BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
OIL CONSERVATION COMMISSION CONFERENCE ROOM
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
May 9, 1973

EXAMINER HEARING

IN THE MATTER OF:

Application of Tamarack Petroleum Company, Inc. for a unit agreement and for a waterflood project, Lea County, New Mexico.

Cases No 4959 and 4960

BEFORE: Daniel S. Nutter
Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will next call Case No. 4959.

MR. CARR: Case 4959, Application of Tamarack Petroleum Company, Inc. for a unit agreement, Lea County, New Mexico.

MR. KELLAHIN: Thomas Kellahin of Kellahin & Fox, Santa Fe, New Mexico, appearing for the Applicant, Tamarack Petroleum Company. If the Examiner please, we would like for purposes of Case 4959 and 4960 to consolidate our testimony.

MR. NUTTER: We will next call Case No. 4960.

MR. CARR: Case 4960, Application of Tamarack Petroleum Company, Inc. for a waterflood project, Lea County, New Mexico.

MR. NUTTER: Cases 4959 and 4960 will be consolidated for purposes of testimony.

MR. KELLAHIN: If the Examiner please, I have two witnesses to be sworn.

ALBERT METCALFE

appeared as a witness, and after being duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Metcalfe, would you please state your name, by whom you are employed, and in what capacity?

A Albert Metcalfe, Tamarack Petroleum Company, Vice President.

Q Have you previously testified before this Commission or one of its hearing examiners and had your qualifications as an expert witness accepted and made a matter of record?

A Yes, I have.

Q Have you examined and are you familiar with the facts of the Tamarack Petroleum Company application in this case?

A Yes.

MR. KELLAHIN: Mr. Examiner, are the witness' qualifications as an expert acceptable?

MR. NUTTER: Yes, sir, they are.

Q (By Mr. Kellahin) Mr. Metcalfe, would you please state briefly what is sought by Tamarack Petroleum Company for these two particular applications?

A Well, we seek approval to unitize for secondary recovery by waterflooding 762 acres in the Bronco Wolfcamp Field in Lea County. We also seek approval to convert three producing wells to water injection wells.

Q Will you please refer to what has been marked as Applicant's Exhibit No. 1, that's the Unit Agreement and the attachments, and please identify them for us.

A This is our Unit Agreement for the Bronco Wolfcamp Unit.

Q Is there an exhibit or an attachment to the Unit Agreement that outlines the proposed unit area?

A Yes, there is. Exhibit A is a plat showing the proposed unit area and Exhibit B describes each of the six tracts in the unit area with their participation in the unit.

Q What type of land is involved, Mr. Metcalfe?

A It's all fee land.

Q There is no federal land or state land, is there?
A There is not.
Q I believe Attachment C to the Unit Agreement is a list of the interest owners. Is this a complete list of the ownership of the tracts in the unit?
A Yes, it is.
Q Will you please indicate what per cent of the working interest has signed the Unit Agreement?
A The working interest is 100% signed.
Q I believe Attachment D to the Unit Agreement is the ratifications by the royalty interest owners and Attachment E is the ratifications of the working interest owners. What percentage of the royalty interest owners have signed the agreement, Mr. Metcalfe?
A There are 38 royalty interest owners and all except one have signed -- well, excuse me. Thirty-eight royalty interest owners, one has not signed who owns 1.04% of the production from four tracts, which would entitle his interest to 1/2 of 1% of the unit production under Phase II. This is Mrs. Simpson, and she's been contacted several times but has refused to sign the Unit Agreement. In addition to Mrs. Simpson, we have three very small, unleased mineral owners in Tract 2. They have a total of 2.3% of the minerals in Tract 2 which would entitle them to 1/10th of 1% of the unit production. All attempts to contact these unleased

mineral owners have failed and we get no response to our correspondence.

Q Have any of the individuals ratified the Unit Agreement whose ratifications are not included in our Attachments D and E?

A Yes, the Lowland Company has signed the ratification but it arrived in my office after I left yesterday, so I couldn't bring it; but I will mail it in.

Q Returning to your basic Unit Agreement here, Mr. Metcalfe, what type of form had you used or where did you obtain your Unit Agreement form?

A Well, this is a modification of the form that we have used in our two Pearl Queen Units, which contact federal as well as state lands, and we modified this which I believe is the form that's approved for federal land.

Q What is the unitized formation?

A It's a Wolfcamp.

Q Who is the designated operator?

A Tamarack.

Q You have referred to Exhibit B, which is an attachment to the Unit Agreement, and that does indicate the basis of tract participation?

A That's correct.

Q What is the expiration date of your Unit Agreement with regards to Oil Conservation Commission approval?

A It is June 1, 1973.

Q In other words, those people that have ratified the agreement have given you until June 1, 1973, to obtain Oil Conservation Commission approval?

A That is correct.

Q In your opinion, Mr. Metcalfe, will approval of this agreement impair anyone's correlative rights?

A No, sir.

Q Will the approval of this agreement result in the prevention of waste of hydrocarbons?

A Yes.

