

CASE 5750: CITIES SERVICE OIL  
CO. FOR AN UNORTHODOX LOCATION,  
LEA COUNTY, NEW MEXICO

CASE NO.

5750

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APPLICATION,  
TRANSCRIPTS,  
SMALL EXHIBITS,  
ETC.

OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

February 29, 1980

Cities Service Company  
Box 1919  
Midland, Texas 79702

Attention: Mr. E. F. Motter

Re: Division Order R-5283

Gentlemen:

Reference is made to your letter dated February 1, 1980, wherein you advise that due to certain problems encountered in and around Southeast Maljamar Unit Injection Wells Nos. 101W, 102W, and 103W, it has been necessary to severely curtail the amount of water injected into these wells since July of 1979. Further, that although through 1977 and 1978 injection into these three wells was more than twice the total withdrawal of oil and water from Well No. 104, since July withdrawals from said well have exceeded the curtailed injection volume into the aforesaid three injection wells.

This is contrary to the provisions of Order (3) of Division Order No. R-5283, which limit withdrawals from Well No. 104 to no more than the injection total into the three injection wells.

Inasmuch as the severely curtailed injection rates appear to have already had a detrimental effect on the productivity of Well No. 104, and in order to try to maintain production from this well at a reasonable water-flood producing rate, the production limitation clause contained in Order No. (3) of Division Order No. R-5283 is hereby suspended from July 1, 1979, through June 30, 1980.

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Page 2  
Letter to Cities Service Company  
February 29, 1980

It is felt that this suspension is further justified by the favorable injection/production ratio of 2.15 to 1\* experienced by these wells in 1977 and 1978.

Yours very truly,

JOE D. RAMEY  
Director

JDR/DSN/fd

cc: NMOCD Hobbs  
Phillips Petroleum Company  
4001 Penbrook  
Odessa, Texas 79762  
Attn: Mr. E. E. Clark  
Case 5750

\*  $(125,649 + 109,888) \div (54,294 + 55,283) = 2.15$

CITIES SERVICE COMPANY  
ENERGY RESOURCES GROUP



Box 1919  
Midland, Texas 79702  
(915) 684-7131

February 1, 1980

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

Attention: Mr. Joe Ramey

Re: Order R-5283  
Southeast Maljamar Unit  
Maljamar Pool  
Lea County, New Mexico

Gentlemen:

New Mexico Oil & Gas Division Order R-5283 dated September 6, 1976, authorized Cities Service Company, operator of the Southeast Maljamar Grayburg-San Andres Unit, to drill Tract 1 well No. 4 as an oil well at an unorthodox location (1355' FSL 1135' FEL, Section 30, T-17-S, R-53-E, Lea County, New Mexico) with the NE/4 SE/4 Section 30 dedicated to the well. Order further required (Paragraph 3) that water injection into Southeast Maljamar Tract 1 wells 1, 2 and 3 should be maintained at a sufficient rate that the total combined monthly injection into said wells be greater than the total monthly liquid volume (oil and water) withdrawal from Southeast Maljamar Tract 1 well No. 4. Cities Service completed SEM well 104 on January 20, 1977, and injection/withdrawal volumes since that time are as follows:

<u>Year</u>	<u>Injection Wells 101W, 102W and 103W</u>	<u>Production Well 104</u>
1977	125,649	54,294
1978	109,888	55,283
1979	27,051	31,091
Cumulative	262,588	140,668

Beginning in July 1979, production from SEM 104 has exceeded the combined injection of SEM wells 101W, 102W and 103W each month for the following reasons:

Due to a water flow from the 8-5/8 - 5-1/2" casing annulus, SEM injection well 101W was worked over by perforating and cementing the 5-1/2" casing in several stages to correct this water flow in mid-1979.

Cities Service was advised by the New Mexico Oil & Gas Division at a meeting in Hobbs, New Mexico, on July 13, 1979 that pressure existed (40#) on the 8-5/8 - 5-1/2" casing annulus in SEM well 103W. At the same meeting Cities Service was requested to plug four shallow wells in or near the Southeast Maljamar Unit which had been drilled by other parties but not properly plugged. AFE's to plug these wells were approved by the Southeast Maljamar Unit working interest owners recently and the work will commence immediately.

Cities Service has experienced problems with water flows in drilling producing wells on the Southeast Maljamar Unit over the last couple of years and more especially in drilling this past year SEM well 105 which is immediately north of SEM injection wells 101W and 102W.

AFE's to work over injection wells 102W and 103W were sent to unit working interest owners in January 1980. Workover proposal is to squeeze the open hole section (previously shot); perforate and circulate cement behind the 5-1/2" casing; cut window in 5-1/2" casing at 3900' and drill directional hole to 4350'; set 4" liner 3800' to total depth; perforate and stimulate pay section; return wells to injection.

To eliminate the water flow problem during plugging and workover operations, Cities Service reduced the injection volume into numerous wells in the unit beginning in July 1979. As a result, the production from SEM well 104 has exceeded injection from SEM wells 101W, 102 W and 103W:

<u>Month</u>	<u>Injection Wells 101W, 102W and 103W</u>	<u>Production Well 104</u>	
July	3,117	4,380	141 6/10
August	2,264	3,843	124 "
September	2,548	3,908	130 "
October	2,753	3,209	103 "
November	2,243	2,856	95 "
December	1,776	2,825	91 "

Cities Service respectfully requests relief from (Paragraph 3) of Order R-5283 until such time as the planned plugging and workovers can be accomplished. It is estimated this work will be completed by July 1,

Order R-5283  
Southeast Maljamar Unit  
Maljamar Pool  
Lea County, New Mexico

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1980. When considering the cumulative injection and production from the wells referred in Order R-5283, withdrawals have been 53% of the injected fluid and by such action, correlative rights have been protected and no waste has occurred.

If additional information on this matter is desired, please advise.

Very truly yours,



E. F. Motter  
Engineering Manager  
Southwest Region  
E & P Division

EFM:mfg

cc: Phillips Petroleum Company  
4001 Penbrook  
Odessa, Texas 79762  
Attn: Mr. E. E. Clark

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
September 1, 1976

EXAMINER HEARING

IN THE MATTER OF:

Application of Cities Service Oil  
Company for an unorthodox location,  
Lea County, New Mexico.

CASE  
5750

Application of Phillips Petroleum  
Company for a special allowable,  
Lea County, New Mexico.

CASE  
5751

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: William F. Carr, Esq.  
Legal Counsel for the Commission  
State Land Office Building  
Santa Fe, New Mexico

For Cities Service Oil Co.: Jason W. Kellahin, Esq.  
KELLAHIN & FOX  
Attorneys at Law  
500 Don Gaspar  
Santa Fe, New Mexico

For Phillips Petroleum Co.: Donald G. Stevens, Esq.  
Attorney at Law  
214 Old Santa Fe Trail  
Santa Fe, New Mexico

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General Court Reporting Service  
825 Calle Mejia, No. 122, Santa Fe, New Mexico 87501  
Phone (505) 982-9212



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1 MR. NUTTER: We will call Case Number 5750.

2 MR. CARR: Case 5750, application of Cities Service  
3 Oil Company for an unorthodox location, Lea County, New Mexico.

4 MR. KELLAHIN: If the Examiner please, Jason Kellahin,  
5 Kellahin and Fox appearing for the Applicant and we will have  
6 one witness to be sworn.

7 MR. STEVENS: Mr. Examiner, I'm Don Stevens, attorney  
8 in Santa Fe, New Mexico representing Phillips Petroleum and  
9 we will have one witness.

10 MR. KELLAHIN: If the Examiner please, I would  
11 suggest that this case be consolidated with 5751.

12 MR. NUTTER: We will call now Case Number 5751.

13 MR. STEVENS: Mr. Examiner, I'm Don Stevens, an  
14 attorney in Santa Fe representing Phillips Petroleum in this  
15 case. We previously requested consolidation and we still want  
16 it if you do but it isn't necessary for our case.

17 MR. NUTTER: Would it shorten the hearing if we  
18 consolidate the cases?

19 MR. STEVENS: Possibly slightly but not much.

20 MR. NUTTER: Well, that sounds good. Cases 5750 and  
21 5751 will be consolidated for the purpose of the hearing and  
22 we will call 5751.

23 MR. CARR: Case 5751, application of Phillips  
24 Petroleum Company for a special allowable, Lea County,  
25 New Mexico.

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1 Will the witnesses in the consolidated case please  
2 stand?

3 (THEREUPON, the witnesses were duly sworn.)  
4

5 DONALD BARRETT

6 called as a witness, having been first duly sworn, was  
7 examined and testified as follows:  
8

9 DIRECT EXAMINATION

10 BY MR. KELLAHIN:

11 Q Would you state your name, please?

12 A My name is Donald Barrett.

13 Q How do you spell that, Mr. Barrett?

14 A B-a-r-r-e-t-t.

15 Q By whom are you employed and in what position?

16 A I'm employed by Cities Service Oil Company as a  
17 reservoir engineer.

18 Q And where are you located?

19 A Midland, Texas.

20 Q Have you ever testified before the Oil Conservation  
21 Commission?

22 A No, sir, I have not.

23 Q For the benefit of the Examiner would you briefly  
24 outline your education and your experience as a petroleum  
25 engineer?

