

dearnley, meier & mc cormick

209 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO 87103
1216 FIRST NATIONAL BANK BLDG. EAST • ALBUQUERQUE, NEW MEXICO 87108

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
CONFERENCE ROOM, STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
February 28, 1973

EXAMINER HEARING

IN THE MATTER OF:

Application of Anadarko Production Company
for a Unit Agreement, Eddy County, New
Mexico;

and

Application of Anadarko Production Company
for a waterflood project, special rules,
unorthodox locations, and pool
redelineation, Eddy County, New Mexico.

Cases Nos.

4911 & 4912

BEFORE: Elvis A. Utz
Examiner

TRANSCRIPT OF HEARING

1 MR. UTZ: The Hearing will come to order, please.
2 Call Case 4911.

3 MR. CARR: Case 4911. Application of Anadarko
4 Production Company for a unit agreement, Eddy County, New
5 Mexico.

6 MR. KELLAHIN: If the Examiner please, Jason
7 Kellahin, Kellahin and Fox, Santa Fe, appearing for the
8 applicant. Also enter the appearance of Mr. Joe Kepke, a
9 member of the Oklahoma Bar.

10 In the interest of time, I would move that we
11 consolidate Case 4911 with Case 4912, the first being a unit
12 agreement and the second seeking approval of a water flood
13 project on the same unit.

14 MR. UTZ: Case 4911 and 4912 will be consolidated
15 for the purpose of testimony. Separate orders will be
16 written.

17 MR. KELLAHIN: We have one Witness I'd like to have
18 sworn.

19 (Whereupon, Mr. Paul A. Tucker was called to the
20 stand and sworn.)

21 * * * * *

22 PAUL A. TUCKER,

23 having been first duly sworn according to law, upon his oath,
24 testified as follows:

25

DIRECT EXAMINATION

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

BY MR. KELLAHIN

Q Would you state your name, please?

A Paul A. Tucker.

Q By whom are you employed and in what position, Mr. Tucker?

A Anadarko Production Company, Senior Petroleum Engineer.

Q Where are you located?

A Fort Worth, Texas.

Q Have you ever testified before the Oil Conservation Commission or one of its Examiners?

A No, sir.

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

A I'm a graduate of the University of Oklahoma in Petroleum Engineering, have worked for Panhandle Eastern Pipeline Company or its associated company, Anadarko, since 1959, was in Panhandle's Gas Reservoir Engineering Section for about through 1968, and computer work for two years.

And then I have been with Anadarko in the evaluation in reservoir engineering for, until the present time.

Q In connection with your duties as a petroleum engineer,

1 do you handle waterflood projects, too?

2 A Yes, sir.

3 Q And do you have anything to do with the proposed
4 waterflood project which is the subject of this hearing?

5 A Yes, sir. I did most of the engineering work on this.

6 MR. KELLAHIN: Are the Witness' qualifications
7 acceptable?

8 MR. UTZ: Yes, sir. They certainly are.

9 Q (By Mr. Kellahin) Mr. Tucker, referring to what has
10 been marked as the Applicant's Exhibit Number 1, would
11 you identify that exhibit, please?

12 A This is the Unit Agreement and Unit Operating Agreement
13 of the proposed Ballard Grayburg San Andres Unit in
14 Eddy County, New Mexico.

15 Q Now, does that Unit Agreement follow generally the
16 Federal form that has been approved by this Commission
17 in the past?

18 A Yes, sir.

19 Q Has it been submitted to the U.S. Geological Survey?

20 A Yes, sir. We have preliminary approval from the
21 Geological Survey.

22 Q Now, is that your Exhibit Number 2?

23 A Yes, sir.

24 Q And that is the preliminary approval of the Unit
25 Agreement?

1 A Yes, sir.

2 Q Does the Unit Agreement contain provisions for
3 expansion at a later date, if that is deemed advisable?

4 A Yes, sir. It does, Page 7.

5 Q Yes, sir. How many acres does the proposed unit cover?

6 A 2,580.59.

7 Q Now, what percentage of that or what portion of that is
8 Federal and what is fee?

9 A The Federal acreage consists of 2,140 acres which is
10 about 83 percent of the unit area. The rest of it is
11 fee acreage, 440 acres, which is the remaining 17 percent.

