

DATE IN 05/19/09	SUSPENSE	ENGINEER W. Jones	LOGGED IN 05/19/09	TYPE SWD	APP NO. PKA 0913943308
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ABOVE THIS LINE FOR DIVISION USE ONLY

RECEIVED

2009 MAY 19 AM 10:40

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

2255 W. St. Francis Drive, Santa Fe, NM 87505



30-045-30812-
Salty Dog #2
XTO 5380

ADMINISTRATIVE APPLICATION CHECKLIST

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

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

[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
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

[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.

Diane Jaramillo

Print or Type Name

Signature

Supervisor, Accounting/Engineering Techs

Title

Diane_Jaramillo@xtoenergy.com

e-mail Address

5-18-09
Date

Injection Permit Checklist (7/8/08)

Case _____ R- SWD WFX _____ PMX _____ IPI _____ Permit Date _____ UIC Qtr _____

Wells 1 Well Name: Salty Dog Well No. 2

API Num: (30-) 845-30812 Spud Date: 12-2001 New/Old: N (UIC primacy March 7, 1982)

Footages 1495 FSL 1477 FEL Unit J Sec 5 Tsp 29N Rge 14W County San Juan

Operator: XTO (5380) Contact Piero Jaramillo

OGRID: 5380 RULE 40 Compliance (Wells) ☒ (Finan Assur) ☒

Operator Address: 382 Road 3100 A, Tex 87410

Current Status of Well: Drilled

Planned Work to Well:

Planned Tubing Size/Depth: 2 7/8 / 2280'

	Sizes Hole.....Pipe	Setting Depths	Cement Sx or Cf	Cement Top and Determination Method
Existing <input checked="" type="checkbox"/> Surface	<u>9 7/8 8 5/8</u>	<u>251</u>	<u>110</u>	<u>Surf.</u>
Existing _____ Intermediate				
Existing <input checked="" type="checkbox"/> Long String	<u>6 3/4 5 1/2</u>			

~~DV Tool~~ _____ ~~Liner~~ _____ ~~Open Hole~~ _____ Total Depth 3616 PBTD _____

Well File Reviewed _____

Diagrams: Before Conversion ☒ After Conversion ☒ Elogs in Imaging File: ☒ New Well

Intervals:	Depths	Formation	Producing (Yes/No)
Above (Name and Top)			
Above (Name and Top)		<u>Cliff House</u>	
Injection..... Interval TOP:	<u>2388</u>	<u>mv</u>	
Injection..... Interval BOTTOM:	<u>3096</u>	<u>mv</u>	
Below (Name and Top)			

1300 PSI Max. WHIP

Open Hole (Y/N)

Deviated Hole?

BLM
SRT.

Sensitive Areas: Capitan Reef _____ Cliff House 2210 Salt Depths _____

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

Fresh Water: Depths: _____ Wells(Y/N) _____ Analysis Included (Y/N): _____ Affirmative Statement _____

Salt Water: Injection Water Types: FR COAL Analysis? _____

Injection Interval.....Water Analysis: _____ Hydrocarbon Potential _____

Notice: Newspaper(Y/N) ☒ Surface Owner BLM Mineral Owner(s) _____

RULE 701B(2) Affected Parties: _____

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

Active Wells _____ Num Repairs _____ Producing in Injection Interval in AOR _____

..P&A Wells _____ Num Repairs _____ All Wellbore Diagrams Included? _____

Questions to be Answered:

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

AOR Repairs Needed: _____ Request Sent _____ Reply: _____

Request Sent _____ Reply: _____

Injection Permit Checklist (7/8/08)

Case SWD-811-A R- WFX PMX IPI Permit Date UIC Qtr

Wells 2 Well Name: SALT DOG #2

API Num: (30-) 045-30812 Spud Date: 12/13/01 New/Old: N (UIC primacy March 7, 1982)

Footages 1495 FSL/1477 FEL Unit J Sec 5 Tsp 29N Rge 14W County San Juan

Operator: XTO ENERGY, INC Contact Loran FOTHERGILL

OGRID: 5380 RULE 40 Compliance (Wells) 6/30/05 (Finan Assur) OK

Operator Address: 382 CR. 3100, AZTEC, NM, 87410

Current Status of Well: Drilled & injected

Planned Work to Well: Re APPLY Planned Tubing Size/Depth: 2 7/8 @ 2150

	Sizes Hole.....Pipe	Setting Depths	Cement Sx or Cf	Cement Top and Determination Method
Existing <input checked="" type="checkbox"/> Surface	<u>4 7/8 8 5/8</u>	<u>2210</u>	<u>110</u>	<u>Surf.</u>
Existing <input type="checkbox"/> Intermediate				
Existing <input checked="" type="checkbox"/> Long String	<u>6 7/8 5 1/2</u>		<u>15 + 177</u>	<u>5 SQZ</u>

DV Tool ☒ Liner ☒ Open Hole ☐ Total Depth 3016 PBTD 3016

Well File Reviewed ☒

Diagrams: Before Conversion New well After Conversion ☒ Elogs in Imaging File: ☒

Intervals:	Depths	Formation	Producing (Yes/No)
Above (Name and Top)			
Above (Name and Top)			
Injection.....	<u>2388</u>	<u>CLIFF HOUSE</u>	
Interval TOP:	<u>2388</u>	<u>CLIFF HOUSE</u>	
Injection.....	<u>2388</u>	<u>CLIFF HOUSE</u>	
Interval BOTTOM:	<u>3096</u>	<u>CLIFF HOUSE</u>	
Below (Name and Top)			

Sensitive Areas: Capitan Reef

.....Potash Area (R-111-P)

Cliff House 2210' Salt Depths

Potash Lessee

Noticed?

Fresh Water: Depths: _____ Wells (Y/N) _____ Analysis Included (Y/N): _____ Affirmative Statement _____

Salt Water: Injection Water Types: FR COAL Analysis? _____

Injection Interval.....Water Analysis: _____ Hydrocarbon Potential _____

Notice: Newspaper (Y/N) _____ Surface Owner _____ Mineral Owner(s) _____

RULE 701B(2) Affected Parties: Richardson / owner

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

Active Wells 0 Num Repairs _____ Producing in Injection Interval in AOR _____

P&A Wells 1 Num Repairs _____ All Wellbore Diagrams Included? No

Questions to be Answered:

Send New Notices
Check upper record for Salinity

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

AOR Repairs Needed: _____ Request Sent _____ Reply: _____

_____ Request Sent _____ Reply: _____



RECEIVED
2009 MAY 19 AM 10 43

382 Road 3100 Aztec, New Mexico 87410
Phone: (505) 333-3100 FAX: (505) 333-3280

May 18, 2009

State of New Mexico
Oil Conservation Division
Mr. William Jones
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Re: Salt Water Disposal Application
Salty Dog No. 2 Well
Section 5, Township 29 North, Range 14 West, NMPM
San Juan County, New Mexico

Dear Mr. Jones:

Per your e-mail correspondence dated February 16, 2009, attached you will find the additional information you requested:

- 1) One-half mile radius map with surrounding owners in the Mesaverde formation.
 - a. Each track listed contained in the one-half mile AOR and the owners affected in each tract.
 - b. Notification to Conoco/Phillips
 - c. Notification to Western Gas Resources
 - d. Notification to the Bureau of Land Management
 - e. Affidavit of Publication from the Daily Times newspaper
- 2) Wellbore diagram of the Rubco-Carr-Russel Federal #1
- 3) Revision to Exhibit "3", Operations Plan
- 4) Revision to the Salty Dog #2 wellbore diagram.

Should you require further documentation please feel free to call my office @ 505-333-3100 or e-mail Diane_Jaramillo@xtoenergy.com and I will be happy to furnish any additional information.

Mr. Loren Fothergill is the engineer in charge should you need clarification of engineering data and is available at the number listed above.

Yours truly,

A handwritten signature in black ink, appearing to read 'Diane Jaramillo', is written over the typed name.

Diane Jaramillo
Supervisor, Engineering Techs/Accounting

CC: Aztec OCD
BLM – Farmington



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

02/16/2009 04:28 PM

To <Diane_Jaramillo@xtoenergy.com>

cc "Ezeanyim, Richard, EMNRD"
<richard.ezeanyim@state.nm.us>, "Warnell, Terry G,
EMNRD" <TerryG.Warnell@state.nm.us>, "Hayden, Steven,
bcc

Subject Disposal Application from XTO: Salty Dog #2 30-045-30812
(renewal of SWD-811)

History:

✉ This message has been replied to and forwarded.

Hello Diane:

After reviewing this application to inject (renewal of SWD-811), we found this permit application to almost be a duplicate of the one in 2001. XTO must update the application including the land details and formal "notice".

- 1) Please draw the ½ mile radius around this well and have your land department inform you of all surrounding owners in the Mesaverde formation.
 - a. List each tract wholly or partially contained in this ½ mile AOR and the owners ("affected parties") in each tract
 - b. Send proof these affected parties were noticed of this most recent application
 - c. Send proof the surface owner was provided a complete copy of this application
 - d. Send a copy of the newspaper notice done within the past few months
- 2) Send a wellbore diagram of the plugged well which is located within the Area of Review.
- 3) The data on your initial pages of the application does not match the data on the actual wellbore diagram – please correct.

REMARKS:

It appears, the OCD will grant the 1,300 psi injection pressure limit based on previous step rate test and application, It appears the OCD will grant injection from 2388 to 3096 feet, but not any higher than 2388 because of salinity concerns.

Please be aware, this well's injection interval is very tight – Richardson was not satisfied with the injectivity into this well.

Regards,

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

Confidentiality Notice: This e-mail, including all attachments is for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited unless specifically provided under the New Mexico Inspection of Public Records Act. If you are not the intended recipient, please contact the sender and destroy all copies of this message. -- This email has been scanned by the Sybari - Antigen Email System.

32

30 N 14 W

33

Salty Dog #2 SWD
1/2 Mile Radius

5

4

NMSF 0079968

29 N 14 W

Fee

NMNM 101551

8

9

DETERMINATION - APPROVAL - CERTIFICATION

Pursuant to the authority vested in the Secretary of the Interior, under Section 17(j) of the Mineral Leasing Act of 1920, as amended (74 Stat. 784; 30 U.S.C. 226(j)), and delegated to the authorized officer, of the Bureau of Land Management, I do hereby:

- A. Determine that the Federal lease or leases as to the lands committed to the attached agreement cannot be independently developed and operated in conformity with the well-spacing program established for the field or area in which said lands are located, and that consummation and approval of the agreement will be in the public interest.
- B. Approve the attached communitization agreement covering: SW¼ of Section 5, T. 29 N., R. 14 W., San Juan County, New Mexico, as to natural gas and associated liquid hydrocarbons producible from the Pictured Cliffs formation. This approval will become invalid *ab initio* by the Authorized officer should then public interest requirements under section 3105.2-3(e) not be met.
- C. Certify and determine that the drilling, producing, rental, minimum royalty and royalty requirements of the Federal lease or leases committed to said agreement are hereby established, altered, changed, or revoked to conform with the terms and conditions of the agreement.
- D. Approval of this agreement does not warrant or certify that the applicant and other working interest owners thereof hold legal or equitable title to the leases which are committed hereto.

Approved: January 4, 2001


Lucy Bee
Legal Instruments Examiner
Petroleum Management Team

Effective: March 4, 2000

Contract No.: Com. Agr. NMNM 103035

20000201

COMMUNITIZATION AGREEMENT

CONTRACT NO. NMM 103035

THIS AGREEMENT, entered into as of the date shown in Section 10 hereof, is by and between the parties subscribing, ratifying or consenting hereto, such parties being hereinafter referred to as "parties hereto."

070 FARMINGTON, NM

WITNESSETH:

WHEREAS, the Act of February 25, 1920 (41 Stat. 437), as amended and supplemented, authorizes communitization or drilling agreements communitizing or pooling a Federal oil and gas lease, or any portion thereof, with other lands, whether or not owned by the United States, when separate tracts under such Federal lease cannot be independently developed and operated in conformity with an established well-spacing program for the field or area and such communitization or pooling is determined to be in the public interest; and

WHEREAS, the parties hereto own working, royalty or other leasehold interests, or operating rights under the oil and gas leases and lands subject to this agreement which cannot be independently developed and operated in conformity with the well-spacing program established for the field or area in which said lands are located; and

WHEREAS, the parties hereto desire to communitize and pool their respective mineral interests in lands subject to this agreement for the purpose of developing and producing communitized substances in accordance with the terms and conditions of this agreement:

NOW, THEREFORE, in consideration of the premises and the mutual advantages to the parties hereto, it is mutually covenanted and agreed by and between the parties hereto as follows:

1. The lands covered by this agreement (hereinafter referred to as "communitized area") are described as follows:

TOWNSHIP 29 NORTH, RANGE 14 WEST, NMPM

Section 5: SW/4

San Juan County, New Mexico

containing 160.00 acres, more or less, and this agreement shall include only the Pictured Cliffs formation underlying said lands and the natural gas and associated liquid hydrocarbons, hereinafter referred to as "communitized substances", producible from such formations.

2. Attached hereto, and made a part of this agreement for all purposes, is Exhibit B, designating the operator of the communitized area and showing the acreage, percentage and ownership of oil and gas interests in all lands within the communitized area, and the authorization, if any, for communitizing or pooling any patented or fee lands within the communitized area.

3. All matters of operation shall be governed by the operator under and pursuant to the terms and provisions of this agreement. A successor operator may be designated by the owners of the working interest in the communitized area, and four executed copies of a designation of successor operator shall be filed with the Authorized Officer.
4. Operator shall furnish the Secretary of the Interior, or his authorized representative, with a log and history of any well drilled on the communitized area, monthly reports of operations, statements of oil and gas sales and royalties and such other reports as are deemed necessary to compute monthly the royalty due the United States, as specified in the applicable oil and gas regulations.
5. The communitized area shall be developed and operated as an entirety, with the understanding and agreement between the parties hereto that all communitized substances produced therefrom shall be allocated among the leaseholds comprising said area in the proportion that the acreage interest of each leasehold bears to the entire acreage interest committed to this agreement.

All proceeds, 8/8ths, attributed to unleased Federal, State or fee land included within the CA area are to be placed in an interest earning escrow or trust account by the designated operator until the land is leased or ownership is established.

6. The royalties payable on communitized substances allocated to the individual leases comprising the communitized area and the rentals provided for in said leases shall be determined and paid on the basis prescribed in each of the individual leases. Payments of rentals under the terms of leases subject to this agreement shall not be affected by this agreement except as provided for under the terms and provisions of said leases or as may herein be otherwise provided. Except as herein modified and changed, the oil and gas leases subject to this agreement shall remain in full force and effect as originally made and issued. It is agreed that for any Federal lease bearing a sliding- or step-scale rate of royalty, such rate shall be determined separately as to production from each communitization agreement to which such lease may be committed, and separately as to any noncommunitized lease production, provided, however, as to leases where the rate of royalty for gas is based on total lease production per day, such rate shall be determined by the sum of all communitized production allocated to such a lease plus any noncommunitized lease production.
7. There shall be no obligation on the lessees to offset any well or wells completed in the same formation as covered by this agreement on separate component tracts into which the communitized area is now or may hereinafter be divided, nor shall any lessee be required to measure separately communitized substances by reason of the diverse ownership thereof, but the lessees hereto shall not be released from their obligation to protect said communitized area from drainage of communitized substances by a well or wells which may be drilled offsetting said area.

8. The commencement, completion, continued operation, or production of a well or wells for communitized substances on the communitized area shall be construed and considered as the commencement, completion, continued operation, or production on each and all of the lands within and comprising said communitized area, and operations or production pursuant to this agreement shall be deemed to be operations or production as to each lease committed hereto.
9. Production of communitized substances and disposal thereof shall be in conformity with allocation, allotments, and quotas made or fixed by any duly authorized person or regulatory body under applicable Federal or State statutes. This agreement shall be subject to all applicable Federal and State laws or executive orders, rules and regulations, and no party hereto shall suffer a forfeiture or be liable in damages for failure to comply with any of the provisions of this agreement if such compliance is prevented by, or if such failure results from, compliance with any such laws, orders, rules or regulations.
10. The date of this agreement is MAR - 4 2000, and it shall become effective as of this date or from the onset of production of communitized substances, whichever is earlier upon execution by the necessary parties, notwithstanding the date of execution, and upon approval by the Secretary of the Interior or by his duly authorized representative, and shall remain in force and effect as to the Pictured Cliffs formation for a period of 2 years and for as long as communitized substances are, or can be, produced from the communitized area in paying quantities: Provided, that prior to production in paying quantities from the communitized area and upon fulfillment of all requirements of the Secretary of the Interior, or his duly authorized representative, with respect to any dry hole or abandoned well, this agreement may be terminated at any time by mutual agreement of the parties hereto. This agreement shall not terminate upon cessation of production if, within 60 days thereafter, reworking or drilling operations on the communitized area are commenced and are thereafter conducted with reasonable diligence during the period of nonproduction. The 2 year term of this agreement will not in itself serve to extend the term of any Federal lease which would otherwise expire during said period.
11. The covenants herein shall be construed to be covenants running with the land with respect to the communitized interests of the parties hereto and their successors in interests until this agreement terminates and any grant, transfer or conveyance of any such land or interest subject hereto, whether voluntary or not, shall be and hereby is conditioned upon the assumption of all obligations hereunder by the grantee, transferee, or other successor in interest, and as to Federal land shall be subject to approval by the Secretary of the Interior, or his duly authorized representative.
12. It is agreed between the parties hereto that the Secretary of the Interior, or his duly authorized representative, shall have the right of supervision over all fee and State mineral operations within the communitized area to the extent necessary to monitor production and measurement, and assure that no avoidable loss of hydrocarbons occurs in which the United States has an interest pursuant to applicable oil and gas regulations of the Department of the Interior relating to such production and measurement.
13. This agreement shall be binding upon the parties hereto and shall extend to and be binding upon their respective heirs, executors, administrators, successors and assigns.

