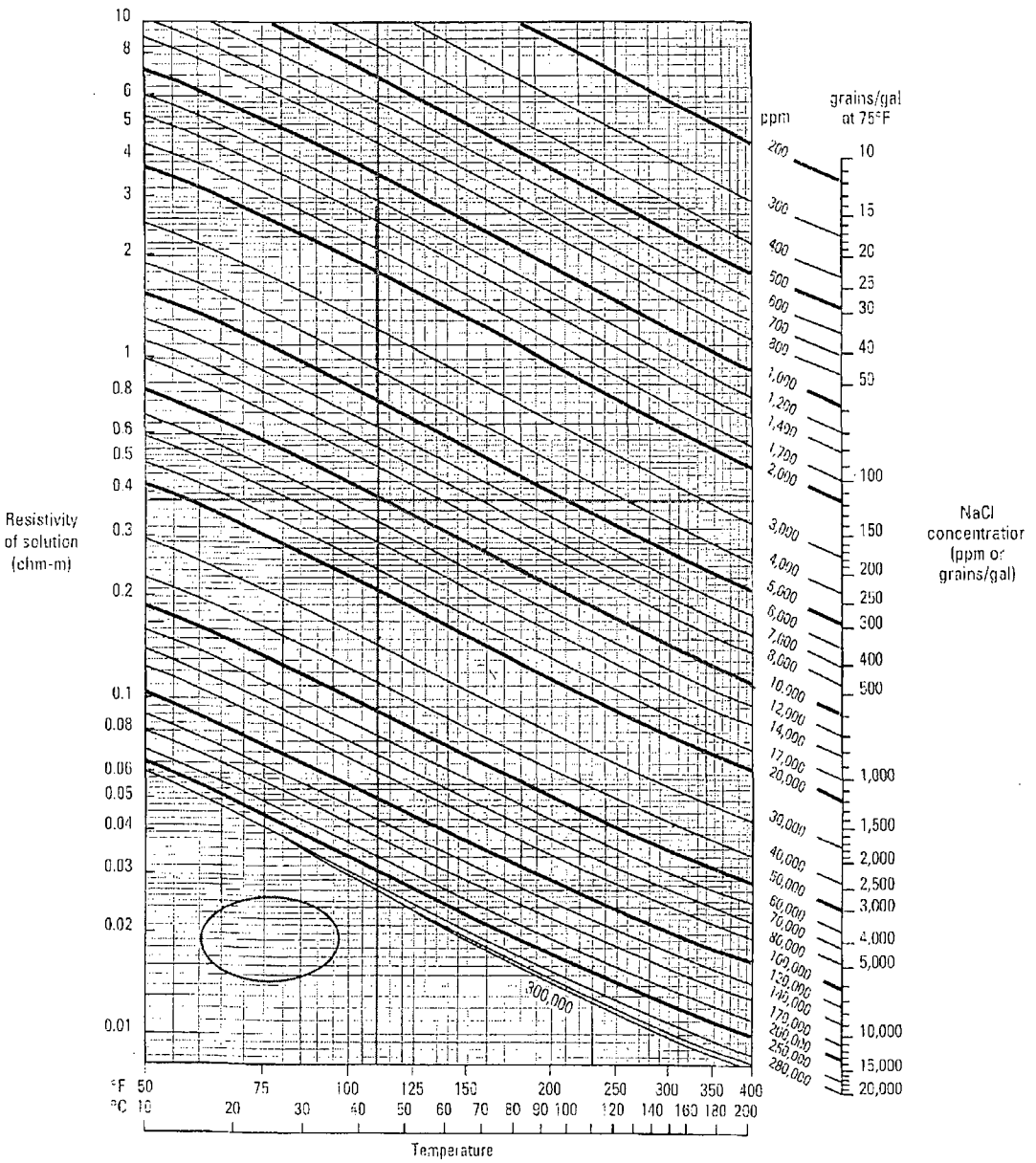
Rmf correction for temperature at depth:
[(61+6.7)/(110.6+6.7)]*4.53 = 2.519

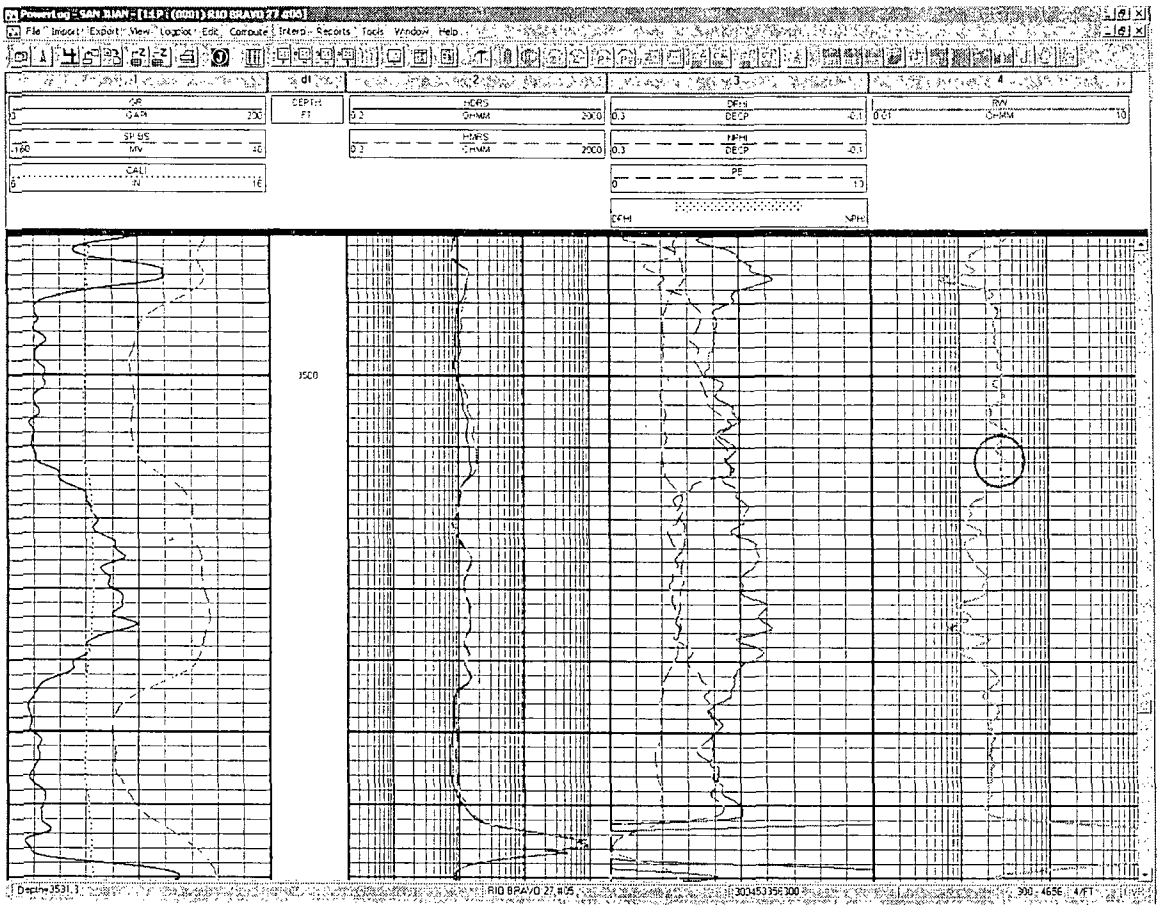
R_{weq} Determination from E_{SSP}

SP-1
(former SP-1)



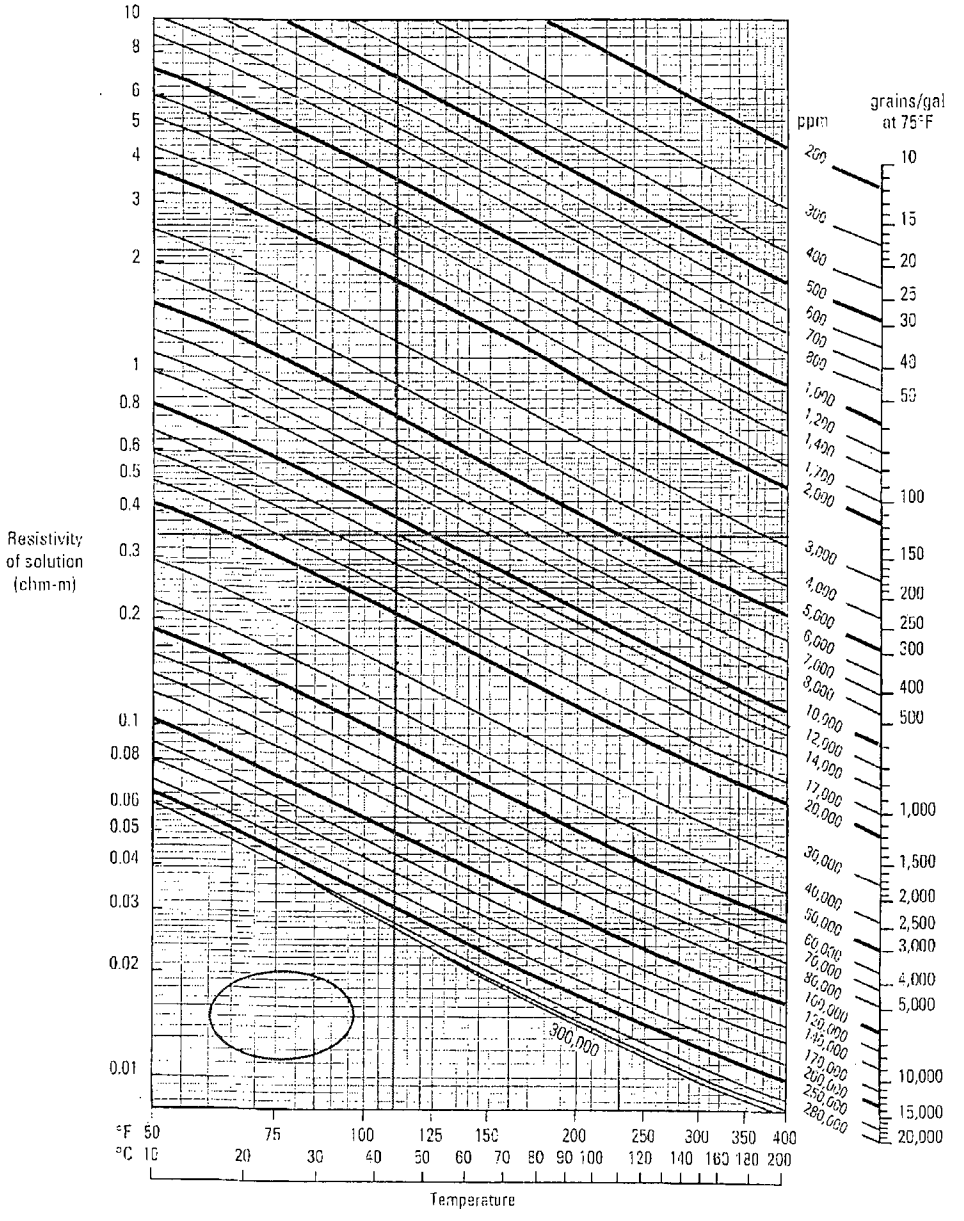
Conversion approximated by $R_2 = R_1 [(T_1 + 6.77)/(T_2 + 6.77)]$°F or $R_2 = R_1 [(T_1 + 21.5)/(T_2 + 21.5)]$°C

