

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 10, 1963

EXAMINER HEARING

IN THE MATTER OF:

Application of Skelly Oil Company for a unit agreement, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval of its East Bisti Unit Area comprising 17,812 acres of Federal, State and Indian lands in Townships 24 and 25 North, Ranges 9, 10, and 11 West, San Juan County, New Mexico.

CASE 2848

IN THE MATTER OF:

Application of Skelly Oil Company for a water-flood project, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Bisti Lower-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup formation through 34 wells in its East Bisti Unit Area.

CASE 2849

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 2848.

MR. DURRETT: Application of Skelly Oil Company for a unit agreement, San Juan County, New Mexico.

MR. JACOBS: Entering an appearance, Ronald J. Jacobs and George W. Selinger for Skelly Oil Company; and as counsel, L. C. White of Gilbert, White and Gilbert. This case and the following case, 2849, both deal with the East Bisti Area, San Juan

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County, one for the unit agreement and one for permission to inject. If there's no objection, we would move that these two cases be consolidated for the purpose of taking testimony.

MR. UTZ: Without objection, Cases 2848 and 2849 will be consolidated for the purposes of testimony only. Separate orders will be written on each case.

MR. JACOBS: We have one witness we ask be sworn at this time.

(Witness sworn.)

MR. UTZ: Any other appearances to be made in either of these cases?

(Whereupon, Skelly's Exhibits Nos. 1 through 8 marked for identification.)

JOHN B. CHAMBERS

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. JACOBS:

- Q Will you please state your name for the record?
- A John B. Chambers.
- Q You are employed by what company?
- A Skelly Oil Company.
- Q In what capacity?
- A As a unitization engineer.
- Q Have you previously testified before this Commission as

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a petroleum engineer?

A I have.

Q Are you familiar with the applications of Skelly Oil Company in these two cases and the unit agreement and the plans to inject into the East Bisti Area in San Juan County, New Mexico?

A I am.

MR. JACOBS: We ask that his qualifications be accepted.

MR. UTZ: Yes, sir, they are acceptable.

Q (By Mr. Jacobs) I hand you what has been marked for identification as Exhibit 1, and ask that you state what that is, please.

A Exhibit 1 is the unit agreement for the development and operation of the East Bisti Unit Area, County of San Juan, State of New Mexico.

Q Is there attached to that exhibit exhibits in the back of that unit agreement?

A Yes, there are.

Q Particularly Exhibit A, what does that show?

A Exhibit A is a map showing the boundaries or boundary of the Unit and the leases and tracts therein.

Q Is this area colored with various shadings?

A Yes, there are three shadings. The area that is not colored depicts Federal lands, that in a light shading depicts allotted Navajo Indian lands, and the dark shading is the State of New Mexico lands.

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Q So there are no fee lands involved in this Unit, is that right?

A There are no fee lands involved.

Q I direct your attention now to what has been marked for identification as Exhibit 3 and ask that you state what that is, please.

A Exhibit 3 is a map showing the Gallegos-Gallup Field and the Bisti Field in San Juan County, and in the various colors are the secondary recovery units presently in existence, with the exception of the blue color to the southeastern portion of the map, which is the proposed East Bisti Unit.

Q Would you identify these by colors?

A The one in green to the north is the Gallegos-Gallup Sand Unit, the West Bisti Unit in a red color, the Central Bisti Unit in yellow, and the Carson Unit in brown.

Q Are all of these areas except the East Bisti Area at the present time under some authorized project by the Commission?

A They are.

Q Then with the approval of the secondary recovery project in the East Bisti Area, this will put the entire Bisti Field under some sort of secondary recovery project?

A Yes.

Q Without going into detail into the unit agreement, Mr. Chambers, in general, what type of an agreement is it?

A It's a Federal-type contract.

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Q Has this agreement been previously submitted to various other parties such as royalty owners?

A Yes, it has been submitted to all the working interest and royalty interest owners.

Q Have you received approval from these various parties?

A We presently have approval from 93 percent of the working interest, 90 percent of the overriding royalty, and 100 percent of the allotted Navajo Indians.

Q Has this agreement been submitted to the State and to the U.S.G.S.?

A Yes.

Q Have you received any type of approval?

A We received preliminary approval from both the State Land Commissioner and the U.S.G.S.

Q Attached to the unit agreement is Exhibit B; what is that?

A Exhibit B is a list on which is shown the individual tracts, the exact acreage in each, the lessees of record, and the working interest and royalty interest owners in each tract, to the best of our knowledge.

Q What is Exhibit C?

