

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION  
OF MOBIL OIL CORPORATION FOR  
APPROVAL OF THE HUMPHREY QUEEN  
UNIT AGREEMENT IN THE LANGLIE-  
MATTIX POOL, LEA COUNTY, NEW MEXICO

Case No. 4203

A P P L I C A T I O N

Applicant, Mobil Oil Corporation, whose address is Post Office Box 633, Midland, Texas 79701, hereby requests Commission approval of the Humphrey Queen Unit Agreement in the Langlie-Mattix Pool, Lea County, New Mexico, and in support of its request states:

The proposed Humphrey Queen Unit is comprised of 761.25 acres, more or less, of Federal and Fee lands described as follows:

Lea County, New Mexico

Township 25 South, Range 37 East, NMPM

Section 3: All


Section 4: E/2 NE/4 and NE/4 SE/4

WHEREFORE, applicant requests that this matter be set for hearing as provided by law and that following hearing the Commission issue its order approving said Unit Agreement.

Respectfully submitted,

MOBIL OIL CORPORATION

By



Ira B. Stitt  
Division Operations Engineer  
Midland Division  
Mobil Oil Corporation

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
August 27, 1969

EXAMINER HEARING

IN THE MATTER OF:

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

Case No.

4203

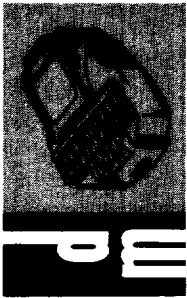
Application of Mobil Oil Corporation  
for a waterflood project and  
unorthodox injection well locations,  
Lea County, New Mexico.

Case No.

4204

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING



MR. UTZ: Cases 4203 and 4204 will be consolidated for the purposes of testimony and separate orders will be written.

MR. HATCH: Case 4203, application of Mobil Oil Corporation for a unit agreement, Lea County, New Mexico.

Case 4204, application of Mobil Oil Corporation for a waterflood project and unorthodox injection well locations, Lea County, New Mexico.

MR. SPERLING: James E. Sperling; Modrall, Seymour, Sperling, Roehl and Harris, Albuquerque, appearing for the applicant. We have one witness.

MR. UTZ: Are there any other appearances? Let the record show that the witness has been sworn in a previous case.

You may proceed.

PAT KELLY

the witness, called by Mr. Sperling, having been first duly sworn upon his oath, testified as follows:

DIRECT EXAMINATION

BY MR. SPERLING:

Q. Your name is Pat Kelly?

A. Yes.

Q. You have previously testified in this hearing in

Cases 4201 and 4202?

A. Yes, sir.

Q. And you are a representative of the applicant, Mobil Oil Corporation?

A. Yes, sir.

Q. Explain what is sought by the application in Case 4203, which relates to unit area?

A. An order is sought by Mobil Oil Corporation, approving the establishment of the Humphrey Queen Unit, which unit will cover the horizon identified in O. C. C. records as the Langlie-Mattix Pool, extending from one hundred feet above the top of the Queen formation, down to the base of the Queen formation.

Q. Mr. Kelly, would you refer to what has been marked as Exhibit One in Case 4203 of the unit agreement?

A. Yes, sir.

Q. And identify it, please?

A. It is the unit agreement, covering the proposed Humphrey Queen Unit.

Q. Now, is this unit agreement substantially in the same form as that which is proposed for the formation of the Langlie-Mattix Queen Unit in Lea County?

A. Yes, sir. There are some minor differences

necessary to accommodate only one operator. Mobil is the only working interest owner in the Humphrey Queen Unit. The royalty interest is the only interest that is diversified.

And the regular form unit agreement has some provisions in it, which relate to several working interest owners. In this case, there is only one working interest owner, and the agreement has been modified to the extent to accommodate that.

Q. Has this unit agreement, the form of it, been submitted to U. S. G. S., in view of the existence of the federal acreage within the area?

A. Yes, sir. The Frisco Lease, tract one, is a federal tract, and the U. S. G. S. has been tendered a draft of the unit agreement.

It is indicated that it would approve the unit agreement if certain changes were made in the draft.

