

CASE 6281: SOUTHERN UNION EXPLORATION  
CO. FOR SALT WATER DISPOSAL, LEA COUNTY,  
NEW MEXICO

CASE NO.

6281

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APPLICATION,  
TRANSCRIPTS,  
SMALL EXHIBITS,

ETC.

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. 6281  
Order No. R-5776

APPLICATION OF SOUTHERN UNION  
EXPLORATION CO. 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 July 19, 1978,  
at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 1st day of August, 1978, 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, Southern Union Exploration Co.,  
is the owner and operator of the Susco State Well No. 3,  
located in Unit N of Section 19, Township 9 South, Range 33  
East, NMPM, Flying "M" San Andres Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to  
dispose of produced salt water into the San Andres formation,  
with injection into the perforated interval from approximately  
4300 feet to 4346 feet.

(4) That the American Trading and Producing Company  
New Mexico State "19" Well No. 1 in Unit E and the BTA Oil  
Producers FMS664 LTD Well No. 1 in Unit M of Section 19 and

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Case No. 6281

Order No. R-5776

the Union Texas Petroleum McGriffin Well No. 1 in Unit C of Section 30, all in Township 9 South, Range 33 East, Lea County, New Mexico, are located within one-half mile of said Susco State Well No. 3 and are completed in such a manner as would allow fluid injected into said well or flushed from the San Andres formation ahead of such injected fluid to escape to other formations.

(5) That the applicant did not establish that the fluids injected into the San Andres formation in said Susco State Well No. 3 would remain within the injection interval.

(6) That the subject application should be denied.

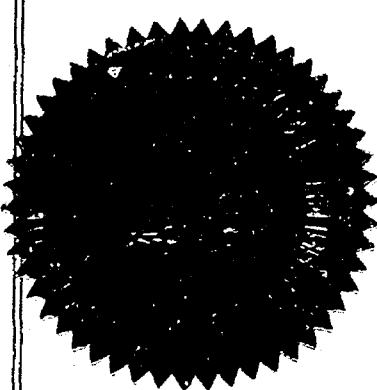
IT IS THEREFORE ORDERED:

(1) That the application of Southern Union Exploration Co., to utilize its Susco State Well No. 3, located in Unit N of Section 19, Township 9 South, Range 33 East, NMPM, Flying "M" San Andres Pool, Lea County, New Mexico, to dispose of produced salt water into the San Andres formation, is hereby denied.

(2) 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*  
JOE D. RAMEY,  
Director

dr/

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CERTIFIED SHORTHAND REPORTER  
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Santa Fe, New Mexico 87501

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STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
State Land Office Building  
Santa Fe, New Mexico  
19 July 1978

EXAMINER HEARING

IN THE MATTER OF:

Application of Southern Union Explor- ) CASE 6281  
ation Co. for salt water disposal, )  
Lea County, New Mexico. )

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation  
Division:

Lynn Teschendorf, Esq.  
Legal Counsel for the Division  
State Land Office Building  
Santa Fe, New Mexico 87501

For the Applicant:

Tommy Roberts, Esq.  
TANSEY, ROSEBAUGH, ROBERTS &  
GERDING  
Farmington, New Mexico

I N D E X

J. W. MULLOY

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1 MR. STAMETS: We'll call next Case 6281.

2 MS. TESCHENDORF: Case 6281. Application of  
3 Southern Union Exploration Company for salt water disposal,  
4 Lea County, New Mexico.

5 MR. ROBERTS: Tommy Roberts, Tansey, Rosebaugh.  
6 Roberts and Gering. P. C., Farmington, New Mexico, on  
7 behalf of Southern Union Exploration Company. I have one  
8 witness.

9 (Witness sworn.)

10  
11 J. W. MULLOY

12 being called as a witness and having been duly sworn upon  
13 his oath, testified as follows, to-wit:

14  
15 DIRECT EXAMINATION

16 BY MR. ROBERTS:

17 Q Will you state your name?

18 A John W. Mulloy.

19 Q Your employer and your position?

20 A I am manager of Foy Boyd and Associates, Con-  
21 sulting Engineers.

22 Q And your address?

23 A We moved. 290 -- Suite 290, 1 Marion Bell (sic)  
24 Place, Midland, Texas.

25 Q Have you testified before the New Mexico Oil

1 Conservation Commission on prior occasions?

2 A. Yes, I have.

3 MR. ROBERTS: Are the witness' qualifications  
4 acceptable and a matter of record?

5 MR. STAMETS: I presume you qualified as an  
6 engineer, Mr. Mulloy?

7 A. Yes.

8 MR. STAMETS: They are.

9 Q. (Mr. Roberts continuing.) Mr. Mulloy, would  
10 you briefly summarize the substance of the application  
11 presented of behalf of Southern Union Exploration Company?

12 A. All right, sir. Southern Union Exploration  
13 Company is making application to dispose of approximately  
14 100 barrels per day of produced San Andres water into  
15 their Susco State Well No. 3 in the Flying "M" San Andres  
16 Field, Lea County, New Mexico, Unit letter "N", which is  
17 located 650 feet from the south, 1980 feet from the west  
18 of Section 19, Township 9 South, Range 33 East.

19 This injection will be through perforations  
20 adjacent to the San Andres interval from 4300 to 4346.  
21 An oil completion attempt was made in this interval and  
22 was determined not to be commercial. Salt water depth in  
23 this zone, in this area, is at a maximum of approximately  
24 300 feet. There are no oil producing zones above the  
25 proposed interval. The next deeper possible production



1 would be the Glorieta at approximately 5,020 feet.

2 All offset operators were notified by copy of  
3 this application; also the landowner, Mrs. Margaret  
4 McGuffin, was notified of our intent. There was some con-  
5 versation with Ms. McGuffin upon her receipt of the appli-  
6 cation in which she questioned exactly what was happening  
7 and an effort was made to explain that to her at the time.

8 Q What would the projected daily injection  
9 volume be?

10 A Approximately 100 barrels at this time, at  
11 the -- with a pressure of something less than 500 pounds,  
12 based on the pressures which the well treated when we at-  
13 tempted to make an oil completion out of it.

14 Q Mr. Mulloy, would you refer to what's been  
15 marked as Exhibit One and identify that exhibit?

16 A Exhibit Number One shows all wells that have  
17 been drilled within a one-half mile radius of the proposed  
18 injection well.

19 It indicates their current status as to oper-  
20 ator, well name, producing rate as of April of this year,  
21 whether they are producing or plugged, and cumulative pro-  
22 duction.

23 Q Would it show any other known injection wells  
24 in the area?

25 A The one-half mile radius does not show any

1 known injection wells.

2 Approximately, oh, a mile and a half east in  
3 the Flying "M" San Andres Unit itself there are indications  
4 of numerous injection wells into this same interval, which  
5 is a secondary recovery project.

6 Q Would you refer to what's been marked as  
7 Exhibit Two and identify that exhibit?

8 A This is a tabular summary of the casing pro-  
9 grams, current status, and cement volumes and cement tops  
10 of every well within one-half mile radius, indicating their  
11 total depth, producing interval, and the casing and cement  
12 tops of all casing strings.

13 Q Would you refer to each well itemized and  
14 state the status of that well?

15 A The American Trading and Production New Mexico  
16 State No. 19 had 13-3/8ths and 8-5/8ths set to protect the  
17 higher zones, with cement circulated to the surface on  
18 both strings, with 5-1/2 inch casing set at a total depth  
19 of 9190 and cemented with 300 sacks of cement. Calculated  
20 cement top at 7800. It's attempted producing interval was  
21 9114 to 9128.

22 The Union of Texas McGuffin had a similar  
23 casing program to protect the upper zones with 5-1/2 inch  
24 casing set at 9583 and its calculated cement top at 7805.  
25 It was -- it never produced.

1 BTA had a similar upper producing zone with  
2 cement circulated, 5-1/2 inch casing set at 9089 cemented  
3 with 300 sacks, cement top at 7800, and it never produced.

4 The Southern Union Susco State had 8-5/8ths  
5 inch casing set at 497 and cemented with 500 sacks and it  
6 circulated; had a production string set at 4500 feet,  
7 cemented with 1500 sacks, the top was not reported but it  
8 should be sufficient depth to circulate, or sufficient  
9 volume to circulate. The producing interval was 4325 to  
10 4366.

11 The Southern Union Susco State No. 2 had  
12 casing set -- 8-5/8ths casing set at 1850, circulated  
13 cement; 4-1/2 casing was set at 4500, cemented with 1370  
14 sacks, the cement top was not reported but it should be  
15 sufficient to circulate. Perforations reported 4332 to  
16 4372.

17 The well in question had 13-3/8ths at 364,  
18 8-5/8ths at 3664, both of which circulated cement; 4-1/2  
19 production string was set at 4523, cemented with 300 sacks  
20 of cement, the cement top is 2870, and no production was  
21 ever made from this well.

22 Shell Oil Company Richardson #1 had 7-5/8ths  
23 set at 480 feet, cemented with 300 sacks, the cement top  
24 was not available. 4-1/2 inch casing was set at 4469,  
25 200 sacks of cement, and again the top was not available.

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1 The attempted producing interval was 4286 to 4306.

2 Q Is this a complete list of all wells within  
3 one-half mile radius of the proposed injection well?

4 A With one small exception. Located in that  
5 area, according to the county map, there is one well that  
6 was apparently drilled to a depth of 382 feet and no inform-  
7 ation was available on that particular well, but that well  
8 is almost a half a mile away.

9 Q Mr. Mulloy, what conclusions, if any, have  
10 you drawn from the information contained in Exhibit Number  
11 Two?

12 A That the wells in question are cased and have  
13 cement sufficient to protect them from any extraneous  
14 waters that might be injected into the proposed well to  
15 prevent migration up or down the hole.

16 Q Mr. Mulloy, would you refer to what have been  
17 marked as Exhibits Three, Four, and Five, collectively,  
18 and identify those exhibits?

19 A These are wells that have been drilled in  
20 one-half mile radius of the well, which were covered on  
21 the previous sheet, but show a diagrammatic sketch of all  
22 casing strings and completion attempts in the one-half  
23 mile radius. These wells were all deeper than the proposed  
24 injection well.

25 Q What conclusions, if any, may you draw from

1 the information contained in these diagrammatic sketches?

2 A. As in the previous exhibits, these wells in-  
3 dicate that -- or these sketches indicate that all wells  
4 that have penetrated the proposed injection interval have  
5 casing and cement sufficient to protect them from migration  
6 of injected water.

7 Q. Would you refer to what's been marked as Ex-  
8 hibit Number Six and identify that exhibit?

9 A. Exhibit Number Six is a diagrammatic sketch  
10 of the proposed injection well. As can be seen, this well  
11 has been drilled, re-entered, and then re-entered again.  
12 The lower portion of the well has been properly plugged to  
13 prevent any migration down the hole. The cement top is  
14 sufficient to prevent any migration up the hole. The  
15 well is -- will be cased with plastic-coated tubing, plastic-  
16 coated packer, and appropriate wellhead equipment to pre-  
17 vent escape of any of these injected waters.

18 Q. In your opinion, Mr. Mulloy, are these the  
19 necessary precautions that need to be taken to isolate the  
20 injection zone so as to prevent communication between zones?

21 A. Yes, they are.

22 Q. Mr. Mulloy, would you refer to what's been  
23 marked as Exhibit Number Seven and identify that exhibit?

24 A. It is a short section of the open hole log  
25 on the subject well, indicating the interval of proposed

1 injection. A complete well open hole log was submitted  
2 with the original application to the Commission.

3 Q What conclusions may you draw from this log  
4 which are relevant to the application before the Commission?

5 A That this interval is capable of accepting  
6 water; that it is an interval that is correlative to other  
7 intervals in this Flying "M" San Andres Field into which  
8 water is currently being injected.

