

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 13, 1964

EXAMINER HEARING

IN THE MATTER OF: Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico.

and

Application of Gulf Oil Corporation for a
waterflood project, Lea County, New Mexico.

Case No.

3118 &
3119

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The Hearing will come to order.

Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico.

MR. KASTLER: If the Examiner please, I am Bill Kastler from Roswell, New Mexico, appearing on behalf of Gulf. We would like for Cases 3118 and 3119 be consolidated for the purposes of the Hearing; and our two witnesses are Mr. V. M. Hendricks as petroleum engineer and Mr. Bates Boles as a landman.

MR. UTZ: Case 3119 is a waterflood for the Unit in 3118; is that correct?

The Cases will be consolidated for the purposes of testimony, and separate orders written on the new cases.

MR. KASTLER: He has prepared data in the form of a brochure, and there are three copies. They are all marked for identification in the interest of speed.

MR. UTZ: The witness will stand and be sworn, please.

(Witness sworn.)

VANCE M. HENDRICKS,

called as a witness herein, having been first duly sworn on oath, was examined and testified as follows.

DIRECT EXAMINATION

BY MR. KASTLER:

Q Please state your name, position and employer.

A Vance M. Hendricks, Petroleum Engineer for the Gulf Oil Corporation, Roswell, New Mexico.

Q Have you previously testified before the New Mexico Oil Conversation Commission?

A Yes, sir, I have.

Q Are you familiar with the technical aspects of Cases 3118 and 3119, consolidated?

A Yes, sir.

Q In which Gulf seeks approval of the South Penrose Skelly Unit?

A I am.

MR. KASTLER: Are the qualifications of this expert witness satisfactory to the Commission?

MR. UTZ: Yes, sir, he has previously qualified before the Commission.

Q (By Mr. Kastler) Will you please state why the leases shown within the proposed South Penrose Skelly Unit should be unitized?

A The proposed unit is being formed so that the southern portion of the Penrose Skelly Pool can be waterflooded to permit greater ultimate oil recovery.

Q Do you have a plat showing the South Penrose Skelly Unit?

A Yes, sir, it is Exhibit Number One in this brochure.

Q Mr. Hendricks, will you refer to Exhibit Number One and state what is shown thereon.

A Exhibit Number One is a map of central Lea County near the vicinity of Eunice, New Mexico. Outlined in yellow is the proposed Unit. As can be seen the Unit will encompass 4,400 acres which 102 wells have been drilled and produced.

Q Do you have a structure map showing a portion of the Penrose Skelly Pool which is to be included in the proposed Unit?

A Exhibit Number Two is a sub-surface structure map of the Grayburg reservoir from which the Penrose Skelly production goes. The Penrose Skelly Pool produces from a northwest southeast trending anticline, having a dip on the north, west, and south flanks of approximately 70 feet per mile while to the east it is approximately 50 feet per mile. This map was contoured on the top of the Grayburg formation and has a contour interval of 10 feet.

Q What are the geological characteristics of the reservoir to be waterflooded?

A The Grayburg formation is a light gray fine crystalline dolomite and white crystalline dolomite having occasional thin beds of fine grained dolomitic sand.

Q Do you have well logs for the proposed injection locations?

A Yes, sir. They are marked as Exhibit Number 3-A through 3-D. Although injection is planned in six wells, only two of these have been logged. The logs of deeper twin wells on the same 40 acre location as the injection wells, have been included so that we have logs for four of the six injection locations.

Q That is, you have logs on the 40 acre unit of four of the six locations; is that correct?

A That's correct.

Q And two of them are the wells that are the injection wells themselves?

A That is correct.

Q And two others are logs of twin wells on that same 40 acres where there is an injection well to be located?

A That's correct.

Q And the injection wells are all dug; is that not correct?

A They are existing wells.

Q Selecting one of these logs, describe what it shows.

A In the back of the booklet in the pocket is an Exhibit marked 3-A. This is a radioactivity log for Zachry's A. L. Downes Number Two situated in Unit C of Section 5, Township

22 South, Range 37 East. The top of the Queen, Grayburg, and San Andres formations are shown. The portion of the Grayburg shaded in orange is the reservoir that is to be waterflooded.

MR. UTZ: Which log are we looking at?

A It is marked "3-A".

MR. UTZ: All right.

Q (By Mr. Kastler) Yes, sir.

