SWD 12/3/98

733

Mobil Exploration & Producing U.S. Inc.

P.O. BOX 633
MIDLAND, TEXAS 79702-0633

MIDLAND SITE
ENVIRONMENTAL, REGULATORY &
LOSS PREVENTION

November 17, 1998

Mr. Ben Stone
Oil Conservation District
2040 S. Pacheco Street
Santa Fe, New Mexico 87505

RE: WATER DISPOSAL WELL
STATE SEC. 27 LEASE – WELL #1
VACUUM DEVONIAN, SOUTH FIELD
LEA COUNTY, NEW MEXICO.

Dear Mr. Stone.

Enclosed is a complete copy of the application sent October 16, 1998, I have re-signed the C-108 and dated it today. I have also enclosed a copy of the Publication Notice for your files.

If any further information is needed concerning this application, please call Shirley Houchins at (915) 688-2585.

Yours truly.

Sue Moseley

Sue Moseley
Regulatory Technical Assistant

Mobil Exploration & Producing U.S. Inc.
As agent for
Mobil Producing TX & NM, Inc.

AOR TOTAL 12
P&A 0
REPAIR 0

Environmental
Awareness

Mobil Exploration & Producing U.S. Inc.

P.O. BOX 633
MIDLAND, TEXAS 79702-0633

MIDLAND SITE
ENVIRONMENTAL, REGULATORY &
LOSS PREVENTION

October 16, 1998

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico, 87501

Attention: Ben Stone

Re: WATER DISPOSAL WELL
STATE SEC. 27 LEASE - WELL #1
VACUUM DEVONIAN, SOUTH FIELD
LEA COUNTY, NEW MEXICO

Dear Mr. Stone:

Mobil Exploration & Producing U.S. Inc., as agent for Mobil Producing Texas & New Mexico, Inc. (MPTM), is hereby requesting the OCD to reissue authority to dispose of produced water into the Devonian formation in the subject well. The original Permit was approved in April, 1991 and authorized by R-9474

Conversion of this well to be a water disposal well is necessary to economically dispose of lease and off lease water. The same water as permitted for disposal in the State Sec. 27 #2 will be disposed into the #1. The purpose for converting #1 is as back-up capacity to #2. Presently #1 is still Plugged and Abandoned and we wish to permit the well before Mobil spends money to reenter it.

The supporting information for this application is organized in accordance with Form C-108.

If any further information is needed concerning this application, please call Shirley Houchins at (915) 688-2585.

688-1536
Sue Mosley

Yours very truly,

Doug Fant

Doug Fant
Environmental, Regulatory, & Loss Prevention Supervisor

Mobil Exploration & Producing U.S. Inc.
as agent for
Mobil Producing TX & NM, Inc.

sm
attachments

cc: w/attachments
Offset Operators
Surface Owner
New Mexico State Land Office
P. O. Box 1148, Santa Fe, NM 87501
District Director OCD - Hobbs

Environmental
Awareness

h\data\smreg\statesec.ltr

Surface Owners

New Mexico State Land Office
P. O. Box 1148
Santa Fe, NM 87501

Snyder Ranches, Inc.
P. O. Box 2158
Hobbs, NM 88240

Offset Operators

Tamarack Petroleum Co. Inc.
Attn: Judy Johnson
500 West Texas, Suite 1495
Midland, TX 79701

Capataz Operating Inc.
Attn: Davis Scott
P. O. Box 2083
Midland, Texas 79702-2083

Devon Energy Corp.
Attn: Steve Cromwell
20 N. Boradway, Suite 1500
Oklahoma City, OK 73102

Arco
Attn: Peggy Kerr
P. O. Box 1610
Midland, Tx 79702

Spirit Energy 76
P. O. Box 3100
Midland, TX 79702

Yates Petroleum Corp.
Attn: Robert Bullock
105 South 4th Street
Artesia, NM 88210

Paladin Energy Corporation
10290 Monroe Drive
Dallas, TX 75229

Olsen Energy Incorporated
16414 San Pedro, Suite 470
San Antonio, TX 78232

STATE OF NEW MEXICO
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance __X__ Disposal _____ Storage
Application qualifies for administrative approval? __Yes ___No

II. OPERATOR: MOBIL PRODUCING TX & NM INC., MOBIL EXPLORATION & PRODUCING U.S. INC

ADDRESS: P. O. BOX 633, MIDLAND, TEXAS 79702

CONTACT PARTY: SHIRLEY HOUCHINS PHONE (915) 688-2585

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

IV. Is this an expansion of an existing project: ___Yes X No
If yes, give the Division order number authorizing the project _____

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

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

VII. Attach data on the proposed operation, including:

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

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological 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/1 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 source 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: SHIRLEY HOUCHINS Sue Moseley for TITLE: ENV & REG TECHNICIAN

SIGNATURE: Sue Moseley for DATE: 10-16-98 11-17-98

* 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 circumstance of the earlier submittal. APRIL, 1991, R-9474

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

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 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;

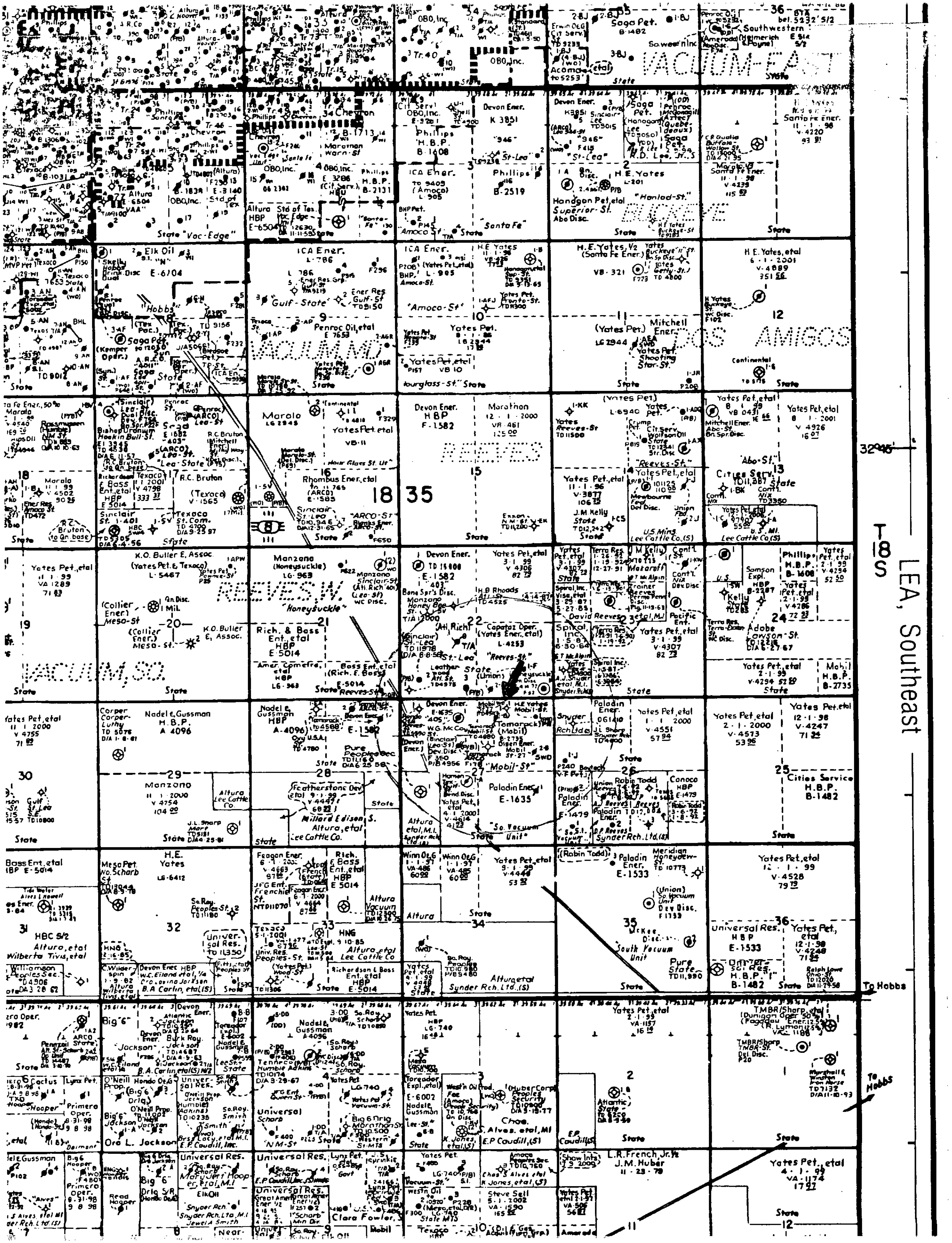
(2) The intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(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, PO Box 2088, Santa Fe, NM 87504-2088 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.


LEA, Southeast
T8S
32°45'
VACUUM-EAST
VACUUM, MID.
VACUUM, SO.
DOS AMIGOS
REEVES
REEVES, W.
To Hobbs
Devon Ener.
Yates Pet., etal
H.E. Yates
Phillips H.B.P.
Saga Pet.
Manzano
Marathon
Nadel & Gussman
Paladin Ener.
Universal Res.
Cities Service H.B.P. B-1482
"So. Vacuum Unit"
South Vacuum Unit
Lee Cattle Co.
Snyder Rch. Ltd.
State

STATE SEC. 27 #1 SWD PERMIT APPLICATION

C-108

I. Disposal

II. Mobil

III. A. 1. State Sec. 27 #1, 660' FNL & 1983' FEL, Sec. 27, T18S, R3E

2. 13 3/8" csg @ 360' cmt w/350 sks of cmt, circ to surface
9 5/8" csg @ 3800' cmt w/3500 sks of cmt, circ to surface
7 5/8" csg @ 11,800' cmt w/1165 sks of cmt, TOC by temp survey @ 1715'
7 5/8" csg cmt @ 1689'

3. 3 1/2 or 4 1/2" Duolined tubing (fiberglass lining) set @ 11,750'

4. 7 5/8" permanent pkr + seal assembly set @ ± 11,750'

B. 1. Devonian, South Vacuum

2. Proposed, 11,800 - 13,970', open hole
Devonian Formation

3. Originally drilled as Devonian producer

4. Devonian perfs @ 11,650-668' squeezed w/150 sks

5. Bone Springs, ± 8850'

IV. Yes, Division order # R-8645 dated 5-5-88

V. See attached map, Exhibit "A"

VI. Application filed March 2, 1988 for disposal permit for State Sec. 27 #2

VII. 1. Average rate = 10,000 BWPD
Maximum rate = 20,000 BWPD

2. Closed system

3. Average injection pressure = 0 (operate on gravity feed)
Maximum injection pressure = 2390 psi

4. See attached Exhibit "B", plus chemical analysis of source water, statement from previous Reservoir Engineer

5. See attached Exhibit "C"

VIII. 1. Lithologic detail

a) Composition - Devonian, white to tan, medium to course crystalline with vuggy to cavernous porosity
b) Type structure - faulted anticline
c) Average porosity - 13%
d) Average permeability - 5 to 30 md

2. Geologic name - Devonian

3. Thickness - average, 500'

4. Average top of pay - 12,000'

5. Overlying fresh water zones, 10,000 ppm or less TDS:
a) Ogalalla @ 300'
b) Santa Rosa @ 1400'

6. There are no fresh water zones immediately underlying the injection zone.

IX. Acidize Devonian w/2,000 gal 15% HCL acid + 10,000 gal gelled 15% HCL acid + 6000 lbs graded rock salt. Maximum treating rate = 5 BPM, maximum treating pressure = 5000 psi. Flush treatment with 50 bbls biocide-treated fresh water.

