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PHILLIPS PETROLEUM COMPANY

ODESSA, TEXAS 7962 L

January 15, 1990

"Application for Authorization to Inject" East Vacuum Grayburg-San Andres Unit Tract 2913, Well No. 011 Vacuum Grayburg-San Andres Pool Lea County, New Mexico

State of New Mexico Department of Energy, Minerals and Natural Resources Oil Conservation Division P. O. Box 2088 Santa Fe, New Mexico 87504

PMX-155

Attn: William J. LeMay

Gentlemen:

Enclosed for processing and administrative approval is "Application for Authorization to Inject" for the subject well to be drilled as a wateralternating-gas well to replace the East Vacuum Grayburg-San Andres Unit, Tract 2913, Well No. W008. The following data is submitted in support of the request:

1. Form C-108

- 2. Well data information
- 3. Map identifying wells and leases within two (2) miles and with one-half
- (1/2) mile radius circle drawn around the proposed injection well.
- 4. List of data on the proposed operation
- 5. Certified copy of Public Notice by newspaper

Your consideration and early advice will be appreciated.

Very truly yours,

1: ple -

J. L. Maple's, Assistant Regulation and Proration

JLM:AP:sdb REGPRO:APINC:evg011

Attachments

cc: New Mexico Oil Conservation Division P. O. Box 1980 Hobbs, New Mexico 88240

Parties of Interest - See List

APPLICATION FOR AUTHORIZATION TO INJECT

Ι.	Purpose: Secondary R	ecovery 🛛 🖾 Pressure Maintena	nce Dispesal	Storage
	Application qualifies	for administrative approval?	🗙 yes 🗌 nu	

11. Operator: Phillips Petroleum Company

Address: 4001 Penbrook Street, Odessa, Texas 79762

Contact party: J. L. Maples

. L. Maples _____ Phone: ____915/367-1411

- 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? X yes \Box no If yes, give the Division order number authorizing the project $\underline{R-6856}$
- 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.

Title Reg. & Pro. Assistant Name: <u>Maples</u> Т Date: January 11, 1990 Ales 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. October 25, 1978, Case 6367 (Order No. R-5897-approved 1-16-1979)

amended 11-19-81, Case No. 7426 (Order No. R-6856 - approved 12-16-81)

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:
 - Lease name; Hell 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. D. 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.

III. Well Data

- A. (1) East Vacuum Grayburg-San Andres, Tract 2913, Well No. 011, 1400' FEL and 130' FSL of Sec. 29, T-17-S, R-35-E, Lea County, New Mexico
 - (2) <u>Proposed Casing</u>: 17-1/2" Hole

<u>13-3/8" 54.5 lb/ft J-55 Surface Casing Set at approximately</u> <u>1600'</u>: Circulate to surface with 1000 sacks of Class "C" + 2% CaCl₂.

Slurry Weight:	14.8 ppg_
Slurry Yield:	1.32 ft ³ /sx
Water Requirement:	6.3 gals/sx

12-1/4" Hole - Switch to 8-1/2" hole at 3000' and continue drilling to TD if no water flow encountered.

<u>If water flow encountered - 9-5/8" 36 lb/ft J-55 Intermediate</u> Casing at 3000':

Lead: 700 sx Class "C" 65/35 Poz + 6% bentonite + 5% salt.

Slurry Weight:	13.2 ppg_
Slurry Yield:	1.70 ft ³ /sx
Water Requirement:	8.8 gals/sx

Tail: 150 sx Class "C" Neat

Slurry Weight:	14.8 ppg
Slurry Yield:	1.32 ft ³ /sx
Water Requirement:	6.3 gals/sx

8-1/2" Hole

5-1/2" Fiber Glass & 15.5, J-55 Production Casing Set at 4800':

Circulate to surface based on caliper volume + 30% excess.

Lead: 1200 sx Class "C" 65/35 Poz + 6% bentonite + 5% salt. Slurry Weight: 13.2 ppg Slurry Yield: 1.70 ft³/sx Water Requirement: 8.8 gals/sx Tail: 300 sx Class "C" Neat Slurry Weight: 14.8 ppg Slurry Yield: 1.32 ft³/sx Water Requirement: 6.3 gals/sx

<u>Page 2</u>

- (3) Tubing: 2-7/8" O.D. 6.5#, J-55 set at 4466'.
- (4) Packer: Baker Lok-Set (Tension) set @ 4466'.

B. (1) Formation: San Andres Pool - Vacuum

- (2) Injection Interval: 4486'-4678', perforated
- (3) Well is to be drilled as an injection well.
- (4) N/A
- (5) Queen 3675'; Blinebry
- VII. (1) Proposed average and maximum daily rate and volumes of fluid to be injected:

	Water	CO2	
Average Rate	400 Barrels Fluid Per Day	500 MCFD	
Maximum Rate	1000 Barrels Fluid Per Day	1000 MCFD	
(2) Closed system			
	Water	C02	

		Natur	002
(3) Average Pro	essure	1350 PSI	1800 ⁻ PSI
Maximum Pro	essure	1350 PSI	1800 PSI

- (4) Source of Fluid: Lea County Underground Water Basin and Reinjected Produced Fluid. Compatibility proven by present injection into same formation.
- (5) N/A



EVGSAU PATTERN 2913-011



· Database

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707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240 .

