BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 7, 1968

EXAMINER HEARING

IN THE MATTERS OF:	(Consolidated)
Application of Kewanee Oil Company for a unit agreement, Eddy County, New Mexico.	Case No. 3830
Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico.	Case No. 3831

BEFORE: Elvis A. Utz
Examiner

TRANSCRIPT OF HEARING

(Whereupon, Applicant's Exhibit Number 1 in Case 3830 was marked for identification.)

MR. UTZ: Case 3830 and 3831.

MR. HATCH: Case 3830. Application of Kewanee Oil Company for a unit agreement, Eddy County, New Mexico.

Case 3831, Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico.

MR. MORRIS: Mr. Examiner, I'm Dick Morris of Montgomery, Federici, Andrews, Hannahs and Morris, Santa Fe, appearing for the Applicant in each of these cases. I would move at this time that the cases be consolidated for purpose of receiving evidence.

MR. UTZ: The cases will be consolidated for the purpose of the testimony and a separate Order will be written on the cases.

MR. MORRIS: I have two witnesses, Mr. J. W. Graham and R. S. Allison, and ask they both stand and be sworn, please.

(Witnesses sworn.)

J. W. GRAHAM

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Graham, will you state your name, where you reside,

by whom you are employed and in what capacity?

A My name is J. W. Graham. I live in Tulsa, Oklahoma. I am employed by Kewanee Oil Company in the capacity of Joint Interest Superintendent.

Q Have you previously testified before the Commission or one of its Examiners and had your qualifications established and accepted of record?

A Yes.

Q Are you familiar with the application of Kewanee Oil Company in Case 3830?

A I am.

Q Would you refer to the brochure that has been marked as Exhibit 1 in Case 3830 and state what that exhibit is?

A Exhibit 1 is a copy of the Unit Agreement for the Atoka-San Andres Unit, Eddy County, New Mexico, the purpose of which is to unitize the oil and gas rights in the San Andres Formation under a group of leases comprising approximately 3360 acres in Township 18 South, Range 26 East for the purpose of secondary recovery.

Q Would you refer to Exhibits A and B contained in that brochure and state what those exhibits show?

A Exhibit A lists the tract numbers of various tracts within the unit, a description of the acreage, the number of

acres in those tracts and the percent tract participation for each tract under Phase 1 and Phase 2 of the unit participation.

Exhibit B is a plat of the unit area which shows the tract numbers. It also shows the name of the current operator and the lease name and the wells within the unit area which have been completed in the San Andres Formation.

Q Under the Unit Agreement, what is the unitized formation?

A The unitized formation is a San Andres Formation or that subsurface portion of the unit area between the top of the San Andres and 920 feet below the top of the San Andres Formation.

Q You mentioned a two-phase participation arrangement under this Unit Agreement. Would you briefly describe that and point out the sections of the Unit Agreement that set this forth?

A Article 5 of the Unit Agreement covers tract participation--it's on Page 6, Mr. Examiner--wherein we state the formula that's used to determined Phase 1 tract participation and Phase 2 participation. Our purpose in having a two-phase formula for this unit was due primarily to there being a substantial amount of primary reserves left and we wanted some basis on which operators and royalty owners would maintain, approximately, their current income during the time that the remaining primary reserves are being produced, and then a Phase 2 formula which would equitably

allocate secondary reserves.

Q Mr. Graham, what percentage of interest, of working interest, does Kewanee Oil Company have under Phases 1 and 2 of this operation?

A Kewanee Oil Company has 45.12473% of the working interest under Phase 1; 42.40326% under Phase 2.

Q Is Kewanee Oil Company designated as the operator of this unit?

A As unit operator, yes, sir.

Q Who are the other working interest owners in this unit?

A There are two other working interest owners: Chevron Oil Company, whose operating name is Standard Oil Company of Texas, and Mobil Oil Company.

Q Do these three companies, including Kewanee, have 100% of the working interest in the unit?

A Yes.

Q And have Chevron, or Standard, and Mobil agreed to commit their working interests to the unit?

A Yes, they have executed a ratification of the Agreement.

Q Concerning the royalty interests and the overriding royalty interests, all of the acreage in this unit is owned privately, none of it being State or Federal acreage, is that correct?

A That's correct.

Q What is your present status of commitment of the royalty and overriding royalty interest to the Unit Agreement?

A As of now, we have on a unit basis, 73.2876% of the royalty ratified under Phase 1; 72.6706% ratified under Phase 2.

Q What are your prospects of obtaining further ratifications by the remaining royalty and overriding royalty interests?

A We think they're very good, obtaining additional ratifications.

Q Under the provisions of the Unit Agreement, there are certain standards that have to be met before tracts are considered qualified for participation in the unit. Would you point out those provisions of the Unit Agreement?

A Those provisions are covered under Article 9 of the Unit Agreement.

Q Just very briefly, what does that Article provide?

A It provides that a tract can be qualified for inclusion in the unit area by ratification of 100% of the working interests and 75% of the royalty interests; or lacking 75% of the royalty interests, working interest owners can indemnify and agree to hold harmless the other working interest owners on account of the inclusion of a tract in the unit area which has less than 75% royalty interest signed.

