CASE No. 4960

Application,

Transcripts,

Small Exhibits

ETC.

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.

* * * *

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 de 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 5/9, 1923.

....., Examiner
New Mexico Oil Conservation Commission

I N D E X

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

May 21, 1973

Re: Case No. 4960 & 4959
Order No. R-4528 & R-4529
Applicant:
Tamarack Petroleum Co., Inc.

Mr. Tom Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other R-4528 - State Engineer Office
R-4529 - Unit Division - State Land Office

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 4960
Order No. R-4528

APPLICATION OF TAMARACK PETROLEUM
COMPANY, INC. FOR A WATERFLOOD
PROJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 9, 1973, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 17th day of May, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Tamarack Petroleum Company, Inc., seeks authority to institute a waterflood project in the Bronco Wolfcamp Unit Area, Bronco-Wolfcamp Pool, by the injection of water into the Wolfcamp formation through three injection wells in Sections 35, Township 12 South, Range 38 East, NMPM, and Section 2, Township 13 South, Range 38 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tamarack Petroleum Company, Inc., is hereby authorized to institute a waterflood project in the Bronco Wolfcamp Unit Area, Bronco-Wolfcamp Pool, Lea County, New Mexico, by the injection of water into the Wolfcamp formation through the following-described wells:

TOWNSHIP 12 SOUTH, RANGE 38 EAST, NMPM
Texaco Harris Well No. 3 - Unit M - Section 35

TOWNSHIP 13 SOUTH, RANGE 38 EAST, NMPM
Tamarack Lipscomb Well No. 1 - Unit C - Section 2
Tamarack Harris Well No. 1 - Unit J - Section 2

(2) That injection into each of the aforesaid wells shall be through 2 3/8-inch plastic-lined tubing set in a packer located as near as practicable to the uppermost casing perforation; that the casing-tubing annulus shall be loaded with an inert liquid and equipped with a pressure gauge at the surface.

(3) That the subject waterflood project is hereby designated the Tamarack Bronco Wolfcamp Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(4) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(5) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

I. R. TRUJILLO, Chairman

AJMX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

today 4900 - 4780

all fee land

working interest 100% signed

38 royalty interest owners — all but one is signed up
< ~~.04%~~ — 1/30 of 1% of unit production — not signed

3 small unleased min owners in tract 3 have not joined — < .1/10% of production

expiration of unit agreement Jan 1, 1973 — deadline to get OCC approval

Watson

depth of Wolfcamp — 9000'

primary drive — solution gas.

porosity — 7%

pressure gauge on annulus — w/ inert liquid fluid.

total volume to be inj.
5 m bbls of H_2O
3000 bbl per day.

injected under pressure [illegible]

CASE 4959: Application of Tamarack Petroleum Company, Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Bronco Wolfcamp Unit Area, comprising 762 acres, more or less, of fee lands in Section 35, Township 12 South, and Section 2, Township 13 South, both Range 38 East, Lea County, New Mexico.

CASE 4960: Application of Tamarack Petroleum Company, Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Wolfcamp formation through three wells in its Bronco Wolfcamp Unit Area, Bronco-Wolfcamp Pool, Lea County, New Mexico.

CASE 4961: Application of Amoco Production Company for down-hole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Blinebry and Drinkard Oil Pools and the Tubb Gas Pool in the well-bore in its Southland Royalty "A" Well No. 4 located in Unit X of Section 4, Township 21 South, Range 37 East, Lea County, New Mexico.

CASE 4962: Application of Amoco Production Company for special pool rules, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Peterson-Pennsylvanian Pool, Roosevelt County, New Mexico, including a provision for classification of oil wells and gas wells, 160-acre spacing for oil wells, 320-acre spacing for gas wells, and a limiting gas-oil ratio of 4,000 to one.

CASE 4963: Application of Texaco Inc. for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the North Benson Queen Unit Area comprising 1800 acres, more or less, of Federal and State lands in Township 18 South, Range 30 East, Eddy County, New Mexico.

CASE 4964: Application of Texaco Inc. for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its North Benson Queen Area, North Benson-Queen Pool, Eddy County, New Mexico, by the injection of water into the Queen formation through 20 wells in said unit area.