Q Was Exhibit 1 and the attachments thereto prepared by you or under your direction and supervision?

A Yes.

MR. KELLAHIN: We have no further questions on direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q You stated Mrs. Simpson has an interest in four tracts?

A Yes, sir, in Tract 1, 2, 4 and 5.

Q These other people are limited to the one tract?

A They are limited to Tract 2, which has no current production at this time and no Phase I participation, but it will have some Phase II participation.

Q I see.

MR. NUTTER: Are there any further questions of Mr. Metcalfe?

(No response)

MR. NUTTER: He may be excused.

MR. KELLAHIN: The Applicant calls Mr. Williamson.

ROY C. WILLIAMSON

appeared as a witness, and after being duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A I'm Roy Williamson, I'm President of the consulting firm of Sipes, Williamson, Runyan & Aycock in Midland, Texas.

Q What is your relationship with Tamarack Petroleum Company in this particular application?

A I have been a consultant to them in preparing the study for the waterflood recovery project.

Q Have you previously testified before this Commission or one of its hearing examiners and had your qualifications accepted?

A Yes, I have.

MR. KELLAHIN: Mr. Examiner, are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q (By Mr. Kellahin) To begin, Mr. Williamson, I direct your

attention to what I have marked as Applicant's Exhibit 2, that's your letter of May 9, 1973, and Applicant's Exhibit 3, which is a plat of the Unit Agreement. Now, in connection with Exhibit 3, this is the plat will you please identify for the Examiner the proposed unit area?

A Yes, the proposed unit area is in the south half of Section 35 of Township 12, Range 38 and encompasses the majority of Section 2 in Township 13, 38.

Q This is indicated by the broken, dotted line?

A By the broken, dotted line, yes. The southeastern 160 acres and the southwest -- 80 acres, I mean, -- are out of the unit area in Section 2.

Q From what formation are the wells on the plat producing?

A They are producing from the Wolfcamp.

Q Have you located all of the wells in the Wolfcamp formation in a two-mile radius from the unit area?

A Right, there are some additional Wolfcamp wells down to the south in Section 11 but their remoteness from this area precludes them from being included in this particular water-flood project.

Q It was, therefore, not feasible to include these in your unit waterflood?

A That's correct. We had an open space there of approximately half a mile, and therefore whatever happens in one area would not affect the other area.

Q Will you please locate your proposed injection wells?
A Okay. We have three proposed injection wells. The first one is Texaco Harris Number 3 which is located in Section 35. The next is the Tamarack Lipscomb Estate Harris Number 1 located in position C in Section 2, and the third well is the Tamarack Harris Number 1 located in the south half of Section 2.
Q In connection with the plat, Exhibit 3, will you now refer back to your letter of May 9, 1973, and let me ask you some questions about this?
A All right.
Q What is the depth of the Wolfcamp production?
A The depth is approximately 9,000 feet.
Q Will you please discuss for us and provide your data on the current primary recovery for the nine wells in the unit area?
A The estimated primary ultimate from the nine wells as determined from the decline curve analysis is approximately 1,182,849 barrels of oil. The cumulative production from these wells as of March 1, 1973, was 1,020,766 barrels of oil, leaving primary reserves of 162,083 barrels.
Q What was your production for February?
A Production for February was 1,202 barrels of oil, 1,275 mcf of gas, and 1,014 barrels of water.
Q What is the primary drive mechanism for your primary

recovery?

A Solution gas.

Q What is your opinion concerning your estimate of recovery under secondary recovery?

A Because of the fact that we do not have enough wells to put in what we would call an enclosed pattern of any kind, we have assumed that the pattern that we have presented of the three injection wells down the center is the most logical from a recovery and prevention of waste standpoint, and we have estimated then that the secondary recovery will be approximately 39% of the primary recovery. Therefore, the additional oil recovery under secondary operations is 461,255 barrels. Adding this to the remaining primary reserves gives us a total reserve, primary plus secondary, as of April 1, of 623,338 barrels.

Q In your opinion, can the unit area be successfully and economically waterflooded?

A Yes, it can.

Q Do you have any data on the porosity of your unit area?

A Only from porosity logs that are available, and calculates an average porosity of approximately 7% with the leased porosity that has been recorded on the logs of around 10%.

Q When, in your opinion, will primary production have declined to the point where you would recommend secondary recovery by waterflooding?

A Well, we are at that point now.

Q Will this proposed waterflood result in the recovery of oil that otherwise would not be recovered, thereby preventing waste?

A That is correct.

Q What effect, if any, does the proposed waterflood project have upon the correlative rights of others?

A I think it will protect the correlative rights by virtue of the unitization recommended.

Q Let's refer to what has been marked as Applicant's Exhibit No. 4. Will you identify that for me, please?

A Yes, Exhibit No. 4 is a schematic of the injection well, the Tamarack Number 1 Harris. On this schematic we show the casing settings, the cementing volumes, the perforating interval, the recommended installation of the plastic line, injection tubing and a packer.

We will meter and record the pressure for the injection volume.

Q Will you fill the annulus with an inert gas or some other substance?