14. This agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties, or may be ratified or consented to by separate instrument, in writing, specifically referring hereto, and shall be binding upon all parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all parties had signed the same document.
15. Nondiscrimination: In connection with the performance of work under this agreement, the operator agrees to comply with all of the provisions of Section 202(1) to (7) inclusive, of Executive Order 11246 (30 F.R. 12319), as amended, which are hereby incorporated by reference in this agreement.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the day and year first above written and have set opposite their respective names the date of execution.

RICHARDSON OPERATING COMPANY

Cathleen Colby
Cathleen Colby, Attorney-in-Fact

Executed January 26, 2000

RICHARDSON PRODUCTION COMPANY

Cathleen Colby
Cathleen Colby, Attorney-in-Fact

Executed January 26, 2000

CONOCO, INC.

Terri G. King
Terri G. King, Attorney-in-Fact
WWT

Executed 8 Feb, 2000

STATE OF COLORADO)
) ss.
COUNTY OF DENVER)

The foregoing instrument was acknowledged before me this 26 day of January, 2000, by Cathleen Colby, as Attorney-in-Fact on behalf of RICHARDSON PRODUCTION COMPANY and RICHARDSON OPERATING COMPANY.

My commission expires:

8-24-02

Gymis O'Shea
Notary Public

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

The foregoing instrument was acknowledged before me this 8th day of February, 2000, by Terri G. King, the Attorney-in-Fact of CONOCO, INC., a Delaware corporation, on behalf of said corporation.

My commission expires:

Vicki R. Westby
Notary Public

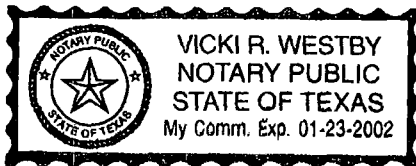


EXHIBIT A

Plat of communitized area covering SW/4 Section 5, Township 29 North, Range 14 West, NMPM, Pictured Cliffs Field, San Juan County, New Mexico.

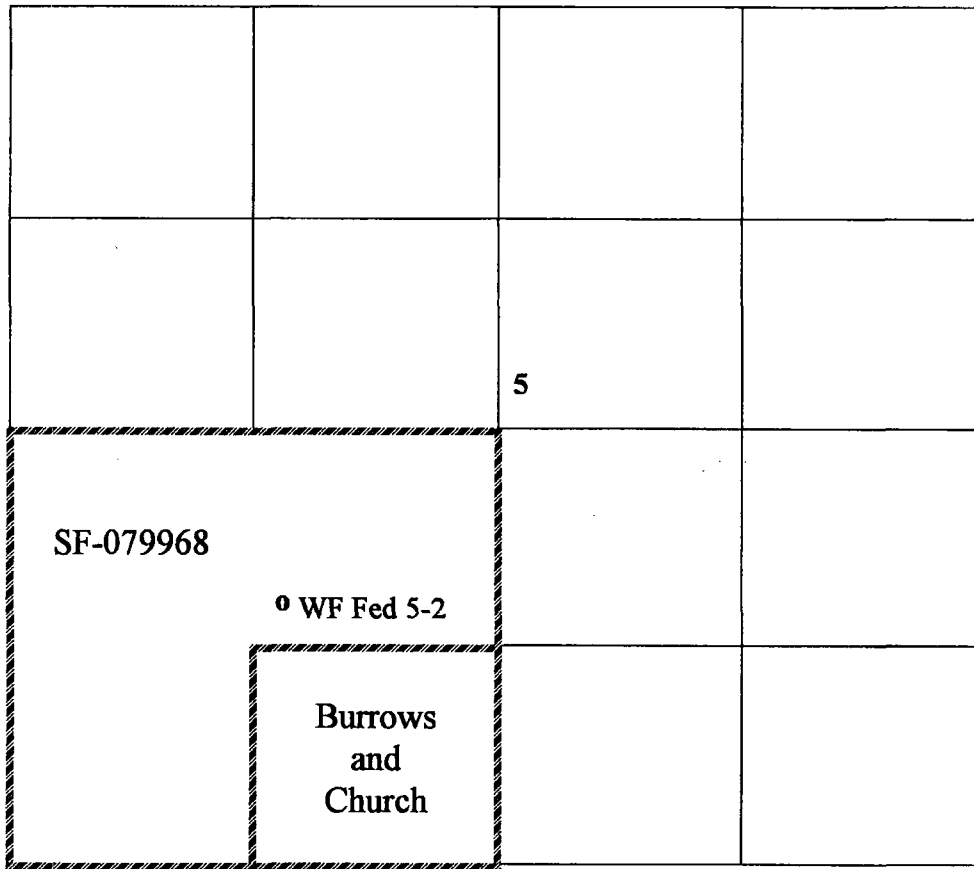


EXHIBIT B

To Communitization Agreement dated _____, embracing:

Township 29 North, Range 14 West, NMPM
Section 5: SW/4
San Juan County, New Mexico

Operator of Communitized Area: Richardson Operating Company

DESCRIPTION OF LEASES COMMITTED

Tract No. 1.

Lease Serial No.: USA NMSF-079968 47313000

Lease Date: July 1, 1951

Lease Term: 5 years

Lessor: United States of America

Original Lessee: Mrs. Emma T. Russell

Present Lessee: 100% Conoco, Inc.

Description of Land Committed: Township 29 North, Range 14 West, NMPM
Section 5: N/2SW/4, SW/4SW/4

Number of Acres: 120.00 gross, 120.00 net

Royalty Rate: 12.5%

Name and Percent ORRI Owners: 2.00% Conoco, Inc.
2.25% Hanson-McBride Petroleum Company
2.25% Paul Slayton
.25% John N. Eddy
.25% Nathan C. Greer

Name and Percent WI Owners: 100% Richardson Production Company

Tract No. 2

Lease Date: April 7, 1997

Lease Term: 5 years

Lessor: Eva Thompson Burrows, a widow 47310 001
Original Lessee: Richardson Production Company
Present Lessee: 100% Richardson Production Company
Description of Land Committed: Township 29 North, Range 14 West, NMPM
Section 5: SE/4SW/4
Number of Acres: 40.00 gross, 20.00 net
Royalty Rate: 12.5%
Name and Percent ORRI Owners: None
Name and Percent WI Owners: 100% Richardson Production Company

Tract No. 3

Lease Date: April 4, 1997
Lease Term: 5 years
Lessor: Anne Burrows Church, a widow 47310 002
Original Lessee: Richardson Production Company
Present Lessee: 100% Richardson Production Company
Description of Land Committed: Township 29 North, Range 14 West, NMPM
Section 5: SE/4SW/4
Number of Acres: 40.00 gross, 20.00 net
Royalty Rate: 12.5%
Name and Percent ORRI Owners: None
Name and Percent WI Owners: 100% Richardson Production Company

RECAPITULATION

<u>Tract No.</u>	<u>No. of Acres Committed</u>	<u>Percentage of Interest in Communitized Area</u>
1	120.00	75.00%
2	20.00	12.50%
3	<u>20.00</u>	<u>12.50%</u>
	160.00	100.00%

DETERMINATION - APPROVAL - CERTIFICATION

Pursuant to the authority vested in the Secretary of the Interior, under Section 17(j) of the Mineral Leasing Act of 1920, as amended (74 Stat. 784; 30 U.S.C. 226(j)), and delegated to the authorized officer, of the Bureau of Land Management, I do hereby:

- A. Determine that the Federal lease or leases as to the lands committed to the attached agreement cannot be independently developed and operated in conformity with the well-spacing program established for the field or area in which said lands are located, and that consummation and approval of the agreement will be in the public interest.
- B. Approve the attached communitization agreement covering: NW¼ of Section 8, T. 29 N., R. 14 W., San Juan County, New Mexico, as to natural gas and associated liquid hydrocarbons producible from the Pictured Cliffs formation. This approval will become invalid *ab initio* by the Authorized officer should then public interest requirements under section 3105.2-3(e) not be met.
- C. Certify and determine that the drilling, producing, rental, minimum royalty and royalty requirements of the Federal lease or leases committed to said agreement are hereby established, altered, changed, or revoked to conform with the terms and conditions of the agreement.
- D. Approval of this agreement does not warrant or certify that the applicant and other working interest owners thereof hold legal or equitable title to the leases which are committed hereto.

Approved: November 8, 2002


Lucy Bee
Legal Instruments Examiner
Petroleum Management Team

Effective: September 26, 2001

Contract No.: Com. Agr. **NMNM 104912**

39 685 001

COMMUNITIZATION AGREEMENT

CONTRACT NO. _____

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076 FARMINGTON, NM

WITNESSETH:

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WHEREAS, the parties hereto own working, royalty or other leasehold interests, or operating rights under the oil and gas leases and lands subject to this agreement which cannot be independently developed and operated in conformity with the well-spacing program established for the field or area in which said lands are located; and

WHEREAS, the parties hereto desire to communitize and pool their respective mineral interests in lands subject to this agreement for the purpose of developing and producing communitized substances in accordance with the terms and conditions of this agreement:

NOW, THEREFORE, in consideration of the premises and the mutual advantages to the parties hereto, it is mutually covenanted and agreed by and between the parties hereto as follows:

1. The lands covered by this agreement (hereinafter referred to as "communitized area") are described as follows:

TOWNSHIP 29 NORTH, RANGE 14 WEST, NMPM
Section 8: NW/4
San Juan County, New Mexico

containing 160.00 acres, more or less, and this agreement shall include only the Pictured Cliffs formation underlying said lands and the natural gas and associated liquid hydrocarbons, hereinafter referred to as "communitized substances", producible from such formations.

2. Attached hereto, and made a part of this agreement for all purposes, are Exhibit A and B, designating the operator of the communitized area and showing the acreage, percentage and ownership of oil and gas interests in all lands within the communitized area, and the authorization, if any, for communitizing or pooling any patented or fee lands within the communitized area.

3. All matters of operation shall be governed by the operator under and pursuant to the terms and provisions of this agreement. A successor operator may be designated by the owners of the working interest in the communitized area, and four executed copies of a designation of successor operator shall be filed with the Authorized Officer.
4. Operator shall furnish the Secretary of the Interior, or his authorized representative, with a log and history of any well drilled on the communitized area, monthly reports of operations, statements of oil and gas sales and royalties and such other reports as are deemed necessary to compute monthly the royalty due the United States, as specified in the applicable oil and gas regulations.
5. The communitized area shall be developed and operated as an entirety, with the understanding and agreement between the parties hereto that all communitized substances produced therefrom shall be allocated among the leaseholds comprising said area in the proportion that the acreage interest of each leasehold bears to the entire acreage interest committed to this agreement.

All proceeds, 8/8ths, attributed to unleased Federal, State or fee land included within the CA area are to be placed in an interest earning escrow or trust account by the designated operator until the land is leased or ownership is established.

6. The royalties payable on communitized substances allocated to the individual leases comprising the communitized area and the rentals provided for in said leases shall be determined and paid on the basis prescribed in each of the individual leases. Payments of rentals under the terms of leases subject to this agreement shall not be affected by this agreement except as provided for under the terms and provisions of said leases or as may herein be otherwise provided. Except as herein modified and changed, the oil and gas leases subject to this agreement shall remain in full force and effect as originally made and issued. It is agreed that for any Federal lease bearing a sliding- or step-scale rate of royalty, such rate shall be determined separately as to production from each communitization agreement to which such lease may be committed, and separately as to any noncommunitized lease production, provided, however, as to leases where the rate of royalty for gas is based on total lease production per day, such rate shall be determined by the sum of all communitized production allocated to such a lease plus any noncommunitized lease production.
7. There shall be no obligation on the lessees to offset any well or wells completed in the same formation as covered by this agreement on separate component tracts into which the communitized area is now or may hereinafter be divided, nor shall any lessee be required to measure separately communitized substances by reason of the diverse ownership thereof, but the lessees hereto shall not be released from their obligation to protect said communitized area from drainage of communitized substances by a well or wells which may be drilled offsetting said area.

8. The commencement, completion, continued operation, or production of a well or wells for communitized substances on the communitized area shall be construed and considered as the commencement, completion, continued operation, or production on each and all of the lands within and comprising said communitized area, and operations or production pursuant to this agreement shall be deemed to be operations or production as to each lease committed hereto.
9. Production of communitized substances and disposal thereof shall be in conformity with allocation, allotments, and quotas made or fixed by any duly authorized person or regulatory body under applicable Federal or State statutes. This agreement shall be subject to all applicable Federal and State laws or executive orders, rules and regulations, and no party hereto shall suffer a forfeiture or be liable in damages for failure to comply with any of the provisions of this agreement if such compliance is prevented by, or if such failure results from, compliance with any such laws, orders, rules or regulations.
10. The date of this agreement is SEP 26 2001, and it shall become effective as of this date or from the onset of production of communitized substances, whichever is earlier upon execution by the necessary parties, notwithstanding the date of execution, and upon approval by the Secretary of the Interior or by his duly authorized representative, and shall remain in force and effect as to the Pictured Cliffs formation for a period of 2 years and for as long as communitized substances are, or can be, produced from the communitized area in paying quantities: Provided, that prior to production in paying quantities from the communitized area and upon fulfillment of all requirements of the Secretary of the Interior, or his duly authorized representative, with respect to any dry hole or abandoned well, this agreement may be terminated at any time by mutual agreement of the parties hereto. This agreement shall not terminate upon cessation of production if, within 60 days thereafter, reworking or drilling operations on the communitized area are commenced and are thereafter conducted with reasonable diligence during the period of nonproduction. The 2 year term of this agreement will not in itself serve to extend the term of any Federal lease which would otherwise expire during said period.
11. The covenants herein shall be construed to be covenants running with the land with respect to the communitized interests of the parties hereto and their successors in interests until this agreement terminates and any grant, transfer or conveyance of any such land or interest subject hereto, whether voluntary or not, shall be and hereby is conditioned upon the assumption of all obligations hereunder by the grantee, transferee, or other successor in interest, and as to Federal land shall be subject to approval by the Secretary of the Interior, or his duly authorized representative.
12. It is agreed between the parties hereto that the Secretary of the Interior, or his duly authorized representative, shall have the right of supervision over all fee and State mineral operations within the communitized area to the extent necessary to monitor production and measurement, and assure that no avoidable loss of hydrocarbons occurs in which the United States has an interest pursuant to applicable oil and gas regulations of the Department of the Interior relating to such production and measurement.
13. This agreement shall be binding upon the parties hereto and shall extend to and be binding upon their respective heirs, executors, administrators, successors and assigns.

14. This agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties, or may be ratified or consented to by separate instrument, in writing, specifically referring hereto, and shall be binding upon all parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all parties had signed the same document.
15. Nondiscrimination: In connection with the performance of work under this agreement, the operator agrees to comply with all of the provisions of Section 202(1) to (7) inclusive, of Executive Order 11246 (30 F.R. 12319), as amended, which are hereby incorporated by reference in this agreement.

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the day and year first above written and have set opposite their respective names the date of execution.

RICHARDSON OPERATING COMPANY

Cathleen Colby *mlh*
Cathleen Colby, Attorney-in-Fact

Executed October 3, 2001

RICHARDSON PRODUCTION COMPANY

Cathleen Colby *mlh*
Cathleen Colby, Attorney-in-Fact

Executed October 3, 2001

STATE OF COLORADO)
) ss.
COUNTY OF DENVER)

The foregoing instrument was acknowledged before me this 3rd day of October, 2001 by Cathleen Colby, as Attorney-in-Fact on behalf of RICHARDSON PRODUCTION COMPANY and RICHARDSON OPERATING COMPANY.

My commission expires:

10-31-02

Dawn Marie Huffer
Notary Public

EXHIBIT A

Plat of communized area covering NW/4 Section 8, Township 29 North, Range 14 West,
NMPM, Pictured Cliffs Field, San Juan County, New Mexico.