CASE 4965: Application of Read & Stevens, Inc. for a dual completion, contraction of vertical limits, creation of a new pool and special pool rules, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks the contraction of the vertical limits of the Buffalo Valley-Pennsylvanian Pool, Chaves County, New Mexico, to exclude the producing interval from 8548 feet to 8578 feet as found in its Langley Com Well No. 1 located in Unit C of Section 13, Township 15 South, Range 27 East, and to redesignate said pool as the Buffalo Valley Lower-Pennsylvanian Gas Pool, and for the creation of a new pool for the

(Case 4965 continued from page 2)

above-described producing interval to be designated Buffalo Valley Upper-Pennsylvanian Gas Pool. Applicant also seeks the adoption of special rules for said proposed new pool similar to the pool rules for the presently existing pool; applicant further seeks approval for the dual completion of the above-described well to produce from both of the aforesaid two pools.

CASE 4966: Application of Read & Stevens, Inc. for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the N/2 of Section 36, Township 12 South, Range 30 East, Chaves County, New Mexico, to be dedicated to a well to be drilled to the Queen formation in Unit B of said Section 36, in the Southeast Chaves Queen Gas Area. Also to be considered will be the cost of drilling and completing said well and the allocation of such costs as well as actual operating costs and charges for supervision. Also to be considered is the designation of applicant as operator of the well and a 200 percent charge for risk involved in drilling said well.

CASE 4967: Application of John M. Etcheverry for dissolution of a standard proration unit and the creation of two non-standard proration units, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the dissolution of the standard 160-acre proration unit comprising the SW/4 of Section 29, Township 14 South, Range 34 East, West Tres Papalotes-Pennsylvanian Pool, Lea County, New Mexico, dedicated to the Mark Production Company Etcheverry Well No. 1 located in Unit L of said Section 29, and the creation of two non-standard 80-acre proration units, one comprising the N/2 and the other the S/2 of the SW/4 of said Section 29; the first unit would be dedicated to the aforesaid Etcheverry Well No. 1 and the second unit would be dedicated to a well proposed to be drilled in Unit P of said Section 29.

CASE 4968: Application of Benjamin K. Horton for the amendment of Order No. R-1814, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-1814 to provide for the dissolution of the 344.28-acre non-standard unit approved by paragraph 4 of said order which unit comprises all of partial Section 11 plus Lot 4 and the SW/4 SW/4 of partial Section 12, Township 28 North, Range 13 West, Basin-Dakota Pool, San Juan County, New Mexico. Applicant proposes the creation of a 275.36-acre non-standard unit comprising all of the aforesaid partial Section 11 only to be dedicated to his Federal Well No. 2 located 1190 feet from the South line and 2210 feet from the East line of said Section 11.

CASE 4946: (Continued and Readvertised)

Application of Union Texas Petroleum for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks

(Case 4946 continued from page 3)

the promulgation of special pool rules for the Crosby-Fusselman Pool, Lea County, New Mexico, including a provision for classification of oil wells and gas wells, 320-acre spacing for all wells, and a limiting gas-oil ratio of 5000 to one. (This case will be continued to the May 23rd Examiner Hearing.)

CASE 4885: (Continued and Readvertised)

In the matter of the hearing called by the Oil Conservation Commission on its own motion to permit John Lemley and Juanita Franks and Aetna Casualty and Surety Company and all other interested parties to appear and show cause why the Lemley and Franks Greathouse Well No. 1, located in Unit F of Section 10, Township 23 North, Range 1 West, Rio Arriba County, New Mexico, should not be plugged and abandoned in accordance with a Commission-approved plugging program.

SIPES, WILLIAMSON, RUNYAN & AYCOCK, INC.
CONSULTING ENGINEERS

1100 GIHLS TOWER WEST
MIDLAND, TEXAS 79701
915 683-1841

Midland, Texas

800 MAIN BUILDING
HOUSTON, TEXAS 77002
713 228-8146

May 9, 1973

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico 87501

Gentlemen:

Subject: Case 4960, Application of
Tamarack Petroleum Company, Inc. for a
Waterflood Project, Bronco (Wolfcamp) Unit Area
Bronco (Wolfcamp) Pool, Lea County, New Mexico

The subject field is located in southeastern Lea County, New Mexico, and produces from the Wolfcamp pay at an approximate depth of 9,050 feet. The proposed unit area encompasses development in the northern part of the field in Section 2, Township 13 South, Range 38 East and in Section 35, Township 12 South, Range 38 East. Exhibit No. 1 shows the proposed unit outline. The Wolfcamp wells in the southern part of the field were not included in this unit because it is not feasible for the two areas of the field to be flooded together.

