CASE 7424: RICE ENGINEERING AND OPER- Zing And LEA COUNTY, NEW MEXICO

DOCKET MAILED

CASE NO.

7424

APPlication, Transcripts, Small Exhibits,

ETC

	2
INDEX	
	$x = \frac{1}{2} \frac{\lambda_{k+1}}{\lambda_{k+1}}$
LOY GOODHEART	
Direct Examination by Mr. Kellahin	
Cross Examination by Mr. Stamets	11
	en de la companie de La companie de la co
and the state of the The state of the state	entra de la comparión La comparión de la comparión La comparión de la comparión d
EXHIBITS	
	er transformation. Transformation
Applicant Exhibit One, Packet of Exhibits	4
Applicant Exhibit Two, Water Analysis	10
Applicant Exhibit Three, Water Analysis	10
Applicant Exhibit Four, Water Analysis	10
	en de la companya de La companya de la co

	4.15 - 5.

MR. STAMETS: We will call next Case 7424. MR. PEARCE: Application of Rice Engineering and Operating, Incorporated, for salt water disposal, Lea County, New Mexico. MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness. 10 11 (Witness sworn.) 12 13 LOY GOODHEART 14 being called as a witness and being duly sworn upon his oath, 15 testified as follows, to-wit: 16 17 DIRECT EXAMINATION 18 BY MR. KELLAHIN: 19 Mr. Goodheart, for purposes of the record 20 would you please state your name and occupation? 21 My name is Loy Goodheart. I'm employed 22 as Division Manager, located in Hobbs, New Mexico, for Rice 23 Engineering and Operating, Incorporated. 24 Mr. Goodheart, have you previously 25 testified before the Oil Conservation Division?

A	
2	A. I have.
3	Q. In what capacity was that, sir?
4	A. The same capacity as I am.
5	ρ Do you hold a professional degree as a
6	petroleum engineer or as a geologist?
7	A. Yes, sir.
8	Q. And what field is that?
9	A. Geological engineering.
10	Q Pursuant to your employment have you
11	made a study of the facts surrounding this particular appli-
12	cation by Rice Engineering?
13	A. Yes, Sir,
14	MR. KELLAHIN: We tender Mr. Goodheart
15	as an expert witness.
16	MR. STAMETS: He is considered qualified
17	MR. KELLAHIN: If the Examiner please,
18	what we have done is we have, pursuant to the rule 701, sub-
19	mitted at the time of the application the exhibits required
20	by Form C-108, and we have at this time marked the entire
21	package of exhibits as Exhibit Number One for the purposes
22	of hearing.
23	In order to go through the testimony
24	today we'd like to use that same package of exhibits with
25	your permission.

MR. STAMETS: That's fine.

4

Mr. Goodheart, let me direct your attention first of all to the cover letter that transmitted your application and have you summarize first of all the location of the subject well and what you're seeking to accomplish by this order.

_

A. Okay, this is a plugged and abandoned well, which is located 1980 from the north line and 2310 from the east line of Section 8, Township 20 South, Range 37 East, Lea County, New Mexico.

11

10

Q. What is to be the disposal formation?

13

12

A. It will be the Lower San Andres forma-

to be under pressure or will it take the fluids under gravity?

Is the disposal of fluids in this well

Thiswas proposed to be a gravity disposal

14

tion.

well.

15

16

1

17

18

19

20

2122

23

24

25

Q Would you summarize for the Examiner the source of the fluids to be disposed of in this well?

A. The water to be disposed of will be

from producing wells in the area located around the well in the Eunice-Monument Pool.

Q Are there waters produced from these wells that are produced from formations other than the San

	_				
Andre	es t	orma	3 t 1	Lon	?

A. Yes, the Paddock and Blinebry production in the area.

Q. All right, sir, to supplement your application do you have water analysis of samples of those produced waters from the other formations?

A. Yes, sir, we do.

We'll come to those in just a minute. Would you tell the examiner what you anticipate to be the average and maximum volumes of water to be disposed of on a daily basis in this well?

Me propose to dispose of approximately 8000 barrels a day from the Eunice-Monument Salt Water Disposal system.

All right, sir. All right, let's turn past the Form C-108, Mr. Goodheart, and come to the first attachment, which is your tabulation of the injection well data. In addition to that tabulation, the next exhibit is the schematic of the well.

Would you take those two exhibits and summarize generally how you propose to complete or recomplete this well for disposal?

A. Yes. As set out on the well data sheet, this particular well has 13-3/8ths casing cemented, cement

n

1

2

3

10

11

12

13

14 15

16

17

18

19

20

21 22

23

24 25 circulated, set at 475 foot. Tardon me. Set at 463 feet.

9-5/8ths cemented to surface set at 2900 feet, and it has 7-inch casing set at 5709. This casing is supposedly cemented to surface. The temperature survey did not pick up the top of the cement and by calculations they said it was supposed to be circulated; however it didn't say anything about circulation being observed.

We propose, as shown, on the schematic, to clean out this 7-inch, the surface plug, and the 20-sack plug, which is located at 1072 to 1176, to the plugback TD depth of 4958, and we shall test the 7-inch casing. If the casing checks satisfactorily we will then perforate intervals as shown from 4300 to 4852, and this will be the disposal interval.

The schematic shows a cement plug at about 4958 feet and then old perforations below that depth.

Yos, sir.

In your opinion, Mr. Goodheart, is that cement plug adequate to isolate the disposal formation from the old producing perforations?

We believe that it is, yes.

All right, sir.

Where in this area would one locate any

fresh water sands?

•	
2	A. The fresh water?
3	Q. Yes, sir.
4	A. Sands are I'm not sure of the depth,
5	but they would be shallower than 300 feet.
6	Q. All right, sir, for purposes of the way
7	you intend to recomplete this well for disposal, in your
8	opinion is the method of completion adequate to insure that
9	the disposal fluids would remain confined to the disposal
10	formation?
11	A. Well, due to the fact that we have the
12	13-inch and 9-inch casing cemented to surface, I don't believ
13	that there's any possibility that fresh water will be endan-
14	gered.
15	Q All right, sir, let's turn to the next
16	exhibit, which is an ownership plat of the surface with some
17	circles drawn. Would you identify that for us?
18	A. This shows the location of windmills
19	where we have taken fresh water samples.
20	Q The exhibit is a little difficult to rea
21	Mr. Goodheart. Could you do you have a subsequent exhibit
22	that locates the windmills?
23	A. Yes, sir.
24	Q All right, sir, let's come back to that,
25	then. The circle includes the wells that you have examined

9 in terms of a half mile radius and the subsequent page shows a tabulation of the information from all those wells in the area of review? That's right. Have you studied all the information contained on that part of the exhibit? t have. In your opinion are each of those wells completed or comented and plugged in such a way that they will not serve as a zone for -- or a method for contamination of fresh water sources? We don't feel that there's any danger of the offset wells.

All right, sir. Subsequent to the tabulation of the information on offset wells is a couple of sample logs from the disposal well, are they?

Yes, that's the one.

All right, sir. And then subsequent to that is a water analysis from a Windmill A in Section 7? Yes. This shows the approximate location of the windmill.

And the subsequent exhibit is another water source, fresh water source?

We listed them as Windmill A, B, and C,

24

19

20

21

22

23

THE REPORT OF THE PARTY OF THE

25

2

3

1

and these are shown on the plat, the previous plat that you mentioned.

All right. All right, sir, at this point

7

6

9

10

11

12

13

14

15

16

17

18 19

20

21

22 23

24 25

would you give me copies of the water analysis of the produced waters from the various formations that would serve as sources for waters for this well?

MR. KELLAHIN: If the Examiner please, the exhibit stamp is not in the hearing room. If we may subsequent to the hearing mark these as additional exhibits for this case, I'd appreciate it.

MR. STAMETS: That will be fine.

And then finally, Mr. Goodheart, attached to your packet of exhibits are return receipt notices for what purpose?

These were evidence of receipt of certified mail from the offset operators as required in the rule.

Do you anticipate that you'll have to stimulate or otherwise treat the disposal well before it will be suitable as a disposal well?

We project that we'll have to acidize in preparation, yes. This would be the only yee of stimulation we'd use.

All right. Mr. Goodheart, were the Exhibits One through Four prepared by you or compiled under

2	your direction and supervision?
3	A. Yes, they were.
4	Q. And in your opinion will approval of thi
5.	application be in the best interest of conservation, the
6	prevention of waste, and the protection of correlative rights
7	A. It's our feeling, yes, sir.
8	MR. KELLAHIN: We move the introduction
9 10	of Exhibits One, Two, Three, and Four. MR. STAMETS: These exhibits will be
11 12	
13	CROSS EXAMINATION
14	BY MR. STAMETS:
15	Q. Mr. Goodleart, looking at the attachment
16	to Form C-108, which will be the wells within a half mile,
17	I've not looked at each one of those, but most of those seem
18	to be cemented well above the injection level, is that your
19	analysis?
20	A. That's correct, yes.
21	Q. And there seem to be no plugged and
22	abandoned wells within this half mile radius.
23	A. That's correct.
24	Q Okay. Now the injection well will be
25	disposing of water into the San Andres formation?

24

25

pressure?

It will be gravity injection.

CERTIFICATE

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Savy W. Boyd CSR

I do percent country that the foreacting is Oll Conservation Division

BRUCE KING GOVERNOR LARRY KEHOE SCORTARY

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

December 18, 1981

POST OFFICE BOX 2088 STATE LAND CFFICE BUILDING SANTA FE, NEW MEXICO 97501 (505) 827-2434

Mr. Thomas Kellahin Kellahin & Kellahin	Re: CASE NO. 7424 ORDER NO. R-6835	1 · · · · · · · · · · · · · · · · · · ·
Attorneys at Law Post Office Box 1769 Santa Fe, New Mexico	Applicant:	CAR ONLY
	Rice Engineering and Operating,	Inc.
Dear Sir:		
Enclosed herewith are two conditions order recently enterested	opies of the above-referenced ered in the subject case.	
Yours very truly, JOE D. RAMEY Director		
JDR/fd		
Copy of order also sent to:		
Hobbs OCD X Artesia OCD X Aztec OCD X		
Other		

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

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

> CASE NO. 7424 Order No. R-6855

APPLICATION OF RICE ENGINEERING AND OPERATING, INC., FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 19, 1981, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this day of December, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Rice Engineering and Operating, Inc., is the owner and operator of the Eunice-Monument Eumont SWD "G" Well No. 8, located in Unit G of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico.
- (3) That the applicant proposes to utilize said well to dispose of produced salt water into the Lower San Andres formation, with injection into the perforated interval from approximately 4300 feet to 4852 feet.
- (4) That the injection should be accomplished through 5 1/2-inch plastic lined tubing under an oil blanket; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing or tubing.

-2-Case No. 7424 Order No. R-6855

- (5) That if injection is at pressure greater than hydrostatic pressure, the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 860 psi.
- (6) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.
- (7) That the operator should report to the supervious of the Hobbs district office of the Division at the start of disposal operations the gravity and level of the inert fluid in the annulus.
- (8) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.
- (9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Rice Engineering and Operating, Inc., is hereby authorized to utilize its Eunice-Monument Eumont SWD "G" Well No. 8, located in Unit G of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, to dispose of produced salt water into the Lower San Andres formation, injection to be accomplished through 5 1/2-inch tubing with injection under an oil blanket into the perforated interval from approximately 4300 feet to 4852 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that 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.

- (2) That, if injection is at greater than hydrostatic pressure, the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 860 psi.
- (3) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of

-3-Case No. 7424 Order No. R-6855

the installation of disposal equipment so that the same may be inspected.

- (4) That the operator shall report to the supervisor of the Hobbs district office of the Division at the start of disposal operations the gravity and level of the inert fluid in the annulus.
- (5) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing or casing in said well or the leakage of water or the inert fluid from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.
- (7) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Division Rules and Regulations.
- (8) That 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 (_ar hereinabove designated.

S E A

STATE OF NEW MEXICO OIL CONSERVATION DIVISION

JOE D. RAMEY,

Director

RICE Engineering & Operating, Inc.

122 WEST TAYLOR

TELEPHONE (505) 393-9174

October 19, 1981

Director
Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
Santa Fe, New Mexico 87501

OIL CONSERVATION DIVISION

Rive TRUMBH NO. 1

CASE 1/2 4

Passing Date

Hearing Date

Re: Form C-108, Application for Authorization to Inject (Salt Water Disposal)

Gentlemen:

Rice Engineering & Operating, Inc., as operator of the Eunice-Monument-Eumont Salt Water Disposal System, Lea County, New Mexico, hereby respectfully applies for a hearing to be held before the Oil Conservation Division for the purpose of securing a permit under Rule 701 to recomplete the abandoned E-M-E SWD "G" Well No. 8 (old Gulf Oil Corporation-Bertie Whitmire Well No. 7), located in the SW/4 NE/4 of Section 8, Township 20 South, Range 37 East, Lea County, New Mexico, as a salt water disposal well in the lower San Andress formation.

Rice Engineering & Operating, Inc. further deposes and states the following

- A. That said well is located 1980 feet from the with ion DIVISION and 2310 feet from the East line of Section & Wolfish Apre 20 South, Range 37 East, N.M.P.M., Lea County, New Mexico (see Dwg. No. A-517).
- B. That said well was drilled and completed as a producing oil well in the Monument Paddock Pool on February 6, 1954 and plugged and abandoned on May 6, 1975.
- C. That said well has 13-3/8" OD casing set at 463 feet, 9-5/8" OD casing set at 2900 feet and 7" OD casing set at 5709 feet (see Dwg. No. A-516).
- D. That said well will be completed as a disposal well in the lower Sen Andres formation by (1) cleaning out to present PBTD of 4958 Feet and perforating in several intervals from 4300 feet to 4852 feet, (2) installing 5½" Ob fiberglass lined tubing to approximately 4290 feet and (3) disposing of produced water in perforated intervals from 4300 feet to 4852 feet.

Page 2 - Oil Conservation Division - 10-19-81

E. That the volume of salt water to be disposed shall be approximately 8000 barrels per day from the Eunice-Monument-Eumont Field, Lea County, New Mexico.

Therefore, Rice Engineering & Operating, Inc. requests that the Director of the Oil Conservation Division set a date for this application to be heard and, after said hearing, to grant this permit to dispose of salt water in the Eunice-Monument-Eumong SWD "G" Well No. 8.

Respectfully submitted,

RICE ENGINEERING & OPERATING, INC.

L. B. Goodheart Division Manager

JEL/jp

Attachments: Form C-108 w/attachments

XIV.

Certification

OIL CONSERVATION DIVISION

POST OFFICE BUT FAMB STATE LAND OFFICE BUYEDING SANTATE NEW MEXICO 87501 FURM C-108 Revised 7-1-81

Case 7424

ATION FOR AUTHORIZATION TO INJECT
Purpose: Secondary Recovery Pressure Haintenance Disposal Storage Application qualifies for administrative approval? Tyes The
Operator: Rice Engineering & Operating, Inc.
Address: 122 West Taylor, Hobbs, New Mexico 88240
Contact party: L. B. Goodheart Phone: 393-9174
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.
Is this an expansion of an existing project? X yes no no If yes, give the Division order number authorizing the project None (SWD System).
Attach o 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.
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.
Attach data on the proposed operation, including:
 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; 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, attaches 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. Perforations from 4300' to 4352' and 10,000 gals. of 15% H_CL acid.
- 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.
 - I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

 Name: L. B. Goodheart Title Division Manager

 Signature: Date: October 12, 1981
- If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Plenae show the date and circumstance of the carlier submittal. Sec. X. Find well logs attached, Drill stem tests were

filed w/OCC when well was initially drilled on 3-1-54.