9 Q I don't believe I've marked Exhibit Number  
10 Eight, but it's the last one on your list. Would you re-  
11 fer to what's now been marked as Exhibit Number Eight and  
12 identify that exhibit?

13 A This is a water analysis taken in May of this  
14 year from -- of water produced or collected from the  
15 battery, the combined battery of the Susco State No. 1 and  
16 No. 2. It indicates a typical formation water of the  
17 San Andres nature and should present no unusual problem in  
18 handling of this water with the equipment provided for in  
19 this well.

20 Q Mr. Mulloy, were Exhibits One through Eight  
21 either prepared by you or under your supervision and at  
22 your direction?

23 A Yes, they were.

24 MR. ROBERTS: Move for admission of the  
25 Exhibits One through Eight.

1 MR. STAMETS: These exhibits will be admitted.

2 Q (Mr. Roberts continuing.) Mr. Mulloy, in  
3 your opinion will the granting of this application enhance  
4 the economic production of the Susco State Well 1 and 2?  
5 And permit the recovery of greater amounts of hydrocarbons,  
6 and facilitate the protection of correlative rights and  
7 the prevention of waste?

8 A Yes, they would. We are now spending approxi-  
9 mately \$100 to \$150 a day hauling water and production  
10 from these wells is such that in a short period of time it  
11 is felt that they would have to be abandoned if not a less  
12 expensive disposal method be developed.

13 MR. ROBERTS: I have no other questions.

14  
15 CROSS EXAMINATION

16 BY MR. STAMETS:

17 Q Mr. Mulloy, looking at Exhibit Number Two,  
18 the first three wells on there show intermediate casing  
19 set, 3600 to 3720, and then an uncemented interval, open  
20 hole interval, behind the pipe down to about 7800 feet.

21 A Uh-huh.

22 Q What would prevent injected water from migrating  
23 down the hole in those wells into other formations?

24 A There would be nothing to prevent it from  
25 migrating. I stand corrected on that, those two wells.

1 You're exactly right. There is nothing to prevent it from  
2 migrating down the hole to the top of the cement, should  
3 it migrate that far across.

4 Q And you have not made any calculations on  
5 what effect that might have?

6 A No, sir.

7 Q You indicated a maximum pressure of 500 psi;  
8 utilizing the Commission's 2/10ths rule of thumb, we have  
9 a maximum pressure of 860 pounds. That's well above what  
10 you indicated.

11 A Yes, sir.

12 Q I would point out that the Commission did re-  
13 ceive a telephone conversation from Ms. McGuffin, on the  
14 telephone, wherein she complained about Southern Union  
15 not fencing pits, water out around the surface, and she  
16 felt like she'd lost a calf due to Southern Union's opera-  
17 tions, and I might suggest that you relay this to whoever  
18 and attempt to make Ms. McGuffin happy.

19 A Well, I can assure the Commission that we have  
20 made those attempts. There was some water out. It was  
21 water from -- it was fresh water, but she has registered  
22 her complaints with us and we have done everything we can  
23 to try to make her -- please her with their operations.

24 MR. STAMETS: Any other questions of the  
25 witness? He may be excused.



Anything further in this case?

MR. ROBERTS: No.

MR. STAMETS: The case will be taken under

advisement.

(Hearing concluded.)

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REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY  
 CERTIFY that the foregoing and attached Transcript of  
 Hearing before the Oil Conservation Division was reported  
 by me; that said transcript is a full, true, and correct  
 record of the hearing, prepared by me to the best of my  
 ability, knowledge, and skill from my notes taken at the  
 time of the hearing.

Sally Walton Boyd  
 Sally Walton Boyd, C.S.R.

I do hereby certify that the foregoing is  
 a complete record of the proceedings in  
 the Examiner hearing of Case No. 6281,  
 heard by me on 7-19, 1928.  
Richard R. Ham, Examiner  
 New Mexico Oil Conservation Commission

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American Trading & Prod. Co.  
#1 New Mexico State "19"

Prod. Rate: None

P & A July 4, 1969

Cum. Production: None

Southern Union Supply Company

Susco State #2

Prod. Rate: 23 BOPD - 4/78

Cum. Production: 685 BO to 5/1/78

TA Oil Producers

MS 664 LTD #1

Prod. Rate: None

P & A 1976

Cum. Production: 220,141 BO

Southern Union Supply Company

Susco State #1

Prod. Rate: 46 BOPD - 4/78

Cum. Production: 25,300 BO to 5/1/78

Proposed Injection Well

for commercial oil

Union Texas Petroleum Corp.

McGuffin #1

Prod. Rate: None

Last Prod. 8/74

Cum. Production: 214,360 BO

Shell Oil Company

#1 Richardson

Prod. Rate: None

P & A September 15, 1965

Cum. Production: 629 BO

EXAMINER STAMP

OIL CONSERVATION COMMISSION

EXHIBIT N Southern Union Exploration Company

Area Plat

Susco State #3 SWD

T-9-S, R-33-E

Flying "M" San Andres Field

Lea County, New Mexico

TUBULAR SUMMARY

Operator	Well Name	Surface Casing	Surface Cement	Surface Cmt. Top	Production Casing	Production Cement	Production Cement Top	Total Depth
Amer. Trading & Prod.	#1 New Mexico State "19"	13 3/8"-364' 8 5/8"-3720'	350 Sacks 1600 Sacks	Circulated Circulated	5 1/2"-9190'	300 Sacks	7800'	9190'
Union Texas Petroleum	McGuffin #1	13 3/8"-367' 8 5/8"-3669'	350 Sacks 935 Sacks	Circulated 1,525'	5 1/2"-9583'	350 Sks.	7805'	9583'
BTA Oil Producers	FMS 664 LTD #1	13 3/8"-366' 8 5/8"-3596'	350 Sacks 1550 Sacks	Circulated Circulated	5 1/2"-9089'	300 Sks	7800'	9089'
Southern Union Supply	#1 Susco State	8 5/8"-497'	500 Sacks	Circulated	4 1/2"-4500'	1500 Sks.	Not Reported	4500'
Southern Union Supply	#2 Susco State	8 5/8"-1850'	900 Sacks	Circulated	4 1/2"-4500'	1370 Sks	Not Reported	4500'
Southern Union Supply	#3 Susco State	13 3/8"-364' 8 5/8"-3664'	350 Sacks 1660 Sacks	Circulated Circulated	4 1/2"-4523'	300 Sks	2870'	9110'
Shell Oil Company	#1 Richardson	7 5/8"-480'	300 Sacks	Not Available	4 1/2"-4469'	200 Sks.	Not Available	4470'

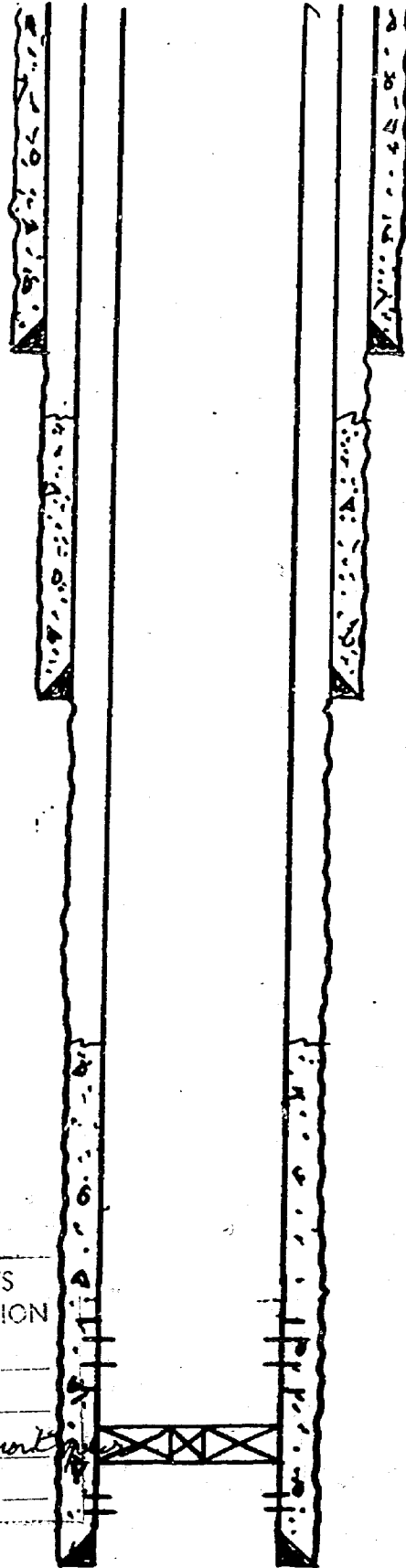
BEFORE EXAMINER STAMETS  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 2  
CASE NO. 6281  
Submitted by Southern Union  
Hearing Date 7-19-78

TUBULAR SUMMARY

Well Name	Surface Casing	Surface Cement	Surface Cmt. Top	Production Casing	Production Cement	Production Cement Top	Total Depth	Producing Interval
Mexico State	13 3/8"-364' 8 5/8"-3720'	350 Sacks 1600 Sacks	Circulated Circulated	5 1/2"-9190'	300 Sacks	7800'	9190'	9114'-9128'
#1	13 3/8"-367' 8 5/8"-3669'	350 Sacks 935 Sacks	Circulated 1,525'	5 1/2"-9583'	350 Sks.	7805'	9583'	None
TD #1	13 3/8"-366' 8 5/8"-3596'	350 Sacks 1550 Sacks	Circulated Circulated	5 1/2"-9089'	300 Sks	7800'	9089'	None
State	8 5/8"-497'	500 Sacks	Circulated	4 1/2"-4500'	1500 Sks.	Not Reported	4500'	4325'-4366'
State	8 5/8"-1850'	900 Sacks	Circulated	4 1/2"-4500'	1370 Sks	Not Reported	4500'	4332'-4372'
State	13 3/8"-364' 8 5/8"-3664'	350 Sacks 1660 Sacks	Circulated Circulated	4 1/2"-4523'	300 Sks	2870'	9110'	None
ndson	7 5/8"-480'	300 Sacks	Not Available	4 1/2"-4469'	200 Sks.	Not Available	4470'	4286'-4306'
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p align="center">BEFORE EXAMINER STAMETS OIL CONSERVATION COMMISSION</p> <p align="center">EXHIBIT NO. <u>2</u></p> <p>CASE NO. <u>6281</u></p> <p>Submitted by <u>Southern Union</u></p> <p>Hearing Date <u>7-19-71</u></p> </div>								

*Explor*

UNION TEXAS PETROLEUM  
McGuffin #1  
660' FNL & 1980' FWL  
Sec. 30, T-9-S, R-33-E  
Lea County, New Mexico



13 3/8" Csg. @ 367'  
cmt. w/350 sks - circulated  
cmt. top 1525'

8 5/8" Csg. @ 3669'  
Cmt. w/935 sks.

cmt. @ 7805

Perfs: 9067-9102  
sqzd. w/100 sks.  
Reperf: 9089-9091  
cmt. retainer @ 9390'  
sqzd. w/100 sks.

Perfs: 9461-9537  
5 1/2" csg. @ 9583  
cmt. w/350 sks.