The remaining primary oil reserves were determined by extrapolation of the decline trends exhibited by the rate versus time production curves prepared for the wells in the proposed unit area. The estimated primary ultimate oil recovery for the nine wells in the proposed unit area is 1,182,849 barrels. The cumulative oil production as of March 1, 1973 was 1,020,766 barrels, leaving oil reserves of 162,083 barrels. Production for February, 1973 was 1,202 barrels of oil, 1,275 MCF of gas and 1,014 barrels of water.

A secondary to primary oil recovery ratio under waterflood operations was calculated to be approximately 0.39/1.00. The additional oil recovery under secondary recovery operations is therefore estimated to be 461,255 barrels. The total future recoverable oil from April 1, 1973, remaining primary plus incremental secondary reserves, equals 623,338 barrels.

Secondary recovery plans call for the injection of water into the Wolfcamp reservoir through three wells as depicted on Exhibit No. 1. These wells are the Texaco - Harris No. 3, the Tamarack-Lipscomb Estate "Harris" No. 1, and the Tamarack - Harris No. 1.

Exhibits No. 2, 3 and 4 are schematic diagrams showing the casing and cementing program for each of the proposed injection wells. Also shown

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TAMARACK EXHIBIT NO. 2
CASE NO. 4959 - 4960

primary drive: solu gas.
estimate 31 % oil recy on secondary.

are perforations, total and plugged back depths, and planned injection packer settings.

Proposed water injection rates are 1,000 barrels per well per day for a total of 3,000 barrels per day for the project. Reservoir void fillup calculations indicate that a production response should occur fifteen months after initiation of water injection.

Amerada has indicated they will furnish water from Devonian wells in Section 11, Township 13 South, Range 34 East, for use in the proposed unit. A water compatibility test was made between the Devonian and the Wolfcamp waters, as shown by Attachment No. 1, a letter from Mr. Waylan C. Martin of the Martin Water Laboratories, Monahans, Texas. The Devonian water contains hydrogen sulfide and the Wolfcamp water contains soluble iron. Mr. Martin states: "the mixing of these waters in equal quantities would result in the precipitation of essentially all of the iron and sulfide from the waters." Suitable surface facilities will be provided to eliminate this incompatibility. Surface water injection pressures are not expected to exceed 1,500 psig.

Yours very truly,

SIPES, WILLIAMSON, RUNYAN & AYCOCK, INC.

Roy C. Williamson, Jr.

Roy C. Williamson, Jr., P. E.

/kp

attachments

WC prod about 1000 bbls wtr in Feb.

estimate total inj will be 5,000,000 bbls wtr.

expect surf inj pres up to 1000 1500 psi

proj life expect to be 15 yrs.