The language of the Humphrey Queen Unit is or has been patterned after the language of the Langlie-Mattix Queen Unit. It is true that the final language that is contained in the Humphrey-Queen Unit and has not been before the U. S. G. S. -- under the cover of Humphrey-Queen Unit. It's been through the U. S. G. S., under the cover of Langlie-Mattix Queen Unit. Both agreements have been

circulated through the U. S., and we went through a second time with the Langlie Unit, and ran out of time with the Humphrey Unit. And so patterned the -- used identical language that the U. S. G. S. had approved for the Langlie agreement in the Humphrey agreement, and conclude that we will probably get it approved.

Q. It is your intention to submit the unit in the form as contained in Exhibit One, in 4203, to U. S. G. S. for approval?

A. Yes, sir.

Q. All right. Now, is there contained in the unit agreement, which is in the form of Exhibit One -- a map and a description of the unit area?

A. Yes, sir. There is attached and made a part of the unit agreement, Exhibit "A", which is a plat, showing the outline of the unit and the location, the locations of all the wells on the unit.

Q. Approximately what is the size of the unit in acreage?

A. The unit boundary encompasses approximately seven hundred and sixty-one and a quarter acres.

Q. Now, please refer to what has been marked as Exhibit Two, in Case 4203, and state what that is?

A. Exhibit Two is an area plat, drawn to a scale of one inch to four thousand feet. It covers the area of the Humphrey Queen Unit, which is in the north central part of the plat.

The Humphrey Unit is outlined with a dashed line.

All of the acreage within two miles of the boundary of the Humphrey Unit, is also shown. Immediately offsetting the Humphrey Unit to the north, is the Langlie-Mattix Woolworth Unit, operated by Amerada. On which waterflood operations are in progress in the Queen formation.

Offsetting the Humphrey Unit to the south, is the Stuart Langlie-Mattix Unit, operated by Gulf, on which waterflooding operations are already in progress, in the Queen formation.

Q. Now, refer to what has been marked as Exhibit Three, in Case 4203, and identify that?

A. Exhibit Three is a log of the well, which was used for purposes of identifying the unitized interval, in the unit agreement.

It is the same log that was used in identifying the unitized interval in the Langlie-Mattix Queen Unit, and also in Gulf Oil Corporation's Stuart Langlie-Mattix Queen Unit.

It is the Gulf Oil Corporation Stewart Well Number Nine -- I beg your pardon -- Stuart Number Nine, which is located three hundred and thirty feet from the north and east lines of Section 10, Township 25, Range 37.

MR. UTZ: These wells are marked "Arnott Ramsey" --

THE WITNESS: Yes, sir. I noticed that it is -- that it has the name on it -- evidently, that it was drilled under, but this is the log.

MR. UTZ: This is now the Stuart?

THE WITNESS: The Stuart -- S-t-u-a-r-t -- Number Nine. J. A. Stuart Number Nine.

MR. UTZ: Is the location the same? Nine-ninety from the northeast? Or nineteen eighty from the northeast?

THE WITNESS: I beg your pardon -- no, no -- I retrieved these logs from a printing company shortly before boarding a plane to come out here, and they brought the wrong logs to me. This is the Stuart Number Nine.

(WHEREUPON, a brief discussion was held off the record.)

THE WITNESS: It happens that this is the only copy of the Stuart Number Nine that I have at this point, and marked on this log are the tops of the various formations -- the Seven Rivers, the Queen formations and the Grayburg



formations -- the top of the unitized interval is one hundred feet above the top of the Queen, at a depth of thirty-one hundred and four feet in the Stuart Number Nine.

The base of the unitized formation is marked on that log to coincide with the top of the Grayburg, which is marked at thirty-five eighteen feet. If it's proper for there to be copies of this log in each of the files, I will be pleased to furnish additional copies at a later time.

MR. UTZ: Well, for the time being, why don't you mark that log Exhibit Number Three, in 4201 and 4203 --

MR. SPERLING: Does the record need to show the constitution of the log or --

MR. UTZ: I don't think so. This identification here should take care of it.

MR. SPERLING: All right, sir. Thank you.

Q. (By Mr. Sperling) All right. You have stated previously that Mobil is the only working interest owner in the proposed unit and that there was diverse royalty ownership. Can you give us an indication as to the present status of sign-up for the unit participation, so far as royalty interest, other than --

A. The unit is being formed with a one phase participation formula, which is based solely on accumulative

oil production, tract accumulative oil production, to January 1, 1969.

Based on that participation formula, twenty-nine percent of the royalty interests have already committed to the unit agreement. The unit agreement was first mailed to those interest owners on August 15.

