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I N D E X

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1 MR. NUTTER: The hearing will come to order, please.
2 The next case will be Case Number 5443.

3 MR. CARR: Case 5443, in the matter of Case 5443
4 being reopened pursuant to the provisions of Order No. R-4994,
5 which order established special rules and regulations for the
6 East Lusk-Bone Spring Oil Pool, Lea County, New Mexico,
7 including a provision for one hundred and sixty acre spacing
8 and proration units.

9 MR. KELLAHIN: Tom Kellahin, Kellahin and Fox,
10 appearing on behalf of Sun Oil Company and I have one witness
11 to be sworn.

12 (THEREUPON, the witness was duly sworn.)
13

14 KENNETH W. LARSON

15 called as a witness, having been first duly sworn, was
16 examined and testified as follows:
17

18 DIRECT EXAMINATION

19 BY MR. KELLAHIN:

20 Q Please state your name, by whom employed and in
21 what capacity?

22 A Kenneth W. Larson, Staff Professional Geologist,
23 Sun Oil Company of Delaware, Dallas Production Region, Dallas,
24 Texas.

25 Q Mr. Larson, have you made a study of and are you

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1 familiar with the facts surrounding this particular application?

2 A. Yes, I have.

3 Q. And did you testify before this Commission on
4 March 19th, 1975 which resulted in the promulgation of the
5 current rules for the East Lusk-Bone Spring Oil Pool?

6 A. I did.

7 MR. KELLAHIN: If the Examiner please, are the
8 witness' qualifications acceptable?

9 MR. NUTTER: Yes, they are.

10 Q. (Mr. Kellahin continuing.) Mr. Larson, will you
11 refer to what has been marked as Applicant's Exhibit Number
12 One and identify it and state what information it contains?

13 A. Exhibit Number One is a structure contour map of
14 the East Lusk-Bone Spring Field, Lea County, New Mexico which
15 was prepared by me in April of 1976. The mapping datum is the
16 top of the second Bone Spring. The scale of the map is one
17 inch to one thousand feet and the contour interval is fifty
18 feet. The structural configuration is that of an east-dipping
19 monocline, with a dip rate of approximately one hundred feet
20 per mile.

21 For clarification purposes the map is color coded,
22 the red dot denoting a Bone Spring producer and the green dots
23 denoting Bone Spring penetrations which were used for mapping
24 control points. The red arrow identifies the type of log for
25 the Sun Oil Company No. 1 Sharon Federal in the southwest

1 quarter of Section 15, Township 19 South, Range 32 East. The
2 Bone Spring pay is colored red on the type log. The line of
3 cross section, AA prime, which is Exhibit Number Two is posted
4 on the map. The shaded area consisting of the northwest
5 quarter of Section 15, Township 19 South, Range 32 East is
6 a hundred and sixty acre temporary unit for which Sun Oil
7 Company is proposing to make permanent.

8 Q The discovery well for this pool is which well?

9 A It is the Sun Oil Jennings Federal No. 1.

10 Q And at the time of the hearing last March of '75,
11 that was the only well in this pool, is that correct? The
12 subsequent wells on this cross section were drilled after
13 that date?

14 A No, they were not. In the southwest quarter of
15 Section 16, the Cleverock Petco State No. 1 was completed as
16 a gas well. However, inasmuch as it produces some forty feet
17 structurally lower than the oil completion in the Jennings
18 Federal we did not consider it to be in the same reservoir.

19 Q All right.

20 A In addition the Sloan Federal has been drilled
21 since the hearing in March of last year.

22 Q That's the one in Section 22?

23 A The northwest quarter of Section 22, yes, sir.

24 Q The current horizontal limits of this pool, I assume
25 are represented by hatch marks in the northwest quarter of

1 Section 15?

2 A. That is correct.

3 Q. Please refer to what has been marked as Exhibit
4 Number Two and identify it?

5 A. Exhibit Number Two is a four-well stratigraphic
6 cross section, AA prime. It starts with the Sun No. 1 Sloan
7 Federal in the northwest quarter of Section 22, extends north-
8 west to the Cleverock No. 1 Petco State in the southeast
9 quarter of 16 and eastward to the Sun No. 1 Sharon Federal in
10 the southwest quarter of Section 15 and terminates with the
11 Sun No. 1 Jennings Federal to the northeast.