BEFORE EXAMINER STAMETS  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 3

CASE NO. 6281

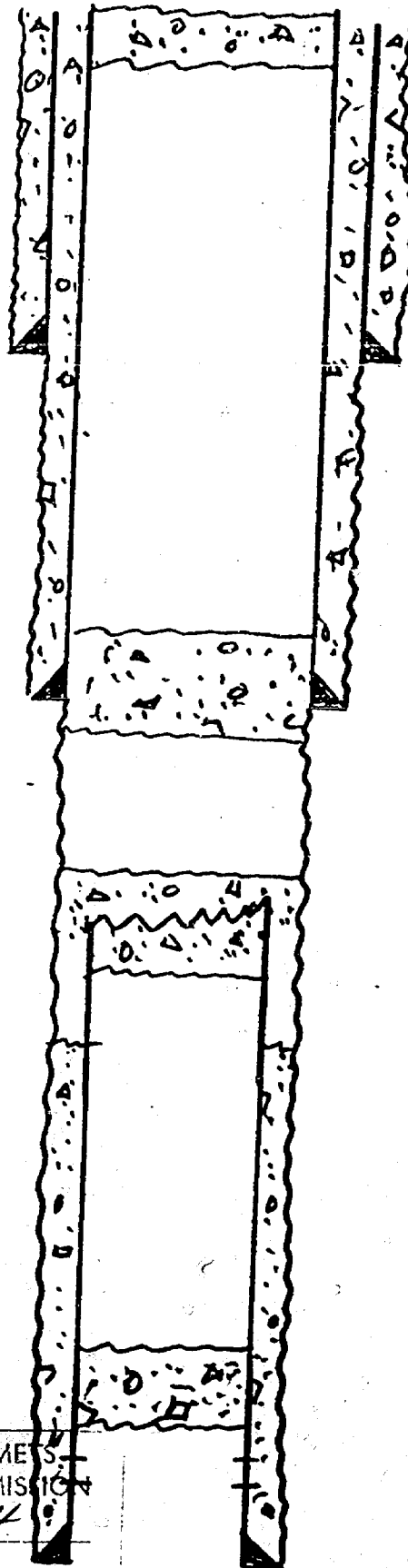
Submitted by Southern Union

Hearing Date 7-19-78

T.D. 9583

AMERICAN TRADING & PRODUCTION CORPORATION  
 New Mexico State "19" #1  
 2310' FNL & 990' FWL  
 Sec. 19, T-9-S, R-33-E  
 Lea County, New Mexico

Set 10 sx. plug  
 @ surface w/4"  
 marker



13 3/8" csg. @ 364'  
 cmt. w/350 sx.  
 cmt. circulated

Set 25 sx. plug  
 @ 3620-3700'

8 5/8" csg. @ 3720'  
 cmt. w/1600 sx.  
 cmt. circulated

Set 25 sx. plug  
 @ 4400'-4314'

calculated cmt.  
 Top @ + 7800'

Set 35 sx. plug

BEFORE EXAMINER STAMPS  
 OIL CONSERVATION COMMISSION

EXHIBIT NO. 4

CASE NO. 6281

Submitted by Southern Union T & P 9190'

Hearing Date 7-19-78

5 1/2" casing @ 9190'  
 cmt. w/300 sx.



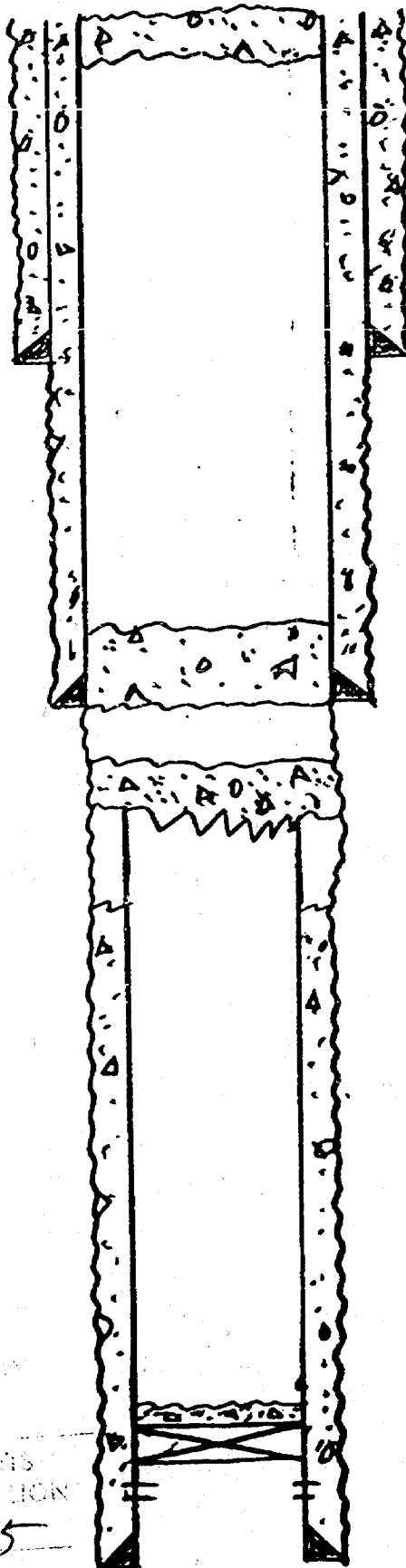
BTA OIL PRODUCERS  
FMS 664 LTD #1  
660' FWL & 330' FSL  
Sec. 19, T-9-S, R-33-E  
Lea County, New Mexico

Set 10 sks. plug  
@ surface w/4"  
marker

set 50 sx. plug  
@ 3596'

shot 5 1/2" csg. @  
7535', 7208', 6882',  
6488', 5996', 5566',  
5282'

Set CIBP @ 990'  
BEFORE EXAMINER STAMPS  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 5  
CASE NO. 6281  
Submitted by Southern Union Oil Co. T. D. 9089'  
Hearing Date 7-19-78



13 3/8" @ 366'  
cmt. w/350 sx.  
cmt. circulate

8 5/8" @ 3596'  
cmt. w/1550 sx.  
cmt. circulate

calculate cmt. top  
@ + 7800'

5 1/2" @ 9089'  
cmt. w/300 sx.

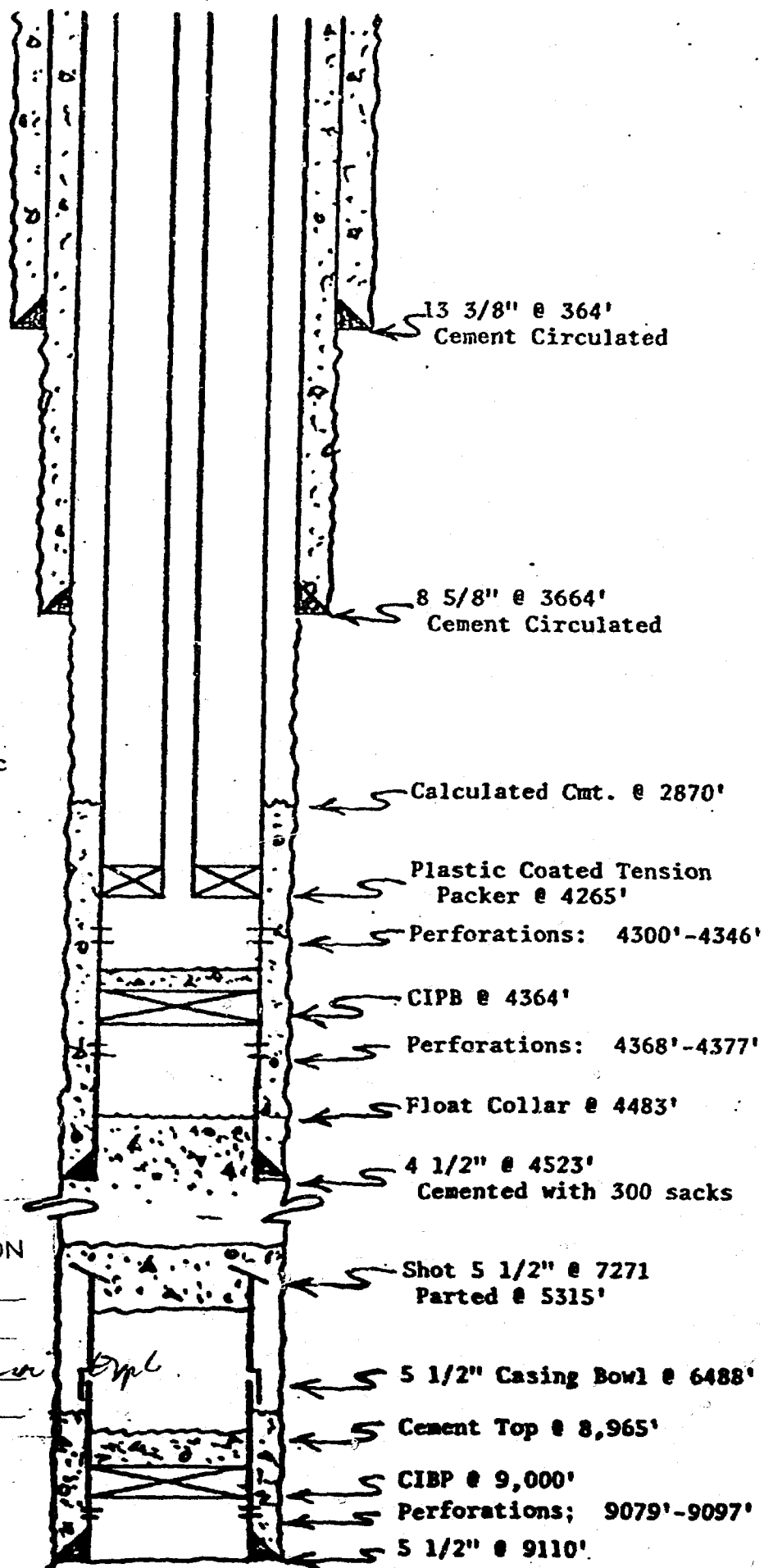
DIAGRAMMATIC SKETCH  
 Southern Union Exploration Company  
 Susco State #3 SWD  
 660' FSL, 1980' FWL, Section 19  
 T-9-S, R-33-E  
 Flying "M" San Andres Field  
 Lea County, New Mexico

2 3/8" J-55, EUE Plastic  
 Coated Tubing Set On  
 Plastic Coated Tension  
 Packer @ 4265'

BEFORE EXAMINER STAMETS  
 OIL CONSERVATION COMMISSION

EXHIBIT NO. 6  
 CASE NO. 6281

Submitted by Southern Union Expl.  
 Hearing Date 7-19-78





BEFORE EXAMINER STAMETS  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 7

CASE NO. 6281

Submitted by Southern Union Gas Co.

Hearing Date 7-19-78

Proposed Injection Interval  
4,300' - 4,346'

4250 4300



SIDEWALL NEUTRON  
GAMMA CALIPER LOG

COMPANY SOUTHERN UNION SUPPLY COMPANY

WELL SUSCO STATE # 3

FIELD FLYING "M"

COUNTY LEA STATE NEW MEXICO

Location 1980' FWL & 660' FSL

Sec. 19 Twp 9-S Rge 33-E

Other Services: Forxo-Guard

Supply Company Susco State # 2

WELL Flying "M"

FIELD Lea State N. M.

COMPANY SOUTHERN UNION SUPPLY COMPANY

WELL SUSCO STATE # 3

FIELD FLYING "M"

COUNTY LEA STATE NEW MEXICO

Location 1980' FWL & 660' FSL

Sec. 19 Twp 9-S Rge 33-E

Other Services: Forxo-Guard

Supply Company Susco State # 2

WELL Flying "M"

FIELD Lea State N. M.