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1 A. I received a Bachelor of Science degree from the  
2 University of Missouri at Rolla in geology. I have a Bachelor  
3 of Science degree in petroleum engineering from the University  
4 of Tulsa. I'm a registered professional engineer in Texas. I  
5 have worked three years total as a production engineer II for  
6 Sun Oil Company in Michigan and one year for Cities Service in  
7 Midland and for the past two-and-a-half years I have been a  
8 reservoir engineer for Cities Service in Midland.

9 Q And in connection with your work, is the area involved  
10 in this application under your jurisdiction?

11 A. Yes, it is.

12 MR. KELLAHIN: Are the witness's qualifications  
13 acceptable?

14 MR. NUTTER: Yes, they are.

15 Q (Mr. Kellahin continuing.) Mr. Barrett, what is  
16 proposed by the applicant in Case 5750?

17 A. We propose to drill an unorthodox location located  
18 very close to the center of the southeast quarter of  
19 Section 30, Township 17 South, Range 33 East in Lea County,  
20 New Mexico.

21 Q Now, is this in a unit?

22 A. Yes, it is. It is located in Tract One of our  
23 Southeast Maljamar Grayburg-San Andres Unit.

24 Q Is that a waterflood project?

25 A. Yes, it is.

1 Q And is the unorthodox location related to your  
2 waterflood project?

3 A Yes, it is.

4 Q Now, referring to what has been marked as Exhibit  
5 Number One would you discuss the information shown on this  
6 exhibit?

7 A The exhibit is a plat of the entire unit area outlined  
8 by the dark dashed line. The proposed location is marked near  
9 the center of Tract One. What we are proposing to do is drill  
10 this location to prevent oil from the particular tract from  
11 being swept across the lease line, to prevent waste and also  
12 to increase the recovery from the total area.

13 Q How are your injection wells shown?

14 A The injection wells are shown with a circle around  
15 them. They are well No's. 1, 2 and 3 in that particular tract.

16 Q And you do not own the offsetting acreage, that one  
17 quarter section?

18 A No, sir, we do not.

19 Q Is that Phillips'?

20 A Yes, it is.

21 Q Now, referring to what has been marked as Exhibit  
22 Number Two would you identify that exhibit?

23 A Exhibit Number Two is a structure contour map con-  
24 structed on the top of the Premier sand which is the primary  
25 producing interval in this particular area.

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1 Q Does that indicate that the sand is quite level in  
2 this area?

3 A Right, there is very little relief in the portion of  
4 the area that we are looking at.

5 Q Now, referring to what has been marked as Exhibit  
6 Number Three, would you identify and discuss that exhibit?

7 A Exhibit Number Three is a bubble map that shows the  
8 relative position of the waterflood front and the drainage  
9 radius of the U. S. Minerals No. 4 Well. The circles are  
10 proportional to the amount of water having been injected and  
11 the amount of oil having been produced by the Phillips well.

12 What we are attempting to show here is to give  
13 some idea of how much remaining reserves there are left to  
14 be recovered in this particular area of the field.

15 The dark crosshatch in each of the circles represents  
16 what we feel would be oil that would have been recovered had  
17 there been no wells at all that has already been swept by  
18 injection. We feel that had the well been drilled right in  
19 the exact center without any other producing wells there, we  
20 probably would have been able to drain approximately forty  
21 acres of the reservoir. As it is we have swept approximately

22 Q Are you referring now to your exhibit?

23 A I will refer to the next exhibit which is a volu-  
24 metric calculation that goes along with this particular plat.

25 Q That is Exhibit Number Four?

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1 A Right. This indicates that we have already swept  
2 approximately thirteen acres of the forty acres that would have  
3 been available to us through the injection wells.

4 MR. NUTTER: Which forty acres are you talking  
5 about, your basic forty acres?

6 A The basic forty acres would be if the well were  
7 located in the exact center of that quarter section. It would  
8 include the total area from wells 101, 102, 103 and U. S.  
9 Minerals No. 4.

10 MR. NUTTER: In other words, you are talking about  
11 if a well had been drilled at the point that is just west of  
12 your proposed location?

13 A Yes, sir, that is correct.

14 MR. NUTTER: And the square would represent --

15 A Would represent a total forty-acre plat.

16 MR. NUTTER: Like this, this square is the forty  
17 acres you are talking about?

18 A Yes, sir, that is correct.

19 MR. NUTTER: Okay.

20 A And the crosshatch again represents the area of  
21 that particular forty acres we feel has already been swept  
22 by injection.

23 MR. NUTTER: Okay.

24 A By drilling the well we feel that we will in effect,  
25 have half of a five-spot available to us for secondary

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1 recovery purposes and as represented by the dashed lines  
2 running through the middle on a diagonal between Wells 101 and  
3 103. With this particular setup we feel that the remaining  
4 primary and secondary oil left to be recovered by the well in  
5 the proposed location is approximately a hundred thousand  
6 barrels.

7 Q In your opinion is oil being swept off the unit at  
8 the present time?

9 A Yes, sir, I believe that it is.

10 Q Is there any other information on Exhibit Number  
11 Four that you want to discuss?

12 A No, sir.

13 Q Referring to what has been marked as Exhibit Numbers  
14 Five and Six, would you discuss those exhibits?

15 A Exhibit Number Five is a production curve prepared  
16 from the New Mexico production reports on Phillips Petroleum  
17 U. S. Minerals No. 4 Well showing the oil produced and the  
18 water produced on a barrels per month basis and the producing  
19 GOR.

20 Exhibit Number Six is a production performance  
21 curve from the Southeast Maljamar Grayburg-San Andres Unit  
22 showing the oil produced, the water produced in barrels  
23 per day and the producing GOR.

24 Q Now, can you relate the information shown on the  
25 two exhibits?



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1           A     The one major point that I would like to point out  
2 between these two particular exhibits is the declining GOR  
3 on both curves with the exception of about a year if you shift  
4 the curve on the U. S. Minerals No. 4 approximately one year  
5 ahead, these two curves will just almost overlay identically  
6 which indicates to me that the Phillips well is receiving  
7 pressure maintenance and waterflood oil as a result of inject-  
8 ion into the Tract One wells.

9           Q     Now, in your opinion is approval of this application  
10 by Cities Service necessary to protect the interest owners in  
11 the waterflood project?

12          A     Yes, sir, it is very definitely.

13          Q     And is that going to impair the correlative rights  
14 of any other operator?

15          A     No, sir, it will not, we have previously agreed.

16          Q     Does Cities Service have any objection to Phillips'  
17 application for a capacity allowable?

18          A     No, sir, we do not.

19          Q     Were Exhibits One through Six prepared by you or  
20 under your supervision?

21          A     Yes, sir, they were.

22               MR. KELLAHIN: At this time I would like to offer  
23 into evidence Exhibits One through Six, inclusive.

24               MR. NUTTER: Cities Exhibits One through Six will  
25 be admitted into evidence.

1 (THEREUPON, Cities Service Exhibits One through  
2 Six were admitted into evidence.)

3 MR. NUTTER: Are there any questions of this witness?

4 MR. STEVENS: None.

5  
6 CROSS EXAMINATION

7 BY MR. NUTTER:

8 Q Mr. Barrett, you mentioned shifting the curves one  
9 year to the right, actually there is a difference of four years  
10 in the starting point of these two curves. Now, if we look at  
11 the Maljamar GSA unit curve we see that injection started in  
12 9-67?

13 A. Yes, sir.

14 Q Then we have a period of two years and three months  
15 production curve there prior to the time of the commencement  
16 of injection and then oil production on the unit did go up  
17 rather rapidly in the next twelve to fourteen months, I believe?

18 A. Yes, sir.

19 Q And it peaked out there in late '68, the first  
20 peak. We don't have a similar production history for the  
21 Phillips well. Was it drilled only in February or March of  
22 1969?

23 A. Yes, sir, I believe that is the proper timing on it.  
24 This was all of the information that I had available to me.

25 Q So we don't have any comparable production history for

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1 it because it wasn't even in existence then?

2 A. That is correct.

3 Q. Now, when do you think it received a response to  
4 your water injection program, from the time it was first  
5 drilled or did this response occur later?

6 A. I would say within a year after or possibly two as  
7 the GOR began to decline you would expect a well under primary  
8 production to exhibit just the opposite in that the GOR  
9 should increase without any other outside effects.

10 Q. Do you know when your 101, 102 and 103 were put on  
11 injection?

12 A. No, sir, I do not at the present time. They were  
13 early in the project, though.

14 Q. Did you put all of the wells on at the same time,  
15 do you know?

16 A. Within a very short period of time. I would say  
17 within six months.

18 Q. So there wasn't any pilot period or anything?

19 A. No, sir, there was no pilot.

20 Q. And the net effect then for the -- if it has been  
21 due to response from your waterflood project, the net effect  
22 has been that the Phillips well has experienced no decline,  
23 it has produced at a uniform rate for six or seven years?

24 A. Yes, sir, that is correct.

25 Q. With a declining GOR. Now, you say that you have no

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1 objection to the application of Phillips in Case Number 5751,  
2 that is for capacity allowable for their Minerals No. 4 Well,  
3 is that correct?

4 A. That is correct.

5 Q But that's premised on the assumption that your  
6 unorthodox location would be approved?

7 A. Yes, sir.

8 MR. NUTTER: Are there any further questions of  
9 Mr. Barrett?

10 MR. KELLAHIN: That is a correct assumption, Mr.  
11 Nutter.

12 MR. NUTTER: He may be excused.

13 (THEREUPON, the witness was excused.)