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; 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 senl 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.

- 8. 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:

- 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.

TRUETTON STEE DATA SHEET

8 1980' FNL, 2310'	FEL 8	t-Eumont SWD	37E
WELL NO. FOOTAGE LUCATION	SCCTION	TORNSHIP	RANGE
Lea County, New Mexico	The state of the s		
Schematic	Tabu	iler Data	
	Surface Cosing		
en de la companya de La companya de la co	Size 13-3/8 "	Camanted wit	h 475 sx
the second of the second	TOC @ surface XX		
	Hole size		
ee attached Dwg. No. A-510	5 Intermediate Casing		
chematic of existing well	9-5/8 11	Cemented wit	ь 1600
ore with proposed disposal nterval	toc @ surface *x		
	Hole size 124"	ec decermined by	3-13-1-1-1-1-1
	* 8		
	Long string		725
	Size 7 "		
	roc @ surface *X		Calculation
And the second s	Hole size 8-3/4"		
	Total depth 5710'	 	
	Injection interval		
	4300 feet to	4852	feet
	(perforated XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		
	nor did not prox	<i>ap</i>	
The state of the s		47	
			나는 생활하는 사람이 얼마나
uhioa siza 5½" li	ned with fiberglass epo	xy lining	set X00XX
	ned with fiberglass epoi (materia ulus paokan at	(y lining 1) 4290	
ith an oil blanket in ann	ulus exxxx at	1)	
ith an oil blanket in ann (brond and model) or describe any other casing-tub	ulus exxxx at	1)	
ith an oil blanket in ann (brond and model) or describe any other casing-tub	ulus esal).	1)	
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data Name of the injection formati	ing seal). Lower San Andres	4290	
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data Name of the injection formation Name of field or Pool (if app	ing seal). Lower San Andres licable) Eunice-Monume	4290 ent Pool	
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data . Name of the injection formati . Name of field or Pool (if app	ing seal). on Lower San Andres licable) Eunice-Monumer	4290 ent Pool	feet
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data . Name of the injection formati . Name of field or Pool (if app . Is this a new well drilled fo	ing seal). on Lower San Andres licable) Eunice-Monume r injection? /7 Yes /X/ he well originally drillod? I	4290 ent Pool	feet
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data . Name of the injection formati . Name of field or Pool (if app . Is this a new well drilled fo If no, for what purpose was to production - P. & A. on 5-	ing seal). on Lower San Andres licable) Eunice-Monumer injection? /7 Yes /X/ he well originally drilled? Interest of the seal of the seal or appropriate the seal of the seal or appropriate the seal of the seal	ent Pool No Orilled for o	il and gas
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data Name of the injection formati Name of field or Pool (if app 1s this a new well drilled fo If no, for what purpose was to production- P. & A on 5- llas the well ever been perforant give plugging detail (sac	ing seal). on Lower San Andres licable) Eunice-Monume r injection? /7 Yes /X/ he well originally drilled? I 6-75. ated in any other zone(u)? L ks of cement or bridge plug(s	ent Pool No Orilled for o	il and gas croted intervals 31'-5038'.
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data . Name of the injection formati . Name of field or Pool (if app . Is this a new well drilled fo If no, for what purpose was to production- P. & A. on 5-	ing seal). on Lower San Andres licable) Eunice-Monume r injection? /7 Yes /X/ he well originally drilled? I 6-75. ated in any other zone(u)? L ks of cement or bridge plug(s	ent Pool No Orilled for o	il and gas crotod intervolutions 31'-5038'.
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data Name of the injection formati Name of field or Pool (if app is this a new well drilled for 1 f no, for what purpose was to production - P. & A on 5 in a five plugging detail, etc.	ing seal). on Lower San Andres licable) Eunice-Monumer injection? /7 Yes /X/ he well originally drilled? In 6-75. ated in any other zone(u)? Less of coment or bridge plug(strong); 5650'-5707', see attentioner.	ent Pool No Orilled for o istall such part) used Yes, 50 ached Dwg. N	il and gas croted intervals 31'-5038'.
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data Name of the injection formation. Name of field or Pool (if apple 1s this a new well drilled for 1f no, for what purpose was to production - P. & A. on 5-18 and give plugging detail (see 5112'-5152', 5170'-5240)	ing seal). on Lower San Andres licable) Eunice-Monumer injection? /7 Yes /X/ he well originally drilled? In 6-75. ated in any other zone(u)? Less of coment or bridge plug(strong); 5650'-5707', see attentioner.	ent Pool No Orilled for o istall such part) used Yes, 50 ached Dwg. N	il and gas croted intervals 31'-5038'.
ith an oil blanket in ann (brond and model) or describe any other casing-tub ther Data Name of the injection formation. Name of field or Pool (if apple 1s this a new well drilled for 1f no, for what purpose was to production - P. & A on 5-18 the well ever been performed give plugging detail, etc.	ing seal). on Lower San Andres licable) Eunice-Monumer injection? /7 Yes /X/ he well originally drilled? Interest of common or bridge plug(st, 5650'-5707', see attenty overlying and/or underlyzone: Eunice-Monument F	ent Pool No Orilled for o ist all such part) used Yes, 50 ached Dwg. No ing all or gas zo ool in the u	il and gas croted interval 31'-5038', o. A-516 for men (penta) in oper San And

SOUT BERTIE WHITIMIKE LSE - WILL MO. 7 \$1400 FML, 2810, FEL 550, 8. 20 - 37 6, L. LLEV = 3549" THE STO SX CL. H CEM FING TO SURFACE -- P&A 5.6.75 13&" - 48# USG SET @ 463' W/475 SX REG NEAT CEM CIR. 172" HOLE (PLUG & 436') 1072' } 20 SX CL. H CMT PLUG × × × MUD 97-36 * CSG SET @ 2900' W/1600 5X (1500 4% GEL, 100 NEAT) CIRC., 124 HOLE, (PLUG @ 2855') 3553' DV TOOL 4146' 3 7" C5G LK & 50 SX 27 GACI 4154' 3 SQ W/200 SX { 150 SX .6 % HALAL 9 } RTMR @ 4087' CRFR/RINFRO 6-30-65 PBTD 💆 4958' 10 5x CFM. × × × PROPOSED DISPOSAL 5010' CIBP INTERVALS 5031 4300-4380, 4445-4470, 4555 - 4581 , 4740 - 4760, FB, PERF, & TA 5056' CIBP 12-7-73 4780 - 4800 , 4822 - 4852 CLEAN OUT 7" CSG TO FBTD 4958" & PERF AFOVE INTRVISE 4 hoks LEB & PERFO 12-5-10 5163' CI CEM RTNR. SQ BELOW W/50 5X MAX P = 3000 # -287 p 5170 PR, FIRE & CLS 111 1-28-70 5206' HYDROMITE TOP -3240 5230 FRAC STOR TOP FB, PERF & FROD. 2-6-54 60 SX CMT 56001 \mathbf{x} \mathbf{x} \mathbf{x} FERF 1-14, 24 8 2-2-54 - 420 × × × × 5650' × × × × 5707' SET & CMT 7" 1-18:24 SEFO. 5709 7"- 20# & 23# (TOP 202 UT & BTM 1579') CSG SET @ 5709' W/ 735 SX (235 SX 4 % GEL CIRC OUT DV TOOL, 450 SX 4 % GEL & 50 SX NEAT THRU DV TOOL) TS NOT PY UP TOC. CALC @ SURFACE, T.D. 5710', HOLE SIZE 84. APPROVED PROP. EME SWD "G"- WELL No. 8 SCALE DWN 8-20-81 JEL EXIST WELL BORE W/PROP DISP. INT. NONE DWG. NO. Rice Engineering & Operating, Inc. A-516

Great Bend, Kansas

K & E Co. - Wichita - Herculene 191543 - A-5803 - 7-77 - 500

. ,-) 6 =	Λ.	37 6
	Shally at Pooring Croshman State	Store Small of	Store Maria 18 Same Control Store Control Store Assess 18 Same Ass
, ,	Shell of the color of	ARCA OF THE AMERICAN	ANDNUMENT Com Correspond Minutes Company Compa
	5/p/a 65 221171	Gir 93 05	Large St. Large
	TAAOSO (Marie Inches)	(Sinc) A Rich (Sinc) A U.S. Amorado () (Sinc)	Stole lone was been self to the self to th
	Stoll The (opposite	O (m) O O CUD O	Softer May Line Honey I I william to the Same Same Same Same Same Same Same Sam
	American Street	NA STATE OF THE PARTY OF THE PA	Marribaci (1964)
	70.000 h 33/3 44	Simon Si Charles	Land Sun
	ON the rate Group	Coll on Various College	The description of the second
	America	Carling Continue (3)	Period France Control
	Amarada Frito- Lavia	(Sun) The Mindrin Street	AACO BAHT 1 Teleco WHY Loughlin, Est. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Arrada (Sun)		Salar Control of the
	100 00 000 000 000 000 000 000 000 000		PANC VINC O Due
	Transfer of the state of the st		Petro- #1 # # # 10 of 00 of 000
	04 01 02 02 Orini	Prolings Variance	Service of the servic
	Suit Getty America Suprier	PROPOSE	MKA OH Prop. J. H. Hansell Michigan Bonnes China Street Contr. Contr. Cattle Contr. Cattle Ca
	Tidenger Gulf Graham State Bell'	Alekka Arilli	1 (Getty Speller A) (001 by 1 20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Amoco seu	OS FINANCE SON	Amoco Itoniy Amoco Itoniy Amoco Itoniy
	Gruy feet	er com	EXACO (OPER)
***************************************	010 010 010 010 010 010 010 010 010 010	611 Ph. High 621 #11 #333 Addit Addit 11 Addit 11 Addit 12 Addit 13 Addit 14 Addit 15 Addit 16 Addit 17 Addit 18 Ad	8 NP, 1/2 P
	RIN " OF SALE	Stere Stere	WC ROOCH Jr. Gillelle Feet # 6/11/2/perfeet # 8. Milliand Deca(S) S N Cattle Coi(S) S N Cattle Coi(S)

LEA COUNTY, NEW MEXICO

M

T 19 5

7 20 \$

Į.	4.			*	
 DWN	JEL	9-14-81	APPROVED	LOCATION PLAT	SCALE
				EME SWD "6" WELL NO. 8	1" = 4000"
				Rice Engineering & Operating, Inc.	DWG. NO.
		1 24		Greet Bend, Kenses	A-517

Attachment to Form C-108 - Application for Authorization to Inject Eunice-Monument-Eumont SWD "G" 8 Rice Engineering § Operating, Inc. - p_{age} 1

- Part VI Other wells within area of review that penetrate the proposed injection zone
- 1. Getty Oil Company-T. Anderson Lease, Well #3, located 2173 FEL & SL, Section 8, T20S, R37E, drilled 3-18-54 to a TD @ 5254'; 13-3/8" @ 613' w/800 sx circ., 9-5/8" @ 2899' w/1275 sx circ., 7" @ 5252' w/500 sx to a TOC @ 3160' per T.S., completed for oil in Monument Paddock 5210'-5235'.
- 2. Getty Oil Company-T. Anderson Lease, Well #4, located 853' FEL & 2223' FSL, Section 8, T20S, R37E, drilled 12-13-76 to T.D. 0 6963'; 13-3/8" 0 317' w/320 sx circ., 9-5/8" 0 2748' w/1750 sx circ., 7" 0 4924' w/668 sx to TOC 0 3640' per T.S., 5" liner from 4693' to 6963' w/858 sx, completion record: Drinkard 6660'-6893' no oil, PBTD 0 6615', perf Tubb 0 6517-72', perf additional Tubb 6465'-6554' & 6313*6448', PBTD 0 6245', perf Blinchry 0 5610'-6170', PBTD 5485', perf Paddock 0 5205'-10' for oil.
- 3. Amerada Hess Corporation-T. Andreson Lease, Well #3, located 2310 FSL & 1650 FWL of Section 8, T20S, R37E, drilling complete on 3-3-54 to a T.D. of 5730; 13-3/8" @ 295' w/300 sx circ., 8-5/8" @ 2900' w/1500 sx to TOC @ 1032' per T.S., 5½" @ 5730' w/500 sx to TOC @ 3229' per T.S., completed for oil and gas in Monument-Blinebry 5676'-5710' on 3-8-54, PB & perf for oil & gas in Monument-Paddock 5168'-5198' & 5205'-5220' on 7-15-54, drill through & re-complete for oil in Monument-Blinebry 5676'-5766' on 12-10-70.
- 4. Amerada Hess Corporation-T. Anderson Lease, Well #4, located 2310' FSL & 2310' FWL, Section 8, T20S, R37E, to a TD of 5710'; 13-3/8" @ 316' w/300 sx circ., 9-5/8" @ 2530' w/1750 sx circ., 7" @ 3710' w/100 sx to 3419' per T.S., 5" liner from 3643'-5710' w/275 sx btm. & top, completed for oil & gas in Monument-Blinebry 5670'-5700', Bradenhead completion for gas in Eumont Gas Field from 2530'-3419', on 3-15-65 perf & sand frac 5605! to 5700' changing well to flowing status, 4-8-74 recomplete from dual in Eumont-Queen gas & Blinebry oil to single in Monument-Blinebry zone.
- 5. Sinclair Oil & Gas Company-Bertha J. Barber Lease, Well #13-Y, located 1980'FNL & 600'FWL, Section 8, T20S, R37E, drilled 9-1-54 to TD of 5250'; 13-3/8" @ 990' w/1000 sx circ., 9-5/8" @ 2900' w/1150 sx to 1210' TOC per T.S., 7" @ 5250' w/2396 sx to 2975' TOC per T.S., completed in Monument Paddock 5104' to 5194' for oil & csg head gas.