X. Well will need to be deepened from present PBTD of 11,752' to proposed new TD of 13,970'.
At that time, open-hole logs will be run and filed with the OCD.

XI. See attached Exhibit "D"

XII. MPTM has examined the available geologic and engineering data and finds no evidence of open faults or other hydrological connection between the Devonian Formation and any underground source of drinking water.

XII. See attached Exhibits "E" and "F" for Proof of Notice

Also attached:
- Proposed sketch
- Map (Exhibit A) with 1/2 mile radius drawn

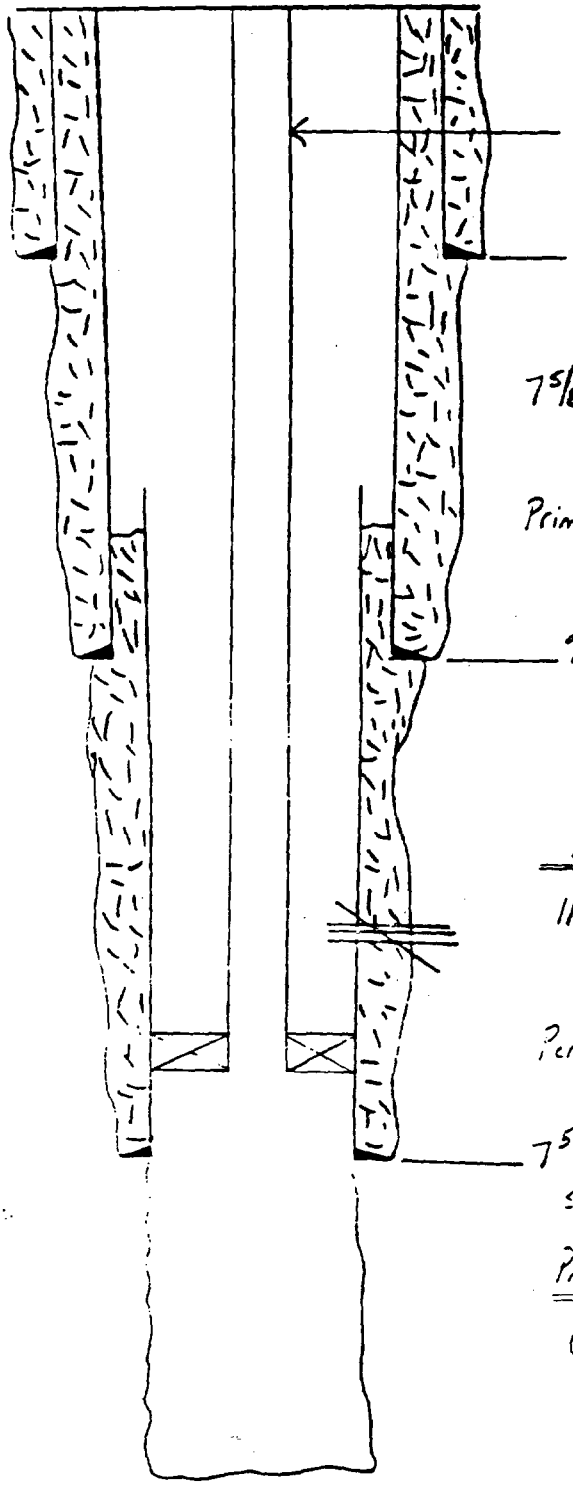
DATE 4-23-90 WELL NO. 1 LEASE State Section 27

FIELD Vacuum Devonian South LOCATION 660' FNL & 1983' FEL Unit B Sec 27, T18S, Lea County, New Mexico

SIGNED D G Elwood

GL 3887'
DF 3895'
KB 3896'
ZERO KB (9' AGL)

PROPOSED WELLBORE DIAGRAM



3½" or 4½" N-80/K-55 Duolined tbg, pkr fluid on annulus

13 3/8" 48 lb/ft H-40 csg set to 360' w/350 sks, cmt circ (17" hole)

7 5/8" csg cut @ 1689'

Primary TOC (9 5/8 - 7 5/8) @ 1715' (temp survey)

9 5/8" 36 lb/ft J-55 csg set to 3800' w/3500 sks, cmt circ (12 1/4" hole)

Devonian Perfs

11,650 - 11,668', squeezed w/150 sks cmt 4 SPF 72 hole

Permanent pkr set @ ± 11,750'

7 5/8" 26.4, 29.7, & 33.7 lb/ft N-80 Buttress + X-line csg set to 11,800' w/1165 sks

Proposed Devonian Disposal Zone

OH 11,800 - 13,970'

Proposed TD: 13,970'

Mobil Exploration & Producing U.S. Inc.

October 24, 1990

P.O. BOX 633
MIDLAND, TEXAS 79702

MIDLAND DIVISION

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico, 87501 (3)

WATER DISPOSAL WELL
STATE SEC. 27 LEASE - WELL NO. 1
VACUUM DEVONIAN, SOUTH FIELD
LEA COUNTY, NEW MEXICO

Gentlemen:

Mobil Exploration & Producing U.S. Inc., as agent for Mobil Producing Texas & New Mexico, Inc. (MPTM), respectfully requests authority to dispose of produced water into the Devonian formation in the subject well.

Conversion of this well to a water disposal well is necessary to economically dispose of lease and off lease water. The same water as permitted for disposal in the State Sec. 27 #2 will be disposed into the #1. The purpose for converting #1 is as back-up capacity to #2. Presently #1 is still P&A'd and we wish to permit the well before Mobil spends money to re-enter it.

The supporting information for this application is organized in accordance with Form C-108.

If any further information is needed concerning this application, please call J. W. Dixon at (915) 688-2452.

Yours very truly,

G. N. Miller
Environmental, Regulatory,
& Loss Prevention Supervisor

Mobil Exploration & Producing U.S. Inc.
as agent for
Mobil Producing Texas & New Mexico, Inc.

JWD/fc
attachments

cc: w/attachments
Offset Operators
Surface Owner
New Mexico State Land Office
P. O. Box 1148, Santa Fe, NM 87501
District Director OCD - Hobbs

STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no

II. Operator: MObil Producing Texas & New Mexico, Inc.

Address: c/o Mobil Exploration & Producing U.S. Inc., Box 633, Midland, TX 79702

Contact party: Judy W. Dixon Phone: (915) 688-2452

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 geological data on the injection zone including appropriate lithologic detail, geological 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 source 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 source 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: Judy W. Dixon Title Env/Reg. Technician

Signature: Judy W. Dixon Date: 10/24/90

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

Case #9337, Order, #R-8645 dated May 5, 1988 - State SEction 27 #2

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

Submit to Appropriate
District Office
State Lease – 6 copies
Fee Lease – 5 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-101
Revised 1-1-89

API NO. (assigned by OCD on New Wells) 30-025-03141

5. Indicate Type of Lease STATE [X] FEE [ ]

6. State Oil & Gas Lease No. NM-587

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
DRILL [ ] RE-ENTER [X] DEEPEN [ ] PLUG BACK [ ]

b. Type of Well:
OIL WELL [ ] GAS WELL [ ] OTHER Disposal SINGLE ZONE [XX] MULTIPLE ZONE [ ]

7. Lease Name or Unit Agreement Name: State Section 27

2. Name of Operator: Mobil Producing Tx. & N.M. Inc.

8. Well No. 1

3. Address of Operator: c/o Mobil Exploration & Producing U.S.Inc. P. O. Box 633, Midland, Texas 79702

9. Pool name or Wildcat: Vacuum Devonian South

4. Well Location
Unit Letter B : 660 Feet From The NOrth Line and 1983 Feet From The East Line

Section 27 Township 18S Range 35E NMPM County

10. Proposed Depth	11. Formation	12. Rotary or C.T.
13,970	Devonian	Rotary

13. Elevations (Show whether DF, RT, GR, etc.)	14. Kind & Status Plug. Bond	15. Drilling Contractor	16. Approx. Date Work will start
3887' GL	Blanket on File	Unknown	AS soon as possible

17. PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
17"	13-3/8"	48#	360'	350	Circ to surface
12-1/4"	9-5/8"	36#	3800'	3500	Circ to surface
	7-5/8"	26.4, 29.7, 33.7#	11,800	1165	Temp survey

7-5/8" csg cmt @ 1689

1. MIRU WO unit. NU BOP, test.
2. RIH, dress off csg stub @ 1689.
3. DD into Devonian to TD of ±-13,970.
4. Run OH logs, analyze.
5. RIH w/test tbg. set pkr @ ±11,750'.
6. Acidize OH Devonian section 11,800-13,970 w/2000 gas 15% HCL acid + 10,000 gal gelled 15% HCL acid + 6000# graded rock salt.
7. Test disposal rate/pressure into Devonian.
8. POOH w/test tbg, RIH w/Duolined tubing (3-1/2 or 4-1/2") plus perm. pkr. Set pkr @ ±11,750'. Load, test annulus.
9. Put well on prod. water disposal.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

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

SIGNATURE Judy W. Dixon TITLE Regulatory Technician DATE 10/11/90

TYPE OR PRINT NAME Judy W. Dixon

Mobil Producing Texas & New Mexico Inc.
acting by and through its agent
Mobil Exploration & Producing U.S. Inc.