	TRENGTH:		1.345
pH:			7.02
Total D	issolved Solids:		71620
Specifi	c Gravity:	Sa	<u>imple 1</u> 1.051
Locatio	n: NVA - IPD (on 4-27-89)		
Company Date	: PHILLIPS PETROLEUM : 05-01-1989		

<u>CATIONS:</u>		<u>me/liter</u>	mg/liter
Calcium	(Ca+2)	108	2160
Magnesium	(Mg ⁺²)	72.0	875
Sodium	(Na ^{+ 1})	1040	23900
Iron (total)	(Fe ⁺²)	0.161	4.50
Barium	(Ba+2)	0.001	0.100
ANIONS:			
Bicarbonate	$(HCO_3 - 1)$	24.0	1460
Carbonate	$(CO_3 - 2)$	0	0
Hydroxide	(OH^{-1})	0	0
Sulfate	(SO4 - 2)	67.1	3230
Chloride	(Cl-1)	1130	40000
DISSOLVED GASES			
Carbon Dioxide	(CO ₂)		150
Hydrogen Sulfide	(H ₂ S)		714
Oxygen	(O_2)		0.100

	SCALING	INDEX	(positive	value	indicates	<u>scale</u>
				Ca	alcium	Calcium
Temper	<u>tature</u>			Car	<u>rbonate</u>	Sulfate
86°F	30°C				0.83	-9.2

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM Date : 09-26-1989 Location: EVGSAU - Source Wells - 2060-S01 (on 9-15-89)

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	Sample 1
Specific Gravity:	1.000
Total Dissolved Solids:	419
pH:	7.67
IONIC STRENGTH:	0.008

<u>CATIONS:</u> Calcium Magnesium Sodium	(Ca ^{+ 2}) (Mg ^{+ 2}) (Na ^{+ 1})	<u>me/liter</u> 3.12 0.880 1.77	<u>mg/liter</u> 62.4 10.7 40.6	
<u>ANIONS:</u> Bicarbonate Carbonate Hydroxide Sulfate Chloride	$(HCO_3 - 1)$ $(CO_3 - 2)$ (OH^{-1}) $(SO_4 - 2)$ (Cl^{-1})	3.40 0 1.12 1.24	207 0 54.0 44.0	

	SCALING	INDEX	(positive	value	indicates	scale)
		_		Ca	alcium	Calcium
Temper	ature			Car	<u>bonate</u>	Sulfate
86'F	30°C				0.29	-18

707 North Leech P.O.Box 1499

· · ·

Magnesium

Hobbs, New Mexico 88240

15.1

1.24

Company : PHILLIPS PETROLEUM Date : 09-26-1989 Location: EVGSAU - Source Wells - 2864-S02 (on 9-15-89) Sample 1 1.000 Specific Gravity: . Total Dissolved Solids: 653 pH: 7.51 0.012 IONIC STRENGTH: mg/liter <u>me/liter</u> 3.32 CATIONS: Calcium (Ca^{+2}) 66.4

 (Mg^{+2})

Sodium	(Na ⁺¹)	4.17	95.9
ANIONS:			
Bicarbonate	$(HCO_3 - 1)$	6.00	366
Carbonate	$(CO_3 - 2)$	0	0
Hydroxide	(OH-1)	0	0
Sulfate	$(SO_4 - 2)$	1.04	50.0
Chloride	(C1-1)	1.69	60.0

	SCALING	INDEX	(positive	value	indicates	<pre>scale)</pre>
				Ca	lcium	Calcium
Tempera	<u>ature</u>			<u>Car</u>	bonate	Sulfate
86'F	30°C				0.39	-18

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company :	PHILLIPS PETROLEUM	
Date :	09-26-1989	
Location:	EVGSAU - Source Wells - 3202-S07 (on 9-15-89)	

	Sample 1
Specific Gravity:	1.000
Total Dissolved Solids:	259
pH:	7.24
IONIC STRENGTH:	0.006

<u>CATIONS:</u> Calcium Magnesium Sodium	(Ca ^{+ 2}) (Mg ^{+ 2}) (Na ^{+ 1})	<u>me/liter</u> 1.88 1.32 0.796	<u>mg/liter</u> 37.6 16.0 18.3	
ANIONS: Bicarbonate Carbonate Hydroxide	$(HCO_3 - 1)$ $(CO_3 - 2)$ (OH^{-1})	1.40 0 0	85.4 0 0	
Sulfate Chloride	(SO4 - 2) (C1-1)	0.791 1.81	38.0 64.0	

	SCALING	INDEX	(positive	value	indicate	s_scale)
				Ca	alcium	Calcium
Temper	ature			Car	bonate	<u>Sulfate</u>
86°F	30°C			-	-0.73	-19