14 MR. NUTTER: Do you have anything further at this  
15 point?

16 MR. KELLAHIN: That's all I have right now.

17  
18 W. J. MUELLER

19 called as a witness, having been first duly sworn, was  
20 examined and testified as follows:

21  
22 DIRECT EXAMINATION

23 BY MR. STEVENS:

24 Q Would you state your name, residence, occupation  
25 and by whom you are employed?

1 A My name is W. J. Mueller, spelled M-u-e-l-l-e-r.  
2 I'm a reservoir engineering advisor for Phillips Petroleum  
3 Company, Odessa, Texas.

4 Q Have you previously testified before this Commission  
5 and had your qualifications accepted by it?

6 A Yes, sir.

7 MR. STEVENS: Are the witness' qualifications  
8 acceptable, Mr. Examiner?

9 MR. NUTTER: They are.

10 Q (Mr. Stevens continuing.) Would you briefly first  
11 outline what Phillips seeks here and I'll ask you for your  
12 comments on the Cities Service application and how they relate  
13 to each other?

14 A Well, briefly, Phillips wears two hats in this, both  
15 cases here. We are a twenty-seven point percent working  
16 interest owner in the Southeast Maljamar Unit and the proposed  
17 unorthodox location requested by Cities Service as operator  
18 in the Southeast Maljamar Unit is on a tract that Phillips  
19 put into the unit.

20 Phillips after the formation of the unit drilled  
21 the Minerals 4 about two point three years after the unit was  
22 formed and we do request a capacity allowable for our  
23 Minerals 4 to compete with the unorthodox location requested  
24 by Cities Service as operator of the Southeast Maljamar Unit.

25 Q All right, perhaps it would be best for you to

1 comment, if you will, on Phillips' viewpoints on the  
2 Cities Service application for this unorthodox location?

3 A. Okay, our Exhibit Number One in the Cities Service  
4 Case 5750 is Phillips' conditional waiver. They would like  
5 the exhibit put into the record for that case wherein Phillips  
6 as an offset operator and one hundred percent working interest  
7 owner of the U. S. Minerals No. 4 located in Unit O of  
8 Section 30, 17 South, 33 East in the Maljamar Grayburg-  
9 San Andres Field, Lea County, New Mexico, conditionally waives  
10 objection to the proposed unorthodox location for the Cities  
11 Service-operated Southeast Maljamar Grayburg-San Andres Unit  
12 Tract One Well No. 4 at thirteen hundred and fifty-five feet  
13 from the south line and eleven hundred and thirty-five feet  
14 from the east line of Section 30.

15 Q. Can I interrupt and ask you, how close is that to  
16 Phillips' lease line on this well and what would be a normal  
17 spacing?

18 A. This unorthodox location is one hundred and eighty-  
19 eight feet from the outer contiguous acreage, boundary of the  
20 two tracts being the Southeast Maljamar Unit in our U. S.  
21 Minerals 4 lease or proration unit.

22 Q. What would be the maximum ordinary allowable under  
23 state-wide rules?

24 A. I think under the infield drilling order that  
25 Cities Service has in the Southeast Maljamar Unit they can

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1 drill within three hundred and thirty feet of the outer  
2 boundary of their unit.

3 Q Okay.

4 A The two conditions of Phillips for waiver of objection  
5 by Phillips Petroleum Company to Cities Service application  
6 are, one, that the New Mexico Oil Conservation Commission  
7 approve a special capacity allowable for Phillips-operated  
8 U. S. Minerals Well No. 4, this being Case 5751 with the  
9 Commission today, in order to permit Phillips a competitive  
10 withdrawal rate from the reservoir. This capacity allowable  
11 for the U. S. Minerals Well No. 4 to become effective upon the  
12 completion date of the Southeast Maljamar Grayburg-San Andres  
13 Unit Tract One Well No. 4 which will by virtue of being in an  
14 active waterflood project also enjoy a capacity allowable.

15 Our second condition of approval is that we think  
16 for the protection of correlative rights and the maximum  
17 recovery in this area that waterflood operations should be  
18 continued and this minimum operation should at least be  
19 voidage replacement for the unorthodox well, the 1-4 and so  
20 our condition number two is that the total combined monthly  
21 water injected volumes into the Southeast Maljamar Grayburg-  
22 San Andres Unit, Tract Numbers One, Two and Three, be maintained  
23 at or above two hundred percent of the total monthly fluid  
24 volume withdrawal from the proposed unorthodox 1-4. This  
25 condition will insure a more balanced injection to withdrawal

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1 ratio for maximum reservoir recovery and protection of  
2 correlative rights.

3 We feel that approximately fifty percent of the  
4 water injected into the three injection wells could be  
5 attributed to volume replacement of the unorthodox location.

6 Q Referring to what has been marked as Exhibit  
7 Number Two would you point out the wells you are talking  
8 about, you have given the descriptions of them.

9 A On Exhibit Number Two, shown by a red arrow, is  
10 the proposed unorthodox location of Cities Service, Tract One,  
11 Well No. 4. Shown by a yellow arrow is the current producing  
12 well, the Phillips U. S. Minerals No. 4 located in Unit O of  
13 Section 30.

14 Also shown on Exhibit Number Two are Tracts One,  
15 Four and Five colored in yellow. These are the four tracts  
16 that Phillips contributed to the Southeast Maljamar Unit.  
17 This was some four hundred acres Phillips put into the unit  
18 or approximately thirty-seven percent of the total acreage  
19 in the unit was contributed by Phillips. For this we received  
20 a Phase One participation of twenty-one point three percent  
21 which was based on remaining primary and current production  
22 at that time. We have a Phase Two Participation of twenty-  
23 four point seven, four percent which is in effect now.

24 Only Phase Two participation formula by the  
25 operators gave credit for undeveloped acreage. This forty

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1 acres was not put into the unit because under the participation  
2 formula it would only have received zero point one seven eight  
3 percent interest.

4 MR. NUTTER: Because it wasn't developed at the  
5 time?

6 A. Right. Yet in the approximately seven-and-a-half  
7 years that U. S. Minerals No. 4 has been produced, it has  
8 produced a volume of oil equal to twenty-three percent as  
9 much as the Southeast Maljamar Unit has produced in this same  
10 time.

11 Q. A summation then might be that you do not oppose  
12 this unorthodox location so long as the amount of water re-  
13 injected would be two hundred percent of the amount taken out  
14 by the Cities Service?

15 A. Yeah, approximately a replacement of voidage by  
16 the Cities Service well.

17 Q. The two hundred percent is based upon what?

18 A. On the fact that you draw bubble maps like Cities  
19 Service did and an attributable half of the injection goes  
20 north and half south or half east and half west, so the  
21 attributable injection into those three injection wells in  
22 any combination they want, approximately only about half of it  
23 could be attributed to the acreage bounded by the outer  
24 boundary of the three injection wells.

25 Q. Have you further comments on Cities Service's

1 application?

2 A. Yes, Phillips -- we don't believe we are really  
3 scabbing here or taking unfair advantage of anybody, we have  
4 paid a major share of the waterflood development costs in this  
5 area through our participation in the Southeast Maljamar Unit.  
6 We have not been restrictive to any waterflood development  
7 in the area. Conoco proposed completion of the Pearl B No. 3  
8 to water injection in 1973, our west offset, we did not  
9 oppose that, we have not put any restrictive covenants on  
10 the Cities Service operated unit and we feel that the operations  
11 of the 4 have not in any way impeded waterflood development.  
12 In fact, we feel that our operations have probably added  
13 reserves development in this area so I doubt seriously that  
14 Cities Service would be drilling the proposed unorthodox  
15 location that they propose here had our Minerals 4 been a  
16 dry hole. We did prove up additional acreage for the unit.

17 MR. STEVENS: Mr. Examiner, I'll ask, we plan  
18 next to go into Case Number 5751 and we will submit informa-  
19 tion and exhibits for that. Would you like to cross examine  
20 the witness now in relation to the Cities Service case or wait  
21 until the end?

22 MR. NUTTER: Mr. Kellahin, did you have any  
23 questions that you wished to ask this witness at this time?

24 MR. KELLAHIN: No, we don't have any questions.

25 MR. NUTTER: I might just ask a couple of questions

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1 here at this point, Mr. Mueller.

2

3

CROSS EXAMINATION

4

BY MR. NUTTER:

5

Q As you are aware, the Commission has had some  
6 difficulty with certain waterflood projects in southeast  
7 New Mexico and has on occasion had to limit injection rates  
8 to some percentage of the reservoir voidage. What would the  
9 effect be if the Commission should have to set some kind of  
10 a maximum injection rate here on your conditional waiver?  
11 I'm not suggesting that they will but I'm just saying if they  
12 would.

13

A I'm saying that if it is imposed on Cities Service  
14 that they just get out and meet the requirement and we would  
15 waive our objection to that continuing with the maximum  
16 capacity allowable on the 1-4 if the restriction is placed by  
17 the Commission on their injection.

18

Q Now, when you are talking about two hundred percent  
19 of total monthly fluid withdrawal, you say oil and water but  
20 you would include an equivalent reservoir volume of gas  
21 in there too, wouldn't you?

22

A I believe that Cities Service's tract and our well  
23 are currently at solution ratio, about three hundred cubic  
24 feet, there is no free gas.

25

Q So gas if it were calculated in there would be

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1 a very minor thing?