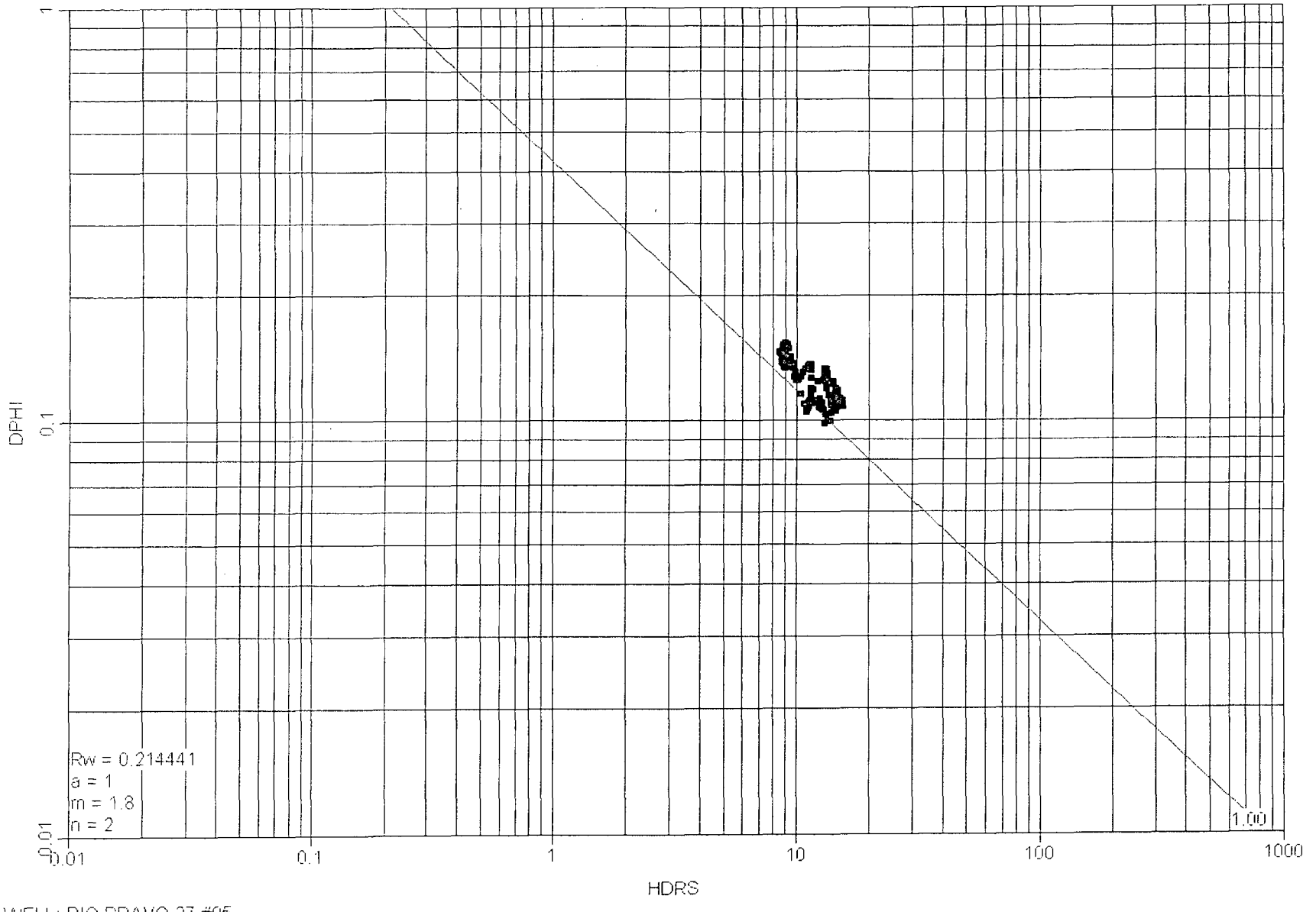




Using Powerlog Rw = .35

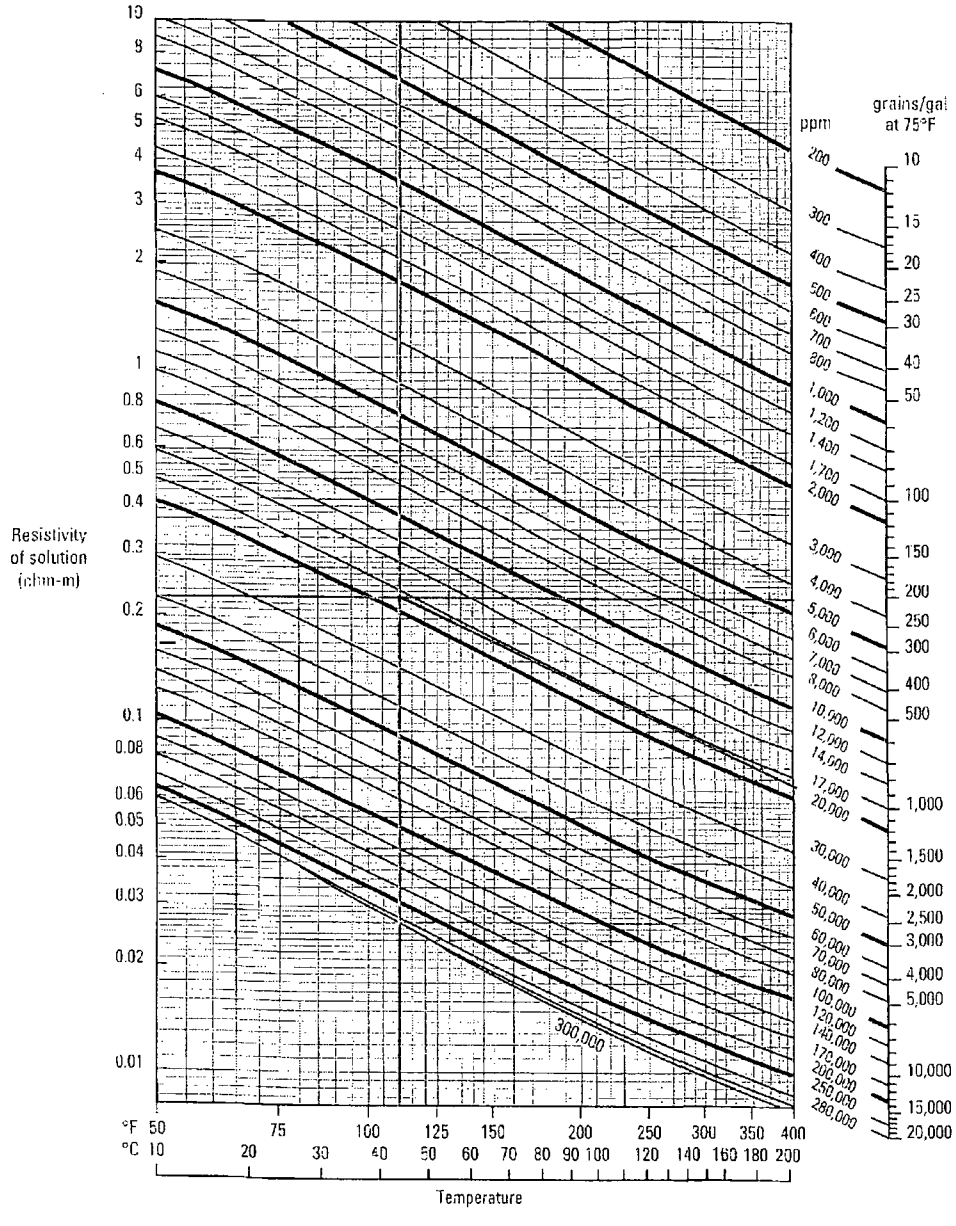
Conversion approximated by $R_2 = R_1 [(T_1 + 6.77)/(T_2 + 6.77)]$°F or $R_2 = R_1 [(T_1 + 21.5)/(T_2 + 21.5)]$°C