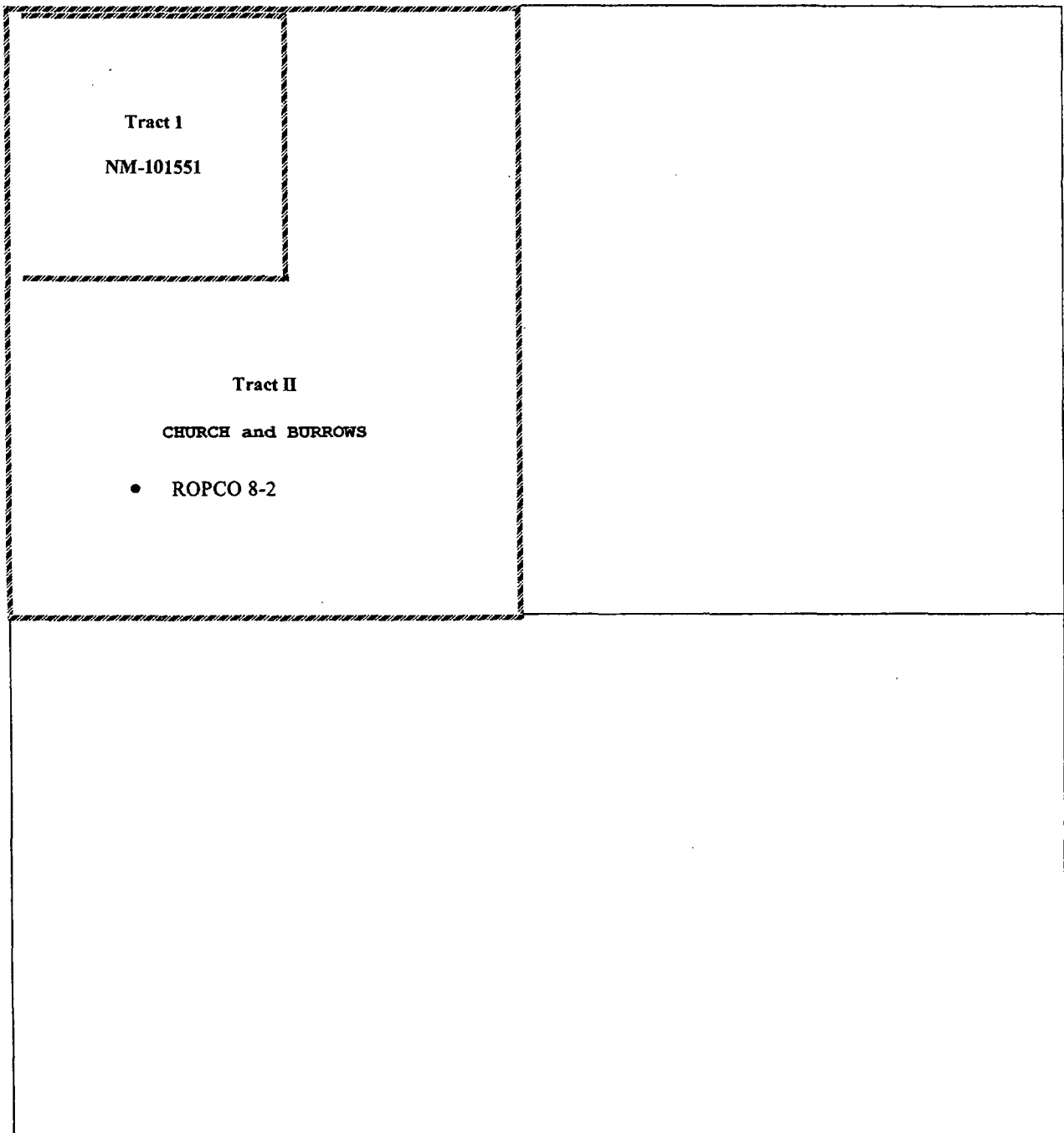


EXHIBIT B

To Communitization Agreement dated _____, embracing:

Township 29 North, Range 14 West, NMPM

Section 8: NW/4

San Juan County, New Mexico

Operator of Communitized Area: Richardson Operating Company

DESCRIPTION OF LEASES COMMITTED

Tract No. I

Lease Serial No.: USA NM 101551 47325 000

Lease Date: December 1, 1998

Lease Term: 10 years

Lessor: United States of America

Present Lessee: 100% Richardson Production Company

Description of Land Committed: Township 29 North, Range 14 West, NMPM
Section 8: NW/4NW/4

Number of Acres: 40.00 gross, 40.00 net

Royalty Rate: 12.5%

Name and Percent ORRI Owners: None

Name and Percent WI Owners: 100% Richardson Production Company

Tract No. II

Lease Serial No.: Fee 47317 001

Lease Date: April 14, 1998

Lease Term: 5 years

Lessor: Anne Burrows Church, a widow (50%)

ROPCO 8-2 well

Present Lessee:	100% Richardson Production Company ✓
Description of Land Committed:	<u>Township 29 North, Range 14 West, NMPM</u> ? Section 8: S/2NW/4, NE/4NW/4
Number of Acres:	120.00 gross, 60.000 net ✓
Royalty Rate:	12.5%
Name and Percent ORRI Owners:	NONE
Name and Percent WI Owners:	100% Richardson Production Company ✓
Pooling Clause:	Lease contains a provision authorizing pooling in accordance with the requirement of the agreement. ✓
Lease Serial No.:	Fee ✓
Lease Date:	April 14, 1998 47317 002
Lease Term:	5 years
Lessor:	Eva Thompson Burrows, a widow (50%)
Present Lessee:	100% Richardson Production Company ✓
Description of Land Committed:	<u>Township 29 North, Range 14 West, NMPM</u> ? Section 8: S/2NW/4, NE/4NW/4 ✓
Number of Acres:	120.00 gross, 60.000 net ✓
Royalty Rate:	12.5%
Name and Percent ORRI Owners:	NONE
Name and Percent WI Owners:	100% Richardson Production Company ✓
Pooling Clause:	Lease contains a provision authorizing pooling in accordance with the requirement of the agreement.

RECAPITULATION

<u>Tract No.</u>	<u>No. of Acres Committed</u>	<u>Percentage of Interest in Communitized Area</u>
1	40.000	25.000%
2	<u>120.000</u>	<u>75.000%</u>
	160.00	100.000%

**DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(MASS) Serial Register Page**

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01 02-25-1920;041STAT0437;30USC226
Case Type 311111: O&G LSE NONCOMP PUB LAND
Commodity 459: OIL & GAS L
Case Disposition: AUTHORIZED

Total Acres
2,523.720

Serial Number
NMSF-- 0 079968

Name & Address			Serial Number: NMSF-- 0 079968	
			Int Rel	% Interest
CONOCOPHILLIPS CO	PO BOX 7500	BARTLESVILLE OK 74005	LESSEE	100.000000000
CONOCOPHILLIPS CO	PO BOX 7500	BARTLESVILLE OK 74005	OPERATING RIGHTS	0.000000000
LANCE OIL & GAS CO	1099 18TH ST #1200	DENVER CO 802021955	OPERATING RIGHTS	0.000000000
RICHARDSON OPERATING CO	6400 S FIDDLER'S GREEN #1330	GREENWOOD VILLAGE CO 80111	OPERATING RIGHTS	0.000000000
XTO ENERGY INC	810 HOUSTON ST #2000	FT WORTH TX 761026298	OPERATING RIGHTS	0.000000000

Serial Number: NMSF-- 0 079968

Mer Twp	Rng	Sec	STyp	SNr Suff	Subdivision	District/Resource Area	County	Mgmt Agency
23 0290N	0140W	003	ALIC		S2NW,N2SW,SWSW;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	003	LOT:		3,4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	004	ALIC		S2N2,S2;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	004	LOT:		1,2,3,4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	005	ALIC		S2N2,N2SW,SWSW,SE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	005	LOT:		1-4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	008	ALIC		N2NE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	009	ALIC		N2NE,SENE,NW,E2SE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N	0140W	010	ALIC		W2NW;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0300N	0140W	033	ALIC		N2,N2SW,NESE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0300N	0140W	033	LOT:		3,4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT

Relinquished/Withdrawn Lands

Serial Number: NMSF-- 0 079968

23 0300N 0140W 720	FF	SENE REJ;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND
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Serial Number: NMSF-- 0 079968

Act Date	Code	Action	Action Remarks	Pending Office
01/21/1948	124	APLN RECD		
05/01/1951	237	LEASE ISSUED		
05/23/1951	126	APLN REJ/DEN IN PART		
07/01/1951	496	FUND CODE	05;145003	
07/01/1951	530	RLTY RATE - 12 1/2%		
07/01/1951	868	EFFECTIVE DATE		
11/27/1958	102	NOTICE SENT-PROD STATUS		
10/19/1963	909	BOND ACCEPTED	EFF 09/27/63;ES0085	
06/10/1970	246	LEASE COMMITTED TO CA	SW631;	
05/03/1976	246	LEASE COMMITTED TO CA	SRM1116;	
06/01/1984	246	LEASE COMMITTED TO CA	NMNM76324;	
04/23/1986	140	ASGN FILED	MESA PETRO/OPER LTD	
04/23/1986	932	TRF OPER RGTS FILED		
08/04/1986	139	ASGN APPROVED	EFF 05/01/86;	
08/04/1986	933	TRF OPER RGTS APPROVED	EFF 05/01/86;	
08/11/1986	963	CASE MICROFILMED	CNUM 103,398	AD
04/04/1988	974	AUTOMATED RECORD VERIF		GLC/CB
02/12/1990	575	APD FILED		
06/26/1990	575	APD FILED		

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**DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
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Name & Address

Serial Number: NMSF-- 0 079968

Name & Address	Int Rel	% Interest
CONOCOPHILLIPS CO PO BOX 7500 BARTLESVILLE OK 74005	LESSEE	100.00000000
CONOCOPHILLIPS CO PO BOX 7500 BARTLESVILLE OK 74005	OPERATING RIGHTS	0.00000000
LANCE OIL & GAS CO 1099 18TH ST #1200 DENVER CO 802021955	OPERATING RIGHTS	0.00000000
RICHARDSON OPERATING CO 6400 S FIDDLER'S GREEN #1330 GREENWOOD VILLAGE CO 80111	OPERATING RIGHTS	0.00000000
XTO ENERGY INC 810 HOUSTON ST #2000 FT WORTH TX 761026298	OPERATING RIGHTS	0.00000000

Serial Number: NMSF-- 0 079968

Mer Twp Rng Sec	STyp SNr Suff	Subdivision	District/Resource Area	County	Mgmt Agency
23 0290N 0140W 003	ALIC	S2NW,N2SW,SWSW;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 003	LOT:	3,4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 004	ALIC	S2N2,S2;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 004	LOT:	1,2,3,4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 005	ALIC	S2N2,N2SW,SWSW,SE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 005	LOT:	1-4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 008	ALIC	N2NE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 009	ALIC	N2NE,SENE,NW,E2SE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0290N 0140W 010	ALIC	W2NW;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0300N 0140W 033	ALIC	N2,N2SW,NESE;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT
23 0300N 0140W 033	LOT:	3,4;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND MGMT

Relinquished/Withdrawn Lands

Serial Number: NMSF-- 0 079968

23 0300N 0140W 720	FF	SENE REJ;	FARMINGTON FO	SAN JUAN	BUREAU OF LAND
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Serial Number: NMSF-- 0 079968

Act Date	Code	Action	Action Remarks	Pending Office
01/21/1948	124	APLN RECD		
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06/10/1970	246	LEASE COMMITTED TO CA	SW631;	
05/03/1976	246	LEASE COMMITTED TO CA	SRM1116;	
06/01/1984	246	LEASE COMMITTED TO CA	NMNM76324;	
04/23/1986	140	ASGN FILED	MESA PETRO/OPER LTD	
04/23/1986	932	TRF OPER RGTS FILED		
08/04/1986	139	ASGN APPROVED	EFF 05/01/86;	
08/04/1986	933	TRF OPER RGTS APPROVED	EFF 05/01/86;	
08/11/1986	963	CASE MICROFILMED	CNUM 103,398	AD
04/04/1988	974	AUTOMATED RECORD VERIF		GLC/CB
02/12/1990	575	APD FILED		
06/26/1990	575	APD FILED		

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Case Type 311111: O&G LSE NONCOMP PUB LAND

**Total Acres
2,523.720**

**Serial Number
NMSF-- 0 079968**

Commodity 459: OIL & GAS L

Case Disposition: AUTHORIZED

06/26/1990	575	APD FILED	(1)
06/26/1990	575	APD FILED	(2)
06/28/1990	575	APD FILED	
06/29/1990	575	APD FILED	
07/20/1990	575	APD FILED	
08/01/1990	576	APD APPROVED	30 FC FEDERAL COM JC
08/01/1990	576	APD APPROVED	36 FC FEDERAL JC
08/06/1990	575	APD FILED	
08/24/1990	576	APD APPROVED	31 FC FED COM CLB
09/19/1990	576	APD APPROVED	14 FC FEDERAL JC
05/16/1991	577	APD WDN/TERM/CANC	32 FC FED COM CMG
05/16/1991	577	APD WDN/TERM/CANC	33 FC FED COM CMG
05/16/1991	577	APD WDN/TERM/CANC	34 FC FED COM CMG
05/16/1991	577	APD WDN/TERM/CANC	35 FC FED COM CMG
05/20/1991	140	ASGN FILED	MESA OPER/CONOCO INC
05/20/1991	932	TRF OPER RGTS FILED	MESA OPER/CONOCO INC
07/26/1991	933	TRF OPER RGTS APPROVED	EFF 06/01/91;
07/26/1991	974	AUTOMATED RECORD VERIF	SSP/AMR
07/31/1991	139	ASGN APPROVED	EFF 06/01/91;
07/31/1991	974	AUTOMATED RECORD VERIF	ST/KRP
10/07/1991	577	APD WDN/TERM/CANC	30 FC FED COM CLB
10/07/1991	577	APD WDN/TERM/CANC	31 FC FED COM CLB
10/07/1991	577	APD WDN/TERM/CANC	36 FC FED CLB
03/02/1992	932	TRF OPER RGTS FILED	MESA OPER LTD/CONOCO
04/23/1992	933	TRF OPER RGTS APPROVED	EFF 04/01/92;
04/23/1992	974	AUTOMATED RECORD VERIF	ST/JS
10/05/1992	646	MEMO OF LAST PROD-ACTUAL	
12/31/1995	235	EXTENDED	THRU 12/31/97;
12/31/1995	522	CA TERMINATED	SW-631;
02/08/1996	643	PRODUCTION DETERMINATION	/1/
02/08/1996	647	MEMO OF LAST PROD-ALLOC	/1/NMNM74067;
04/25/1996	643	PRODUCTION DETERMINATION	/1/
04/25/1996	647	MEMO OF LAST PROD-ALLOC	/1/NMNM75930;
05/01/1996	522	CA TERMINATED	NMNM75930;
10/14/1997	932	TRF OPER RGTS FILED	CONOCO/RICHARDSON
11/14/1997	933	TRF OPER RGTS APPROVED	EFF 11/01/97;
11/14/1997	974	AUTOMATED RECORD VERIF	ANN
03/04/2000	246	LEASE COMMITTED TO CA	NMNM103035
03/09/2000	575	APD FILED	RICHARDSON OPER CO
03/11/2000	246	LEASE COMMITTED TO CA	RICHARDSON OPER CO
03/28/2000	575	APD FILED	RICHARDSON OPER CO
05/22/2000	575	APD FILED	RICHARDSON OPER CO
05/24/2000	576	APD APPROVED	1 WF FEDERAL 3
05/24/2000	576	APD APPROVED	2 WF FEDERAL 3
08/14/2000	575	APD FILED	/2/RICHARDSON OPER CO
08/14/2000	575	APD FILED	RICHARDSON OPER CO

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Commodity 459: OIL & GAS L

Case Disposition: AUTHORIZED

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08/15/2000	576	APD APPROVED	1 WF FEDERAL 5
09/02/2000	246	LEASE COMMITTED TO CA	NMNM104847
09/21/2000	575	APD FILED	RICHARDSON OPER CO
09/26/2000	575	APD FILED	RICHARDSON OPER CO
10/05/2000	575	APD FILED	RICHARDSON OPER CO
10/12/2000	575	APD FILED	RICHARDSON OPER CO
11/02/2000	575	APD FILED	RICHARDSON OPER CO
11/13/2000	575	APD FILED	RICHARDSON OPER CO
11/16/2000	576	APD APPROVED	3 WF FEDERAL 33
11/30/2000	575	APD FILED	RICHARDSON OPER CO(1;
11/30/2000	575	APD FILED	RICHARDSON OPER CO(2;
11/30/2000	575	APD FILED	RICHARDSON OPER CO(3;
01/08/2001	246	LEASE COMMITTED TO CA	NMNM103036
01/31/2001	576	APD APPROVED	4 ROPCO 5
06/13/2001	246	LEASE COMMITTED TO CA	NMNM103096
04/11/2002	246	LEASE COMMITTED TO CA	NMNM110461;
06/12/2002	246	LEASE COMMITTED TO CA	NMNM108218
01/16/2003	817	MERGER RECOGNIZED	CONOCO/CONOCOPHILLIPS
04/09/2003	650	HELD BY PROD - ACTUAL	
05/30/2003	643	PRODUCTION DETERMINATION	/1/
05/30/2003	658	MEMO OF 1ST PROD-ACTUAL	/1/SF079968;WF FED 1R
01/09/2004	246	LEASE COMMITTED TO CA	NMNM108219
01/09/2004	246	LEASE COMMITTED TO CA	NMNM108220
01/13/2004	246	LEASE COMMITTED TO CA	NMNM108224
01/26/2004	899	TRF OF ORR FILED	GREER TRST/RICHARDSON
07/28/2004	932	TRF OPER RGTS FILED	CONOCO/RICHARDSON OPE
08/19/2004	933	TRF OPER RGTS APPROVED	EFF 08/01/04;
08/19/2004	974	AUTOMATED RECORD VERIF	JLV
10/14/2004	246	LEASE COMMITTED TO CA	NMNM108261
10/14/2004	932	TRF OPER RGTS FILED	RICHARDSO/LANCE OIL
12/08/2004	933	TRF OPER RGTS APPROVED	EFF 11/01/04;
12/08/2004	974	AUTOMATED RECORD VERIF	MV
03/16/2005	246	LEASE COMMITTED TO CA	NMNM108217
05/05/2005	246	LEASE COMMITTED TO CA	NMNM110596
08/23/2005	246	LEASE COMMITTED TO CA	NMNM108222;ROPCO 8 #1
08/24/2005	246	LEASE COMMITTED TO CA	NMNM108221;ROPCO 8 #1
05/23/2007	932	TRF OPER RGTS FILED	LANCE O&G/XTO ENERG;1
06/15/2007	899	TRF OF ORR FILED	1
07/25/2007	933	TRF OPER RGTS APPROVED	EFF 06/01/07;
07/25/2007	974	AUTOMATED RECORD VERIF	MV

Line Nr Remarks

Serial Number: NMSF-- 0 079968

0002	NMSF079968 HELD BY ALLOCATED PROD FROM NMNM76324.
0003	08/19/04-LESSEE-CONOCOPHILLIPS CO ES0048 NW
0004	12/08/2004 LANCE BONDED TRANSFEREE WYB000112/NW

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PURPOSES NOT INTENDED BY BLM



April 20, 2009

Conoco/Phillips
Burlington Resources Oil & Gas LP
3401 East 30th
Farmington, NM 87402

Re: XTO Energy, Inc. Application for Authorization to Inject
Salty Dog No. 2
NW/4SE/4, Section 5, T29N-R14W
San Juan County, New Mexico

To Whom It May Concern:

As a leasehold owner within one-half mile of the proposed Salty Dog No. 2 disposal well, you are being notified of our Application for Authorization to Inject. XTO seeks to dispose of water produced from the Fruitland Coal and Pictured Cliffs formations into the Mesaverde formation.

Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days.

Additional information may be obtained by contacting Loren Fothergill, 382 CR 3100, Aztec, NM 87410, (505) 333-3100.

Yours truly,

A handwritten signature in black ink, appearing to read 'Diane Jaramillo', written over a horizontal line.

Diane Jaramillo
Supervisor, Accounting/Engineering Techs

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Conoco/Phillips
BBOG
3401 East 30th
Farmington, NM 87402

COMPLETE THIS SECTION ON DELIVERY

A. Signature

[Signature]

- ☐ Agent
☐ Addressee

B. Received by (Printed Name)

[Signature]

C. Date of Delivery

4-21-09

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

7004 2510 0005 9631 4551

PS Form 3811, February 2004

Domestic Return Receipt

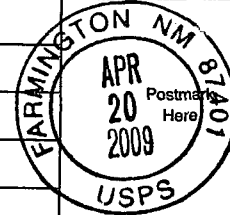
102595-02-M-1540

U.S. Postal Service™
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For delivery information visit our website at www.usps.com

OFFICIAL USE

Postage \$
Certified Fee
Return Receipt Fee
(Endorsement Required)
Restricted Delivery Fee
(Endorsement Required)
Total Postage & Fees \$



Sent To

Conoco/Phillips
Street, Apt. No.,
or PO Box No. 3401 East 30th
City, State, ZIP+4 Farmington, NM 87401

PS Form 3800, June 2002

See Reverse for Instructions

7004 2510 0005 9631 4551



April 20, 2009

Western Gas Resources
1099 18th Street, Suite 1200
Denver, CO 80202

Re: XTO Energy, Inc. Application for Authorization to Inject
Salty Dog No. 2
NW/4SE/4, Section 5, T29N-R14W
San Juan County, New Mexico

To Whom It May Concern:

As a leasehold owner within one-half mile of the proposed Salty Dog No. 2 disposal well, you are being notified of our Application for Authorization to Inject. XTO seeks to dispose of water produced from the Fruitland Coal and Pictured Cliffs formations into the Mesaverde formation.

Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days.

Additional information may be obtained by contacting Loren Fothergill, 382 CR 3100, Aztec, NM 87410, (505) 333-3100.

Yours truly,

A handwritten signature in black ink, appearing to read "Diane Jaramillo", written over a horizontal line.

Diane Jaramillo
Supervisor, Accounting/Engineering Techs

SENDER: COMPLETE THIS SECTION

- ☒ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- ☒ Print your name and address on the reverse so that we can return the card to you.
- ☒ Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Western Gas Resources
1099 18th Street, Suite 1200
Denver, CO 80202

2. Article Number

7004 2510 0005 9631 4544

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

JK

☐ Agent☐ Addressee

B. Received by (Printed Name)

C. Date of Delivery

- D. Is delivery address different from item 1? ☐ Yes ☒ No
- If YES, enter delivery address below: ☐ No

3. Service Type

- ☒ Certified Mail ☐ Express Mail
- ☐ Registered ☒ Return Receipt for Merchandise
- ☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

U.S. Postal Service™ **PLANE 5**

CERTIFIED MAIL™ RECEIPT

(Domestic Mail Only, No Insurance Coverage Provided)

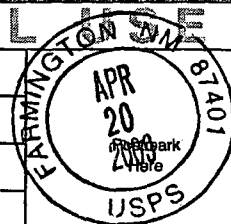
For delivery information visit our website at www.usps.com**OFFICIAL USE**

Postage \$

Certified Fee

Return Receipt Fee
(Endorsement Required)Restricted Delivery Fee
(Endorsement Required)

Total Postage & Fees \$



Sent To

Western Gas Resources

Street, Apt. No.,
or PO Box No.

1099 18th St Suite 1200

City, State, ZIP+4

Denver CO 80202

PS Form 3800, June 2002

See Reverse for Instructions

7004 2510 0005 9631 4544

REC'D / SAN JUAN

MAY 01 2009

AFFIDAVIT OF PUBLICATION

Ad No. 61485

**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):

Wednesday, April 22, 2009

And the cost of the publication is \$56.71

Tia Aviles

ON 4/27/09 TIA AVILES appeared before me, whom I know personally to be the person who signed the above document.

Christine Sellers
My Commission Expires November 05, 2011

COPY OF PUBLICATION

Public Notice

XTO Energy Inc. is applying with the New Mexico Oil Conservation Division (NMOCD) for approval to inject water into the Salty Dog #2 SWD well. The Salty Dog #2 SWD wells is located at 1495' FSL & 1477' FEL, Sec 5, T29N-R14W, San Juan County, NM. The well will dispose of water produced from oil and gas wells into the Mesa Verde formation at a depth of 2,388' to 3,096' at a maximum rate of 1,000 barrels of water per day and a maximum pressure of 1,300 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220, South Saint Francis Drive, Santa Fe, NM 87505, within 15 days. Additional information can be obtained by contacting Loren Fothergill, 382 CR 3100, Aztec, NM 87410, (505) 333-3100.

Legal No. 61485 published in The Daily Times, Farmington, New Mexico on Wednesday, April 29, 2009



382 Road 3100 Aztec, New Mexico 87410
Phone: (505) 333-3100 FAX: (505) 333-3280

January 16, 2009

State of New Mexico
Oil Conservation Division
Mr. William Jones
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Re: Salt Water Disposal Application
Salty Dog No. 2 Well
Section 5, Township 29 North, Range 14 West, NMPM
San Juan County, New Mexico

Dear Mr. Jones:

XTO Energy Inc. is resubmitting the application for the referenced salt-water disposal well, due to the well not injecting within a one-year period. Enclosed please find one original and one copy of the complete Salt Water Disposal Application. A copy has been furnished to the Aztec OCD Office and the Farmington BLM Office.

This well was completed in the Blanco Mesaverde field on January 6, 2002. XTO owns the surface where this well is located.

There is only one well which penetrates the injection zone within one half mile of the Salty Dog No. 2 location. The plugged and abandoned Pubco-Carr Russell Federal No. 1 well is located in the NE/4NE/4 of Section 8, T29N, R14W. The five wells within the area of review are Fruitland Coal wells operated by XTO Energy. Pertinent well records are attached.

Information from the State Engineer's Office in Aztec indicates there are no shallow fresh water wells within one half mile of the Salty Dog No. 2 location.

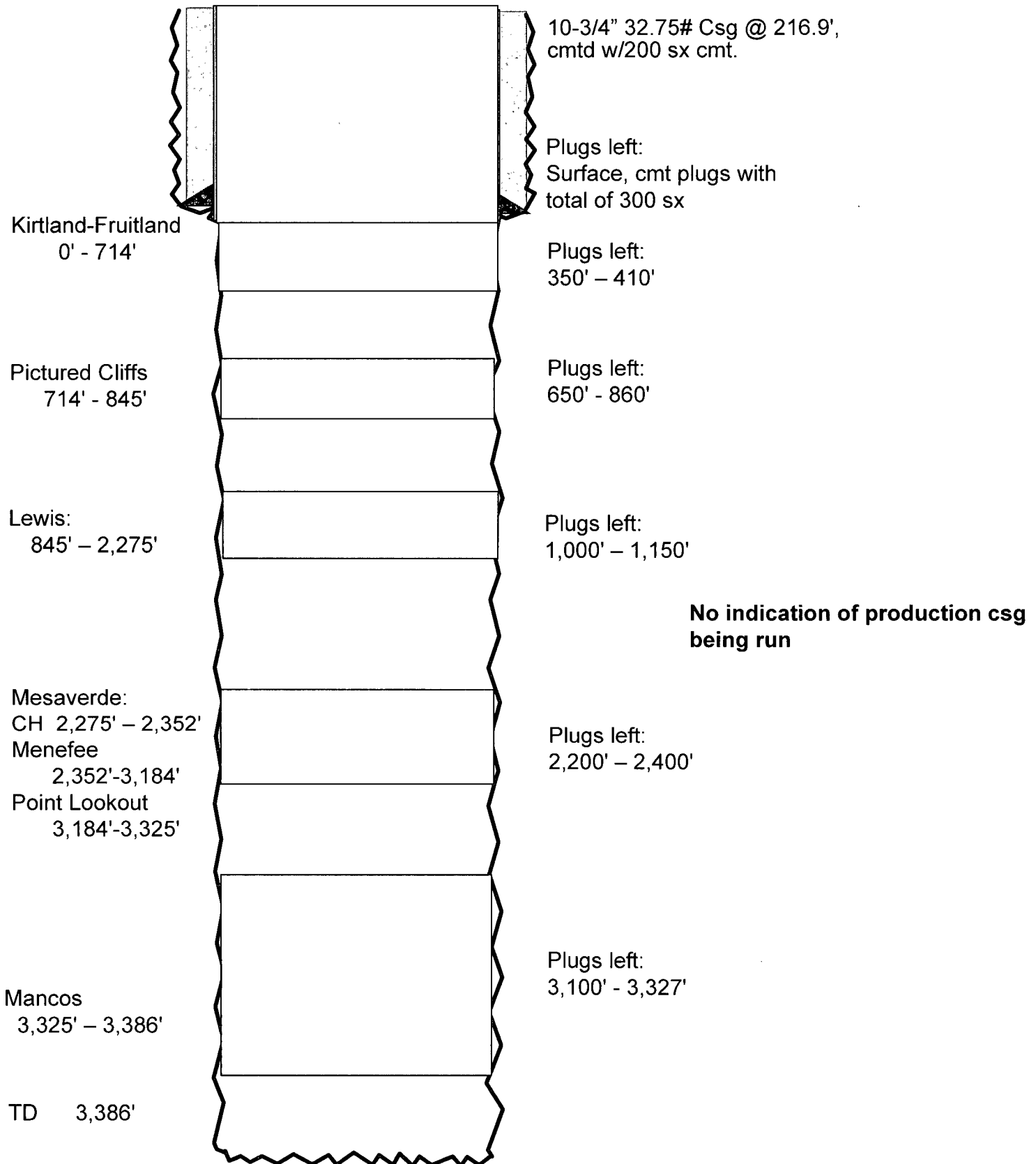
Should you require further documentation please feel free to call my office @ 505-333-3100 or e-mail Diane_Jaramillo@xtoenergy.com and I will be happy to furnish any additional information.

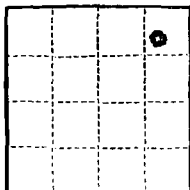
NOTES U.S. BUREAU OF LAND MANAGEMENT FARMINGTON DISTRICT OFFICE 1235 N. PLATA HIGHWAY, SUITE 401 FARMINGTON, NM 87401	RECEIPT		DATE	1-16-09	033952
	RECEIVED FROM		XTO		
	ADDRESS				
	FOR		SALT water Disposal App		
	ACCOUNT		HOW PAID		
	AMT. OF ACCOUNT		CASH		
	AMT. PAID		CHECK		
	BALANCE DUE		MONEY ORDER		
	BY		Diane Jaramillo		
	©2001, REDIFORM © 81806				

Rubco-Carr-Russel Federal #1

Sec 8, T29N-R14W
790' FNL & 990' FEL
Plugged 1/26/60

GL: 5,332.4'





(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Santa Fe

Lease No. 87 019268

Unit **RECEIVED**

JAN 27 1960

SUNDRY NOTICES AND REPORTS ON WELLS

U.S. GEOLOGICAL SURVEY
FACILITY, NEW MEXICO

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT	XI
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL		

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Astec, New Mexico January 26, 19 60

Pease Carr-Russell Federal
Well No. 1 is located 790 ft. from [N] line and 990 ft. from [E] line of sec.
Section 8 29N 14W S.M.P.M.
($\frac{1}{4}$ Sec. and Sec. No.) (Twp.) (Range) (Meridian)
Twin Mounds Area San Juan New Mexico
(Field) (County or Subdivision) (State or Territory)

The elevation of the ~~surface~~ drill hole above sea level is 5332.4 ft.

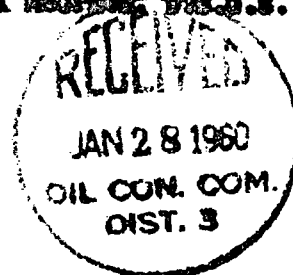
DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Flagging has been accomplished as verbally approved by Mr. Phil McCreary, D.I.G.S. on August 26, 1954.

Flags left: 3387-3400
2400-2500
1150-1000
860-650
410-350
Surface

ILLEGIBLE



Total, 300 am, spotted by House; installed 8' of 4" OD steel pipe for attachment marker; pits filled and location cleaned up.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company PEASE PETROLEUM CORPORATION

Address 108 West Church

Astec, New Mexico

By W. E. Russell, Jr.
Title Mgr. Prod. Dept.

U. S. LAND OFFICE
SERIAL NUMBER
LEASE OR PROSPECT TO PROSPECTUNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SE 1 1955

LOG OF OIL OR GAS WELL

LOCATE WELL CORRECTLY

Company Pubco-Carr Address Box 544, Aztec, New Mexico
 Lessor or Tract Russell-Federal Field Twin Mounds State New Mexico
 Well No. 1 Sec. 8 T. 29N R. 14W Meridian San Juan County Sandoval
 Location 1 ft. N. of Line and 8 ft. E. of Line of San Juan Section 5338
790 N 900 E 888 S 5338

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Bill A. Street District Geologist

Date August 31, 1954
 The substance of this page is for the condition of the well at above date.

Commenced drilling 8-9, 1954 Finished drilling 8-25, 1954
OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from None to None No. 4, from None to None
 No. 2, from None to None No. 5, from None to None
 No. 3, from None to None No. 6, from None to None

IMPORTANT WATER SANDS

No. 1, from None to None No. 3, from None to None
 No. 2, from None to None No. 4, from None to None

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
							From	To	
10-3/4	32.75	8	Howco	216.90	Taper				

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Mech used	Mud gravity	Amount of mud used
10-3/4	216.90	200	Howco		

PLUGS AND ADAPTERS

Heaving plug—Material None Length None Depth set None
 Adapters—Material None Size None

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from None feet to None feet, and from None feet to None feet
 Cable tools were used from None feet to None feet, and from None feet to None feet

DATES

3386 Put to producing 3386, 1954
 The production for the first 24 hours was 8-28 barrels of fluid of which 54 % was oil; 54 % emulsion; 8-28 water; and 54 % sediment. Gravity 8-28
 If gas well, cu. ft. per 24 hours 54 Gallons gasoline per 1,000 cu. ft. of gas 54
 Rock pressure, lbs. per sq. in. 54

EMPLOYEES

None, Driller None, Driller
None, Driller None, Driller

FORMATION RECORD

FROM	TO	TOTAL FEET	FORMATION
0	714	714	Kirtland-Fruitland
714	845	131	Pictured Cliffs
845	2275	1430	Lewis
2275	2352	77	Mesaverte-Cliffhouse
2352	3184	832	Mesaverte
3184	3325	141	Point Lookout
3325	3386 TD	61	Mancos

FOLD MARK

EXHIBIT "3"

XTO ENERGY INC. OPERATIONS PLAN SALTY DOG #2

I. Location: Section 5, Township 29 North, Range 14 West, NMPM
1495' FSL and 1477' FEL
San Juan County, NM

Field: Blanco Mesaverde
Elevation: 5297'
Surface: Fee – XTO Energy, Inc.
Minerals: Federal NMSF-079968

II. Geology:	<u>Formation Tops</u>	<u>Depth</u>
	Fruitland Coal	684 feet
	Pictured Cliffs	698 feet
	Lewis Shale	883 feet
	Charca	1690 feet
	Cliff House	2267 feet
	Menefee	2300 feet
	Point Lookout	3231 feet
	Total Depth	3616 feet

Estimated depths of anticipated water, oil, gas and other mineral bearing formations which are expected to be encountered:

Water and gas:	684 feet	Fruitland Coal
	698 feet	Pictured Cliffs

Water:	2267 feet	Cliff House
	3231 feet	Point Lookout

- A. Logging Program: Induction/GR and Density Logs at TD
- B. The maximum expected bottom hole pressure is 400 psi. This pressure will be contained as specified in III B. and C. below. No overpressured zones are expected in this well. No H2S zones are anticipated in this well.

III. Surface Csg: 8-5/8" 24#, J-55 Csg @ 251', hole cemented with 110 sx with CL B cmt. Circ cmt to surf.

Production Csg: 5-1/2" 15.5#, K-55 Csg @ 3,612'. Cmt'd w/165 sx CL B

Cmt with 2% metasilicated (12.5 ppg, 2.06 cuft/sx). Tailed in with 177 sx CL B cmt with 3#/sx gilsonite & 1/4#/sx celloflake (15.6 ppg, 1.18 cuft/sx). Circ 8 bbls cmt to surf.

Tubing: 2-7/8" 6.5#, J-55 Tbg, EOT @ 2,310'. Baker 5-1/2" x 2-7/8 Lok-Set Pkr @ 2,310'.

Stimulation: Perforated MV as follows: 2,388'-2,395', 2,464'-2,472', 2,478-2,484', 2,556'-2,566', 2,730'-2,738', 2,790'-2,807', 2,914'-2,954', 3,088'-3,096' w/4 SPF, (120 Deg phasing, 0.38" dia, 21" pene). Perf with 2,500 gals 7.5% HCL w/550 ball sealers 1.35g, ISDP 1,145 psig, 5" SIP - 948 psig. 10" SIP - 907 psig, 15" SIP - 866 psig.