2 A Yes. Actually it is included in the formation  
3 volume factor.

4 Q At this time?

5 A Yes. I think they are at about three hundred GOR  
6 and so are we, which is actually solution ratio.

7 MR. NUTTER: Okay, Mr. Stevens, we will go to  
8 Case 5751.

9

10 W. J. MUELLER

11 called as a witness, having been previously sworn, was  
12 examined and testified as follows:

13

14 DIRECT EXAMINATION

15 BY MR. STEVENS:

16 Q For the record are you the same party who  
17 testified in Case 5750, Mr. Bill Mueller?

18 A Yes, sir.

19 Q Briefly, what does Phillips seek in this application?

20 A In the application today Phillips seeks a capacity  
21 allowable for its U. S. Minerals Well No. 4 located in Unit O  
22 of Section 30, Township 17 South, Range 33 East, Maljamar  
23 Grayburg-San Andres Pool, Lea County, New Mexico. It is  
24 directly offset to the northeast and west by water injection  
25 and to the south by oil-water contact.

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1           Q     Referring to the log marked Exhibit Number One,  
2     would you explain it, please?

3           A     Exhibit Number One is the borehole compensated  
4     acoustic log run by Dresser-Atlas on our U. S. Minerals Well  
5     No. 4.

6                 This log shows on the two-inch section, we have  
7     Yates, Queen, Grayburg and San Andres marked. The four areas  
8     in red colored at the bottom of the two-inch section that are  
9     about forty-two, fifty to forty-three, fifty, are the four  
10    lower Grayburg sands we are producing from. These four  
11    sands are detailed on the five inch -- excuse me, this is  
12    reduced scale so I guess it is about two-and-a-half inch. It  
13    shows our actual perforations on the large-scale section of  
14    the log with the well being perforated from forty-two, fifty  
15    to sixty; forty-two, eighty-four to ninety-six; forty-three,  
16    twelve to twenty-four and forty-three, forty to fifty.

17                The log analysis indicates that we have some forty-  
18    six feet of net pay in these four sands and that they had  
19    an average porosity of ten point two percent and a weighted  
20    average water saturation of forty-six percent, that the  
21    forty-acre original oil in place calculations for the proration  
22    unit of our U. S. Minerals No. 4 is approximately seven hundred  
23    and fifty thousand barrels of oil. We anticipate that  
24    through the offset injection we would recover at least fifty  
25    percent of this or approximately three hundred and seventy-five

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1 thousand barrels of oil should be the estimated current  
2 ultimate recovery for the U. S. Minerals No. 4. We've only  
3 produced a cumulative of one hundred and seventy-one thousand  
4 barrels of oil and, therefore, have a remaining recovery in  
5 excess of two hundred thousand barrels of oil which we feel  
6 deserves careful protection.

7 We do not feel that this reserve definitely  
8 indicates that we have not produced any oil from outside of  
9 our own forty-acre reserve limit and I can't say if oil has  
10 moved into the forty acre unit or not.

11 Q Would this amount of pay tend to be greater or  
12 lesser than the other wells in the field, in your opinion?

13 A This is one of the best wells in the field and I  
14 would say particularly this area would be maybe number one or  
15 number two.

16 Q Would this be the reason why this well has  
17 produced twenty-three percent as much as the Southeast  
18 Maljamar itself as previously testified?

19 A Yes, sir.

20 Q In other words, could a summation be made that  
21 as a better well that explains the better porosity and that  
22 explains the amount of oil it has produced and will produce?

23 A The Southeast Maljamar Tract One which was the old  
24 total U. S. Minerals lease one, two and three, was one of  
25 the best tracts put in the Southeast Maljamar Unit.

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1 Q Referring then to what has been marked as Exhibit  
2 Two would you explain it, please?

3 A Exhibit Two is the average annual oil, water and  
4 gas production for our U. S. Minerals No. 4 since completion  
5 in 1969 through the first half of 1976. In the seven-and-a-  
6 half years this well has been completed it has accumulated  
7 a hundred and seventy-one thousand, two hundred and two  
8 barrels of oil. The well's reserves have been pressured by  
9 offsetting injection as is evidenced by the decrease in gas  
10 production here.

11 Q Would you point out what the various colors mean  
12 on your graph there?

13 A Yes, the color code is indicated on the right-hand  
14 side of the graph, the red-shaded curve being barrels of oil  
15 per day, the blue-shaded curve being barrels of water per  
16 day and the green-shaded curve being MCF of gas per day.

17 Our current producing gas-oil ratio is approximately  
18 three hundred to one. Initially we started out at about  
19 fifteen hundred to one.

20 The well has not sustained any decline, in fact,  
21 it has experienced an increase over the seven-and-a-half years  
22 of its production and when Cities Service first approached  
23 us earlier this year to drill this unorthodox location we  
24 stated that if we thought our waiver would be conditioned  
25 upon a capacity allowable for this well, so in May of this year

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1 we inserted a two-inch tubing pump in this well and tested  
2 it on May 6th through May 11th at rates of one hundred and  
3 forty-one barrels of oil to a high of a hundred and ninety-one  
4 barrels of oil per day and water rates from a hundred and  
5 fifty barrels of water per day to two hundred and fifteen  
6 barrels of water per day. The six day average test was a  
7 hundred and sixty barrels of oil per day and a hundred and  
8 eighty barrels of water per day. I think this is approximately  
9 the initial rate we could anticipate if the well is given a  
10 capacity allowable, approximately twice the normal allowable  
11 of eighty barrels of oil per day.

12 Q Referring then to what has been marked as Exhibit  
13 Number Three would you explain it, please?

14 A Exhibit Number Three is the June 1976 daily average  
15 production in barrels of oil per day, barrels of water per  
16 day and MCF per day for the wells in two-and-a-half sections  
17 flat area. As noted on this plat the U. S. Minerals No. 4  
18 with an average June production of eighty-three barrels of  
19 oil per day, seventy-seven barrels of water per day is the  
20 highest oil producer on the plat. The only well approaching  
21 it is the Cities Service Tract Seven, Well No. 6 located over  
22 in the southeast quarter of the southeast quarter of Section  
23 29 and it produced sixty barrels of oil per day and a hundred  
24 and thirty-one barrels of water per day.

25 Q Your red is oil, blue is water and green is gas in



1     HCT?

2             A.     Correct. The blue figures under the injection  
3     wells are the daily average injections for the month of  
4     June, 1976.

5             As noted here on the daily average June injection  
6     on Tract One of Cities Service, had the condition which we  
7     requested be imposed at that time it would have permitted  
8     Cities Service to produce the Tract 1-4 in excess of two  
9     hundred and fifty barrels of fluid a day. I think there is  
10    about five hundred barrels injection there, four, eighty or  
11    four, eighty-five.

12            The normal injection rate has been approximately  
13    six hundred barrels a day, I think, on the average waterflood.

14            Q.     And then from that could you say that if Cities  
15    were to drill this well they would not exchange their  
16    practices as presently constituted?

17            A.     That's right. I mean, the major capacity they have  
18    now in the 7-5 is about a hundred and ninety barrels of fluid  
19    a day.

20            I will state, though, I believe the records will  
21    show and I do not have them with me, I'm sorry, but at the  
22    time we drilled the U. S. Minerals No. 4, only wells 1 and  
23    3 were on injection. I believe Well No. 2 was a producer in  
24    Tract One of Cities Service Unit and it was only subsequently  
25    placed on injection after the U. S. Minerals 4 was drilled.

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1 Q Referring to what has been marked as Exhibit Number  
2 Four, would you explain that, please?

3 A Exhibit Number Four is the cumulative barrels of  
4 oil produced, colored in red, under each of the current  
5 producing wells in this area and colored in blue is the  
6 cumulative water injected under each of the injection wells  
7 in the area. I note that the cumulative production of Phillips  
8 Well No. 4 here was based on a 1-1-76 figure or it's the end  
9 of the annual report for '75 since those are handy figures.  
10 I indicate that our estimate of approximately three hundred and  
11 fifty to four hundred thousand barrels of ultimate recovery  
12 from the Minerals 4's own forty acre development isn't too far  
13 out of line when you look at the Conoco operated MC-8 Unit Well  
14 No. 199. The direct northwest offset has accumulated some  
15 three hundred and twenty-seven thousand barrels of oil and the  
16 northwest offset to that was another two hundred and twenty-  
17 two thousand barrels of oil.

18 Q From that information could you infer that the high  
19 productivity of the 4 is at least in part due to a high produc-  
20 tivity area as opposed to the waterflood injection offsetting?

21 A Yes, there is a very good sand development right in  
22 the diagonal across the middle of the southwest-southwest section  
23 of the lease here, tract or section, but just a narrow band where  
24 the sand is well developed, Lower Grayburg sands.

25 Q And this would negate a contention which might be made

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1 that the high productivity was due to the waterflood, is  
2 that correct?

3 A Well, I think we've got good sand development, plus  
4 they have pressured us up. This also down there in Tract Nine  
5 Well No. 5, you see they have an accumulative recovery of  
6 a hundred and fifty-five thousand barrels being greater  
7 than the cunes in the area offsetting it.

8 Q And it also would be an edge well?

9 A Yes, it will be an edge well.

10 We do not believe that the capacity allowable would  
11 be detrimental to any waterflood project in this area, nor  
12 would it hurt any proposed completions in this area. It  
13 should not result in the loss of reserves to the projects  
14 if Cities Service is granted the unorthodox location they  
15 propose in Tract One, Well No. 4.