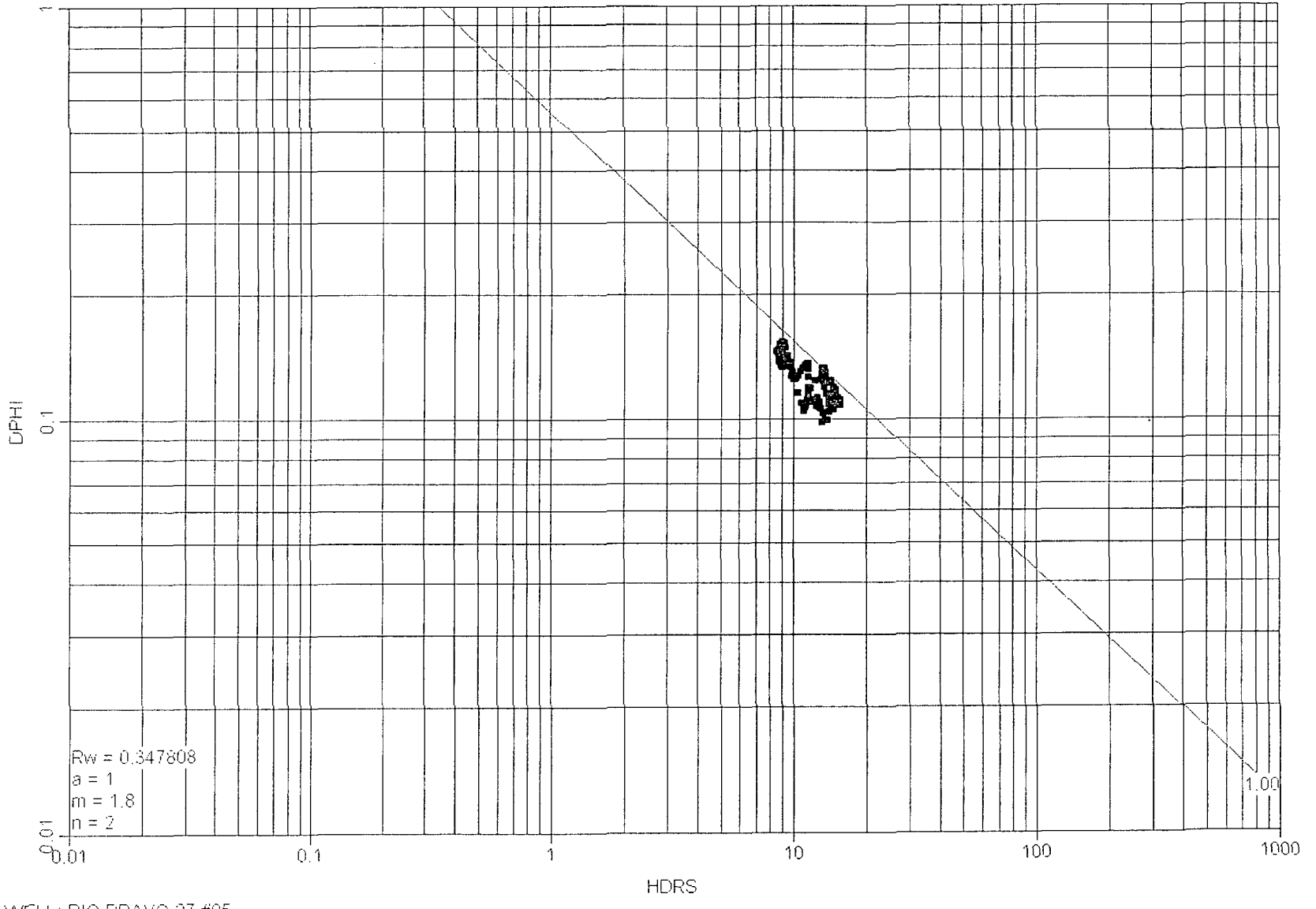




WELL: RIO BRAVO 27 #05
ZONE: 3468.000 - 3516.000 FT
DATE: 20 Aug 2009 @ 8:16

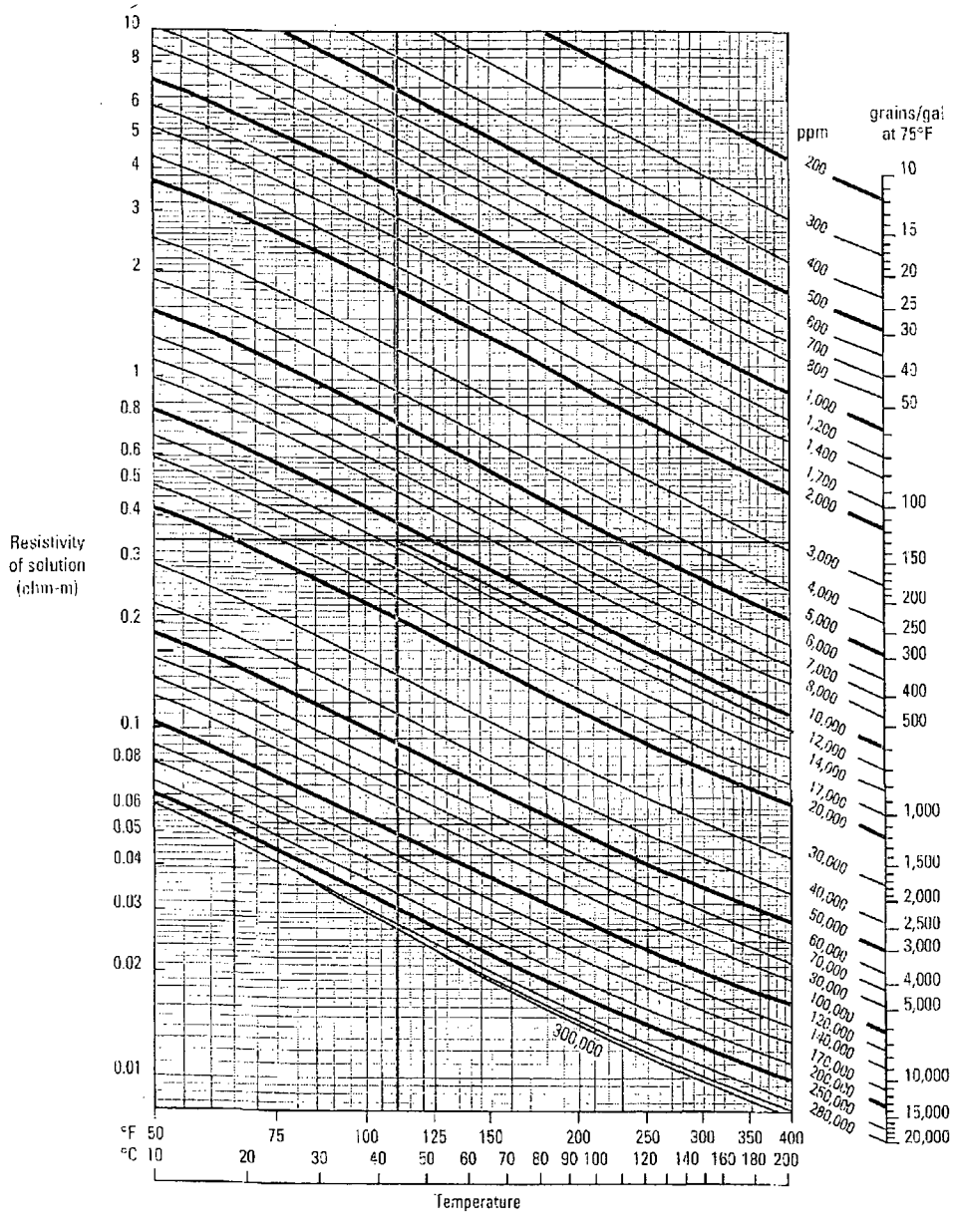
Conversion approximated by $R_2 = R_1 [(T_1 + 6.77)/(T_2 + 6.77)]$°F or $R_2 = R_1 [(T_1 + 21.5)/(T_2 + 21.5)]$°C





WELL: RIO BRAVO 27 #05
ZONE: 3488.000 - 3516.000 FT
DATE: 20 Aug 2009 @ 7:09

Conversion approximated by $R_2 = R_1 [(T_1 + 6.77)/(T_2 + 6.77)]$ °F or $R_2 = R_1 [(T_1 + 21.5)/(T_2 + 21.5)]$ °C



WORKSHEET FOR ESTIMATING WATER QUALITY FROM ELECTRICAL WELL LOGS

Noble

From Log Header: 30-45-33583

Well No. & Location RioBravo #5 E, 27, 31N 13W

Rmf 4.53 at 61 °F

Max. Recorded Temp. 127 °F

Bottom Logged Interval 4650 feet

Temp. Gradient in degrees F/Foot = (max. Rec. Temp - 60°F ÷ Bottom Logged Interval = .014

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Sand between 3490 and 3520 Feet Depth

T_f = (Temp. Gradient x Depth of F_m) + 60°F = 109 °F

Rmf at T_f (From chart Gen-9 Schlumberger) = 1.7

Rsfl (or equivalent) = 25 ohm-meters (From Log)

Rild (or equivalent) = 10 ohm-meters (From Log)

$F = \frac{Rsfl}{Rmf}$ = ______ = 14.7

$Rwa = \frac{Rild}{F}$ = ______ = .68 ohm - m at T_f

Convert Rwa @ T_f to Rwa @ 77°F (25°C) $R_{77°} = R_{Tf}\left(\frac{T_f + 6.77}{83.77}\right)$; in °F (Arps Eqn.)

Rwa @ 77°F (25°C) = 0.94

Use chart or equation to relate Rwa to TDS ~4700

(If TDS is less than 5000, continue to lower sand)

See other log analysis after Pickett Plot was USED

Jones, William V., EMNRD

From: MDPeterson@nobleenergyinc.com
Sent: Thursday, January 28, 2010 3:29 PM
To: Jones, William V., EMNRD
Subject: RE: Disposal application from Noble Energy Inc.: Rio Bravo 27-05 30-045-33583 Mesaverde Formation
Attachments: 2055-Sharp.pdf

Will,
In the document below are the details for the 4 wells that were within the 2 mile radius and had attempted production from the Mesa Verde. All of the perfs for these wells were in the Pointlookout. The Senter 1C is the currently producing well and it is on the outskirts of the 2 mi line. It is 1.98 mi away from the Rio Bravo 27-5.
Sincerely,
Melanie

Melanie Peterson
San Juan Geologist

Noble Energy Inc
1625 Broadway St. Suite 2200
Denver CO, 80202
Direct: 303-228-4207

"Jones, William V., EMNRD" <William.V.Jones@state.nm.us>

01/28/2010 02:03 PM

To <MDPeterson@nobleenergyinc.com>
cc
Subject RE: Disposal application from Noble Energy Inc.: Rio Bravo 27-05 30-045-33583 Mesaverde Formation

They should ask a private well owner for a water sample.
If the owner refuses, then we can't make them.

Getting a background sample in this application file may protect Noble from future accusations that this disposal well caused their fresh water well to go saline.

I think it to everyone's advantage to get a sample and it is also in the C-108 requirements.

Take Care,

William V. Jones PE
New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505
505-476-3448

From: MDPeterson@nobleenergyinc.com [mailto:MDPeterson@nobleenergyinc.com]
Sent: Thursday, January 28, 2010 11:25 AM
To: Jones, William V., EMNRD
Subject: RE: Disposal application from Noble Energy Inc.: Rio Bravo 27-05 30-045-33583 Mesaverde Formation

Thanks for the help. I forgot about the Senter 1C. I will get you that data right away.
I have one more question. Aaron Duncan (one of our engineers) talked with someone at the New Mexico Office of State Engineers to find out if we could get a fresh water well sample and he was told that all of the wells in that area were privately owned. What do people usually do in that situation? Do we need to have one of our workers go door to door and request a sample? If no one allows us to take one then where should we go from there?
Thank you,
Melanie

"Jones, William V., EMNRD" <William.V.Jones@state.nm.us>

01/28/2010 10:16 AM

To <MDPeterson@nobleenergyinc.com>
cc
Subject RE: Disposal application from Noble Energy Inc.: Rio Bravo 27-05 30-045-33583 Mesaverde Formation

Hello Melanie:
I looked at your C-108 submittal. It had listed wells within 2 miles and whether the Mesaverde was tested or produced. It appears there is a ring of swab tests or even production tests around the proposed disposal well. Look at Part VI page 3plus.

