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STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION  
CASE 10,822

EXAMINER HEARING

IN THE MATTER OF:

Application of Cross Timbers Operating Company for  
a waterflood project, Lea County, New Mexico

**ORIGINAL**

TRANSCRIPT OF PROCEEDINGS

BEFORE: DAVID R. CATANACH, EXAMINER

15111

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

September 9, 1993

## A P P E A R A N C E S

FOR THE DIVISION:

ROBERT G. STOVALL  
Attorney at Law  
Legal Counsel to the Division  
State Land Office Building  
Santa Fe, New Mexico 87504

FOR THE APPLICANT:

HINKLE, COX, EATON, COFFIELD & HENSLEY  
Attorneys at Law  
By: JAMES G. BRUCE  
218 Montezuma  
P.O. Box 2068  
Santa Fe, New Mexico 87504-2068

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1           WHEREUPON, the following proceedings were had  
2 at 11:41 a.m.:

3           EXAMINER CATANACH: Okay, at this time we'll  
4 call Case 10,822.

5           MR. STOVALL: Application of Cross Timbers  
6 Operating Company for a waterflood project, Lea County,  
7 New Mexico.

8           EXAMINER CATANACH: Are there appearances in  
9 this case?

10          MR. BRUCE: Mr. Examiner, Jim Bruce from the  
11 Hinkle law firm, representing the Applicant.

12                   I have one witness to be sworn.

13          EXAMINER CATANACH: Any additional  
14 appearances?

15                   There being, none, will the witness please  
16 stand to be sworn in?

17                           GARY MARKESTAD,  
18 the witness herein, after having been first duly sworn  
19 upon his oath, was examined and testified as follows:

20                                   DIRECT EXAMINATION

21 BY MR. BRUCE:

22           Q.    Would you please state your name and city of  
23 residence for the record?

24           A.    My name is Gary Markestad. I'm from Midland,  
25 Texas.

1 Q. And who do you work for and in what capacity?

2 A. I'm the operations engineer for Cross Timbers  
3 Operating Company.

4 Q. Have you previously testified before the  
5 Division?

6 A. No, I haven't.

7 Q. Would you please briefly outline your  
8 educational and work background?

9 A. I received a bachelor of science degree in  
10 petroleum engineering from the New Mexico Institute of  
11 Mining and Technology in 1982.

12 Since that time I've worked as a -- in  
13 various capacities in petroleum engineering, always in  
14 Midland, Texas.

15 Q. Okay. How long have you been employed by  
16 Cross Timbers?

17 A. I've been employed by Cross Timbers for the  
18 past four years.

19 Q. And does your area of responsibility include  
20 southeast New Mexico?

21 A. Yes, it does.

22 Q. And are you familiar with the contents of the  
23 Application for this waterflood?

24 A. Yes, I am.

25 MR. BRUCE: Mr. Examiner, I tender Mr.

1 Markestad as an expert petroleum engineer.

2 EXAMINER CATANACH: Mr. Markestad is so  
3 qualified.

4 Q. (By Mr. Bruce) Briefly, what is it that  
5 Cross Timbers seeks to do in this case?

6 A. We seek to get approval to inject water into  
7 our State "BY" Lease Well Number 6, which is currently  
8 a producing well in the Maljamar (Grayburg-San Andres)  
9 field, with the hopes of increasing production from  
10 this lease.

11 Q. Okay. So it's for waterflood and not for  
12 saltwater disposal?

13 A. That's correct.

14 Q. Okay. And the lease that you're interested  
15 in covers the southeast quarter of Section 32?

16 A. That's correct.

17 Q. If you could refer to Exhibit 1, would you go  
18 through that for the Examiner and discuss your  
19 operation?

20 Mr. Examiner, for your benefit we've numbered  
21 the pages.

22 First, referring to page 3, would you discuss  
23 your proposed work order of the well, Mr. Markestad?

24 A. Okay. Let's see, I guess this is page 3, the  
25 injection well data?

1 Q. Yes.

2 A. Okay. This well is a vertical well. We have  
3 8 5/8 casing set at 325 feet, cement is circulated to  
4 the surface.

5 We have 4-1/2-inch casing set at 4748 feet,  
6 cemented with 250 sacks. The top of the cement is at  
7 3152 feet. We have that from a cement top log.

8 For the construction of the injection well,  
9 we intend to set a nickel-plated Baker Lok-Set packer  
10 at approximately 4550 feet on 2-3/8-inch plastic-coated  
11 tubing.

