

## NEW MEXICO OIL CONSERVATION DIVISION

EXAMINER HEARINGSANTA FE, NEW MEXICOHearing Date JUNE 29, 2000 Time 8:15 A.M.

NAME	REPRESENTING	LOCATION
SLOTT HALL Bob Miller Paul Cooter	MILLER LAW FIRM Neenbury Shohara Oil	SF Midland Albuquerque
David Pearson William J. [unclear]	Gates Pet Engel, [unclear], [unclear] + [unclear]	Artesia Santa Fe
Michael H. Feldewert	" "	" "
PERRY L. HUGHES	SHAHARA OIL	CARLSBAD, NM
STAN ATNIP	SLA, INC	MIDLAND, TX
HAAR GULICH	APOC INC.	TULSA, OK
Randy G. Patterson	Yates Petroleum Corp	Artesia NM
CHUCK MORAN	YATES PETROLEUM	ARTESIA NM
Reed Meek	Yates Petroleum Corp	Artesia NM
Steve Smith	Santa Fe Snyder	Midland
Steve Hulke	Santa Fe Snyder	Midland
Dave Perini	Perini Environmental	Carlsbad, NM
W. Kellihin Raye Miller	Kellihin + Kellihin Marbach Energy	Santa Fe Artesia NM

Mike Giam

James Turbyfill

Andy Schwandt

Tim CASHEN

Martin Soyce

Larry Scott

John Savas

Concho Resources Inc

Concho Res Inc

Marathon Oil Co.

LG?E

Markob Energy

Lynx Petroleum

Williams Pet. Cos.

Midland TX

Midland TX

Hobbs, NM

Dumas

Artesia, NM

Hobbs, NM

Midland, TX

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

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

CASE NO. 12,440

APPLICATION OF SHAHARA OIL, L.L.C., FOR )  
APPROVAL OF A TERTIARY RECOVERY PROJECT )  
FOR THE GRAYBURG JACKSON PREMIER SAND )  
UNIT, UNORTHODOX OIL WELL AND INJECTION )  
WELL LOCATIONS WITHIN THAT UNIT, AND )  
QUALIFICATION OF THAT PROJECT FOR THE )  
RECOVERED OIL TAX RATE PURSUANT TO THE )  
NEW MEXICO ENHANCED OIL RECOVERY ACT, )  
EDDY COUNTY, NEW MEXICO )

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

June 29th, 2000

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, June 29th, 2000, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

\* \* \*

STEVEN T. BRENNER, CCR  
(505) 989-9317

00 JUL 13 AM 4:58

OIL CONSERVATION DIV.

## I N D E X

June 29th, 2000  
Examiner Hearing  
CASE NO. 12,440

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

## FOR THE DIVISION:

LYN S. HEBERT  
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 2040 South Pacheco  
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## FOR THE APPLICANT:

EASTHAM, JOHNSON, MONNHEIMER and JONTZ, P.C.  
 500 Marquette, NW, Suite 1200  
 P.O. Box 1276  
 Albuquerque, New Mexico 87103-1276  
 By: PAUL A. COOTER

\* \* \*

1 WHEREUPON, the following proceedings were had at  
2 8:25 a.m.:

3 EXAMINER STOGNER: At this time I will call Case  
4 Number 12,440.

5 MS. HEBERT: Application of Shahara Oil, L.L.C.,  
6 for approval of a tertiary recovery project for the  
7 Grayburg Jackson Premier Sand Unit, unorthodox oil well and  
8 injection well locations within that unit, and  
9 qualification of that project for the recovered oil tax  
10 rate pursuant to the New Mexico Enhanced Oil Recovery Act,  
11 Eddy County, New Mexico.

12 EXAMINER STOGNER: Call for appearances.

13 MR. COOTER: Paul Cooter, Mr. Examiner, appearing  
14 on behalf of Shahara Oil. I have two witnesses, Barry  
15 Hughes and Stan Atnipp. And in addition to those, I would  
16 like to introduce to the Examiner Carl Dooley, who is the  
17 manager of engineering and secondary recovery with AROC in  
18 Tulsa. Mr. Dooley will not be a witness, however.

19 EXAMINER STOGNER: Any other appearances?

20 Okay, will the witnesses please remain standing  
21 to be sworn in at this time?

22 (Thereupon, the witnesses were sworn.)

23 EXAMINER STOGNER: Mr. Cooter?

24 MR. COOTER: One other request, Mr. Stogner. May  
25 I have the witness sit beside me at this table so that we

1 may share exhibits?