Also the log analysis of the upper PLO looked like it had some hydrocarbon effect – possibly nothing, but maybe enough to require a swab test. Even if this well did not have a possible producing PLO, the swab test could yield info that would help identify other PLO wells that could produce.

Be sure and let me know when the OCD web site shows all is OK with Rule 5.9 OR Daniel Sanchez issues a letter stating it is OK for me to proceed. So just getting the work done is the first step, the second step is if the Aztec district office gets its paperwork updated on the inactive wells showing they are active again.

Take Care,

William V. Jones PE
New Mexico Oil Conservation Division
1220 South St. Francis
Santa Fe, NM 87505
505-476-3448

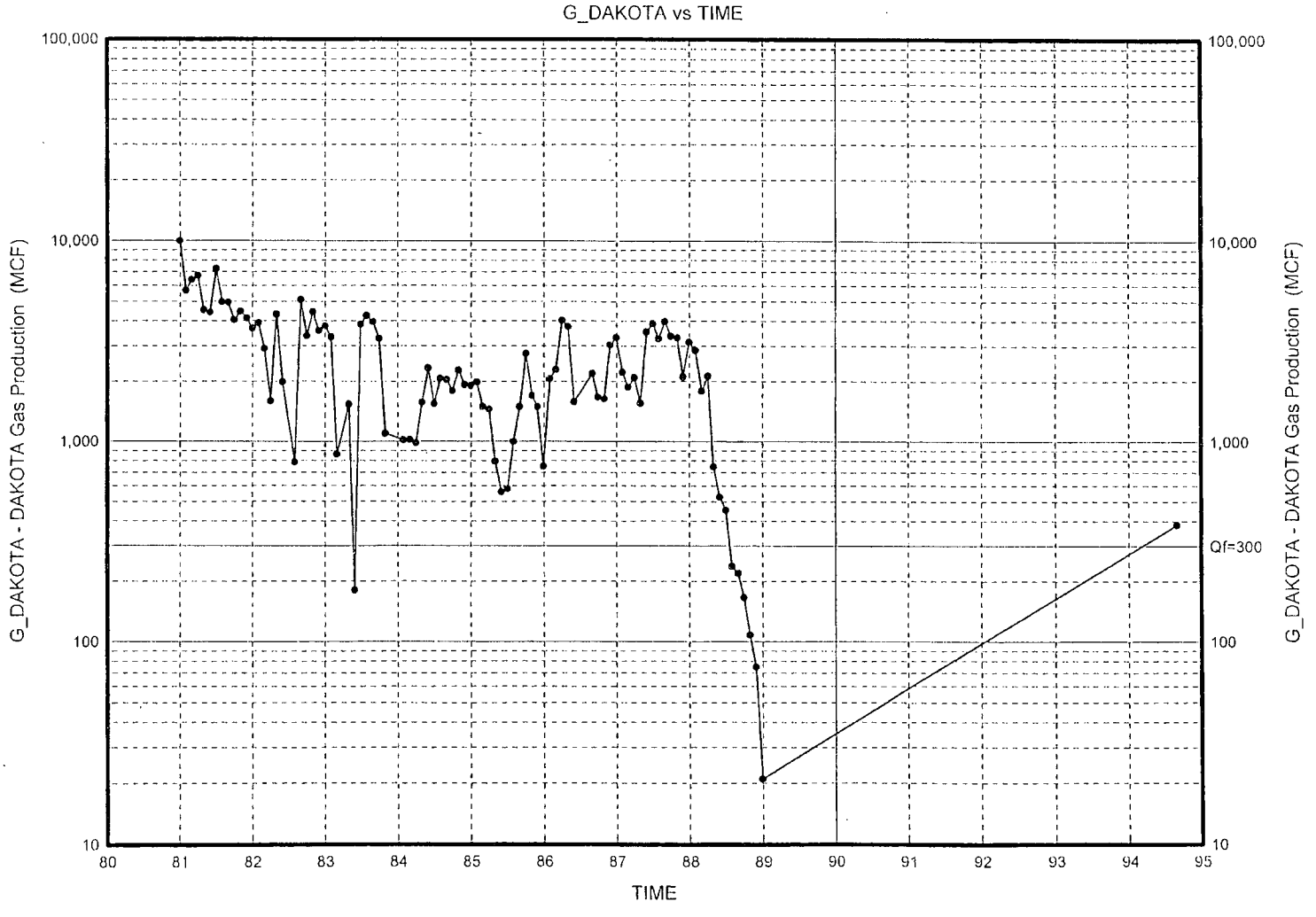
From: MDPeterson@nobleenergyinc.com [mailto:MDPeterson@nobleenergyinc.com]
Sent: Thursday, January 28, 2010 10:00 AM
To: Jones, William V., EMNRD
Subject: Re: Disposal application from Noble Energy Inc.: Rio Bravo 27-05 30-045-33583 Mesaverde Formation

Will,
I am actually glad you brought the line item D up. We are in the midst of land work, AFE, regs & etc. to P&A two of the wells on the list (Rio Bravo 1 and Eldorado 1), try to bring back production in the Tribal C3A and to convert the Tribal 5-9 into a Gallup producing well. We will be having a meeting later today on these so we can see what we have left to do on them. We will be sure to stay on top of those and get them in right away.

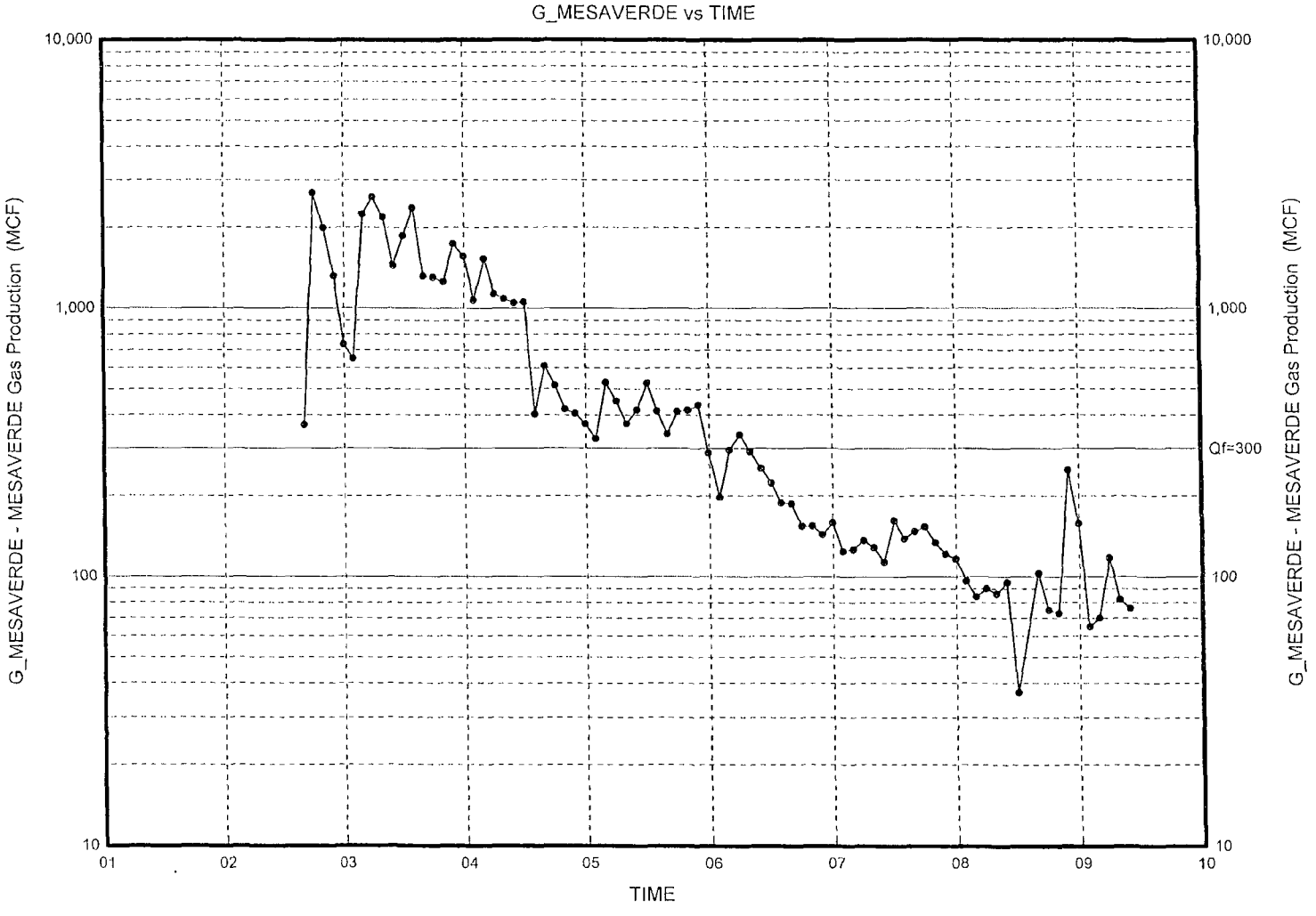
Could you tell me what well has had production for the Mesa Verde, so that I can research it? My initial research was using IHS data and it showed one month of production for the Alamo 22-16, but upon further research of our files and your