Ground Level 11/25/77 Elev. 4373'

Ground Level K. B. - 10 Elev. 4383'

Ground Level Kelly Bushing Elev. 4373'

Ground Level Epithermal Elev. 4373'

Ground Level 5002 Elev. 4373'

Ground Level 4999 Elev. 4373'

Ground Level 4999 Elev. 4373'

Ground Level Surface Elev. 4373'

Ground Level Mud Elev. 4373'

Ground Level 600 Elev. 4373'

Ground Level 110° F. Elev. 4373'

Ground Level B. Stroud Elev. 4373'

Ground Level Mr. Monsell Elev. 4373'

Ground Level 7-7/8" 3700' Elev. 4373'

Ground Level 5002' Elev. 4373'

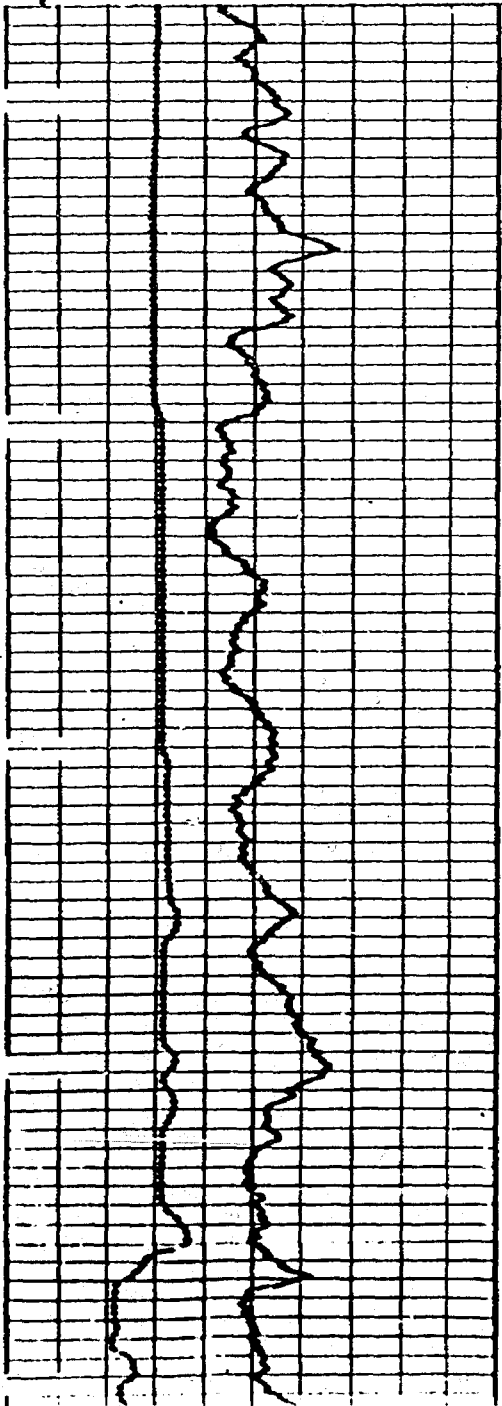
Ground Level 8-5/8" 0 Elev. 4373'

Ground Level 3700' Elev. 4373'

BEFORE EXAMINER STATES  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 1  
CASE NO. 102-81  
Submitted by Spencer L. Hester  
Hearing Date 1-19-78

Proposed Injection Interval  
4,300' - 4,346'

4250 4300 4350



**REBECO**  
CHEMICALS

915/381-2595  
OFFICE & PLANT  
16301 WEST UNIVERSITY ODESSA, TEXAS 79760  
P. O. BOX 6308

# WATER ANALYSIS REPORT

COMPANY SOUTHERN UNION EXPLORATION ADDRESS N. Mexico  
LEASE Susco #1 & #2 DATE XXXXXX May 30, 1978

ANALYSIS	PPM or Mg/L	E P M or Meq./L	Ionic P P M
1. PH	7.25		
2. H <sub>2</sub> S	Pos.		
3. CO <sub>2</sub>	Pos.		
4. Specific Gravity	1.12		
5. Phenol Alkalinity (CaCO <sub>3</sub> )	0.0		
6. M.P. Alkalinity (CaCO <sub>3</sub> )	520.0		
7. Bicarbonate (CaCO <sub>3</sub> )	520.0	10.4	HCO <sub>3</sub> 634
8. Chlorides (Cl)	187,000.0	5,267.6	CL 187,000
9. Sulphates (SO <sub>4</sub> )	2,800.0	58.33	SO <sub>4</sub> 2,800
10. Total Hardness (CaCO <sub>3</sub> )	10,000.0		
11. Calcium (CaCO <sub>3</sub> )	5,750.0	115.0	Ca 2,300
12. Magnesium (CaCO <sub>3</sub> )	4,250.0	85.0	Mg 1,037
13. Sodium (Na)		5,135.73	Na 118,122
14. <del>XXXXXXXXXX</del> Barium (Ba)			NO <sub>3</sub> 0
15. Iron (Fe)			
16. Total Dissolved Solids			311,893

Remarks: Both types of scale, CaCO<sub>3</sub> and CaSO<sub>4</sub>, are indicated. Either SCALFAC #401 or #404 is recommended for inhibition.  
#401 - Squeeze Treatments  
#404 - Other Types of Application

BEFORE EXAMINER STAMETS  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 8

CASE NO. 6281

Submitted by Southern Union

Hearing Date \_\_\_\_\_

*Southern Union* for the Petroleum Industry

*[Signature]*  
REPRESENTATIVE

JUL 20 1978

CONSERVATION COMMISSION

Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Southern Union Exploration Company to dispose of produced water into the San Andres Formation of the captioned well. We have no objections to the completion and operation of this well as set out on New Mexico Oil Conservation Commission Form C-108, dated June 19, 1978.

Yours very truly,

Margaret McGuffin  
P. O. Box 344  
Caprock, New Mexico 88213

Mr. Ramey:  
I have tried a number of times to reach you on the phone and have failed, to let you know I'm appased to this project.  
I thank you  
Margaret Mc Guffin  
Mrs. John Mc Guffin

COASTAL STATES GAS PRODUCING COMPANY

Five Greenway Plaza East  
Houston, Texas 77046

Case 6281

(713) 627-3700

June 28, 1978

Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P.O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N. Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Sir:

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Yours very truly,



Russell Wade  
Manager, Contracts & Regulations

RW/ah

Case 6281

Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Southern Union Exploration Company to dispose of produced water into the San Andres Formation of the captioned well. We have no objections to the completion and operation of this well as set out on New Mexico Oil Conservation Commission Form C-108, dated June 19, 1978.

Yours very truly,

*J.E. Malon*

Clajon  
P. O. Box 1668  
Fort Stockton, Texas 79735





Case 6281

Southern Union Exploration Company  
First International Building  
Dallas, Texas 75270  
(214) 748-8511

June 30, 1978

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

Re: July 19 Docket

Gentlemen:

This is to confirm the request of Southern Union Exploration Company to have the following entered on the July 19 Hearing Docket: Application to Convert the Southern Union Exploration Company Susco State #3 to a salt water disposal well.

Very truly yours,

James G. Ellis  
Chief Petroleum Engineer

JGE:sbr

cc: John Mulloy - FBA - Midland  
R. J. McCrary

Dockets Nos. 24-78 and 25-78 are tentatively set for hearing on August 2 and 16, 1978. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 19, 1978

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM,  
STATE LAND OFFICE 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 August, 1978, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for August, 1978, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6274: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Shar-Alan Oil Company, The Travelers Indemnity Co., and all other interested parties to appear and show cause why the Lillian State Well No. 2-X located in Unit P of Section 2 and the Emma McDaniel Well No. 2 located in Unit G of Section 22, both in Township 24 North, Range 1 West, Rio Arriba County, New Mexico, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 6241: (Continued from June 7, 1978, Examiner Hearing)

Application of Yates Petroleum Corporation for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle Eagle Creek Permo-Penn and West Atoka-Morrow gas production in the wellbore of its Powell DG Well No. 1 located in Unit O of Section 35, Township 17 South, Range 25 East, Eddy County, New Mexico.

CASE 6275: Application of Delta Drilling Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox gas well location of its Donaldson "A" Com. Well No. 1 located 1930 feet from the North line and 2303 feet from the West line of Section 23, Township 23 South, Range 28 East, Strawn formation, Eddy County, New Mexico, the W/2 of said Section 23 to be dedicated to the well.

CASE 6276: Application of Jerome P. McHugh for an unorthodox gas well location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of his Chris Well No. 4 to be drilled 1902 feet from the South line and 1650 feet from the East line of Section 9, Township 27 North, Range 3 West, Blanco Mesaverde Pool, Rio Arriba County, New Mexico, the S/2 of said Section 9 to be dedicated to the well.

Applicant further seeks authority to commingle Blanco Mesaverde and Gavilan-Pictured Cliffs production in the wellbore of said well.

CASE 6277: Application of Jerome P. McHugh for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Gavilan Pictured Cliffs and Blanco Mesaverde production in the wellbores of his Chris Wells Nos. 3 and 3A, located in Units H and I of Section 21, Township 27 North, Range 3 West, Rio Arriba County, New Mexico.

CASE 6253: (Continued and Readvertised)

Application of Merrion & Bayless for a non-standard proration unit and unorthodox location, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 366.44-acre non-standard gas proration unit comprising the W/2 of Sections 30 and 31, Township 26 North, Range 2 West, Blanco Mesaverde Pool, Rio Arriba County, New Mexico, to be dedicated to a well to be drilled at an unorthodox location 1650 feet from the North line and 750 feet from the East line of said Section 30.

CASE 6278: Application of Consolidated Oil & Gas, Inc., for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Jenney Well No. 1-A located in Unit P of Section 13, Township 26 North, Range 4 West, Rio Arriba County, New Mexico, to produce gas from the Blanco Mesaverde Pool and the Basin-Dakota Pool and to commingle Greenhorn gas production with the aforesaid Dakota production in said well.

CASE 6279: Application of Hanagan Petroleum Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying the N/2 of Section 28, Township 21 South, Range 26 East, Avalon Hills-Morrow Pool, Eddy County, New Mexico, 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. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6280: Application of Energy Reserves Group, Inc., for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle South Blanco-Pictured Cliffs and Otero-Chacra production in the wellbores of its Jicarilla 35 Well No. 6 located in Unit H of Section 1, Township 24 North, Range 5 West, and its Jicarilla 35 Wells Nos. 4 and 5, located in Unit M of Section 35 and Unit J of Section 36, respectively, both in Township 25 North, Range 5 West, Rio Arriba County, New Mexico.

CASE 6281: Application of Southern Union Exploration Co. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation through the perforated interval from 4300 feet to 4346 feet in its Susco State Well No. 3 located in Unit N of Section 19, Township 9 South, Range 33 East, Flying "M" San Andres Pool, Lea County, New Mexico.

CASE 6282: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order abolishing, contracting, extending vertical and horizontal limits, and redesignating certain pools in McKinley, Rio Arriba, Sandoval, and San Juan Counties, New Mexico:

(a) ABOLISH the Ojito-Gallup Oil Pool in Rio Arriba County, New Mexico, described as:

TOWNSHIP 25 NORTH, RANGE 3 WEST, NMPM  
Section 17: SW/4

(b) EXTEND the vertical limits of the Ojito-Dakota Oil Pool in Rio Arriba County, New Mexico, described as:

TOWNSHIP 25 NORTH, RANGE 3 WEST, NMPM  
Section 17: SW/4  
Section 18: SE/4  
Section 19: NE/4

to include the Gallup formation and redesignate said pool the Ojito Gallup-Dakota Oil Pool and extend said pool to include therein:

TOWNSHIP 25 NORTH, RANGE 3 WEST, NMPM  
Section 17: NW/4

(c) ABOLISH the Nipp-Pictured Cliffs Pool in San Juan County, New Mexico.