Q Under the second portion of Aricle 9 that you just referred to, what will be the situation with respect to tract

participation in this unit?

A As of now, we have 18 of the 30 tracts qualified with 75% or more royalty interest signed. All of the tracts operated by Mobil Oil Company have qualified. Those tracts operated by Kewanee Oil Company and Standard Oil Company of Texas which do not have 75% ratified will be qualified by indemnity agreement signed by those working interest owners.

Q So you will have 100% of the tracts qualified under the Unit Agreement?

A Yes.

Q Does the Agreement provide for an effective date?

A Yes, it does. Under Article 17, it provides that the Agreement will become effective at a time and date determined by the working interest owners and set forth in a certificate filed for record; the qualification for filing this certificate are that at least 85% of the unit area shall have qualified under the provisions of Article 9, a counterpart of the agreement to be filed of record and approved by any govermental authority necessary.

Q When do you hope to make the Agreement effective?

A We hope to make it effective September 1, 1968.

Q Was this Unit Agreement prepared by you or under your supervision?

A Yes.

MR. MORRIS: That's all I have of Mr. Graham on direct.

MR. UTZ: The purpose of this unit is for secondary recovery, is that correct?

THE WITNESS: Yes, sir.

MR. UTZ: Are there any questions? You may be excused.

(Whereupon, Applicant's Exhibit Number 1 in Case 3831 was marked for identification.)

R. S. ALLISON

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Allison, will you please state your name, where you reside, by whom you are employed and in what capacity?

A My name is R. S. Allison. I reside in Tulsa, Oklahoma. I am employed by Kewanee Oil Company as Secondary Recovery Engineer.

Q And have you previously testified before the Commission or one of its Examiners and had your qualifications established of record?

A Yes, I have.

Q Have you prepared a brochure of Exhibits for presentation in this case?

A Yes, I have.

Q And is that marked as Exhibit Number 1 in Case 3831?

A Yes.

MR. MORRIS: At this point, Mr. Examiner, I might point out that the brochure that was submitted with the application has had some changes made in it and should not be confused with the brochure that is being submitted as the marked exhibit in this case. The changes concern the location of a couple of the injection wells; however, there's still the same number of injection wells. They are still located all in Township 18 South, Range 26 East, Eddy County, in accordance with the notice that was given in the case.

MR. UTZ: Probably should remove this from the file then.

MR. MORRIS: We'll be glad to take them back.

MR. UTZ: Let me have that one there. I have a couple of notes on the top of it.

Q (By Mr. Morris) Mr. Allison, would you refer to this brochure marked Exhibit 1, and, first, refer to Exhibit A in that brochure and state what that is and what it shows.

A Exhibit A shows the proposed unit area shaded in gray, the adjacent ownership and the wells within the unit area and adjacent wells.

MR. UTZ: What's this dark outline?

THE WITNESS: That has no significance in this hearing. Those are Kewanee operated leases.

Q Now, this shows not only San Andres wells, but also Grayburg wells in this area, is that correct?

A Yes, within the unit area, there's Grayburg reservoir also.

Q The San Andres wells are shown on Exhibit B, and Exhibit B does not show the Grayburg wells, is that correct?

A That's correct.

Q Referring to Exhibit B, what else does that show?

A Exhibit B shows the proposed injection wells circled.

Q What are the wells shown with the double or triple circles around them?

A There are two wells with double circles there. Those two wells are San Andres wells which the Commission has previously granted permission for water injection.

Q Now, are these two wells -- you're referring to the well that is in the northeast of the northwest of Section 11 that has the designation 6-WI under the Standard of Texas lease, is that right?

A That's one of two wells, yes.

Q And the other one is located in the southwest of the northwest of Section 13 and carries the designation 9-S-WI?

A Yes, that's correct.

Q Are those two wells included within the 28 injection wells for which approval is sought under this waterflood project?

A Yes, those two within the 28 total wells.

MR. MORRIS: Mr. Examiner, as the witness has stated, these wells have previously been approved for waterflood, as waterflood wells. The well in Section 11 was approved for waterflooding under an application by Standard Oil Company of Texas in Case 3524, Order Number R-3192. The well in Section 13 was approved under an application by Kewanee for waterflooding in Case 3291, Order Number R-2955. In the event this application is approved, it might be appropriate for the Commission to rescind those previous Orders and just include those two wells in this waterflood project.

Q Mr. Allison, how many wells, total, are involved in this project?

A 58 wells.

Q And how many of those 58 are injection wells?

A 28.

Q What type of a waterflood pattern could this be called?

A I'd call it a modified five spot. It's as close as practical to a five spot with the current well locations.

Q In your opinion, will this pattern of waterflooding give Kewanee adequate control of the waterflood throughout this

unit area?

A Yes, it will.

Q What is Exhibit C in this brochure?

A Exhibit C is a structure contour map on top of a main San Andres porosity zone within the unit area. It shows a nosing condition dipping to the east with a field development pretty much across the top of the nose. The contours show a fairly uniform rate of dip to the east which would indicate continuity across the unit area.