Attachment to Form C-108 - Application for Authorization to Inject Eunice-Monument-Eumont SWD "G" 8
Rice Engineering & Operating, Inc. - Page 2

- Sinclair Oil & Gas Company-Bertha J. Barber Lease, Well #16, located 660 FWL & 2310 FSL, Section 8, T20S, R37E, drilled on 11-7-54 to a TD of 5240'; 13-3/8" 2 965' w/1150 sx circ., 9-5/8" @ 2909' w/1600 sx circ., 7" @ 5240' w/350 sx to 4600' TOC per T.S., completed in Monument Paddock 5148'-5206' for oil & csg head gas.
- 7. Conoco Inc.-Britt B-8, Well #2-B, located 330 FNL & 2310 FWL, Section 8, T20S, R57F, drilled on 9-20-53 to TD 5710'; 10-3/4" @ 600' w/400 sx circ., 7-5/8" @ 3349' w/1412 sx circ., 5½" @ 5705' w/206 sx to 5200' TOC per T.S., completed in Monument Blinebry 5670'-5680' for oil, 3-15-56, recomplete Monument Blinebry 5646'-5670' for oil & csg head gas, shut in 9-1-69.
- 8. Conoco Inc. Britt B-8, Well #3-P, located 660 FNL & 1650 FWL, Section 8, T20S, R37E, drilled on 12-28-54 to TD of 5250'; 10-3/4" @ 632' w/500 sx circ., 7-5/8" @ 3298' w/1465 sx to TOC @ 650' per T.S., 5½" @ 5249' w/155 sx to TOC @ 4750' by T.S., completed on 12-28-54 in Monument-Paddock 5150'-5220' for oil. 3-20-61 found csg holes, cut, pulled, milled & reamed csg to 4676', replaced & cmt to 670', shut in 10-30-74.
- 9. Cities Service Oil Company-Laughlin Lease, Well #5, located 359 18L & 2310-FEL, Section 5, T20S, R37E, drilled on 9-13-53 to TD 5715'; 13-3/8" @ 335' w/330 sx circ., 8-5/8" @ 2398' w/925 sx circ., 5½" @ 5713' w/1300 sx circ., dual completion on 23-53 in the Paddock 5190' to 5215' for oil and in the Queen 3207'-3355' for gas (perf & sqz off in Blinebry 5675'-5743', 1-19-54 PB to 3359' & continue as single completion in Queen zone.
- 10. Gulf Oil Corporation-Bertie Whitmire Lease, Well No. 5, located 1650 FNL & 1650 FWL, Section 8, T20S, R37E, drilled on 9-26-53 to TD of 5700'; 13-3/8" @ 471' w/475 sx circ., 9-5/8" @ 2901' w/1600 sx circ., 7" @ 5699' w/385 sx to near top, 9-26-53 perf 5660'-5695' to oil, 6-22-62 additional perfs 5580'-5618'.
- 11. Gulf Oil Corporation-Bertie Whitmire Lease, Well No. 6, Tocated 900 FNL G 2310 FEL, Section 8, T205, R37E, drilled on 11-10-53 to TD 0 5735'; 13-3/8" 0 469' w/469 sx circ., 9-5/8" 0 2900' w/1600 sx circ., 7" 0 5712' w/428 sx to TOC 0 2550' per T.S., completed for oil in the Paddock 5175'-5220' 11-26-53.
- 12. Gulf Oil Corporation-Bertie Whitmire Lease, Well No. 8, located 1650 FNL & 1980 FWL, Section 8, T20S, R37E, drilled 4-22-54 to a TD 0 5250'; 13-3/8" 0 455' w/475 sx circ., 9-5/8" 0 2829' w/1700 sx circ., 7" 0 5249' w/400 sx to TOC 0 2786' per T.S., completed 4-22-54 the Paddock 5140'-5245' to oil.

Attachment to Form C-108 - Application for Authorization to Inject Eunice-Monument Eumont SWD "G" 8 Rice Engineering & Operating, Inc. - Page 3

Part VII

- 1. An average injection rate of 8,000 bwpd and a maximum of 15,000 bwpd is projected.
- 2. The Eunice-Monument-Eumont SWD System is semi-closed.
- 3. Proposed SWD well to operate by gravity injection.
- 4. Injected fluid is produced water.
- 5. Not applicable.

Part VIII

The proposed injection zone, the San Andres Formation, is a thick carbonate reef growth characterized by coarsely crystalline to cavernous porosity. The San Andres varies from 1000'-1200' in thickness and the bottom of this formation is at a depth of 5080' per the original well log. The only source of potable ground water in the area is in the Ogallala Aguifer and the lowest water sands per the well log are at 216'.

Part XI

See attached chemical analysis on water wells.

Part XII

Available geologic and engineering data has been examined and we have found no evidence of open faults or any other hydrologic connection between this disposal zone and any source of drinking water.

Reproduced Br
West Texas Electrical Log Service
1905 Commerce Street
Dollar 1, Texas

REFERENCE Nº A 2533 -D

ZCR			111	ll st	100 B 1 1 1 1 1 1 1 1	(oriertie	
300					HA RAT -	NEUTRON	
	ĪĪ	COMPAN	Y_CU		393E	1980, L EF 1980, L NF focation of	Wall
i I	2303	WELL	PHI	THETC	<u> </u>	Scc.8-205-	376
Honument Mintmexer	(a)	FIELD LOCATION		.8-20	5-37E	GRN (ES-ML-SI	3)
PIETO STATE OF THE	COMPANY	COUNTY_	LFA			Lievations D.F.s. K.B.s. or G.L	1260
3593	8	STATE	_NĐ	MEXI	<u>co</u>	FILING No	
Core Reading State Reading State Reading State Reading State Rept Reading State Readin	10 m	1513-54 5713 2503 5714 5714 661-51-61 10 61-61 10					
		116				The state of the s	
			20	MBINA	TION		٠ - :

Perioduced By West Texas Electrical Log Service 1995 Connect Street Dalla 1, Icrai

REFERENCE Nº W 1319 -B

	IBLROFR HTT IUR		VIII VE	rokperition
N Wonwent Nhi taeyer 1	COMPANY CULL WRIL HHI HELD HON LOCATION SEG	inete Jhent	R # 1	location of Well 1960! F. N. 2310! E. L. Sec. 8-205-37E ES-GRH (ML-SG) throsion: D.m. 3560
COUNTY L	COUNTY, LEA		co	fill or GI
Cig. Schlum. Cig. Schlum. Cig. Delila: Death Rearried Depth Rearried Depth Bottom Duller Depth Bottom Mud Not. Deasily	1759-8655 3571655 366-3		6 77 6 75 6 75 6 75 6 75 6 75 6 75 6 75	C Neis C les
WE CELO	ROTA COMPLETE	SCHLU	MICRGER 10	5.
	IS-POTENTIAL ivolis	SKEARC		SISTIVITY ims. m ^e /m
	20	2	0 10*	Honnal 175

RETOLITE DIVISION

353 Marshall Avenue / Saint Louis, Missours 63119 (314) 961-3500 / TWX 910-760-1660 / Telex 44-2417

WATER ANALYSIS REPORT

Company

Rice Engineering & Operating Co.

Submitted by: Gaskin Sampled by: Gaskin

Source

Sample Point: Windmill "A"

Approx. 1200'FEL &

2350' FNL Sec. 7, T20S,

Sample Date: 9/25/81

R37E

Analysis Date: 10/5/81

SAMPLE ANALYSIS

Appearance: Clear

Sp. Conductivity: 5960 micromhos/cm

Color: Colorless

H2S: Neg.

Constituent	PPM
Sodium	379
Potassium	0.70
Lithlum	1
Calcium	
Magnesium	
Barium	
Strontium	0.000
Aluminum	
Silver	
Arsenic	
Chromium	
Copper	
Iron	
Mercury	
Lead	
Antimony	olicais pipipi le su
Titanium	
Zinc	
Boron	
Phosphate	
Chloride	Y
Sulfate	
Bicarbonate	

Sum of cations: 59.2 Sum of anions: 58.7

Ion Balance

Measured: 3100 ppm Calculated 3420 ppm TDS Balance

RECEIVED

<1. 79.5

OCT 8 1961

RICE ENGINEERING & OPERATING, INC. HORBS, N. H.



TRETOLITE DIVISION

369 Marshali Avenue / Saint Louis, Missouri 63119 (314) 961-3500 / TWX 910-760-1660 / Telex 44-2417

WATER ANALYSIS REPORT

Company

Source

Rice Engineering & Operating Co.

Sample Point: Water well (elec) "B"

Approx. 700' FEL & 1700 FSL Sec. 8, T20S, R37E

TO

FILE

Submitted by: Gaskin Sampled by: Gaskin

Calculated: 1840 ppm

Sample Date: 9/25/81 Analysis Date: 10/5/18

OCT 8 1981

RICE ENGINEERING & OPERATING, IKC.

unbes, N. W.

SAMPLE ANALYSIS

Color: Colorless Appearance: Clear Sp. Conductivity: 2990 H2S: Neg. pH: PPM Constituent 281 3.69 Lithium . 1 190 Magnesium 74.8 Barium 1.11 4.62 Strontium Aluminum ×.03 Silver <.003 4.1 €.01 Chromium 4.002 .003 £.03 Mercury Leaders <.05 Antimony........ x.4 Tin <.1 Titanium <.002 Zinc294 Boron549 Phosphate <.1 Chloride 632 Sulfate 251 Bicarbonate 322 Carbonate €.1 81.2 Sum of cations: 28.1 meg/1 Ion Balance RECEIVED Sum of anions: 28.5 meg/1 Measured: 1500 ppm

TDS Balance

RETOLITE DIVISION

369 Mershall Avenue / Saint Louis, Missouri 63119 (314) 961-3500 / TWX 910-760-1660 / Telex 44-2417

WATER ANALYSIS REPORT

Company

Rice Engineering & Operating Co.

Submitted by: Gaskin Sampled by: Gaskin

Source

Sample Point: Windmill "C" Approx.
600' FWL 6 1400' FSL
Sec. 9, T20S, R37E

Sample Date: 9/25/81

Analysis Date: 10/5/81

SAMPLE ANALYSIS

Appearance: Clear

Sp. Conductivity: 3310 micromhos/cm

pH: 7.6

Color: Colorless H2S: Neg.

Constituent		PPM	
Sodium		361	
Potassium	*****	5.68	
Lithium	,	1.09	
Calcium		2x19(2	19.)
Magnesium		69.3	
Barium		1.4	
Strontium		4.15	
Aluminum		<.03	
Silver		<.003	
Arsenic		4.1	
Chromium		<.01	
Copper		.08	
Iron	entre de la companya	. 682	
Mercury		<.03	•
Lead		∢. 05	
Antimony		2.4	
Tin		4.1	
Titanium		<.002	
Zinc	• • • • • • • • • • • • • • • • • • •	.481	
Boron		.668	
Phosphate		~1	
Chloride		843	
Sulfate		175	The State of the S
Bicarbonate		322	
Carbonate		~].	
Silica		76.3	

Sum of cations: 32.6 meg/1 Sum of anions: 32.9 meg/1

Ion Balance

Measured: 1800 ppm

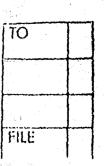
Calculated: 2080 ppm

TDS Balance

RECEIVED

OCT 8 1981

NCE CHEINECHING & OPENATING, 1122 unnas H M



P 335 767 740 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED --NOT FOR INTERNATIONAL MAIL
(See Clovers)

		N		(See Reverse)		
	1.	lit t	7.			
	P	et	r	y-Lewis Cor	P	
	þ		Ô	Box 506		i
¥	P.C	0,81	ATE	AND ZIP CODE lland, TX 7	0336	
		STA	_	tianu, in /	1330	-4
	···`			IEDFEE	143-	
	5	_	r		1/2	٠.
	12			ECIAL DELIVERY		١
	ž	198	7			ጘ
Control of	CONSULT POSTMASTER FOR PEES	23	336	EATE CLUVERED	60	۱
	S.	OPTIONAL SERVICES	SERVICE	SHOW TO WHOM, CATE.		-
Septiment of the septim	S	3	1993	AND ACCRESS OF CELIVERY		336
7	3	710	RETURN RECEIPT	SHOW TO WHOM AGO DATE DELIVERED WITH PESTS CHECK	6	.
	ž	Ö	NES.	KINTH O	1-1-	į
200	٦		RET	SHOW TO SHOW ITS PAY	151	.
2/2			ا. ا	RESTRICTED TRUMERS ST	1/2/-	-
				INDENNOFFES 1981	<u> </u>	
o com some Apr	POS	ST M.	ARK	OR DATE VEFO		
3	-					1
Š						1
Š	gr.			· · · · · · · · · · · · · · · · · · ·		1
2						١

P 335 767 733 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL (See Reverse)

sti Po lo	o,si bł	ATE	hon Oil Com Box 2409 AND ZIP CODE , N. M. 882	pany 40ج			
PO	STA	GE		1,555			
	ÇE	RTH	HEDFEE	75.			
IR FEES			ECIAL DELIVERY STRICTED DELIVERY	6			
STE9 FO	SERVICES	MICE	SHOW TO WHOM AND CATE DOLINE FIED	600			
SULT POSTIMASTER FOR FEES	TONAL SERV	RETURY RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF BELIVERY	¢			
CONSULT	CIPTION	RYREC	SECH TO WHOM AND DATE DELIVERED WITH PESTB. CHECK DELIVERED	×.			
8		RETU	SHOW TO WHEVE CATE AND ACCRESS OF VELCEN WAN RESTRICTED FELLWARY	1.			
1			TAGE AND TEES 100	1.79			
0.	POSTMARX OR DATE						

P 335 767 734 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL (See Reverse)

		NTT		0:1 0					
				Oil Corpor	ation				
	Į šii P	REE	ô	Box 670					
		o b		AND ZIP CODE	240				
		STA			133				
	-	CC	ATIF	IEDFEE	775 .				
	SES		SP	ECIAL DELIVERY	6				
	3 RC		FIE	STRICTED DELIVERY					
	STER P	Sagu	MICE	SHOW TO WHOM AND DATE DELIVERED	60.				
	CSTMA	AL SERI	1PT SER	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	•				
	CONSOLT POSTMASTER POR FEES	OFTION	OPTIONAL SERVICES	OFTION	UNITA	UNOITYO	RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE OF THE PROPERTY OF THE P	•
	8		RETU	SHOW TO WHEN, DUTE AND ADOPESS OF CENVERY WILL HESTER CTED CLIVERY	201.				
	TO	TAL:	205	TAGE AND EES	WIKE				
	PO.	STM	ĀRK	OR DATE (1000) - 				
				10,00	13/				
-					* . *				
1									

F 335 767 741 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL (See Reverse)

		11.	برا). خاند شد	(See Reverse)		
	SEI	11 T) l	nion Texas eum Corp.		
	1	30	ÔNI	Wilco Buil	ding	÷ :
1	P.0	i d	1 a	and rexas	79701	1
	10	STA	3E		125	
		C+	RTIF	IEDFEE	75	¢
	SES		-	ECIAL DELIVERY		¢
0	8		RE	STRICTED DELIVERY		
	STMASTER FOR FEES	ICES	VICE	DATE CAT MANON WAND	60	•
		SERVICES	T SERVIC	SHOW TO WHOM CHIE.		¢
	CONSULT R	OPTIONA	RETURN RECEI	SHOW TO WHOM AND CATE OF THE FEED WITH RESTRICTED OCTOBERT		4
	ğ		RETUR	HINK TO WHOM, DATE AND HINK YAS CELLY BY WITH PENSOCIOLOGY WENT CELLY BY		¢
rm:3800, Apr. 1976	1 .		- /	TAGEANDFLES	.7.7	5
Ap:	PO	STM	MÁR	ON CONTRACTOR OF THE CONTRACTO		
88			1	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
E	1			/ "J"		

P 335 767 742 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL (See Reverse)

		VI I		7	
	10.0)h	- F	H. Hendrix	Corp.
	1.12	COLOR D		idland Towe	er
	MS	i d	l a	nd, Texas	79701
	10	STA	GE		135
		CE	RTII	IEDFEE	175 .
	SES	_	SF	PECIAL DELIVERY	•
	8		RE	STAICTED DELIVERY	¢
Ç	OSTMASTER FOR FEES	SERVICES	AICE.	S4CW TO WHOM AND CATE DELIVERED	60.
	OSTWA	al SERI	7 5	SHOW TO WHOM DATE. AND ADDRESS-OF SHOWERY	
	CONSULT	NCILAO	RETURN RECE	SHOW TO WHOM AND DATE IN LIVERED WITH RESTRICTED SECIVERY	ŧ
0	ខ		RETU	POWER CANADAM	•
7	- 1			AGE AND FEE	1170
<	POS	184	HK	Junia Co	/
3	·			ノメンジ	
rorm sew, Apr. 1976	-				
^ 1				*	

P 335 767 735 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED --HOT FOR INTERNATIONAL MAIL (See Reverse)