2 EXAMINER STOGNER: Sure, just as long as he  
3 speaks up.

4 PERRY L. HUGHES,  
5 the witness herein, after having been first duly sworn upon  
6 his oath, was examined and testified as follows:

7 DIRECT EXAMINATION

8 BY MR. COOTER:

9 Q. Would you state your name for the record, please,  
10 sir?

11 A. My name is Perry L. Hughes.

12 Q. And what is your position, Mr. Hughes, with  
13 Shahara Oil?

14 A. I am president of Shahara Oil, L.L.C.

15 Q. Have you previously testified before this  
16 Division?

17 A. Yes, sir.

18 Q. Briefly relate your education and professional  
19 experience.

20 A. I graduated from West Virginia University in 1965  
21 with a bachelor of science in petroleum engineering. I  
22 have worked in engineering and management capacities, both  
23 domestically and foreign, for the last 35 years.

24 Q. Shahara Oil is the operator and project manager  
25 for AROC (Texas), Inc., and Stanley L. Atnipp in this

1 matter?

2 A. That is correct.

3 Q. Those two entities, AROC and Mr. Atnipp, own 100  
4 percent of the operating rights in the unit?

5 A. That's correct, in the Grayburg Jackson Premier  
6 Sand Unit. It covers 960 acres in 17 South, 30 East, Eddy  
7 County, located physically about one mile southeast of Loco  
8 Hills.

9 Q. Were the unit lands correctly described in the  
10 Application?

11 A. Yes, they were.

12 Q. On behalf of AROC and Mr. Atnipp, the owners of  
13 the operating rights, what does Shahara Oil seek by this  
14 Application?

15 A. Shahara Oil has three requests.

16 One is the approval of a tertiary recovery  
17 project for the Grayburg Jackson Premier San Unit, using  
18 microemulsion flooding.

19 Two, we seek the approval of two unorthodox well  
20 locations within the unit, one for a new producing well to  
21 be drilled and one for the conversion of one existing  
22 wellbore for injection waterflood purposes.

23 And three, the qualification of the project for  
24 recovered oil tax rate.

25 Q. First, let's talk about the tertiary recovery



1 project for the Grayburg Jackson Premier Sand Unit.

2 Attached to the Application as Exhibit A is Order Number  
3 R-2749, dated July 29, 1964. That was the order which  
4 approved the unit, was it not?

5 A. And authorized the waterflood project.

6 MR. COOTER: We would ask you, Mr. Examiner, to  
7 take administrative notice of that order which is attached  
8 to the Application.

9 Q. (By Mr. Cooter) At that time, General American  
10 Oil Company of Texas was the applicant and the operator of  
11 the unit. When did Shahara Oil acquire its rights?

12 A. Shahara Oil acquired the operating rights  
13 effective August 1, 1995, from Riverhill Energy Corporation  
14 and Bargo Energy Partners.

15 Q. At that time in 1995, they were the owners of 100  
16 percent of the operating rights?

17 A. That is correct.

18 Q. Subsequent to Shahara Oil's acquisition of those  
19 rights, they then passed and are now owned by AROC (Texas)  
20 and Mr. Atnipp?

21 A. That is correct, and Shahara Oil acts as the  
22 operator and project manager for AROC and Stanley Atnipp.

23 Q. What was the status of the waterflood project  
24 when it was acquired by Shahara Oil?

25 A. At that time, in August of 1995, there was one

1 injection well active, and oil production was about 20  
2 barrels of oil per day.

3 The unit itself was originally operated by  
4 General American, which was acquired later by Phillips  
5 Petroleum and later Riverhill, Bargo and then Shahara.

6 Q. Let me direct your attention to what was marked  
7 Exhibit B to the Application. Can you identify that for  
8 us?

9 A. Exhibit B is the Grayburg Jackson Premier Sand  
10 Unit agreement, and this is the agreement under which these  
11 properties have been operated since 1964.

12 Q. The Premier Sand Unit interval is described in  
13 that agreement on page 3?

14 A. That is correct. The Premier sand is defined as  
15 that reservoir which is found with the top at 3230 feet and  
16 the base at 3243 feet on Schlumberger log from General  
17 American Maddron Beeson Well Number 8 B, and it further  
18 defines the Premier sand as that interval plus 100 feet  
19 above the top of the sand and 50 feet below the bottom of  
20 the sand, or a total interval of 163 feet.

21 Q. What have Shahara Oil's operations been since  
22 acquiring the project?

23 A. Since August of 1995, Shahara has drilled five  
24 producing wells and completed them within the unitized  
25 interval of the Premier sand and re-established injection

1     into two unit wells, also into the Premier sand.

2             Q.     Let's turn next to what has been marked as  
3     Exhibit C to your Application. Explain that, if you would.

4             A.     Exhibit C shows the outline of the Grayburg  
5     Jackson Premier Sand Unit and the wells which will be  
6     producing wells at the completion of this redevelopment of  
7     the Premier Sand Unit and the wells that will be injection  
8     wells. There will be a total of 14 injection wells and 21  
9     producing wells.