12 Q Now, there is no State land involved in this unit; is
13 that correct?

14 A No, sir.

15 Q What is this unitized formation under terms of the Unit
16 Agreement?

17 A The unitized formation, the portion of the Grayburg and
18 San Andres Zone, which extends from 20 feet below the
19 base of the Loco Hill sand down to a depth of 450 feet
20 below the top of the San Andres.

21 There is a depth reference point defined to a
22 particular log in the Unit Operating Agreement or the
23 Unit Agreement.

24 The interval is between the depth of 2,388 feet and
25 3,116 feet below the surface of the land on the

1 Schlumberger Gamma Ray Neutron log of Anadarko
2 Production Company's Ballard "B" Number 4 Well, which
3 is 1,980 feet from the South line and 1,980 feet from
4 the West line of Section 8, 18 South, 29 East.

5 MR. UTZ: 18, 29?

6 THE WITNESS: Yes, sir.

7 Q (By Mr. Kellahin) What page were you reading from in
8 the Agreement there?

9 A Page 4.

10 Q Now, have all of the working interest owners within the
11 unit boundaries signed the Agreement?

12 A Yes, sir. 100 percent of the working interest owners
13 have signed.

14 Q And do you have all of the royalty ownership signed?

15 A We have a hundred percent of the royalty interest owners
16 in all tracts except Tract 26. We expect to obtain
17 this additional ratification from those royalty owners
18 prior to the time the unit is effective, and the facts
19 in the Unit Agreement assume that we will obtain this
20 additional ratification.

21 Q Now, referring to what has been marked as your Exhibit
22 Number 3, would you identify that exhibit?

23 A It is a map showing the boundary of the proposed unit
24 and the tract designations which have been signed and
25 are unified in the Unit Agreement or the Exhibit thereto.

1 Q Now, the tract also shows the working interest ownership,
2 does it not?

3 A Yes, sir.

4 Q Is Anadarko designated as the unit operator in the
5 Agreement?

6 A Yes, sir, they are.

7 Q Attached to the Exhibit Number 1, the Unit Agreement,
8 does it also contain the Unit Operating Agreement?

9 A Yes, sir.

10 Q Do you have any comments about the Operating Agreement?

11 A No, sir, other than all of the working interest owners
12 have also ratified this.

13 Q Ratified the Operating Agreement. And it is a standard
14 form of Operating Agreement, is it?

15 A Yes, sir.

16 Q Now, referring to what has been marked as Exhibit Number
17 4, would you identify that exhibit?

18 A This is a decline curve or a plot of monthly oil
19 production in barrels versus time for the leases by
20 making up the tracts within the proposed unit.

21 Q Now, the graph would appear to hold a fairly level
22 decline with some peaks along the way.

23 Could you account for those?

24 A Well, the initial development stage occurred in the
25 1939 to 1941 period. And about the first part of 1949,

1 a number of the wells were deepened to the San Andres,
2 the pay zone of the San Andres formation.

3 This accounts for the 1949 increase. In about 1956,
4 some wells were drilled, some additional development was
5 made on Anadarko's Federal II lease in the East half of
6 Section 8 of 18 South, 29 East.

7 And in 1964, there was some deepening of some wells
8 in the, mostly owned by Depco and Texas American in the
9 northern part of the proposed unit; and they deepened
10 and did some fracturing work.

11 Q Now, do you have a tabulation of the average production
12 from the wells that were in the unit boundary?

13 A Yes, sir. That's Exhibit 5 which shows the current
14 leases. It lists the number of producing wells that
15 were contained in our production reports as of September
16 1972, and a graphic determination of the barrels per
17 month production from our decline curves on those leases
18 and an approximate average production rate as of that
19 time.

