October 24, 1990

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COLVISION

MIDLAND DIVISION

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

Care 10233

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 OF NEW MEXICO	UIL WHISEHVATION DIVISION	شافيني بية وموجوب
ENERGY AND MINERALS DEPARTMENT	POST OFFICE BOX 2088	Revised 7-1-81
•	STATE LAND OFFICE BUILDING	

APPLIC	ATION FOR AUTHORIZATION TO INJECT
Ι.	Purpose: Secondary Recovery Pressure Maintenance Disposal Storage Application qualifies for administrative approval? yes No
11.	Operator: MObil Producing Texas & New Mexico, Inc.
	Address:
	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
۷.	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:
	<ol> <li>Proposed average and maximum daily rate and volume of fluids to be injected;</li> <li>Whether the system is open or closed;</li> <li>Proposed average and maximum injection pressure;</li> <li>Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and</li> <li>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.).</li> </ol>
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.
×.	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 avai]able 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:

\* 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.

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, P. O. Box 2088, Santa Fe, New Mexico 87501 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.

State Longe - 6 copies Fee Longe - 5 copies	Energy, I	State of New Mex Minerals and Natural Res	ico ources Department		Form C-101 Revised 1-1-59
DISTRICT I P.O. Box 1980, Hobbs, I	OIL (	P.O. Box 208	N DIVISION	API NO. ( assigned by O 30-025-031	CD on New Wells) 41
DISTRICT II P.O. Drawer DD, Artesia	Si NM 88210	anta Fe, New Mexico 8	37504-2088	5. Indicate Type of Leas	
DISTRICT III 1000 Rio Brazos Rd., Az	nec. NM 87410			6. State Oil & Gas Leas	e No.
APPLIC	ATION FOR PERMIT T	O DRILL, DEEPEN, O	R PLUG BACK		
1a. Type of Work:				7. Lease Name or Unit .	Agreement Name
DR: b. Type of Well:	LL RE-ENTER		PLUG BACK		
OE GAS WELL WELL		SAL SINGLE ZONE		State Section	27
2. Name of Operator				8. Well No.	
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Section 27	Town	hip <sup>18S</sup> Ram	35E	NMPM	County
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13. Elevations (Show wh	ether DF, RT, GR, etc.)	4. Kind & Status Plug. Bond	15. Drilling Contractor	16. Арргол	L Date Work will start
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DATE <u>4-23-90</u> WELL NO. / LEASE State Section 27 FIELD Vacuum Devonian South LOCATION 660' FNL \$ 1983' FEL Unit B Sec 27, TISS, Lea Conaty New Mexico SIGNED DE Elwood 3887 3895 GL \_\_\_\_ DF 3896' R (9'AGL) KB ZERO





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

### **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

obil Producin	g Tx. & N	I. M. Inc.		Lease State	Sec. 2	.7		Well No.
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#### <u>C-108</u>

- I. Disposal
- II. Mobil
- III. A. 1. State Sec. 27 #1, 660' FNL & 1983' FEL, Sec. 27, T185, R35E
  - 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
    - 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,  $\pm$  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'
  - 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 <u>13,970'</u>. 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, 1933

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 Chemica 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 Incustries, Inc. P.O. Box 60020, Houston, Texas 77205 Tel. (713) 987-5400 Telex: 4620243 NLOS UI

## Water Analysis Rer

\_\_\_\_\_ mg/l \_\_\_\_\_ ppm(Vol/Vol)

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### USPENDED SOLIDS (QUALITATIVE)

27 Suffide 🔲 Iron Oxide 🖂 Calcium Carbonate 🖾 Calcium Sulfate 🖾 Acid Insoluble 🖂

EMARKS AND RECOMMENDATIONS:

TO ENGINEER	DIST. NO.	ADDRESS	OFFICE PHONE	HOME PHONE
Dickerson/Siyker	821	-		
ALYZED BY	10			

Max. BaSO4 Possible (Calc.)