10            Q.     While we're looking at Exhibit C, let's also look  
11     at Exhibit D and E that were attached to the Application.  
12     Let's start with Exhibit D. What is that?

13            A.     Exhibit D indicates the wells which will be  
14     producing wells in the unit. They are numbered 1 through  
15     21. 1 through 11 are wells to be drilled and completed as  
16     producing wells in the Premier sand. Number 11 is at an  
17     unorthodox location. It's located in the center of the  
18     northeast quarter of Section 28, as shown on Exhibit C.

19            MR. COOTER: I would like to point out to you,  
20     Mr. Stogner, a mistake that I made in the Application. On  
21     page 2 of the Application, paragraph 5, in the second line,  
22     where we talk about the unorthodox locations, over at the  
23     right-hand side I say, "Those two wells are well 1", which  
24     is designated the MA Number 7 well, and that actually --  
25     "1" should be "11". It is correctly identified on Exhibit

1 B.

2 THE WITNESS: I should point out, with regard to  
3 Well Number 11, which is the unorthodox location, that the  
4 ownership is the same within the unit, and in this case the  
5 east half of the northeast quarter of Section 28 and the  
6 west half of the northeast quarter of Section 28 have the  
7 same ownership, being AROC and Stanley Atnipp.

8 Q. (By Mr. Cooter) Now let's go to Exhibit E.  
9 Identify that, would you?

10 A. Exhibit E shows the wells which are to be  
11 injection wells in the unit.

12 Number 1 is a new well to be drilled. It's  
13 located in the northwest of the northwest of Section 27 and  
14 designated Grayburg Jackson Premier Sand Unit Tract AD  
15 Number 12.

16 Well Numbers 2 through 4 are current injectors.

17 And Numbers 5 through 14 are existing wellbores  
18 which will be made into injectors.

19 Q. Wells 2 through 4 that you mentioned that are  
20 current injection wells, they will remain injectors?

21 A. That is correct.

22 Q. And which well is the unorthodox location?

23 A. It is Well Number 1 -- no, Well Number --

24 Q. -- 14, I think.

25 A. -- Well Number 14, which is the Grayburg Jackson

1 Premier Sand Unit Tract MA Number 2, which again is located  
2 in the east half of the southwest corner of the northeast  
3 quarter of Section 28.

4 Q. It's the one down there.

5 Are all the wells that are shown on Exhibits D  
6 and E included in the plat which is Exhibit C?

7 A. That is correct.

8 Q. Let me next direct your attention to the exhibit  
9 which has been marked as Exhibit F. Would you identify and  
10 explain that?

11 A. Exhibit F again shows the outline of the Grayburg  
12 Jackson Premier Sand Unit and indicates the cumulative  
13 production of oil and water and cumulative water injection  
14 to date within the existing Grayburg Jackson Premier Sand  
15 Unit.

16 The key is, the green is indicating thousands of  
17 barrels of oil produced in each well; the pink, thousands  
18 of barrels of water produced from each well; and the blue  
19 being cumulative water injection for each well.

20 The cumulative oil production from the unit is  
21 about 2.3 million barrels of oil, the water production is  
22 about 3.5 million barrels of water, and cumulative water  
23 injection to date is about 11.2 million barrels of water.

24 Q. When you say "to date", that's from day one of  
25 the unit waterflood operations through the end of 1999?

1           A.    That is the case insofar as water injection. The  
2 cumulative production is from date of initial production in  
3 the unit area from the Premier sand. Some of these wells  
4 were drilled in the 1940s, but the unit waterflood order  
5 was put in place in 1964.

6           Q.    At the present time, are the wells within the  
7 unit in an advanced state of depletion?

8           A.    Yes, they are. We, as Exhibit G, have the --

9           Q.    Okay, let's go next to Exhibit G and identify  
10 that.

11          A.    Exhibit G is part of an engineering report  
12 prepared for the owners of the unit, which evaluates  
13 waterflood and infill drilling potential on the unit.

14                The first page of data, the second page of  
15 Exhibit G, indicates the proved, developed, producing  
16 reserves, estimated to remain at this time, assuming no  
17 further work done on the unit, and that indicates about  
18 26,000 barrels of remaining proved developed producing  
19 reserves.