20 Q Now, looking at the average production rate for the
21 average well, in your opinion, is this pool in that
22 advanced stage of depletion?

23 A Yes, sir. It is.

24 Q In your opinion, is it ready for secondary recovery
25 operations by waterflooding?

1 A Yes, sir.

2 Q Do you have any estimate on how much additional oil
3 might be recovered by the secondary recovery operations?

4 A We are estimating approximately 2,690,000 barrels.

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

8 A This is a type log which shows the unitized interval,
9 and it shows also the zones which contain the secondary
10 oil, the zones that we plan to inject water into.

11 This particular log is not an injection well itself.
12 It was chosen because we have, it's a modern site well
13 Neutron log, and the best log we have to show the
14 porosity zones.

15 Q Now, by offering this Exhibit and showing the intervals
16 you propose to inject water into, is it your intention
17 to limit your injection to those specific zones?

18 A Not necessarily. We have marked on this exhibit two
19 primary zones into which we will definitely inject water.
20 Secondary zones are productive in certain areas of the
21 field; and as we develop the flood and obtain more
22 modern logs and information, water will be injected into
23 those and perhaps some of the additional stringers within
24 the unitized interval.

25 The Grayburg, the upper set, the large well, let's

1 see, the bracket that covers the Metex to the top of
2 the San Andres is the Grayburg interval. And then the
3 Jackson Zone porosity is located toward the lower part
4 of the diagram at about 3,000 feet.

5 Q Now, the Jackson porosity is within the vertical limits
6 of the Grayburg San Andres Pool, is it not?

7 A Yes, sir.

8 Q Now, referring to what has been marked as Exhibit
9 Number 7, would you identify that exhibit?

10 A This is a structure map of the top of the Loco Hill
11 sand. The Loco Hill sand itself is not in the unitized
12 interval, but this is the best marker bed for showing
13 the over-all structure in the area.

14 Q And does the Grayburg conform closely to this structure?

15 A Yes, sir.

16 Q Now, referring to Exhibit Number 8, would you discuss
17 that exhibit?

18 A The Jackson Zone does not cover the entire area of the
19 unit which the Grayburg Zone does. This particular
20 diagram shows what we believe to be the productive
21 limits of the Jackson Zone; and as you can see, it
22 covers most of the Section 8 of 18 South, 29 East.

23 The structure itself is schematic inasmuch as there
24 is no accurate deep control to --

25 Q That is the area you will be flooding in the Jackson:

1 is that correct?

2 A Yes, sir.

3 Q Now, referring to Exhibit Number 9, would you identify
4 that exhibit?

5 A This exhibit is our initial plan of development which
6 describes what injection wells we will drill and defines
7 approximately the timing that we are expecting.

8 Q It also gives the well locations, does it not?

9 A Yes, sir. It shows the well spot at which the different
10 injection wells will be drilled.

11 Q Now, these locations will require approval as unorthodox
12 locations in some instances?

13 A Yes, sir. There are three that are unorthodox locations.
14 The first one is located 20 feet from the North line
15 and 1,500 feet from the East line of Section 5 of 18
16 South, 29 East.

17 This second one is located 20 feet from the North
18 line and 1,200 feet from the West line of Section 5 of
19 18 South, 29 East.

20 MR. UTZ: That's Well Number 3?

21 THE WITNESS: It would be, yes, sir. Tract 13,
22 Well 3.

23 MR. UTZ: And the first one was Tract 8, Well 5?

24 THE WITNESS: Tract 8, Well 5.

25 MR. UTZ: Okay.

1 THE WITNESS: Then the third one is Tract 5, Well
2 12. It's located --

3 MR. UTZ: Tract 5, Well 12. I haven't found it yet.

4 THE WITNESS: I haven't either. Let me tell you
5 where it is located. 1,320 feet from the South line and 20
6 feet from the East line of Section 8 of 18 South, 29 East.