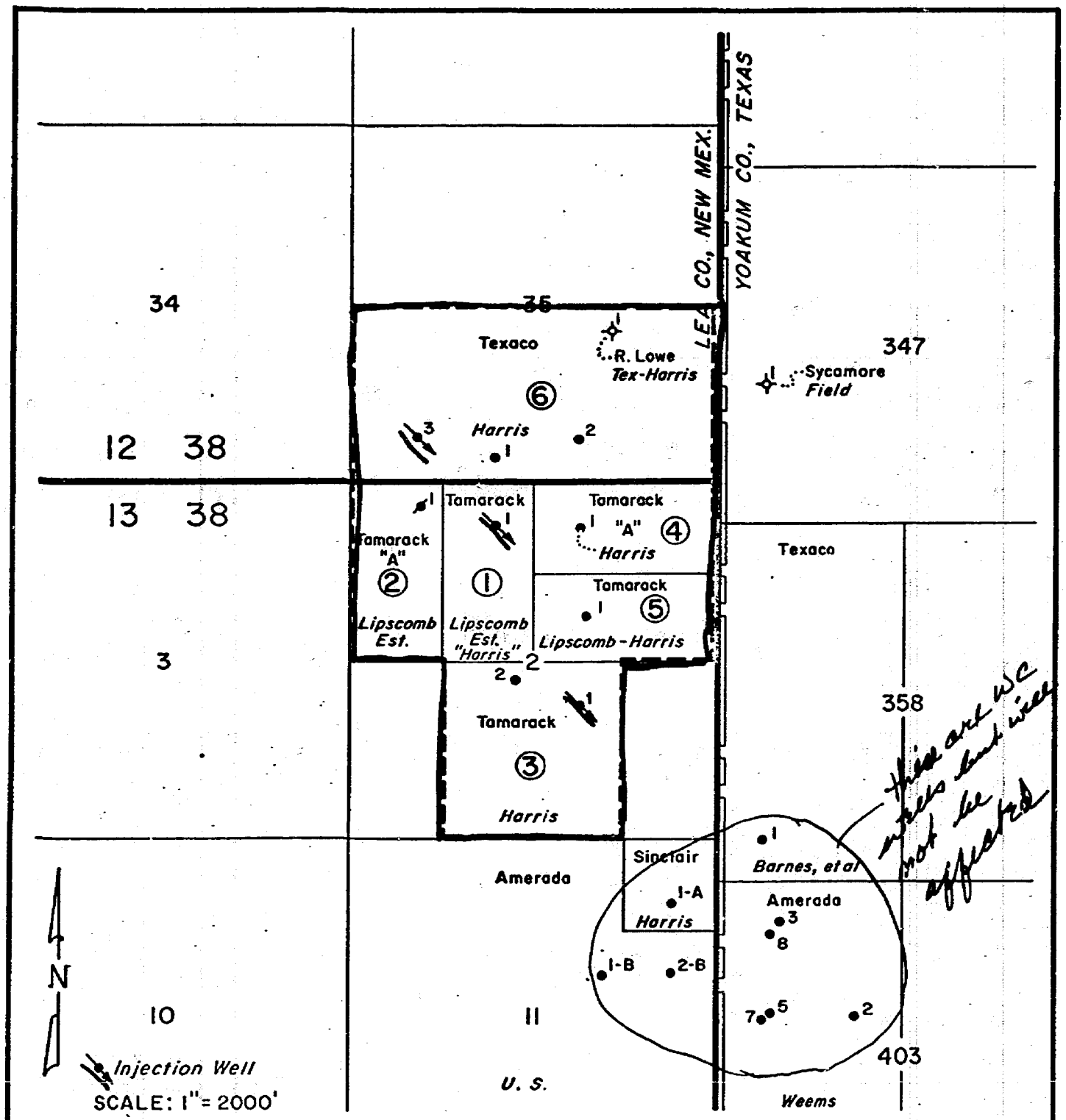


EXHIBIT 1

TO UNIT AGREEMENT

BRONCO (WOLFCAMP) UNIT

BRONCO (Wolfcamp) FIELD

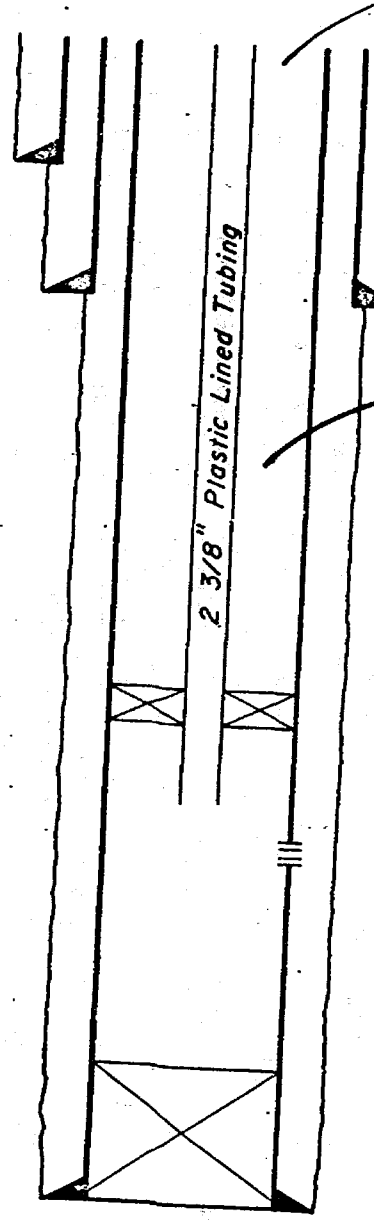
LEA COUNTY, NEW MEXICO

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Tamarack EXHIBIT NO. 3
CASE NO. 4959- 4960

Tamarack — No. 1
Harris

13 3/8" at 325'
with 260 sx.