20          Q.    Which would be recovered in, say, a three-year  
21 period?

22          A.    That is correct.

23          Q.    And then the unit would become uneconomic --

24          A.    That is correct.

25          Q.    -- to produce?

1           Okay, what is the next page in that exhibit?

2           A.    The last page of Exhibit G is the estimated  
3 reserves to be developed, and are classified as proven  
4 undeveloped reserves, utilizing infill drilling, as we've  
5 outlined in our previous exhibits, the location of the  
6 producing wells to be drilled, and through waterflooding.  
7 These are the reserves to be developed through secondary  
8 recovery in the unit, and indicate about 1.17 million  
9 barrels of incremental oil to be recovered through infill  
10 drilling and waterflooding.

11          Q.    Now, also while we're talking about this, let's  
12 also look at Exhibit H, if you would. This shows the  
13 potential with infill drilling. What about the  
14 microemulsion flooding? Does that add to the figures that  
15 are presented here?

16          A.    That is correct. Exhibit H indicates proven  
17 undeveloped reserves to be developed within the Premier  
18 Sand Unit, first utilizing infill drilling and waterflood,  
19 as we have just mentioned, 1.17 million barrels. In  
20 addition, tertiary recovery using microemulsion flooding,  
21 we believe an additional 360,000 barrels of oil will be  
22 recovered, a total of 1.53 million barrels of oil and 256  
23 million cubic feet of gas.

24          Q.    Yeah, let's go on to the revenue resulting from  
25 that at this time.

1           A.    Utilizing the average oil prices as used in the  
2    engineering report which was prepared by Cawley Gillespie  
3    and Mr. Aaron Cawley in Fort Worth, Texas, and using an oil  
4    price of \$25.25 a barrel over the life and an average gas  
5    price of \$3.80 per MCF over the life, the infill drilling  
6    and waterflood revenue to be developed, oil and gas, is  
7    \$30.3 million, and the tertiary recovery revenue, using  
8    microemulsion flooding, \$9.3 million, a total of \$39.6  
9    million of revenue under this project.

10          Q.    Maybe it's readily apparent, but without this  
11    effort, Mr. Hughes, would you envision a fairly early  
12    abandonment of the unit?

13          A.    I think that if we do not go forward with the  
14    development that, as shown in Mr. Cawley's report, the  
15    production from the unit will cease in about three years.

16          Q.    And if the project is abandoned, would a  
17    substantial amount of oil be left in the ground and  
18    unrecovered?

19          A.    Yes, obviously about a million and a half barrels  
20    of oil. We believe that the 1.53 million barrels of  
21    reserves will be developed and produced in the next 15  
22    years.

23          Q.    Over what period of time -- or did you just say  
24    that?

25          A.    Yeah.



1 Q. What would be the cost of the unit, both capital  
2 expenditures and operating costs, during that period of  
3 time?

4 A. We believe that the total cost of the project  
5 will be \$7.2 million. This includes a capital expenditure  
6 of \$2.96 million and operating costs of \$4.2 million.

7 Q. That \$4.2-million figure is a little different  
8 than in the Cawley report. Could you explain why?

9 A. In the Cawley report, there is no operating cost  
10 associated with the use of microbes in the microemulsion  
11 flooding. That cost is estimated -- total cost is  
12 estimated at \$182,000 for the initial application of  
13 microbes in the microemulsion flooding.

14 Q. In your opinion would the granting of the  
15 Application and the authorization for the project prevent  
16 waste, both economic and physical?

17 A. Yes, it will.

18 MR. COOTER: Mr. Examiner, I would ask you to  
19 take administrative notice of Exhibit A.

20 Q. (By Mr. Cooter) Exhibit B was the unit  
21 agreement. To the best of your knowledge and information,  
22 is that a true and correct copy of that?

23 A. Yes, it is.

24 Q. Were Exhibits C through H, with the exception of  
25 Exhibit G, which is the Cawley report, prepared either by

1 you or under your direction and supervision?

2 A. Yes.

3 Q. Do they accurately and correctly reflect the  
4 information that is set forth thereon?

5 A. Yes.

6 Q. And was Exhibit C, which is part of the Cawley-  
7 Gillespie report -- is that an accurate and correct copy of  
8 the document?

9 A. Yes, that's Exhibit G.

10 MR. COOTER: G, yes.

11 Mr. Examiner, we offer all the exhibits at this  
12 time.

13 EXAMINER STOGNER: I'll take administrative  
14 notice of Order Number R-2749 -- this was the initial  
15 waterflood project approval in 1964, as it relates to the  
16 initiation of this project back in 1964 -- and also admit  
17 into evidence Exhibits A through H as necessary.

18 MR. COOTER: That concludes my examination of Mr.  
19 Hughes.

20 EXAMINATION

21 BY EXAMINER STOGNER:

22 Q. Mr. Hughes, why has the unit boundaries changed?

23 A. The original unit, as envisioned in early 1964,  
24 included the west half of the northeast quarter of Section  
25 28 and the southeast of the southwest of Section 28. Those

1 were undrilled areas, that 120 acres was undrilled at the  
2 time of the formation of the unit. And in discussions  
3 during the formation and finalization of the unit, those  
4 were excluded as apparently being nonproductive.