IV. Operations: Average Daily Rate: 1,000 bwpd
Maximum Daily Rate: 1,000 bwpd
System is closed:
Average Injection Pressure: 1,000 psi
Maximum Injection Pressure: 1,300 psi

Source of water to be injected is from Fruitland Coal and Pictured Cliffs wells in the area. Representative samples of this water are included in this report.

A water sample from the Mesaverde taken from the Stella Needs A Com #1E well, located in the NE/4SW/4 of Section 36, Township 30 North, Range 14 West, is also included in this report.

Geological data from the disposal zone is presented in Administrative Order SWD-595.

There are no fresh water wells within one mile of this location.

Examination of available geologic and engineering data reveals no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

Salty Dog #2 (SWD)
WELLBORE DIAGRAM

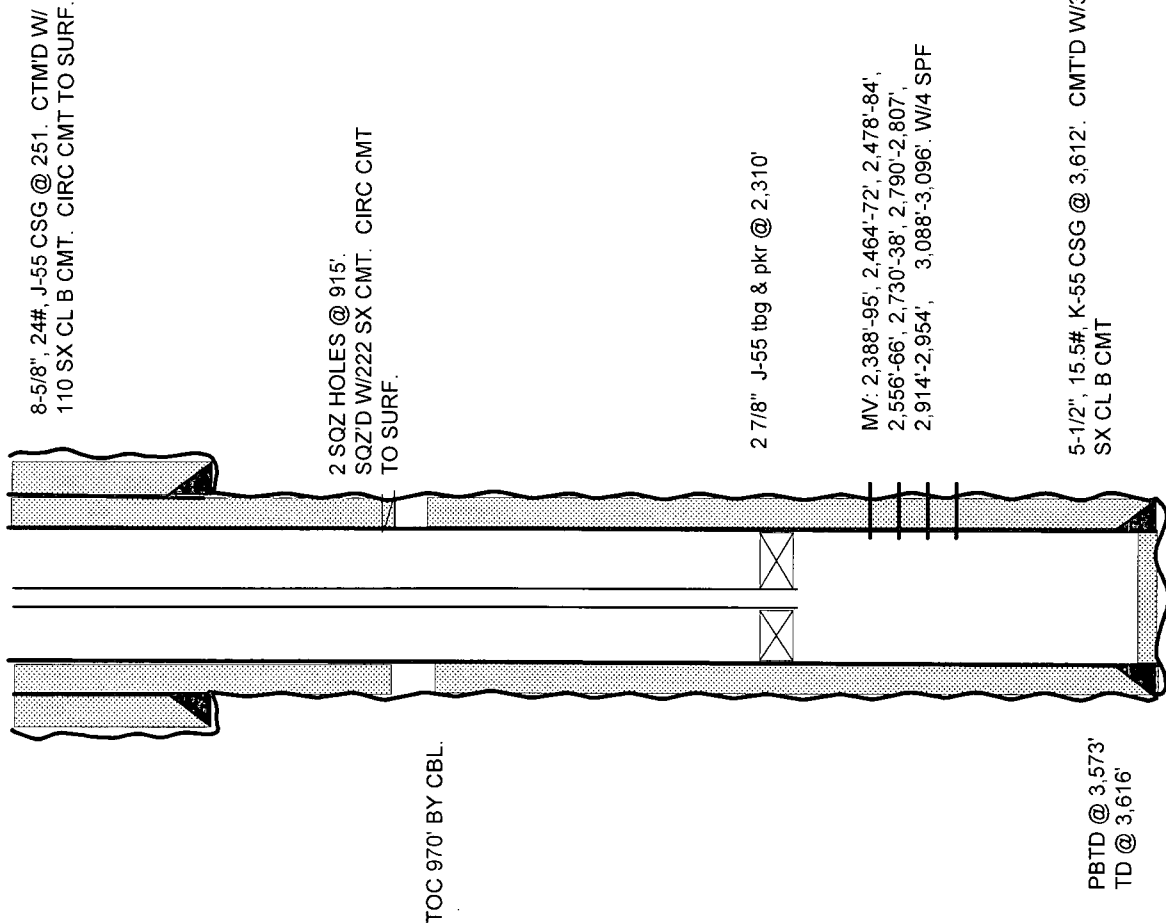
DATA

LOCATION: 1,495' FSL & 1,477' FEL. SEC 5-T29N-R14W
COUNTY/STATE: SAN JUAN, NEW MEXICO
FIELD: SWD MESAVERDE
FORMATION: MESAVERDE
FEDERAL LEASE#: NMSF 079968
API#: 30-045-30812
XTO WELL#: 2,310'
SPUD DATE: 12/13/01
COMPLETION DATE: 2,310'
PERFS: 2,388'-95', 2,464'-72', 2,478'-84', 2,556'-66', 2,730'-38', 2,790'-2,807', 2,914'-2,954',
3,088'-3,096' W/4 SPF
TBG: 2-7/8", 6.5#, J-55 TBG. EOT @ 2,310'. BAKER 5-1/2" X 2-7/8" LOK-SET PKR @ 2,310'.
PROD METHOD: SI

HISTORY

12/13/01: MIRU DRLG CO. SPUDDED 9-3/4" HOLE TD HOLE @ 260'. SET 8-5/8", 24#, J-55 CSG @ 251'. CTMD W/110 SX CL B CMT. CIRC CMT TO SURF.
01/06/02: TD 6-3/4" HOLE @ 3,616'.
01/07/02: SET 5-1/2", 15.5#, K-55 CSG @ 3,612'. CMT'D W/165 SX CL B CMT W/2% METASILICATED (12.5 PPG, 2.06 CUFT/SX). TAILED IN W/177 SX CL B CMT W/3#/SX GILSONITE & 1/4#/SX CELLOFLAKE (15.6 PPG, 1.18 CUFT/SX). CIRC 8 BBLS CMT TO SURF.
01/10/02: RAN CBL. TOC @ 970'.
01/11/02: MIRU WL. SET CIBP @ 930'. PERF WELL @ 915' W/2 JSPF. TIH W/MODEL R PKR & SET @ 750'. SQZD PERFS W/222 SX CL B CMT W/2% METASILICATED & 2% CACL2. CIRC CMT TO SURF. REL PKR. TOH W/TBG & PKR.
01/12/02: TIH & TGD CMT @ 853'. DO CMT TO 920'. PT'S CSG & SQZ HOLES TO 1,000 PSIG. HELD OK.
01/14/02: DRLG ON CIBP.
02/06/02: MIRU WIRELINE LOGGING UNIT.
02/08/02: PERF'D MV AS FOLLOWS: 2,388'-95', 2,464'-72', 2,478'-84', 2,556'-66', 2,730'-38', 2,790'-2,807', 2,914'-2,954', 3,088'-3,096' W/4 SPF, (120 DEG PHASING, 0.38" DIA, 21" PENE). TIH W/ 5-1/2" PKR & 100 JTS 2-7/8" J-55 TBG. SET PKR @ 2,310'.
02/09/02: BD PERFS FR/2,388'-3,096' @ 1,650 PSIG. A. PERFS W/2,500 GALS 7.5% HCL W/550 BALL SEALERS 1.35G. ISDP-1,145 PSIG, 5" SIP-948 PSIG, 10" SIP-907 PSIG, 15" SIP 866 PSIG.
03/01/02: RAN STEP RATE TEST. MAX INJ PRES 2,262.7 PSIG @ 2,954'. MAX AIR 7.629 BPM. 2-7/8", 6.5 #, J-55 TBG. EOT @ 2,310'. BAKER 5-1/2" X 2-7/8" LOK-SET PKR @ 2,310'.
03/15/02: INJECTION PRESSURE INCREASED TO 1,050 PSIG.
11/21/02: RAN STEP RATE TEST.
12/01/02: INJECTION PRESSURE INCREASED TO 1,300 PSIG.
06/14/07: MIT TEST PERFORMED. PTD CSG TO 380 PSIG FOR 30". HELD OK.

KB: 5304'
GL: 5,297'
CORR: 7'



Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Monday, February 16, 2009 4:28 PM
To: 'Diane_Jaramillo@xtoenergy.com'
Cc: Ezeanyim, Richard, EMNRD; Warnell, Terry G, EMNRD; Hayden, Steven, EMNRD; Perrin, Charlie, EMNRD
Subject: Disposal Application from XTO: Salty Dog #2 30-045-30812 (renewal of SWD-811)

Hello Diane:

After reviewing this application to inject (renewal of SWD-811), we found this permit application to almost be a duplicate of the one in 2001. XTO must update the application including the land details and formal "notice".

811-A

- 1) Please draw the ½ mile radius around this well and have your land department inform you of all surrounding owners in the Mesaverde formation.
 - a. List each tract wholly or partially contained in this ½ mile AOR and the owners ("affected parties") in each tract
 - b. Send proof these affected parties were noticed of this most recent application
 - c. Send proof the surface owner was provided a complete copy of this application
 - d. Send a copy of the newspaper notice done within the past few months
- 2) Send a wellbore diagram of the plugged well which is located within the Area of Review.
- 3) The data on your initial pages of the application does not match the data on the actual wellbore diagram – please correct.

REMARKS:

It appears, the OCD will grant the 1,300 psi injection pressure limit based on previous step rate test and application.¹
It appears the OCD will grant injection from 2388 to 3096 feet, but not any higher than 2388 because of salinity concerns.
Please be aware, this well's injection interval is very tight – Richardson was not satisfied with the injectivity into this well.

Regards,

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

— not used in ^{RBDMS} ~~as~~ of 3/1/09



RECEIVED

JAN 20 PM 1 17

382 Road 3100 Aztec, New Mexico 87410
Phone: (505) 333-3100 FAX: (505) 333-3280

January 16, 2009

State of New Mexico
Oil Conservation Division
Mr. William Jones
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Re: Salt Water Disposal Application
Salty Dog No. 2 Well
Section 5, Township 29 North, Range 14 West, NMPM
San Juan County, New Mexico

Dear Mr. Jones:

XTO Energy Inc. is resubmitting the application for the referenced salt-water disposal well, due to the well not injecting within a one-year period. Enclosed please find one original and one copy of the complete Salt Water Disposal Application. A copy has been furnished to the Aztec OCD Office and the Farmington BLM Office.

This well was completed in the Blanco Mesaverde field on January 6, 2002. XTO owns the surface where this well is located.

There is only one well which penetrates the injection zone within one half mile of the Salty Dog No. 2 location. The plugged and abandoned Pubco-Carr Russell Federal No. 1 well is located in the NE/4NE/4 of Section 8, T29N, R14W. The five wells within the area of review are Fruitland Coal wells operated by XTO Energy. Pertinent well records are attached.

Information from the State Engineer's Office in Aztec indicates there are no shallow fresh water wells within one half mile of the Salty Dog No. 2 location.

Should you require further documentation please feel free to call my office @ 505-333-3100 or e-mail Diane.Jaramillo@xtoenergy.com and I will be happy to furnish any additional information.

Mr. Loren Fothergill is the engineer in charge should you need clarification of engineering data and is available at the number listed above.

Yours truly,

A handwritten signature in black ink, appearing to read 'Diane Jaramillo', is written over the typed name.

Diane Jaramillo
Supervisor, Engineering Techs/Accounting

CC: Aztec OCD
BLM – Farmington

New Mexico Oil Conservation Division
January 16, 2009
Page 2

List of Exhibits to Application for Authorization to Inject C-108:

- Exhibit 1 Well and Lease Plat – 2 mile radius
- Exhibit 2 Well Records – Pubco-Carr Russell Federal No.1
- Exhibit 3 Operations Plan
- Exhibit 4 Injection Well Data Sheet
- Exhibit 5 Wellbore Diagram
- Exhibit 6 Survey Plat and Well Pad
- Exhibit 7 Water Analysis: Mesaverde
- Exhibit 8 Water Analysis: Fruitland Coal and Pictured Cliffs
- Exhibit 9 Affidavit of Publication
- Exhibit 10 Proof of Notice

DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
---------	----------	----------	-----------	------	---------

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



ADMINISTRATIVE APPLICATION CHECKLIST

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

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

[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
 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

[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.

Loren Fothergill

Print or Type Name

Loren W Fothergill
Signature

Sr. Production Engineer

Title

Loren_Fothergill@xtoenergy.com

1-16-09

Date

e-mail Address

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance ☒ Disposal _____ Storage
Application qualifies for administrative approval? _____ Yes _____ No
- II. OPERATOR: XTO Energy, Inc.
ADDRESS: 382 CR 3100, Aztec, NM 87410
CONTACT PARTY: Loren Fothergill PHONE: 505-333-3100
- 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 ☒ 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: Loren Fothergill TITLE: Sr. Production Engineer
SIGNATURE: Loren W Fothergill DATE: 1-16-09
E-MAIL ADDRESS: Loren_Fothergill@xtoenergy.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: _____

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.

INJECTION WELL DATA SHEET

OPERATOR: XTO Energy, Inc.WELL NAME & NUMBER: Salty Dog No. 2WELL LOCATION: 1495' FSL & 1477' FEL
FOOTAGE LOCATIONUNIT LETTER JSECTION 5TOWNSHIP 29NRANGE 14WWELLBORE SCHEMATICWELL CONSTRUCTION DATASurface Casing

Hole Size: 9 7/8 Casing Size: 8 5/8, 24#
 Cemented with: ~~43~~ 50 sx. or 50 ft³
 Top of Cement: Surface Method Determined: _____

Intermediate Casing

Hole Size: _____ Casing Size: _____
 Cemented with: _____ sx. or _____ ft³
 Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: 6 3/4 Casing Size: 5 1/2, 15.5#
 Cemented with: ~~185 + 130~~ 542 sx. or _____ ft³
 Top of Cement: Surface Method Determined: _____

Total Depth: 3700'Injection IntervalMV perfs: 2200' - 3580' feet To perforated _____

(Perforated or Open Hole; indicate which)

Well
 History
 See p. 2

INJECTION WELL DATA SHEET

Tubing Size: 2 7/8", 6.4#, J-55 Lining Material: None

Type of Packer: 5 1/2" x 2 7/8"

Packer Setting Depth: 2150' estimate

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

Additional Data

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

If no, for what purpose was the well originally drilled?

2. Name of the Injection Formation: Mesaverde

3. Name of Field or Pool (if applicable): Blanco Mesaverde

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. No

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:

Pictured Cliffs 800'

Gallup 5000'

KB: 5304'
GL: 5,297'
CORR: 7'

8-5/8", 24# J-55 CSG @ 251'. CMT'D W/
110 SX CL B CMT. CIRC CMT TO SURF.

2 SQZ HOLES @ 915'.
SQZ'D W/222 SX CMT. CIRC CMT
TO SURF.

2 7/8" J-55 tbg & pkr @ 2,310'

MV: 2,388'-98", 2,464'-72", 2,478'-84",
2,556'-66", 2,730'-38", 2,790'-2,807",
2,914'-2,954", 3,088'-3,096' W/4 SPF

5-1/2", 15.5# K-55 CSG @ 3,612'. CMT'D W/342
SX CL B CMT

PBTD @ 3,573'
TD @ 3,616'

Salty Dog #2 (SWD) WELLBORE DIAGRAM

DATA

LOCATION: 1,495' FSL & 1,477' FEL SEC 5-T29N-R14W
COUNTY/STATE: SAN JUAN, NEW MEXICO
FIELD: SWD MESAVERDE
FORMATION: MESAVERDE
FEDERAL LEASE#: NMSF 079968
API#: 30-045-30812
XTO WELL#:
SPUD DATE: 12/13/01
COMPLETION DATE:
PERFS: 2,388'-98", 2,464'-72", 2,478'-84", 2,556'-66", 2,730'-38", 2,790'-2,807", 2,914'-2,954',
3,088'-3,096' W/4 SPF
TBG: 2-7/8", 6.5# J-55 TBG. EOT @ 2,310'. BAKER 5-1/2" X 2-7/8" LOK-SET PKR @ 2,310'.
PROD METHOD: SI

HISTORY

12/13/01: MIRU DRLG CO. SPUDDED 9-3/4" HOLE TO HOLE @ 260'. SET 8-5/8", 24# J-55 CSG
@ 251'. CMT'D W/110 SX CL B CMT. CIRC CMT TO SURF.
01/06/02: TD 6-3/4" HOLE @ 3,616'.
01/07/02: SET 5-1/2", 15.5# K-55 CSG @ 3,612'. CMT'D W/165 SX CL B CMT W/2%
METASILICATED (12.5 PPG, 2.06 CUFT/SX). TAILED IN W/177 SX CL B CMT W/3# SX
GILSONITE & 1/4# SX CELLOFLAKE (15.6 PPG, 1.18 CUFT/SX). CIRC 8 BLS CMT
TO SURF.
01/10/02: RAN CBL. TOC @ 970'.
01/11/02: MIRU WL. SET CIBP @ 930'. PERF WELL @ 915' W/2 JSPF. TIH W/MODEL R PKR &
SET @ 750'. SQZD PERFS W/222 SX CL B CMT W/2% METASILICATED & 2% CACL2.
CIRC CMT TO SURF. REL PKR. TOH W/TBG & PKR.
01/12/02: TIH & TGD CMT @ 853'. DO CMT TO 920'. PT'S CSG & SQZ HOLES TO 1,000 PSIG.
HELD OK.
01/14/02: DRLG ON CIBP.
02/06/02: MIRU WIRELINE LOGGING UNIT.
02/08/02: PERF'D MV AS FOLLOWS: 2,388'-98", 2,464'-72", 2,478'-84", 2,556'-66", 2,730'-38",
2,790'-2,807", 2,914'-2,954", 3,088'-3,096' W/4 SPF, (120 DEG PHASING, 0.38" DIA, 21"
PENE). TIH W/ 5-1/2" PKR & 100 JTS 2-7/8", J-55 TBG. SET PKR @ 2,310'.
02/09/02: BD PERFS FR/2,388'-3,096' @ 1,650 PSIG. A. PERFS W/2,500 GALS 7.5% HCL W/550
BALL SEALERS 1.35G. ISDP-1,145 PSIG, 5" SIP-948 PSIG, 10" SIP-907 PSIG, 15" SIP
866 PSIG.
03/01/02: RAN STEP RATE TEST. MAX INJ PRES 2,262.7 PSIG @ 2,954'. MAX AIR 7.629 BPM.
2-7/8", 6.5 # J-55 TBG. EOT @ 2,310'. BAKER 5-1/2" X 2-7/8" LOK-SET PKR @ 2,310'.
03/15/02: INJECTION PRESSURE INCREASED TO 1,050 PSIG.
11/21/02: RAN STEP RATE TEST.
12/01/02: INJECTION PRESSURE INCREASED TO 1,300 PSIG.
06/14/07: MIT TEST PERFORMED. PTD CSG TO 380 PSIG FOR 30". HELD OK.