7 MR. UTZ: You are not sure whether that is listed
8 on your Exhibit 9 or not?

9 THE WITNESS: I think it's there. I just haven't
10 found it yet. All right. It will be on, all right. Well,
11 I've made an error. This well is Tract 5, Well 13, and it is
12 listed on the bottom of the second page of Exhibit 9.

13 MR. UTZ: Okay.

14 Q (By Mr. Kellahin) And that is in the third stage of
15 development?

16 That's not an initial well in your project, though?

17 A No, sir. I haven't explained that part of it yet, but
18 the narrative is supported by Exhibit 10 which shows
19 the first stage of development of the injection pattern.

20 It shows that well development, six wells to
21 inject into the Grayburg formation and four wells to
22 inject into the Jackson formation.

23 No, the North four wells, as shown on this exhibit
24 in Section 5, will all be newly drilled wells to the
25 Grayburg formation only.

1 The middle two wells in that set of wells are
2 replacements for existing wells. And their locations
3 will be within 330 feet of the present wells.

4 There might be a little discrepancy between Exhibit
5 Number 9 and Exhibit 10. As shown on Exhibit 9, I show
6 conversion of two existing wells two Grayburg and Jackson
7 Wells as follows under Item 3 on the initial stage of
8 development.

9 This well in Unit B of Section 8 which is the
10 Texas American Ballard "B-2", we may attempt to make
11 that a dual Jackson Well; but we are really not
12 anticipating sufficient porosity there to actually make
13 it feasible.

14 That's why it doesn't show up as a dual well on
15 Exhibit 10. The Anadarko Federal II Number 6, which is
16 1,990 feet from the North line and 2,310 feet from the
17 East line, we may go ahead and prepare that well for
18 injection into both zones, both the Grayburg and Jackson;
19 but in the initial stage, we may not actually initiate
20 Jackson injection into that well.

21 Q Now, turning to Exhibit Number 11, would you discuss
22 that exhibit?

23 A This Exhibit shows the completion of the injection
24 pattern and also identifies four new producing wells
25 which will probably or possibly be drilled.

1 This stage, Exhibit 9 on the second page, shows
2 the third stage of development. And during that third
3 stage of development, the injection would be expanded
4 as it shows in Exhibit 11 providing that performance
5 of the initial stages justifies doing that.

6 Q Now, Anadarko is the operator of the Far West Loco
7 Hills sand unit, is it not?

8 A Yes, sir.

9 Q Is that a waterflood project?

10 A Yes, sir. It is.

11 Q And that offsets to your Ballard Grayburg San Andres
12 Unit to the East?

13 A Yes, sir.

14 Q Are you fighting the same zones or formations in the
15 Far West Loco Hill Unit?

16 A No, sir. The Far West Loco Hills Unit is a waterflood
17 exclusively of the Loco Hills sands. The Ballard Unit
18 will be a waterflood of Metex and Premier intervals of
19 the Grayburg.

20 There is one well in the Northeast, Northeast of
21 Section 17, being the Thompson Travis well which is
22 getting some response from the Far West Unit.

23 Q Will the injection of water in your Ballard Grayburg
24 and San Andres Unit in any way have an adverse effect
25 on the Loco Hills Unit?

1 A No, sir.

2 Q Now, what's the situation to the North of your proposed
3 unit?

4 A This is a waterflood operated by Harold Kersey, the old
5 Loco Unit. It has been active for some years. I don't
6 have the detailed production statistics of that, but it
7 is no longer a flush unit.

8 The old Loco Unit Number 13, for example, is
9 producing about three barrels a day of oil.

10 Q Has the injection of water there had any effect on the
11 wells in your proposed unit?

12 A We haven't had any experience; but we have had two
13 effects. The Depco Bay Miller Number 2 Well in the
14 Northwest, Northwest of Section 5, 18 South, 29 East,
15 has been shut-in due to water.