12 The current perforated interval is 4602 to  
13 4645 feet.

14 Q. Are you going to add any perforations?

15 A. Not at this time, although we are requesting  
16 an injection interval from 4602 to 4708 feet in order  
17 to give us the latitude to open up additional Grayburg  
18 pay for injection at a later date if we deem necessary.

19 Q. Okay. Moving on to the next page, page 4,  
20 would you discuss your proposed operations?

21 A. Okay. Initially we intend to inject water,  
22 approximately 200 barrels of water per day, with a  
23 maximum of 400 barrels of water a day, through a closed  
24 system.

25 We're expecting injection pressure to be

1 around 1000 p.s.i. with a maximum of 1500 p.s.i., which  
2 is normal for this field.

3 Water will primarily be produced water from  
4 this lease, also produced water from our offsetting US  
5 Minerals lease, and some fresh water that we will be  
6 getting from our southeast Maljamar (Grayburg-San  
7 Andres) Unit which offsets this lease directly to the  
8 north.

9 Q. You said that injection pressures of 1000 to  
10 1500 are common in this area. Are there a number of  
11 injection programs around this area?

12 A. Yes. The Conoco MCA Unit to the west of us,  
13 the -- our Cross Timbers Southeast Maljamar (Grayburg-  
14 San Andres) Unit directly north, and three floods  
15 operated by Quality Production to the north and  
16 northwest and northeast of this lease.

17 Q. Okay. Moving on to the pages 5 through 9, in  
18 your opinion will there be any problems associated with  
19 injecting the water into this zone?

20 A. No, 5 through 9 show water analysis of both  
21 representative samples of produced water from the  
22 Grayburg formation, from our US Minerals lease, also  
23 the water analysis of the fresh water we intend to use  
24 for make-up water from our southeast Maljamar  
25 (Grayburg-San Andres) Unit.

1           And a water analysis from the mixing of these  
2 two waters at -- not show any severe scaling potential,  
3 any problems with mixing the water.

4           We are mixing both these waters in our  
5 southeast Maljamar (Grayburg-San Andres) Unit and have  
6 not had any significant problems with mixing these  
7 waters.

8           Q.    Okay.  Would you please move on and discuss  
9 the wells in the area of review?

10           Those on the exhibit are pages 11 through 18,  
11 Mr. Examiner.

12           A.    We have several wells within the area of  
13 review.  There should be some old Cities Service wells  
14 which were plugged.

15           I have wellbore schematics, and I have also  
16 shown the plugging procedure of the wells that are  
17 within the area of review.

18           And a number of active wells operated by  
19 Cross Timbers Operating, and also by OXY USA and L.B.  
20 Simmons and Phillips.

21           Q.    Are any of those problem wells, to the best  
22 of your knowledge?

23           A.    No, no, there's a significant amount of water  
24 injection in the area, and we've seen no problems with  
25 any of the wells that have been plugged within this

1 area of review.

2 I might point out that in the southeast  
3 Maljamar (Grayburg-San Andres) Unit, which we operate,  
4 when it was established by Cities Service Oil and Gas,  
5 they were required to re-plug several wells in the  
6 area, and since that time we've seen no problem with  
7 any plugged or temporarily abandoned wells in the area.

8 Q. And all of the wells in the area of review  
9 for this Application would have been in the area of  
10 review for the Cities Service Application?

11 A. That's correct.

12 Q. Would your project area for this waterflood  
13 just include the southeast quarter of Section 32?

14 A. That is correct.

15 Q. At the current time, how many producing wells  
16 do you have on that lease, in this formation?

17 A. We currently have only one producing well on  
18 this lease in this formation, which is the State "BY" 6  
19 itself.

20 We have a temporarily abandoned well  
21 offsetting it to the east that we plan on returning to  
22 active service as soon as we can get the injection in  
23 this well. Our plans right now are to take the  
24 equipment out of the State "BY" 6 and put it into the  
25 State "BY" 5 where we'll receive maximum benefit.

1           We also -- We may at some point deepen the  
2 State "BY" Number 3 to the Grayburg, and we should see  
3 some benefit from that well also.

4           Q.    Okay.  Is Exhibit 2 just copies of the  
5 certified return receipts from when you initially  
6 mailed the C-108?

7           A.    That's correct.

8           Q.    And you had initially applied to have this  
9 done administratively?

10          A.    That's correct.

11          Q.    And the copy -- As we said, the C-108 was  
12 sent to the offsets at that time?

13          A.    That's correct.

14          Q.    In your opinion, is the granting of this  
15 Application in the interests of conservation and the  
16 prevention of waste?