16 Offset water injection has definitely pressured up  
17 the reserves under our forty-acre tract, however, the estimated  
18 remaining reserves of this well of two hundred thousand  
19 barrels of oil from just its own forty-acres would have a  
20 remaining life of seven to ten years under the current state-  
21 wide allowable of eighty barrels of oil per day and this  
22 project life could or this producing life of No. 4 could  
23 possibly even exceed the project life of the offset waterflood  
24 development such that it would result in possibly a subsequent  
25 loss of reserves in Minerals 4 if the fluid under its forty-

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1 acre tract migrates back into abandoned acreage. So although  
2 they have pressured us up now, it may come back to them if  
3 their project is not continued for as long as Minerals 4 is  
4 produced.

5 Q Inasmuch as this unorthodox location of Cities would  
6 have a capacity allowable you seek merely what they would get  
7 also?

8 A Yes, just at a different producing rate.

9 Q This also, would it not, prevent, if you are able to  
10 produce it, prevent migration of oil off your tract due to  
11 the Cities Service's flood elsewhere, is that affirmative?

12 A I don't believe they have a flood elsewhere but I  
13 do not anticipate oil migration off our tract since we are  
14 blanked in by water injection on all sides and dry holes to  
15 the south.

16 Q Were Exhibits One through Four and Exhibits One and  
17 Two in Case 5750 prepared by you or under your direction?

18 A Yes, sir.

19 Q And in your opinion would the granting of your  
20 application tend to protect correlative rights and prevent  
21 waste?

22 A Yes, sir.

23 MR. STEVENS: We move at this time the introduction  
24 of Exhibits One through Four in Case 5751 and One and Two in  
25 Case 5750.

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1 MR. NUTTER: Phillips' Exhibits One and Two in Case  
2 5750 and Exhibits One through Four in Case 5751 will be  
3 admitted.

4 (THEREUPON, Phillips' Exhibits One and Two  
5 (Case 5750) and Exhibits One through Four  
6 (Case 5751) were admitted into evidence.)

7 MR. STEVENS: We have no further questions.

8 MR. NUTTER: Are there any questions of the witness,  
9 Mr. Kellahin?

10 MR. KELLAHIN: Mr. Nutter, I don't believe we  
11 covered the testimony, what effective date do you propose for  
12 your capacity allowable?

13 THE WITNESS: The completion date of the Cities  
14 Service unorthodox location in Tract One, Well No. 4.

15 MR. KELLAHIN: Thank you.

16 MR. NUTTER: I believe that is one of the conditions  
17 of the waiver.

18 Was that all you had, Mr. Kellahin?

19 MR. KELLAHIN: That's all I had.

20 MR. NUTTER: If there is nothing further of the  
21 witness he may be excused.

22 (THEREUPON, the witness was excused.)

23 MR. NUTTER: Did you have anything further,  
24 Mr. Stevens?

25 MR. STEVENS: Nothing, sir.

1 MR. NUTTER: Does anyone have anything they wish to  
2 offer in Cases 5750 or 5751?

3 We will take the cases under advisement and take  
4 a fifteen minute recess.

5 (THEREUPON, the hearing was in recess.)  
6  
7  
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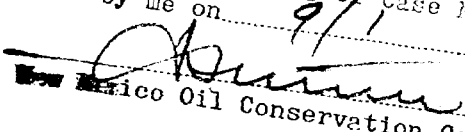
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REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter,  
do hereby certify that the foregoing and attached Transcript  
of Hearing before the New Mexico Oil Conservation Commission  
was reported by me, and the same is a true and correct record  
of the said proceedings to the best of my knowledge, skill and  
ability.

  
Sidney F. Morrish, C.S.R.

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I do hereby certify that the foregoing is  
a complete record of the proceedings in  
the Examiner hearing of Case No. 5750-51  
heard by me on 9/1, 1976.  
, Examiner  
New Mexico Oil Conservation Commission



# OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO  
P. O. BOX 2088 - SANTA FE  
87501



DIRECTOR  
JOE D. RAMEY

LAND COMMISSIONER  
PHIL R. LUCERO  
September 17, 1976

STATE GEOLOGIST  
EMERY C. ARNOLD

Mr. Jason Kellahin  
Kellahin & Fox  
Attorneys at Law  
Post Office Box 1769  
Santa Fe, New Mexico

Re: CASE NO. 5750  
ORDER NO. R-5283

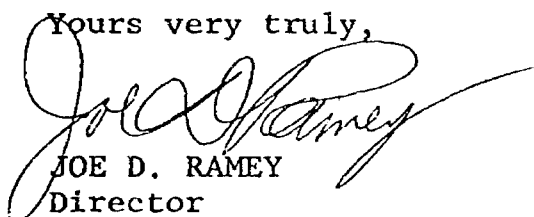
Applicant:

Cities Service Oil Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Yours very truly,

  
JOE D. RAMEY  
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x  
Artesia OCC x  
Aztec OCC           

Other Don Stevens



BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE NO. 5750  
Order No. R-5283

APPLICATION OF CITIES SERVICE OIL  
COMPANY FOR AN UNORTHODOX OIL WELL  
LOCATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 1, 1976, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 16th day of September, 1976, the Commission, a quorum being present, 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 Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Cities Service Oil Company, seeks approval of an unorthodox oil well location 1355 feet from the South line and 1135 feet from the East line of Section 30, Township 17 South, Range 33 East, NMPM, for its Southeast Maljamar Grayburg-San Andres Unit Tract 1 Well No. 4, Maljamar Grayburg-San Andres Pool, Lea County, New Mexico.

(3) That the NE/4 SE/4 of said Section 30 is to be dedicated to the well.

(4) That a well at said unorthodox location will better enable applicant to produce the oil underlying the proration unit.

(5) That the offset operator waived objection to the proposed unorthodox location, provided applicant maintains water injection into its Southeast Maljamar Grayburg-San Andres Unit Tract 1 Wells Nos. 1, 2, and 3 located in Units J, I, and P, respectively, of Section 30, Township 17 South, Range 33 East, NMPM, at a sufficient rate that the total combined monthly water injected into said wells is equal to or greater than the total monthly liquid volume withdrawal (oil and water) from the subject well No. 4.

-2-

Case No. 5750  
Order No. R-5283

(6) That approval of the subject application will afford the applicant the opportunity to produce its just and equitable share of the oil in the subject pool, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That an unorthodox oil well location is hereby approved for the Cities Service Oil Company Southeast Maljamar Unit Tract 1 Well No. 4 to be located at a point 1355 feet from the South line and 1135 feet from the East line of Section 30, Township 17 South, Range 33 East, NMPM, Maljamar Grayburg-San Andres Pool, Lea County, New Mexico.

(2) That the NE/4 SE/4 of said Section 30 shall be dedicated to the above-described well.

(3) That subject to further order of the Commission, Cities Service Oil Company, shall maintain water injection into its Southeast Maljamar Unit Tract 1 Wells Nos. 1, 2, and 3 at a sufficient rate that the total combined monthly water injected into said wells is equal to or greater than the total monthly liquid volume withdrawal (oil and water) from the aforesaid Southeast Maljamar Unit Tract 1 Well No. 4.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