5 The unit was then formed as outlined in our  
6 exhibits. Subsequent to that, in the 1980s, the three  
7 wells as shown in those 120 acres were drilled and  
8 completed as lease wells, not only completed in the Premier  
9 sand but other zones above and below the Premier sand.  
10 They are being produced as lease wells from the Maddron A  
11 and the Maddron E leases.

12 Q. Does the unit agreement provide for an expansion  
13 of additional acreage?

14 A. Yes, it does.

15 Q. Would the drilling of that Well Number -- is that  
16 7, the producing well --

17 A. Yes, sir.

18 Q. -- at an unorthodox location, would that initiate  
19 such an expansion?

20 A. I don't believe so, Mr. Examiner. I think that  
21 as the ownership is the same on both sides, there's no  
22 effect to the ownership having the MA 7 well drilled at the  
23 unorthodox location. The location was chosen to optimize  
24 the recovery from the Premier sand.

25 Q. Okay, now when you say that ownership is the

1 same, okay, let's take a look at the unit. That's all  
2 federal land?

3 A. Yes, sir.

4 Q. Okay. And the -- What, the west half of the  
5 northeast quarter is federal?

6 A. Yes, sir.

7 Q. Okay. Now, in your Application on the first  
8 paragraph, Atnipp is the owner of 100 percent of the  
9 operating rights. Now, is that saying that Atnipp is 100-  
10 percent working interest under the unit?

11 A. Yeah, the interest owned on either side of the  
12 unit boundary is 99.5 percent AROC (Texas), Inc., and one  
13 half of one percent Stanley L. Atnipp, and those interests  
14 are the same, both in the unit and in the acreage to the  
15 west half of the northeast quarter of 28.

16 Q. Okay. And there's no overrides of any kind on  
17 either side of the line?

18 A. There are overrides, and they are, I believe to  
19 be, all the same, the same interests.

20 Q. And how many overrides are there?

21 A. Mr. Examiner, I don't have that information with  
22 me. That's something that we can provide.

23 EXAMINER STOGNER: Okay. Mr. Cooter, if you  
24 could provide that, of what the override interest is within  
25 these unit boundaries, as shown on Exhibit F, compared to

1 the west half of the northeast quarter.

2 And while we're on that, I will expect, Mr.  
3 Cooter, if there are differences and it is where that one  
4 of those overriding interests is such that it's being  
5 drained by the Well Number 7, then I will expect you to  
6 make proper notification of that.

7 MR. COOTER: Be happy to do so, Mr. Stogner.

8 I might point out, it might help you, on Exhibit  
9 B, page 12 of the unit agreement, the initial participating  
10 area excluded that 120 acres. And as you'll note from the  
11 page 4 of Exhibit B to that unit agreement -- I'm sorry for  
12 the duplication of numbers here, but page 4 of Exhibit B to  
13 the unit agreement, there were no overriding royalty  
14 interests outstanding when the unit was formed. And I  
15 believe that all overriding royalties that may have been  
16 carved out subsequent to that have covered both the unit  
17 and the west half of that northeast quarter. But I will  
18 verify that.

19 EXAMINER STOGNER: If you would, I would  
20 appreciate that.

21 Mr. Cooter, what's your next witness going to be  
22 presenting today?

23 MR. COOTER: Going into the microemulsion, what  
24 it is, how -- the quantities that will be used here. I  
25 know that you've heard this before, and I'll be happy to

1 just state for the record that Mr. Atnipp would so testify,  
2 and testify as to the quantity of the slug size and the  
3 cost of the project. The figures have been worked into the  
4 exhibits that are now in front of you.

5 EXAMINER STOGNER: Okay, who's going to be  
6 presenting the information that's required on the C-108  
7 about the area of review of any new or reconversions of  
8 injection wells?

9 MR. COOTER: We had not filed or prepared a  
10 C-108, because it is an existing waterflood unit. If you  
11 believe that we should, we shall certainly so do.

12 Q. (By Examiner Stogner) Well, let's see. Did  
13 you -- Let me make sure I have my facts straight on this.

14 Okay, on paragraph 4 of your Application there  
15 will be 11 new producing wells and one new injection well.  
16 That's not an existing well, or am I reading something  
17 wrong?

18 A. No, that is correct.

19 Q. Okay. And the conversion of 10 currently  
20 existing wellbores to injection wells, are those producing  
21 wells or old injection wells?

22 A. Both. Some are current producing, some are old  
23 injection wells, some of which may be in a plugged-and-  
24 abandoned status.