Q. Do you anticipate any substantial difficulty in obtaining required signatures to the unit agreement?

A. No, sir.

Q. The proper percentages?

A. No, sir. I don't envision any difficulty in obtaining enough signatures to make the unit effective.

Q. Would you give us just a little bit of a background on the development and history of this area?

A. The Humphrey Queen Unit has been developed with a total of twenty-four wells up to the present time. The first well on the unit, completed in the Queen formation, was completed on August 12, 1937.

There were three additional completions made in 1937, ten in 1938, one in 1948, one in 1964, two in 1965, four in 1968 and two in 1969.

Accumulative oil production from the unit to the end of 1968 was a million five hundred and sixty-nine thousand

barrels.

MR. SPERLING: At this time, Mr. Examiner, I would like to offer Exhibits One through Three in Case 4203.

MR. UTZ: Without objection, Exhibits One through Three will be entered into the record of this case.

(Whereupon, Applicant's Exhibits One through Three were entered.)

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Q. (By Mr. Sperling) Mr. Kelly, if you will please refer to what has been marked as Exhibit One in Case 4204, and identify that please?

A. Exhibit One is the area plat, drawn to a scale of one inch to four thousand feet.

It shows the area encompassed by the Humphrey Queen Unit boundary, near the north central portion of the plat. All of the acreage within two miles of the unit boundary is shown on that map.

Q. This is the same exhibit as was identified as Exhibit Number Two in 4203; is that right?

A. Yes, sir.

Q. And now refer to Exhibit Number Three in 4204.

A. Exhibit Number Three is a --

MR. HATCH: You mean two; don't you?

MR. SPERLING: Yes, I mean two, number two --

THE WITNESS: Exhibit Number Two is a waterflood pattern map of the proposed Humphrey Queen Unit. It shows the locations of all of the injection wells that we plan to use in flooding the Queen sand, beneath the unit, and shows, also, the location of all of the producing wells that we will use.

Unit Well Number Twelve, on the plat, is shown as a production well to be drilled. That well has already been drilled and in the process of recovering load at this time.

Down in the southwest corner of Well Number Twenty, is shown as an injection well to be drilled. That well has already been drilled and cement lined tubing has already been run into it and it's set on a packer.

Q. Now, Mr. Kelly, have any of the wells within the unit area been the previous subject of application for approval before the Commission?

A. Yes, sir.

Q. All right.

A. This is the acreage we had in this unit, we

purchased from George Buckles in May of this year, and at the time that we bought it, it was covered by a waterflood Order Number R-3426, which authorized the inauguration of a waterflood on the several leases, which are going to be in the Humphrey Queen Unit.

I might point out that the only injection wells that we plan to use on the unit, that were not authorized as injectors in that order are Unit Wells Number Two, Four and Thirteen.

There was a well authorized for injection use near the location of Well Number Thirteen, on the unit, and I would view Thirteen as a substitute for it.

Q. Would you refer then, to Exhibit Number Three, in 4204, and explain what that is?

A. Exhibit Number Three is a tabulation of the proposed injection wells. The upper part of the tabulation covers the current producers that will be converted; the lower part lists the wells that we will drill or either that we have already drilled for injection use.

The unit well number is listed, together with the current lease in Well Number -- along with the location of each of the existing wells, according to unit, section, township and range, and the wells drilled are to be drilled

according to the nearest distance to the two nearest section lines.

Q. Well, now on that exhibit, there is a reference by an asterisk, to the wells that have been completed and equipped as injectors, under authority granted under Order Number R-3426 --

A. Yes.

Q. Does that reflect what you previously testified to, concerning the authorization extended by that order?

A. Yes, sir. Those injection wells, which are -- they were in existence when we bought the property and are Number Six, Nineteen and Twenty-three -- those wells had already been drilled pursuant to initial -- the initial waterflood order -- and we intended to use them as injectors.

Q. Would you explain what is contemplated, as far as mechanical initiation of this flood is concerned?

A. The injection station has been designed to deliver an average of seven hundred and fifty barrels per well per day. This is the injection rate that we expect to start at.

I do expect that we will not inject any pressure higher than one thousand pounds at the surface until we have

achieved a measure of fill-up.

Thereafter, we will of course inject it at whatever pressure we think is necessary to efficiently flood the formation, within the capability of our equipment.