A The unitized interval will be from the top of the Queen formation to the top of the San Andres formation as shown on this log.

Q Have you prepared an Exhibit showing the production history and present status of the wells in the proposed South Penrose Skelly Unit?

A Yes, sir, it is marked Exhibit Number Four.

Q Please explain Exhibit Number Four.

A The Exhibit shows the production performance of the 56 Penrose Skelly wells that are now producing. The center curve checked in the red is the oil production history. As can be seen the average oil production per well within the Unit during June was 3.3 barrels per day. The curve below is a water production history curve. It shows that the average daily water production is 3.4 barrels per day per well during the same month. The upper most curve is that of the producing gas-oil

ratio. In June the producing gas-oil ratios for these 56 wells was 19,643 --

Q MCF?

A 19,643 to One.

Q Is Exhibit Number Five a tabulation of the monthly oil, water and gas production from which Exhibit Number Four was prepared?

A Yes, sir, that's correct.

Q Mr. Hendricks, what does Exhibit Number Six show?

A Exhibit Number Six is a combination map and diagrammatic sketch of the proposed injection wells. The shaded area in the upper left portion of the map is the proposed double 5-spot pilot waterflood. Six wells will be converted to water injectors. Every well on the map within the unit area has been colored in either red, green or yellow.

The red wells are those that are currently producing in the Penrose Skelly Pool and there are 56 of these wells.

The fourteen colored in green are wells that are temporarily abandoned or standing in the unit area.

The remaining 32 wells are colored yellow and these wells are former Penrose Skelly Pool wells that have been recompleted into another producing horizon or have been permanently abandoned.

Q Are there any 40-acre locations which have never been

drilled?

A Yes, sir. There are four that have never been drilled and there are four others, although having a well thereon, have never produced from the Penrose Skelly Pool.

Q Is it the proposal to utilize these wells?

A On the locations which has a well on it. When the pilot responds and expansion occurs, then a well will be needed on every 40 acres.

Q And there can either be duals or singled, as the occasion demands; is that correct?

A That's correct.

Q Do the diagrams on Exhibit Number Six show how the injection wells will be equiped in the waterflood?

A Yes, sir, the casing program and downhole equipment to be used is shown. Using Zachry Downes Number One as an example, which is checked in green on the left side of the Exhibit. It can be seen that the 7 inch casing is cemented at 3,522 feet. A casing liner will be cemented in place from within the 7 inch casing to a point within the Grayburg above the porosity development. Water will be injected through internally plastic coated tubing below a tension packer to be set in the liner and into the open hole and then into the Grayburg formation.

Q The injection will be through the plastic coated liner

or tubing, but into the exposed open hole in the Grayburg Section?

A That's correct.

Q What will be the source of the injection water, type of water to be used, and other related matters regarding injection?

A Brackish water will be obtained from the San Andres formation. The water will be produced from Gulf's W. M. Rinewalt Number Two. This well is checked in green on Exhibit Number Six and it is situated in Unit E of Section Four, Township 22 South, Range 37 East inside the unit area. The well was originally completed in the Brunson Ellenburger Pool but is now recompleted in the Penrose Skelly Pool.

Q It is plugged back; is that right?

A Yes, it is a plugged back well based on the estimated daily injection volume of 500 barrels per injection well. It is anticipated the water needs will be about 3,000 barrels per day. All surface equipment will be corrosion resistant. The initial injection pressure is estimated, although, will be less than 500 pounds but will increase upward to 2,000 pounds as flood progresses.

Q Won't this injection well be needed as this water well will be needed as a producing well in your unitized formation?

A When the pilot is expanded it will be on a location in

which injection will be needed. There are other wells on that 40-acre location that could be used if this one is continued as a water supplied well.

Q What other results are expected from the project?

A It is believed that the proposed waterflood project will recover additional oil in the magnitude of 65 percent of the reservoir ultimate primary recovery. In terms of barrels we should receive some four million additional barrels of water.

Q What are the reasons for the project and what recommendations does Gulf, as a Unit Operator, have to the Commission?

A Since the Pool produces by a solution gas drive mechanism, a considerable quantity of oil will remain unrecovered at the end of primary depletion unless a secondary recovery project is inaugurated to increase ultimate oil recovery. In view of these circumstances, Gulf, in association with Amerada, Continental, Humble, Mobil, Pan American, Shell, Texaco and others has concluded that the best course of action is the unitization of the wells in the portion of the Penrose Skelly Pool shown on Exhibit Number One so that a jointly owned waterflood can be undertaken.