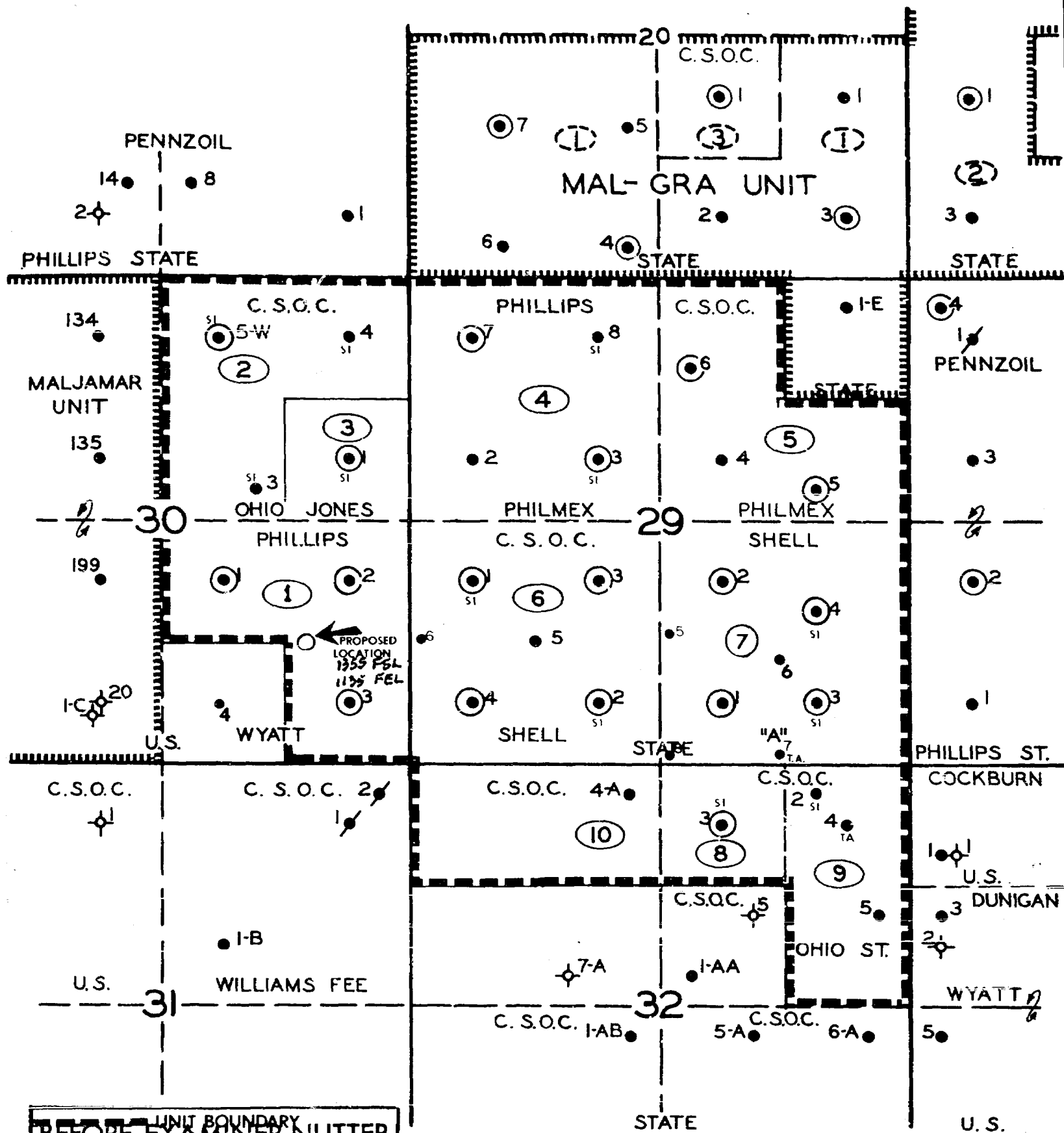
  
PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

  
JOE D. RAMEY, Member & Secretary

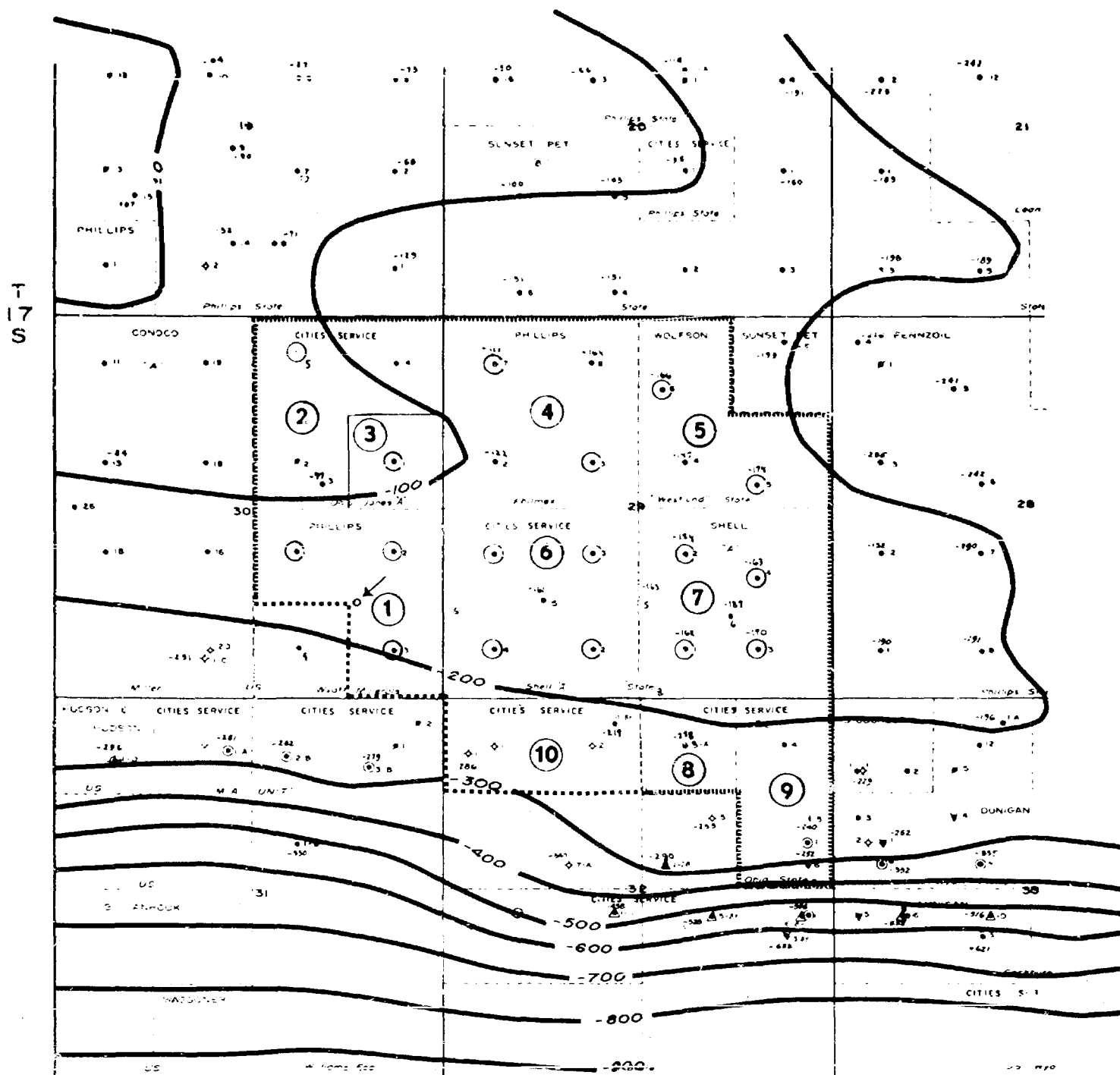
S E A L

jr/



UNIT BOUNDARY  
 BEFORE EXAMINER NUTTER  
 OIL CONSERVATION COMMISSION  
 Exhibit NO. 5750  
 CASE NO. 5750

GRAYBURG - SAN ANDRES  
 LEA COUNTY, NEW MEXICO  
 T-17-S. R-33-E. JULY, 1973  
 SCALE: 4"=1 MI.



Cities Service Oil Company

R-33-E

# **S.E.M. WATERFLOOD AREA**

SOUTHEAST MALJAMAR POOL, LEA COUNTY, NEW MEXICO

SCALE



STRUCTURE CONTOUR MAP

TOP OF PREMIER SAND

CONTOUR INTERVAL = 100 FT.

▲ Maljamar 'Strip' Well

○ PROPOSED LOCATION

..... UNIT BOUNDARY

**BEFORE EXAMINER NUTTER**

OIL CONSERVATION COMMISSION

Cities EXHIBIT NO. 2

CASE NO. 5750

LEGEND

Grayburg-San Andres Production

Grayburg Production

Abajo Reef Production

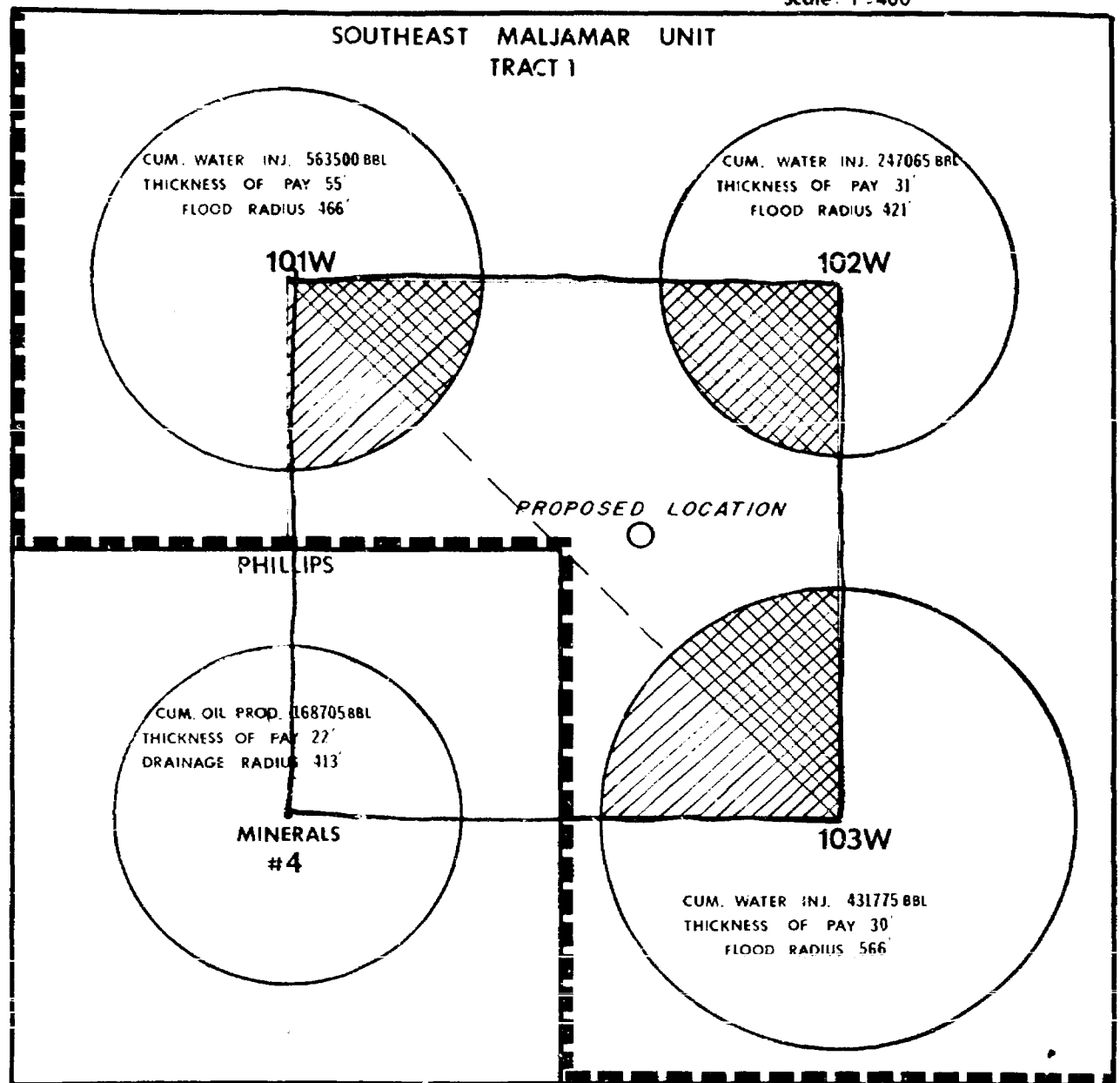
# SOUTHEAST MALJAMAR UNIT

LEA COUNTY, NEW MEXICO

T.-17-S. R.-33-E.