A Exhibit C is in actually four parts. Exhibit C-1, part 1, is a list of the individual tracts showing the phase one participation by tracts. Exhibit C-1, part 2, shows the participation for working interest owners in the unit under phase one. Exhibit



C-2, part 1, shows the individual tract participation under the phase two participation; and Exhibit C-2, part 2, shows the working interest participation under phase two.

Q You say phase one and phase two, Mr. Chambers, what does that mean?

A The unit is being formed on a split participation formula.

Q What is the cut-off point as to the break-off from phase one to phase two?

A Actually the cut-off was 5,750,000 barrels; as soon as that volume of oil had been produced, phase two was to become effective. At this time there has already been in excess of 5,750,000 barrels produced, so the unit will be formed through participation.

Q Do you feel that the formation of this unit for the purposes stated in the unit agreement, that is, the secondary recovery projects, is necessary to protect the correlative rights of all the interested parties therein?

A Yes, I do.

MR. JACOBS: That's all the questions we have on the unit agreement. We will go on to the other phase of it, the injection, unless there is some particular questions you wish to ask now on the unit agreement.

MR. UTZ: Why don't we proceed, and we will ask questions on both phases of the testimony later.

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MR. JACOBS: All right.

Q I call your attention to what has been marked for identification as Exhibit 2. What is that exhibit, Mr. Chambers?

A Exhibit 2 is a map of the unit area on which we have indicated with red circles the proposed injection wells that will be utilized in this waterflood.

Q Have you also shown on there the unit boundary?

A Yes, the unit boundary is shown.

Q Does this map also show the lessees and all the wells completed in the Bisti Field?

A It does.

Q That is, to the East Bisti Area?

A Yes.

Q Does it show all the lessees within a two-mile radius of the proposed injection wells or the limits of the field?

A Yes, it does.

Q What type of a pattern would you call this, Mr. Chambers?

A This would be a modified line drive with additional wells for injection along the gas-oil contact in the northwestern portion of the unit.

Q Are you familiar with the application that has been filed in this case?

A Yes, I am.

Q In paragraph 4 of the application there is listed some thirty-four wells. Do these thirty-four wells as listed in the



application coincide with the thirty-four wells that are circled in red on this Exhibit No. 2?

A The thirty-four wells as listed do coincide; however, there are incorrect locations, specific locations, given for three of these wells.

MR. JACOBS: Mr. Examiner, inadvertently, the exact location of three of the wells was incorrect. The section, township, and range is correct of the unit designation; that is, for instance, in the second well listed on the application, Shell Oil Company Mud 6 No. 14-16 is shown as being located in Unit K, Section 16, 25, 11. The truth and fact, that should be Unit M. With your permission we've prepared an amended application which corrects this typographical error; there are three.

MR. UTZ: Paragraph 3 is the proper locations on your amended application?

MR. JACOBS: Yes, it corrects these three errors, the Shell Oil Company Mud 6, 14-16; Shell Oil Company Mud 6 No. 23-16 which should be K instead of M; and Sun Oil Company Kosaw No. 2, which should be N instead of P.

MR. UTZ: These corrections or amendments to the previous application will be accepted as part of the record.

Q (By Mr. Jacobs) What is the proposed source of the fluid to be injected into the Gallup formation in this unit area?

A The present proposed source of fluid will be the Allison-Menefee formation which is located at a depth of approximately

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3200 feet, within the unit area.

Q What type of a fluid is this?

A It's a brine water.

Q Are there any other possibilities that are being contemplated by the operators for the source of fluid?

A We have considered the possibility of a water sand called the Ojo-Alamo Sand. It is actually located in the vicinity north of the Gallegos-Gallup Unit at a depth of 700 feet. This is a fresh water sand. We are working on the possibility of water rights there and contemplating the possibility of using that water for injection purposes.

Q What volume of fluid are you anticipating to inject?

A We're presently anticipating between twenty-three and thirty thousand barrels of water per day.

Q That would be an average of approximately how many barrels per well per day?

A Well, I would say approximately 600 barrels per day. The maximum volume of 30,000 barrels would most likely be in the event we get all thirty-four wells converted to injection.

Q Now I hand you what has been marked for identification as Exhibit No. 4 and ask that you state what that is, please.

A Exhibit No. 4 is an electric log of the Standard Oil Company of Texas Well No. 9-12-1, which we're using for a type log to show the interval we wish to unitize in the Gallup formation.

Q What is the exact location of that well, Mr. Chambers?

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A The well is located in the Southeast Quarter of the Northeast Quarter, Section 12, Township 24 North, Range 10 West, San Juan County.

Q The depths that are marked, you say, are 5260 feet and 5845 feet?

A That is correct.

Q Is that the same interval and the same definition that is included in the unit agreement as a definition of the formation to be unitized?

A That's correct.