(d) EXTEND the horizontal limits of the WAW Fruitland-Pictured Cliffs Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 25 NORTH, RANGE 12 WEST, NMPM  
Section 2: W/2  
Section 3: All  
Section 10: N/2  
Section 11: W/2 and SE/4  
Section 14: NE/4

TOWNSHIP 26 NORTH, RANGE 12 WEST, NMPM  
Section 5: E/2  
Section 7: W/2 and SE/4  
Section 8: E/2 and SW/4  
Section 16: SW/4  
Sections 17 and 18: All  
Section 19: NE/4  
Section 20: All  
Section 21: W/2 and SE/4  
Section 22: S/2  
Section 26: SW/4  
Sections 27 and 28: All  
Section 29: N/2  
Sections 33, 34 and 35: All

TOWNSHIP 26 NORTH, RANGE 13 WEST, NMPM  
Section 1: N/2 and SE/4  
Section 2: NE/4  
Section 4: NE/4  
Section 12: E/2

TOWNSHIP 27 NORTH, RANGE 12 WEST, NMPM  
Section 30: SW/4

TOWNSHIP 27 NORTH, RANGE 13 WEST, NMPM  
Section 18: W/2  
Section 19: N/2  
Section 25: SE/4  
Section 27: NW/4  
Section 30: W/2  
Section 34: SE/4  
Sections 35 and 36: All

which includes, among other lands, the lands formerly contained in the Nipp-Pictured Cliffs Pool.

(e) CONTRACT the South Gallegos-Fruitland Pool in San Juan County, New Mexico, by deleting:

TOWNSHIP 26 NORTH, RANGE 12 WEST, NMPM  
Section 8: N/2  
Section 9: N/2  
Section 10: N/2

(f) EXTEND the Ballard-Pictured Cliffs Pool in Rio Arriba, San Juan, and Sandoval Counties, New Mexico, to include therein:

TOWNSHIP 23 NORTH, RANGE 3 WEST, NMPM  
Section 7: S/2  
Section 8: SW/4

(g) EXTEND the Blanco Mesaverde Pool in Rio Arriba and San Juan Counties, New Mexico, to include therein:

TOWNSHIP 29 NORTH, RANGE 4 WEST, NMPM  
Section 5: SW/4

(h) EXTEND the Blanco-Pictured Cliffs Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 29 NORTH, RANGE 8 WEST, NMPM  
Section 9: SE/4

TOWNSHIP 30 NORTH, RANGE 10 WEST, NMPM  
Section 22: NW/4

(i) EXTEND the South Blanco-Pictured Cliffs Pool in Rio Arriba, San Juan, and Sandoval Counties, New Mexico, to include therein:

TOWNSHIP 28 NORTH, RANGE 8 WEST, NMPM  
Section 10: All

(j) EXTEND the Bloomfield-Chacra Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 29 NORTH, RANGE 11 WEST, NMPM  
Section 9: SW/4

(k) EXTEND the BS Mesa-Gallup Pool in Rio Arriba County, New Mexico, to include therein:

TOWNSHIP 26 NORTH, RANGE 4 WEST, NMPM  
Section 3: SE/4

(l) The advertised extension of the Chacon-Dakota Associated Pool in Rio Arriba and Sandoval Counties, New Mexico, will be deferred to a later date because of an error in advertising.

(m) EXTEND the Dufers Point Gallup Dakota Oil Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 25 NORTH, RANGE 8 WEST, NMPM  
Section 18: W/2

TOWNSHIP 25 NORTH, RANGE 9 WEST, NMPM  
Section 12: W/2  
Section 13: NE/4

(n) EXTEND the Fulcher Kutz-Pictured Cliffs Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 29 NORTH, RANGE 11 WEST, NMPM  
Section 5: SW/4

(o) EXTEND the South Hospah-Lower Sand Oil Pool in McKinley County, New Mexico, to include therein:

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM  
Section 6: NW/4 SE/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM  
Section 12: NW/4 NW/4

(p) EXTEND the South Hospah-Upper Sand Oil Pool in McKinley County, New Mexico, to include therein:

TOWNSHIP 17 NORTH, RANGE 8 WEST, NMPM  
Section 5: W/2 SW/4  
Section 6: S/2 SE/4  
Section 7: N/2 NE/4  
Section 8: NW/4 NW/4

TOWNSHIP 17 NORTH, RANGE 9 WEST, NMPM  
Section 12: NW/4 NW/4

(q) EXTEND the Kutz-Fruitland Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 28 NORTH, RANGE 11 WEST, NMPM  
Section 33: NW/4

(r) EXTEND the South Los Pinos Fruitland-Pictured Cliffs Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 31 NORTH, RANGE 7 WEST, NMPM  
Section 2: NE/4  
Section 10: NE/4

(s) EXTEND the Lybrook-Gallup Oil Pool in Rio Arriba and Sandoval Counties, New Mexico, to include therein:

TOWNSHIP 23 NORTH, RANGE 7 WEST, NMPM  
Section 8: NW/4

(t) EXTEND the Papers Wash-Entrada Oil Pool in McKinley County, New Mexico, to include therein:

TOWNSHIP 19 NORTH, RANGE 5 WEST, NMPM  
Section 15: SE/4 SW/4  
Section 16: NE/4 SE/4  
Section 22: NE/4 NW/4

(u) The advertised extension of the Rusty-Chacra Pool in Sandoval County, New Mexico, will be deferred to a later date because of an error in advertising.

(v) EXTEND the Ute Dome-Dakota Pool in San Juan County, New Mexico, to include therein:

TOWNSHIP 32 NORTH, RANGE 14 WEST, NMPM  
Section 24: S/2



**FOY BOYD ASSOCIATES, INC.**

1306 GIBBS TOWER WEST  
PHONE (915) 684-7877  
MIDLAND, TEXAS 79701

June 20, 1978

*Case 6281*

*So I for hearing  
on 1/19  
letter coming*

JUN 23 1978

*Jim Ellis - S.U.G.*

Mr. Joe Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Mr. Ramey:

Attached is New Mexico Oil Conservation Commission Form C-108, requesting permission to inject produced water into the San Andres formation on the captioned well. Also included are various other forms such as an area plat, schematic, log and water analysis.

All operators within one half (1/2) mile of the proposed injection site have been notified in addition to the owner of the surface location. Waivers have been included with this notification. These waivers indicate that the offset operators have no objection to your approval of this application.

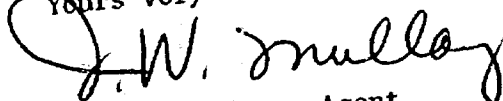
An investigation was conducted to determine the cement tops on all wells within one half mile of the injection well which were drilled and completed at a depth greater than the injection zone. The wells within the area of investigation drilled below the San Andres are the Union of Texas McGuffin Well No. 1, located in Unit C, Section 30, T-9-S, R-33-E; the American Trading and Producing Company, New Mexico State "19" Well No. 1, located in Unit E, Section 19, T-9-S, R-33-E; and BTA Oil Producers, FMS 664 LTD Well No. 1, located in Unit M, Section 19, T-9-S, R-33-E. Schematic drawing of each of these wells is attached.

Mr. Joe Ramey  
Page 2  
June 20, 1978

There are no other dry holes or deeper completions in the area of investigation.

Your approval of the application is requested at your earliest convenience.

Yours very truly,



John W. Mulloy - Agent  
Southern Union Exploration Co.

JWM:jw

Enc.

NEW MEXICO OIL CONSERVATION COMMISSION  
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR <b>Southern Union Exploration Company</b>		ADDRESS <b>1800 First International Bldg., Dallas, Tx.</b>	
LEASE NAME <b>Susco State</b>	WELL NO. <b>3</b>	FIELD <b>Flying "M" San Andres</b>	COUNTY <b>Lea</b>
LOCATION UNIT LETTER <b>N</b> ; WELL IS LOCATED <b>660'</b> FEET FROM THE <b>South</b> LINE AND <b>1980</b> FEET FROM THE <b>West</b> LINE, SECTION <b>19</b> TOWNSHIP <b>9-S</b> RANGE <b>33-E</b> NMPM.			
CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING	13 3/8"	364'	350
INTERMEDIATE	8 5/8"	3664'	1600
LONG STRING	4 1/2"	4523'	300
TUBING	2 3/8"	4261	NAME, MODEL AND DEPTH OF TUBING PACKER <b>Howco Tension Packer</b>
NAME OF PROPOSED INJECTION FORMATION <b>San Andres</b>		TOP OF FORMATION <b>3689'</b>	BOTTOM OF FORMATION <b>5020'</b>
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? <b>Tubing</b>		PERFORATIONS OR OPEN HOLES? <b>Perforations</b>	PROPOSED INTERVAL(S) OF INJECTION <b>4300' - 4346'</b>
IS THIS A NEW WELL DRILLED FOR DISPOSAL? <b>No</b>	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? <b>Oil Production</b>		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? <b>Yes</b>
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH <b>4368'-4377', CIBP @ 4364' with cement cap</b>			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA <b>300'</b>		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA <b>None</b>	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA <b>Glorieta 5020'</b>
ANTICIPATED DAILY INJECTION VOLUME (BBLs.) <b>40</b>	MINIMUM <b>100</b>	MAXIMUM <b>100</b>	OPEN OR CLOSED TYPE SYSTEM <b>Open</b>
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE - <b>No</b>		IS INJECTION TO BE BY GRAVITY OR PRESSURE? <b>Pressure</b>	NATURAL WATER IN DISPOSAL ZONE <b>No</b>
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) <b>Margaret McGuffin - P. O. Box 344 - Caprock, New Mexico 88213</b>		ARE WATER ANALYSES ATTACHED? <b>Yes</b>	
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL			
<b>Phillips Petroleum Company - Phillips Building - 4th &amp; Washington - Odessa, Texas 79761</b>			
<b>Clajon - P. O. Box 1668 - Ft. Stockton, Texas 79735</b>			
<b>Cleary Petroleum - P. O. Drawer 2358 - Midland, Texas 79702</b>			
<b>Shell Oil Company - P. O. Box 1509 - Midland, Texas 79702</b>			
<b>Arco - P. O. Box 1610, Midland, Texas 79702</b>			
<b>Coastal States Gas Producing - Permian Building - Midland, Texas 79701</b>			
<b>Latham, et al - P. O. Box 1392, Hobbs, New Mexico 88240</b>			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? <b>Yes</b>		EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL <b>Yes</b>	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B) <b>Yes</b>		ELECTRICAL LOG <b>Yes</b>	
		DIAGRAMMATIC SKETCH OF WELL <b>Yes</b>	

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

*J.W. Smalley*  
(Signature)

Agent

(Title)