Therefore, Gulf Oil Corporation, as the South Penrose Skelly Unit Operator-elect, respectfully requests the Oil Com-

servation Commission approve the installation of the proposed waterflood facilities and grant a Unit oil allowable equal to the sum of the current allowables for the unit wells not offset by water injection plus the allowable earned by the wells situated in the pilot waterflood area as provided in Rule 701 (E). Subparagraph Three of the Commission Rules and Regulations.

Q Are all of these wells, these Penrose Skelly wells at the stripper stage at present?

A Yes, the wells for a total average for all of the fifty-six is 3.3 barrels per day. Specifically in the pilot project area they are currently producing at 1.6 barrels per day, average.

Q In your opinion, would the granting of this Application be in the interest of prevention of waste and protection of correlative rights?

A Yes, sir, it would.

Q Were Exhibits Number One, Two, Three, Four and Five, as well as the narrative data, prepared by you, or at your direction or under your supervision?

A It was: yes, sir.

Q Gulf has received a copy of a letter dated September 23, 1964 from the State Engineer of New Mexico, to the Oil Conservation Commission, which concerns the feasibility of the

of the South Penrose Skelly Unit insofar as the protection of water is involved?

A Yes, sir, we have.

Q And does the State Engineer's Office concur in this Application?

A They do.

Q And they conclude that the wells, the injection wells, are wells cased and protected?

A Yes; that is correct.

Q And that the use of the Brackish water involved within the Unit area would not jeopardize any fresh water supplies?

A That specific point was not covered in this letter; but that is a fact.

Q It is implied.

MR. KASTLER: This concludes the direct technical testimony, Mr. Utz.

MR. UTZ: Is this your land man?

MR. KASTLER: This is our production engineer.

Q (By Mr. Utz) It is my understanding that all water will be injected through plastic coated tubing under a packer into openhole formation?

A Yes, sir.

Q (By Mr. Utz) And at this time you are asking for six injection wells?

A Yes, sir.

Q (By Mr. Utz) Now, anywhere on your Exhibits, are those six injection wells listed by location, exact location?

A Yes, sir. On Exhibit Number Six they are; the six wells shown for injection, in the diagrammatic sketch.

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

(No response.)

MR. UTZ: The witness may be excused.

(Witness excused.)

MR. KASTLER: I now ask Mr. Bates Boles to take the stand.

In Mr. Boles' testimony, he will use three copies of the proposed Unit Agreement and three copies of the proposed Unit Operating Agreement which should be marked Exhibit's Seven and Eight.

(Whereupon, Applicant's Exhibit's Seven and Eight marked for identification.)

MR. UTZ: The witness will stand and be sworn in.

B A T E S B O L E S, called as a witness herein, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q Please state your name, your title and employer.

A Bates Boles, District Clerical Supervisor, Gulf Oil Corporation, Roswell, New Mexico.

Q Have you previously been qualified as a witness to testify before the New Mexico Oil Conversation Commission with conjecture with Unit proposals?

A Yes, sir.

Q And in your duties have you become familiar with the unitization of the South Penrose Skelly Unit?

A Yes.

MR. KASTLER: Are the witness' qualifications satisfactory?

MR. UTZ: Yes, sir.

Q (By Mr. Kastler) Would you please give the status of the Working Interest Owners' sign-up or execution, at this time?

A Based on secondary phase participation, approximately 66 percent of the Working Interest Owners have signed. We have an additional 23 percent who have indicated that they were in the process of signing, but we have not received their signed ratifications.

Q For a total 89 percent?

A That would be a total of 89 percent, either promised or signed.

Q At this time?

A Yes.

Q Have any Working Interest Owner stated he would not sign?

A Yes.

Q Approximately 1 percent?

A Approximately 1 percent.

Q And are the tracts involving that Unit Operator situated near or at the edge of the Unit Area?

A They are situated on the edge of the area. One is on the northeast edge and the other is on the south edge.

Q Would you please give the status of the Royalty Owners sign-up?