SE  $\frac{1}{4}$  of Sec. 30

Scale: 1"=400'



Shaded area represents effective area swept by  
injection as of 7/1/76.

--- UNIT BOUNDARY

BEFORE EXAMINER MUTTER  
OIL CONSERVATION COMMISSION  
C. H. H. EXHIBIT NO. 3  
CASE NO. 5750

VOLUMETRIC RESERVE CALCULATION

Basis - Data from MCA Unit

Oil in place = 571 BBL/A-F

Primary recovery = 18%

Secondary = 18%

Areal sweep efficiency .715

I Volume Already Swept By Injection (PRI + SEC)

12.9 acres

This is equivalent to  $571 \times 12.9 \times 30 \times .36 = 79,551$

II Remaining Area Available For Primary Production

Assuming normal 40-acre drainage

$40 - 12.9 = 27.1$  acres

Oil available for primary production

$571 \times 27.1 \times 30 \times .18 = 83,560$  BBL

III Area Available For Flood Recovery

Area already swept (1/2 of total volume already swept)

A) From Muscat areal sweep efficiency is .715

$\therefore \text{Area} = 20 \times .715 - 6.45 = 14.3 - 5.4 = 7.85$  acres

<b>BEFORE EXAMINER NUTTER</b>
OIL CONSERVATION COMMISSION
<u>cti</u> EXHIBIT NO. <u>4</u>
CASE NO. <u>5750</u>

(Contd)

IV Oil Available For Flood Recovery

$$571 \times 30 \times 7.85 \times .18 = 24,204$$

∴ Total expected recovery

Primary - 83,560 BBL

Secondary - 24,204 BBL

107,764 BBL

V If Well Not Drilled

A) Area that will be swept to Phillips' lease

$$= 30 \text{ acres} \times .715 \text{ (efficiency)} = 21.45 \text{ acres}$$

B) Oil swept across lease line

$$21.45 \times 571 \times 30 \times .36 = 132,278 \text{ BBL}$$

PHILLIPS PETROLEUM COMPANY

CONDITIONAL WAIVER

N.M.O.C.C. Docket No. 24-76,  
Case 5750

BEFORE THE BOARD OF OIL CONSERVATION LEA COUNTY, NEW MEXICO CASE NO. 5750
--

New Mexico Oil Conservation Commission  
Santa Fe, New Mexico 87501

CASE 5750: Application of Cities Service Oil Company for approval of an unorthodox location for its Southeast Maljamar Grayburg-San Andres Unit Tract 1 Well No. 4 to be located 1,355' FSL and 1,135' FEL of Section 30-T17S-R33E, Lea County, New Mexico.

Phillips Petroleum Company, as offset operator and 100 percent working interest owner of the U. S. Minerals Well No. 4, located in Unit 0 of Section 30-T17S-R33E, Maljamar Grayburg-San Andres Field, Lea County, New Mexico; hereby conditionally waives objection to the proposed unorthodox location for the Cities Service-operated Southeast Maljamar Grayburg-San Andres Unit Tract 1 Well No. 4 at 1,355 feet from south line and 1,135 feet from east line of Section 30-T17S-R33E. This unorthodox location being 188 feet from the outer contiguous acreage boundary.

Phillips Petroleum Company's conditions for waiver of objection are:

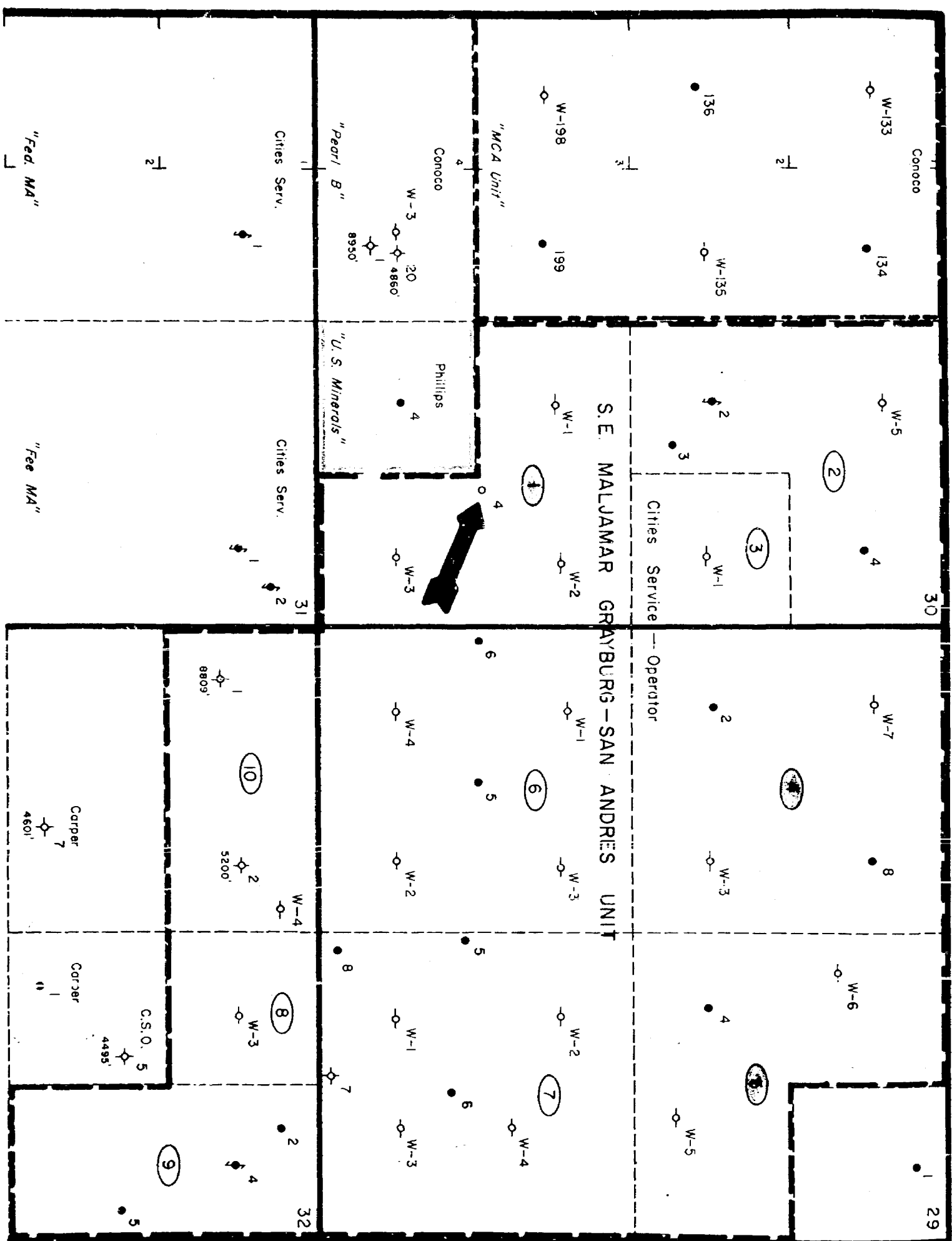
1. The N.M.O.C.C. approval of a special capacity allowable for the Phillips-operated U. S. Minerals Well No. 4 (Case 5751) in order to permit competitive withdrawal from the reservoir. This capacity allowable for the U. S. Minerals Well No. 4 to become effective upon the completion date of the Southeast Maljamar Grayburg-San Andres Unit Tract 1 Well No. 4 which will by virtue of being in an active waterflood project enjoy a capacity allowable.
2. The total combined monthly water injected volumes into the Southeast Maljamar Grayburg-San Andres Unit Tract 1 Wells Nos. 1, 2, and 3 be maintained at or above 200 percent of the total monthly fluid volume withdrawal (oil and water) from the proposed unorthodox Southeast Maljamar Grayburg-San Andres Unit Tract 1 Well No. 4. This condition will ensure a more balanced injection to withdrawal ratio for maximum reservoir recovery and protection of correlative rights.