Residual Hydrocarbons



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

### Water Analysis Rep

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COMPANY																				10	AŢĒ			
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Catcium. Ca + +		15	6			3.1	20		. 0	Dxyq	en, (	$D_2$		-									mgi	1
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UDPENDED SOLIDS (QUALITATIVE)

th Sulfide 🗇 Iron Oxide 🖂 Calcium Carbonate 📮 Calcium Sulfate 📮 Acid Insoluble 🗔

EMARKS AND RECOMMENDATIONS:

CENGINEER	
Dickerson/Slyker	

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

Water Analysis Repo

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12-16-87		TYPE O	F PRO	DUCTI	CN:	0,	PRIM	ARY		WA	TER	FLC	co	C	CO2	FLC	ÓĎ	:	PCI	LYM	EA	FLC	) ) )	C	) s1	<b>FEA</b>	JFL	000	)	
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USPENDED SOLIDS (OUALITATIVE)

on Sultide I Iron Oxide I Calcium Carbonate I Calcium Sulfate I Acid Insoluble I EMARKS AND RECOMMENDATIONS:

 TO ENGINEER
 DIST. NO.
 ADDRESS
 OFFICE PHONE
 HOME PHONE

 Dickerson/Slyker
 821

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

### Water Analysis Repc

				SHEET NUMBER
OMPANY			*****	IDATE
Mobil Producina T	exas & New Mexico			
IELD		1COU	NTY OR PARISH	STATE
Vacuum		Le	a	New Mexico
EASE OR UNIT	SAMPLE SOURCE	<u></u>	IWATER SC	DURCE (FORMATION)
Bridges-State Lea	ises #120		Uppe	r Penn
EPTH. FT. EHT. *F	SAMPLE SOURCE	TEMP. *F WATT	ER. EELIDAY OIL EELIDAY	GAS, MMCF/DAY
ATE SAMPLED	TYPE OF WATER: D PRODUC	ED D SUPPLY D WAT		OSAL
12-16-87	TYPE OF PRODUCTION: C PI	RIMARY C WATERFLOOD	DE CO2FLOOD E POLYMER	FLOOD C STEAMFLOOD
+ 20 1	W (NUMBER EESI 15 10 5	ATER ANALYSIS PA DE ION SYMEOL INDICA 0	TTERN TES meri SCALE UNIT) 5 10	15 <b>20</b> c
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Ca <sup>+</sup> +   <u>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </u>				HC03
Mg <sup>+</sup> +	<mark>┼┼┼╋╋┽╎╎╷╷┼</mark>			so <sub>4</sub> =
Fe <sup>+++</sup>				$\omega_3 = -$
ISSOLVED SOLIDS			DISSOLVED GASES	
ATIONS Stal Hardness Bicium, Ca + +	me/i 246 132 114	mg/1 <u>2,640</u> 1,391	Hydrogen Sulfide, H2S Carbon Dioxide, CO2 Oxygan, C2	mg/l mg/l mg/l
n (Total) Fe + + + rium, Ba + + dium, Na + (Calc.)	2,197	50,531	PHYSICAL PROPERTIES pH (Field) Eh (Redox Potential) Specific Gravity	<u>6.16</u> MV
HONS Horide, Cl Hate, SO4 = Hoonate, CO3 =	<u>2.366.2</u> <u>46.4</u> 12	<u>84.000</u> 3.225	Turbidity, FTU Units Total Dissolved Solics (Calc.) Stability Index <u>6</u> <u>80</u> °F <u>6</u> <u>100</u> °F	$\frac{141,813 \text{ mg/}}{+0.13}$ +0.03 +0.22
droxyl, OH	16.4	204	CaSO4 Solubility @*F @*F Max. CaSO4 Possible (Calc.)	mgA mgA mgA
			Max. BaSC4 Possible (Calc.) Residual Hydrocarbons	mg/l ppm(Vol/Vol)

### SPENDED SOLIDS (QUALITATIVE)

Suilide D Iron Oxide D Calcium Carbonate D Calcium Sulfate D Acid Inscluble D

MARKS AND RECOMMENDATIONS:

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YZED BY	DATE	DISTRIBUTION I CUSTOMER	- BEGION	
ickerson/Slyker	821			
ENGINEER	DIST. NO.	ADDRESS	CEFICE PHONE	HOME PHONE