8 5/8" at 4572'
with 200 sx.



pressure gauge

inert substance

this well
current prod
530 BO
cumul. prod
173,000 bbls

Set Packer at 9018'

Perfs. 9068'-9100'

P.B. 9154'

5 1/2" at 9700'
with 370 sx.

T.D. 9700'

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TAMARACK EXHIBIT NO. 4
CASE NO. 4959-4960

EXHIBIT 2

INJECTION WELL

BRONCO (WOLFCAMP) UNIT

BRONCO (Wolfcamp) FIELD
LEA COUNTY, NEW MEXICO

SCHLUMBERGER

COMPANY JAMES G. BROWN AND ASSOCIATES

WELL HARRIS # 1

FIELD BRONCO

LOCATION SEC. 2-13S-38E

COUNTY LEA

STATE NEW MEXICO

Other Surveys

LES ML F.I

Location of Well

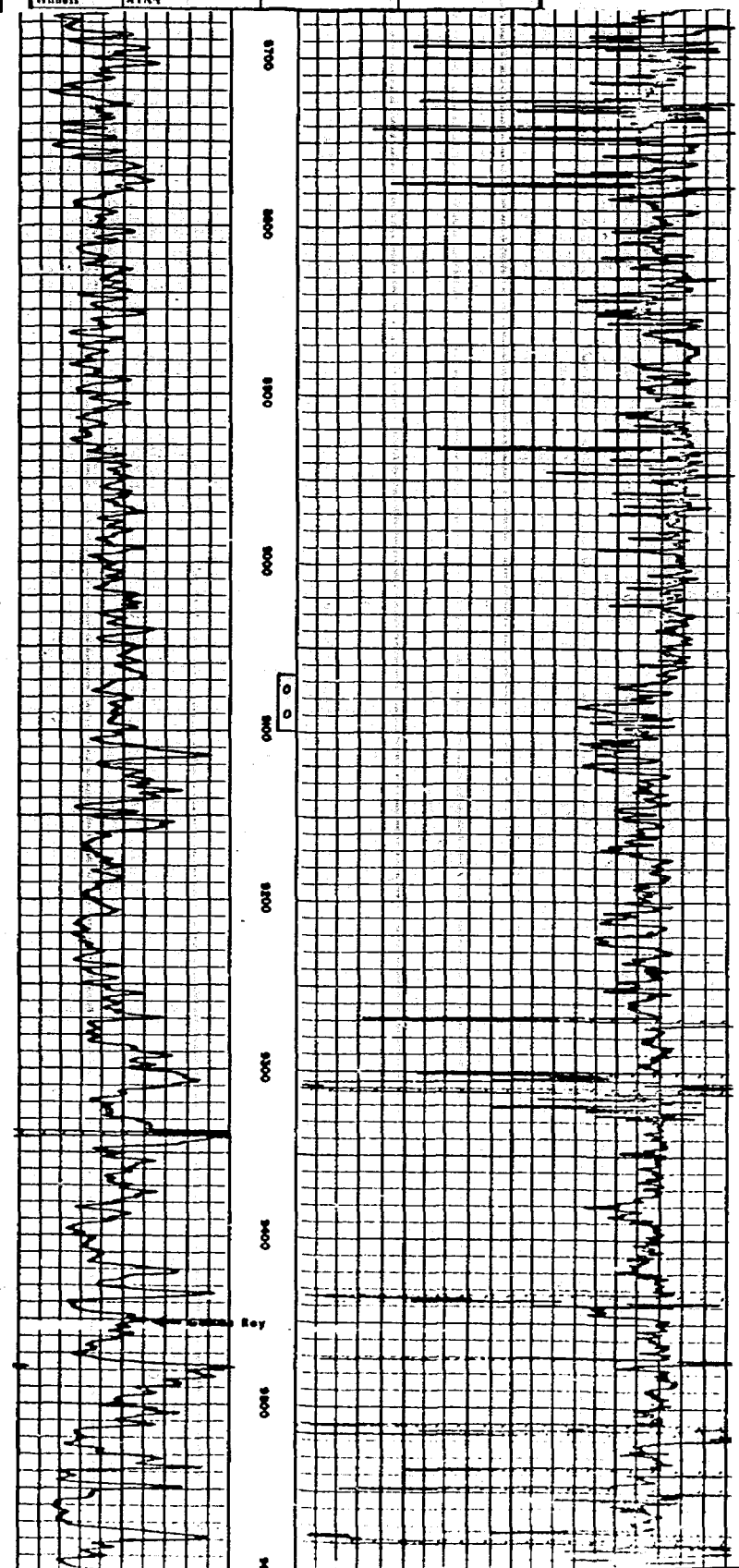
1815 FROM E/L
2110 FROM S/L

Elevations: K.B. 3810
D.F. 3809
or G.L. 3799

COUNTY LEA
FIELD or LOCATION BRONCO
WELL HARRIS # 1
COMPANY JAMES G. BROWN AND ASSOCIATES

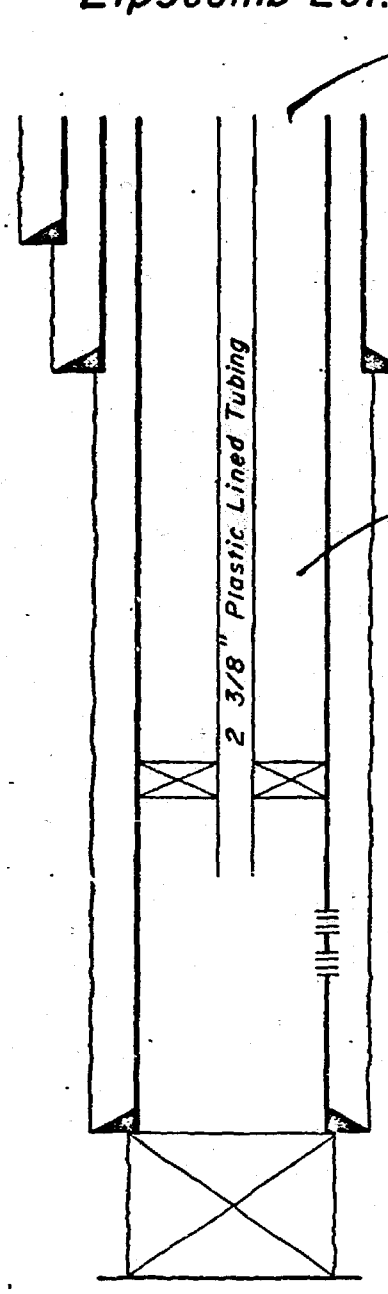
Log Depths Measured From KB 11 Ft. above GL

RUN No.	ONE		
Date	4-4-62		
First Reading	9696		
Last Reading	4580		
Feet Measured	5116		
Csg. Schlum.	4580		
Csg. Driller	4575		