T 17 S

Scale: 1" = 1000'

FIELD  
BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. *100*  
CASE NO. *5750*



Dockets Nos. 25-76 and 26-76 are tentatively set for hearing on September 15 and 29, 1976. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 1, 1976

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

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

- CASE 5747: Application of Atlantic Richfield Company for a non-standard gas proration unit, unorthodox location, and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for a previously established 185-acre non-standard Eumont gas proration unit comprising the SW $\frac{1}{4}$  and SW $\frac{1}{4}$  NW $\frac{1}{4}$  of Section 19, Township 21 South, Range 36 East, Lea County, New Mexico, to be simultaneously dedicated to applicant's State "F" DE Wells Nos. 1 and 3, at unorthodox locations in Units E and K, respectively, of said Section 19.
- CASE 5748: Application of TERRAPET Management Corporation 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 at a point 990 feet from the South and West lines of Section 31, Township 14 South, Range 28 East, Buffalo Valley-Pennsylvanian Gas Pool, Chaves County, New Mexico.
- CASE 5749: Application of Southern Union Supply Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Gallagher State "8" Well No. 3, proposed to be drilled at a point 660 feet from the South line and 1980 feet from the East line of Section 8, Township 17 South, Range 34 East, West Vacuum Field, Lea County, New Mexico.
- CASE 5750: Application of Cities Service Oil Company for an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Southeast Maljamar G-SA Unit-Tract 1 Well No. 4 to be located 1355 feet from the South line and 1135 feet from the East line of Section 30, Township 17 South, Range 33 East, Maljamar Grayburg-San Andres Pool, Lea County, New Mexico.
- CASE 5751: Application of Phillips Petroleum Company for a special allowable, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a capacity allowable for its U. S. Minerals Well No. 4 located in Unit C of Section 30, Township 17 South, Range 33 East, Maljamar Grayburg-San Andres Pool, Lea County, New Mexico, said well being a direct offset to an active waterflood project.
- CASE 5752: Application of Bettis, Boyle & Stovall for a special allowable, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a capacity allowable for its V. H. Justis Well No. 2 located in Unit D of Section 20, Township 25 South, Range 37 East, Jalmat Oil Pool, Lea County, New Mexico, said well being a direct offset to an active waterflood project.
- CASE 5262: (Reopened)
- In the matter of Case 5262 being reopened pursuant to the provisions of Order No. R-4822-B, which order extended the special pool rules for Southwest Media-Entrada Oil Pool, Sandoval County, New Mexico, including a provision for 160-acre spacing and proration units and a special depth bracket allowable of 750 barrels of oil per day. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing and why the special depth bracket allowable should not be rescinded.
- CASE 5757: (Continued & Readvertised)
- Application of Howard Boatright for amendment of Order No. R-5208, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-5203 which authorized salt water disposal into the Delaware formation through applicant's State CS Well No. 1, located in Unit L of Section 17, Township 21 South, Range 27 East, Eddy County, New Mexico. Applicant seeks to increase the maximum injection pressure for said well from 400 psi to 800 psi, and also to amend the specified packer setting depth from 2975 feet to 2585 feet.
- CASE 5736: (Continued from August 18, 1976, Examiner Hearing)
- Application of BCO Inc. for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Basin Dakota Gas Pool and Lybrook-Gallup Oil Pool and undesignated Greenhorn and Mancos production in the wellbore of its Dunn Well No. 2, located in Unit F of Section 10, Township 23 North, Range 7 West, Rio Arriba County, New Mexico.

JASON W. KELLAHIN  
ROBERT E. FOX  
W. THOMAS KELLAHIN

KELLAHIN AND FOX  
ATTORNEYS AT LAW  
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POST OFFICE BOX 1769  
SANTA FE, NEW MEXICO 87501

TELEPHONE 982-4315  
AREA CODE 505

August 5, 1976

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

Dear Joe:

Enclosed please find the original and two copies of the application of Cities Service Oil Company for an unorthodox well location in Lea County, New Mexico. We would appreciate this being set for hearing on September 1.

Yours very truly,



Jason W. Kellahin

JWK:kjf

Enclosure

BEFORE THE  
OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF CITIES SERVICE OIL COMPANY  
FOR AN UNORTHODOX WELL LOCATION,  
LEA COUNTY, NEW MEXICO

A P P L I C A T I O N

Comes now Cities Service Oil Company and applies to the Oil Conservation Commission for an unorthodox well location for its Southeast Maljamar-Grayburg-San Andres Unit, Tract 1, Well No. 4, to be located 1,355 feet from the South line, and 1,135 feet from the East line, in Unit I, Section 30, Township 17 South, Range 33 East, Lea County, New Mexico, and in support thereof would show the Commission:

1. Applicant is the operator of the Southeast Maljamar Grayburg-San Andres Waterflood, Lea County, New Mexico, designated by the Commission as the Southeast Maljamar Waterflood Project, which project has been in operation for approximately ten years.

2. The waterflood project has advanced to the point that the additional well is necessary to protect the unit production, and prevent possible migration of oil beyond the unit boundaries.

3. Approval of the unorthodox well location will result in a greater recovery of oil during the life of the project, and is in the interests of conservation and the prevention of waste. Correlative rights of offset operators will not be impaired by approval of a well located as proposed.

WHEREFORE applicant prays that this application be set for hearing before the Commission or the Commission's duly appointed examiner, and that after notice and hearing as required by law, the Commission enter its order approving the unorthodox well location as requested.

Respectfully submitted,

CITIES SERVICE OIL COMPANY

By Joan W. Kellahin  
Kellahin & Fox  
P. O. Box 1769  
Santa Fe, New Mexico 87501

Attorneys for Applicant

BEFORE THE  
OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF CITIES SERVICE OIL COMPANY  
FOR AN UNORTHODOX WELL LOCATION,  
LEA COUNTY, NEW MEXICO

A P P L I C A T I O N

Comes now Cities Service Oil Company and applies to the Oil Conservation Commission for an unorthodox well location for its Southeast Maljamar-Grayburg-San Andres Unit, Tract 1, Well No. 4, to be located 1,355 feet from the South line, and 1,135 feet from the East line, in Unit I, Section 30, Township 17 South, Range 33 East, Lea County, New Mexico, and in support thereof would show the Commission:

1. Applicant is the operator of the Southeast Maljamar Grayburg-San Andres Waterflood, Lea County, New Mexico, designated by the Commission as the Southeast Maljamar Waterflood Project, which project has been in operation for approximately ten years.

2. The waterflood project has advanced to the point that the additional well is necessary to protect the unit production, and prevent possible migration of oil beyond the unit boundaries.

3. Approval of the unorthodox well location will result in a greater recovery of oil during the life of the project, and is in the interests of conservation and the prevention of waste. Correlative rights of offset operators will not be impaired by approval of a well located as proposed.

WHEREFORE applicant prays that this application be set for hearing before the Commission or the Commission's duly appointed examiner, and that after notice and hearing as required by law, the Commission enter its order approving the unorthodox well location as requested.

Respectfully submitted,  
CITIES SERVICE OIL COMPANY

By Jason W. Kellahin  
Kellahin & Fox  
P. O. Box 1769  
Santa Fe, New Mexico 87501

Attorneys for Applicant

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE NO. 5750

Order No. R- 5283

APPLICATION OF CITIES SERVICE OIL COMPANY  
FOR AN UNORTHODOX ~~OIL~~ WELL LOCATION,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 1, 19 76,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this        day of September, 19 76, the Commission,  
a quorum being present, 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  
Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Cities Service Oil Company seeks  
approval of an unorthodox ~~oil~~ well location 1355 feet from the South  
line and 1135 feet from the East line of Section 30, Township  
17 South, Range 33 East, NMPM, <sup>for its Southeast Maljamar</sup> ~~to test the~~  
<sup>Grayburg-San Andres Unit Tract 1 Well No. 4</sup> ~~formation,~~ Maljamar Grayburg-San Andres Pool,  
Lea County, New Mexico.

(3) That the <sup>NE 1/4</sup> ~~SE 1/4~~ of said Section 30 is to be dedicated to the  
well.

(4) That a well at said unorthodox location will better enable  
applicant to produce the ~~oil~~ underlying the proration unit.

(5) That <sup>the</sup> ~~no~~ offset operator <sup>waived objection</sup> ~~objected~~ to the proposed unorthodox  
location, provided applicant maintains water injection into  
its <sup>Southeast</sup> ~~Maljamar~~ Grayburg-San Andres Unit Tract 1  
Wells Nos. 1, 2, and 3 located in Units J, I, and P,  
respectively, of Section 30, Township 17 South, Range  
33 East, NMPM, at a ~~rate~~ <sup>sufficient</sup> rate that  
the total combined monthly water injected into said  
wells is equal to or <sup>greater</sup> ~~more~~ than the total monthly liquid  
~~fluid~~ volume withdrawal (oil and water) from the  
subject Well No. 4.



(6) That approval of the subject application will afford the applicant the opportunity to produce its just and equitable share of the <sup>oil</sup>~~gas~~ in the subject pool, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That an unorthodox ~~oil~~ well location <sup>is hereby approved</sup> for the Cities Service Oil Company Southeast Maljamar Unit Tract 1 Well No. 4 ~~formation is hereby approved for a well~~ to be located at a point 1355 feet from the South line and 1135 feet from the East line of Section 30, Township 17 South, Range 33 East NMPM, Maljamar Grayburg-San Andres Pool, Lea County, New Mexico.

(2) That the <sup>NE 1/4 SE 1/4</sup> ~~SE~~ of said Section 30 shall be dedicated to the above-described well.

(9) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

(3) That subject to further order of the Commission, Cities Service Oil Company shall maintain water injection into its Southeast Maljamar Unit Tract 1 Wells Nos. 1, 2, and 3 at a sufficient rate that the total combined monthly water injected into said wells is equal to or greater than the total monthly liquid volume withdrawal (oil and water) from the aforesaid Southeast Maljamar Unit Tract 1 Well No. 4.