6-19-78

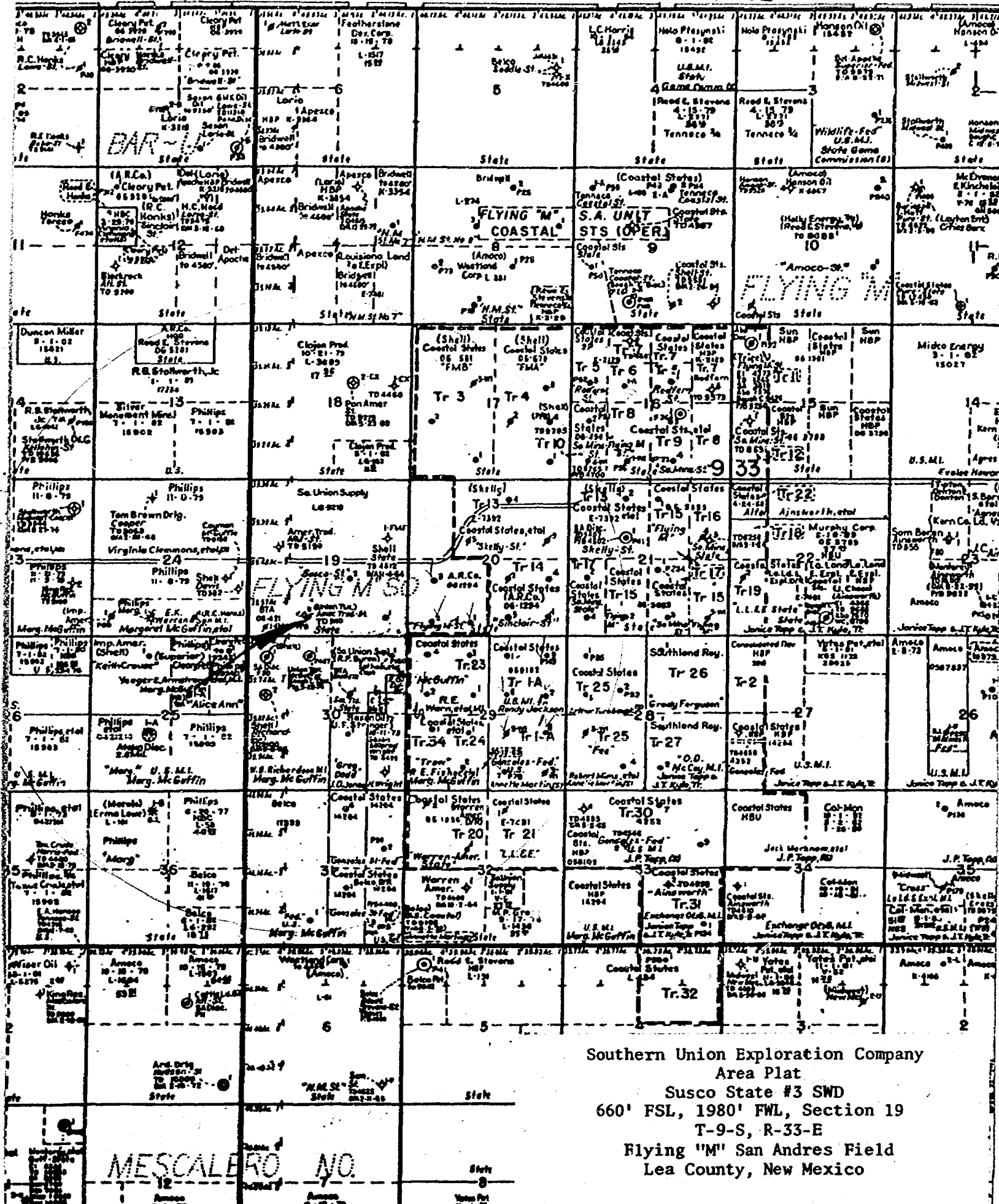
(Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

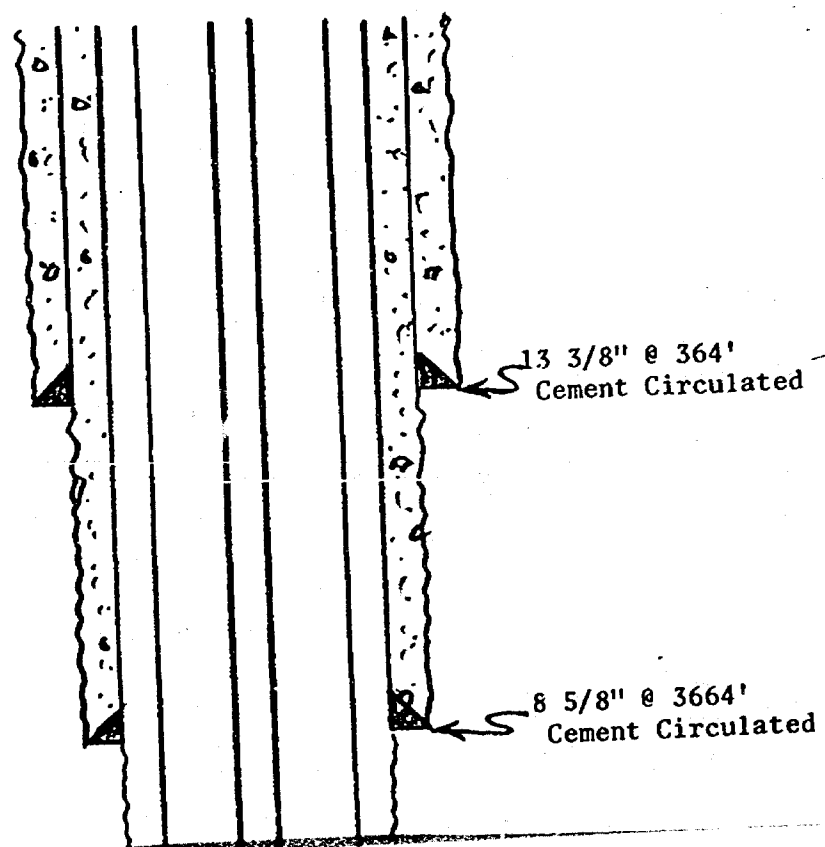


# LAVER CO.

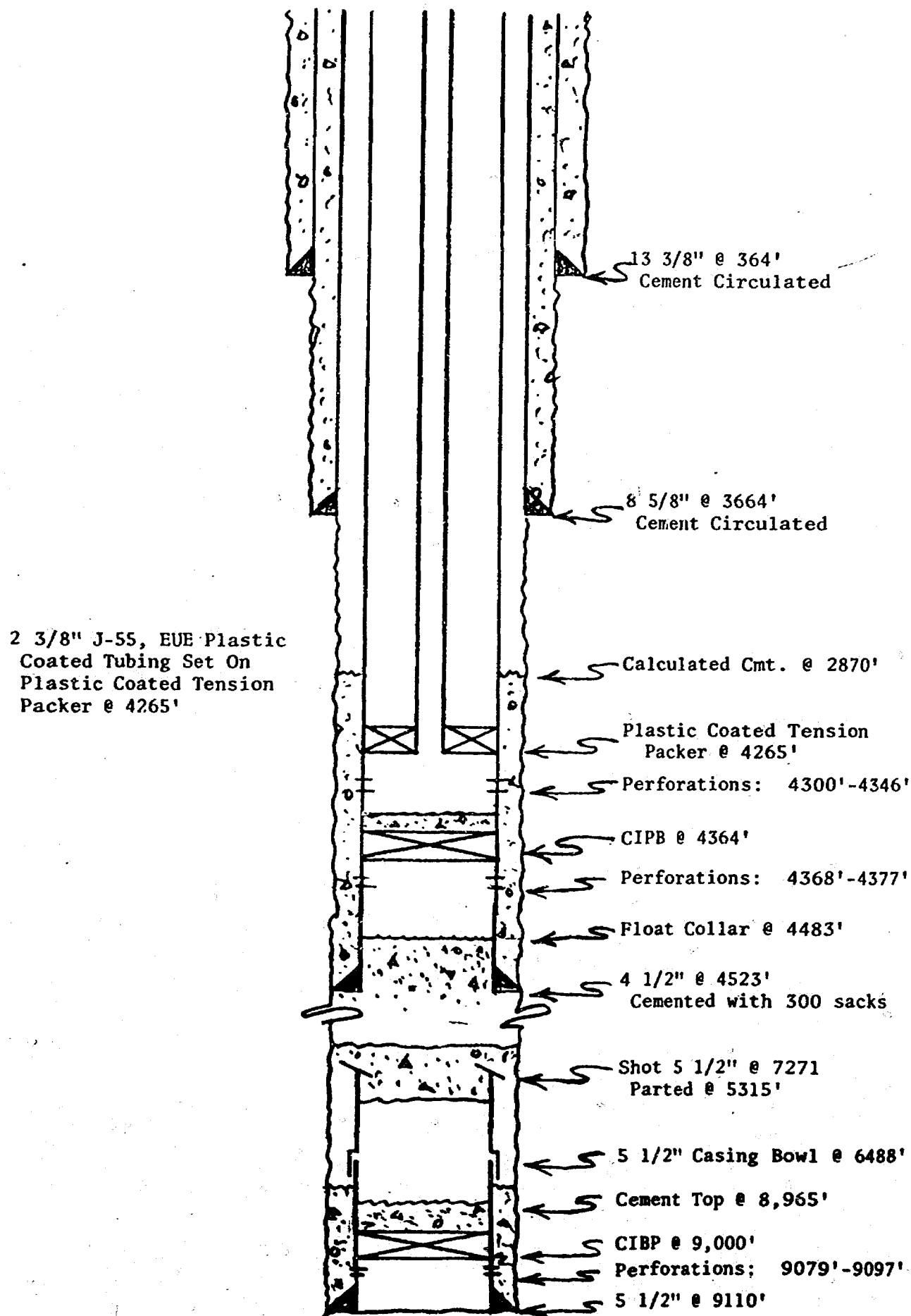
R33E



DIAGRAMMATIC SKETCH  
Southern Union Exploration Company  
Susco State #3 SWD  
660' FSL, 1980' FWL, Section 19  
T-9-S, R-33-E  
Flying "M" San Andres Field  
Lea County, New Mexico



DIAGRAMMATIC SKETCH  
 Southern Union Exploration Company  
 Susco State #3 SWD  
 660' FSL, 1980' FWL, Section 19  
 T-9-S, R-33-E  
 Flying "M" San Andres Field  
 Lea County, New Mexico





CHEMICALS, INC.

P. O. BOX 6305

• ODESSA, TEXAS • 79760

May 31, 1978

RECEIVED

SOUTHERN UNION EXPLORATION COMPANY  
First International Building  
Suite 1800  
Dallas, Texas 75270

JUN 12 1978

FOY BOYD ASSOCIATES, INC.

Gentlemen:

We have just completed water analyses on your Susco #'s 1 & 2. As we understand, you are beginning a monthly, hot, fresh water treatment downhole. This appears to be an excellent idea due to your water being saturated with Chlorides. A salt bridge or deposit could easily occur. We suggest using 5 gallons of our PARAFAC #216 per truck load of water. This is a water soluble, paraffin dispersant that will keep the paraffin dispersed and reduce any tendency toward emulsifying that your fresh water treatment may have.

The water analyses also indicate Calcium Carbonate and Calcium Sulfate type scales in the moderate to severe range. It is highly possible that some production loss has occurred over a period of time due to scale deposition.

To prevent any further scale deposition, we recommend the use of our SCALFAC #401 type scale inhibitor with a formation squeeze type application. We currently have several wells in New Mexico on squeeze with Phillips and Amerada.

A simple acid job would not remove the Calcium Sulfate scale, a slightly more complex method of scale removal is required. Should you be interested, we will be more than happy to work with you and the field personnel to insure the success of any treatment we recommend.

It should also be noted that as your water cut is over 25%, we could easily see a water-wet system and a mild corrosive condition. As a precautionary measure to protect your string of pipe, we suggest using CORFAC #120 on a batch treatment at the rate of 2 gallons bi-monthly.

Listed below are the prices of the products mentioned in this letter.

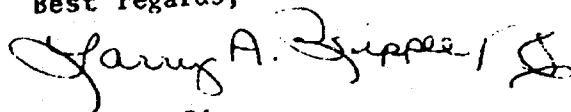
PARAFAC #216.....\$3.25/Gallon  
SCALFAC #401..... 3.79/Gallon  
CORFAC #120..... 3.79/Gallon

*"Chemicals for the Petroleum Industry"*

SOUTHERN UNION EXPLORATION COMPANY  
May 31, 1978  
Page 2

We certainly appreciate your business and will be available  
should any questions arise concerning our analyses or  
recommendations.