12 The datum per hang line is the top of the second
13 Bone Spring pay and the log vertical scale is one inch equals
14 twenty feet. There is no horizontal scale.

15 The porosity is colored red and the perforations
16 are posted on the logs.

17 There is only one well currently producing in the
18 field, the Sun No. 1 Jennings Federal to the right of the
19 cross section. In the Sun No. 1 Sloan Federal the zone of
20 porosity was perforated, acidized with five thousand gallons,
21 fraced with six thousand gallons, plus sixteen thousand,
22 eight hundred pounds of sand and produced on pump an average
23 of ten to fifteen barrels of oil, plus about ten or fifteen
24 barrels of water a day between the period December 11th, 1975
25 and February 2nd, 1976. It was temporarily abandoned as of

1 February 7th, 1976. The study is now being made to determine
2 what course of action to pursue next.

3 As previously mentioned, the Petco State was completed
4 in the Wolfcamp, it was recompleted in the second Bone Spring
5 as a gas well and is presently temporarily abandoned.

6 There is definitely a barrier between this well and
7 the Sun No. 1 Jennings Federal because the top of the perfora-
8 tions in the Cleverock gas well are twenty-three feet
9 structurally lower than the base of the perforations in the
10 oil producing Jennings Federal Well.

11 The second Bone Spring section in the Sun No. 1
12 Sharon Federal Well has not been tested, however, it probably
13 will be upon depletion of the current producing zone in the
14 Wolfcamp.

15 Q Please refer to what has been marked as Exhibit
16 Number Three?

17 A Exhibit Number Three consists of three production
18 related graphs for the Sun No. 1 Jennings Federal. The lower,
19 a graphic presentation of the average rate, barrels of oil
20 per day. The middle, the GOR ratio history and the upper,
21 the flowing tubing pressure, the psig history of the well,
22 has shown the average yearly production rate varies from a
23 high of three hundred and twenty-seven barrels of oil per day
24 to the present low of two hundred and ten barrels of oil a
25 day. The GOR range is not extreme, averaging about seven

1 hundred cubic feet per barrel. The flowing tubing pressure
2 has been on a steady decline since the well's potential on
3 January 30th, 1975, from eight hundred and fifty pounds psig
4 to its current low of a hundred and twenty pounds psig.

5 Q The existing rules for this pool provide for a
6 special depth bracket allowable of five hundred and fifteen
7 barrels. Your current production for this well was two hundred
8 and ten barrels of oil per day?

9 A Yes, at the time this graph was prepared. However,
10 you will note on the lower graph that there is a rapid decline
11 during the latter part of '75 and the early part of this. We
12 were having difficulty with paraffin build up, consequently
13 the production fell off substantially.

14 In March of this year they scraped the paraffin,
15 placed the well on pump and on a test on March 12th it pumped
16 two hundred and sixty-nine barrels of oil plus seven barrels
17 of water a day.

18 Q In your opinion is there any need to change the
19 depth bracket allowable assigned to this pool?

20 A No, I don't.

21 Q And your current GOR ratio is averaging about seven
22 hundred?

23 A That is correct.

24 Q And that is within the state-wide rules?

25 A Oh, yes.

1 Q. Please refer to Exhibit Number Four?

2 A. Exhibit Number Four is the well's production history
3 in tabular form as of March 1st, 1976. It had produced a
4 hundred and four thousand, seven hundred and ninety-two
5 barrels of oil, seventy thousand, four hundred and twenty
6 thousand cubic feet of gas, no water and an additional ninety-
7 seven thousand barrels of oil are anticipated for a total
8 recovery of approximately two hundred and two thousand barrels
9 of oil.

10 Q. Exhibit Number Five?

11 A. Exhibit Number Five consists of reservoir fluid and
12 bottom-hole pressure data.

13 Q. In your opinion, Mr. Larson, is the discovery well's
14 performance showing that it is draining an area of not less
15 than a hundred and sixty acres?

16 A. Yes, I believe so.

17 Q. What is the cost of drilling in this area?

18 A. A dry hole amounts to about two hundred and sixteen
19 thousand dollars. A successful completion, assuming you only
20 treat it one zone, would be approximately three hundred and
21 forty-nine thousand.

22 Q. As an economic venture could you develop this
23 acreage on less than a hundred and sixty acres?

24 A. I believe not.

25 Q. In your opinion will continuation of the current pool

1 rules be in the best interest of conservation, prevention of
2 waste and the protection of correlative rights?