TELEPHONE NO. (915) 688-2452

(This space for State Use)

APPROVED BY ORIGINAL SIGNED BY JERRY SEXTON DISTRICT I SUPERVISOR TITLE DATE APR 15 1991

CONDITIONS OF APPROVAL, IF ANY:

R-9474 Swd

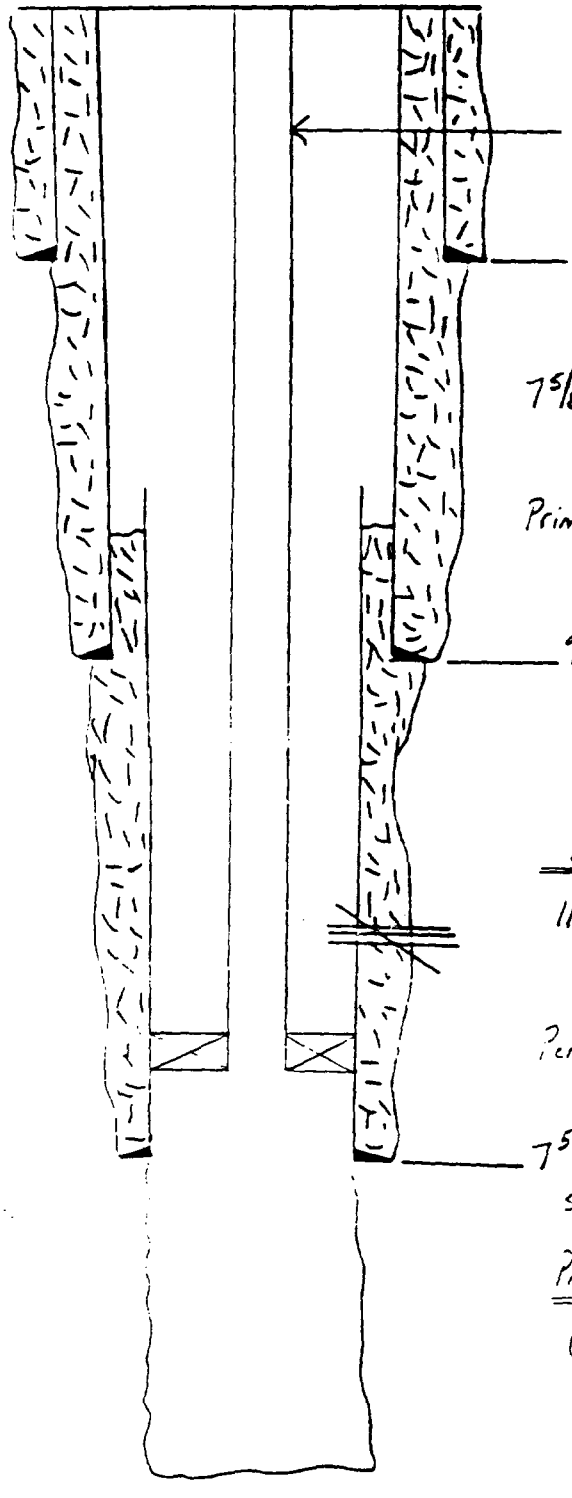
DATE 4-23-90 WELL NO. 1 LEASE State Section 27

FIELD Vacuum Devonian South LOCATION 660' FNL & 1983' FEL Unit B Sec 27, T18S, Lea County, New Mexico

SIGNED D G Elwood

GL 3887'
DF 3895'
KB 3896'
ZERO KB (9' AGL)

PROPOSED WELLBORE DIAGRAM



3½" or 4½" N-80/K-55 Duolined tbg, pkr fluid on annulus

13 3/8" 48 lb/ft H-40 csg set to 360' w/350 sks, cmt circ (17" hole)

7 5/8" csg cut @ 1689'

Primary TOC (9 5/8 - 7 5/8) @ 1715' (temp survey)

9 5/8" 36 lb/ft J-55 csg set to 3800' w/3500 sks, cmt circ (12 1/4" hole)

Devonian Perfs

11,650 - 11,668', squeezed w/150 sks cmt 4 SPF 72 holes

Permanent plug set @ ± 11,750'

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Proposed Devonian Disposal Zone

OH 11,800 - 13,970'

Proposed TD: 13,970'

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
Mobil Producing Tx. & N. M. Inc.	State Sec. 27	1

Unit Letter	Section	Township	Range	County
B	27	T-18-S	R-35-E NMPM	Lea

Actual Footage Location of Well:
1983 feet from the East line and 660 feet from the North line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3887'	Devonian	South Vacuum	80 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

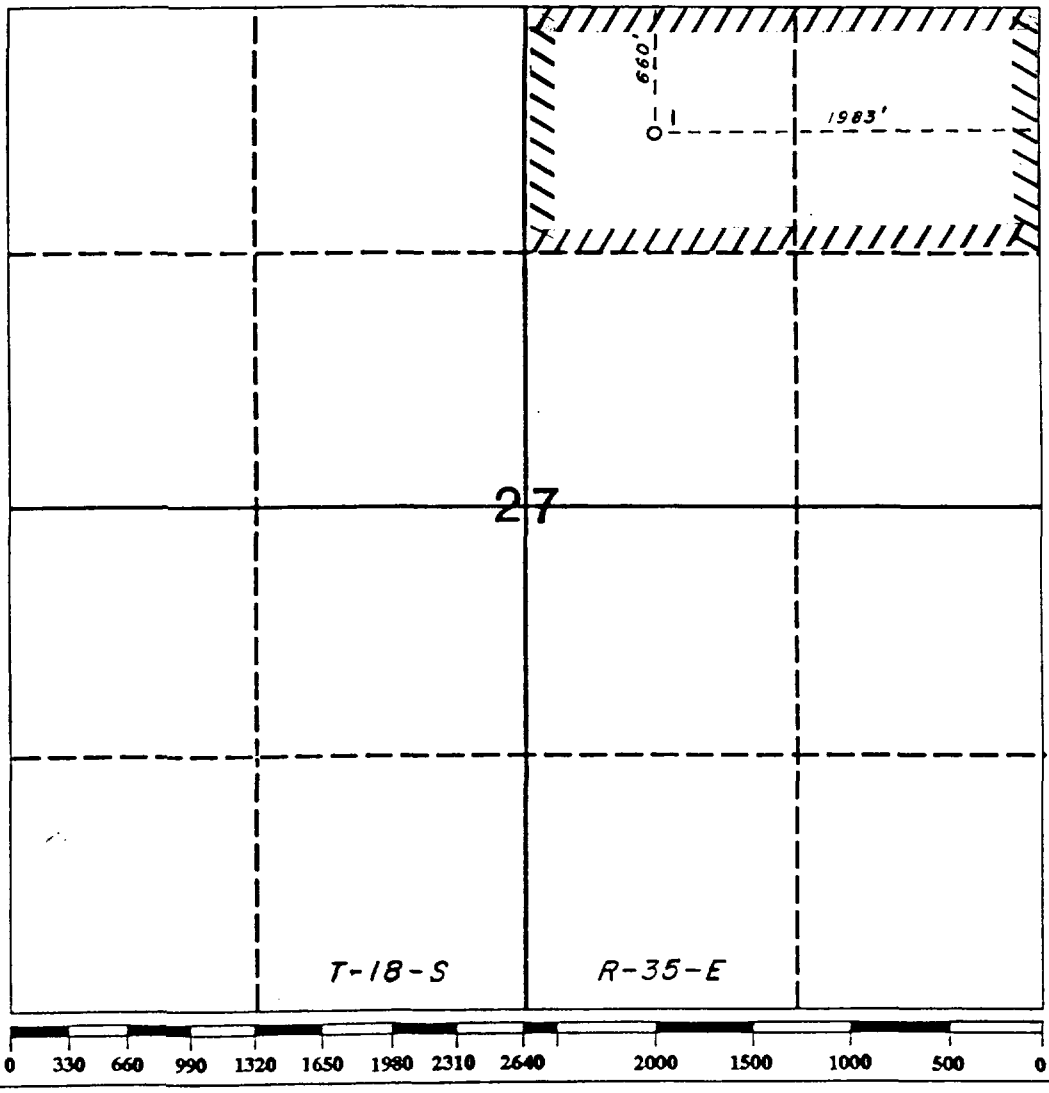
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☐ Yes ☐ No If answer is "yes" type of consolidation _____

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if neccessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

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

Signature
Judy Dixon
Printed Name
Environmental & Regulatory
Position
Mobil Producing Texas & New Mexico In
Company
acting by and through its agent
Mobil Exploration & Producing U.S. Inc
Date

SURVEYOR CERTIFICATION

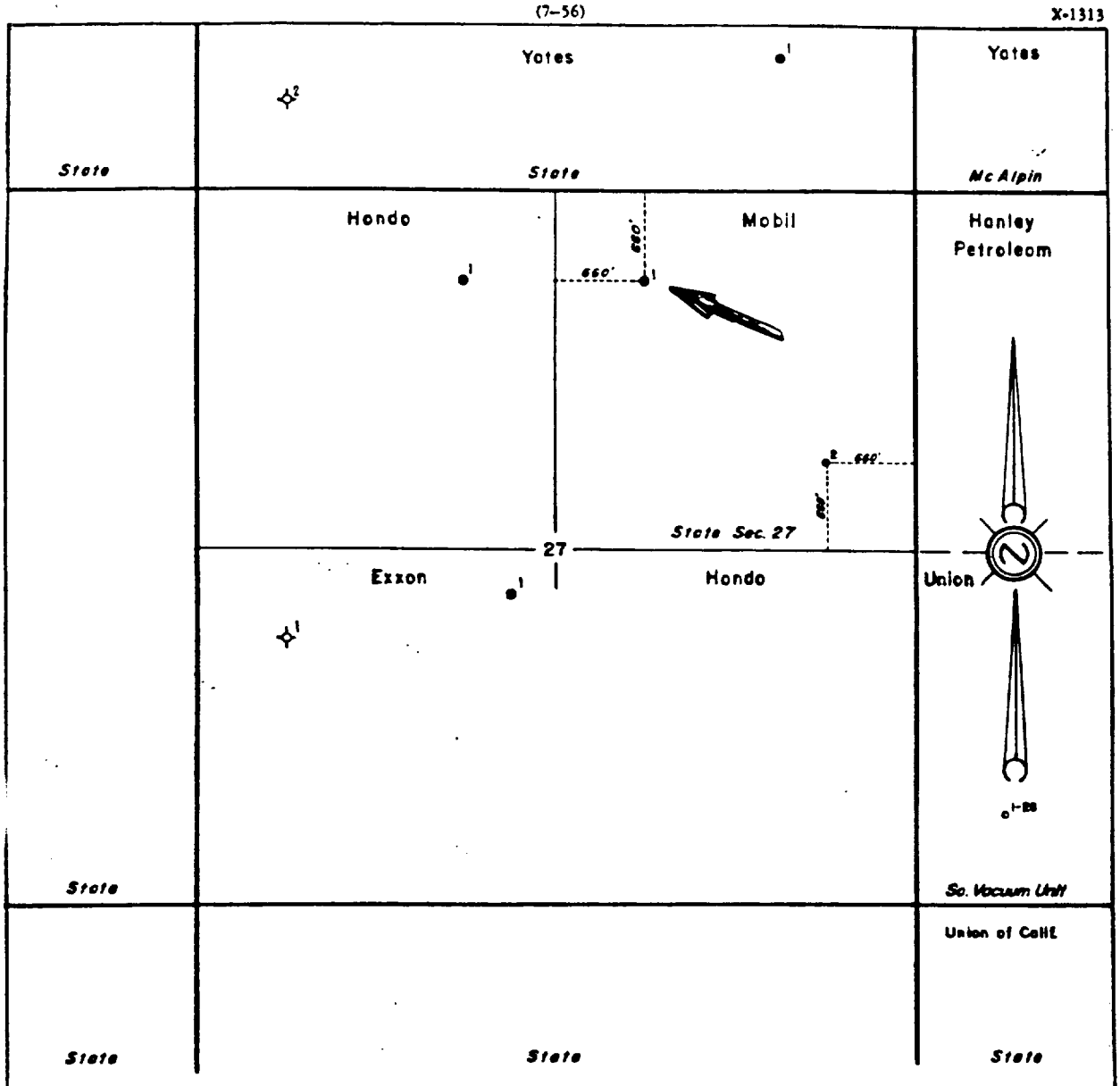
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Signature & Seal of
Professional Surveyor

Certificate No.

(7-56) X-1313



Reserve _____ Permit depth _____

Special instructions _____

Date work is commenced _____, 19___ _____ Supt.

Location approved by _____ Location made by _____

THE STATE OF TEXAS
COUNTY OF MIDLAND

I hereby certify that this plat truly represents conditions as they actually exist on this lease; that said plat which is drawn to the scale indicated hereon, is to the best of my knowledge true and correct; that it accurately shows said lease with all wells on same; that number and locations of said wells are as indicated hereon; and that this plat correctly reflects all pertinent and required data.