Depth Reached	9703		
Bottom Driller	9700		
Mud Typ.	GEL CAUSTIC SODA ASH CRISCOSE		
Dens. | Visc.	9.3 | 37		
Mud Resist.	.33 @ 75 °F	@ °F	@ °F
" Res. BHT	.16 @ 158 °F	@ °F	@ °F
" pH	8.5 @ °F	@ °F	@ °F
" Wtr. Loss	14.8 cc 30 min	cc 30 min	cc 30 min
" Rmf	.28 @ 76 °F	@ °F	@ °F
Bit Size	7 7/8"		
Spacing:			
T.J. 1 R.	9696 To 8496	To	To
T.J. 2 R.	8496 To CSG.	To	To
Opr. Rig Time			
Truck No.	3701-HOBBS		
Recorded by	OWEN-BROWN		
Witness	WYNN		



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TAMARACK EXHIBIT NO. 5
CASE NO. 4959-4960

Tamarack — No. 1
Lipscomb Est.



gauge

inert fluid

13 3/8" at 363'
with 350 sx.

8 5/8" at 4575'
with 2400 sx.

this well currently not prod

22800 lbs annulus

Set Packer at 8997'

Perfs. 9047'-64'
Perfs. 9072'-90'

5 1/2" at 9465'
with 200 sx.

P. B. 9465'

T. D. 11,918'

EXHIBIT 3

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TAMARACK EXHIBIT NO. 6
CASE NO. 4959-4960

INJECTION WELL
BRONCO (WOLFCAMP) UNIT
BRONCO (Wolfcamp) FIELD
LEA COUNTY, NEW MEXICO.