25 EXAMINER STOGNER: Okay. Well, Mr. Cooter, I

1 could provide that information. It may take a year to a  
2 year and a half for me to get around and look up the well  
3 data --

4 MR. COOTER: Well, let's --

5 EXAMINER STOGNER: -- so let me forewarn you,  
6 it's going to be a long time before I get the Application  
7 out, if I have to go through our well files. And we will  
8 be moving those well files in December. That may add some  
9 additional time for me to do the review. I will be more  
10 than happy, so why don't you call your next witness. I do  
11 not have a problem in doing that.

12 MR. COOTER: What could we do, then, to -- file  
13 the C-108?

14 EXAMINER STOGNER: Oh, that would help. But like  
15 I said, I will look up the information myself if that's  
16 what you want. It's going to take a long time.

17 MR. COOTER: No, let's see if we can't expedite  
18 this. Too much is at stake. What can we do to --

19 EXAMINER STOGNER: Well, I would suggest first of  
20 all that you maybe read 701.B.(2) and what is necessary for  
21 an injection well. And all injection wells do have C-108s  
22 on them, and I don't know why the new well or any of these  
23 conversions don't. But like I said, I could be seeing  
24 something wrong, and I will be more than happy to get the  
25 necessary information. However, it's going to take me

1 quite a while to look the information up for you.

2 MR. COOTER: If we filed a C-108 on all of that,  
3 would that be of assistance?

4 EXAMINER STOGNER: Yes, sir, it would.

5 MR. COOTER: We shall so do, Mr. Stogner.

6 EXAMINER STOGNER: Okay.

7 MR. COOTER: Next, I would call Stanley Atnipp.

8 EXAMINER STOGNER: One other thing on that.

9 MR. COOTER: Yes, sir.

10 EXAMINER STOGNER: Has the surface owner been  
11 notified? I believe that would be, I'm assuming, the  
12 federal government. And that's a requirement in there.

13 MR. COOTER: I think we did, but I'm not sure.  
14 We'll --

15 EXAMINER STOGNER: If you could verify that for  
16 me and make sure that the notification requirements on the  
17 C-108 have been met.

18 MR. COOTER: Yes, sir, we will file the C-108 for  
19 those.

20 STANLEY L. ATNIPP,  
21 the witness herein, after having been first duly sworn upon  
22 his oath, was examined and testified as follows:

23 DIRECT EXAMINATION

24 BY MR. COOTER:

25 Q. Would you state your name for the record, please,



1 sir?

2 A. Stanley L. Atnipp.

3 Q. And what is your present business association,  
4 Mr. Atnipp?

5 A. I am a consulting engineer affiliated with SLA,  
6 Inc., in Midland, Texas.

7 Q. Have you previously testified before the New  
8 Mexico Oil Conservation Division?

9 A. Yes, sir, I have.

10 Q. Would you briefly relate your education and  
11 professional experience?

12 A. I graduated in 1977 from Colorado School of Mines  
13 with a bachelor of science in petroleum engineering. Since  
14 then, from 1977 through 1979, worked for Aminoil, USA; 1979  
15 through 1994 for Marathon Oil; and from 1994 to present as  
16 a consulting engineer.

17 Q. You heard Perry Hughes explain Shahara Oil's  
18 plans for the Grayburg Jackson Premier Sand Unit?

19 A. Yes, sir, I did.

20 Q. And the microemulsion flooding of some 960 acres  
21 in Eddy County?

22 A. Yes, sir.

23 Q. Are you familiar with that proposed activity?

24 A. Yes, sir, I am.

25 Q. Explain, if you would, what we're talking about

1 with microemulsion flooding.

2 A. Microemulsion flooding is using a product such as  
3 a surfactant to increase the oil recovery from a reservoir.  
4 And in this case we're going to be using naturally  
5 occurring micro-organisms which will affect the sweep  
6 efficiency by removing of scale, and the byproduct of that  
7 process will be a surfactant. So we will be flooding the  
8 formation with a surfactant.

9 Q. Would that also have a result in reducing the  
10 injection pressures?

11 A. In most cases, if the scale has built up around  
12 the injectors, yes, it will.

13 Q. What volume is proposed for this project?

14 A. The volume of microbes is proposed 2800 gallons.

15 Q. And over what period of time would those be added  
16 to the fluid?

17 A. The slug size is approximately 450,000 barrels of  
18 water, so we would anticipate somewhere, five to six  
19 months' period of time, to put the slug in place.

20 Q. And what would be the cost of that operation?

21 A. The cost of that is \$182,000.

22 Q. You saw what had been marked as Exhibit H. In  
23 your opinion are those figures, the recoverable reserves,  
24 reasonably anticipated using this microemulsion flooding?