Q What is the present status of the producing wells in the East Bisti Area?

A Well, the field is essentially 95 percent depleted under primary at the present time.

Q Approximately what is the productivity or rate of production of these wells?

A I would estimate the most prolific well possibly produced in the neighborhood of 35 to 40 barrels of oil per day, the most marginal well probably around half a barrel a day.

Q With an approximate average of about what?

A Around 700 barrels per day for the field.

Q For this part of the field?

A For this portion of the field, yes.

Q You said it was 95 percent depleted. Would you consider this in the nature of a stripper-type operation?

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A At the present time, yes.

Q Are you familiar with the Commission's Rule 701 with reference to the classification of a waterflood project or pressure maintenance project?

A I am.

Q Would you classify the proposed injection and secondary recovery project as a waterflood or pressure maintenance?

A A waterflood.

Q And this primarily because of the productivity, stripper-type production presently in the East Bisti Field area?

A That is correct.

Q Do you have an idea of the approximate pressure in this portion of the field?

A I would estimate the reservoir pressure currently to be in the neighborhood of 300 pounds.

MR. UTZ: What was it initially?

A The original pressure was approximately 1540 pounds.

Q Do you feel that the proposed injection and waterflood project will recover oil that would not otherwise be recovered?

A I do.

Q Do you feel that the waterflood project in the East Bisti Unit Field Area is feasible?

A Yes.

Q I call your attention to what has been marked for identification as Exhibits 5, 6, and 7, and ask that you state what that

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is, please.

A Those are electric logs on three proposed injection wells which are owned and operated by Skelly Oil Company.

Q These electric logs are from the wells, the three Skelly-operated wells that are going to be proposed for injection

A That is right.

Q These are the electric logs of the wells that you had available to you?

A That is correct.

Q I call your attention to what has been marked for identification as Exhibit No. 8, and ask that you state what that is, please.

A Exhibit No. 8 is a group of schematic diagrams, thirty-four in all, one schematic diagram for each of the proposed injection wells, showing the subsurface equipment and the completion program on each individual well.

Q That is the present condition of these wells, is that right?

A Yes, this is the present condition.

Q What type of work do you anticipate doing to convert these wells to injection?

A Basically, we will pull the tubing in these wells, run plastic-coated tubing with a packer set immediately above the unitized formation.

Q Will the setting of this packer be below the top of the



cement?

A Yes.

Q In your opinion, will the setting of a packer below the top of the cement and the injection through the tubing protect any and all possible fresh water sands or other formations that may be in existence in this area?

A Yes, very definitely.

Q In each of the cases, you have either the top of the cement or the calculated top of the cement, do you not?

A Yes.

Q Are you familiar, Mr. Chambers, with the recent Rule 701-B, recently enacted by the Commission?

A I am.

Q Does this rule call in part 5 for the sending of the application complete with all attachments to the State Engineer's Office?

A It does.

Q Was this caused to be done?

A Yes.

Q In fact, the application, the map, and the diagrammatic or schematic sketches were sent to the State Engineer?

A Yes, they were.

MR. JACOBS: We offer in evidence, Mr. Examiner, Exhibits 1 through 8, inclusive.

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MR. UTZ: Without objection, the Exhibits 1 through 8 will be entered into the record of these cases. Which exhibits were in Case 2848?

MR. JACOBS: Mr. Examiner, we actually consolidated the two and numbered them concurrently. Really, Exhibit 1 and Exhibit 3 more or less applied to the unit agreement, which was the first one, 2848. The remainder of the exhibits, 2, 4, 5, 6, 7, and 8, referred primarily to 2849, the case for permission to inject.

MR. UTZ: We will accept them into the record in that order, then.

(Whereupon, Skelly's Exhibits Nos. 1 through 8, inclusive, received in evidence.)

MR. UTZ: Are there questions of the witness?

MR. DURRETT: Yes, sir, I have a question or two.

CROSS EXAMINATION

BY MR. DURRETT:

Q Did you give a figure on primary production that's been recovered to date?

A I didn't give the exact primary production; as of 6-1-63 it was 5,811,731 barrels, to be exact.

Q One other question. Did you receive any correspondence or any communication whatsoever from the State Engineer's Office concerning your application for the flood?

A Not to my knowledge.



Q They just haven't said anything one way or another, then?

A Not to my knowledge.

MR. UTZ: Are there other questions?

BY MR. PORTER:

Q I have one question in connection with this total cumulative on primary of 5.8 million, or something like that. Have you made any calculations as to what you would expect to recover under this waterflood project?

A Yes, sir. The Engineering Committee for the Unit made an estimation of 5,947,000 barrels secondary.

Q In other words, about as much as you have already recovered?