Best regards,

  
Larry A. Rippee

LAR/jc  
cc: File  
Enclosure



915/381-2595

OFFICE & PLANT P. O. BOX 6305  
18301 WEST UNIVERSITY ODESSA, TEXAS 79760

## WATER ANALYSIS REPORT

COMPANY SOUTHERN UNION EXPLORATION ADDRESS N. Mexico  
LEASE Susco #1 & #2 DATE ~~XXXXXX~~ May 30, 1978

ANALYSIS	PPM or Mg/L	EP M or Meq./L	Ionic P P M	
1. PH	7.25			
2. H <sub>2</sub> S	Pos.			
3. CO <sub>2</sub>	Pos.			
4. Specific Gravity	1.12			
5. Phenol Alkalinity (CaCO <sub>3</sub> )	0.0			
6. M.P. Alkalinity (CaCO <sub>3</sub> )	520.0			
7. Bicarbonate (CaCO <sub>3</sub> )	520.0	10.4	HCO <sub>3</sub>	634
8. Chlorides (Cl)	187,000.0	5,267.6	Cl	187,000
9. Sulphates (SO <sub>4</sub> )	2,800.0	58.33	SO <sub>4</sub>	2,800
10. Total Hardness (CaCO <sub>3</sub> )	10,000.0			
11. Calcium (CaCO <sub>3</sub> )	5,750.0	115.0	Ca	2,300
12. Magnesium (CaCO <sub>3</sub> )	4,250.0	85.0	Mg	1,037
13. Sodium (Na)		5,135.73	Na	118,122
14. <del>XXXXXXXXXX</del> Barium (Ba)			NO <sub>3</sub>	0
15. Iron (Fe)				
16. Total Dissolved Solids				311,893

Remarks: Both types of scale, CaCO<sub>3</sub> and CaSO<sub>4</sub>, are indicated. Either SCALFAC #401 or

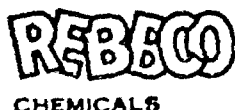
#404 is recommended for inhibition.

#401 - Squeeze Treatments

#404 - Other Types of Application

  
REPRESENTATIVE

Chemicals for the Petroleum Industry



915/381-2595

OFFICE & PLANT P. O. BOX 6305  
16301 WEST UNIVERSITY ODESSA, TEXAS 79760

## STABILITY INDEX (STIFF-DAVIS METHOD)

for  $\text{CaCO}_3$ 

$$\text{SI} = \text{pH} - \text{pCa} - \text{pALK} - K$$

pH = 7.25  
pCa = 1.48  
pALK = 1.98  
K @ 80°F = 2.95  
@ 100°F = 2.73  
@ 120°F = 2.45

where: pH = Lab measured (pH meter).  
pCa = Negative logarithm of Calcium ion concentration.  
pALK = Negative logarithm of Alkalinity of Bicarbonate ion.  
K = Constant representing the effects of temperature and total salt concentration of  $\text{CaCO}_3$ .  
SI = The stability index for Calcium Carbonate. A positive index indicates deposition (scale) will occur. A negative index indicates a corrosive condition. An SI of zero indicates water is in equilibrium, neither corrosive nor scale forming.

## IONIC STRENGTH TO DETERMINE K VALUE

Ion	Ionic Mg/L	Mg/L Times 10 <sup>-3</sup>	Factor	Ionic Strength
Na	118,122	.118	2.2	.2596
Ca	2,300	.023	5.0	.115
Mg	1,037	.01	8.2	.082
Cl	187,000	1.87	1.4	2.618
HCO <sub>3</sub>	634	.006	.8	.0048
SO <sub>4</sub>	2,800	.028	2.1	.0588

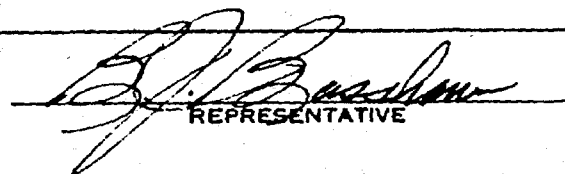
Remarks: Total Ionic Strength = 3.1334

$$\text{SI @ } 80^\circ\text{F} = 7.25 - 1.48 - 1.98 - 2.95 = +.84$$

$$\text{SI @ } 100^\circ\text{F} = 7.25 - 1.48 - 1.98 - 2.73 = +1.06$$

$$\text{SI @ } 120^\circ\text{F} = 7.25 - 1.48 - 1.98 - 2.45 = +1.34$$

Stability Index indicates  $\text{CaCO}_3$  scaling at temperatures above 60°F.

  
REPRESENTATIVE

Chemicals for the Petroleum Industry

$\text{CaSO}_4(\text{Gyp})$   
Scaling Tendency

$$\text{SO}_4^{--} = \frac{\text{Ksp} \times F_1 \times F_2}{\text{Ca}^{++}} = \text{Saturation in meq/l @ } 90^\circ\text{F}$$

$$\text{SO}_4^{--} = \frac{964 \times 2.97 \times 1.72}{115} = 42.82 \text{ meq/l}$$

Calculated Saturation = 42.82 meq/l

Analysis is 58.33 meq/l

∴  $\text{CaSO}_4$  scale is indicated.



Ms. Margaret McGuffin  
P. O. Box 344  
Caprock, New Mexico 88213

✓ Phillips Petroleum Company  
Phillips Building  
4th & Washington  
Odessa, Texas 79761

Clajon  
P. O. Box 1668  
Fort Stockton, Texas 79735

✓ Cleary Petroleum  
P. O. Drawer 2358  
Midland, Texas 79702

✓ Shell Oil Company  
P. O. Box 1509  
Midland, Texas 79702

✓ Arco  
P. O. Box 1610  
Midland, Texas 79702

Coastal States Gas Producing  
Permian Building  
Midland, Texas 79701

✓ Latham, et al  
P. O. Box 1392  
Hobbs, New Mexico 88240



**FOY BOYD ASSOCIATES, INC.**

1306 GILLS TOWER WEST  
PHONE (915) 684-7877  
MIDLAND, TEXAS 79701

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Sec. 19, T-9-S, R-33-E  
Lea County, New Mexico

Gentlemen:

Attached is a waiver and a New Mexico Oil Conservation Commission Form C-108, with attachments, which makes application to dispose of produced water into a porous formation. If you have no objections to the approval of this application, please indicate so by signing the attached waiver and forwarding it to the New Mexico Oil Conservation Commission in the enclosed envelope.

Should you have any questions or require additional information or data, please let us know at the earliest possible time.

Yours very truly,

FOY BOYD ASSOCIATES, INC.

John W. Mulloy - Agent  
Southern Union Exploration Company

JWM:bb  
Enc.

Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

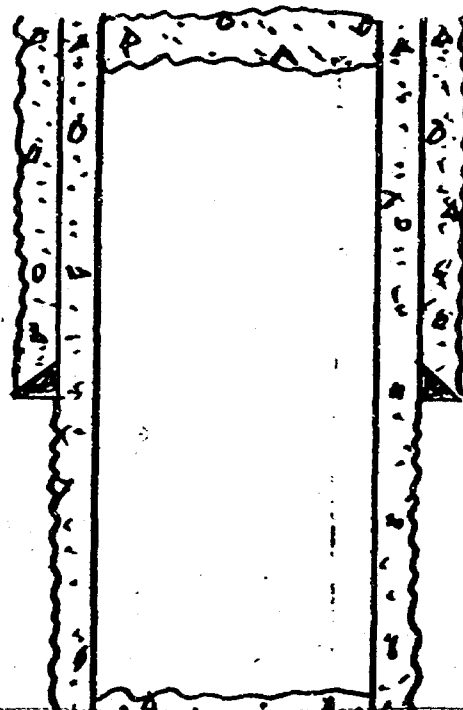
Dear Sir:

We have been duly notified of the intent of Southern Union Exploration Company to dispose of produced water into the San Andres Formation of the captioned well. We have no objections to the completion and operation of this well as set out on New Mexico Oil Conservation Commission Form C-108, dated June 19, 1978.

Yours very truly,

BTA OIL PRODUCERS  
FMS 664 LTD #1  
660' FWL & 330' FSL  
Sec. 19, T-9-S, R-33-E  
Lea County, New Mexico

Set 10 sks. plug  
@ surface w/4"  
marker



13 3/8" @ 366'  
cmt. w/350 sx.  
cmt. circulate

set 50 sx. plug

8 5/8" @ 3596'

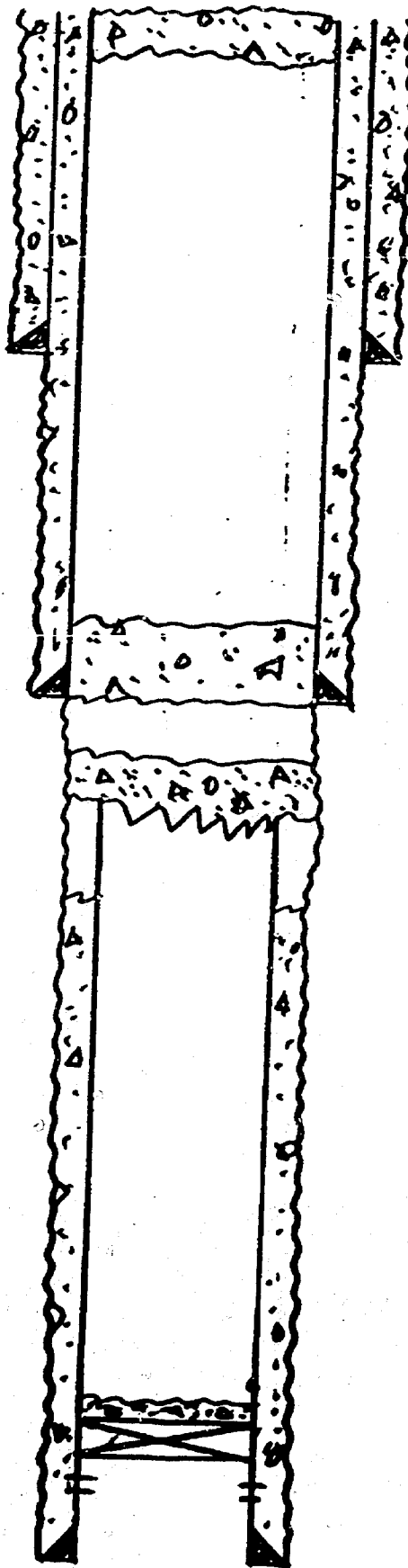
BTA OIL PRODUCERS  
 FMS 664 LTD #1  
 660' FWL & 330' FSL  
 Sec. 19, T-9-S, R-33-E  
 Lea County, New Mexico

Set 10 sks. plug  
 @ surface w/4"  
 marker

set 50 sx. plug  
 @ 3596'

shot 5 1/2" csg. @  
 7535', 7208', 6882',  
 6488', 5996', 5566',  
 5282'

Set CIBP @ 990'  
 w/3 sx. cmt.



13 3/8" @ 366'  
 cmt. w/350 sx.  
 cmt. circulate

8 5/8" @ 3596'  
 cmt. w/1550 sx.  
 cmt. circulate

calculate cmt. top  
 @ + 7800'

5 1/2" @ 9089'  
 cmt. w/300 sx.