16 We are getting some flattening on the production
17 on Depco's Miller lease due to water being injected in
18 the old Loco Unit immediately to the North.

19 Q Now, the old Loco Unit does affect the Grayburg and
20 San Andres formation, does it not?

21 A Yes, sir.

22 Q It is in that same formation?

23 A Yes, sir.

24 Q Is there any waterflood project of any kind in the West?

25 A Well, there is some injection in Section 12. The zones

1 are Grayburg Zones of the same, the Metex and Premier
2 which we will be flooding in the Ballard Unit.

3 Q In your opinion will the flooding of the Grayburg San
4 Andres or the Jackson Zone have any adverse effects on
5 any of the offsetting operators?

6 A No, sir.

7 Q What volumes of water do you propose to inject in these
8 wells?

9 A We will inject about 400 barrels per day per zone. And
10 for the initial phase as related back to Exhibit 10,
11 this will be about 4,000 barrels per day initially. And
12 then later on with full development, this would reach
13 about 10,000 barrels per day.

14 Q Do you have any indication what the pressure might be
15 on these injection wells?

16 A We expect that the Grayburg injection pressure may reach
17 2,200 to 2,400 pounds. This may be a fairly high value
18 for that, and we would be hoping to keep it lower than
19 that if we can get the required volumes.

20 The Jackson, we expect it will take water at a
21 lower pressure than that, maybe no more than 1,500
22 pounds. These are estimates, and it's a little difficult
23 to determine exactly what these will be.

24 Q Now, what is the source of your water?

25 A We plan to purchase water from one of the water companies

1 available in the area. There are three, the Arwood
2 Limited Water Company, the Double Eagle Water Company,
3 and the Yucca Water Company.

4 We made some informational contacts and believe
5 that we can obtain the water supply.

6 Q Now, is that fresh water?

7 A Yes, sir. The Exhibits 12 and 13 show the water analysis
8 that is taken from the Arwood and Double Eagle system.

9 Q And as the waterflood progresses, would you plan to
10 reinject produced water?

11 A Yes, sir. We would.

12 Q Now, referring to what has been marked as Exhibit
13 Number 14, would you identify that Exhibit?

14 A That's a schematic diagram referring to the type of
15 injection well that we would drill for the new Grayburg
16 Zone completions.

17 This would be, this particular sketch would apply
18 to all of the new wells to be drilled to the Grayburg
19 formation. Their locations and descriptive information
20 about them are located in the lower left-hand corner.

21 Q Now, will you use internally coated tubing?

22 A Yes, sir.

23 Q Will you inject under a packer?

24 A Yes, sir.

25 Q Do you plan to fill the casing tubing annulus with an

1 inert fluid?

2 A Yes, sir.

3 Q Will you install a packer gauge at the surface?

4 A Yes, sir.

5 Q Now, referring to Exhibits 15 through 29, what are those
6 exhibits?

7 A Those are exhibits describing individually the other
8 injection wells, schematic diagrams of the other
9 injection wells.

10 Q These are the wells that will be converted to injection?

11 A Well, there is one new well in that batch. It would
12 be Exhibit, well, really, there is an alternate exhibit.
13 So it would be Exhibit 23. And Exhibit 24 would refer
14 to the new Grayburg injection well.

15 Q Now, some of the exhibits are marked as alternate. What
16 do you mean by that?

17 A Well, for instance, Exhibit 23 and 24, one method of
18 injecting into both zones would be down a single tubing
19 string into the Jackson Zone and the Grayburg Zone.

20 The Jackson and the Grayburg would be separated by
21 a packer, and there would be a packer above the Grayburg
22 Zone. The volumes injected into the, the control of
23 the volumes injected into the two different zones would
24 be by means of a flow control. We may find this to be
25 suitable.