A It's very similar, almost one to one ratio, although it was not set up on that basis.

Q This area represents approximately one-third, or maybe a little more than that, of the total area in the pool?

A Yes, sir.

Q I believe the cumulative production in that pool is something over 15 million so apparently that represents about one-third of the production, too?

A Yes, sir.

MR. PORTER: That's all the questions I have.

BY MR. UTZ:

Q Mr. Chambers, did I understand you to say that the

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entire horizontal limits of the Bisti Pool is now under some type of secondary recovery?

A With the exception of the East Bisti Unit, yes, sir.

Q These wells down to the southwest -- southeast, rather, for example, the Gulf Kinebeto in Section 21 and the Gulf Largo Federal "B" in Section 22, are they not a part of this pool?

A To the best of my knowledge, those wells have either been considered non-commercial or have been plugged and abandoned at the present time.

Q That would go also for the Gulf Largo Federal in Section 14?

A Yes, sir.

Q As well as the Gulf South Huerfano No. 1 in the Southwest Quarter of Section 15?

A Yes, sir.

Q That area is, however, a part of the horizontal limits of the Bisti Pool?

A Yes, sir, it is.

Q Now there's a well up here in 25, 11, in the Southwest of the Northwest of Section 15; it is my understanding that that well is now on pump, pumping from seven to eight barrels per day. Has there been any consideration of getting that in this unit?

A Certainly consideration could be given to that. I was unaware that the well had been recompleted, been reopened.

Q It is my understanding that it has. You'd be willing

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to accept that in the unit, would you not, if the operator desired?

A I don't believe that would be a decision that Skelly Oil Company would be able to make. I believe that would be necessarily left up to a vote of the working interest owners participating in this unit as to whether or not the well would come in.

MR. SELINGER: That would involve an enlargement and I don't believe we are in a position to say that should be enlarged or not.

Q (By Mr. Utz) What type of drive did you say that this was going to be?

A The waterflood, the injection program is set up on a modified line drive.

Q So that you have these water blocks or line drives every so often down your trend?

A Yes, sir, basically, attempting to flood in a north-westerly - southeasterly direction as far as setting up a flood bank is concerned.

Q Do you have any type agreement between yourself, line agreement between yourself and the Carson Unit? Was that agreed upon as far as your spacing and injection wells?

A Verbally, yes, this has been agreed to. There is no line agreement, to my knowledge, that has been drawn up on paper at this time.

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Q But they're happy, as well as you?

A They are very contented at the present time, yes, sir.

Q Could you tell me how many wells are producing from 35 to 40 barrels in this unit, proposed unit?

A I could do no more than guess at such a figure. I would say there probably are not over ten or twelve wells producing at that volume.

Q Ten or twelve wells. For the record, what is the normal unit allowable in this pool?

A I believe at the present time it's 94 barrels.

Q So even at 35 or 40 barrels, this would be considered marginal?

A Yes, sir.

Q What is the total number of wells in the proposed unit that are producing the 700 barrels per day?

A Would you repeat the question, please?

Q What is the total number of wells in the proposed unit that are producing the 700 barrels per day?

A There are 128 wells within the unit boundary.

Q That's a pretty low average. Of course, I believe you have stated that you expect this unit to operate under Rule 701?

A Yes, sir.

Q That is your request?

A Yes, sir.

MR. UTZ: Are there any other questions of the witness?



If not, the witness may be excused.

(Witness excused.)

MR. UTZ: Are there any other statements in this case?

MR. DURRETT: We have received a telegram from Mr. John D. Nodell, Jr., Denver Area Attorney for Humble Oil and Refining Company, stating that they support the applications of Skelly in both of these cases. This telegram will be placed in the file if anyone would like to consider it in its entirety.

MR. UTZ: On question, if I may. What do you expect your injection pressures to be?

MR. CHAMBERS: We would estimate it, presently, we would estimate our pressures to be in the neighborhood of a thousand to thirteen or fourteen hundred pounds.

MR. JACOBS: This is the wellhead injection pressure?

MR. CHAMBERS: This would be the wellhead injection pressure, yes, sir.

MR. McGANNON: R. L. McGannon, Standard of Texas. We support the application of the unit agreement and the waterflood.

* * *

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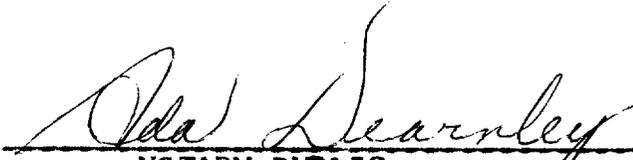
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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal this 17th day of July, 1963.



NOTARY PUBLIC

My Commission Expires:
June 19, 1967.