Q What is Exhibit D to the brochure?

A Exhibit D is a type log of the injection wells that are proposed.

Q You have the top of the San Andres Formation marked on this log?

A Yes. The top of the San Andres is identified on this log, 1,039 feet.

Q What is your main porosity zone?

A The main porosity zone that the previous exhibit was contoured on is located on this log, the top at 1650.

Q Moving on to Exhibit E, what is that?

A Exhibit E is a schematic of a typical injection well completion technique which is proposed which, in detail, is two and three-eighths tubing, plastic coated on a packer with the packer set immediately above the producing perforations and

an inhibited fluid in the tubing casing annulus with a pressure gauge at the surface.

Q All injection will be through perforations and below packer?

A Yes.

Q What is Exhibit F?

A Exhibit F is a table with data of the 28 proposed injection wells which shows the location of these wells, the casing, size, both surface oil string, the depth to which it sets, the cement that was used to cement the casing, the top of the cement, the total depth of the well and the completion interval.

Q From the information that is shown here with respect to the cementing of these wells, will the cementing program on each of these wells, in your opinion, be sufficient to give protection to the fresh water zones that exist in this area?

A Yes, in most cases, in all cases, the surface casing is cemented to the surface. The oil string is cemented to the surface in most cases and in the cases where it is not cemented to the surface, the cement is circulated up into the surface casing so that the entire interval is covered with cement in all of the wells.

Q What does Exhibit G show?

A Exhibit G is a decline curve for the unit area showing

the current rate of production as 14,000 barrels per month. This calculates to be approximately eight barrels per day per well, average.

Q For the wells that are presently producing, what does that calculate to be?

A That would calculate less than nine barrels per day.

Q Now, Exhibit H merely shows the old lease names and the new tract numbers under the lease agreement, is that correct?

A Yes. If the unit is approved, we would propose to rename the leases with tract numbers and leave the well numbers as they currently are, and this is a key between the current lease names and the proposed unit tract numbers.

Q What will be the source of water for this waterflood project?

A It will be fresh water purchased from one of the local ranchers.

Q And has this purchase already been arranged for and has the landowner from whom you are purchasing the water obtained approval of the State Engineer to use the water for this purpose?

A Yes, in all cases.

Q At what rate do you intend to inject water into these wells?

A A maximum rate of 300 barrels per day per well at a thousand times maximum pressure.

Q And have you already arranged for sufficient water to inject into the proposed injection wells, sufficient to meet your requirements?

A Yes, the water has already been contracted for.

Q What would be your estimate of the total water requirement for this project?

A Well, that would be highly speculative, but my guess as to the total fresh water requirements would be in the range of two million barrels.

Q Will the water be recycled?

A Yes, produced water will be reinjected.

Q What is your estimate in terms of primary production of your production on secondary?

A Secondary should approach 75% of ultimate primary.

Q Were Exhibits A through H contained in Exhibit Number 1 in this case prepared by you or under your direction?

A Yes, they were.

MR. MORRIS: We offer into evidence Exhibit Number 1 in Case 3831.

MR. UTZ: Without objection, Exhibit 1, Parts A through H, will be entered in to the record.

(Whereupon, Exhibit Number 1 of Case 3831 was admitted in evidence.)

MR. MORRIS: That's all I have of this witness.

CROSS EXAMINATION

BY MR. UTZ:

Q With reference to Exhibit E, a part of Exhibit 1, would you state whether you intend to load the annulus or not?

A Yes. I believe we would intend to load it with an inhibited fluid and use pressure gauge at the surface.

Q And all the wells will be equipped in this manner?

A Yes, sir.

Q In regards to your well names for your injection wells, what was it specifically that you propose? To put the new tract number in place of the well number?

A Put the new tract number in place of the current lease name and to not change the well numbers.

Q I see. So that in our Order, for example, referring to Exhibit F, we would list that well as Kewanee Oil Company Tract Number 30?

A Yes, sir.

Q Well Number 1?

A Yes, sir. We would probably refer to the well as 30-1, would be the way we would prefer to have it referred to.

Q Well, the lease name will be Tract 30.

A Yes, sir.

Q Is there the same number wells as there is on Exhibit H?

A Well, Exhibit H doesn't show the number of wells. Exhibit H might be confusing in that some of these lease names also have numbers following them, such as Kewanee Tract or Kewanee Terry Tract 3. That is a lease name or --

Q Let me ask it another way. Are all the injection wells you intend to use included on Exhibit H?

A Yes.

MR. UTZ: Are there any other questions of the witness? You may be excused. Any statements in this case?

MR. MORRIS: No.

MR. UTZ: Let's take a ten minute recess.

I N D E X

E X H I B I T S

Number	Marked for Identification	Received in Evidence
Applicant's Exhibit Number 1 in Case Number 3830	2	-
Applicant's Exhibit Number 1 in Case Number 3831	8	15

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

I, CHARLOTTE MACIAS, 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 27th day of September, 1968.

Charlotte Macias
Notary Public

My Commission Expires:

February 10, 1971.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3820, heard by me on Dec 7, 1968

Examiner
New Mexico Oil Conservation Commission