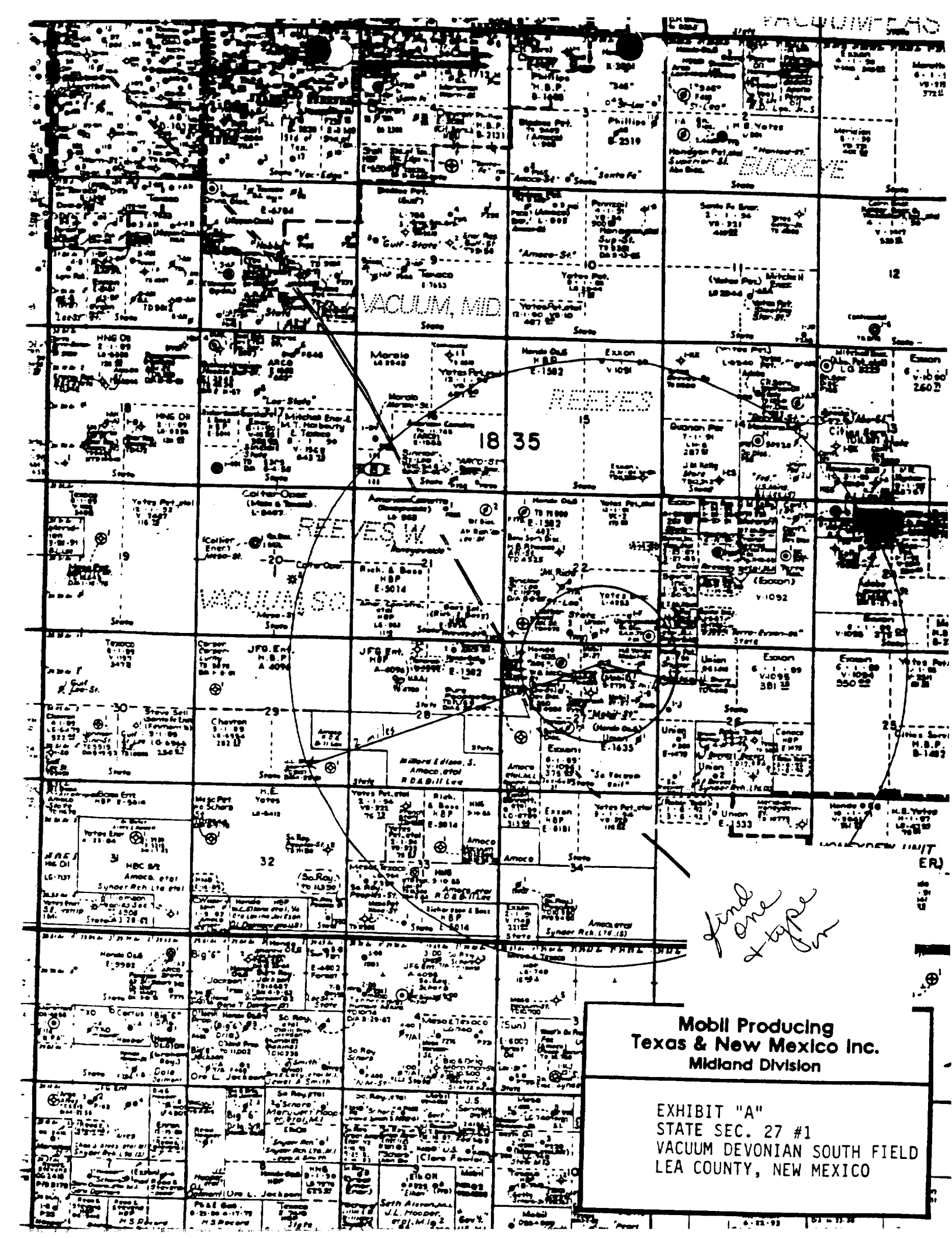
_____

MOBIL OIL CORP.
EXPLORATION & PRODUCING DEPARTMENT
MIDLAND DIVISION - MIDLAND, TEXAS

LEASE State Sec. 27
DISTRICT Hobbs LEASE NO. NM-587
LOCATION MADE _____ 19 _____ WELL NO. _____
TOTAL ACRES IN LEASE 160 ACRES COVERED BY PLAT 160
DESCRIPTION NE1/4 Sec. 27, T16S, R35E

Lea COUNTY New Mexico

DRAWN A.D.Beard DATE 8-22-56 FIELD South Vacuum Devonian Pool
SCALE 1" = 1000' FILE NO. 84


VACUUM, MID.
REEVES
18
35
Mobil Producing
Texas & New Mexico Inc.
Midland Division
EXHIBIT "A"
STATE SEC. 27 #1
VACUUM DEVONIAN SOUTH FIELD
LEA COUNTY, NEW MEXICO

STATE SEC. 27 #1 SWD PERMIT APPLICATION

C-108

I. Disposal

II. Mobil

III. A. 1. State Sec. 27 #1, 660' FNL & 1983' FEL, Sec. 27, T18S, R3E

2. 13 3/8" csg @ 360' cmt w/350 sks of cmt, circ to surface
9 5/8" csg @ 3800' cmt w/3500 sks of cmt, circ to surface
7 5/8" csg @ 11,800' cmt w/1165 sks of cmt, TOC by temp survey @ 1715'
7 5/8" csg cmt @ 1689'

3. 3 1/2 or 4 1/2" Duolined tubing (fiberglass lining) set @ 11,750'

4. 7 5/8" permanent pkr + seal assembly set @ ± 11,750'

B. 1. Devonian, South Vacuum

2. Proposed, 11,800 - 13,970', open hole
Devonian Formation

3. Originally drilled as Devonian producer

4. Devonian perfs @ 11,650-668' squeezed w/150 sks

5. Bone Springs, ± 8850'

IV. Yes, Division order # R-8645 dated 5-5-88

V. See attached map, Exhibit "A"

VI. Application filed March 2, 1988 for dispcsal permit for State Sec. 27 #2

VII. 1. Average rate = 10,000 BWPD
Maximum rate = 20,000 BWPD

2. Closed system

3. Average injection pressure = 0 (operate on gravity feed)
Maximum injection pressure = 2390 psi

4. See attached Exhibit "B", plus chemical analysis of source water, statement from previous Reservoir Engineer

5. See attached Exhibit "C"

VIII. 1. Lithologic detail

a) Composition - Devonian, white to tan, medium to course crystalline with vuggy to cavernous porosity
b) Type structure - faulted anticline
c) Average porosity - 13%
d) Average permeability - 5 to 30 md

2. Geologic name - Devonian

3. Thickness - average, 500'

4. Average top of pay - 12,000'

5. Overlying fresh water zones, 10,000 ppm or less TDS:
a) Ogalalla @ 300'
b) Santa Rosa @ 1400'

6. There are no fresh water zones immediately underlying the injection zone.

IX. Acidize Devonian w/2,000 gal 15% HCL acid + 10,000 gal gelled 15% HCL acid + 6000 lbs graded rock salt. Maximum treating rate = 5 BPM, maximum treating pressure = 5000 psi. Flush treatment with 50 bbls biocide-treated fresh water.

X. Well will need to be deepened from present PBTD of 11,752' to proposed new TD of 13,970'.
At that time, open-hole logs will be run and filed with the OCD.

XI. See attached Exhibit "D"

XII. MPTM has examined the available geologic and engineering data and finds no evidence of open faults or other hydrological connection between the Devonian Formation and any underground source of drinking water.

XII. See attached Exhibits "E" and "F" for Proof of Notice

Also attached:
- Proposed sketch
- Map (Exhibit A) with 1/2 mile radius drawn

Exhibit "B"

INTEROFFICE CORRESPONDENCE

DATE: Feb. 15, 1988

TO: Ann Moore

CC:

With regards to the water capatability test conducted on fluids to be injected into the State 27 well #2 SWDW, the following statement can be made :

> A composite of produced water which represents the typical injection fluid consists of Abo (46%), San Andres (48%), Glorieta (2%), Pennsylvania (3%), and Blinebry (1%). This water was combined with Devonian produced water in varying amounts. In summary, the Devonian water alone, and mixtures of Devonian from 0 to 50% with the proposed injection fluid formed carbonate scale. Calcium sulfate becomes evident in the high percent composite range of 80 - 100%. Thus a scale prevention program is needed and chemical treatment of the well will be done as required to control both types of scale.

Ann, attached is a copy of the analysis performed by NL Treating Chemi
If you have any questions, please give me a call at ext. 2076.

Thanks

Jack Hamner
RM - 240
Project Reservoir Engineer

NL Treating Chemicals
NL Treating Chemicals/NL Industries, Inc.
P.O. Box 60020, Houston, Texas 77205
Tel. (713) 987-5400 Telex: 4620243 NLOS UI

Water Analysis R

SHEET NUMBER: 2

COMPANY: Mobil Producing Texas & New Mexico

DATE:

FIELD: Vacuum

COUNTY OR PARISH: Lea

STATE: New Mexico

LEASE OR UNIT: North Vacuum Abo ~~Bridges State Leases~~ Unit

SAMPLE SOURCE: #235

WATER SOURCE (FORMATION): Abo

DEPTH, FT.	EHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY
			64			

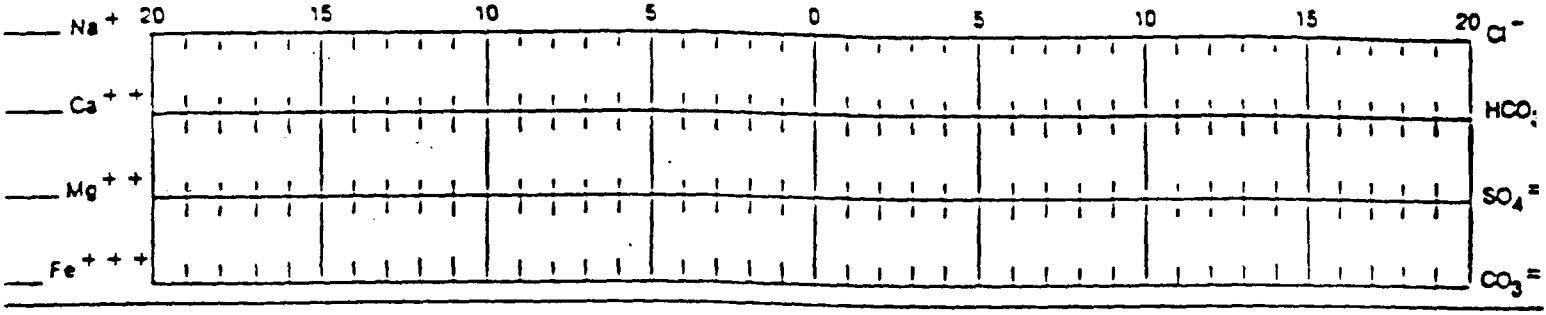
DATE SAMPLED: 12-16-87

TYPE OF WATER: ☐ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

TYPE OF PRODUCTION: ☐ PRIMARY ☐ WATERFLOOD ☐ CO_2 FLOOD ☐ POLYMER FLOOD ☐ STEAMFLOOD

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES me/l SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l	mg/l
Total Hardness	128	
Calcium, Ca^{++}	50	1,000
Magnesium, Mg^{++}	78	952
Iron (Total) Fe^{+++}		
Barium, Ba^{++}		
Sodium, Na^{+} (Calc.)	75.1	1,727
ANIONS		
Chloride, Cl^{-}	169.0	6,000
Sulfate, $SO_4^{=}$	30.7	1,475
Carbonate, $CO_3^{=}$		
Bicarbonate, HCO_3^{-}	3.4	207
Hydroxyl, OH^{-}		
Sulfide, $S^{=}$		