(22		_	(Coc Hoveree)		
∦ G	e i	tt	y Oil Compa	ny	
\$3	REE	0	Box 730		
P.C).,S	TATE	EANDZIPCODE S, N. M. 88	240	، سوڙي پ
PO	STA	GE		[133]	
	CE	RTI	FISO FEE	25	¢
EES		s	PECIAL DELIVERY		¢
8		RE	STRICTED DELIVERY		•
STER F	ICES	VICE.	SHOW TO WHOM AND DATE DELIVERED .	lo	ę
OSTMA	L SERVICES	PT SERVICE	SHOW TO WHOM DATE AND ACCRESS OF CREIVERY	-W-3.2	•
CONSULT 1 OSTMASTER FOR FEES	OPTICN	RETURN RECE	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY		c
8		RETUR	SHOW TO WHOM DATE AND A CHESS OF KLEWER WHILE AND A STRONG THE HERE		
			AGE ATT HER CA	170	,
			Tot Zo		-
	5.17				- [
1					1

P 335 767 736 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDEO— NOT FOR INTERNATIONAL MAIL

٤.,		TO ET	C	onoco Inc. Box 460	
1	10) D	bs	NDZIP COOL	240
P	os	TAG	E		-77-
Γ	T	CEI	TIFE	EDFEE	1/5
١,	١,	1	CDS	CIAL DELIVERY	
Įĕ	١ ؛	- }	RES	STRICTED DELIVERY	
18	5	ν. Vėj	[SHOW TO WHOM AND DATE WELL WELL OF	60
	POSTMESTER FUNDE	L SERVICES	RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ALCAESS OF CELIVERY	
	CONSUL	OPTICKAL	RN RECE	SHOW TO WHOM AND DATE TELMINED WITH RESTRICTE SELVERY	
١	8		nETU.	SHOW TO WHOM CATE AND ADDRESS OF DELIVERY PESTRICIED CELIVERY	150
l	10	TAL	209	TAGE AND FEED)\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
				KORDATE I	1001
۲,	ľ.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			1901
S Forth John, April 1					USIV
ř					
ö	ļ	2			

P 335 767 737 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PADVIDED— NOT FOR INTERNATIONAL MAIL (See Reverse)

	(Secritive)	
1.11.1	Company	d Gas
P. O	ноно . Вох 1710	
PO.STAT	E AND ZIP CODE	
Hobb	s, N. M. 882	240
HUSIAGE		1 25
l l	FIEDFEE	73:
S S	PECIAL DELIVERY	¢
8 6	ESTRICTED DELIVERY	6
STER FOR FEES ICES	CATE CATALOGUES OF THE CATALOG	bo.
AL SERI	SHOW TO WHOM, DATE, ASD ACCRESS OF DELIVERY	•
CONSULT POSTMA OPTIONAL SERVE	SHEW TO WHOM AND DATE DELIVERED WITH RESTRICTED THE LIVERY	- (6)
S L	SHOW TO WHOM ESTE AND ADDRESS OF LYCALRY MITH- FESTECTED YOUNGERY	3.
	TAGE AND FES SC	\$2
POSTMAR	COR DATE O	4/./
		/.J
1	WI	

P 335 767 739 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL

		. 11		(See neverse)	
	SE	%I		Cooper Brot Immy Cooper	hers
ž.	ŞT	RSE	TAN	DNO.	
	P		0,	. Box 55	
	P.0	o,s	i. TE	AND ZIP CODE	
1	M	on	iun	nent, N.M.	88265
ı	Р0	STA	ĊΕ		13.55
Ì		CE	RTIE	FIEDFEE	De c
1			,	بالشبية بالمتابعة فصيباته يصفه لأشياع	1.0
I	ä	ľ	SF	PECIAL DELIVERY	•
İ	OR FEES		RE	STRICTED DELIVERY	7 (
ł		1	7.7	Show to promise	
į	315	S	ğ	CATE DELIVERED	60
I	₹.	8	5	SHOW TO WHO'N PATE.	
ı	CONSULT POSTMASTER	CPTICHAL SERVICES	RETURN RECEIPT SERVI	AND ADDRESS OF LEUVERY	•
ĺ	٤I	ž.	Š	SHOW TO WHOM AND DATE	
١	ន្ត	K	ĕ	DETINENED MATERIAL STREET	ا ،
Į	ă	0	ŝ	MUMAY	
Į	9		ij.	SON PANOL DATE AND POCKESS OF DECLES PORTURE PESTAL HOLE CALL	$\langle \cdot \rangle = \langle \cdot \rangle$
ı		- 1	-	restation (36)	121
ţ	101	AL	051	TAGE AND TEES TO	100
L				1.806	74.14.2.1
ŀ	POS	ilali	ark.	OILDAIL	c/ 1
l				100	.27 I
l					- 1

P 335 767 738 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— HOT FOR INTERNATIONAL MAIL (See Reverse)

	An		r a	da Hess Cor	р.
	p ^{S1}	33A)	AAT C	Drawer "D"	!
				ent, N.M. 8	8265
	100	GTA	GE		1.35
		CE	RIII	EOFEE	75.
	33		SF	ECIAL DELIVERY	¢
	8		Řξ	STRICTED DELIVERY	C
	STE3 F	70.5	:A:C:	SHOW TO WHOM AND CATE CETIVENED	00
	POSTINA	OPTIONAL SERVICE	RECEIPT SERVIC	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	•
	CONSULT POSTINASTER FOR PEES	CPTION	PN REC	SHOW TO WELL AND ONLE OCCUPEND WITH THE STRUCTED THE SERVE OF THE STRUCTED	¢
و	ថ		RRUGH	SEELE CHARLOL SOF YOU	6
Form 3800, Apr. 1976			1.	AGETO DIEES	170
ω.A					•
m 38					
For				3	



COMPANY Rice Eng. & Oper.-EME SWD System

Hobbs, NM

WATER ANALYSIS REPORT

ADDRESS.



DATE: 11/11/81

OURCE _	Gulf Oil Be	ACCED WILLOWS	DATE SAMPL	.EU <u>11 1</u>	17.01	NO	
	Analy	yois Monument Paddock		Mg/L		*Meq/L	¥ <u>1</u>
1.	. pH	6,3					And the state of the
2.		tive)					
3.	The second of the second of the				182	And Annual Control of the Annual Control of	
4.	. Dissolved Soli	and the second s		20072	<u> </u>		
5.	. Suspended Sc	olids — A — jee		-0-		n eta 2016. Guerra	
6.	Phenolphthale	in Alkalinity (CaCO3)		-0-			
7.		Alkalinity (CaCO ₃)		1200			
8.	Bicarbonate (HCO ₃)	нсо,1	1464	÷61	24	нсо,
9.				566	÷35.5	269	CI
10.	Sulfates (SO4			87 5	÷48	39	so,
11.	. Calcium (Ca)		co	.00	÷20	5	Co
12.	Magnesium (Mg)	Mg <u>4</u>	86	÷12.2 .	39	Mg
13.	Total Hardne	ss {CaCO ₃ }	_4	500			
14.	Total Iron (Fe	e)					
							1.0
15. 16.	Barium (Qual		2	75			
15. }6.	Barium (Qual Strontium illi equivalents p	PROBABLE A	MINERAL COMPO	SITION	uiv. Wt. X	Meq/L	= Mg/L
15. }6.	Barium (Qual	er liter	MINERAL COMPO	SITION	uiv. Wt. X 81.04	Meq/L 5	= Mg/l 405
15. 16. • M	Barium (Qual Strontium illi equivalents p	PROBABLE A	MINERAL COMPO	SITION Equ	17 ft 1 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -	7	and the second of the second of the
15. 16. • M	Barium (Qual Strontium illi equivalents (PROBABLE A HCO ₃ 39	Ca (HCO ₃) ₂	<u>SITION</u> Equ	81.04	5	405
15. 16. 16. 18. 18.	Strontium Strontium Illi equivalents f Ca Mg	PROBABLE A → HCO ₃ → SO ₄ → SO ₄ → CI 269	Ca (HCO ₃) ₂	SITION Equ	81.04 68.07	<u>5</u> -0-	405 -0-
15. 16. 16. 18. 18.	Strontium Strontium illi equivalents p	PROBABLE A HCO ₃ 39	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂	SITION Equ	81.04 68.07 55.50	5 -0- 0-	405 -0- -0-
15. 16. 'M	Barium (Qual Strontium illi equivalents (Ca Mg Na	PROBABLE A PROBABLE A HCO ₃ 24 39 Cl 269 Distilled Water 20°C 13 Mg/L	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂ Mg (HCO ₃) ₂	<u>SITION</u> Equ	81.04 68.07 55.50 73.17	5 -0- 0- 19	405 -0- -0- 1390
15. 16. 'M	Strontium Strontium illi equivalents p Ca Mg Na Na turation Values Ca CO3	PROBABLE A PROBABLE A HCO ₃ 24 39 Cl 269 Distilled Water 20°C 13 Mg/L	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂ Mg (HCO ₃) ₂ Mg SO ₄	SITION Equ	81.04 68.07 55.50 73.17 60.19	5 -0- 0- 19 20 -0- -0-	405 -0- -0- 1390 1203 -0- -0-
15. 16. 'M	Barium (Qual Strontium Alli equivalents p Ca Mg Na Na Na Turation Values Ca CO ₃ Co SO, • 2H	PROBABLE A HCO3 39 CI 24 39 CI 269 Distilled Water 20°C 13 Mg/L 2,090 Mg/L	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂ Mg (HCO ₃) ₂ Mg SO ₄ Mg Cl ₂	<u>SITION</u> Equ	81.04 68.07 55.50 73.17 60.19 47.62	5 -0- 0- 19 20 -0- -0- 19	405 -0- -0: 1390 1203 -0-
15. 16. 16. 18. 18.	Barium (Qual Strontium Alli equivalents p Ca Mg Na Na Na Turation Values Ca CO ₃ Co SO, • 2H	PROBABLE A HCO3 39 CI 24 39 CI 269 Distilled Water 20°C 13 Mg/L 2,090 Mg/L	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂ Mg (HCO ₃) ₂ Mg SO ₄ Mg Cl ₂ Na HCO ₃	<u>SITION</u> Equ	81.04 68.07 55.50 73.17 60.19 47.62	5 -0- 0- 19 20 -0- -0-	405 -0- -0: 1390 1203 -0- -0-
15. 16. 'M	Barium (Qual Strontium illi equivalents (Mg Na Na turation Values Ca CO ₃ Ca SO ₄ • 2H Mg CO ₃	PROBABLE A HCO3 39 CI 24 39 CI 269 Distilled Water 20°C 13 Mg/L 2,090 Mg/L	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂ Mg (HCO ₃) ₂ Mg SO ₄ Mg Cl ₂ Na HCO ₃ Na ₂ SO ₄ Na Cl	<u>SITION</u> Equ	81.04 68.07 55.50 73.17 60.19 47.62 84.00	5 -0- 0- 19 20 -0- -0- 19	405 -0- 1390 1203 -0- -0- 1349
15. 16. 16. 18. 18. 18. 18. 18. 18. 18. 18. 18. 18	Barium (Qual Strontium illi equivalents (Mg Na Na turation Values Ca CO ₃ Ca SO ₄ • 2H Mg CO ₃	PROBABLE A PROBABLE A HCO3 24 39 CI 269 Distilled Water 20°C 13 Mg/L 2,090 Mg/L 103 Mg/L	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂ Mg (HCO ₃) ₂ Mg SO ₄ Mg Cl ₂ Na HCO ₃ Na ₂ SO ₄ Na Cl	<u>SITION</u> Equ	81.04 68.07 55.50 73.17 60.19 47.62 84.00	5 -0- 0- 19 20 -0- -0- 19	405 -0- 1390 1203 -0- -0- 1349
15. 16. 16. 16. 18.	Barium (Qual Strontium illi equivalents (Ca Mg Na Na Na Iuralion Values Ca CO3 Ca SO4 • 2H Mg CO3	PROBABLE A PROBABLE A HCO3 24 39 CI 269 Distilled Water 20°C 13 Mg/L 2,090 Mg/L 103 Mg/L	Compound Ca (HCO ₃) ₂ Ca SO ₄ Ca Cl ₂ Mg (HCO ₃) ₂ Mg SO ₄ Mg Cl ₂ Na HCO ₃ Na ₂ SO ₄ Na Cl	<u>SITION</u> Equ	81.04 68.07 55.50 73.17 60.19 47.62 84.00 71.03	5 -0- 0- 19 20 -0- -0- 19 269	405 -0- 1390 1203 -0- -0- 1349



TRETOLITE DIVISION 369 Marchall Arease / Saint Louis, Missouri, 63119 (314) WO 1-3500/TWX 910-760-1860/Telex 44-2417

WATER ANALYSIS REPORT

OURCE Gulf -Bertie Whitmire #3		1	1/11/81	ANALYSIS	1/11/81
Anglysis Blinebry	DATE SAMP	1EU	1/1	NO *Meq/l	
All the growth of the control of the			, ,		
1. pH <u>6.4</u>					
2. H ₂ S (Qualitative)	And the second				
3. Specific Gravity 1.005		01070			
4. Dissolved Solids		21370			aniyi lli .
5. Suspended Solids	——————————————————————————————————————	-0 <i>-</i> -0 <i>-</i>			e distribution de la companya de la Particologia de la companya de la c
6. Phenolphthalein Alkalinity (CaCO ₃)	-		**************************************		
7. Methyl Orange Alkalinity (CaCO ₃)		1400		۸۵	
8. Bicarbonate (HCO ₃)	. нсо,	1708	= 51	28	HCO;
9. Chlorides (CI)		10218		287	CI
10. Sulfates (SO ₄)		1700		35	50,
11. Calcium (Ca)		136	÷20	<u> </u>	Co
12. Magnesium (Mg)	, my	267	-12.2	21	Мэ
13. Total Hardness (CaCO ₁)		4500		Se e	so is
14. Total from (Fe)	a-la-		<u></u>		
15. Barium (Qualitative)	_1	50			· · · · · · · · · · · · · · · · · · ·
16. Strontium					
*Milli equivalents per liter	MINERAL COMPO	SITION			
, ROMALL ,			•		
6 Co ← HCO ₃ 28	Compound		Equiv. Wt. X	Meg/L 6	= Mg/L 486
	Ca (HCO ₃) ₂		81.04	12	
21 Mg SO, 35	_ Ca SO,		68.07	0	0
323 No CI 287	不 그는 사람이 되었다고 하는 사람들이 다	**	55.50	21	1526
Saturation Values Distilled Water 20°C	Mg (HCO3)		73.17		1536
Ca CO ₃ 13 Mg/L	Mg SO,		60.19	0,	0
Co SO. • 2H ₁ O 2,090 Mg/L	Mg Cl ₂		47.62	9	0
Mg CO ₃ 103 Mg/L	Na UCO3		84.00	1	84
	Na ₂ SO ₄		71.03	35	2486
	No CI		58,46	287	16778
MARKS cc: J. LeFlohic, L. Goodhea	rt				
	·				
G. Knorr, E. Speck					
	£1			fully submitted	
			Mike	A. Hill	



TRETOLITE DIVISION 369 Marshall Avenue / Saint Louis, Missouri 63119 13141 WO 3-3500/TWX 910-760-3660/Telex 44-2417