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

### Water Analysis Rep

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CMPANY			· · · ·																												_			~~~~~	11	DATE			~~~	
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LEASE OR UNIT									19	AMP	ĽĒ	SOU	RCE																W	TE	R S	CUR	ICE I	FOF	IMA	TICA	n.			
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JEPTH. PT.			внт	<b>•</b> F			SAN	PLE	SC	URC	E					T	EMP	•F		ľ	WAT	ER.	881	JOA	Y		C	<u> </u>	SUI	DAY	,			-	ľ	يكغو	MM	CFA	CAY	1
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12-16-87	7					ľ	TY	PE O	F PI	ROOI	UCT	ION	: 1	P	RIM	ARY	C	. w.	ATE	RFi	.00	D	0	CO2	FL	00	ō	C	PO	LYN	AER	FLO	200	) [	ĒŚ	TEN	MFL	ÓÖ	107	
· · ·										1)	101	465	RE	W	AT DE	ER	AN	NAL MBC		SIS	P/ ICA	ATT	EF	RN e/I S	SC/		U	 (1)												
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#### USPENDED SOLIDS (QUALITATIVE)

In Sulfide I Iron Oxide Calcium Carbonate Calcium Sulfate Acid Insoluble SMARKS AND RECOMMENDATIONS:

Note: Small sample of water obtained.

IC ENGINEER	DIST. NO.	ADDRESS	CFFICE PHONE	HOME PHONE
i <b>ckerson/</b> Slyker	821		1	1.
ALYZED BY	. *			



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

### Water Analysis Re

								SHEET	NUMBER
COMPANY Mobil Produci	ng Texas	& New Mexico						DATE	
FIELD Vacuum				соцят	OR PARISH			STATE	Mexico
LEASE OR LINIT Bridges-State	Leases	SAMPLE SOURCE		<u>-</u>		WATER	SOURCE (FO	RMATION)	
	HT, *F	IAMPLE SOURCE	TEMP. *F	WATER.	BUUDAY	OIL SBUDAY		GAS, M	MCF/DAY
DATE SAMPLED 12-16-87		TYPE OF WATER: D PRCD TYPE OF PRODUCTION: D		Y C WATER		SALT WATER DIS	FOSAL	STEAMF	LOCD
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Na <sup>+</sup> 20			5	0	5	10	15	1 1 1	
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Mg <sup>+</sup> +	<del>       </del>	- <del></del>				· · · · ·			
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DISSOLVED SOLIDS				τ	DISSOLVED	GASES	<u> </u>		
CATIONS Total Hardness Calcium, Ca + +		me/1 734 546 188	mg 10_9 2_2	// H C 20 C 94	Hydrogen Sull Carbon Dioxid Dxygen, O <u>2</u>	lide, H <sub>2</sub> S Ie, CO <sub>2</sub>			_ mg/l _ mg/l _ mg/l
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NIONS Thioride, CI Julfate, SO <sub>4</sub> = Jarbonate, CO <sub>3</sub> =		<u>3.352.1</u> <u>41.7</u>	2_0	T T <u>00</u> s <u>00</u>	urbidity, FTU otal Dissolve itability Index	d Solids (Calc.) @80*F @100*F	) <del>-</del>	1 <u>95,88</u> +1.55 +1.74	5 mg/l
vdroxyl, OH Jilide, S =		5.9 	3	60 C C Ν Ν	CaSO4 Solubil łax. CaSO4 P łax. BaSO4 P lesidual Hydr	@*F G*F Cossible (Calc.) cossible (Calc.) cossible (Calc.)		+1_97	_ mg/l _ mg/l _ mg/l _ mg/l _ ppm(Vol/Vol)

### USPENDED SOLIDS (QUALITATIVE)

Con Sulfide D Iron Cixide D Calcium Carbonate D Calcium Sulfate D Acid Inscluble D EMARKS AND RECOMMENDATIONS:

TOENGINEER	DIST. NO.	ADDRESS	CFFICE PHONE	HOME PHONE
Dickerson/Slyker	821			
ALYZED BY	DATE	DISTRIBUTION - CUITER	******	

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January 20, 1988

A Division of EXXON CHEMICAL COMPANY

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:

Abo46%San Andres48%Glorieta2%Pennsylvania3%Blinebry1%

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:

- 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.
- 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

Mobil Producing Texas & New Mexico Page Two

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,

oon John U. S Wayne Dickerson John V. Slyker

Sales Engineer Sales Representative

/cg

W. Reeves cc: D. Seale

# N.

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

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COLUMNY					
Mark 13 Danadi		Maxiaa			
MODII PFDC	UCING TEXES & NEW	MEXICO	I COUNT	Y OR PARISH	117-16-87
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LEASE OR UNIT		WELLIST NAME & NO.	SAMPLE	E SOURCE	INEW REXICO
•••••			500	Below	
TYPE SAMPLE			TYPET	'EST	
			Com	natibility of Devo	nian with Nix
REASON FOR TEST					
Possible	Salt Water Dispos	al			
RESULTS:					······································
Compati	bility Mixture % Composite	Observations Initial	(100	)°F)	-** · ·
Devonian	Produced Waters	Appearance		<u>5 days</u>	
100	0	Clear		Moderate calcium	carbonate Depositio
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 depositio
40	60	Slightly hazy; sl gray cast	ight	Slight calcium ca	rbonate deposition
30	70	Slightly hazy, sl	ight	Slight calcium ca	rbonate deposition
	0.0	gray cast			
20	00	Slightly hazy, sl gray cast	ight	Moderate calcium calcium carbonate iron compounds pr	sulfate S slight depositions; sligh ecipitated.
10	90	Slightly hazy; sl	ight	Heavy calcium sul	fate deposition;
		gray cast	<b>J</b>	moderate calcium + moderate iron c	carbonate formed, ompounds deposited.
0	100	Slightly hazy, sl	ight	Heavy calcium sul	fate deposited;
		gray cast	-	moderate calcium moderate amount o compounds formed	carbon <mark>ate precipita</mark> f insolub <b>le iron</b>

#### REMARKS & RECOMMENDATIONS:

ALES ENGINEER	I CIST NO	
Blinebry	1	
Pennsylvania	3	
Clorieta	2	
San Andres	48	
Аро	46	
Composite Produce Source	ed Water Ratios <u>Mixture %</u>	• •

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REPORT OF TEST



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

WATER ANALYSIS REPORT

Report for:Date sampled: 5-8-90cc:Date reported: 5-9-90cc:Lease or well # : SNYDER WINDMILLcc:County:cc:State:Company: MOBILFormation:Address:Depth:Service Engineer: OWEN ROBERTSSubmitted by: OWEN ROBERTS

CHEMICAL COMPOSITION : Chloride (Cl) Iron (Fe) (total)	mg/L 50 3.0	meq/L 1	
Total hardness	230	2	
Magnesium (Mg)	48 26	2	
Bicarbonates (HCO3)	146	2	
Carbonates (CO3)	n/a		
Sulfates (SO4)	39	1	
Hydrogen sulfide (H2S)	15		
Sodium (Na)	29	0	
Total dissolved solids	312	0	
Barium (Ba)	n/a		
Strontium (Sr)	n/a		
Specific Gravity	1.000		
Density (#/gal.)	8.334		
pH ·	6.350		
IONIC STRENGTH Stiff-Davie	U.UL (CaCO3) Stability Indox		
SI = pH	I - pCa - pAlk - K	ě.	
-			
SI	486 F = -0.74		
	104 F = -0.55 122 F = -0.30		
	140 F = -0.06		
	158 F = +0.19		
This water is	: 2389 ma/1 (8-100 00		n
CaSO4 saturat	ion value at 82 F.	er under 115 CALCULATE	D
SATURATION=	2389 mg/L PRE	SENT= 0 mg/L	
	-	-	
	Cano	on Dear	
	REPORTED BY RANDOLPH	SOIT	

CHEMIST



DATE 4-23-90 WELL NO. / LEASE State Section 27 FIELD Vacuum Devonian South LOCATION 660' FNL \$ 1983 FEL Unit B Sec 27, TISS, & Lea County New Mexico SIGNED DE Elwood 3887 3895 GL DF KB <u>3896'</u> ZERO <u>KB (9'AGL</u>)





Proposed TD: 13,970'