DISSOLVED GASES

Hydrogen Sulfide, H_2S	mg/l
Carbon Dioxide, CO_2	mg/l
Oxygen, O_2	mg/l

PHYSICAL PROPERTIES

pH (Field)	7.2	
Eh (Redox Potential)		MV
Specific Gravity		
Turbidity, FTU Units		
Total Dissolved Solids (Calc.)	11,361	mg/l
Stability Index @ 80 °F	+0.81	
@ 100 °F	+0.30	
@ 120 °F	+0.45	
$CaSO_4$ Solubility @ ____ °F		mg/l
@ ____ °F		mg/l
Max. $CaSO_4$ Possible (Calc.)		mg/l
Max. $BaSO_4$ Possible (Calc.)		mg/l
Residual Hydrocarbons		ppm(Vol/Vo

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Calcium Sulfate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

TC ENGINEER	DIST. NO.	ADDRESS	OFFICE PHONE	HOME PHONE
Dickerson/Slyker	821			

ALYZED BY:

NL Treating Chemicals

NL Treating Chemicals: NL Industries, Inc.
P.O. Box 60020, Houston, Texas 77205
Tel. (713) 987-5400 Telex: 4620243 NLOS UI

Water Analysis R

SHEET NUMBER: 1

COMPANY: Mobil Producing Texas & New Mexico

DATE:

FIELD: Vacuum

COUNTY OR PARISH: Lea

STATE: New Mexico

LEASE OR UNIT: Bridges-State Leases

SAMPLE SOURCE: #193

WATER SOURCE (FORMATION): San Andres

DEPTH, FT.	EHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY
			70			

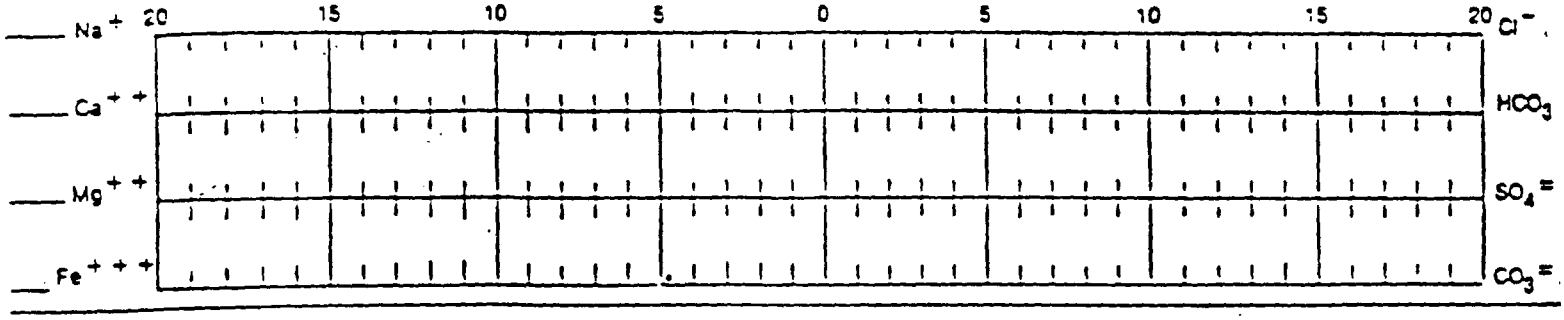
DATE SAMPLED: 12-16-87

TYPE OF WATER: ☐ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

TYPE OF PRODUCTION: ☐ PRIMARY ☐ WATERFLOOD ☐ CO_2 FLOOD ☐ POLYMER FLOOD ☐ STEAMFLOOD

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES *me/l* SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l	mg/l
Total Hardness	282	
Calcium, Ca^{++}	156	3,120
Magnesium, Mg^{++}	126	1,537
Iron (Total) Fe^{+++}		
Barium, Ba^{++}		
Sodium, Na^{+} (Calc.)	974.7	22,418
ANIONS		
Chloride, Cl^{-}	1,193.1	42,000
Sulfate, $SO_4^{=}$	57.3	2,750
Carbonate, $CO_3^{=}$		
Bicarbonate, HCO_3^{-}	12.2	744
Hydroxyl, OH^{-}		
Sulfide, $S^{=}$	4.1	65

DISSOLVED GASES

Hydrogen Sulfide, H_2S		mg/l
Carbon Dioxide, CO_2		mg/l
Oxygen, O_2		mg/l

PHYSICAL PROPERTIES

pH (Field)	6.63	
Eh (Redox Potential)		MV
Specific Gravity		
Turbidity, FTU Units		
Total Dissolved Solids (Calc.)	72,634	mg/l
Stability Index @ 80 °F	+0.21	
@ 100 °F	+0.35	
@ 120 °F	+0.52	
$CaSO_4$ Solubility @ ____ °F		mg/l
@ ____ °F		mg/l
Max. $CaSO_4$ Possible (Calc.)		mg/l
Max. $BaSO_4$ Possible (Calc.)		mg/l
Residual Hydrocarbons		ppm(Vol/Vol

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Calcium Sulfate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

ENGINEER	DIST. NO.	ADDRESS	OFFICE PHONE	HOME PHONE
Dickerson/Slyker	821			

NL Treating Chemicals
NL Treating Chemicals/NL Industries, Inc.
P.O. Box 60020, Houston, Texas 77205
Tel. (713) 987-5400 Telex: 4620243 NLCS UI

Water Analysis Re

SHEET NUMBER: 3

COMPANY: Mobil Producing Texas & New Mexico

DATE:

FIELD: Vacuum

COUNTY OR PARISH: Lea

STATE: New Mexico

LEASE OR UNIT: Bridges-State Leases

SAMPLE SOURCE: #114

WATER SOURCE (FORMATION): Glorieta

DEPTH, FT.	BHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL BBL/DAY	GAS, MMCF/DAY
			53			

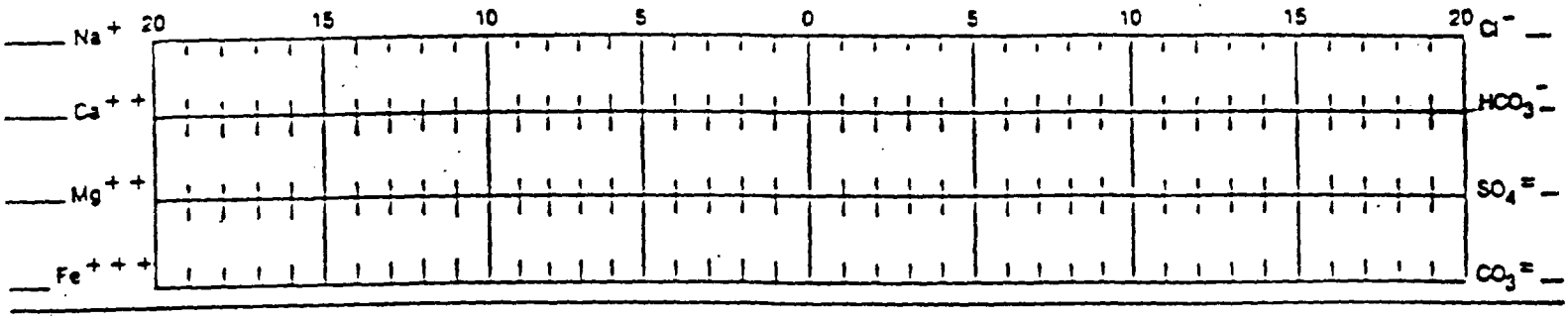
DATE SAMPLED: 12-16-87

TYPE OF WATER: ☐ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

TYPE OF PRODUCTION: ☐ PRIMARY ☐ WATERFLOOD ☐ CO_2 FLOOD ☐ POLYMER FLOOD ☐ STEAMFLOOD

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES *me/l* SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l	mg/l
Total Hardness	276	
Calcium, Ca^{++}	188	3,760
Magnesium, Mg^{++}	88	107
Iron (Total) Fe^{+++}		
Barium, Ba^{++}		
Sodium, Na^{+} (Calc.)	3,698.9	85,075
ANIONS		
Chloride, Cl^{-}	3,915.5	139,000
Sulfate, $SO_4^{=}$	47.4	2,275
Carbonate, $CO_3^{=}$		
Bicarbonate, HCO_3^{-}	7.5	458
Hydroxyl, OH^{-}		
Sulfide, $S^{=}$	4.5	72

DISSOLVED GASES

Hydrogen Sulfide, H_2S		mg/l
Carbon Dioxide, CO_2		mg/l
Oxygen, O_2		mg/l

PHYSICAL PROPERTIES

pH (Field)	6.6c	
Eh (Redox Potential)		MV
Specific Gravity		
Turbidity, FTU Units		
Total Dissolved Solids (Calc.)	231,712	mg/l
Stability Index @ 80 °F	+0.77	
@ 100 °F	+0.96	
@ 120 °F	+1.21	
$CaSO_4$ Solubility @ ____ °F		mg/l
@ ____ °F		mg/l
Max. $CaSO_4$ Possible (Calc.)		mg/l
Max. $BaSO_4$ Possible (Calc.)		mg/l
Residual Hydrocarbons		ppm (Vol/Vol)

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Calcium Sulfate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

TO ENGINEER: Dickerson/Slyker | DIST. NO.: 821 | ADDRESS: | OFFICE PHONE: | HOME PHONE:

ANALYZED BY: | DATE: | DISTRIBUTION:

NL Treating Chemicals
NL Treating Chemicals/NL Industries, Inc.
P.O. Box 60020, Houston, Texas 77205
Tel. (713) 967-5400 Telex: 4620243 NLOS UI

Water Analysis Re

SHEET NUMBER: 5

COMPANY: Mobil Producing Texas & New Mexico

DATE:

FIELD: Vacuum

COUNTY OR PARISH: Lea

STATE: New Mexico

LEASE OR UNIT: Bridges-State Leases

SAMPLE SOURCE: #120

WATER SOURCE (FORMATION): Upper Penn

DEPTH, FT.	EHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY
			72			

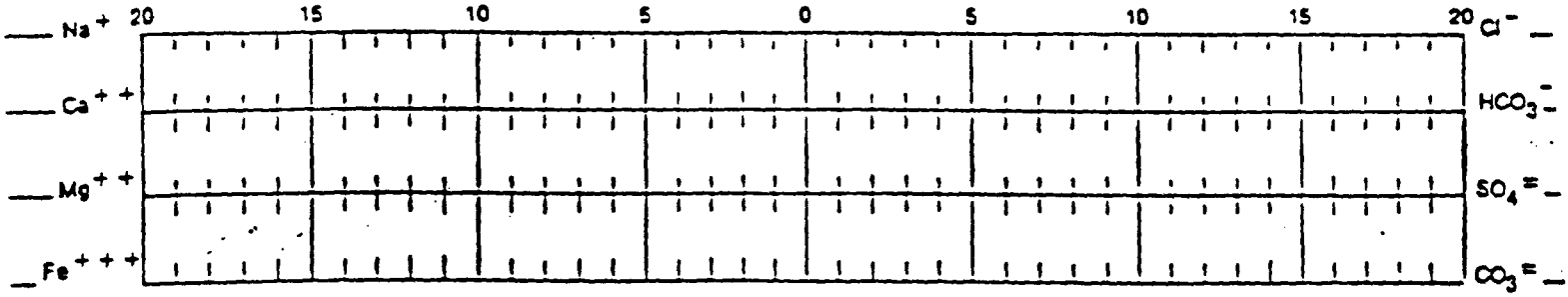
DATE SAMPLED: 12-16-87

TYPE OF WATER: ☐ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

TYPE OF PRODUCTION: ☐ PRIMARY ☐ WATERFLOOD ☐ CO_2 FLOOD ☐ POLYMER FLOOD ☐ STEAMFLOOD

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES m.e/ SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l	mg/l
Total Hardness	246	
Calcium, Ca^{++}	132	2,640
Magnesium, Mg^{++}	114	1,391
Iron (Total) Fe^{+++}		
Barium, Ba^{++}		
Sodium, Na^{+} (Calc.)	2,197	50,531
ANIONS		
Chloride, Cl^{-}	2,366.2	84,000
Sulfate, $SO_4^{=}$	46.4	3,225
Carbonate, $CO_3^{=}$		
Bicarbonate, HCO_3^{-}	12	732
Hydroxyl, OH^{-}		
Sulfide, $S^{=}$	16.4	264

DISSOLVED GASES

Hydrogen Sulfide, H_2S	mg/l
Carbon Dioxide, CO_2	mg/l
Oxygen, O_2	mg/l

PHYSICAL PROPERTIES

pH (Field)	6.16
Eh (Redox Potential)	MV
Specific Gravity	
Turbidity, FTU Units	
Total Dissolved Solics (Calc.)	141,813 mg/l
Stability Index @ 80°F	+0.13
@ 100°F	+0.03
@ 120°F	+0.22
$CaSO_4$ Solubility @ °F	mg/l
@ °F	mg/l
Max. $CaSO_4$ Possible (Calc.)	mg/l
Max. $BaSO_4$ Possible (Calc.)	mg/l
Residual Hydrocarbons	ppm(Vol/Vol)

SUSPENDED SOLIDS (QUALITATIVE)

☐ Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Calcium Sulfate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

ENGINEER	DIST. NO.	ADDRESS	OFFICE PHONE	HOME PHONE
Dickerson/Slyker	821			
ANALYZED BY	DATE	DISTRIBUTION ☐ CUSTOMER	☐ REGION	☐ DISTRICT
EF	12/17/87			

NL Treating Chemicals

NL Treating Chemicals/NL Industries, Inc.
P.O. Box 60020, Houston, Texas 77205
Tel. (713) 987-5400 Telex: 4620243 NLOS UI

Water Analysis F

SHEET NUMBER: 7

COMPANY: Mobil Producing Texas & New Mexico

DATE:

FIELD: Vacuum

COUNTY OR PARISH: Lea

STATE: New Mexico

LEASE OR UNIT: Bridges-State Leases

SAMPLE SOURCE: #165

WATER SOURCE (FORMATION): Middle Penn

DEPTH, FT.	BHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY

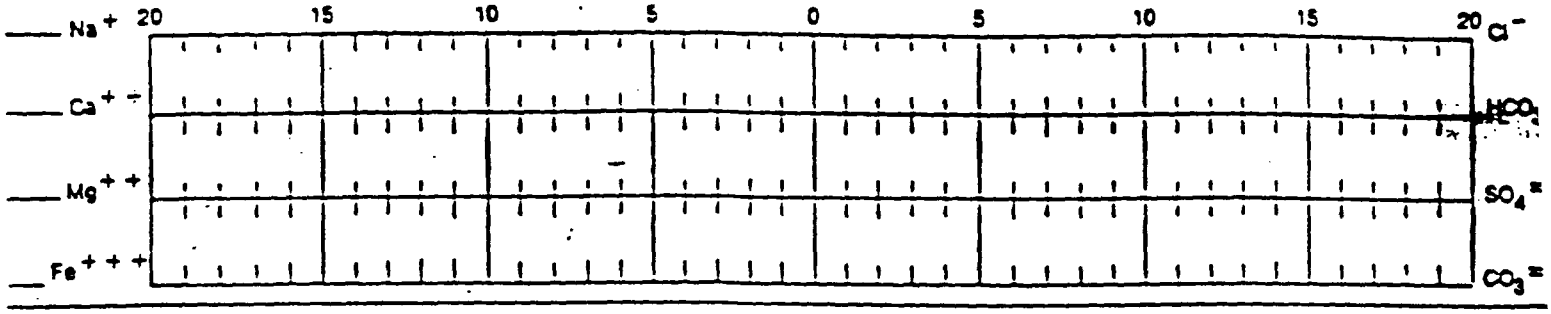
DATE SAMPLED: 12-16-87

TYPE OF WATER: ☐ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

TYPE OF PRODUCTION: ☐ PRIMARY ☐ WATERFLOOD ☐ CO_2 FLOOD ☐ POLYMER FLOOD ☐ STEAMFLOOD

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES me/l SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l	mg/l
Total Hardness	172	
Calcium, Ca^{++}	100	2.000
Magnesium, Mg^{++}	72	878
Iron (Total) Fe^{+++}		
Barium, Ba^{++}		
Sodium, Na^{+} (Calc.)		
ANIONS		
Chloride, Cl^{-}	647.9	23,000
Sulfate, $SO_4^{=}$	33.9	1,625
Carbonate, $CO_3^{=}$		
Bicarbonate, HCO_3^{-}		
Hydroxyl, OH^{-}		
Sulfide, $S^{=}$		

DISSOLVED GASES

Hydrogen Sulfide, H_2S		mg/l
Carbon Dioxide, CO_2		mg/l
Oxygen, O_2		mg/l
PHYSICAL PROPERTIES		
pH (Lab)	7.7	
Eh (Redox Potential)		MV
Specific Gravity		
Turbidity, FTU Units		
Total Dissolved Solids (Calc.)		mg/l
Stability Index @ ____ °F		
@ ____ °F		
@ ____ °F		
$CaSO_4$ Solubility @ ____ °F		mg/l
@ ____ °F		mg/l
Max. $CaSO_4$ Possible (Calc.)		mg/l
Max. $BaSO_4$ Possible (Calc.)		mg/l
Residual Hydrocarbons		ppm(Vol/Vo

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Calcium Sulfate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

Note: Small sample of water obtained.

FIELD ENGINEER	DIST. NO.	ADDRESS	OFFICE PHONE	HOME PHONE
Dickerson/Slyker	821			

ANALYZED BY | DATE | DISTRIBUTION

NL Treating Chemicals

NL Treating Chemicals/NL Industries, Inc.
P.O. Box 60020, Houston, Texas 77205
Tel. (713) 987-5400 Telex: 4620243 NLCS UI

Water Analysis

SHEET NUMBER: 4

COMPANY: Mobil Producing Texas & New Mexico

DATE:

FIELD: Vacuum

COUNTY OR PARISH: Lea

STATE: New Mexic

LEASE OR UNIT: Bridges-State Leases

SAMPLE SOURCE: #27

WATER SOURCE (FORMATION): Blinebry

DEPTH, FT.	BHT, °F	SAMPLE SOURCE	TEMP, °F	WATER, BBL/DAY	OIL BBL/DAY	GAS, MMCF/DAY
			52			

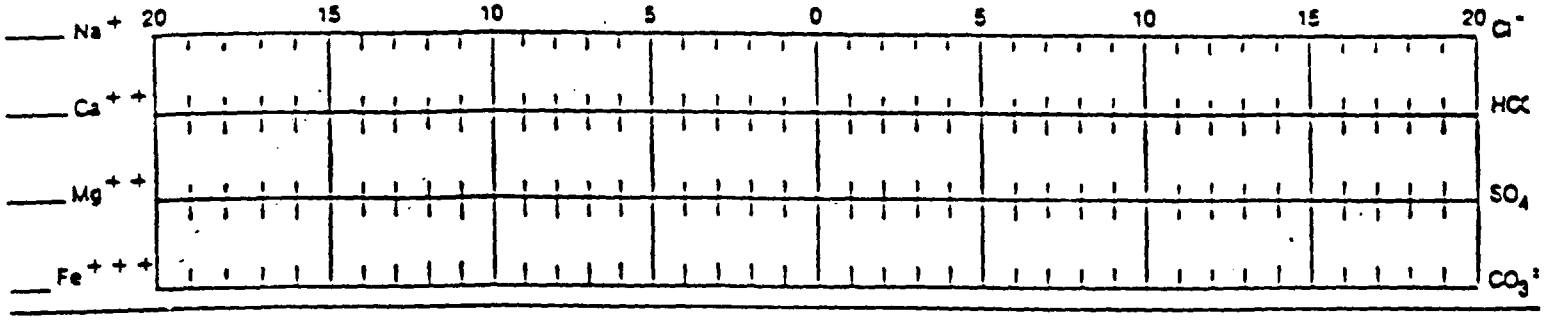
DATE SAMPLED: 12-16-87

TYPE OF WATER: ☐ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL

TYPE OF PRODUCTION: ☐ PRIMARY ☐ WATERFLOOD ☐ CO_2 FLOOD ☐ POLYMER FLOOD ☐ STEAMFLOOD

WATER ANALYSIS PATTERN

(NUMBER BESIDE ION SYMBOL INDICATES me/l SCALE UNIT)



DISSOLVED SOLIDS

CATIONS	me/l	mg/l
Total Hardness	734	
Calcium, Ca^{++}	546	10,920
Magnesium, Mg^{++}	188	2,294
Fe^{+++}		
+		
Sodium, Na^{+} (Calc.)	2,665.7	61,311

ANIONS		
Chloride, Cl^-	3,352.1	119,000
Sulfate, $SO_4^=$	41.7	2,000
Carbonate, $CO_3^=$		
Bicarbonate, HCO_3^-	5.9	360
Hydroxyl, OH^-		
Sulfide, $S^=$		

DISSOLVED GASES

Hydrogen Sulfide, H_2S		mg/l
Carbon Dioxide, CO_2		mg/l
Oxygen, O_2		mg/l

PHYSICAL PROPERTIES

pH (Field)	7.05	
Eh (Redox Potential)		MV
Specific Gravity		
Turbidity, FTU Units		
Total Dissolved Solids (Calc.)	196,885	mg/l
Stability Index @ 80°F	+1.55	
@ 100°F	+1.74	
@ 120°F	+1.97	
$CaSO_4$ Solubility @ ____°F		mg/l
@ ____°F		mg/l
Max. $CaSO_4$ Possible (Calc.)		mg/l
Max. $BaSO_4$ Possible (Calc.)		mg/l
Residual Hydrocarbons		ppm(Vol/V

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Calcium Sulfate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

TC ENGINEER	DIST. NO.	ADDRESS	OFFICE PHONE	HOME PHONE
Dickerson/Slyker	821			

ANALYZED BY: JF

DATE:

DISTRIBUTION ☐ CUSTOMER ☐ REGION

Exhibit "C"

NL Treating Chemicals
A Division of EXXON CHEMICAL COMPANY

January 20, 1988

Mr. David Howell
Mobil Producing Texas & New Mexico
P. O. Box 1800
Hobbs, New Mexico 88240

Subject: Vacuum Area Waters - Compatibility Study with Devonian Brine

Dear Mr. Howell:

Appended are individual produced water analyses pertaining to those Mr. Dickerson and I took with you on December 16, 1987. Also included is the Union's Devonian water analysis.