1 The alternate method shows dual string whereby you
2 have separate tubing strings, one for the Jackson, one
3 for the Grayburg. And we have not determined which we
4 considered to be the best type.

5 So we would like to be able to use either method
6 in that well and in another well where we have an
7 alternative exhibit.

8 Q On Exhibits 19 and 20, you have an alternate proposal
9 there, do you not?

10 A Yes, sir. 19 and 20 both refer to two methods of
11 completing the same well.

12 Q Now, you are asking for approval giving you sufficient
13 latitude to use either method; is that correct?

14 A Yes, sir.

15 Q Because you haven't determined yet which one you will
16 use?

17 A No, sir.

18 Q But in each case will you be injecting through
19 internally coated tubing and under a packer?

20 A Yes, sir.

21 Q Even under the alternate method of completion?

22 A By either method.

23 Q And you will fill the casing tubing annulus with inert
24 fluid in each case and have a pressure gauge at the
25 surface; is that correct?

1 A Yes, sir, as shown on the exhibits.

2 Q Now, Mr. Tucker, in connection with this flood, do you
3 anticipate there may be a need for additional injection
4 or producing wells at unorthodox locations?

5 A Yes, sir. This is possible.

6 Q And are you asking for an administrative procedure for
7 approval of additional wells for injection or production
8 at both orthodox and unorthodox locations?

9 A Yes, sir. We are.

10 Q Were Exhibits 2 through 29 prepared by you or under
11 your supervision?

12 A Yes, sir. They were.

13 Q And Exhibit 1 is a copy of the Unit Agreement and Unit
14 Operating Agreement as submitted; is that right?

15 A Yes, sir.

16 Q And Exhibit 2 is a copy of the letter from the
17 Department of the Interior giving preliminary approval?

18 A Yes, sir.

19 Q Now, there is one other matter in connection with this
20 application.

21 The Northwest quarter of Section 7.

22 A It would be 18 South, 29 East.

23 Q 18 South, 29 East. Is that presently in the Artesia
24 Pool?

25 A Yes, sir.

1 Q Is that the same formation that is in the Grayburg?

2 A Yes, sir.

3 Q San Andres Pool?

4 A Yes, sir.

5 Q Are you asking that that quarter-section be deleted from
6 the Artesia Pool and included in the Grayburg San Andres
7 Pool?

8 A Yes, sir. That's right.

9 MR. KELLAHIN: At this time, I'd like to offer
10 into evidence Exhibits 1 through 29 inclusive.

11 MR. UTZ: I want to get that straight. The
12 Northwest, you want this deleted from the Artesia Pool and
13 put in the Grayburg?

14 MR. KELLAHIN: The Grayburg and San Andres.

15 THE WITNESS: Well, the Loco Hills Grayburg and San
16 Andres.

17 MR. UTZ: Without objection, Exhibits 1 through 29
18 will be entered into the record of this case.

19 CROSS-EXAMINATION

20 BY MR. UTZ

21 Q Mr. Tucker, at this point, I'm a little confused about
22 the number of wells, whether they are converted wells,
23 new wells, and on non-standard locations.

24 Now, does Exhibit Number 9 list all of the wells
25 that you want to have approved?

1 A Yes, sir. They are all in there.

2 Q And I believe you have four stages of development?

3 A Yes, sir. There are two main stages, the initial and
4 the third which is the development of injection and the
5 Stage 2 and Stage 4 is well work and lease equipment to
6 maintain the production.

7 Q Now, altogether, how many wells are you asking approval
8 for at this time to convert to injection?

9 A To convert?

10 Q All right, sir. Now, let's take the converted wells
11 and then the new wells.

12 A All right. There are 12 conversions. There are 11 new
13 wells for injection. And of those 11, three are in the
14 unorthodox locations which we previously described.