3 A. Yes, I do.

4 Q. Does Sun Oil Company desire that the present temporary
5 rules be made permanent?

6 A. We do.

7 Q. Were Exhibits One through Five either prepared by
8 you or under your direction and supervision?

9 A. They were.

10 MR. KELLAHIN: If the Examiner please, we move the
11 introduction of Exhibits One through Five.

12 MR. NUTTER: Sun's Exhibits One through Five will
13 be admitted into evidence.

14 (THEREUPON, Sun's Exhibits One through
15 Five were admitted into evidence.)

16 MR. KELLAHIN: That concludes our direct examination.

17

18 CROSS EXAMINATION

19 BY MR. NUTTER:

20 Q. Mr. Larson, you stated that the reservoir performance
21 data indicates that it is draining not less than a hundred and
22 sixty acres, in reply to Mr. Kellahin's question?

23 A. Yes, sir.

24 Q. What information is here that indicates that?

25 A. Well, we took on Exhibit Number Five, Mr. Examiner,

1 we took the net pay, the average porosity, the average water
2 saturation, temperature, bubble point and so on and this
3 information was provided to me by our reservoir engineering
4 section.

5 Q Well, still I don't see anything that says that it
6 is draining forty acres or eighty acres or a hundred and sixty
7 acres.

8 A Well, on the Exhibit Two, the cross section, there
9 is evidence that the zone of porosity does extend to the
10 southwest, so I think, or it is my opinion at least, that the
11 hundred and sixty acres could be reasonably considered as
12 productive.

13 Q But is it draining it or not?

14 A Well, I suspect so because the well to the north,
15 which is not on the cross section, the log has not been
16 released, did not have any porosity in this whatsoever, so
17 the areal extent of this is limited. I think it extends over
18 the one hundred and sixty but the exact definition of the
19 reservoir I frankly don't know.

20 Q Again we are talking about two separate things, Mr.
21 Larson. You are talking about the range of the porosity, the
22 extent of the reservoir and I'm talking about the capability
23 of the well to drain acres. What evidence do we have that
24 it is draining forty acres, much less a hundred and sixty?

25 MR. KELLAHIN: Let me ask you this, Mr. Larson, how

1 did you calculate your recoverable reserves of two hundred
2 and two thousand barrels?

3 A. That was done by our reservoir engineering service.

4 MR. KELLAHIN: Using what information in calculating
5 those reserves?

6 A. Let me see if I have their figures here. Excuse me.
7 No, I'm sorry, I do not.

8 MR. KELLAHIN: I assumed that the figures here on
9 Exhibit Five represented the reservoir information that
10 was used to make the volumetric calculations from which you
11 derived the recoverable reserves?

12 A. That's correct.

13 MR. KELLAHIN: All right, of your recoverable
14 reserves, how much of that figure has been produced?

15 A. A hundred and four thousand, seven hundred and
16 ninety-two barrels.

17 MR. KELLAHIN: And when was that well completed?

18 A. January 30th, 1975.

19 MR. KELLAHIN: I wonder if we could do this, Mr.
20 Examiner, if we could provide you by mail with the volumetric
21 calculations that were used to determine the drainage area
22 for this particular well. Apparently Mr. Larson has not
23 brought those figures with him.

24 MR. NUTTER: I think it would be preferable to
25 continue the case until we have the information because I

1 don't feel like with the information we've got here today I
2 could make a recommendation to the Commission to continue
3 the spacing rules in the pool. It would either be a matter of
4 making a recommendation for it to revert to state-wide or
5 else to continue the case until you can get that information
6 and the testimony to back it up.

7 MR. KELLAHIN: Well, I think that would be preferable
8 for us to continue further evidence in this case until a
9 later date and allow us to bring in the calculations at a
10 later date.

11 MR. NUTTER: Very good. Case Number 5443 will be
12 continued to the Examiner Hearing scheduled to be held at
13 this same place at nine o'clock A.M. on April 28th, 1976.

14 MR. KELLAHIN: Thank you very much.

15 MR. NUTTER: Yes, sir.
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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

Sidney F. Morrish, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 5442 (reopened) heard by me on 4/14, 1976.
[Signature], Examiner
New Mexico Oil Conservation Commission

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