A mixture of your produced water was made as follows:

Abo	46%
San Andres	48%
Glorieta	2%
Pennsylvania	3%
Blinebry	1%

That mixture was blended with Devonian water in 10% increments. Samples were placed in an oven for 5 days at 100°.

The "Compatibility" appendage describes how samples reacted. Brief general summary comments are these:

1. No major initial incompatibility was seen at the time of mixing.

2. Moderate calcium carbonate deposition was found in the Devonian by itself (100%).

3. Mixtures were stable and stayed clear in the 90%-60% Devonian range.

4. Calcium carbonate deposition was seen in all samples from 50% Devonian to 0% (or 100% composite produced water mixture).

5. Calcium sulfate deposition was observed in the 80%-100% composite produced water ratios.

200 N. Loraine, Suite 250, Midland, TX 79701
Tel (915) 684-7269 FAX: (915) [illegible]

In summary, the Devonian alone, and mixtures of Devonian from 50% to 0% formed carbonate scale. Calcium sulfate becomes a known in the high percent composite mixture range.

In other words, scale prevention treatment is advisable throughout most of the mixing range. One treatment can handle both kinds of scale.

We would be pleased to discuss this report with you at a mutually agreeable time.

Very truly yours,

Wayne Dickerson John V. Slyker

Wayne Dickerson
Sales Engineer

John V. Slyker
Sales Representative

/cg

cc: W. Reeves
D. Seale

NL Treating Chemicals/NL Industries, Inc.
P. O. Box 4305 Houston, Texas 77210

REPORT OF TES

SHEET NUMBER

COMPANY: Mobil Producing Texas & New Mexico
DATE: 12-16-67
FIELD OR PLANT: Vacuum Area Leases
COUNTY OR PARISH: Lea
STATE: New Mexico
LEASE OR UNIT:
WELL(S) NAME & NO.:
SAMPLE SOURCE: See Below
TYPE SAMPLE:
TYPE TEST: Compatibility of Devonian with Mix
REASON FOR TEST: Possible Salt Water Disposal

RESULTS:

Compatibility Mixture %		Observations (100°F)	
Devonian	Composite Produced Waters	Initial Appearance	5 days
100	0	Clear	Moderate calcium carbonate Deposi
90	10	Clear	No deposition
80	20	Clear	No deposition
70	30	Clear	No deposition
60	40	Slightly hazy	No deposition
50	50	Slightly hazy	Moderate calcium carbonate deposi
40	60	Slightly hazy; slight gray cast	Slight calcium carbonate depositi
30	70	Slightly hazy, slight gray cast	Slight calcium carbonate depositi
20	80	Slightly hazy, slight gray cast	Moderate calcium sulfate & slight calcium carbonate depositions; sli iron compounds precipitated.
10	90	Slightly hazy; slight gray cast	Heavy calcium sulfate deposition; moderate calcium carbonate formed, + moderate iron compounds deposite
0	100	Slightly hazy, slight gray cast	Heavy calcium sulfate deposited; moderate calcium carbonate precipi moderate amount of insoluble iron compounds formed

REMARKS & RECOMMENDATIONS:

Composite Produced Water Ratios

Source	Mixture %
Abo	46
San Andres	48
Glorieta	2
Pennsylvania	3
Blinebry	1

SALES ENGINEER | DIST NO | ADDRESS

Champion Chemicals Inc.

P.O.BOX 2187
HOBBS, N.M. 88240

PHONE: (505) 393-7726

WATER ANALYSIS REPORT

Report for:
cc: DONNA ELWOOD-JR. GARCIA
cc:
cc:
Company: MOBIL
Address:
Service Engineer: OWEN ROBERTS

Date sampled: 5-8-90
Date reported: 5-9-90
Lease or well # : SNYDER WINDMILL
County: State:
Formation:
Depth:
Submitted by: OWEN ROBERTS

CHEMICAL COMPOSITION :	mg/L	meq/L
Chloride (Cl)	50	1
Iron (Fe) (total)	3.0	
Total hardness	230	
Calcium (Ca)	48	2
Magnesium (Mg)	26	2
Bicarbonates (HCO3)	146	2
Carbonates (CO3)	n/a	
Sulfates (SO4)	39	1
Hydrogen sulfide (H2S)	15	
Carbon dioxide (CO2)	39	
Sodium (Na)	2	0
Total dissolved solids	312	
Barium (Ba)	n/a	
Strontium (Sr)	n/a	

Specific Gravity	1.000
Density (#/gal.)	8.334
pH	6.350
IONIC STRENGTH	0.01

Stiff-Davis ($CaCO_3$) Stability Index :

$SI = pH - pCa - pAlk - K$

SI @ 86 F = -0.74
104 F = -0.53
122 F = -0.30
140 F = -0.06
158 F = +0.19

This water is 2389 mg/l (%-100.00%) under ITS CALCULATED CaSO4 saturation value at 82 F.
SATURATION= 2389 mg/L PRESENT= 0 mg/L

Randolph Scott

REPORTED BY RANDOLPH SCOTT

CHEMIST

DATE 4-23-90 WELL NO. 1 LEASE State Section 27

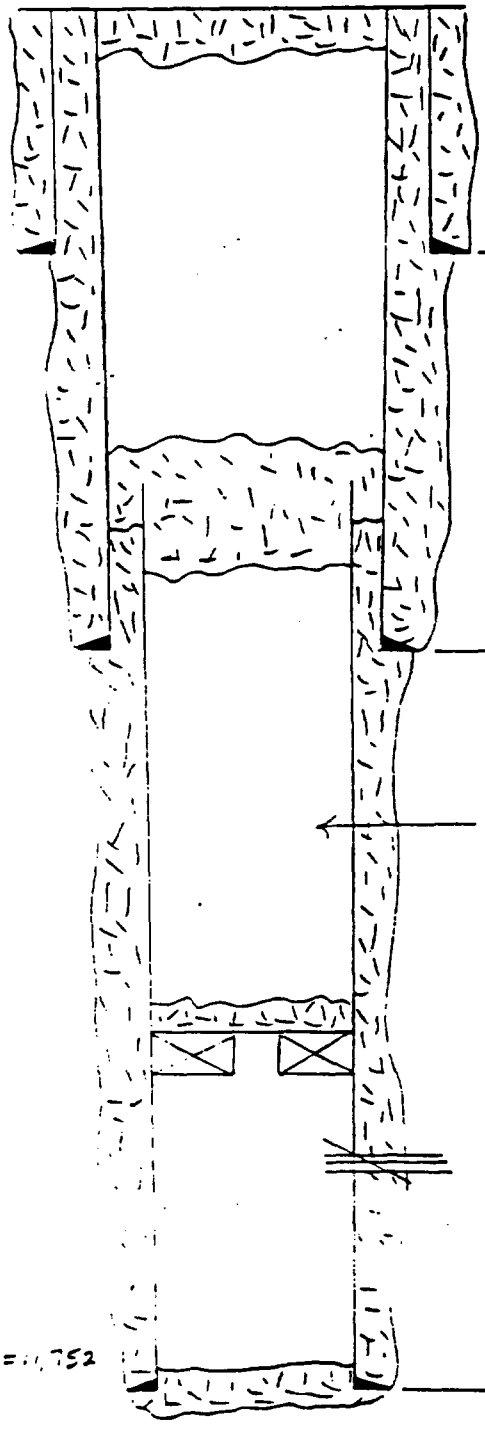
FIELD Vacuum Devonian South LOCATION 660' FNL & 1983' FEL Unit B Sec 27, T18S, R

Lea County, New Mexico

SIGNED D G Elwood

GL 3887'
DF 3895'
KB 3896'
ZERO KB (9' AGL)

PRESENT WELLBORE DIAGRAM



20 sk surface cmt plug, csg cut 3' below surface, P&A marker welded on

13 3/8" 48 lb/ft H-40 csg set to 360' w/350 sks, cmt circ (17" hole)

7 5/8" csg cut @ 1689', spot 30 sk cmt plug, 740 - 1638'

Primary TOC (9 5/8 - 7 5/8) @ 1715' (temp survey)

9 5/8" 36 lb/ft J-55 csg set to 3800' w/3500 sks, cmt circ (12 1/4" hole)

Wellbore loaded w/ mud

Cmt retainer set @ ± 11,260', squeezed perfs left 2 bbls cmt on retainer (TOC @ ± 11,

Devonian Perfs

11,650 - 11,668', squeezed w/150 sks -SPF 72 ho

PBTD = 11,752

7 5/8" 26.4, 29.7, & 33.7 lb/ft N-80 Buttress + X-line csg set to 11,800' w/1165 sks

TD: 11,800'
PBTD: 11,752'

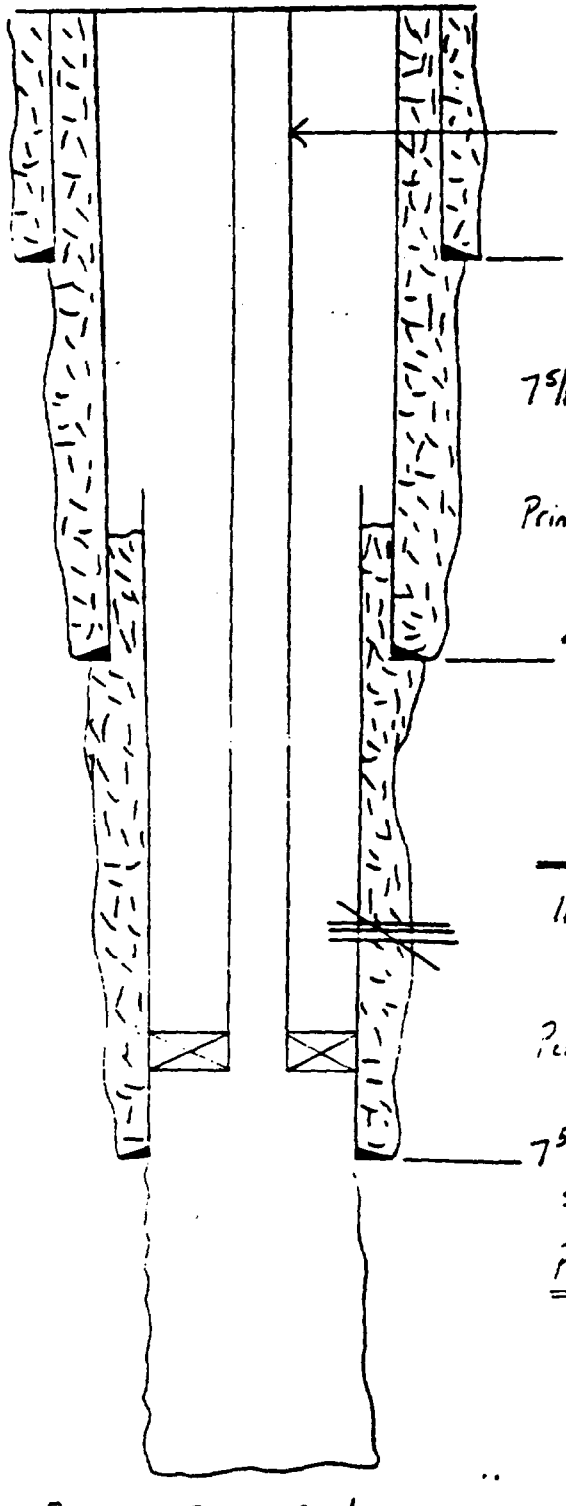
DATE 4-23-90 WELL NO. 1 LEASE State Section 27