25 A. Yes, for the barrels of oil, this 360,000

1 attributed to the microemulsion, flooding is very  
2 reasonable in my opinion.

3 MR. COOTER: That's all I have of this witness.

4 EXAMINATION

5 BY EXAMINER STOGNER:

6 Q. Will an equal amount of this microemulsion  
7 material be injected in each of the injection wells?

8 A. That is the ideal situation, because you're going  
9 to be putting the material in at the water station so that  
10 the microbes go wherever the water goes, and I anticipate  
11 that that would be a fairly equal amount, according to the  
12 waterflooding.

13 Q. Okay, will this -- I'm looking at -- what?  
14 Exhibit C. This is the list of producing wells and  
15 injection wells. In this process, you get all the wells  
16 producing, all of the wells injection water before you add  
17 this emulsion, do you kind of do a cleansing or what's the  
18 procedure before you actually run the slug?

19 A. You don't have to do that. The microbes can be  
20 introduced into the system as is, and by virtue of the fact  
21 that one of their food sources is scale and iron sulfide, I  
22 will be able to clean up most of that damage on the  
23 injection side using the microbes. So there won't have to  
24 be a tremendous amount of time spent preparing each  
25 wellbore from that aspect anyway.

1           Q.    So essentially on these injection wells, whether  
2   they be currently injection or re-establishing injection,  
3   no matter what the wellbore is, I mean, what kind of work  
4   needs to be done to it, you can initially start injecting  
5   the microemulsion slug?

6           A.    If the wellbores are in an approved manner by  
7   which, you know, as far as their integrity goes, yes.

8           Q.    Okay. And will there need to be any additional  
9   assurance of the integrity before the emulsion process?

10          A.    I assume that there's -- the State of New Mexico,  
11   you check your wellbores, make sure they're open and you've  
12   got your tubing in the right place and all that, if you're  
13   opening up old wells.

14          Q.    Well, yeah, we do. But as a prudent operator,  
15   wouldn't you want to assure that too?

16          A.    I'm not the operator in this situation.

17          Q.    Uh-huh, but we would hope the operator --

18          A.    Yes.

19          Q.    -- would abide by all this and make sure that  
20   none of the microemulsion goes down where it isn't supposed  
21   to be.

22          A.    Yes.

23          Q.    How about the salinity of the injection fluid  
24   going down? Does that have any effect on the  
25   microemulsion, or is this fresh water that you're --

1           A.    No, it doesn't -- the salinity, the only way that  
2   it affects the microbes is, it makes them perhaps less  
3   active when you get up around the saturation of chloride  
4   ions.  When you get up to around 280,000 to 380,000 parts  
5   per million, chlorides, then it affects their activity  
6   level.

7           Q.    Have you been informed of what the water source  
8   is or what the water salinity or quality is in this  
9   project?

10          A.    I understand it, it's produced water, and that  
11   was probably, if I remember anything right -- Perry may be  
12   able to help me with that, but I would assume that it's not  
13   anywhere near the 300,000 or 280,000 chloride mark.

14               EXAMINER STOGNER:  All right, then I'll ask Mr.  
15   Hughes that question.

16               MR. HUGHES:  Yes, the makeup water, or the water  
17   to be injected, is a combination of our produced water,  
18   which is a low-salinity formation water, due to the fact  
19   that over the early injection history fresh water was used  
20   as makeup water.  Our makeup water will be produced water  
21   obtained from other operators in the area, and is not  
22   anywhere near saturation.

23               EXAMINER STOGNER:  Now, will that makeup produced  
24   water be from the same formation or a different formation?

25               MR. HUGHES:  It will be both from the Grayburg

1 San Andres formation or the Grayburg formation, and some  
2 from the Glorieta formation immediately below the San  
3 Andres.

4 EXAMINER STOGNER: Where will this source come  
5 from?

6 MR. HUGHES: Other operators right in the Loco  
7 Hills area, Mack Energy, perhaps Marbob, plus our own  
8 produced water from our leases, the Grayburg Jackson  
9 Premier Sand Unit and another project that we have  
10 immediately to the southeast, which this office has  
11 approved as a waterflood, just designated the Beeson F  
12 Federal Waterflood, which was approved in 1999.

13 EXAMINER STOGNER: What's the current water  
14 production off of this unit now?

15 MR. HUGHES: The current water production is  
16 about 200, 250 barrels of water per day.

17 EXAMINER STOGNER: And what do you propose that  
18 the volume to be injected will be, once this project is up  
19 and running?

20 MR. HUGHES: We expect to be able to inject about  
21 300 barrels of water per day per injection well, total of  
22 up to 6300 barrels of water per day. I would anticipate  
23 the total volume to be injected during the life of the  
24 project to be around 12 million barrels of water. We would  
25 not anticipate using any fresh water as makeup water.