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM Date : 09-26-1989 Location: EVGSAU - Source Wells - 3366-S06 (on 9-15-89)

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	Sample 1
Specific Gravity:	1.000
Total Dissolved Solids:	315
pH:	7.16
IONIC STRENGTH:	0.008

<u>CATIONS:</u> Calcium Magnesium Sodium	(Ca ^{+ 2}) (Mg ^{+ 2}) (Na ^{+ 1})	<u>me/liter</u> 2. 44 2.20 0.156	<u>mg/liter</u> 48.8 26.7 3.60	
ANIONS:				
Bicarbonate	$(HCO_3 - 1)$	2.20	134	
Carbonate	$(CO_3 - 2)$	0	0	
Hydroxide	(OH-1)	0	0	
Sulfate	(504 - 2)	0.791	38.0	
Chloride	(Cl-1)	1.81	64.0	

	SCALING	INDEX	(positive	value	indicates	scale)
				Ca	alcium	Calcium
Temper	ature			Car	<u>cbonate</u>	<u>Sulfate</u>
86'F	30°C			-	-0.51	-18

707 North Leech P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM Date : 9-25-89 Location: EVGSAU - Source Wells - 2721-S04 (on 9-15-89) Specific Gravity: 1.000 Total Dissolved Solids: 253 pH: 7.50 IONIC STRENGTH: 0.005

CATIONS:		<u>me/liter</u>	mg/liter
Calcium	(Ca+2)	1.20	24.0
Magnesium	(Mg+2)	1.20	14.6
Sodium	(Na+1)	1.44	33.1
ANIONS:			
Bicarbonate	(HCO3 - 1)	1.40	85.4
Carbonate	(CO3 - 2)	0	0
Hydroxide	(OH-1)	0	0
Sulfate	$(SO_4 - 2)$	0.750	36.0
Chloride	(C1-1)	1.69	60.0

	SCALING	INDEX	(positive	value	indicate	<u>s scale)</u>
				Ca	alcium	Calcium
Temper	ature			<u>Car</u>	rbonate	<u>Sulfate</u>
86°F	30°C			-	-0.66	-19

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AFFIDAVIT OF PUBLICATION

State of New Mexico, County of Lea.

I<u>, George W. Moore</u>

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of_

<u>One</u> weeks. Beginning with the issue dated

<u>January 1</u>, 19<u>90</u> and ending with the issue dated

<u>, 19_90</u> January 1 Publisher.

Sworn and subscribed to before

day of me this

Notary Public.

My Commission expires____

July	12	,	19 <u>93</u>
(Seal)			

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made. LEGAL NOTICE January 1, 1990 NOTICE is hereby given of the application of Phillips Petroleum Company Attention: K. Am. Manager, Permian Basin Region, 4001 Penbrook Street, Odessa, Texas 79762 Telephone (915) 367-1324, to OII Conservation Division, Energy and Minérals Department, State of New Mexico, for approval of the following injection well(s) for the purpose of water-alternating gas injection Well(s) No(s): 11 Lease/Unit Names: East Vacuum Gb/SA Unit Location: Unit 0, 130' FSL and 1400' FEL of Section 29, T-17-S, R-35-E, Lea County, New Mexico. The injection formation Is San Andres at a depth of

Is San Andres at a depth of 4486-4678 feet below the surface of the ground. Expected maximum iniection rate is 400 barrels per day, and expected iniection pressure is 1350 psi; with an expected maximum injection rate of 500 mcf per day, and expected injection pressure of 1800 psi. Interested parties must file objections or requests for hearing with the Oil Conservation Division, Energy and Minerals Department, State of New Mexico 87504-2088, within fifteen days of this publication.

> JAN 1 2 1990 PBR

PARTIES OF INTEREST

Operators within one-half mile: ARCO Oil and Gas P. O. Box 2819 Dallas, Texas 75221 Chevron U.S.A., Inc. P. O. Box 1660 Midland, Texas 79702 Exxon Company, U.S.A. P. O. Box 1700 Midland, Texas 79702 Shell Western E&P P. O. Box 576 Houston, Texas 77001 Texaco, Inc. 4601 DTC Blvd. Denver, Colorado 80237 Surface Land Owner:

State of New Mexico Office of Public Lands P. O. Box 1148 Santa Fe, New Mexico 87504-1148

REGPRO: APINC: parties.011

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STATE OF NEW MEXICO ENERGY AND MINERALS DERARTMENTISION OIL CONSERVATION DIVISION RECEIVED HOBBS DISTRICT OFFICE JAN 19 AM 9 38

1-16-90

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GARREY CARRUTHERS

OIL CONSERVATION DIVISION P. O. BOX 2088 SANTA FE, NEW MEXICO 87501

RE:	Proposed:		
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Gentlemen:

I have examined the application for the:

Phillips Pet. Co.	East Vac.	DB1&A ut. Tr. 2913	#11-0 29-17-35
Operator	Lease & Well No	. Unit S-T-R	

and my recommendations are as follows:

Yours very truly, Jerry Sexton

Supervisor, District 1

/ed