A Based on secondary phase participation, approximately 73 percent of the Unit Area is fee lands, 15 percent Federal lands and 12 percent State lands. We have approximately 60 percent of the royalty ownership on fee lands has signed. If we consider the State and Federal royalty as being signed, approximately 85 percent of the royalty ownership has ratified the Unit Agreement.

Q Has the South Penrose Skelly Unit Agreement been drafted after various preliminary drafts and approvals of lessees involved?

A Yes. The Working Interest Owners formed a Committee

and held a meeting and wrote the instruments to the satisfaction of all Working Interest Owners.

Q Have the instruments been submitted to the unitization of the State Land Office for preliminary approval?

A Yes, sir.

Q And has such approval been granted in form and content?

A Yes.

Q Has the Unit Agreement been examined and approved by the U.S. Geological Survey, both in Roswell and in Washington D.C.?

A Yes, and the Acting Director of the U.S.G.S. gave this Unit Area preliminary approval by letter dated April 28, 1964.

Q Does the Unit Agreement provide for the expansion of the Unit Area?

A Yes, subject to the approvals of the Director, the Commissioner and the Commission.

Q Does the Unit Agreement provide for selection of a successor Unit Operator in the event of the resignation or removal so as to insure continuous responsible operations?

A Yes. The successor operator shall be selected by three or more Working Interest Owners having 60 percent or more of the voting interest subject to the approval of the director and the

Commissioner.

Q The Commissioner or the Land Commissioner?

A The Land Commissioner.

Q What is the basis of allocation of both primary and secondary oil?

A The Unit Agreement provides for a split formula which resulted from negotiations in the Operators' Committee and which have been approved by the Commissioner and Director. Specifically, the allocation of the remaining primary oil to both Working Interest Owners and Royalty Owners is based upon the ratio of the total income inclusive of gas production from each such tract to the total income inclusive of gas production from each such tract to the total income inclusive of gas production from all such tracts during the period from July 1, 1961 to January 1, 1962. Secondary participation shall be equal to 100 percent of the ratio of the cumulative oil production from each such tract to the cumulative oil production from all such tracts both as of January 1, 1962; provided, however, that certain quarter-quarter sections within the Unit, which have never produced from the formation to be unitized or have only recently been developed, have been assigned a cumulative oil figure which is comparable to the average cumulative oil recovery of the adjacent quarter-quarter sections.

Q In other words, if a tract -- do you understand?

MR. UTZ: Every word of it.

MR. KASTLER: Withdraw the next question.

Q (By Mr. Kastler) What does the Unit Agreement provide in regard to non-joinder and subsequent joinder?

A For joinders after the effective date, a Working Interest Owner must obtain the approval of the other Working Interest Owners and the Director or Commissioner. The subsequent commitment by a Royalty Owner is subject to the consent of the Working Interest Owner who is the lessee of the tract involved.

Q In your opinion does the Unit Agreement provide for the prevention of waste and the protection of correlative rights?

A Yes, sir.

MR. KASTLER: This concludes the direct testimony of this witness, Mr. Utz.

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

(No response.)

MR. UTZ: The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any other statements to be made in this Case?

MR. KASTLER: Mr. Utz, we have received a letter from Skelly which we have had Xeroxed, and they ask for the

concurrence with the Application and I would like to submit these for the Commissioner's use.

MR. UTZ: I don't believe you entered your Exhibits.

MR. KASTLER: At this time I would like to move to the entrance of Exhibit's One through Eight.

MR. UTZ: Without objection the Exhibit's One through Eight will be made a part of the record in this Case.

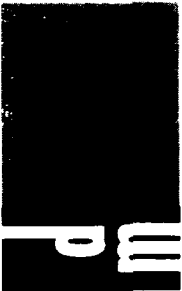
(Whereupon, Applicant's Exhibit's One through Eight were entered into evidence.)

MR. UTZ: If there are no further statements, the Case will be taken under advisement.

We will have a ten minute break.

(Whereupon, the taking of the Hearing was concluded.)

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STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, CHARLES FLOYD WALKER, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF, I have affixed my hand and notarial seal this 23rd day of October, 1964.

Charles Floyd Walker
NOTARY PUBLIC

My Commission Expires:
March 25, 1968.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No 3118 & 3119 heard by me on Oct. 13, 1964.

Howard J. [Signature], Examiner
New Mexico Oil Conservation Commission

I N D E X

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Exhibit's One through Eight	3	19	19