WATER ANALYSIS REPORT

Gulf	ns ADDRESS	Hobbs, NM		11/11/81
URCE Bertie Whitmire-Heater Treater	DATE SAM	PLED 11/11/81	ANALYSIS	
Analysis Co-mingled Monument Bline				
1. pH	WY THIONE	MENI I MORE		
1 010	·			
5. Specime Gravity		22667		
4. Dissolved Solids	- 			
5. Suspended Solids			The second state of the second	
6. Phenolphihalein Alkalinity (CaCO3)	•	1100		
7. Methyl Orange Alkalinity (CaCO3)		1100	60	
8. Bicarbonate (HCO ₃)	HCO, _	1342 ÷61	22	HCO,
9. Chlorides (CI)	CI _	1130 ÷ 35		CI
10. Sulfates (SO ₄)	sO ₄ _	1800 ÷48	37	\$O,
11. Calcium (Ca)	Co _	120 20	6	Co
12. Magnesium (Mg)	Mg _	437 - 12.2	35	Мд
13. Total Hardness (CaCO ₁)		4800		
14. Total Iron (Fe)	*			
15. Barium (Qualitative)		325		
16. Strontium				** .
*Milli equivalents 21 liter	NERAL COMP	ACITIANI		
PROBABLE MI	HACKAL CENTE	<u>OJIIION</u>		
Co ←	Compound	Equiv. Wt.	X Meq/L =	≕≔ Mg/L
4 1 3 1 20 1				
6 22	Co (HCO ₃);	81.04	6	486
	Co (HCO ₃) ₂	81.04 68.07	0	0
35 Mg				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Co SO ₄	68.07 55.50	0	<u> </u>
35 Mg — SO ₁ 37	Co SO ₄ Co Cl ₂	68.07 55.50	0	0 0 0
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Co SO ₄ Co Cl ₂ Mg (HCO ₃)	68.07 55.50 73.17	0 0 16	0 0 0
Soluration Values Distilled Water 20°C Ca CO ₃ 13 Mg/L	Co SO ₄ Co Cl ₂ Mg (HCO ₃) Mg SO ₄	68.07 55.50 73.17 60.19	0 0 16 19	0 0 1170 1143
Soluration Values Distilled Water 20°C Ca CO ₃ 13 Mg/L Ca SO ₄ • 2H) 2,090 Mg/L	Co SO ₄ Co Cl ₂ Mg (HCO ₃) Mg SO ₄ Mg Cl ₂ No HCO ₃	68.07 55.50 73.17 60.19 47.62	0 0 16 19	0 0 1170 1143 0
Soluration Values Distilled Water 20°C Ca CO ₃ 13 Mg/L Ca SO ₄ • 2H) 2,090 Mg/L	Co SO ₄ Co Cl ₂ Mg (HCO ₃) Mg SO ₄ Mg Cl ₂ No HCO ₃	68.07 55.50 73.17 60.19 47.62 84.00 71.03	0 0 16 19 0	0 0 1170 1143 0 0
35 Mg — 37 37 37 336 No — CI 318 Soluration Values Distilled Water 20°C Ca CO ₃ 13 Mg/L Ca SO ₄ · 2H) 2,090 Mg/L Mg CO ₃ 103 Mg/L	Co SO ₄ Co Cl ₂ Mg (HCO ₃) Mg SO ₄ Mg Cl ₂ No HCO ₃	68.07 55.50 73.17 60.19 47.62 84.00	0 0 16 19 0 0	0 0 1170 1143 0 0
35 Mg — 37 37 37 336 No — CI 318 Soluration Values Distilled Water 20°C Ca CO ₃ 13 Mg/L Ca SO ₄ · 2H) 2,090 Mg/L Mg CO ₃ 103 Mg/L	Co SO ₄ Co Cl ₂ Mg (HCO ₃) Mg SO ₄ Mg Cl ₂ No HCO ₃	68.07 55.50 73.17 60.19 47.62 84.00 71.03 58.46	0 0 16 19 0 0	0 0 1170 1143 0 0
Soluration Values Distilled Water 20°C Ca CO ₃ 13 Mg/l Ca SO ₁ · 2H) 2,090 Mg/l Mg CO ₃ 103 Mg/l ARKS cc: J. LeFlohic, L. Goodheart	Co SO ₄ Co Cl ₂ Mg (HCO ₃) Mg SO ₄ Mg Cl ₂ No HCO ₃	68.07 55.50 73.17 60.19 47.62 84.00 71.03	0 0 16 19 0 0	0 0 1170 1143
35 Mg — 37 37 37 336 No — CI 318 Soluration Values Distilled Water 20°C Ca CO ₃ 13 Mg/L Ca SO ₄ · 2H) 2,090 Mg/L Mg CO ₃ 103 Mg/L	Co SO ₄ Co Cl ₂ Mg (HCO ₃) Mg SO ₄ Mg Cl ₂ No HCO ₃	68.07 55.50 73.17 60.19 47.62 84.00 71.03 58.46	0 0 16 19 0 0	0 0 1170 1143 0 0



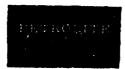
TRETOLOTE DIVISION
369 Marshall Avenue / Saint Lawis, Missauri 63119
13141-W0 1-3500/TWX 910-760-1660/Telix 44-2417

WATER ANALYSIS REPORT

OURCE		Anderson #1		DATE SAM	PLED 11/14	/81	ANALYSIS	
	Analysi 68	San Andres			Mg/L	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	'Meq/L	The following services
1.	рН	6.4						
2.	H ₂ S (Qualitative)		* * * * * * * * * * * * * * * * * * *					
3.	Specific Gravity	1.045						
4.	Dissolved Solids	Marian Valentina		· -	73415			
5.	Suspended Solids			_	0	<u> </u>		
6.	Phenolphthalein Alk	alinity (CaCO ₃)		en e	0			
7.	Methyl Orange Alkal	Inity (CaCO ₁)		-	650	<u></u> 1		
8.	Bicarbonate (HCO:	31		HCO, _	793	_ ÷61	13	нсо,
9.	Chlorides (CI)			CI _	41,306	_ ÷35.5	1164	CI
10.	Sulfates (SO ₄)			so, _	3750	÷48	78	so.
11.13	Calcium (Ca)			Cα _	3400	÷20	170	Co
12.	Magnesium (Mg)			Mg _	850	÷12.2 .	70	Mg
13.	Total Hardness (Co	aCO,}			12000			
. 14.	Total from (Fe)							
15.	Barium (Qualitativ	e)			250			
16. *Mill	Strontium li equivalents per lit		E MINERA	LCOMP	OSITION			

				details and provide
Co HCO3 12	Compound	Equiv. WI. X	Meq/L ==	≝ Mg/L
170	Ca (HCO ₃) ₂	81.04	13	1053_
70 Mg	Ca SO ₄	68.07	78	5309
1015 Na CI 1164	Ca Cl ₂	55.50	79	4384
	Mg (HCO ₃) ₂	73.17	0	0
Saturation Values Distilled Water 20°C Ca CO ₃ 13 Mg/L	Mg SO ₄	80.19	0	0
Ca SO, • 2H,O 2,090 Mg/L	Mg Cl ₂	47.62	70	3333
Mg CO ₃ 103 Mg/l	No HCO3	84.00	0	0
	Na ₂ SO ₄	71.03	0	0
	Na Cl	58.46	1015	59336
REMARKS cc: J. LeFlohic, L. Goodheart	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			
G Knorr E Speck				
			fully submitted ITE COMPANY	

Mike A Hill



TRETOLITE DIVISION
369 Marshall Avenue / Saint Levis, Misseuri 63119
(314) WO 1-3500/TWX 910-760-1660/Telex 44-2417

WATER ANALYSIS REPORT

OURCE	EME SWD Well M	- 5	DATE SAMPLE	11/14/81	ANALYSIS — NO	
	Analysis	-	255	Mg/L	'Meq/L	
1.	рН	7.0				
2.	H2S (Qualitative)					
3.	Specific Gravity	1,000				
4.	Dissolved Solids		1	4,920		
5.	Suspended Solids	1 - 2 x		0		
6.	Phenolphthalein Alka	linity (CoCO.)		0		
7.	Methyl Orange Alkalir	• • • • • • • • • • • • • • • • • • •	1	050	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
8.	Bicarbonate (HCO3)		HCO,1	281 - 61	21	нсо,
9.	Chlorides (CI)			174	202	CI
10.	Sulfates (SO ₄)		so. <u>1</u>	175 -48	24	\$0.
"H.	Colcium (Co)		Co 10	040 ÷20	54	Co
12.	Magnesium (Mg)		Mg2	<u> 19</u> - 12.2	18	Mg
13.	Total Hardness (Cal	CO ₃ 1	3.	500		
14.	Total Iron (Fe)			10-10-10-10-10-10-10-10-10-10-10-10-10-1		
15.	Sarlum (Qualitative	r in the second	v ^{e.1.1} .	300		
16.	Strontium					
· Mill	i equivalents per lite		NICONI COMPOSI			
		PKOBABLE MI	NERAL COMPOSI	IION		and the second
	Co (HCO ₃	Compound	Equiv. Wt.)		
54		$\xrightarrow{\text{lico}_3} \left \begin{array}{c} 21 \\ \end{array} \right $	Co (HCO ₃) ₂	81.04	21	1701
18	M9	→ so ₄ 24	Ca SO ₄	68.07		1633
175	No	→ CI 202	Ca Cl ₂	55.50	9	499
Satu	ration Values Disti	lled Water 20°C	Mg (HCO ₃) ₂	73.17	0	0
	Co CO3	13 Mg/L	Mg SO ₄	60.19	0	0
	Co \$O. • 2H.O	2,090 Mg/L	Mg Cl ₂	47.62	18	857
	Mg CO ₃	103 Mg/L	Na MCO3	84.00	0	0
			Na ₂ SO ₄	71.03		
	en e		Na Cl	58.46	175	10230
MARKS	cc: J LeFlohi	c, L Goodheart	<u> </u>			
	4 Martin					
	A					
	G Knorr, I	S Speck			ifully submitted	

porkets Nos. 38-81 and 39-81 are tentatively set for December 2, and December 15, 1981. Application for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - THUR DAY - NOVEMBER 19, 1981

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM STATE LAND OPPICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

- ALLOWABLE: (1) Consideration of the allowable production of gas for December, 1981, from fiftuen provated pools in Lea, Eddy and Chaves Counties, New Mexico.
 - (2) Consideration of the allowable production of gas for December, 1981, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.
- CSE 7410: Application of B.O.A. Oil & Gas Company for two unorthodox oil well locations, San Juan County,
 New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of
 a well to be drilled 2035 feet from the South line and 2455 feet from the East line and one to
 be drilled 2455 feet from the North line and 1944 feet from the East line, both in Section 31,
 Township 31 North, Range 15 West, Verde-Gallup Oil Pool, the NW/4 SE/4 and SW/4 NE/4, respectively,
 of said Section 31 to be dedicated to said wells.
- CASE 7356: (Continued from October 21, 1981, Examiner Hearing)

Application of S & I Oil Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the W/2 SW/4 of Section 12, Township 29 North, Range 15 West, Cha Cha-Gallup Oil Pool, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

- CASE 7411: Application of Viking Petroleum, Inc., for an unorthodox gas well location, Chaves County, New Mexico.

 Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 330 feet from the North and East lines of Section 12, Township 11 South, Range 27 East, the NE/4 of said Section 12 to be dedicated to the well. (This case will be dismissed).
- Application of Gulf Oil Corporation for salt water disposal, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Lower Yates, Queen, San Andres and Delaware formations in the open hole interval from 4375

 Leet to 7452 feet in its Lea "ZD" State Well No. 1 located in Unit. N es Section 30, Township 13 South, Range 35 East, Air-Strip Field.
- Application of Gulf Oil Corporation for Directional Drilling, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks authority to directionally drill its Arnott Ramsey Well No. 12, the surface location of which is 500 feet from the South line and 1400 feet from the East line of Section 32, Township 25 South, Range 37 East, to a bottomicle location within 150 feet of a point 500 feet from the South line and 800 feet from the East line of Section 32, Township 25 South, Range 37 East, Langlie Mattix Pool, the SE/4 SE/4 of said Section 32 to be dedicated to the well.
- CASE 7414: Application of Gulf Oil Corporation for downhole commingling, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks approval for the downhole commingling of the Drinkard and Wantz-Granite Wash production in the wellbore of its Hugh Well No. 10, located in Unit C of Section 14, Township 22 South, Range 37 East.

- CASE 7415; Application of Gulf Uil Corporation for downhole commingling, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks approval for the downhole commingling of the Tubb and Drinkard production in the wellbore of its T. R. Andrews Well No. 3, located in Unit J of Section 32, Township 22 South, Range 38 East.
- CASE 7379: (Continued from October 21, 1981, Examiner Hearing)

Application of JEM Resources, Inc., for vertical pool extension and special GOR limit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the vertical extension of the Cave-Grayburg Pool to include the San Andres Formation, and the establishment of a special gas-oil ratio limit for said pool to 6000 to one or, in the alternative, the abolishment of the gas-oil ratio limit in said pool, all to be effective October 1, 1981.

CASE 7407: (Continued from November 4, 1981, Examiner Hearing)

Application of Mesa Petroleum Company for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Aboformation underlying the NE/4 of Section 23, Township 5 South, Range 24 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the ablocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

- Application of El Paso Natural Gas Company for pool creation and redelineation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks to contract the horizontal limits of the Jalmat Gas Pool by deleting therefrom all lands in Township 26 South, Range 37 East. Applicant also proposes to contract the horizontal limits of the Rhodes Yates Seven Rivers Oil Pool by deleting therefrom all of the gas productive lands in the North end thereof and to create the Rhodes Yates-Seven Rivers Gas Pool comprising all such deleted lands. Applicant further proposes the deletion of certain oil productive lands from said Rhodes oil pool and the extension of the Scarborough Pool to include said lands. Applicant further proposes to contract the horizontal boundaries of the Rhodes Gas Storage Unit to delete certain lands and wells not participating in the Rhodes Gas Storage Project and to withdraw without restrictionall gas remaining in the newly created Rhodes Gas Pool.
- CASE 7417: (This case will be dismissed.)

Application of Northwest Pipeline Corporation for 13 non-standard gas proration units, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for 13 non-standard Pictured Cliffs gas proration units ranging in size from 142.39 acres to 176.77 acres and each comprised of various contiguous lots or tracts in Sections 4,5,6,7, and 18 of Township 31 North, Range 7 West. Said proration units result from corrections in the survey lines on the North and West sides of Township 31 North, Range 7 West and overlap seven non-standard Mesaverde privation units previously approved by Order No. R-1066.

- CASE 7418: Application of Morris R. Antwell for special pool rules, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the West Nadine-Drinkard Pool including a special gas-oil ratio of 6,000 to one.
- CASE 7419: Application of Morris R. Antweil for special pool rules, Lea County, New Mexico.