A Right, yes, we will.

Q Will you please refer to what has been marked as Applicant's Exhibit No. 5 and identify that for us, please?

A This is a copy of the log, sonic log, run in the well, and I have identified the perforated interval by means of a

little box with two circles in it; perforations being from 9,068 feet to 9,100 feet.

Q This is not a new injection well, you are converting a production well, is that correct?

A That's correct.

Q What is the history of production on this Harris Number 1?

A The Harris Number 1 has a current production of 530 barrels of oil and has cumulative oil as of 3/1/73 of approximately 173,000 barrels.

Q Please refer to what has been marked as Applicant's Exhibit No. 6, identify that for us, please.

A This is another schematic of the injection well, the Tamarack Number 1 Lipscomb Estate, and there again we show the casing and cementing records, the recommended packer and tubing hook-up, and the perforated interval.

Q Please refer to what has been marked as Applicant's Exhibit No. 7 and identify this.

A Exhibit No. 7 is a gamma ray neutron log from this well again showing the location of the current perforations of 9,047-64 feet and 9,072-90 feet.

Q These current perforations, will they be used as points of injection?

A That is correct.

Q What is the history of production on this one?

A This well is currently not producing. It producted 66

barrels of oil in January and in February did not produce anything. However, it has a cumulative of 228,000 barrels.

Q Please refer to what has been marked as Applicant's Exhibit No. 8 and identify that.

A All right. This is another injection well, the Texaco Number 3 Harris. Again, the schematic showing, the casing, cementing, tubing, and perforation record on this well.

Q You've shown us three schematics on all three injection wells. Are all three of these proposed injection wells to be completed in accordance with sound engineering practices?

A Yes, they are.

Q Will you please refer to what has been marked as Exhibit No. 9?

A This is a sonic log on the Harris Number 3 well. However, the well was originally drilled by White Hall Oil Company and the title at that time was the Harris Number 1. On this log also are shown the perforated intervals from 9,077 feet to 9,090 feet.

Q What is the history of production on this well, Mr. Williamson?

A This well has been shut-in since the first part of 1969 with a cumulative production of 53,000 barrels.

Q What will be the point of injection?

A It will be through the perforated interval 9,077 to 90.

Q Please refer to Applicant's Exhibit No. 10 and identify

this, please.

A Number 10 is a water analysis study from Martin Water Laboratories. This was occasioned by the fact that the water supply for this unit will be provided from Devonian wells that Amerada has in Section 11. They have agreed to furnish this water to Tamarack for flooding the Wolfcamp. We obtained this study in order to see what the capability of the two waters would be.

There are no calcium carbonate or calcium sulfate scaling tendencies; therefore, this should not be a problem in mixing water. The Wolfcamp water does contain a moderate amount of soluble iron and the Devonian water contains a mild amount of hydrogen sulfide. The mixing of these waters in equal quantities would result in the precipitation of essentially all the iron and sulfide from the waters. We do not feel that this would be a problem in the reservoir and initially the produced water from the Wolfcamp field will be hauled away and will not be reinjected into the formation. At such time as we do begin to produce significant amounts of the produced water, we will test and filter it so we do not create a plugging problem in our injection wells.

Q Do you have an estimated total volume of water to be injected in the waterflooding?

A It should be in the neighborhood of 5,000,000 barrels of

water. We will initially inject approximately 1,000 barrels of water per well per day for a total of 3,000 barrels per day, and, as we fill up, we will reduce this injection to maximize draws and maximize production.

Q Will the water be injected under pressure?

A Yes, it will. We anticipate that the surface injection pressure will not exceed 1500 pounds.

Q What is the anticipated life of the unit, Mr. Williamson?

A Approximately 15 years.

Q Were Exhibits 2 through 9 either prepared by you or under your direction and supervision?

A Yes, they were.

MR. KELLAHIN: The Applicant moves for introduction of Applicant's Exhibits 1 through 9.

MR. NUTTER: How about 10?

MR. KELLAHIN: Yes, 10 also.

MR. NUTTER: Applicant's Exhibits 1 through 10 will be admitted in evidence.

MR. KELLAHIN: That concludes our direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Williamson, will you place a pressure gauge on the annulus, to determine, if there was leakage, you would have one there?

A Yes, we certainly would.

Q Have you decided yet what type of inert fluid would be

would be put in the annulus?

A No, sir, it would probably be an inhibited fluid.

Q It would be a liquid fluid?

A Right, liquid as opposed to gas, yes, sir.

Q How much water is the Wolfcamp making at the present time, do you have any idea?

A For the month of February, we produced 12,000 barrels or approximately 30, 35 barrels a day.

MR. NUTTER: Are there any other questions of Mr. Williamson?

(No response)

MR. NUTTER: You may be excused. Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Cases 4959 and 4960?

(No response)

MR. NUTTER: We will take the case under advisement.

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

I, JOHN DE LA ROSA, 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 that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

John D. La Rosa
CERTIFIED SHORTHAND REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4959-4960, heard by me on May 23, 1974.

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Examiner
New Mexico Oil Conservation Commission

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