15 Q Now, under the initial stage of development, we have
16 four of the 11 wells listed there; is that correct?

17 A Yes, sir.

18 Q Well, we have 11 more to find, and where are they, or
19 seven more, I mean?

20 A All right. Under the third stage of development on the
21 second page of the Exhibit 9, there are six additional
22 Grayburg Wells described.

23 Now, under Item 2 there, there is a Grayburg and
24 Jackson dual or at least into both zones. So that would
25 be the 11. Under the initial stage of development, Item

1 1, there are four Grayburg injection wells.

2 Under the third stage of development, Item 1, there
3 are six Grayburg injection wells. Under Item 2 of the
4 third stage, there is a Grayburg Jackson Well listed.

5 Now, that's the 11 injection wells to be drilled.

6 Q Well, what I need is a list of name and number of each
7 well and location of each well. And I don't believe I
8 can get it out of here.

9 A Well, we haven't got it marked as an exhibit, but --

10 Q Well, if you can furnish me that list, well, that will
11 preclude any more questioning on this exhibit.

12 MR. KELLAHIN: Would you like this marked as an
13 exhibit?

14 MR. UTZ: Sure would.

15 MR. KELLAHIN: That will be 30.

16 Q (By Mr. Utz) I assume this list includes 23 wells;
17 is that right?

18 A Yes, sir. Injection wells. That does not include the --

19 Q Okay. We have 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 new
20 wells listed here. And Exhibit Number 9 shows your
21 non-standard locations, and I can get those from that
22 exhibit.

23 Now, this is all of the wells that you want to
24 approve at the present time, both new and conversions?

25 A Injection wells.

1 Q And you don't plan to drill any new producing wells at
2 the present time?

3 A Not in the first, not in the initial stage.

4 Q Okay.

5 MR. UTZ: Any other questions of the Witness?

6 MR. KELLAHIN: I'd like to offer into evidence
7 Exhibit Number 30.

8 MR. UTZ: Exhibit Number 30 will be entered into
9 the record in this case. The Witness may be excused.

10 Are there statements in the case?

11 The case will be taken under advisement.
12
13
14
15
16
17
18
19
20
21
22
23
24
25

1 STATE OF NEW MEXICO)
) ss
2 COUNTY OF BERNALILLO)

3 I, JANET RUSSELL, a Notary Public, in and for the County
4 of Bernalillo, State of New Mexico do hereby certify that the
5 foregoing and attached Transcript of Hearing before the New
6 Mexico Oil Conservation Commission was reported by me; and
7 that the same is a true and correct record of the said
8 proceedings to the best of my knowledge, skill and ability.

9
10
11 Janet Russell
12 NOTARY PUBLIC

13 My Commission Expires:
14 November 24, 1976
15
16
17
18
19
20
21
22

23 I do hereby certify that the foregoing is
24 a complete record of the proceedings in
the Examiner hearing of Case No. 4911-12
held by me on Feb 28, 1973.
25 [Signature] Examiner
New Mexico Oil Conservation Commission

I N D E XWITNESS

PAUL A. TUCKER

Direct Examination by Mr. Kellahin	4
Cross-Examination by Mr. Utz	22

E X H I B I T S

	<u>ADMITTED</u>	<u>OFFERED</u>
Applicant's Exhibit Number 1	22	5
Applicant's Exhibit Number 2	22	5
Applicant's Exhibit Number 3	22	7
Applicant's Exhibit Number 4	22	8
Applicant's Exhibit Number 5	22	9
Applicant's Exhibit Number 6	22	10
Applicant's Exhibit Number 7	22	11
Applicant's Exhibit Number 8	22	11
Applicant's Exhibit Number 9	22	12
Applicant's Exhibit Number 10	22	13
Applicant's Exhibit Number 11	22	14
Applicant's Exhibit Number 12	22	18
Applicant's Exhibit Number 13	22	18
Applicant's Exhibit Number 14	22	19
Applicant's Exhibit Number 15 through 29	22	19
Applicant's Exhibit Number 30	25	24