The injection station and the distribution lines are all designed to handle a maximum of eighteen hundred p.s.i.

All of the injection wells will be completed for injection through cement lined tubing, set on a tension packer, above the pay.

And the casing will be loaded, in every case, with treated water.

Q. Have you developed a source of water for the program?

A. Yes, sir. I say we have developed -- I think we have.

The well, the water supply well, is in the process of completion at this time. We had drilled a well, described as Humphrey A-10, near the center of Section 3 -- slightly west of the center of Section 3.

It has been drilled to a depth of approximately forty-eight hundred feet in the San Andres formation.

And we encountered drilling operations -- a good break, about four hundred foot drilling break. And I have confidence that we are going to be able to get all of the water out of that well that we need -- casing is being set now. The well was logged yesterday, and casing is being set today, and it will be completed within a few days and tested -- in the Grayburg-San Andres formation.

Q. Now, refer to what's been marked as Exhibit Four and explain that?

A. Exhibit Four is a tabulation of oil production from the unit area, beginning with 1959. It has listed the accumulative production at each -- for each time period. The average number of producing wells, during the period, and the average daily rate -- the producing rate, for the period.

It is on an angle basis, from 1959 through '68, and on a monthly basis through 1969, down through the month of June, when the unit produced one thousand and seventy barrels for an average of about two barrels of oil per day.

Q. What do you anticipate by way of secondary recovery?

A. I think that the secondary oil to be produced



from the Humphrey Unit will, at least, produce a secondary to primary ratio of point seven five, which will be at least one million one hundred and seventy-seven thousand barrels.

Q. Now, refer to Exhibit Number Five, which appears to be related to Exhibit Four --

A. Exhibit Five is a graphical representation of the daily oil production tabulated in Exhibit Four.

Q. Now, refer to Exhibit Four, which is a log of the injection well --

A. Exhibit Number Six is a log of the injection well, which we had recently drilled five feet from the west line and one hundred feet from the south line of Section 3.

It is Unit Well Number Twenty. Shown on that log is the top of the unitized interval, one hundred feet above the top of the Queen.

Also at the top of the Queen formation and the top of the Pinrose formation. The well did not penetrate the Grayburg formation. I believe also shown on that log is the overall interval, which has been perforated in it, which extends, I believe, from thirty-three thirty-seven to thirty-five eighty-eight feet. No, thirty-three seventy-four to thirty-five eighty-eight feet.

Q. When do you or would you anticipate, timewise, fill-up and response, as far as the producing wells are concerned?

A. Because some of the producing wells are going to be -- because they are situated in fairly close proximity to injection wells -- I think we will have some response noted by the middle of 1970. I expect that we will achieve approximately fifty percent of the fill-up within fourteen to sixteen months after we start injecting.

Q. Now, before we proceed to Exhibit Seven, do you have anything further to add with reference to your proposed program?

A. I might point out that in this case also bids have been received on the injection facilities, the injection stations and the distribution systems -- they were open until last Friday, and I am sure that an award has either been made in the last day or two or will be made in the next day or two, and that construction will begin on those facilities within the next ten or fifteen days.

Q. Is this area subject to the same commitments that you mentioned as being outstanding in connection with the Langlie-Mattix Queen Unit?

A. Yes, sir.

Q. As far as the properties are concerned?

A. Yes, sir. It's all part of the same package. We concluded the properties could be more additionally flooded by dividing them into two units in the matter that we have. But it's all part of the same purchase and subject to the same agreements.

Q. Now, refer to what has been marked as Exhibit Seven and identify that, please?

A. Exhibit Seven is a collection of diagrammatic sketches of the proposed completion arrangement on all of the proposed injection wells.

It shows that in the producing wells that will be converted to injection, which, for the most part, are open hole completions, that we will set a packer above the casing chute and inject through cement lined tubing.

In the case of the drilled wells, of which there are two, we have, in the first case, on Number Twenty -- circulate cement to the surface, behind the surface, and the producing strings, and perforated selectively the force intervals for injection.

The remaining well to be drilled will be completed the same way. And, of course, the casing annulus will be loaded with treated water.

Q. Now, Mr. Kelly, in your opinion, will the draining of the applications in these cases lead to the prevention of waste and protect the correlative rights?

A. Yes, sir.

Q. In this area?

A. Yes, sir. I think it's essential that the properties be subjected to a secondary recovery program very soon if they are going to be produced properly. And I think the unit agreement is necessary for each owner -- an opportunity to recover in proportion to the value of his property.