 Applicant, in the above styled cause, seeks the promulgation of special pool rules for the West Nadine-Blinebry pool including a special gas-oil ratio of 4,000 to or;
- Application of Southland Royalty Company for two unorthodox oil well locations, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks approval for the unorthodox location of two previously
 drilled wells, the first being 760 feet from the South line and 660 feet from the East line of Section 5
 the other being 660 feet from the North and West lines of Section 9, both in Township 19 South, Range
 35 East, both to be plugged back to the Scharb-Bone Springs Pool, the S/2 SE/4 of Section 5 and the
 N/2 NW/4 of Section 9, respectively, to be dedicated to the wells.
- Application of Doyle Hartman for compulsory pooling, unorthodox well location and non-standard spacing unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Eumont Gas Pool underlying a 120-acre non-standard spacing unit consisting of the S/2 SW/4 and the NW/4 SW/4 of Section 3, Township 20 South, Range 37 East, to be dedicated to a well to be drilled at an unorthodox location 2,310 feet from the South line and 330 feet from the limit line of Section 3. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

- Page 3
 Examiner Hearing Thursday November 14, 1981
- CASE 7422: Application of Conoco, Inc. for dual completion and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Southeast Monument Unit Well No. 121, to produce oil from the Skaggs Grayburg and an undesignated Paddock pool through parallel strings of tubing. Applicant further seeks approval of the unorthodox location of said well 1310 feet from the North line and 1330 feet from the West line of Section 19, Township 20 South, Range 38 Eant, the NE/4 NW/4 of said Section 19: to be dedicated to the well.
- Application of Conoco, Inc., for a waterflood project, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks authority for three companies to institute a cooperative waterflood project in the Blinebry oil and gas pool by the injection of water into the Blinebry formation through 13 injection wells located on leases operated by Conoco, Shell Oil Company, and Southland Royalty Company, in Sections 33 and 34, Township 20 South, Range 38 East, and Sections 2 and 3, Township 21 South, Range 37 East.
- CASE 7424: Application of Rice Engineering and operating, Inc., for salt water disposal, Lea County, New Mexico.

 Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the
 Lower San Andres formation in the perforated interval from 4300 feet to 4852 feet in its Eunice
 Monument Eumont SWD "G" Well No. 8, located in Unit G of Section 8, Township 20 South, Pange 37 Fast.
 - CASE 7425: Application of H. L. Brown, Jr. for compulsory pooling and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the top of the San Andres formation to the base of the Pennsylvanian formation underlying the S/2 of Section 36, Township 16 South, Range 37 East, to be dedicated to a well to be drilled at an unorthodox location 554 feet from the South and West lines of said Section 26, provided that in the event the subject well encounters production in the Lasey-Strawn Pool and/or the West Knowles-Drinkard Pool, the lands pooled would be the W/2 SW/4 of said Section 26. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.
 - CASE 7426: Application of Phillips Petroleum Company for Amendment of Division Order No. R-5897 and Certification of a tertiary recovery project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the Amendment of Division Order No. R-5897, to include the injection of carbon dioxide in the previously authorized pressure maintenance project in the East Vacuum Grayburg-San Andres Unit, for conversion of existing injectors to water/carbon dioxide injection, and for certification to the Secretary of the IRS that the East Vacuum Grayburg-San Andres Unit Project is a qualified textiary oil recovery project.
 - CASE 7427: Application of Belco Petroleum Corporation for a special allowable, Eddy County, New Mexico.
 Applicant, in the above-styled cause, seeks an adjustment to the manner in which allowables are calculated for wells in the South Carlsbad-Morrow Gas Pool in order to grant relief to the over-produced status of its Douglas Com. Well No. I located in Unit H of Section 7, Township 22 South, Range 27 East, said well being subject to shut-in being more than six times its allowable over-produced. In the alternative, applicant seeks to make up the over-production at a rate less than complete shut-in by curtailing production from the well to 80 percent of its top allowable until it is back in balance.
 - CASE 7428: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating; and extending certain pools in Chaves, Eddy, Lea, and Roosevelt Counties, New Mexico.
 - (a) CREATE a new pool in Lea Cov cy, New Mexico, classified as a gas pool for Wolfcamp production and designated as the North Antelope Ridge-Wolfcamp Gas Pool. The discovery well is J. C. Williamson Triple A Federal Well No. 1 located in Unit F of Section 10, Township 23 South, Range 34 East, NMPM. Said pool would comprise:

TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM Section 10: N/2 and N/2 SW/4

(b) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Wolfcamp production and designated as the Diamondtail-Wolfcamp Pool. The discovery well is the Superior Oil Company Triste Draw Federal Well No. 1 located in Unit J of Section 14, Township 23 South, Range 32 East, NNPM. Said pool would comprise:

TOWNSHIP 23 SOUTH, RANGE 32 EAST, NNPM Section 14: SE/4

(c) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Bone Spring production and designated as the North Grama Ridge-Bone Spring Pool. The discovery well is the Hunt Oil Company State 4 Well No. 1 located in Unit T of Section 4, Township 21 South, Range 34 East, NNPM. Said pool would imprise:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM Section 4: SW/4

(d) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Wolfcamp production and designated as the Grassland-Wolfcamp Pool. The discovery well is C. F. Qualia State 23 Well No. 1 located in Unit K of Section 23, Township 15 South, Range 34 East, NMPM. Said pool would comprise:

TOWNSHIP 15 SOUTH, RANGE 34 EAST, NMPM Section 23: SW/4

(e) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Bone Spring production and designated as the North Lusk-Bone Spring Pool. The discovery well is Petroleum Development Corporation Shelly Federal Com. Well No. 1 located in Unit H of Section 5, Township 19 South, Range 32 East, EMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 32 EAST, NMPM Section 5: N4/4

(f) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Atoka production and designated as the McMillan-Atoka Gas Pool. The discovery well is Southland Royalty Company Pecos River 21 Federal Com Cell No. 1 located in Unit K of Section 21, Township 19 Louth, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 27 EASY, NMPM Section 21: S/2

(g) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Springs-Morrow Gas Pool. The discovery well is Jake L. Hamon State 33 Com Well No. 1 located in Unit I of Section 33, Township 20 South, Range 26 East, NNPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 26 EAST, NMPM Section 32: E/2 Section 33: All

(h) EXTEND the Antelope Ridge-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM Section 11: All Section 15: N/2

(i) EXTEND the Baldridge Canyon-Morrow Gas Pool in Eddy County, New Nexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 24 EAST, NMPM Section 14: N/2

(j) EXTEND the Bear Draw-Queen-Grayburg-San Andres Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 29 EAST, NMPM Section 28: N/2 SE/4

(k) EXTEND the Bluitt-Wolfcamp Gas Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH RANGE 37 EAST, NMPM Section 10: SE/4

(1) EXTEND the Buffalo Valley-Pennsylvanian Gas Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 15 SOUTH, RANGE 27 EAST, NMPM Section 4: All

Examiner Hearing - Thursday - November 14, 1981

(a) EXTEND the Bunker Hill-Penrose Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, PANGE 31 EAST, NMPM Section 13: SE/4 SW/4

(n) EXTEND the Burton Flat-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM Section 35: W/2

(0) EXTEND the Eagle Creek-Strawn Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM Section 27: N/2

TOWNSHIP 18 SOUTH, RANGE 25 EAST, NMPM Section 1: All

(p) EXTEND the Golden Lane-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 29 EAST, NMPM Section 8: S/2

(q) EXTEND the Kennedy Farms-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico to include therein:

> TOWNSHIP 17 SOUTH, PANGE 26 EAST, NMPM Section 34: N/2 Section 35: N/2

(r) EXTEND the North Mason-Delaware Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 26 SOUTH, RANGE 32 EAST, NMPM Section 8: S/2 S/2

(s) EXTEND the West Osudo-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SCUTH, RANCE 35 PAST, NMPM Section 35: N/2

(t) EXTEND the West Parkway-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 29 EAST, NMPM Section 29: W/2

(u) EXTEND the Peterson-Mississippian Pool in Roosevelt County, New Mexico, to include therein:

> TOWNSHIP 4 SOUTH, RANGE 33 EAST, NNPM Section 29: NE/4

(v) EXTEND the POW-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 26 EAST, NMPM Section 4: \$/2

(w) EXTEND the Saunders-Permo Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

> TOWNSHIP 14 SOUTH, RANGE 33 EAST, NMPM Section 32: NE/4

The ten thank which the ten thank the ten the ten thank the ten thank the ten thank the ten thank the ten the ten thank the ten thank the ten thank the ten thank the ten the ten thank the ten thank the ten thank the ten thank the ten the ten thank the ten the ten the ten thank the ten thank the ten the te

Examiner Hearing - Thursday - November 14, 1901

-5-14

(x) EXTEND the Scharb-Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 35 EAST, NMPM Section 8: NE/4

(y) EXTEND the East Siete-San Andres Pool in Chaves County, ew Mexico, to include therein;

TOWNSHIP 8 SOUTH, RANGE 31 EAST, NMPM Section 10: NE/4

(z) EXTEND the Teague-Abo Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM 8451 100 271 NW/4

(ap) EXTEND the Tom-Tom-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 7 SOUTH, RANGE 31 EAST, NMPM Section 28: SE/4

(bb) EXTEND the North Turkey Track-Morrow Gas Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 18 SOUTH, RANGE 29 EAST, NMPM Section 21: All

(cc) EXTEND the North Young-Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM Section 9: NE/4

RICE Engineering & Operating, Inc.

122 WEST TAYLOR

TELEPHONE (505) 393-9174

HOBBS, NEW MEXICO 88240 October 19, 1981

Director Oil Conservation Division Energy and Minerals Department P. O. Rox 2088 Santa Fe, New Mexico 87501 Case 7424

Re: Form C-108, Application for Authorization to Inject (Salt Water Disposal)

Gentlemen:

Rice Engineering & Operating, Inc., as operator of the Eunice-Monument-Eumont Salt Water Disposal System, Lea County, New Mexico, hereby respectfully applies for a hearing to be held before the Oil Conservation Division for the purpose of securing a permit under Rule 701 to recomplete the abandoned E-M-E SWD "G" Well No. 8 (old Gulf Oil Corporation-Bertie Whitmire Well No. 7), located in the SW/4 NE/4 of Section 8, Township 20 South, Range 37 East, Lea County, New Mexico, as a salt water disposal well in the lower San Andrews formation.

Rice Engineering & Operating, Inc. further Weboses and 1981 states the following:

- A. That said well is located 1980 feet from the AUTIMATION DIVISION and 2310 feet from the Bast line of Section 8, White Apple 20 South, Range 37 East, N.M.P.M., Lea County, New Mexico (see Dwg. No. A-517).
- B. That said well was drilled and completed as a producing oil well in the Monument Paddock Pool on February 6, 1954 and plugged and abandoned on May 6, 1975.
- C. That said well has 13-3/8" OD casing set at 463 feet, 9-5/8" OD casing set at 2900 feet and 7" OD casing set at 5"09 feet (see Dwg. No. A-516).
- D. That said well will be completed as a disposal well in the lower San Andres formation by (1) cleaning out to present PBTD of 4958 feet and perforating in several intervals from 4300 feet to 4852 feet, (2) installing 52" OD fiberglass lined tubing to approximately 4290 feet and (3) disposing of produced water in perforated intervals from 4300 feet to 4832 feet.

Page 2 - Oil Conservation Division - 10-19-81

E. That the volume of salt water to be disposed shall be approximately 8000 barrels per day from the Eunice-Monument-Eumont Field, Lea County, New Mexico.

Therefore, Rice Engineering & Operating, Inc. requests that the Director of the Oil Conservation Division set a date for this application to be heard and, after said hearing, to grant this permit to dispose of salt water in the Eunice-Monument-Eumong SWD "G" Well No. 8.

Respectfully submitted,

RICE ENGINEERING & OPERATING, INC.

L. B. Goodheart Division Manager

JEL/jp

Attachments: Form C-108 w/attachments

OIL CONSERVATION DIVISION

POST OFFICE BOTH 2018 STATE LAND OFFICE BUILDING GARTA PE, NEW MENCOUNTS

FORM C-108 Revised 7-1-81

Case 7424

APPLICATION FOR AUTHORIZATION TO INJECT

I.	Purpose: Applica	LISecondary Recovery Lion qualifies for administ	Pressure Haintenance X Disposal Storage rative approval? yes no
11.	Operator:	Rice Engineering &	Operating, Inc.
	Address:	122 West Taylor, Ho	bbs, New Mexico 88240
	Contact pa	rty: L. B. Goodheart	Phone: 393-9174
ш.	Well data:		d on the reverse side of this form for each well

- X yes IV. Is this an expansion of an existing project? lino If yes, give the Division order number authorizing the project None (SWD System)
- ٧. 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:

aby contify that the Unformati

- Proposed average and maximum daily rate and volume of fluids to be injected;
- Whether the system is open or closed;
- Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with 4. the receiving formation if other than reinjected produced water; and
- 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.).
- 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 *VIII. 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.
 - Describe the proposed stimulation program, if any. Perforations from 4300' to 4852' and 10,000 gals. Of 15% $H_{C}L$ acid. IX.
- Attach appropriate logging and test data on the well. (If well logs have been filed X. 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

to the best of my knowledge and b	elief.	en this	appricacion	18 cros and	COLLEG
Name: L. B. Goodheart		Title	Division	Manager	
Signature:	ums	Date	October	12, 1981	

million that had not been been a

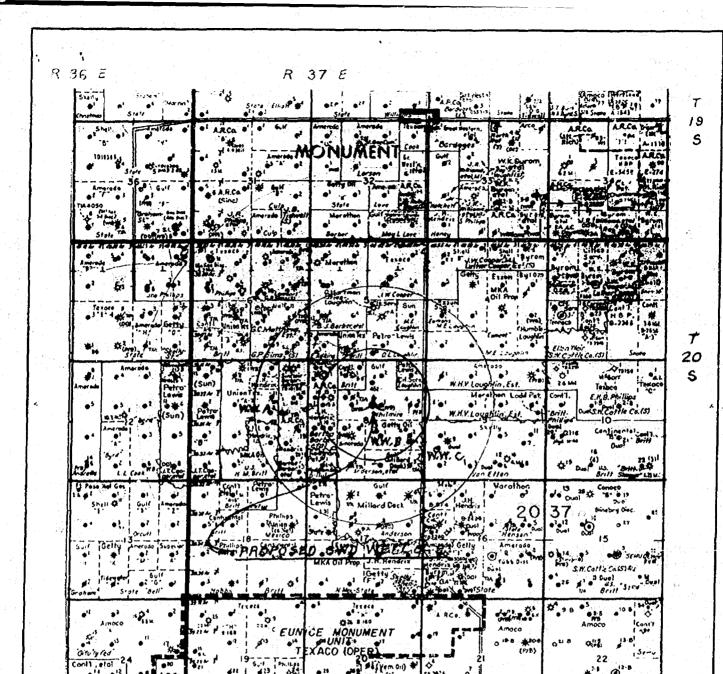
If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. Sec. X. Find well logs attached, Drill stem tests were

filed w/OCC when well was initially drilled on 3-1-54.
DISTRIBUTION: Original and one copy to Sonta Fo with one copy to the appropriate Division district office. POPALE BURES WITHOUT WITH STREET