T. D. 9089'

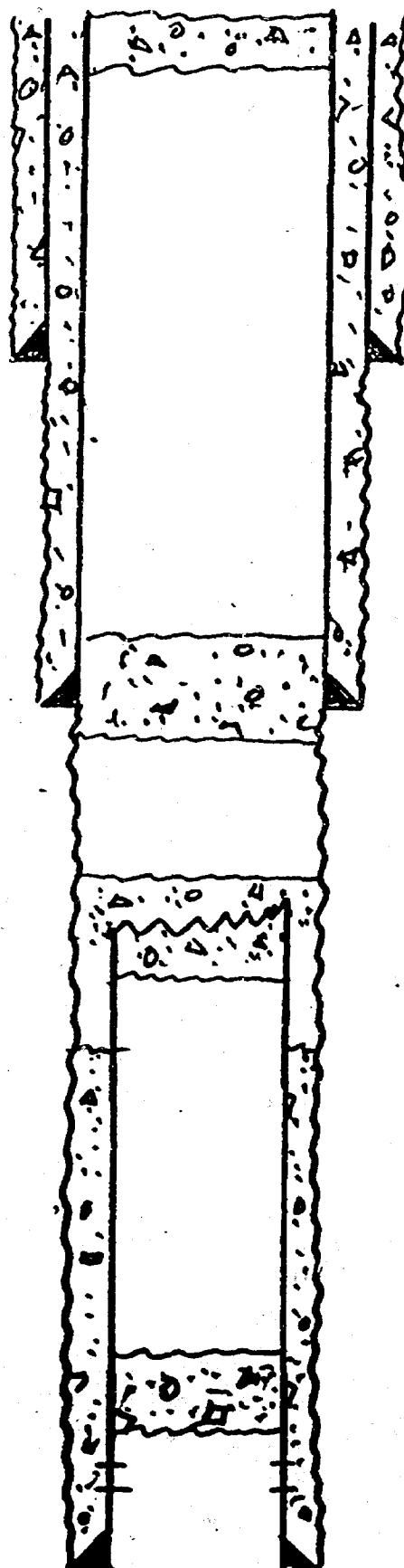
AMERICAN TRADING & PRODUCTION CORPORATION  
 New Mexico State "19" #1  
 2310' FNL & 990' FWL  
 Sec. 19, T-9-S, R-33-E  
 Lea County, New Mexico

Set 10 sx. plug  
 @ surface w/4"  
 marker

Set 25 sx. plug  
 @ 3620'-3700'

Set 25 sx. plug  
 @ 4400'-4314'

Set 35 sx. plug  
 @ 9121'



13 3/8" csg. @ 364'  
 cmt. w/350 sx.  
 cmt. circulated

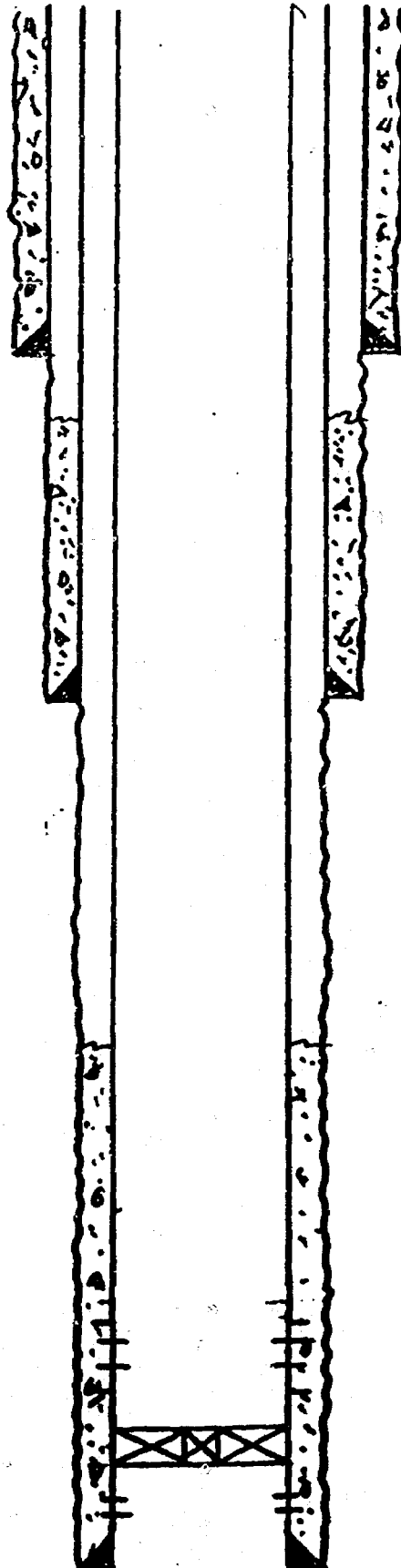
8 5/8" csg. @ 3720'  
 cmt. w/1600 sx.  
 cmt. circulated

calculated cmt.  
 Top @ ± 7800'

5 1/2" casing @ 9190'  
 cmt. w/300 sx.

T. D. 9190'

UNION TEXAS PETROLEUM  
 McGuffin #1  
 660' FNL & 1980' FWL  
 Sec. 30, T-9-S, R-33-E  
 Lea County, New Mexico



13 3/8" Csg. @ 367'  
 cmt. w/350 sks - circulated  
 cmt. top 1525'

8 5/8" Csg. @ 3669'  
 Cmt. w/935 sks.

cmt. @ 7805

Perfs: 9067-9102  
 sqzd. w/100 sks.  
 Reperf: 9089-9091  
 cmt. retainer @ 9390'  
 sqzd. w/100 sks.

Perfs: 9461-9537  
 5 1/2" csg. @ 9583  
 cmt. w/350 sks.

T.D. 9583

JUN 23 1978

Santa Fe

Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Southern Union Exploration Company to dispose of produced water into the San Andres Formation of the captioned well. We have no objections to the completion and operation of this well as set out on New Mexico Oil Conservation Commission Form C-108, dated June 19, 1978.

Yours very truly,

*J. F. Tweed*

Atlantic Richfield Company  
P. O. Box 1610  
Midland, Texas 79702



Phillips Petroleum Company  
Phillips Building  
4th & Washington *4001 Pinkbrook*  
Odessa, Texas 79762

Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

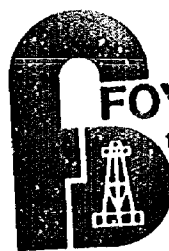
Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Southern Union Exploration Company to dispose of produced water into the San Andres Formation of the captioned well. We have no objections to the completion and operation of this well as set out on New Mexico Oil Conservation Commission Form C-108, dated June 19, 1978.

Yours very truly,

Shell Oil Company  
P. O. Box 1509  
Midland, Texas 79702



# FOY BOYD ASSOCIATES, INC.

1306 GIBBS TOWER WEST  
PHONE (915) 684-7877  
MIDLAND, TEXAS 79701

June 20, 1978

Shell Oil Company  
P. O. Box 1509  
Midland, Texas 79702

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Sec. 19, T-9-S, R-33-E  
Lea County, New Mexico

Gentlemen:

Attached is a waiver and a New Mexico Oil Conservation Commission Form C-108, with attachments, which makes application to dispose of produced water into a porous formation. If you have no objections to the approval of this application, please indicate so by signing the attached waiver and forwarding it to the New Mexico Oil Conservation Commission in the enclosed envelope.

Should you have any questions or require additional information or data, please let us know at the earliest possible time.

Yours very truly,

FOY BOYD ASSOCIATES, INC.

*John W. Mulloy*

John W. Mulloy - Agent  
Southern Union Exploration Company

JWM:bb  
Enc.

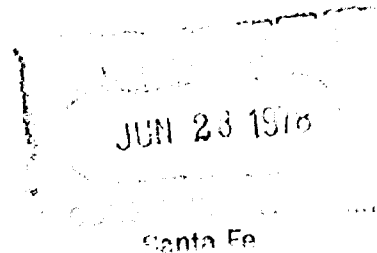
*We are not the operators of  
any lease offsetting this  
40 acre tract N-19-T9S-33E*

*RMC  
6-26-78*

*JWH*

<u>Yes</u>	<u>No</u>
<u>    </u>	<u>    </u>
<u>    </u>	<u>    </u>
<u>    </u>	<u>    </u>

REC. MIDLAND JUN 22 1978



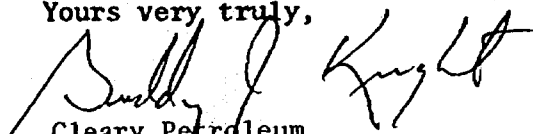
Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Southern Union Exploration Company to dispose of produced water into the San Andres Formation of the captioned well. We have no objections to the completion and operation of this well as set out on New Mexico Oil Conservation Commission Form C-108, dated June 19, 1978.

Yours very truly,

  
Cleary Petroleum  
P. O. Drawer 2358  
Midland, Texas 79702

JUN 27 1978

Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Southern Union Exploration Co.  
Susco-State #3  
Unit N, Section 19, T-9-S, R-33-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Southern Union Exploration Company to dispose of produced water into the San Andres Formation of the captioned well. We have no objections to the completion and operation of this well as set out on New Mexico Oil Conservation Commission Form C-108, dated June 19, 1978.

Yours very truly,

*E. Latham, Jr.*  
Latham, et al  
P. O. Box 1392  
Hobbs, New Mexico 88240

OIL CONSERVATION COMMISSION  
HOBBS DISTRICT

OIL CONSERVATION COMMISSION  
BOX 2088  
SANTA FE, NEW MEXICO

DATE June 23, 1978

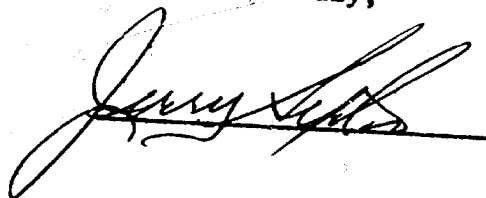
RE: Proposed MC \_\_\_\_\_  
Proposed DHC \_\_\_\_\_  
Proposed NSL \_\_\_\_\_  
Proposed SWD X \_\_\_\_\_  
Proposed WFX \_\_\_\_\_  
Proposed PMX \_\_\_\_\_

Gentlemen:

I have examined the application dated June 20, 1978  
for the Southern Union Exploration Co. Susco State #3-N 19-9-33  
Operator Lease and Well No. Unit, S-T-R  
and my recommendations are as follows:

Should have a plug in BTA Oil Producers FMS 664 LTD #1 at top of SWD zone  
and a plug at top of Glorieta.

Yours very truly,



ROUGH

dr/

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. 6281

Order No. R- 5776

APPLICATION OF SOUTHERN UNION  
EXPLORATION CO. FOR SALT WATER  
DISPOSAL, LEA COUNTY, NEW MEXICO.

*DR*  
*JOR* *JD* *AK*  
ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 19  
19 78, at Santa Fe, New Mexico, before Examiner Richard L. Stamets

NOW, on this August day of July, 1978, 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, Southern Union Exploration Co.,  
is the owner and operator of the Susco State Well No. 3,  
located in Unit N of Section 19, Township 9 South,  
Range 33 East, NMPM, Flying "M" San Andres Pool,  
Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to  
dispose of produced salt water into the San Andres  
formation, with injection into the perforated  
interval from approximately 4300 feet to 4346 feet.

(4) That the injection should be accomplished through 1-  
inch plastic lined tubing installed in a packer set at approxi-  
mately 4300 feet; 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

(4) That the American Trading and Producing Company New Mexico State "19" Well No 1 in Unit C and the BTF Oil Producers FMS 664 LTD Well No 1 in Unit M of ~~the~~ Section 19 and the Union Texas Petroleum McGuffin Well No 1 in Unit C of Section 30, all in Township 9 South, Range 33 East, Lea County, New Mexico, are located within one half mile of said Susco State Well No 3 and are completed in such a manner as ~~it~~ would allow fluid injected into said well or flushed from the San Andres formation ahead of such injected fluid to escape to other formations.

(5) That the applicant ~~did not~~ <sup>did not establish</sup> ~~provide~~ ~~reasonable assurance~~ that the ~~expected~~ fluids injected into the San Andres formation in said Susco State Well No 3 would remain within the injection interval.

(6) That the subject application should be denied.

IT IS THEREFORE ORDERED:

(1) That the applicant Southern Union Exploration Co. <sup>is hereby</sup> ~~is hereby~~ authorized to utilize its Susco State Well No. 3 located in Unit N of Section 19, Township 9 South, Range 33 East, NMPM, Flying "M" San Andres Pool Lea County, New Mexico, to dispose of produced salt water into the San Andres formation, <sup>is hereby denied.</sup> ~~injection to be~~

(2) 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.