Count	UWI (APINum)	Well Label	Operator	Spud Date	Completion	Status	Mesa Verde Penetration?	TWN	RNG	Sec	Spot Call	NS Foot	NS Dir	EW Foot	EW Dir	TD	Comments
1	30045310710000	SENTER 1C	NOBLE ENERGY LIMITED LIABILITY CORP	6/20/2002	8/13/2002	GAS	Yes: Currently Producing	31N	13W	24	NE SW SW	810	FSL	805	FWL	6870	Currently producing 1mcf/d. Cumulative 51,945 mcf. Well is not economical - too water saturated.
2	30045243480000	LANGENDORF 1-E	COLUMBUS ENERGY CORPORATION	6/1/1980	9/13/1980	PAOGW	Yes: No Current Production	31N	13W	34	NW SE SE	1100	FSL	1100	FEL	6835	Not economic - Plugged
3	30045326860000	ALAMO 22 16	PATINA SAN JUAN INCORPORATED	4/16/2005	7/19/2005	GAS	Yes: No Current Production	31N	13W	22	SE	660	FSL	780	FEL	6590	Error within IHS. Never produced from Mesa Verde. Currently produces from Fruitland and Dakota.
4	30045106990000	PRICE 1-15	BENSON-MONTIN-GREER DRILLING CORPORA	7/9/1961	9/2/1961	P&A	Yes: No Current Production	31N	13W	15	SE SW	895	FSL	1470	FWL	6673	Not economic - Plugged

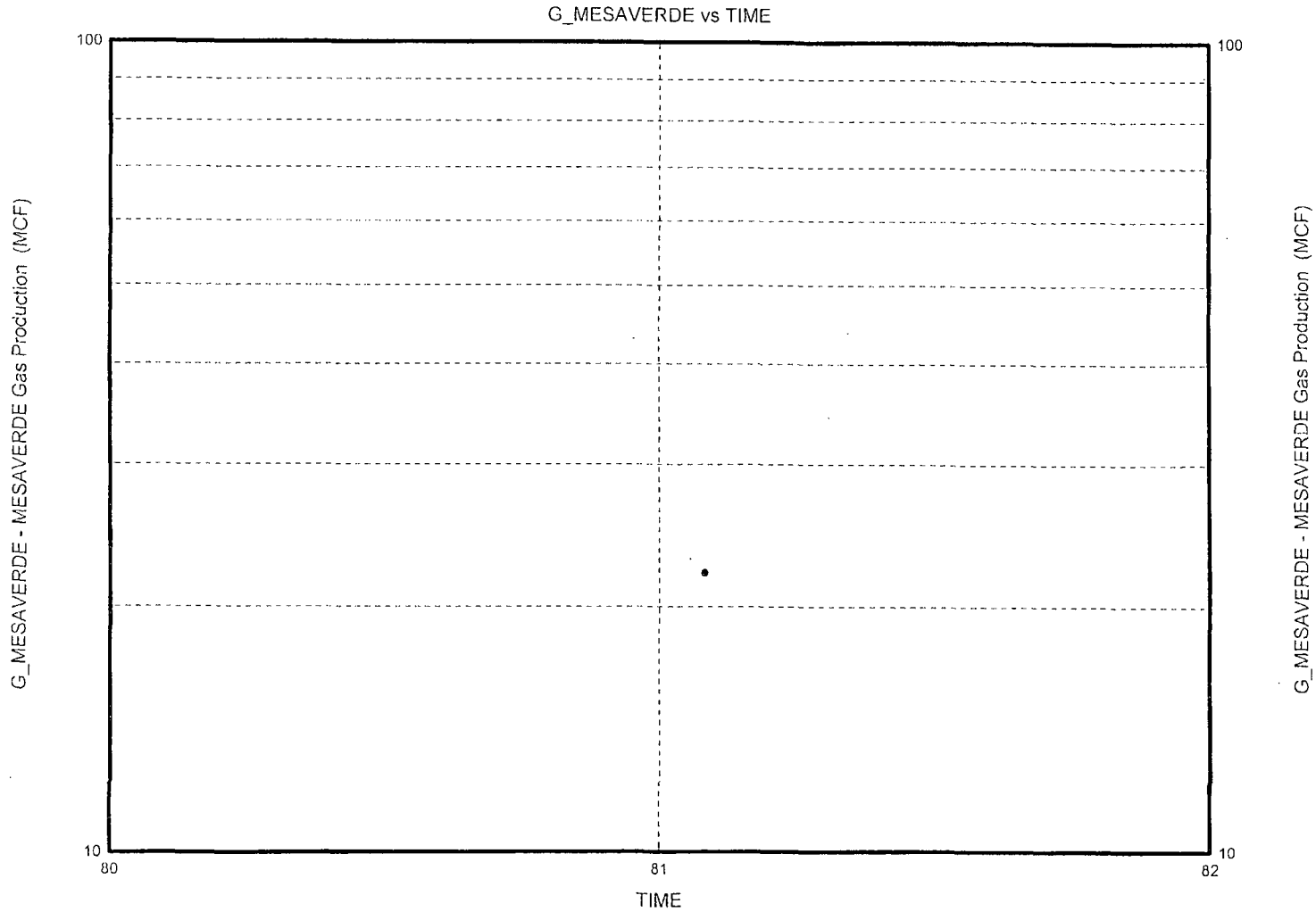
UWI: 30045243480000 Name: LANGENDORF Num: 1-E Label: LANGENDORF 1-E



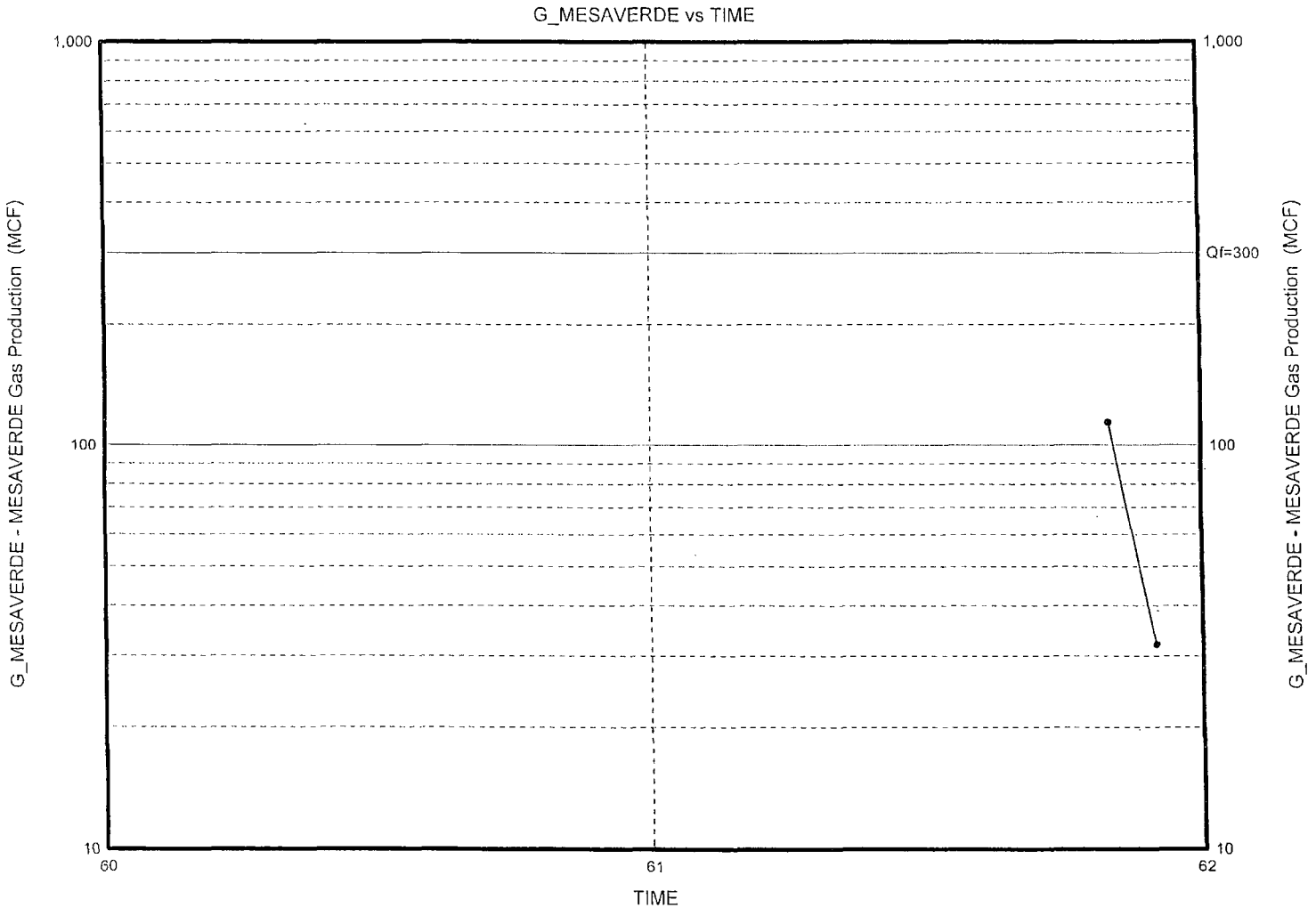
UWI: 30045310710000 Name: SENTER Num: 1C Label: SENTER 1C



UWI: 30045243480000 Name: LANGENDORF Num: 1-E Label: LANGENDORF 1-E



UWI: 30045106990000 Name: PRICE Num: 1-15 Label: PRICE 1-15



Part XIV. PROOF OF NOTICE: See AFFIDAVIT OF PUBLICATION Ad. No. 63729 and Exhibit A's attached.

AFFIDAVIT OF PUBLICATION

Ad No. 63729

STATE OF NEW MEXICO
County of San Juan:

TIA AVILES, being duly sworn says: That she is the CLASSIFIED MANAGER of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Monday, December 28th, 2009

And the cost of the publication is $58.86

Tia Aviles

ON 1/05/10 TIA AVILES appeared before me, whom I know personally to be the person who signed the above document.

Christine Gillespie

My Commission Expires - 11/05/11

COPY OF PUBLICATION

Legal Notice
Intent to Dispose of Water in the Subsurface

Noble Energy, Inc. proposes to inject produced water into the Mesa Verde formation in the Rio Bravo 5 well (API # 3004533583), located 1505' FNL and 1245' FWL of Sec 27-T31N-R13W, NMPM, San Juan County, New Mexico. The new depth of injection will be from 3487' - 4286'. Maximum anticipated rate is 1,200 BWPD at a maximum surface injection pressure of 1,000 psi.

Questions should be addressed to Noble Energy, Inc., Attn: Billie Maez at 5802 US Highway 64, Farmington, NM 87401 or call (505) 632-8056. Objections to the proposal or request for hearing by interested parties must be filed with the New Mexico Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 within 15 days.

Lgeal No. 63729 published in The Daily Times on December 28th, 2009.