INJECTION WILE DATA SHILL

WELL NO. FOOTAGE LUCATION	L 8 SCCTION	208	37E
	SECTION	TOWNSHIP	RANGE
Lea County, New Mexico			
Schematic	Tabi	ılar Data	
	Surface Casing		
en e	Size 13-3/8 •	Cemented w	ith 475
	toc @ surface x	et determined	ov circulatio
	Hole size 17½"		
ee attached Dwg. No. A-516			
hematic of existing well	Intermediate Casing	i de la companya da sa	1600
re with proposed disposal terval	Size 9-5/8 "		
tervar	10c @ surface **	et determined b	circulation
	Hole size 124"		
	Long string		
	Size 7 m	Cemented vi	th 735
	roc @ surface xx	A determined b	,*calculation
	Hole size 8-3/4"		
	Total depth 5710'		
	Injection interval		
	4300 feet to	4852	
	(perforated XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	indicate which	feet
	*T.S. did not pick	up T.O.C.	
		A Contract of the Contract of	
			A company of
	fiboral accomo		
	with fiberglass epox (materia	1)	set XXXX
th an oil blanket in annul	(materia	1)	
th an oil blanket in annuly (brand and model)	us Racker at	1)	
th an oil blanket in annuly (brond and model) r describe any other casing-tubing	us Racker at	1)	
th an oil blanket in annula (brond and model) r describe any other casing-tubing	us (materia Racker at _	1)	
th an oil blanket in annulum (brond and model) r describe any other casing-tubing her Data Name of the injection formation	eal). Lower San Andres	429	
th an oil blanket in annula (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if applic	eal). Lower San Andres ble) Eunice-Monume	nt Pool	
th an oil blanket in annulu (brond and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if application is this a new well drilled for in	(moterio RANKA at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes	nt Pool	0 fcet
th an oil blanket in annular (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if application is this a new well drilled for its lift no, for what purpose was the second control of the second contr	(materia RXXXX at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes /V well originally drilled? D	nt Pool	0 fcet
th an oil blanket in annular (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if applied is this a new well drilled for in lift no, for what purpose was the production- P & A on S-6-7	(materia RXXXX at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes /V well originally drilled? D 75.	nt Pool No rilled for	O rest
th an oil blanket in annulum (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if application) Is this a new well drilled for in If no, for what purpose was the production-P & A on 5-6-7	(materia RXXXX at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes /X/ well originally drilled? D 75.	nt Pool No rilled for	O feet oil and gas
th an oil blanket in annular (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if application is this a new well drilled for in If no, for what purpose was the production- P & A on 5-6-7 Has the well ever been perforate and give plugging detail (backs)	(materia RANKAR at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes /V well originally drilled? D 75. d in any other /one(s)? Li of cement or bridge plug(s.)	nt Pool No rilled for stall such pool	oil and gas
th an oil blanket in annulum (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if applied in this a new well drilled for in this a new well drilled for in the production- P & A on S-6-7 Has the well ever been perforate and give plugging detail (backs of 5112'-5152', 5170'-5240',	(materia RANKAR at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes /V well originally drilled? D 75. d in any other /one(s)? Li of cement or bridge plug(s.)	nt Pool No rilled for stall such pool	oil and gas
th an oil blanket in annular (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if applied is this a new well drilled for in If no, for what purpose was the production- P & A on 5-6-7 Has the well ever been perforate and give plugging detail (backs of 5112'-5152', 5170'-5240', plugging detail, etc.	(materia RXXXX at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes /V well originally drilled? D 75. d in any other /one(s)? Li of cement or bridge plug(s) 5650'-5707', see att	nt Pool No rilled for stall such pool used) Yes, 50 ached Dwg.	oil and gas recorded intervention of the second of the se
th an oil blanket in annular (brand and model) r describe any other casing-tubing her Data Name of the injection formation Name of field or Pool (if applied in this a new well drilled for in this a new well drilled for in the production- P & A on S-6-7 Has the well ever been perforate and give plugging detail (backs of 5112'-5152', 5170'-5240',	(materia RXXXX at seal). Lower San Andres able) Eunice-Monume njection? /7 Yes /V well originally drilled? D 75. d in any other /one(s)? Li of cement or bridge plug(s) 5650'-5707', see att	nt Pool No rilled for stall such pool used) Yes, 50 ached Dwg.	oil and gas recorded intervention of the second of the se

GULF BERTIE WHITMIRE LSE - WELL NO. 7 1980'FNL, 2310'FEL, Sec8-20-37 13.96 G.L. ELEV = 3549' 54'STO SX CL. H CEM PLUG TO SURFACE -P&A 5-6-75 132" - 48# USG SET @ 463" W/ 475 SX REG NEAT CEM. CIR. 17 ± HOLE (PLUG € 436') 1072' } 20 SX CL H CMT PLUG MUD 9€"36 # C5G SET @ 2900' W/1600 5X (1500 4% GEL, 100 NEAT) CIRC., 124" HOLE, (PLUG @ 2855') 3553' DV TOOL 4146'3 7" C3G LK & 50 SX 2% CAGI ALAD 9 RTNR @ 4087' CRPRIRTN PROP 4154'3 SQ W/200 SX { 150 SX .6 % HALAD 9 } RTNR @ 4087' CRPRIRTN PROP PBTD 4958' 10 SX CEM. $X \times X$ PROPOSED DISPOSAL 5010' CIBP INTERVALS 0 5038. 4300'-4380', 4445-4470', 4555 - 4561', 4740 - 4760; PB, PERF, & TA 12-7-73 5056' CIBP 4780 - 4800 , 4822 - 4852 CLEAN OUT 7"CSG TO PBTD +958" 5112 - 5114 · 5121 - 5123 · & PERF ABOVE INTRVLS & 4 hoks PB & PERF 5/36 - 5/38 12-5-70 P370 5163' GI CEM, RTHR. SQ BELOW W/50 SX MAX P = 3000 # 5170 -- P8, PERF & CLS IN 1-28-70 -287D 5206' HYDROMITE TOP 5240 , 5230' FRAC SAND TOP PB. PERF & PROD. 2-6-54 5300 60 SX CMT x x x 5600' XXX --- PERF 1-14,24 & 2-2-54 - 420 × × × 5 5650' × × × 2 5707 --- SET & CMT 7" 1-12.54 PBTO 5709 7"- 20# & 23# (TOP 202 JT & BTM 1579') CSG SET @ 5709' W/ 735 SX (235 SX 4 % GEL CIRC OUT DV TOOL , 450 SX 4% GEL & 50 SX NEAT THRU DV TOOL) TS NOT PK UP TOC, CALC @ SURFACE, T.D. 5710, HOLE SIZE 87. DWN SCALE APPROVED PROP. EMS SWD "G"- WELL No. 8 JEL 8-20-81 EXIST WELL BORE WIPROP DISP. INT. NONE DWG. NO. Rice Engineering & Operating, Inc. A-516 Great Bond, Kenses



LEA COUNTY, NEW MEXICO

/ N

DWN	JEL	9-14-81	APPROVED	LOCATION PLAT	SCALE
				 EME SWO "6" WELL HO. 8	1" = 4000'
				Rice Engineering & Operating, Inc.	DWG. NO.
				Great Band, Kansas	A-517

Attachment to Form C-108 - Application for Authorization to Inject Eunice-Monument-Eumont SWD "G" 8 Rice Engineering & Operating, Inc. - p_{age} 1

1

- Part VI Other wells within area of review that penetrate the proposed injection zone
- 1. Getty Oil Company-T. Anderson Lease, Well #3, located 2173 FEL & SL, Section 8, T20S, R37E, drilled 3-18-54 to a TD @ 5254'; 13-3/8" @ 613' w/800 sx circ., 9-5/8" @ 2899' w/1275 sx circ., 7" @ 5252' w/500 sx to a TOC @ 3160' per T.S., completed for oil in Monument Paddock 5210'-5235'.
- 2. Getty Oil Company-T. Anderson Lease, Well #4, located 853' FEL § 2223' FSL, Section 8, T20S, R37E, drilled 12-13-76 to T.D. @ 6963'; 13-3/8" @ 317' w/320 sx circ., 9-5/8" @ 2748' w/1750 sx circ., 7" @ 4924' w/668 sx to TOC @ 3640' per T.S., 5" liner from 4693' to 6963' w/858 sx, completion record: Drinkard 6660'-6893' no oil, PBTD @ 6615', perf Tubb @ 6517-72', perf additional Tubb 6465'-6554' § 6313'-6448', PBTD @ 6245', perf Blinebry @ 5610'-6170', PBTD 5485', perf Paddock @ 5205'-10' for oil.
- 3. Amerada Hess Corporation-T. Andreson Lease, Well \$\frac{1}{2}\$, located 2310' FSL \$\xi\$ 1650' FWL of Section 8, T20S, R37E, drilling complete on 3-3-54 to a T.D. of 5730'; 13-3/8" @ 295' w/300 sx circ., 8-5/8" @ 2900' w/1500 sx to TOC @ 1032' per T.S., 5\frac{1}{2}\text{" @ 5730'} \text{ w/500 sx to TOC @ 3229' per T.S., completed for oil and gas in Monument Blinebry 5676'-5716' on 3-8-54, PB \$\xi\$ perf for oil \$\xi\$ gas in Monument-Paddock 5168'-5198' \$\xi\$ 5205'-5220' on 7-15-54, drill through \$\xi\$ re-complete for oil in Monument-Blinebry 5676'-5766' on 12-10 70.
- 4. Amerada Hess Corporation-T. Anderson Lease, Well #4, located 2310 FSL & 2310 FWL, Section 8, T205, R37E, to a TD of 5710; 13-3/8" @ 316! w/300 sx circ., 9-5/8" @ 2530' w/1750 sx circ., 7" @ 3710' w/100 sx to 3419' per T.S., 5" liner from 3643'-5710' w/275 sx btm & top, completed for oil & gas in Monument-Blinebry 5670'-5700', Bradenhead completion for gas in Eumont Gas Hield from 2530'-3419', on 3-15-63 perf & sand frac 5605' to 5700' changing well to flowing status, 4-8-74 recomplete from dual in Eumont-Queen gas & Blinebry oil to single in Monument-Blinebry zone.
- 5. Sinclair Oil & Gas Company-Bertha J. Barber Lease, Well #13-Y, located 1980' FNL & 660' FWL, Section 8, T20S, R37E, drilled 9-1-54 to TD of 5250'; 13-3/8" @ 990' w/1000 sx circ., 9-5/8" @ 2900' w/1150 sx to 1210' TOC per T.S., 7" @ 5250' w/2396 sx to 2975' TOC per T.S., completed in Monument Paddock 5104' to 5194' for oil & csg head gas.

Attachment to Form C-108 - Application for Authorization to Inject Eunice-Monument-Eumont SWD "G" 8 Kice Engineering & Operating, Inc. - Page 2

- 6. Sinclair Oil & Gas Company-Bertha J. Barber Lease, Well #16, located 660 FWL & 2310 FSL, Section 8, T20S, R37E, drilled on 11-7-54 to a TD of 5240'; 13-3/8" @ 965' w/1150 sx Sirc., 9-5/8" @ 2909' w/1600 sx circ., 7" @ 5240' w/350 sx to 4600' TOC per T.S., completed in Monument Paddock 5148'-5206' for oil & csg head gas.
- 7. Conoco Inc. Britt B-8, Well #2-B, located 330 FNL & 2310 FWL, Section 8, T20S, R37E, drilled on 9-20-53 to TD 5710'; 10-3/4" @ 600' w/400 sx circ., 7-5/8" @ 3349' w/1412 sx circ., 5½" @ 5705' w/206 sx to 5200' TOC per T.S., completed in Monument Blinebry 5670'-5680' for oil, 3-15-56, recomplete Monument Blinebry 5646'-5670' for oil & csg head gas, shut in 9-1-69.
- 8. Conoco Inc.- Britt B-8, Well #3-P, located 660 FNL & 1650 FWL, Section 8, T20S, R37E, drilled on 12-28-54 to TD of 5250'; 10-3/4" @ 632' w/500 sx circ., 7-5/8" @ 3298' w/1465 sx to TOC @ 650' per T.S., 5½" @ 5249' w/155 sx to TOC @ 4750' by T.S., completed on 12-28-54 in Monument-Paddock 5150'-5220' for oil. 3-20-61 found csg holes, cut, pulled, milled & reamed csg to 4676', replaced & cmt to 670', shut in 10-30-74.
- 9. Cities Service Oil Company-Laughlin Lease, Well #5, located 330 FSL & 2310 FEL, Section 5, T20S, R37E, drilled on 9-13-53 to TD 5715'; 13-3/8" @ 335' w/330 sx circ., 8-5/8" @ 2398' w/925 sx circ., $5\frac{1}{2}$ " @ 5713' w/1300 sx circ., dual completion on 9-23-53 in the Paddock 5190' to 5215' for oil and in the Queen 3207'-3355' for gas (perf & sqz off in Blinebry 5675'-5743', 1-19-54 PB to 3359' & continue as single completion in Queen zone.
- 10. Gulf Oil Corporation-Bertie Whitmire Lease, Well No. 5, located 1650 FNL & 1650 FWL, Section 8, T20S, R37E, drilled on 9-26-53 to TD of 5700'; 13-3/8" @ 471' w/475 sx circ., 9-5/8" @ 2901' w/1600 sx circ., 7" @ 5699' w/385 sx to near top, 9-26-53 perf 5660'-5695' to oil, 6-22-62 additional perfs 5580'-5618'.
- 11. Gulf Oil Corporation-Bertie Whitmire Lease, Well No. 6, located 990 FNL & 2310 FEL, Section 8, T20S, R37E, drilled on 11-10-53 to TD @ 5735'; 13-3/8" @ 469' w/469 sx circ., 9-5/8" @ 2900' w/1600 sx circ., 7" @ 5712' w/428 sx to TOC @ 2550' per T.S., completed for oil in the Paddock 5175'-5220' 11-26-53.
- 12. Gulf Oil Corporation-Bertie Whitmire Lease, Well No. 8, located 1650 FNL & 1980 FWL, Section 8, T20S, R37E, drilled 4-22-54 to a TD @ 5250'; 13-3/8" @ 455' w/475 sx circ., 9-5/8" @ 2829' w/1700 sx circ., 7" @ 5249' w/400 sx to TOC @ 2786' per T.S., completed 4-22-54 the Paddock 5140'-5245' to oil.

Attachment to Form C-108 - Application for Authorization to Inject Eunice-Monument-Eumont SWD "G" 8 Rice Engineering & Operating, Inc. - Page 3

Part VII

- 1. An average injection rate of 8,000 bwpd and a maximum of 15,000 bwpd is projected.
- 2. The Eunice-Monument-Eumont SWD System is semi-closed.
- 3. Proposed SWD well to operate by gravity injection.
- 4. Injected fluid is produced water.
- 5. Not applicable.

Part VIII

The proposed injection zone, the San Andres Formation, is a thick carbonate reef growth characterized by coarsely crystalline to cavernous porosity. The San Andres varies from 1000'-1200' in thickness and the bottom of this formation is at a depth of 5080' per the original well log. The only source of potable ground water in the area is in the Ogallala Aguifer and the lowest water sands per the well log are at 216'.

Part XI

See attached chemical analysis on water wells.

Part XII

Available geologic and engineering data has been examined and we have found no evidence of open faults or any other hydrologic connection between this disposal zone and any source of drinking water.

JEL/jp 10-12-81



TRETOLITE DIVISION

389 Mersingil Avenue / Saint Louis, Missouri 63119 (314) 961-3500 / TWX 910-760-1660 / Telex 44-2417

WATER ANALYSIS REPORT

Company

Rice Engineering & Operating Co.

Submitted by: Gaskin Sampled by: Gaskin

Source

Sample Point: Windmill "A"

Approx. 1200'FEL &

2350' FNL Sec. 7, T20S, R37E

Sample Date: 9/25/81 Analysis Date: 10/5/81

SAMPLE ANALYSIS

Appearance: Clear

Sp. Conductivity: 5960 micromhos/cm

pH: 7

Color: Colorless

H2S:

Neg.