State of New Mexico
Energy, Minerals & Mining Resources Department
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Form C - 102

☐ AMENDED REPORT

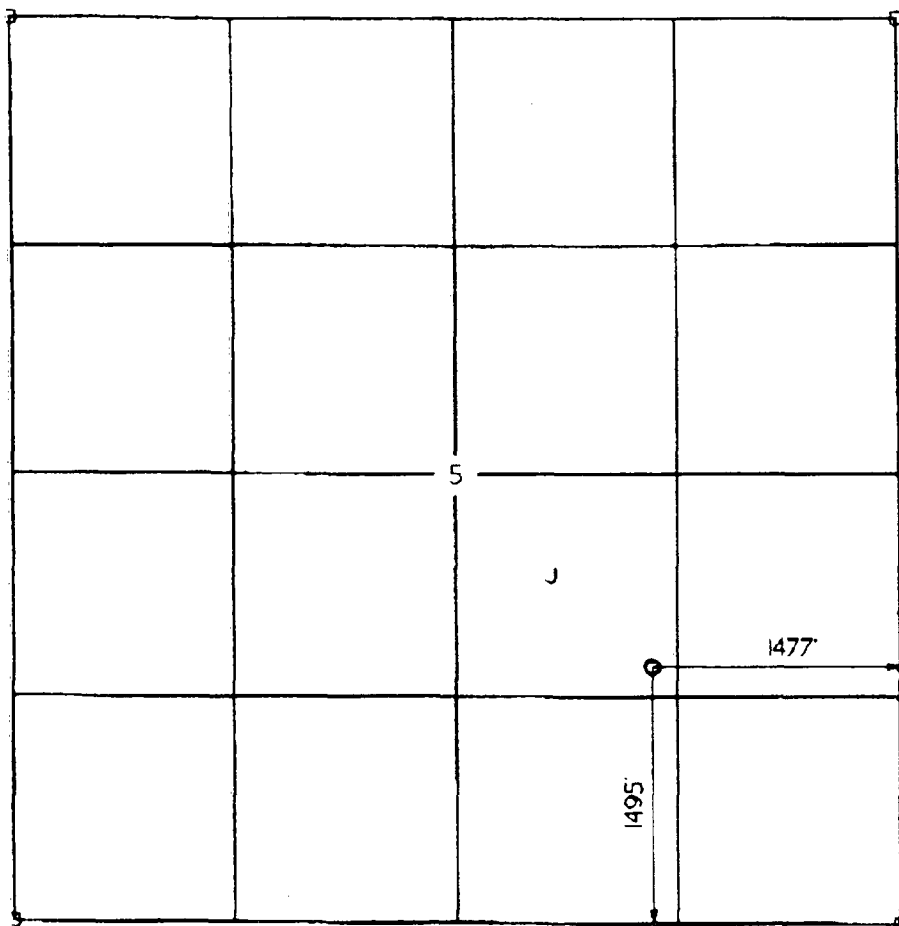
WELL LOCATION AND ACREAGE DEDICATION PLAT

APA Number	Pool Code	Pool Name
Property Code	Property Name SALTY DOG	Well Number 2
OGRI No.	Operator Name RICHARDSON OPERATING COMPANY	Elevation 5297'

Surface Location									
UL or Lot	Sec.	Twp.	Rge.	Lot Id.	Feet from	North/South	Feet from	East/West	County
J	5	29 N.	14 W.		1495	SOUTH	1477'	EAST	SAN JUAN

Bottom Hole Location if Different From Surface									
UL or Lot	Sec.	Twp.	Rge.	Lot Id.	Feet from	North/South	Feet from	East/West	County
Dedication	Join ?	Consolidation	Order No.						

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



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

Signature

Printed Name

Title

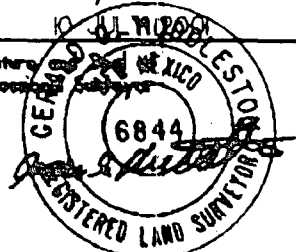
Date

SURVEYOR CERTIFICATION

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

Date of Survey

Signature and Seal of Surveyor



Dugan Production Corp.

COMPANY OF NORTH AMERICA

Stella Needs A Com No. 1 - Conversion to SWD

API WATER ANALYSIS

Company: DUGAN PROD.

W.C.N.A. Sample No.: S106695

Field:

Legal Description:

Well: STELLA NEEDS A COM #1E

Lease or Unit:

Depth:

Water.B/D:

Formation: POINT LOOKOUT/MESA VERDE

Sampling Point: SWAB

State: N.M.

Sampled By: J. ALEXANDER

County:

Date Sampled: 04/24/95

Type of Water(Produced, Supply, ect.):

PROPERTIES

pH: 6.30

Iron, Fe(total): 250

Specific Gravity: 1.050

Sulfide as H₂S: 0

Resistivity (ohm-meter): .13

Total Hardness:

Temperature: 78F

(see below)

DISSOLVED SOLIDS

CATIONS

mg/l

me/l

Sodium, Na: 20470

:

890

Calcium, Ca: 2084

:

104

Magnesium, Mg: 170

:

14

Barium, Ba: N/A

:

N/A

Potassium, K:

:

Sample(ml): 1.0 ml of EDTA: 5.20

Sample(ml): 1.0 ml of EDTA: .70

ANIONS

mg/l

me/l

Chloride, Cl: 31905

:

900

Sulfate, SO₄: 3750

:

78

Carbonate, CO₃:

:

Sample(ml): 1.0 ml of H₂SO₄:

Sample(ml): 1.0 ml of H₂SO₄: .30

Bicarbonate, HCO₃: 1830

:

30

Total Dissolved

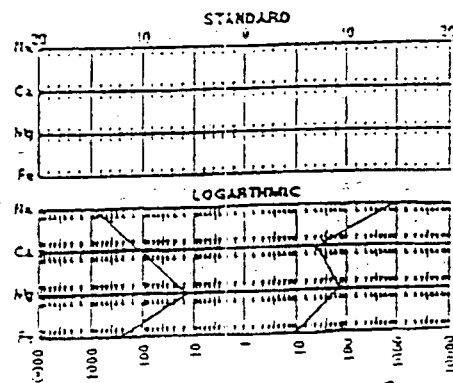
Solids (calculated): 60209

Total Hardness: 5900

Sample(ml): 1.0 ml of EDTA:

REMARKS AND RECOMMENDATIONS:

WATER PATTERNS-me/l



Analyst: DC
Date Analyzed: 4/24/95

BJ SERVICES COMPANY

WATER ANALYSIS #FW01W266

FARMINGTON LAB

GENERAL INFORMATION

OPERATOR:	RICHARDSON OPERATING	DEPTH:	
WELL:	BUSHMAN FEDERAL 6-1	DATE SAMPLED:	10/19/98
FIELD:	SEC06/T29N/R14W	DATE RECEIVED:	10/20/98
SUBMITTED BY:	BRAD SALZMAN	COUNTY:	SAN JUAN
WORKED BY:	D. SHEPHERD	STATE:	NM
PHONE NUMBER:		FORMATION:	FC/PC

SAMPLE DESCRIPTION

SAMPLE FOR ANALYSIS

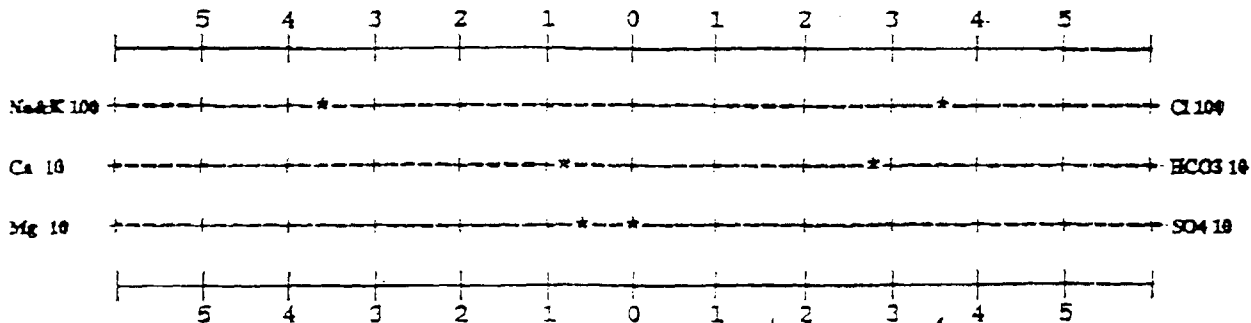
PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY:	1.015	@ 74°F	PH:	7.49
RESISTIVITY (MEASURED):	0.280	ohms @ 76°F		
IRON (FE++) :	0 ppm	SULFATE:		39 ppm
CALCIUM:	158 ppm	TOTAL HARDNESS		710 ppm
MAGNESIUM:	77 ppm	BICARBONATE:		1,719 ppm
CHLORIDE:	12,574 ppm	SODIUM CHLORIDE(Calc)		20,685 ppm
SODIUM+POTASS:	8,493 ppm	TOT. DISSOLVED SOLIDS:		23,536 ppm
H2S: NO TRACE		POTASSIUM (PPM):		110 PPM

REMARKS

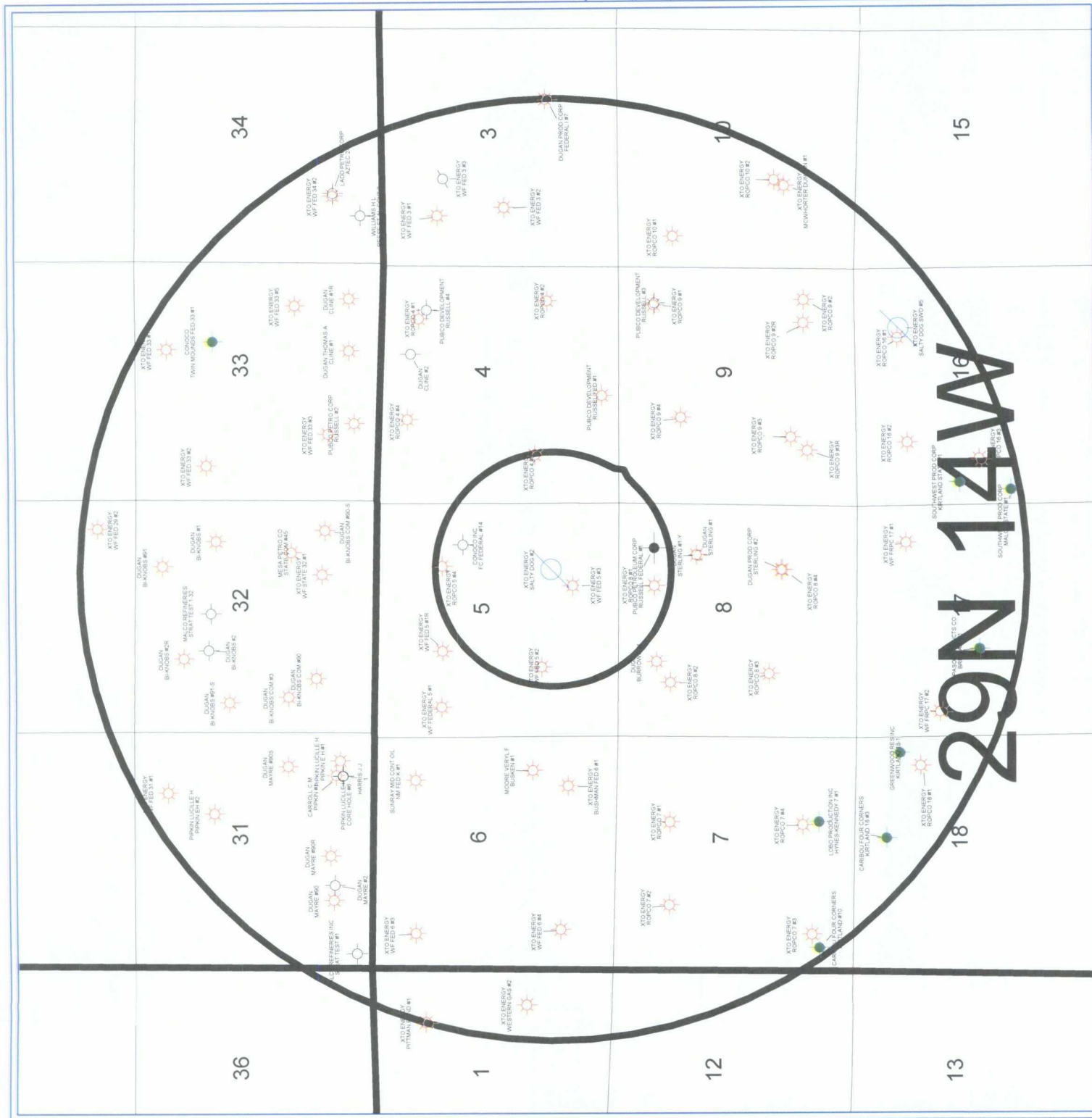
SAMPLED FROM SEPERATOR

STIFF TYPE PLOT (IN MEQ/L)



ANALYST

D. SHEPHERD



XTO ENERGY INC.

SALTY DOG #2 SWD

SEC. 5, T29N-R14W

SAN JUAN COUNTY, NM

1/2 MILE & 2 MILE RADIUS



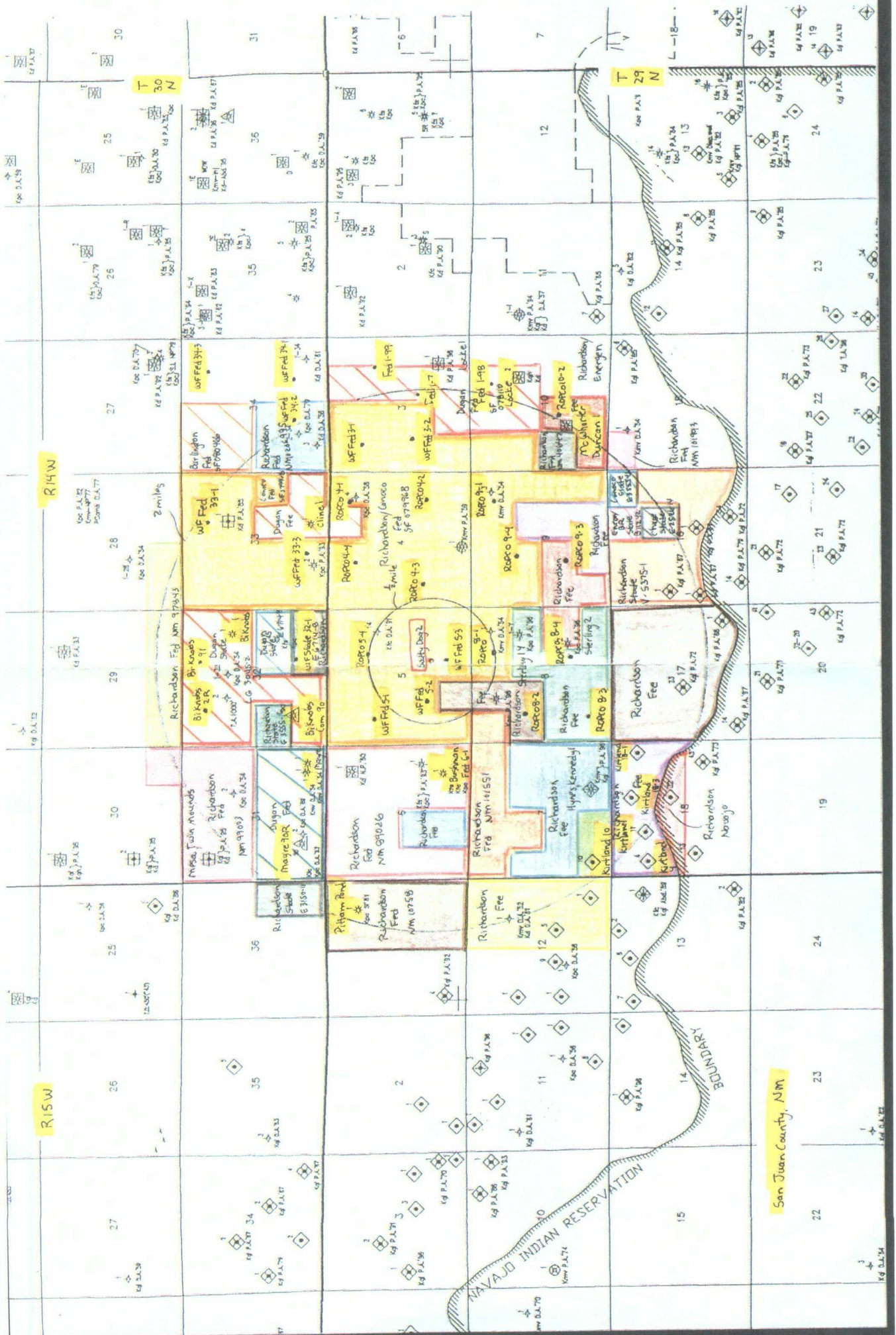
POSTED WELL DATA

Operator
Well Label

WELL SYMBOLS



January 12, 2009



San Juan County, NM

Form 9-331a
(Feb. 1931)

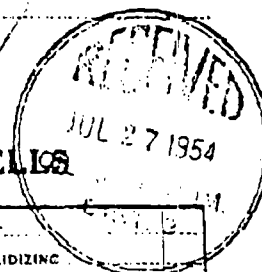
To: CA44 1-303-930-8009
From: Ken at CHouse 334-9471

Budget Item 42 10000.
Approval expires 12-31-33.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office San Jose
Lease No. EP 10000
Unit ✓



SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	<input checked="" type="checkbox"/>	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL, OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE LEASE BY SURVEY, NAME, NATURE OF REPORT, NOTICE, OR OTHER DATA)

July 27, 1954

Pitco-Carr Russell Federal

Well No. 1 is located 200 ft. from N line and 200 ft. from E line of sec. 1

WATER Sec. 6
(Of Sec. and Sub. No.)