17          A.    Yes, it is.

18          Q.    And were Exhibits 1 and 2 prepared by you or  
19 under your direction?

20          A.    Yes, they were.

21                MR. BRUCE:  Mr. Examiner, I would move the  
22 admission of Exhibits 1 and 2, and then Exhibit 3 is  
23 just a copy of my affidavit of notice.

24                I re-notified the offsets, the offsetting  
25 operators, of the hearing since the original notice of

1 the C-108 was quite some time ago.

2 EXAMINER CATANACH: Okay, Exhibits 1 through  
3 3 will be admitted as evidence.

4 EXAMINATION

5 BY EXAMINER CATANACH:

6 Q. Mr. Markestad, the Maljamar Pool encompasses  
7 the Grayburg and San Andres. You just intend to inject  
8 into the Grayburg; is that correct?

9 A. That's correct. There doesn't appear to be  
10 any San Andres production right in this area.

11 Q. Your wells have not produced out of the San  
12 Andres or been tested or anything?

13 A. Now, the San Andres drops off very rapidly,  
14 structurally drops off at this lease. It's productive  
15 in our southeast Maljamar (Grayburg-San Andres) unit,  
16 however the San Andres itself is too deep on the State  
17 "BY" lease.

18 Q. Do you have any kind of idea at this point  
19 what you may recover by a secondary process within this  
20 project area?

21 A. I don't have that information right in front  
22 of me right now, but we expect some significant  
23 recoveries and hopefully be able to continue to operate  
24 this lease.

25 We're currently in a marginal situation on

1 this lease right now. We need to do something to  
2 increase production, that will continue to operate the  
3 lease.

4 Q. Do you have any kind of estimate on when you  
5 might see some response?

6 A. It generally doesn't take too long in this  
7 area. I would hope to see some response within six  
8 months.

9 Q. Is the -- Let's see, initially you're going  
10 to bring the Number 5 well back into producing status?

11 A. That's correct.

12 Q. Does the Number 3 deepening depend on what  
13 you may see in the Number 5 well as far as the  
14 response?

15 A. I really don't think it would depend on  
16 response on the Number 5.

17 Hopefully, we'd be able to get the Number 3  
18 deepened and completed in the Grayburg prior to seeing  
19 a response since they are -- the Number 3 is closer to  
20 the Number 6 than the 5 is.

21 If we wait to see a response in the 5, we may  
22 be too late in the Number 3.

23 Q. So are you going to do the work on the Number  
24 3 -- When do you propose to do that?

25 A. It just depends on when we get some internal

1 approval. It's basically just in the planning stages  
2 right now. We don't have a time frame set for that.

3 Q. Do you know what the production from the  
4 Number 5 well was prior to being TA'd?

5 A. I believe it was only one or two barrels a  
6 day at that time.

7 We know when the well was shut in, but you  
8 really can't tell from production history what the well  
9 was -- was actually -- what the actual production of  
10 the well was.

11 Q. On the Number 3, was that -- What was that  
12 previously? Was that a producing well?

13 A. The Number 3?

14 Q. Uh-huh.

15 A. It's still a producing well, but it's in the  
16 Queen, producing under the Queen formation.

17 Q. Are you going to abandon the Queen in that  
18 well?

19 A. I would think that we should be able to  
20 downhole commingle. There are several wells in the  
21 area that have everything from the H through the  
22 Grayburg-San Andres completed in that area.

23 Q. You wouldn't know how much cumulative  
24 recovery the Number 5 well has to date or...

25 A. I don't have that information with me, no,

1 sir.

2 Q. Do you have any information regarding the  
3 ratio of primary to secondary recovery in this area,  
4 might be?

5 A. Generally better than 50 percent. I think on  
6 secondary recovery, in some areas, as much as a one to  
7 one, secondary-to-primary ratio.

8 EXAMINER CATANACH: I don't have anything  
9 else of the witness.

10 Anything else, Mr. Bruce?

11 MR. BRUCE: Nothing further.

12 EXAMINER CATANACH: Mr. Stovall?

13 MR. STOVALL: Nothing.

14 EXAMINER CATANACH: Okay, there being nothing  
15 further, Case 10,822 will be taken under advisement.

16 (Thereupon, these proceedings were concluded  
17 at 11:58 a.m.)

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CERTIFICATE OF REPORTER

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STATE OF NEW MEXICO )  
 ) SS.  
COUNTY OF SANTA FE )

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL September 30, 1993.



STEVEN T. BRENNER  
CCR No. 7

My commission expires: October 14, 1994

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10,822 heard by me on September 9 1993.

David R. Catanzano, Examiner  
Oil Conservation Division