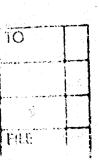
en e		DDM
Constituent		PPM
Sodium		379
Potassium		8.48
Lithium		. 1
Calcium		560
Magnesium		174
Barium		.3
Strontium		7.78
Aluminum		<.03
		7-7-7-7
Silver		<.003
Arsenic		<. 1
Chromium		< 01
Copper		٠.002
Tron		.222
Mercury		4.03
Lead		∠. 05
Antimony	• • • • • • • • • • • • • • • • •	<.04
Tin		< 17
Titanium		< .002
Zinc		.456
Boron		. 25
Phosphate		4.1
Chloride		1860
Sulfate		114
Bicarbonata		228
Carbonate		
Silica		<1.
Str. Ga		79.5

Sum of cations: 59.2 Ion Balance Sum of anions: 58.7 Measured: 3100 ppm TDS Balance Calculated 3420 ppm

RECEIVED

OCT 8 1981

RICE ENGINEERING & OPERATING, INCL. HOBBS, N. M.





TRETOLITE DIVISION

369 Marshalt Avenue / Seint Leuis, Misseuri 63118 (314) 981-3500 / TWX 910-760-1602 / Telex 44-2417

WATER ANALYSIS REPORT

Company

Source

Rice Engineering & Operating Co.

Sample Point: Water well (elec) "B"

Approx. 700' FEL & 1700' FSL Sec. 8, T20S, R37E

Submitted by: Gaskin Sampled by: Gaskin Sample Date: 9/25/81 Analysis Dace: 10/5/18

SAMPLE ANALYSIS

Appearance: Clear Color: Colorless Sp. Conductivity: 2990 H2S: Neg. pH: 7

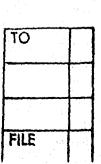
Constituent	PPM
Sodium	281
Potassium	3,69
Lithium	
Calcium	190
Magnesium	74.8
Barium	1.11
Strontium	., 4.62
Aluminum	·· 4.03
Silver	√.003
Arsenic	۷.1
Chromium	₹.01
Copper	<.002
Iron	003
Mercury	≥.03
Leader	
Antimony	<.4
Tin	· · <.1
Titanium	
Zinc	
Boron	
Phosphate	
Chloride	
Sulfate	~~.
Bicarbonate	
Carbonate	€.1
Silicaria	81.2

Sum of cations: 28.1 meq/1 Ion Balance Sum of anions: 28.5 meq/1

Measured: 1500 ppm TDS Balance Calculated: 1840 ppm RECEIVED

OCT 8 1981

RICE ENGINEERING & RPERATING, INC.





TRETOLITE DIVISION

389 Marshall Avenue / Saint Louis, Missouri 63179 (314) 981-3500 / TWX 910-780-1860 / Telex 44-2417

WATER ANALYSIS REPORT

Company
the same of the sa

Rice Engineering & Operating Co.

Submitted by: Gaskin Sampled by: Gaskin

Source

Sampla Point: Wandmill "C" Approx.

6001 FWI. 671400 FSL

Sec. 9, T20S, R37E

Sample Date: 9/25/81 Analysis Date: 10/5/81

SAMPLE ANALYSIS

Appearance: Clear

Sp. Conductivity: 3310 micromhos/cm

pH: 7.6

Color: Colorless

H2S:

Neg.

PPM Constituent 361 Potassium 5.68 Lithium 1.09 2x19,-(219.) Calcium Magnesium 69.3 1.4 Strontium 4.15 Aluminum ٠.03 Silver <.003 Arsenic 4.1 Chromium <.01 Copper .08 .682 Mercury <.03 Lead <.05 Antimony 4.4 4.1 Titanium < 002 .481 .668 41 843

Sum of cations: 32.6 meq/1

Sulfate

Bicarbonate.......

Carbonate.

Ion Balance

Sum of anions: 32.9 meq/1

Measured: 1800 ppm Calculated: 2080 ppm

TDS Balance

RECEIVED

175

322

<1. 76.3

OCT 8 1981

HICE ENGINEERING & SPERATHER, ME.

* :	
TO	
· v	
FILE	

P 335 767 740 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED-NOT FOR INTERNATIONAL MAIL

(See Reverse) Petro-Lewis Corp. STREET AND NO. P. O. Box 506 PO STATE AND ZIP CODE Levelland, 79336 POSTAGE CERTIFIED FEE Ħ SPECIAL DELIVERY RESTRICTED DELIVERY SHOW TO VINOM AND ONTE DELIVERED 66 AND ADDRESS OF DELIVERY SHOW TO WHO SHOW TO ADDRESS RESTRIC TOTAL POSTAGE AND FE

P 335 767 733 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED-NOT FOR INTERNATIONAL MAIL (Seo Reverse)

				(30371070700)						
٠,٠		ii i		non Oil Com	pany					
	STREET AND NO									
	۲.	() .	BOX 2409						
		bt			40					
10	PO	STA	GE		• :35					
		Œ	P(T)	IEO FEE	?5.					
	1			ECIAL DELIVERY	•					
	8	201.0	æ	STAICTED DELIVERY	•					
ب. ح	STER	2300	MCE	SHOW TO WHOM AND DATE DELIVERED	bo					
	Post	AL SE	35	SHOW TO WHOM, DATE, AND ADDRESS OF CELLYERY	•					
-	ONSULT POS	OFTIO	KETURN RECEIP	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY						
0	ਲ		TET.	SHOW TO WHICH CATE AND ADDRESS OF DELIVERY WILD RESTRICTED BELIVERY	Part.					
1970	101	N. I	105 1	AGE AND REES 700	1/16					
5	701	TN	VIK	OR DATE	プナ					
3				OR DATE OF C						
rorm saw, Apr.										
Ö										
7	l				7					

P 335 767 734 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED-NOT FOR INTERNATIONAL MAIL (Sec Reverse)

	STI P	REE 3.81	f TAN O	Oil Corpor DNO. Box 670	
			b	s, N. M. 88	240
	PO	STA			• 33
	14.5 s	α	PITIE	TED FEE	:15.
	FES	- 1		ECIAL DELIVERY	•
	8		PAC	STRICTED DELIVERY	
av.	100	2	20	SHOW TO WHOM AND DATE DEL ACOCO	100
	POSTMA	AL SEN	BPT SE	S OW TO WHOM, DATE, AND ADDRESS OF GELIVERY	•
	COMESULT	Ě	RIK RECEIPT	SHOW TO YAH MAND DATE DELIVERED WITH RESTRICTED DELIVERY	ŧ
9	8		RETURK	SHOW TO WHOM, DATE AND ADDRESS OF OLIVERY WITH RESTRICTED DILLIVERY	
PS Form 3800, Apr. 1976	101	TAL I	POS	AGE AND EED	WIN
Apr	PO:	STM.	ARK	OR DATE 1960	121
8				1000	/3/
38					
E					
S					

P 335 767 741 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL

		447	5-51	(See Reverse)	4 1
ſ	SEI	VI T	ōυ	nion Texas	
ŧ	'e	tr	<u>o 1</u>	eum Corp.	
	STA	ieri Kn	ÂNI	Wilco Buil	ding
ŀ	PO	ST	ATE	AND ZIP CODE	1.0
1	M	id	1 a	nd, Texas	/9/01
Ì	~	CYAI	e.		\sim
	. 2 655	ÇE	ATIF	EOFEE	75 1
١	EES	-	SP	ECIAL DELIVERY	
1	Œ .	-1	AE	STRICTED DELIVERY	£
	CONSULT POSTMASTER FOR PEES	/HCES	MCE	SHOW TO WHOM AND DATE DELIVERED	60 "
	POSTIMA	AL SER	RETURN RECEIPT SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	4
	HSULT	OFTIONAL'S	RN REC	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY:	¢
	8		RETU	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH PROTOCOLOUR PROTOCOLOUR PY	•
	10	TAL	POS	TAGE AND FEES	170
	PO	STM	ARR	of person	
l			li	\~\ %	
2			_ \	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	

P 335 767 742 RECEIPT FOR CERTIFIED MAIL

> NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL (See Reverse)

	J/	γħ	n	H. Hendrix	Corp.
	5	25	TÀ	idland Towe	r
	PC	วิร	TAY	nd, Texas	-
		SIA	UE.		35
	1	CE	สาแ	FIED FEE	175
2	題	-	L	PECIAL DELIVERY	
	ã		H.	STRICTED DELIVERY	
	STE	SERVICES	MCE	SHOW TO WHOM AND DATE DELIVERED	600 "
	OSTIKA		RECEIPT SERVICE	SHOW TO WHOW, DATE, AND ADDRESS-OF DELIVERY	
	COMBULT POSTIMASTER FOR FEES	OPTIONA:		SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	
ę	ខ		RETURN	SHOW TO WHOM DATE AND ADDRESS CADELISERY WITH RESTRICTED DETIVERY	
roim 3000, Apr. 1970				AGE AND FEES	11/10
?	POS	TM/	AK	600 168 CD . 1.1.	1
3					
				N. J.	

P 335 767 735 RECEIPT FOR CERTIFIED MAIL

NO INSURANCÉ COVERAGE PLOVIDEO-NOT FOR INTERNATIONAL MAIL

			(See Develse)				
G		tt	y Oil Compa	ny			
P	REE	'0'	Box 730		Ĩ		
PG), § O l	TATE DD	AND ZIP CODE S. N. M. 88	240			
	STA			135			
	C	ATI	FIEDFEE	25	•		
8	-	SI	ECIAL DELIVERY		•		
5		RI	STRICTED DELIVERY		¢		
STEN A	3053	SERVICE	SHOW TO WHOM AND DATE DELIVERED	bo	ŧ		
POSTIKA	OFTIONAL SERVICES	SPT SE	SHOW TO WHOM DATE. AND ADDRESS OF DELIVERY	, .	•		
COMSULT POSTWASTER FOR FEES	MOLL	A DCL	S S	RETURK RECEIPT	SHOW TO WHOM AND DATE DELIVERO WITH RESTRICTED DELIVERY	The market of particular and the second of t	•
3		NET.	SHOWTO WHOSE DATE AND ADDRESS OF DELIVERY WITH PESTRICITED DELIVERY		•		
TOT	AL F	PO\$1	金を	1770)		
POS	TM/	NAK.	distriction of	<i>}</i>			
12			10	•			
			TO THE				

P 335 767 736 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL

) FV	(See Reverse)	
SEN	214		onoco Inc.	
STATE P	33	n.	BOX 400	
PO	sta ob	bs	N. M. 88	240
POS	TAG	E		ドメニ
	Œ	TIFI	ED FEE	3/5
			CIAL DELIVERY	1 1 1 1 1 <u>0</u>
뿐		RES	STRICTED DELIVERY	
STEN FOR FEE	SES	\Box	SHOW TO WHOM AND DATE DELIVERED	60.
STIENS	C SERV	FI SERVICE	SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	•
E L'INSER	S S	N RECEN	SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTO DELIVERY	
-	∤ ∂	RETURN	SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY MAT RESTRICTED DELIVERY	S
<u>. </u>	LATC	POS	TAGE AND FERS	74.X.
ة أة			OR DATE	1001
≦ `				ان دول
8				USIO
PS Form 3800, Apr. 1970			villa Vij	
21				

P 335 767 737 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL

5		i.	200	(See Reverse)					
	SENT TO ARCO Oil and Gas Company								
	STREET AND NO.								
	P. O. Box 1710 PO STATE AND ZIP CODE								
	Hobbs, N. M. 88240								
PS Form 3800, Apr. 1976	PO	STA	• 35						
	22	CERTIFIED FEE			775 .				
	CONSULT POSTMASTER FOR PEER	OPTIONAL SERVICES	13.7	ECIAL DELIVERY					
			Pi	STANCTED DELIVERY	•				
			RETURN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	bo'				
				SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	1 m				
				SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY					
			RETU	SHOW TO WHE ! WITE AND ADDRESS OF I SO WERY WITH-	49.				
	TO	3							
Apr	POSTMARK OR DATE								
8	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\								
38	WIN								
E									
8					1				
~ 1					1				

P 335 767 739 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL

(See Reverse) * Jimmy Cooper Brothers
* Jimmy Cooper
STREET AND NO. P. O. Box 55 P.O., STATE AND ZIP CODE 88265 Monument, N.M. POSTAGE CENTIFIED FEE FEES SPECIAL DELIVERY RESTRICTED DELIVERY SHOW TO WHOM AND DATE DELIVERED CONSULT POSTMASTER 60 SHOW TO WHOM, DATE. AND ADDRESS OF DELIVERY SHOW TO WHOM AND DATE DELIVERED WILLIAMS THIS DELIVERY TOTAL POSTAGE ANE PEES POSTMARK OR DAT

PS Form 3800,

P 335 767 738 RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED— NOT FOR INTERNATIONAL MAIL (See Reverse)

	Amerada Hess Corp.									
Ä.	P. O. Drawer "D"									
		nı	8265							
	PO	STA	135							
1.		CE	ATII	IEDFEE	75.					
	CONSULT POSTMASTER FOR FEES	OFTIONAL SERVICES	SPECIAL DELIVERY		\$					
			RESTRICTED DELIVERY		*					
3			AN RECEIPT SERVICE	SHOW TO WHOM AND DATE DELIVERED	60.					
				SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	\$					
				SHOW TO WOOM AND DATE DELIVERY WITH RESTRICTED	•					
			7	SHOW TO WHOM, DUE AND LOOPELY PROGETIVE OF THE PROGETIVE OF TIVERY	•					
17/0	TOTAL POST			AGENTI PEES	170					
	POSTMARK OR BATE									
3		\$10								
r Ot 111 3000,										
۱;										

Herby & Harry

M.S.

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

all all

IN THE MATTER OF THE HEARING

CALLED BY THE OIL CONSERVATION

DIVISION FOR THE PURPOSE OF

CONSIDERING:

CASE NO. 7424 Order No. R-6855

APPLICATION OF RICE ENGINEERING AND OPERATING, INC., FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO.

Son

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 19, 1981, at Santa Fe, New Mexico, before Exeminer Richard I. Stamets.

NOW, on this _____ day of November, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Rice Engineering and Operating, Inc., is the owner and operator of the Eunice-Monument Eumont Linearly the Gulf Oil Corporation Bertie White Mark 22 South, Range 37 East, NMPM. Lea County, New Mexico.
- (3) That the applicant proposes to utilize said well to dispose of produced salt water into the Lower San Andres formation, with injection into the perforated interval from approximately 4300 feet to 4852 feet.

(4300 K, 2)

(4) That the injection should be accomplished through under an oil blanket;

5/2 inch plastic lined tubing installed in a packer set; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 860 psi.

(6) That the Director of the Division should be authorized to administratively approve 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

formation.

(6) (2) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

office of the Division at the start of disposal operations the gravity and level of the finite inert fluid in the annulus.

- That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.
- (9) the That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

Inc., is hereby authorized to utilize its Eunice-Monument

(hereby well No. 8, located in Unit G of Section 8,

Township 20 South, Range 37 East, NMPM, Lea County, New Mexico,

to dispose of produced salt water into the Lower San Andres

formation, injection to be accomplished through

(hereby with injection into the perforated interval from approximately 4300 feet to 4852 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that 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.

Livitetion is a figure of the hydrostatic pressure,

- (2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 600 psi.
- (3) That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the formation.
- (3) 447 That 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 so that the same may be inspected.

[5] That the operator shall report to the supervisor of the Hobbs district office of the Division at the start of disposal operations the growty and level of the Division at the start of disposal operations the growty and level of the Division's Hobbs district office of the supervisor of the Division's Hobbs district office of the failure of the tubing casing, or there, 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.

(5)(7) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Division Rules and Regulations.

(\$) That 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

JOE D. RAMEY, Director

SEAL

kanakan kana da ang kana da ang kanakan da k