Q. Would the approval of such a plan result in the recovery of otherwise unrecoverable oil?

A. Yes, sir.

MR. SPERLING: That's all I have, Mr. Examiner. I would like to offer Exhibits One through Seven in this Case 4204.

MR. UTZ: Without objection, Exhibits One through Seven will be entered into the record of this case.

(Whereupon, Applicant's Exhibits One through Seven, Inclusive, were admitted into evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q. Mr. Kelly, do you intend to put a valve on these? That is, at the annulus?

A. Yes, sir. There will be a valve on the surface casing, producing string annulus, of every well.

Q. And did I understand you to say that the Thirteen and Twenty injection wells are in the process of being completed at the present time?

A. No, sir. Well Number Twenty has already been completed. Well Number Thirteen has not been drilled.

Q. Which well was it?

A. Well Number -- there are three injection wells that were drilled at unorthodox locations by George Buckles.

One of those is in use for salt water disposal purposes right now, the Number Twenty-three well -- and six in nineteen are being completed at the present time. We have just gotten through cleaning out six, and we are ready to run cement lined tubing in it, and the rig is on nineteen at the present time.

Q. Which well is being used for salt water?

A. Twenty-three.

Q. Twenty-three?

A. Yes, sir.

Q. That's the one you mentioned awhile ago then that had been completed or rather, you were drilling on it?

A. No, sir. You may be thinking of the water supply well that is in the process of being completed.

Q. Well, you spoke of this before you spoke of the twenty -- I was busy with something else and I missed it -- that's why I was asking the question --

A. Well, I'm not sure what I said about that. I can set the record straight by saying that the three unorthodox locations, Number Six, Nineteen and Twenty-three were already completed -- already drilled and completed when we bought the property and they were drilled pursuant to the waterflood order that had been issued. That is, in response to Buckles' application.

We have drilled Well Number Twenty, under authority of that order, and it is completed as an injector now, although the water is not going into it. The only remaining well to be drilled as an injector on the lease, according to my present plans, is Well Number Thirteen, which is near the west boundary of the unit.

Other than that, all of the wells that we will

use for injectors will be converted producers -- unless we find it necessary to carry on further development to efficiently flood the property.

Q. Now, it's my understanding that all wells have been approved and -- in a previous order, which was 3426 --

A. 3426; yes, sir.

Q. Except three -- your Number Two and your Number Thirteen?

A. Yes, sir.

Q. And I understand that the locations were approved in a previous order?

A. Yes, sir.

Q. And none of these three are non-standard locations?

A. Number Thirteen is -- it's near the west line of the unit.

Q. So, you will need approval for that one?

A. Yes, sir. I expect that we will have entered into a cooperative agreement with Union Texas Petroleum, proposed operator of the Langlie-Jal Unit, which is being formed at the present time, offsetting the Humphrey Unit to the west -- before we drill that well.

I think we will have reached some agreement with them, perhaps some participation or something -- agreement

on the location and, perhaps, participation.

Q. What kind of water are you going to get out of the Grayburg? The same type?

A. The Grayburg-San Andres water is -- contains  $H_2S$  -- it is a corrosive water and our system has been designed to account for this.

The supply wells -- there will be one on the Humphrey Unit -- will be treated for corrosion. It may prove necessary to chemically treat the water some other way.

Gulf is using Grayburg-San Andres water in its Stuart Langlie-Mattix waterflood, and the Stuart Number Nine Well, which you have a log of in the file, is Gulf's water supply well from the San Andres. And the only treatment they are giving it at the present time is to prevent corrosion in the supply well.

MR. UTZ: Are there any other questions of the witness? You may be excused. Statements?

The case will be taken under advisement.

MR. SPERLING: Thank you, Mr. Examiner.



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## The Witness - PAT KELLY

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E X H I B I T SAdmittedApplicant's Exhibits 1 through 3 in Case  
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Applicant's Exhibits 1 through 7 in Case  
Number 4204


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STATE OF NEW MEXICO     )  
                                   )     ss  
 COUNTY OF BERNALILLO    )

I, CA FENLEY, Court Reporter 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.

  
 COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4203 heard by me on Aug. 27, 1969.

  
 Examiner  
 New Mexico Oil Conservation Commission

dearnley-meier

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