1           EXAMINER STOGNER: Mr. Cooter, I believe there's  
2 another requirement in here that the agency be provided  
3 quality of the water or a sample or a report on the water  
4 to be injected and the water that is in the formation, to  
5 assure compatibility. If you will provide this along with  
6 the C-108.

7           MR. COOTER: Yes, sir.

8           Q. (By Examiner Stogner) Mr. Atnipp, has there been  
9 any studies done on this microemulsion if it's introduced  
10 into a freshwater aquifer, what occurs, what happens?

11          A. These are naturally occurring microbes, and the  
12 EPA stance is, because they're naturally occurring, that  
13 they don't oversee that. There is no problem with whether  
14 the -- Most of them, a lot of them, came out of water  
15 sources, fresh and saline, the ocean. So they are  
16 naturally occurring in the environment today, so there is  
17 not any problem -- If it does get in any source of water,  
18 it's not anything else but another naturally occurring  
19 micro-organism.

20          EXAMINER STOGNER: Well, oil is a naturally  
21 occurring substance, and if it is in fresh water I  
22 guarantee it's not going to be looked at lightly. Which  
23 leads me up to the next question. Is there any freshwater  
24 wells out there in this area?

25          MR. HUGHES: Not that I'm aware of at all, Mr.

1 Examiner.

2 EXAMINER STOGNER: Okay, I think there's another  
3 C-108 requirement in which that be backed up and assured  
4 that there are no fresh waters, so I'm assuming that an  
5 adequate study will be done on that too.

6 MR. HUGHES: Yes, we actually, in the Beeson F  
7 Federal application, which is located one-half mile to the  
8 southwest of this Premier Sand Unit provided that  
9 information. So we can do that with no problem. There was  
10 no fresh water in the area, as found in our application for  
11 the Beeson F.

12 EXAMINER STOGNER: Mr. Cotter, I apologize for  
13 being such a burden here, but if we don't do it now, I  
14 guarantee the EPA will definitely come in whenever they  
15 review our UIC record and find an application such as this  
16 lacking so much information, they'll make us do it then, so  
17 we might as well get it done now.

18 MR. COOTER: Yes, sir.

19 EXAMINER STOGNER: Is there anything else, Mr.  
20 Cooter, in this matter?

21 MR. COOTER: No, sir.

22 EXAMINER STOGNER: Okay. Is there anything else  
23 in Case Number 12,440?

24 I'll hold the record open pending the needed  
25 information.



1 MR. COOTER: We will get that to you just as  
2 quickly as possible, Mr. Stogner.

3 EXAMINER STOGNER: Do appreciate it, Mr. Cooter.

4 MR. COOTER: Thank you.

5 EXAMINER STOGNER: Thank you.

6 (Thereupon, these proceedings were concluded at  
7 9:19 a.m.)

8 \* \* \*

9  
10  
11  
12  
13  
14 I do hereby certify that the foregoing is  
15 a complete record of the proceedings in  
16 the examiner hearing of Case No. 12441  
17 heard by me on 27 June 1966.  
18 Michael E. Stogner, Examiner  
19 Of Conservation Division  
20  
21  
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23  
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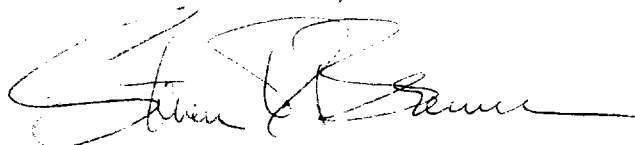
CERTIFICATE OF REPORTER

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 June 30th, 2000.



STEVEN T. BRENNER  
CCR No. 7

My commission expires: October 14, 2002

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

IN THE MATTER OF THE HEARING CALLED BY	)	
THE OIL CONSERVATION DIVISION FOR THE	)	
PURPOSE OF CONSIDERING:	)	CASE NO. 12,440
	)	
APPLICATION OF SHAHARA OIL, L.L.C., FOR	)	
APPROVAL OF A TERTIARY RECOVERY PROJECT	)	
FOR THE GRAYBURG JACKSON PREMIER SAND	)	
UNIT, UNORTHODOX OIL WELL AND INJECTION	)	
WELL LOCATIONS WITHIN THAT UNIT, AND	)	
QUALIFICATION OF THAT PROJECT FOR THE	)	
RECOVERED OIL TAX RATE PURSUANT TO THE	)	
NEW MEXICO ENHANCED OIL RECOVERY ACT,	)	
EDDY COUNTY, NEW MEXICO	)	
	)	

OFFICIAL EXHIBIT FILE

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

June 29th, 2000

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, June 29th, 2000, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

\* \* \*

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