State of New Mexico



W.R. HUMPHRIES

COMMISSIONER

Commissioner of Public Lands March 10, 1988

P.O. BOX 1148 SANTA FE, NEW MEXICO 87504-1148

Mobil Exploration & Producing U.S., Inc. P. O. Box 633 Midland, Texas 79702

> Re: Water Disposal Well State Section 27 Lease Well No. 2 Vacuum Devonian,South Field Lea County, New Mexico

Attn: Mr. C. A. Moore

Gentlemen:

In connection with the above application submitted to the Oil Conservation Division by Mobil's letter dated March 2, 1988, the Land Commissioner has no objections at this time as to the above application, but reserves the right to refuse to grant an easement if it would be detrimental to the Trust Lands.

Because an oil and gas lessee is entitled to dispose of the Salt Water produced exclusively from wells located on the leased premises, no salt water disposal easement will be needed; however, if any of the salt water to be injected is produced from wells outside of the leased lands, you must apply for a Salt Vater Disposal Easement.

Copies D. The Hill W. Perry Paure A J. Algor A J. Algor L. Farrar N. Flace 24 10 Ki

WRH:FOP:cw

Verv trulv vours,

W. R. Humphries Commissioner of Public Lands

A Lev

By: Floyd O. Prando, Director Oil and Gas Division A/C 505-827-5744

RECEIVED

cc: Oil Conservation Division

MAR 1 4 1988

### Mobil

### MOBIL PRODUCING TEXAS & NEW MEXICO, INC. STATE SEC. 27, WELL #1 SOUTH VACUUM (DEVONIAN) FIELD LEA COUNTY, TEXAS

### EXHIBIT "F"

#### **OFFSET OPERATORS**

Arco Oil & Gas Co. P. O. Box 1610 Midland, Tx 79702

Hanley Petroleum 445 W. Wall - Suite 1500 Midland, Tx. 79701

UNOCAL Corporation P. O. Box 671 Midland, Texas 79702 Exxon Company, USA P. O. Box 1600 Midland, Texas 79702

Hondo Oil & Gas P. O. Box 2208 Roswell, NM 88202

Yates Energy P. O. Box 2323 Roswell, NM 88202

### SURFACE OWNER

Snyder Ranches, Inc. P. O. Box 2158 Lovington, New Mexico 88260

October 24, 1990

P.O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

#### CERTIFIED MAIL RETURN RECEIPT REQUESTED

Arco Oil & Gas Co. P. O. Box 1610 Midland, Tx 79702

> NOTICE OF APPLICATION FOR 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), has made application to the Oil Conservation Division of New Mexico for authority to dispose of produced water into a reservoir not productive of oil or gas in the above captioned well.

A copy of this application is furnished to you for your information.

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

xc: Oil Conservation Division

. .

October 24, 1990

P.O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

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Hanley Petroleum 415 W. Wall - Suite 1500 Midland, Texas 79701

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October 24, 1990

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JWD:fc attachments

xc: Oil Conservation Division

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October 24, 1990

P.O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

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Exxon Company, USA P. O. Box 1600 Midland, Texas 79702

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JWD:fc attachments

October 24, 1990

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MIDLAND DIVISION

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JWD:fc attachments

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October 24, 1990

P.O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

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JWD:fc attachments

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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

### 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 Application For Authorization To

Inject
and numbered in the
Court 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 <u>One (1)</u>
consecutive weeks, beginning with the issue of
October 18
and ending with the issue of
October 18
And that the cost of publishing said notice is the
sum of \$.8.57
which sum has been (Paid) (Aussissed) as Court Costs

CE LUTTOTO

APPLICATION FOR **AUTHORIZATION TO INJECT** 1. Mobil Producing TX&NM Inc., Box 633, Midland, Texas 70702, Attention: G. N. Miller, (915)688-1753, 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, T 18-S, R 35-E County: Lea 3. Formation Name: Devonian Injection Interval: 11,800-13,970 Maximun Injection Rate: 20,000 BWPD Maxium Presssure: 2390 PSI 4. Interested parties who can show that they are adversely affected by this application, must file objections or

LEGAL NOTICE

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 18, 1990.