Exhibit A
Surface Owner
T31N-R13W-Sec. 27: SWNW
San Juan County, New Mexico

12/04/2009

PARTY	INTEREST	Legal Description
Steven S. and Melinda A. Dunn PO Box 298 La Plata, NM 87418	Surface Owner	T31N-R13W Section 27: SWNW

RED DOG ENTERPRISES
PAUL HALL

Exhibit A
Leasehold Interest
T31N-R13W-Sec. 21: S/2
San Juan County, New Mexico

12/04/2009

PARTY	INTEREST	LIMITATIONS
A. H. Roddy Co. 13629 Sprucewood Drive Dallas, Texas 75240	Working Interest	Mesa Verde
Ann Bower P. O. Box 4413 Austin, Texas 78765	Working Interest	Mesa Verde
Bowen Ventures, L.P. 5616 Collinwood Ave. Fort Worth, Texas 76107	Working Interest	Mesa Verde
Burlington Resources Oil & Gas Company LP 3401 E. 30th Street Farmington, New Mexico 87402	Working Interest	Mesa Verde
Calico Investments Incorporated 4429 North Central Expressway Dallas, Texas 75205	Working Interest	Mesa Verde
Chase Bank of Texas, N. A. P. O. Box 660197 Dallas, Texas 75266-0197	Working Interest	Mesa Verde
David A. Bower Grantor Trust David A. Bower, Trustee P. O. Box 214850 Dallas, Dallas County, Texas 75221	Working Interest	Mesa Verde
Ell McComb 2321 Chimney Hill Drive Arlington, Texas 76012	Working Interest	Mesa Verde
Glen M. Neubert, Agent d/b/a R & N Associates 4100 McEwen Road, Suite 240 Dallas, Texas 75244	Working Interest	Mesa Verde
John Bower P. O. Box 775265 Steamboat Springs, Co. 80477	Working Interest	Mesa Verde
Kate Bower P. O. Box 12470 Dallas, Texas 75225	Working Interest	Mesa Verde
Mrs. Wilson Schoellkopf, Sr. c/o Wilson Schoellkopf, Jr. 2710 Oak Lawn Avenue, Suite 109 Dallas, Texas 75219	Working Interest	Mesa Verde
Neil F. Toler 1600 Delta Arlington, TX 76012	Working Interest	Mesa Verde
Oklahoma Exploration Company Ltd. 1979-1 c/o Oklahoma Oil Company 4809 Cole Ave., Ste. 210 Dallas, Texas 75205-3581	Working Interest	Mesa Verde

RED DOG ENTERPRISES
PAUL HALL

Exhibit A
Leasehold Interest
T31N-R13W-Sec. 21: S/2
San Juan County, New Mexico

12/04/2009

Pevehouse Incorporated 3300 North A Street, Bldg 1-201 Midland, TX 79705-5421	Working Interest	Mesa Verde
Prime Energy Corporation 20770 Highway 281 N. #108-615 San Antonio, Texas 78258	Working Interest	Mesa Verde
Robert A. Leach 6565 Terrace Dr. The Colony, TX 75056-4640	Working Interest	Mesa Verde
Stuart J. Bower P. O. Box 25069 Dallas, Texas 75225	Working Interest	Mesa Verde
Thomas K. Bower P. O. Box 25045 Dallas, Texas 75225-1045	Working Interest	Mesa Verde
Thomas R. Laverty 14421 Overview Drive Dallas, Texas 75240	Working Interest	Mesa Verde
Vivian D. Laverty 14421 Overview Dr. Dallas, TX 75240	Working Interest	Mesa Verde
Wheeler M. Sears 4925 Greenville Ave., Suite 717 Dallas, Texas 75206	Working Interest	Mesa Verde
Wilson Schoellkopf, Jr. 2710 Oak Lawn Avenue, Suite 109 Dallas, Texas 75219	Working Interest	Mesa Verde
Wilson Schoellkopf, Sr. c/o Wilson Schoellkopf, Jr. 2710 Oak Lawn Avenue, Suite 109 Dallas, Texas 75219	Working Interest	Mesa Verde

RED DOG ENTERPRISES
PAUL HALL

Exhibit A
Leasehold Interest
T31N-R13W-Sec. 22: All
San Juan County, New Mexico

12/04/2009

PARTY	INTEREST	LIMITATIONS
Noble Energy, Inc. 1625 Broadway, Suite 2200 Denver, CO 80202	Working Interest	Mesa Verde as to E/2
Adobe Resources Corporation fka Adobe Oil Company 300 West Texas, Suite 1100 Midland, TX 79701-4548	Working Interest	Mesa Verde as to W/2
Pevehouse, Inc. 3300 North A Street, Bldg 1-201 Midland, Texas 79705-5421	Working Interest	Mesa Verde as to W/2
Bowen Family Revocable Trust 5616 Collinwood Ave. Fort Worth, Texas 76107	Working Interest	Mesa Verde as to W/2
Dugan Production Company P.O. Box 420 Farmington, New Mexico 87499-0420	Working Interest	Mesa Verde as to W/2
Marcia Fuller French P. O. Box 11327 Midland, Texas 79702	Working Interest	Mesa Verde as to W/2
Pevehouse Incorporated 4305 N. Garfield, Suite 203 Midland, Texas 79705	Working Interest	Mesa Verde as to W/2
San Juan County, New Mexico Board of County Commissioners 100 S. Oliver Drive Aztec, New Mexico 87410	Mineral Interest	Mesa Verde as to W/2

RED DOG ENTERPRISES
PAUL HALL

Exhibit A
Leasehold Interest
T31N-R13W-Sec. 27: All
San Juan County, New Mexico

12/04/2009

PARTY	INTEREST	LIMITATIONS
Noble Energy, Inc. 1625 Broadway, Suite 2200 Denver, CO 80202	Working Interest	Mesa Verde as to N/2 and SW/4
Burlington Resources Oil & Gas Company LP 3401 E. 30th Street Farmington, New Mexico 87402	Working Interest	Mesa Verde as to SE/4

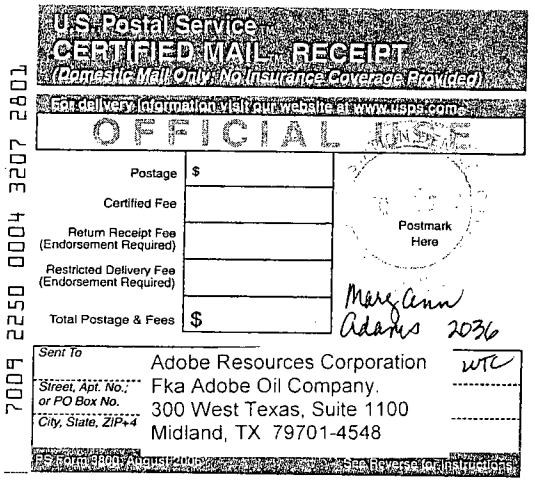
RED DOG ENTERPRISES
PAUL HALL

Exhibit A
Leasehold Interest
T31N-R13W-Sec. 28: All
San Juan County, New Mexico

12/04/2009

PARTY	INTEREST	LIMITATIONS
Bowen Ventures, L.P. 5616 Collinwood Ave. Fort Worth, Texas 76107	Working Interest	Mesa Verde
Dugan Production Company P.O. Box 420 Farmington, New Mexico 87499-0420	Working Interest	Mesa Verde
Marcia Fuller French P. O. Box 11327 Midland, Texas 79702	Working Interest	Mesa Verde
Noble Energy, Inc.	Working Interest	Mesa Verde
Pevehouse Incorporated 3300 North A Street, Bldg 1-201 Midland, Texas 79705-5421	Working Interest	Mesa Verde
Prime Energy Corporation/Mark Seaman 20770 Highway 281 N. #108-615 San Antonio, Texas 78258	Working Interest	Mesa Verde

RED DOG ENTERPRISES
PAUL HALL



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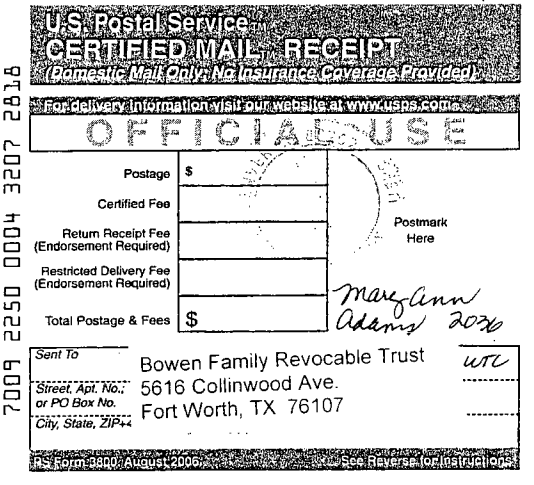
Fka Adobe Oil Company.
300 West Texas, Suite 1100
Midland, TX 79701-4548
WTC
PS Form 3800, August 2006
See Reverse for Instructions



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Mary Ann Adams 2036
7009 2250 0004 3207 2818
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City, State, ZIP+4
Bowen Family Revocable Trust
5616 Collinwood Ave.
Fort Worth, TX 76107
WTC
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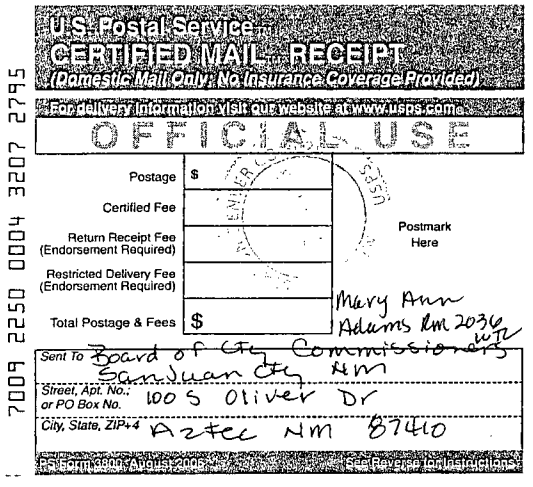
See Reverse for Instructions