PM
(Twp.)

15
(Range)

PaMaPaMa
(Meridian)

John Mearns
(Field)

C. D. JAMES
(County or subdivision)

State of New Mexico
(State or Territory)

Ground level

The elevation of the ~~surface~~ above sea level is 5332.4 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands, shales, and lengths of proposed sections, indicate production points, and all other important proposed work)

It is proposed to drill with rotary tools to the top of the Permian shale, estimated to be at a depth of 3000 feet. It is proposed to core and drill stem test the Pictured Cliff formation and several possible zones in the Mesozoic formation. Tentative casing program as follows:

10-3/4" surface casing 200 feet
Production string

Drilling Unit: NE 1/4 of Section 8 - Blind River lease.

A Blanket Drilling Bond has heretofore been filed and approved by the Commission.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Pitco Development, Inc.

Address Post Office Box 1366

Albuquerque, New Mexico

By Charles J. Plant
Title Vice President

Company PUBCO DEVELOPMENT CO.

Tract PUBCO-CARR-RUSSELL FEDERAL. Well No. 1

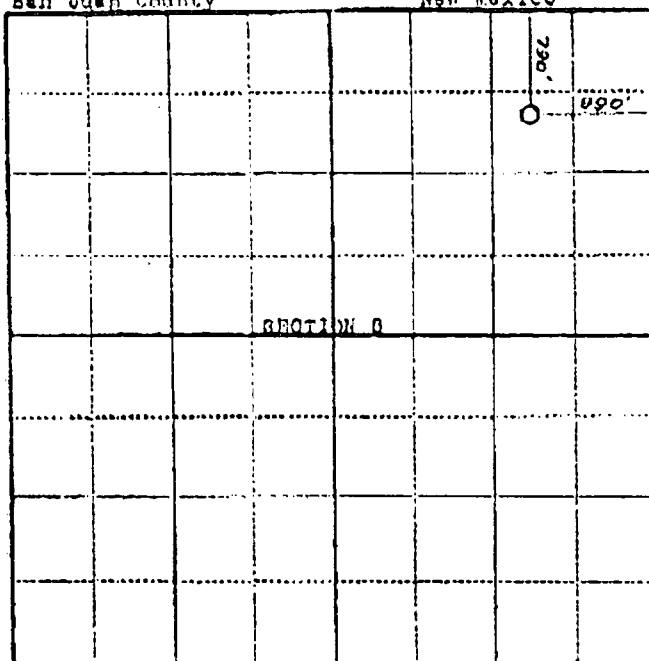
Sec. 8 T. 29 N R. 14 W N.M.P.M.

LOCATION 700 feet from north line; 090 feet from east line.

Elevation: 5832.4 OL

San Juan County

New Mexico



Scale—4 inches equal 1 mile.

This is to certify that the above plat was prepared from field notes of actual surveys made by me or under my supervision and that the same are true and correct to the best of my knowledge and belief.

Stephen H. Kinney
STEPHEN H. KINNEY
Registered Professional
Engineer and Land Surveyor

Surveyed July 19, 1954

Seal:

RECEIVED
JUL 23 1954
U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

Budget Bureau No. 42-R-836,2.
Approved: Expired 12-31-60.

Yurii S. SMO

[illegible]

LOCATE WELL CORRECTLY

U. S. LAND OFFICE

Serial Number...

LEAD ON P'ROST

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SEP 1 1950

LOG OF OIL OR GAS WELL

Company Pulao-Carr Address Box 844, Aztec, New Mexico
 Lessor or Tract Russell-Federal Field Twin Mounds New Mexico
 Well No. 1 Sec. 8 Meridian N.M.P.M. County San Juan
 Location 1 ft. 1790 of 1 N 29N 11W 15 ft. 990 of 1 E 11E 11N
 The information given herewith is a complete and correct record of this well and all work done thereon
 so far as can be determined from all available records.
 Signed Bill A. Stine

Date August 30, 1951 Bill A. Street
The summary on this page is for the condition of the well at above date. District Geologist

Commenced drilling _____, 19____ Finished drilling _____, 19____

0-29 54 OIL OR GAS HANDS OR ZONES 0-25 54

OIL OR GAS SANDS OR ZONES

(Donold gas by 6)

No. 1, from _____ to _____ No. 4, from _____ to _____
 No. 2, from **None** to _____ No. 5, from _____ to _____
 No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

No. 1, from _____ to _____ No. 3, from _____ to _____
No. 2, from _____ to _____ No. 4, from _____ to _____

CASING RECORD

Size width	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
							From—	To—	
10 3/4	32.75	8	3-ply	216.00	Tank	cutting plant, Boston			

MUDDING AND CEMENTING RECORD

Disc casting	Where set	Number sacks of cement	Mix used	Mild gravity	Amount of mild used
3/4	216.90	200	Howoo		

MARK

POLE

PLUGS AND ADAPTERS

Heaving plug Material Length Depth set

Adapter Material Size

SHOOTING RECORD

Size	Shot used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from feet to feet, and from feet to feet

Cable tools were used from feet to feet, and from feet to feet

DATES

....., 190.....
 3386 put to producing 190.....

The production for the first 24 hours was barrels of fluid of which% was oil;%
 emulsion; 8-26% water; and% sediment. Gravity, 23.6 54

If gas well, cu. ft. per 24 hours Gallons gasoline per 1,000 cu. ft. of gas 54

Rock pressure, lbs. per sq. in.

EMPLOYEES

....., Driller Driller

....., Driller Driller

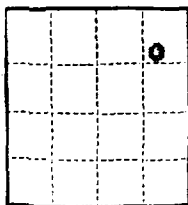
Banner Drilling Co

J. L. Copeland

N. W. Copeland

FORMATION RECORD

FROM	TO	TOTAL FEET	FORMATION
0	714	714	Kirtland-Fruitland
714	845	131	Pictured Cliffs
845	2275	1430	Lewis
2275	2352	77	Mesaverde-Cliffhouse
2352	3104	832	Menefee
3104	3325	141	Point Lookout
3325	3386 TD	61	Mancoos



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Santa Fe
Lease No. FF 079968
Unit _____

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY
NOTICE OF INTENTION TO ABANDON WELL	

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Astec, New Mexico January 26, 1960

Pubco Carr-Russell Federal
Well No. 1 is located 790 ft. from (N) line and 990 ft. from (E) line of sec. 8

Section 8 29N 14W R.M.P.M.
(Twp.) (Range) (Meridian)
Twin Mounds Area San Juan New Mexico
(Field) (County or Subdivision) (State or Territory)

The elevation of the Ground surface above sea level is 2332.4 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

It is proposed to plug Pubco Carr-Russell #1; TD 3396; E-log to TD and DET information indicate a dry hole to TD.

DET #1: 727-773 Pictured Cliffs If 15%, FF 60%, Paip 215, rec. 150' all, Gcm. No gts.

DET #2: 2932-2963 Menafee If 30%, FF 180, Paip 1170, rec. 365' wcm, no gas or oil.

CORE ANALYSIS: 724-772 water productive, Pictured Cliff; 3223-3227 water productive Menafee.

Plugs to be run as designated by Mr. Phil McGrath, U.S.G.S., 8-26-54; 3327-3100, 2400-2200, 1150-1000, 800-650, 410-350, 300 max.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

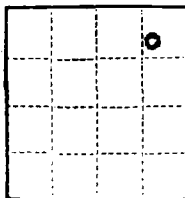
Company PUBCO PETROLEUM CORPORATION

Address 108 West Chuska

Astec, New Mexico

By H. E. Maxwell, Jr.

Title Mgr. Prod. Dept.



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Santa Fe
Lease No. BF 079968
Unit _____

RECEIVED

JAN 17 1960

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING
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NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY
NOTICE OF INTENTION TO ABANDON WELL	

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Artec, New Mexico January 26, 1960

Pubco Carr-Russell Federal

Well No. 1 is located 790 ft. from (N) line and 990 ft. from (E) line of sec. _____

NE 1/4, Section 8

(1/4 Sec. and Sec. No.)

29N

(Twp.)

14W

(Range)

N.M.P.M.

(Meridian)

Twin Mounds Area

(Field)

San Juan

(County or Subdivision)

New Mexico

(State or Territory)

The elevation of the Ground ~~corner~~ floor above sea level is 5332.4 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Plugging has been accomplished as verbally approved by Mr. Phil McGrath, U.S.G.S. on August 26, 1954.

Plugs left: 3327-3100
2400-2200
1150-1000
860-650
410-350
Surface

Total, 300 sax, spotted by Howco; installed 8' of 4" OD steel pipe for abandonment marker; pits filled and location cleaned up.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

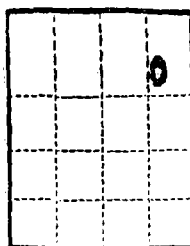
Company PUBCO PETROLEUM CORPORATION

Address 108 West Chuaka

Artec, New Mexico

By H. E. Maxwell, Jr.

Title Mgr. Prod. Dept.



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Santa Fe

Lease No. 77 079968

Unit _____

RECEIVED

JAN 27 1960

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT	XX
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL		

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Astec, New Mexico January 26, 1960

Pueco Carr-Russell Federal
Well No. 1 is located 799 ft. from [N] line and 950 ft. from [E] line of sec. _____

NE 1/4, Section 8 29N 14W E.M.P.M.
(1/4 Sec. and Sec. No.) (Twp.) (Range) (Meridian)
Twin Mounds Area San Juan New Mexico
(Field) (County or Subdivision) (State or Territory)

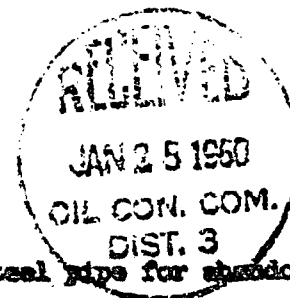
The elevation of the Ground surface above sea level is 5332.4 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Plugging has been accomplished as verbally approved by Mr. Phil McGrath, U.S.G.S. on August 26, 1954.

Plugs left: 3327-3100
2400-2200
1150-1000
860-650
410-350
Surface



Total, 300 sxx, spotted by Hosco; installed 8' of 4" OD steel pipe for abandonment marker; pits filled and location cleaned up.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company PUECO PETROLEUM CORPORATION

Address 108 West Chuska

Astec, New Mexico

By N. E. Maxwell, Jr.

Title Mgr. Prod. Dept.

AFFIDAVIT OF PUBLICATION

Ad No. 44869

STATE OF NEW MEXICO
County of San Juan:

CONNIE PRUITT, 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 meeting of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Wednesday, August 15, 2001.

And the cost of the publication is \$20.56.

Connie Pruitt

ON 8/17/01 CONNIE PRUITT appeared before me, whom I know personally to be the person who signed the above document.

Dennis Beck
My Commission Expires April 02, 2004

COPY OF PUBLICATION

918 LEGAL NOTICE

Richardson Operating Company will file an application on August 17, 2001, for approval to inject water, produced from oil and gas wells, into the Mesaverde formation in the Sally Dog No. 2, located in the NW/4SE/4 of Section 5, Township 29 North, Range 14 West, San Juan County, New Mexico, at a depth from 2000 to 3700 feet with surface injection pressure up to 600 pounds per square inch.

Surface owners and offset operators must file any objections or request for public hearing with the New Mexico Oil Conservation Division, 1220 South St. Francis Drive, Santa Fe, New Mexico 87504 within 15 days of the date of this notice. The Richardson Operating Company contact person is John Durham, 3100 La Plata Hwy, Farmington, NM 87401, telephone (505) 664-3100.

Legal No. 44869, published in The Daily Times, Farmington, New Mexico, Wednesday, August 15, 2001.

079



RICHARDSON OPERATING COMPANY

1700 Lincoln, Suite 1700
Denver, Colorado 80203 (303) 830-8000
FAX (303) 830-8009

August 17, 2001

Mr. William W. Franklin
Conoco Inc.
Mail Code DU 3092
600 North Dairy Ashford
Houston, TX 77079

Certified Mail Return Receipt
7000 1670 0006 8579 3524

Re: Application for Authorization to Inject
Salty Dog No. 2
NW/4SE/4-Section 5-T29N-R14W
San Juan County, New Mexico

Gentlemen:

As a leasehold owner within one-half mile of the proposed Salty Dog No. 2 disposal well, you are being notified of our Application for Authorization to Inject. Richardson Operating Company seeks to dispose of water produced from the Fruitland Coal and Pictured Cliffs formations into the Mesaverde formation. Objections, or a request for hearing, must be filed within 15 days with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505,

Enclosed is a copy of our Form C-108 and associated Exhibits. If you need additional information, please do not hesitate to call.

Sincerely,

RICHARDSON OPERATING COMPANY

Cathleen Colby
Land Manager

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Conoco Inc. - Attn: Bill Franklin
Mail Code DU 3092
600 North Dairy Ashford
Houston, TX 77079

2. Article Number (Copy from service label)

7000 1670 0006 8579 3524

PS Form 3811, July 1999

COMPLETE THIS SECTION ON DELIVERY

A. Received by (Please Print Clearly) B. Date of Delivery

C. Signature

X

☐ Agent☐ AddresseeD. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

☒ Certified Mail☐ Express Mail☐ Registered☐ Return Receipt for Merchandise☐ Insured Mail☐ C.O.D.

4. Restricted Delivery? (Extra Fee)

☐ Yes

Domestic Return Receipt

102595-00-M-0952

Jones, William V., EMNRD

From: Jones, William V., EMNRD
Sent: Tuesday, July 22, 2008 2:51 PM
To: 'loren_fothergill@xtoenergy.com'
Cc: Ezeanyim, Richard, EMNRD; Perrin, Charlie, EMNRD; Macquesten, Gail, EMNRD
Subject: Injection Permit from XTO (Extending the SWD-811) Salty Dog SWD Well No. 2 (30-045-30812)

Tracking: Recipient	Read
'loren_fothergill@xtoenergy.com'	
Ezeanyim, Richard, EMNRD	Read: 7/22/2008 4:07 PM
Perrin, Charlie, EMNRD	
Macquesten, Gail, EMNRD	

Hello Loren:

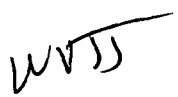
We received your letter requesting an extension of this SWD-811 disposal permit.

Please ask your regulatory personnel to re-apply to inject into this well after providing notice as required in Rule 701B(2). XTO is welcome to submit the results of the latest Step Rate Test run on that well at the same time as the new application. Please coordinate with Charlie in Aztec.

Appreciate the effort XTO has made to bring the Lance/Richardson properties into compliance.

(I am mailing a copy of this Email, to ensure communication)

Regards,



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

7/22/2008

RICHARDSON OPERATING COMPANY OPERATIONS PLAN

August 17, 2001

- | | | | | |
|-----|----------|------------------|-------------|---------------|
| II. | Geology: | <u>Formation</u> | <u>Tops</u> | <u>Depths</u> |
| | | Fruitland Coal | | 600 feet |
| | | Basal Coal | | 790 feet |
| | | Pictured Cliffs | | 800 feet |
| | | Lewis | | 930 feet |
| | | Cliff House | | 2200 feet |
| | | Menefee | | 2440 feet |
| | | Point Lookout | | 3310 feet |
| | | Total Depth | | 3700 feet |

Water and gas:	600 feet	Fruitland Coal
	790 feet	Basal Coal
	800 feet	Pictured Cliffs

Water:	2200 feet	Cliff House
	3310 feet	Point Lookout

- A. Logging Program: Induction /GR and Density Logs at TD
- B. The maximum expected bottom hole pressure is 400 psi. This pressure will be contained as specified in III B. and C. below. No overpressured zones are expected in this well. No H2S zones are anticipated in this well.

DUAL INDUCTION SFL

OTF

COUNTY _____
FIELD _____
LOCATION _____
WELL _____
COMPANY _____

LOCATION _____
API SERIAL NO. _____
SEC. _____
TWP. _____
RANGE _____
7 29 N 14 W

735 ESW 510 FEET
WELL # 10
FIELD
COUNTY Santa Juana STATE New Mexico

Other Services:
FBI
DUI
DE

COMPANY Carbon Four Owners, Inc.