FIELD Vacuum Devonian South LOCATION 660' FNL & 1983' FEL Unit B Sec 27, T18S, Lea County, New Mexico

SIGNED D G Elwood

GL 3887'
DF 3895'
KB 3896'
ZERO KB (9' AGL)

PROPOSED WELLBORE DIAGRAM



3½" or 4½" N-80/K-55 Duolined tbg, pkr fluid on annulus

13⅜" 48 lb/ft H-40 csg set to 360' w/350 sks, cmt circ (17" hole)

7⅝" csg cut @ 1689'

Primary TOC (9⅝ - 7⅝) @ 1715' (temp survey)

9⅝" 36 lb/ft J-55 csg set to 3800' w/3500 sks, cmt circ (12¼" hole)

Devonian Perfs

11,650 - 11,668', squeezed w/150 sks cmt 4 SPF 72 hole

Permanent pkr set @ ± 11,750'

7⅝" 26.4, 29.7, & 33.7 lb/ft N-80 Buttress + X-line csg set to 11,800' w/1165 sks

Proposed Devonian Disposal Zone

OH 11,800 - 13,970'

Proposed TD: 13,970'

Affidavit of Publication

STATE OF NEW MEXICO)
) ss.
COUNTY OF LEA)

Joyce Clemens being first duly sworn on oath deposes and says that he is Adv. Director of THE LOVINGTON DAILY LEADER, a daily newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled

Legal Notice

and numbered ..... in the

..... County of Lea

County, New Mexico, was published in a regular and entire issue of THE LOVINGTON DAILY LEADER and not in any supplement thereof, once each week on the same day of the week, for one (1) day consecutive weeks, beginning with the issue of

October 21, 19 98

and ending with the issue of

October 21, 19 98

And that the cost of publishing said notice is the sum of $ 16.98

which sum has been (Paid) (Assessed) as Court Costs

Joyce Clemens

Subscribed and sworn to before me this 21st day of October, 19 98

Notary Public, Lea County, New Mexico

My Commission Expires June 22, 2002

LEGAL NOTICE

1. Mobil Producing TX & NM Inc., Attention: Shirley Houchins, P.O. Box 633, Midland, Texas 79702, (915) 688-2585 will apply for permission to inject produced water into the following well/wells for the purpose of Disposal.
2. Well Name and Number: State Sec. 27, No. 1,
Location: 660' FNL & 1983' FEL, Sec. 27, Section: 27, T18S, R35E, County, Lea
3. Formation Name: Devonian
Injection Interval: 11,800-13,900
Maximum Injection Rate: 20,000 BWPD
Maximum Pressure: 2390 PSI

4. Interested parties, who can show that they are adversely affected by this application, must file objections or requests for hearing with the Energy and Minerals Department, Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within 15 days after this publication.

Published in the Lovington Daily Leader October 21, 1998.

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

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 10233
Order No. R-9474

APPLICATION OF MOBIL EXPLORATION
& PRODUCING U.S. INC., AS AGENT FOR
MOBIL PRODUCING TEXAS & NEW MEXICO INC.,
FOR APPROVAL OF SALT WATER DISPOSAL,
LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on March 7 and March 21, 1991, at Santa Fe, New Mexico, before Examiners Jim Morrow and Michael E. Stogner, respectively.

NOW, on this 27th day of March, 1991, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The applicant, Mobil Exploration & Producing U.S. Inc. as agent for Mobil Producing Texas & New Mexico Inc., (Mobil), seeks authority to dispose of produced salt water into the South Vacuum-Devonian Pool, in the open hole interval from approximately 11,800 feet to 13,970 feet in its State Section 27 Well No. 1 (proposed well) located 660 feet from the North line and 1983 feet from the East line (Unit B) of Section 27, Township 18 South, Range 35 East, NMPM, Lea County, New Mexico.

(3) Mobil plans to use the proposed well for disposal of lease and off-lease water. The well is needed as a back-up for the State Section 27 Well No. 2 which was approved by Oil Conservation Commission Order No. R-8645 on May 5, 1988.

(4) At the hearing Mobil submitted exhibits and testimony containing the following information and plans concerning the proposed well.

(a) It is plugged and abandoned with cement plugs at the surface, 1638 feet, and 11260 feet. 13 3/8-inch casing is set at 360 feet and 9 5/8-inch casing is set at 3,800 feet with cement circulated behind both strings. 7 5/8-inch casing set at 11,800 feet has been cut and pulled from 1,689 feet. Cement behind the 7 5/8-inch casing is from 11,800 feet to 1,715 feet. If approved, the proposed well would be cleaned out and deepened to 13,970 feet, pressure tested to ensure casing integrity, and 3 1/2-inch or 4 1/2-inch fiberglass lined tubing would be run and set in a packer at 11,750 feet. The tubing-casing annulus would be loaded with packer fluid.

(b) From a closed system, water would be injected down the tubing into the open-hole Devonian-Fusselman interval between 11,800 feet and 13,970 feet. The Devonian portion of the injection interval is below the abandoned Devonian production section, 11,650 to 11,668 feet which has been cement squeezed with 150 sacks. Average and maximum injection rates would be 10,000 and 20,000 barrels per day. The proposed well is expected to take water on a vacuum. A maximum injection pressure of 2390 psi is being requested.

(c) Based on compatibility test of Devonian water and produced waters which indicate probable scale formation, Mobil plans a scale prevention program.

(5) The following information concerning the area surrounding the proposed disposal well was submitted by Mobil through its exhibits and the testimony of its witnesses:

(a) Structure maps of the South Vacuum-Devonian Pool show a major Northwest-Southeast trending fault with an upthrown Southwest block which has been and continues to be oil productive.

(b) Devonian production from the pool has been from 14 wells located in Sections 21, 22, 26, and 27, Township 18 South, Range 35 East. Currently there are four productive wells in the Southeast part of the Pool; all are operated by Unocal. Average daily per well production

from the four wells is 20 bbls. of oil and 1,876 barrels of water. Currently there are also two former Devonian producers which are used as disposal wells. The Fusselman, non-productive in this pool, is included in the disposal interval in Mobil's State Section 27 Well No. 2 and the proposed well.

(c) The Mobil State Section 27 Well No. 2 located 1869 feet Southeast of the proposed well has been a very successful disposal well. Water injection into the 27 Well No. 2 since June 1990 has averaged approximately 6,000 barrels per day at O psi (Vacuum) surface injection pressure. Tracer surveys run in March 1988 and January 1991 show that most of the injected water is entering a lower Devonian interval from approximately 12,040 feet to 12,100 feet.

(d) The Mobil State Section 27 Well No. 2 is the only well within one-half mile of the proposed well which penetrates the proposed injection interval. It is properly constructed to prevent the migration of injected fluids from the disposal interval.

(e) Fresh water is present in the Ogalalla formation at 300 feet and the Santa Rosa at 1,400 feet. There is no evidence of open faults or other hydrological connection between the Devonian Formation and any underground source of drinking water. A water sample from a well in the area identified as the "Snyder Windmill" indicated a chloride concentration of 50 mg/liter.

(6) Snyder Ranches, Inc. protested this application and through its witness, Mr. Larry C. Squires, submitted the following testimony:

(a) Snyder Ranches lands have been damaged in the past by potash operations and oil field operations.

(b) The "Snyder Windmill" water sample came from some location other than the approximate location identified by Mobil's witness.

(c) Snyder Ranches is not protesting the granting of Mobil's application in this case, but is requesting that OCD require additional tests to ensure that fresh water in the area is being protected.

(d) Snyder Ranches is concerned that a recent water blow-out in the area may have been caused by injection operations.

(7) Additional tests and procedures to ensure fresh water protection were discussed at the hearing by Mobil and Snyder Ranches as follows:

(a) Require more frequent mechanical integrity pressure tests.

(b) Maintain pressure on the tubing-casing annulus.

(c) Periodic sampling of Snyder Ranches water well located approximately one-half mile East of Mobil's proposed well.

(8) Following the hearing, correspondence was received from Mobil requesting that the tests and procedures set out in Findings (7)(b) and (7)(c) above not be required, but recommending annual pressure testing as an additional permit requirement. Mobil also submitted a written request that the record in Case No. 9337 be included as a part of the record in this case.

(9) Snyder Ranches Inc. submitted a letter following the hearing suggesting that Mobil hire an independent water laboratory to sample the Snyder Ranches water well on a quarterly basis.

(10) The subject application indicates that Mobil would comply with OCD rules and requirements in operating the proposed well as a disposal well and that fresh water resources and oil and gas accumulations would not be adversely affected. Approval of the application is in the interest of conservation, and would prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Mobil Exploration & Producing U.S. Inc. as agent for Mobil Producing Texas & New Mexico Inc., is hereby authorized to dispose of produced salt water into the South Vacuum-Devonian Pool, in the open hole interval from approximately 11,800 feet to 13,970 feet in its State Section 27 Well No. 1 located 660 feet from the North line and 1983 feet from the East line (Unit B) of Section 27, Township 18 South, Range 35 East, NMPM, Lea County, New Mexico.

PROVIDED HOWEVER THAT, injection shall be through 3 1/2-inch or

4 1/2-inch fiberglass lined tubing set in a packer at approximately 11,750 feet, the tubing-casing annulus shall be filled with an inert packer fluid, and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

PROVIDED FURTHER THAT, prior to commencing injection operations and annually thereafter, the casing in the subject well shall be pressure tested to assure the integrity of such casing in a manner and at a time that is satisfactory to the supervisor of the Division's district office at Hobbs, New Mexico.

(2) The injection well or system shall be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 2360 psi (0.2 psi per foot).

(3) The Director of the Division may authorize an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the San Andres formation.

(4) The operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment and of the mechanical integrity pressure tests in order that the same may be witnessed.

(5) The operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing or packer in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) The applicant shall conduct disposal operations and submit monthly reports in accordance with Rules 702, 703, 704, 705, 706, 708 and 1120 of the Division Rules and Regulations.

(7) Personnel from the Division's Hobbs district office shall contact Snyder Ranches Inc. personnel on or about April 1 and October 1, 1991 and 1992 and arrange to collect a water sample from the Snyder Ranch Inc. water well in Section 26 approximately one-half mile East of Mobil's proposed well. Chloride analysis of the samples shall be kept on file at the Hobbs office. After 1992, the Supervisor of the Hobbs office shall determine whether additional sampling is needed.

(8) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY,
DIRECTOR

dr/