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Mary Ann Adams Rm 2036 WTC
7009 2250 0004 3207 2795
Sent To Board of City Commissioners WTC
Street, Apt. No.; or PO Box No. 100 S Oliver Dr
City, State, ZIP+4 Aztec NM 87410
San Juan Cty NM
PS Form 3800, August 2006
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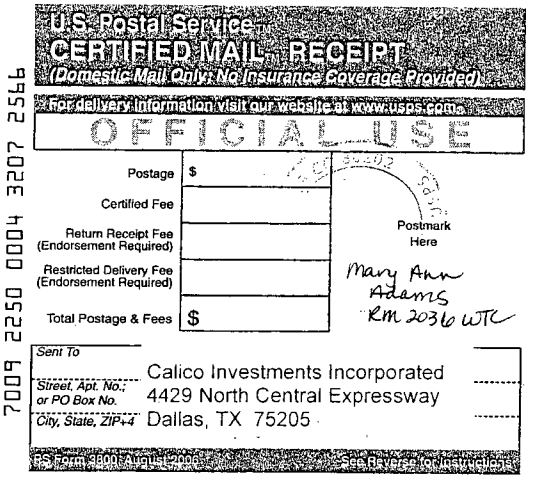

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Mary Ann Adams Rm 2036 WTC
7009 2250 0004 3207 2566
Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
Calico Investments Incorporated
4429 North Central Expressway
Dallas, TX 75205
PS Form 3800, August 2006
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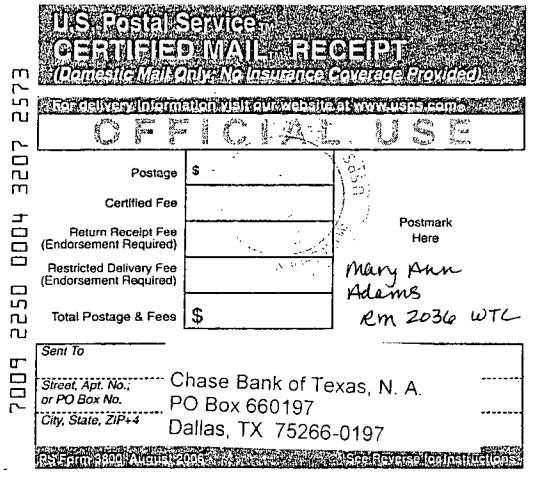

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Mary Ann Adams Rm 2036 WTC
7009 2250 0004 3207 2573
Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
Chase Bank of Texas, N. A.
PO Box 660197
Dallas, TX 75266-0197
PS Form 3800, August 2006
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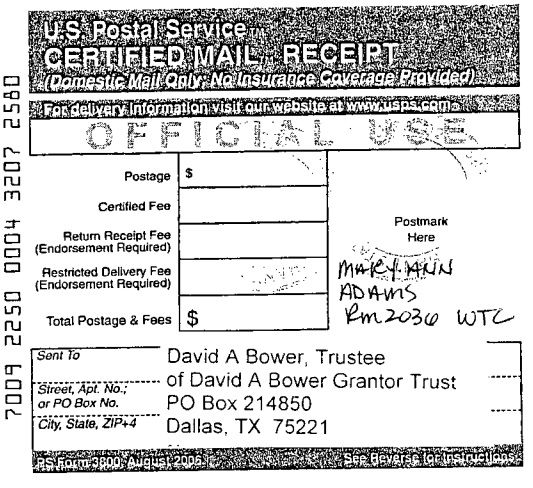

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MARY ANN ADAMS Rm 2036 WTC
7009 2250 0004 3207 2580
Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
David A Bower, Trustee
of David A Bower Grantor Trust
PO Box 214850
Dallas, TX 75221
PS Form 3800, August 2006
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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2764

Sent To: Dugan Production Company
Street, Apt. or PO Box: PO Box 420
City, State: Farmington, New Mexico 87499-0420

2036 WTC

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2597

Sent To: Ell McComb
Street, Apt. No.; or PO Box No.: 2321 Chimney Hill Drive
City, State, ZIP+4: Arlington, TX 76012

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2788

Sent To: The Frost National Bank of San Antonio
Street, or PO: Executor to Estate of Ross B. Lea and
City, St: Margaret Lea, Deceased
100 W. Houston Street
San Antonio, TX 78205

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Mary Ann Adams Rm 2603 WTC

7009 2250 0004 3207 2603

Sent To: Glen M Neubert, Agent
Street, Apt. No.; or PO Box No.: d/b/a R & N Associates
City, State, ZIP+4: 4100 McEwen Road, Suite 240
Dallas, TX 75244

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2610

Sent To: John Bower
Street, Apt. No.; or PO Box No.: PO Box 775265
City, State, ZIP+4: Steamboat Springs, CO 80477

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2627

Sent To: Kate Bower
Street, Apt. No.; or PO Box No.: PO Box 12470
City, State, ZIP+4: Dallas, TX 75225

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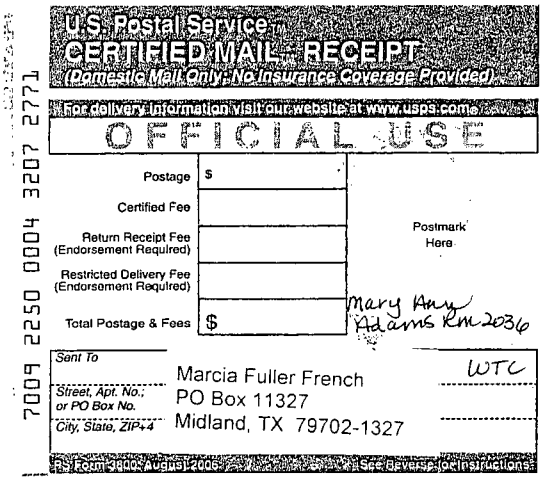

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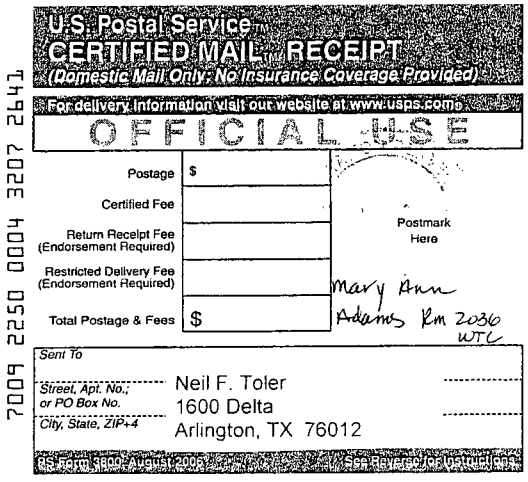
Mary Ann Adams Rm 2036 WTC
Sent To
Marcia Fuller French
Street, Apt. No.; or PO Box No. PO Box 11327
City, State, ZIP+4 Midland, TX 79702-1327
7009 2250 0004 3207 2771
PS Form 3800, August 2006 See Reverse for Instructions



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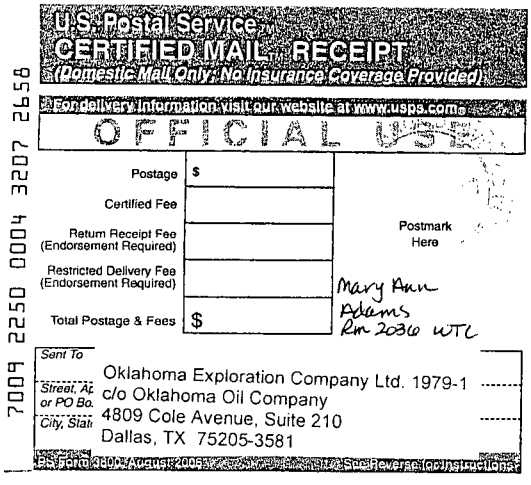
Postmark Here
Mary Ann Adams Rm 2036 WTC
Sent To
Neil F. Toler
Street, Apt. No.; or PO Box No. 1600 Delta
City, State, ZIP+4 Arlington, TX 76012
7009 2250 0004 3207 2641
PS Form 3800, August 2006 See Reverse for Instructions



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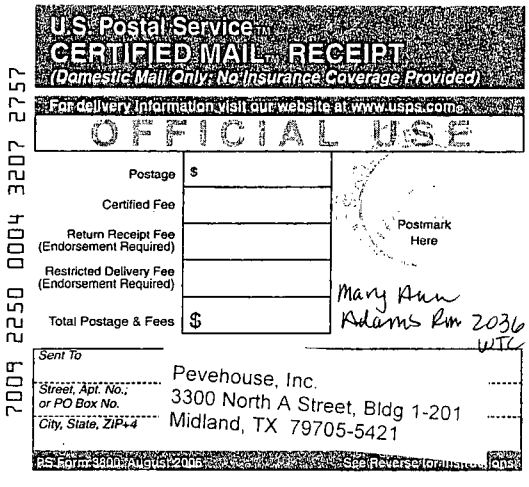
Mary Ann Adams Rm 2036 WTC
Sent To
Oklahoma Exploration Company Ltd. 1979-1
Street, Apt. No.; or PO Box No. c/o Oklahoma Oil Company
City, State, ZIP+4 4809 Cole Avenue, Suite 210
Dallas, TX 75205-3581
7009 2250 0004 3207 2658
PS Form 3800, August 2006 See Reverse for Instructions



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Mary Ann Adams Rm 2036 WTC
Sent To
Pevehouse, Inc.
Street, Apt. No.; or PO Box No. 3300 North A Street, Bldg 1-201
City, State, ZIP+4 Midland, TX 79705-5421
7009 2250 0004 3207 2757
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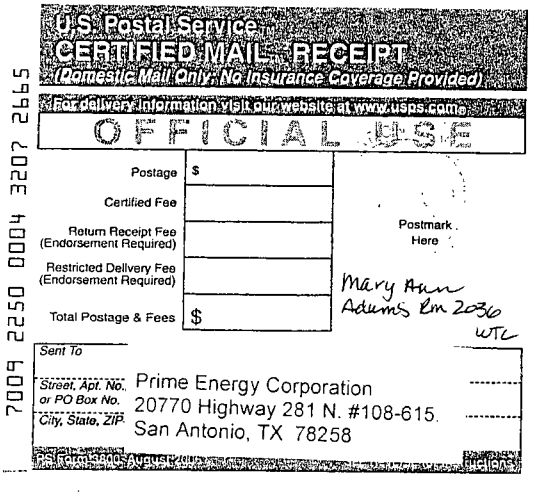