Date	Run No.	Depth—Driller	Depth—Logger	Btm. Log Interval	Top Log Interval	Coring—Driller	Coring—Logger	Bit Size	Type Fluid in Hole	Dens.	Visc.	Yd ³	Fluid Loss	Source of Sample	Rm. @ Meas. Temp.	Rmf. @ Meas. Temp.	Rmc. @ Meas. Temp.	Source: Rmf	Rmc	Rm. @ BH1	Circulation Stopped	Logger on Bottom	Max. Rec. Temp.	Temp.	Location	Recorded by	Witnessed by
6-23-81	ONE	4700	4690	4684	4686	858 @ 357	358	778	FSM	9.1	41	—	82.2 ml	Blanking	1.87 @ 90 °F	1.60 @ 85 °F	1.60 @ 85 °F	2.15 @ 85 °F	EMT	EMT	1-73 @ 1800	2-23 @ 2300				DMC-BRIDE	DMC-BRIDE
													ml		°F	°F	°F	°F									
													ml		°F	°F	°F	°F									
													ml		°F	°F	°F	°F									
													ml		°F	°F	°F	°F									
													ml		°F	°F	°F	°F									
													ml		°F	°F	°F	°F									

Elev: K.B. 5100
 D.F. 5198
 G.L. 5187

Elev: 5187
 Log Measured From: K.B.
 Drilling Measured From: K.B.
 13 ft. Above Perm. Datum

Permanent Datum: G.L.

The well name, location and borehole reference data were furnished by the customer

Run No.		SCALE CHANGES	
Service Order No.	227746	Type Log	Depth
Fluid Level	FULL	Scale Up Hole	Scale Down Hole
Salinity ppm. cl	-		
Speed F.P.M.	50		
EQUIPMENT DATA			
Panel No.	BC 508		
Cart No.	DA 224		
Sonde No.	EA 235		
Mem. Panel No.	QAA 1035		
G.R. Panel No.	BC 653		
G.R. Cart No.	IC 1095		
Tape Recorder - (SERIAL)	MTA 3707		
Depth Encoder - (SERIAL)	IDW 902		
Pressure Wheel - (SERIAL)	IDW 902		
Type Centralizers	FIN		
Stand Off - Inches	1.5"		
CALIBRATION DATA			
SBR	1		
Sonde Error - ILM	10.0		
Sonde Error - ILD	7.7		
G.R. BKG. - CPS.	44		
G.R. Source - CPS.	209		
S.E. Set in Hole - Depth	=		
S.E. Corr. - Hole Size	=		
LOGGING DATA			
SBR	1		
S.E. Log - ILM	10.0		
S.E. Log - ILD	7.7		
G.R. Scale per 100 Div.	0-200		
G.R. S.C.	1		
G.R. Sens.	0-200		
REMARKS			

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretation. We, and the person in charge in the case of grass, will not be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions quoted and made known from Schedule 1.

GR (GAPI)		ILD (DHMM)	
0.0	200.0	0.0	100.0
SF (MV)		SFLA (DHMM)	
-100.0	0.0	0.0	100.0
		CILD (MMHD)	
		400.0	0.0

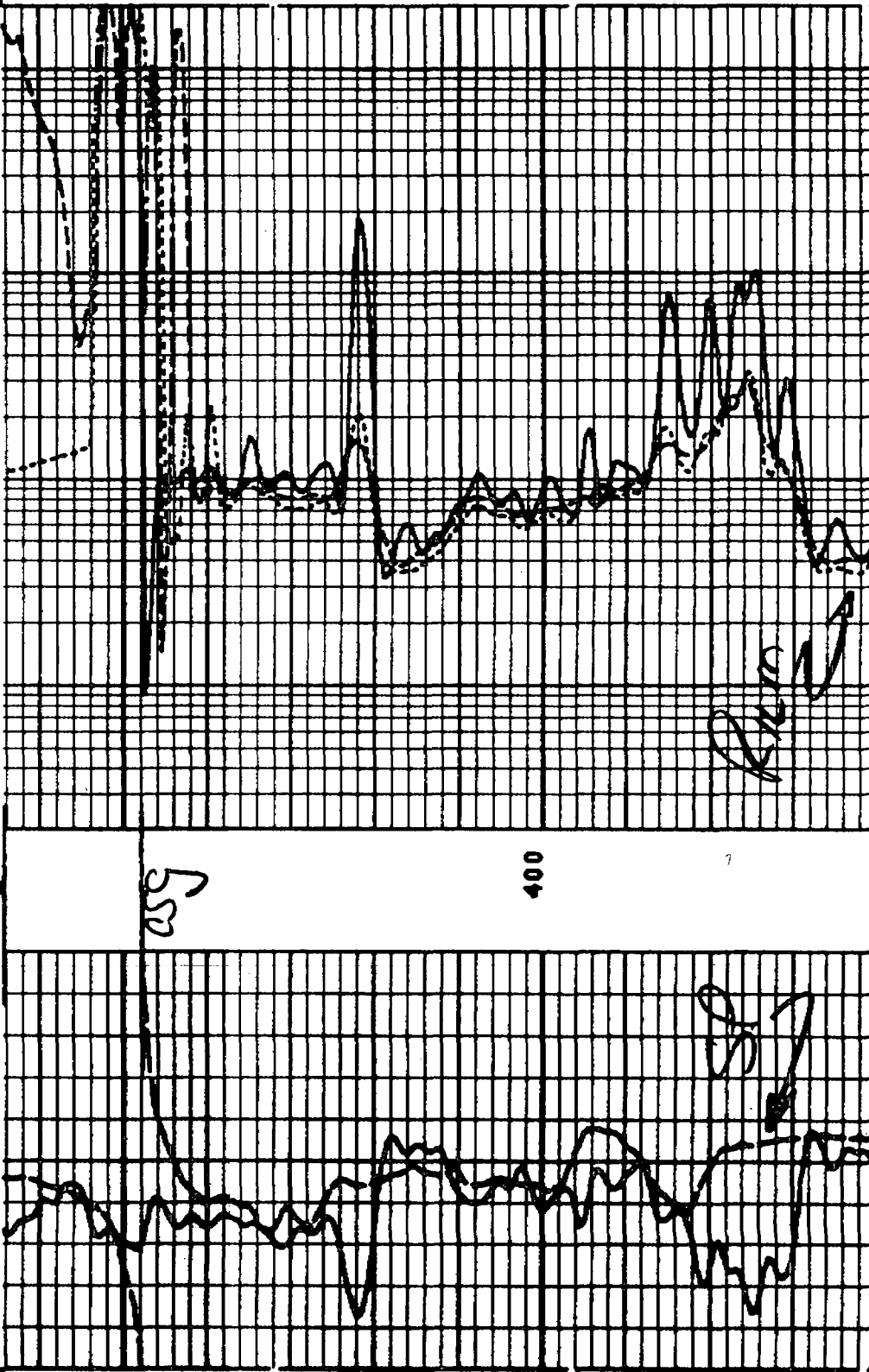
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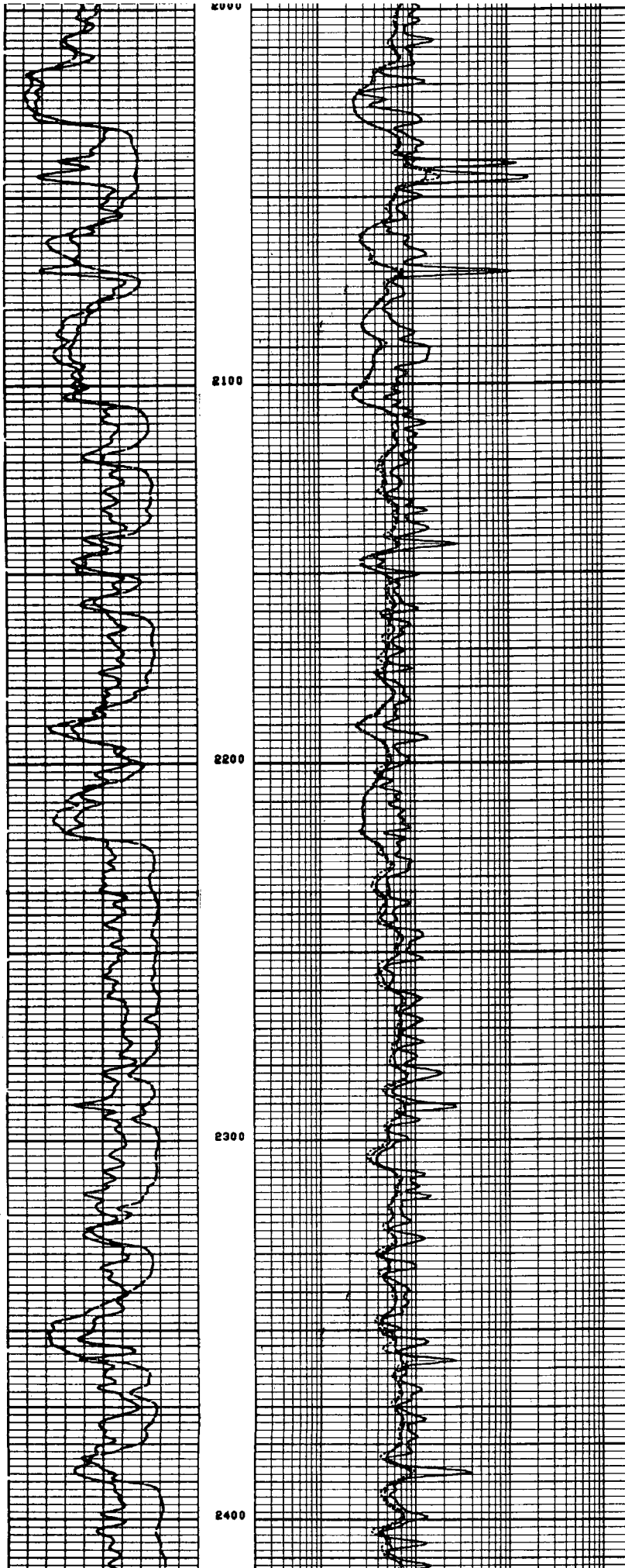
LR²

GR (GAPI)		IUP (DHMM)	
0.0	200.0	0.2000	2000.
SP (MV)		IUM (DHMM)	
-100.0	0.0	0.2000	2000.
		SELU (DHMM)	
		0.2000	2000.

FILE

LR?

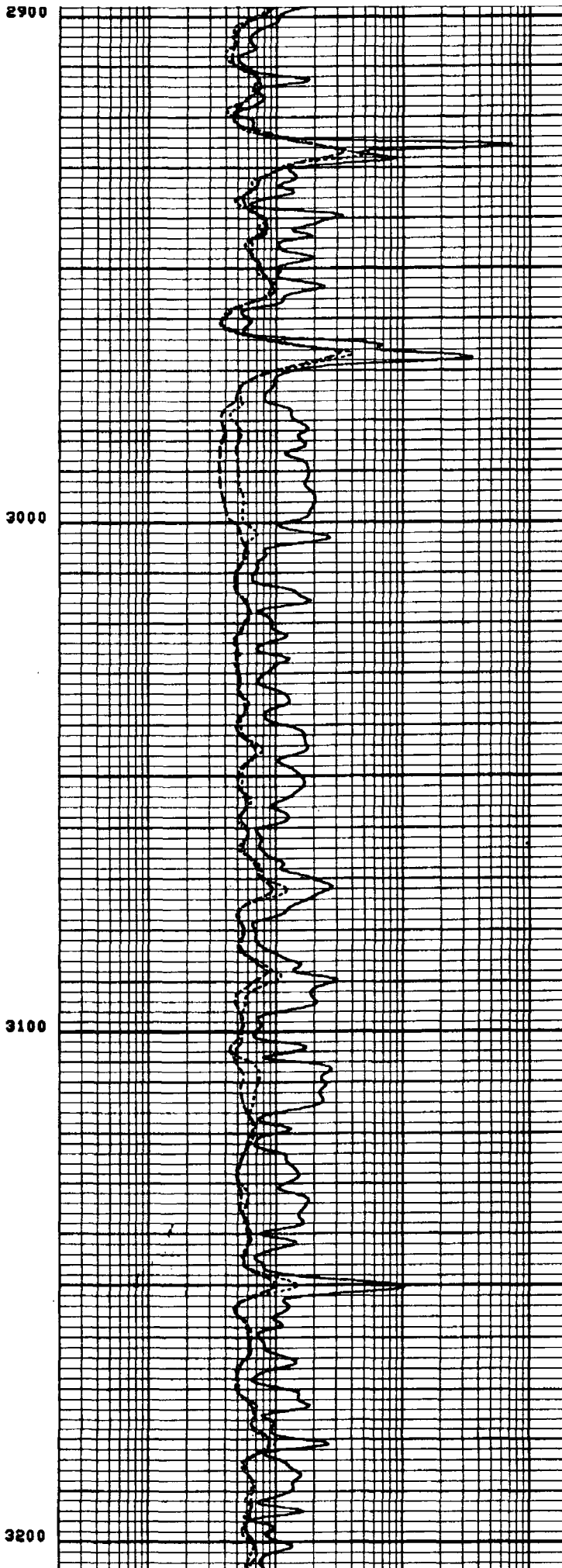
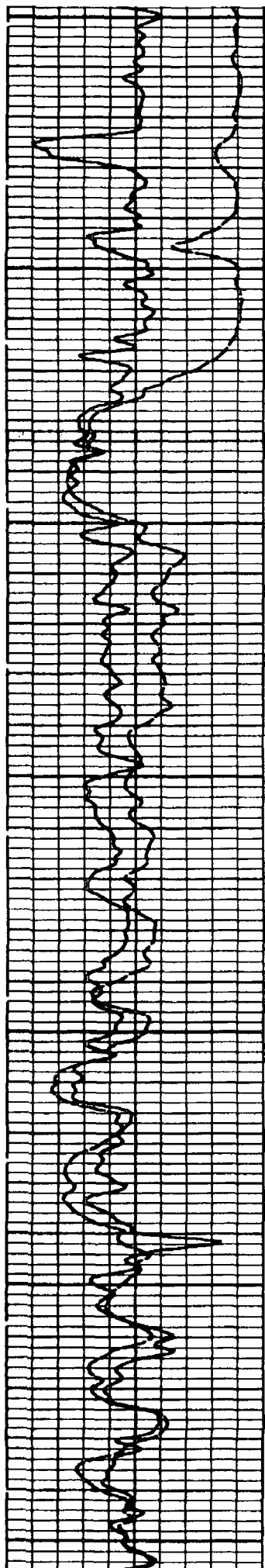




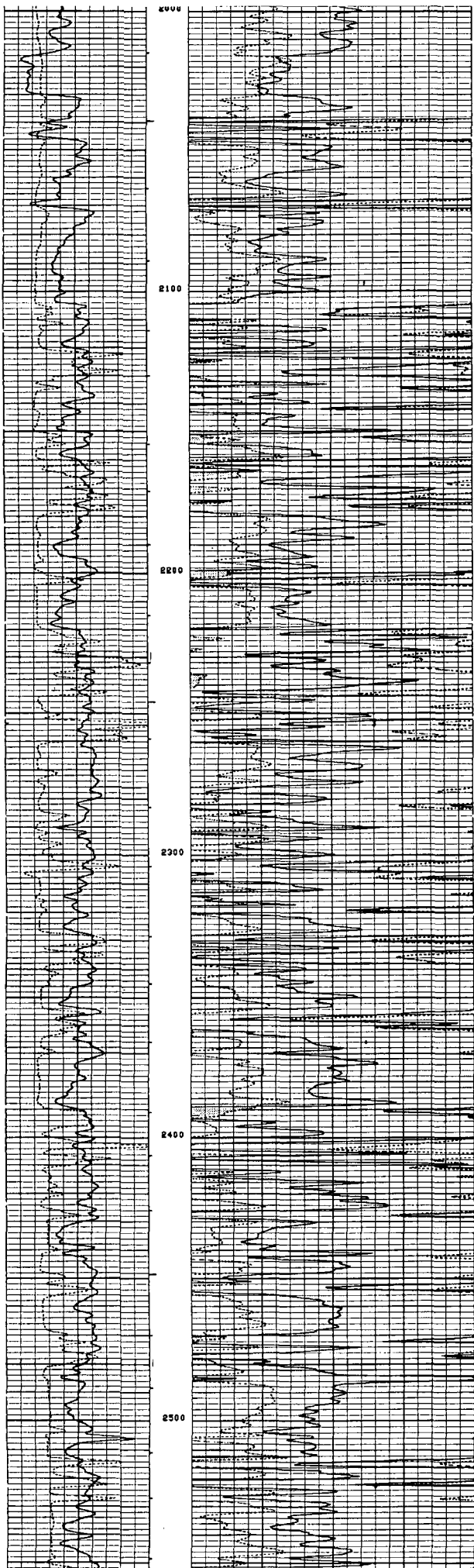
$R_{mf} \approx 2500 \text{ TDS}$

$R_{000} (16\% \phi)$

1111



~
17000 TBS



Φ Log

WORKSHEET FOR ESTIMATING WATER QUALITY FROM
ELECTRICAL WELL LOGS

From Log Header:

Well No. & Location _____

Rmf 1.6 at 85 °F

Max. Recorded Temp. 110 °F

Bottom Logged Interval 4684 feet

Temp. Gradient in degrees F/foot = (max. Rec. Temp - 60°F ÷ Bottom Logged Interval)
= 0.0107

XX

Sand between 2210 and 2220 Feet Depth

T_f = (Temp. Gradient x Depth of F_m) + 60°F = 85 °F

Rmf at T_f (From chart Gen-9 Schlumberger) = 1.6

Rsfl (or equivalent) = 8 ohm-meters (From Log)

Rild (or equivalent) = 3 ohm-meters (From Log)

F = $\frac{Rsfl}{Rmf}$ = $\frac{8}{1.6}$ = 2.3 or 2.7

Rwa = $\frac{Rild}{F}$ = $\frac{3}{2.3}$ = 1.3 ohm - m at T_f

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

Rwa @ 77°F (25°C) = 1.42

Use chart or equation to relate Rwa to TDS

8000

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

SwD
624