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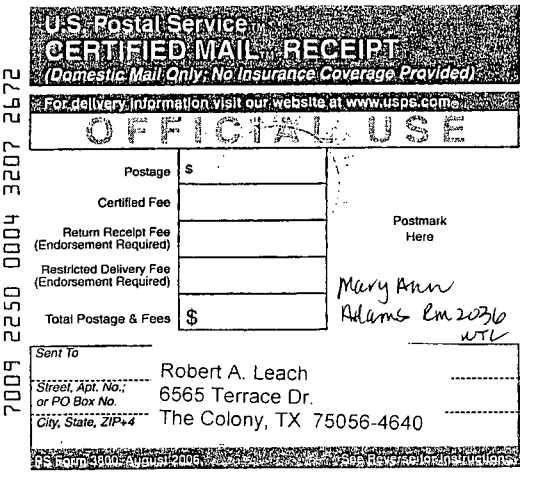
Mary Ann Adams Rm 2036 WTC
Sent To
Prime Energy Corporation
Street, Apt. No. or PO Box No. 20770 Highway 281 N. #108-615
City, State, ZIP San Antonio, TX 78258
7009 2250 0004 3207 2665
PS Form 3800, August 2006 See Reverse for Instructions



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Mary Ann Adams Rm 2036 WTC
Sent To
Robert A. Leach
Street, Apt. No.; or PO Box No. 6565 Terrace Dr.
City, State, ZIP+4 The Colony, TX 75056-4640
7009 2250 0004 3207 2672
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7009 2250 0004 3207 2689

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Mary Ann Adams Rm 2036 WTC

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

Stuart J. Bower
PO Box 25069
Dallas, TX 75225

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7009 2250 0004 3207 2696

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Mary Ann Adams Rm 2036 WTC

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

Thomas K. Bower
PO Box 25045
Dallas, TX 75225-1045

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Mary Ann Adams 2036 WTC

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

Thomas R. Laverty
14421 Overview Dr.
Dallas, TX 75240

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7009 2250 0004 3207 2719

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Mary Ann Adams Rm 2036 WTC

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

Vivian D. Laverty
14421 Overview Dr.
Dallas, TX 75240

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7009 2250 0004 3207 2740

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Mary Ann Adams Rm 2036 WTC

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

Wilson Schoelkopf, Sr.
c/o Wilson Schoelkopf, Jr.
2710 Oak Lawn Avenue, Suite 109
Dallas, TX 75219

PS Form 3800,

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Mary Ann Adams Rm 2036 WTC

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or PO Bo
City, Stat

Wheeler M. Sears
4925 Greenville Ave., Suite 717
Dallas, TX 75206

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2511

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
A. H. Roddy Co
13629 Sprucewood Drive
Dallas, TX 75240

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2528

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
Ann Bower
PO Box 4413
Austin, TX 78765

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2542

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
Burlington Resources Oil & Gas Company LP
3401 E 30th Street
Farmington, NM 87402

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2535

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZI
Bowen Ventures, L.P.
5616 Collinwood Avenue
Fort Worth, Texas 76107

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2557

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
Steven and Melinda Dunn
PO Box 298
La Plata, NM 87418

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2634

Sent To
Street, Apt. No.; or PO Box No.
City, State, ZIP+4
Mrs. Wilson Schoelkopf
c/o Wilson Schoelkopf, Jr.
2710 Oak Lawn Avenue, Suite 109
Dallas, TX 75219

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Mary Ann Adams Rm 2036 WTC

7009 2250 0004 3207 2573

Sent To
Street, Apt. No. or PO Box No.
City, State, ZIP+
Wilson Schoelkopf, Jr.
2710 Oak Lawn Avenue, Suite 109
Dallas, TX 75219

PS Form 3800, August 2006 See Reverse for Instructions

OK

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Wednesday, January 27, 2010 3:58 PM
To: 'MDPeterson@nobleenergyinc.com'
Cc: Macquesten, Gail, EMNRD; Sanchez, Daniel J., EMNRD; Hayden, Steven, EMNRD; Ezeanyim, Richard, EMNRD
Subject: Disposal application from Noble Energy Inc.: Rio Bravo 27-05 30-045-33583 Mesaverde Formation

Hello Melanie:
I just today reviewed this application and it appears fine except for a few items – and item (d.) is the significant one:

a. I am confused as to why a fresh water sample could not be taken and analyzed when the application said 18 fresh water wells were in this area. The C-108 requires the applicant to (if possible) catch a local fresh water sample and have the analysis in the application. Please ask your field people to check this out again and see if they could ask someone for a sample.
b. The 2 mile AOR shows that the Mesaverde has produced in the past and at least one well is still active. I assume that is the Point Lookout? Would you please check on this and let me know where in the Mvrd the production came from?
c. The log analysis we all did seemed to show the upper Point Lookout had some gas saturation or (less likely) a low TDS water content. For those reasons, we may put a requirement in this permit that Noble perf the upper Point Lookout and swab test it for hydrocarbon potential and also to catch a water sample for analysis. This would mean not perfing the higher water saturation sands of the PLO until this swab test is finished. If the swab test shows the PLO should not be invaded with disposal waters, Noble would restrict disposal to the Menefee and the Cliff house.
d. The biggest item is the status of Rule 5.9 for Noble Energy, Inc. Here below are links to see what I am seeing. The number of inactive wells prevents any disposal permit from being released at this time. That Rule prevents approval of disposal applications if an operator is not in compliance with Rule 5.9. There is also one well that Noble needs a single well bond posted. Please alert your management that this situation exists and let them know they can contact Daniel Sanchez or Gail MacQuesten of this office to work on a schedule to bring at least 2 wells of these 7 inactive wells back into compliance by either returning them to production, temporarily abandoning them, or plug and abandoning them. Your accounting people should consider contacting Dorothy Phillips of this office to post the single well bond on the one well requiring a bond.

All contact info for the OCD is at: http://www.emnrd.state.nm.us/ocd/AboutUs.htm

Single well bond situation: (look for a "y" in the far right column)
http://www.emnrd.state.nm.us/OCD/OCDPermitting/Report/Stats/InactiveWellFinancialAssuranceReport.aspx?Operator=234550

Inactive wells:
http://www.emnrd.state.nm.us/OCD/OCDPermitting/Report/Stats/InactiveWellList.aspx?Production=15&Operator=234550&ACO=Exclude&TA=Exclude

Please let me know your comments and **most importantly when the Rule 5.9 status is OK** and we can pick this back up and consider it again.

Thank You,

Inactive Well List

Total Well Count: 232 Inactive Well Count: 4 Since: 12/30/2008

Printed On: Thursday, March 25 2010

District	API	Well	ULSTR	OCD Unit	OGRID	Operator	Lease Type	Well Type	Last Production	Formation/Notes	Status	TA Exp Date
3	30-039-21610	JICARILLA B #001A	P-26-26N-04W	P	234550	NOBLE ENERGY INC	I	G	06/2008	BLANCO MV		
3	30-045-11081	LANDAUER #001	H-3 -31N-13W	H	234550	NOBLE ENERGY INC	P	G	12/2007			
3	30-045-24322	RIO BRAVO #001	B-27-31N-13W	B	234550	NOBLE ENERGY INC	P	G	11/2007	INT TO P&A APPVD 2/23/2010		
3	30-039-29515	TRIBAL 05 #009	I-5 -26N-03W	I	234550	NOBLE ENERGY INC	J	G	09/2008	TAPACITO PC/BASIN DK/BLANCO MV		

WHERE Ogrid:234550, County:All, District:All, Township:All, Range:All, Section:All, Production(months):15, Excludes Wells Under ACOI, Excludes Wells in Approved TA Period

now OK

Injection Permit Checklist (11/30/09)

Case _____ R-_____ SWD P&A WFX_____ PMX_____ IPI_____ Permit Date _____ UIC Qtr _____

Wells 1 Well Name: Rio BRAVO 27-05

API Num: (30-) 045-33583 Spud Date: 10/2/06 New/Old: N (UIC primacy March 7, 1982)

Footages 1505 FNL/1245 FWL Unit ___ Sec 27 Tsp 31N Rge 13W County San Juan

Operator: Noble Energy Inc Contact D. Melanie Peterson

OGRID: 224550 RULE 5.9 Compliance (Wells) 7/234 (Finan Assur)_____

Operator Address: 1625 Broadway, Denver, CO 80202

Location and Current Status: DKTA/FRC Producer

Planned Work to Well: SPZ Perfs/Perf inj Planned Tubing Size/Depth: 2 7/8" x 7" @ 3410'

	Sizes Hole.....Pipe	Setting Depths	Cement Sx or Cf	Cement Top and Determination Method
Existing ✓ Surface	13 1/2 9 5/8	332	300	CIRC.
Existing ✓ Intermediate	8 3/4 7"	4640	336/205	CIRC/CIRC
Existing ✓ ~~Long String~~ Liner	6 1/4 4 1/2	6675	160	4636 CBL

DV Tool 2059' Liner 4339-6675 ~~Open Hole~~ Total Depth 6675

Well File Reviewed _____

Diagrams: Before Conversion ✓ After Conversion ✓ Elogs in Imaging File: _____

4.3 miles away
SWD Salty DGH 4
See 30-045-32334

Intervals:	Depths	Formation	Producing (Yes/No)
Above (Name and Top)	0		
Above (Name and Top)	1672-1796	Fruitland	Yes
Injection..... Interval TOP:	3487	Cliffhouse	no
Injection..... Interval BOTTOM:	4286	PLO	no
Below (Name and Top)			

700 PSI Max. WHIP

_____ ~~Open Hole~~ (Y/N)

_____ ~~Deviated Hole?~~

3487'/4286'/6975'

OK per LOG Calcs.

Sensitive Areas: ~~Capitan Reef~~ _____ Cliff House ✓ ~~Salt Depths~~ _____

.... ~~Potash Area (R-111-P)~~ _____ ~~Potash Lessee~~ _____ ~~Noticed?~~ _____

Fresh Water: Depths: 0 Ad. Wells _____ Analysis? _____ Affirmative Statement ✓

Disposal Fluid Sources: FRC/PLO/DKTA Analysis?

Disposal Interval Production Potential/Testing/Analysis Analysis: no production, wet

Notice: Newspaper(Y/N) ✓ Surface Owner Steven/Melinda Dunn Mineral Owner(s) Many

RULE 26.7(A) Affected Parties: Many!! See APP.

Area of Review: Adequate Map (Y/N) ✓ and Well List (Y/N) ✓

Active Wells 3 Num Repairs 0 Producing in Injection Interval in AOR no

4 ..P&A Wells 1 Num Repairs 0 All Wellbore Diagrams Included? ✓

Questions to be Answered:

no FW analysis?

Required Work on This Well: _____ Request Sent _____ Reply: _____

AOR Repairs Needed: _____ Request Sent _____ Reply: _____

_____ Request Sent _____ Reply: _____