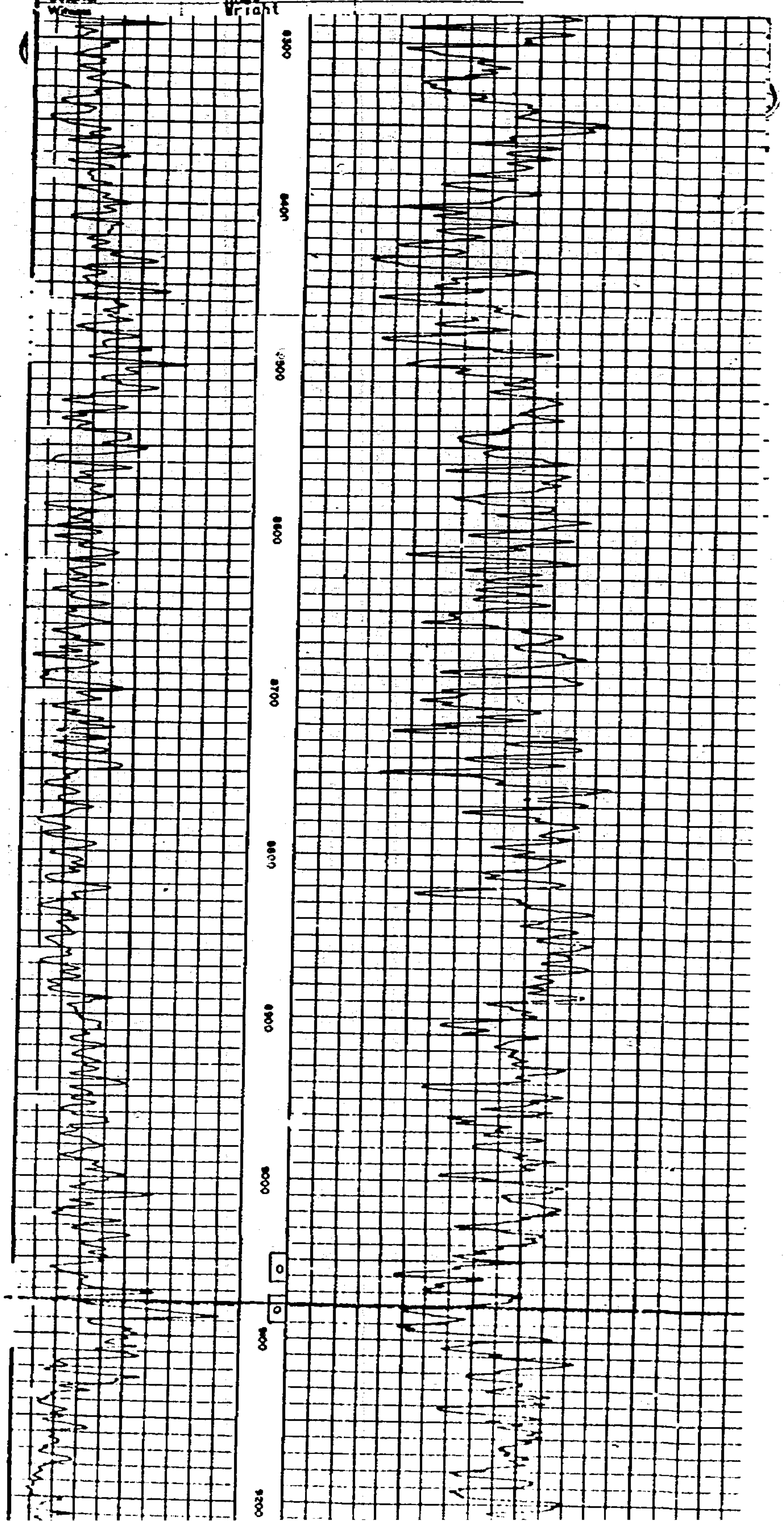
SCHLUMBERGER WELL SURVEYING CORPORATION

COUNTY	Lea
FIELD or LOCATION	Wildcat
WELL	Harris #1
COMPANY	R.C. Lipscomb

COMPANY R.C. LIPSCOMB		Other Surveys ES
WELL HARRIS # 1		Location of Well 660' f N/L 1980' f W/L
FIELD WILDCAT		
LOCATION SEC. 2-13S-30E		Elevation: D.F. K.B. 3809 or G.L.
COUNTY LEA		
STATE NEW MEXICO		FILING No.

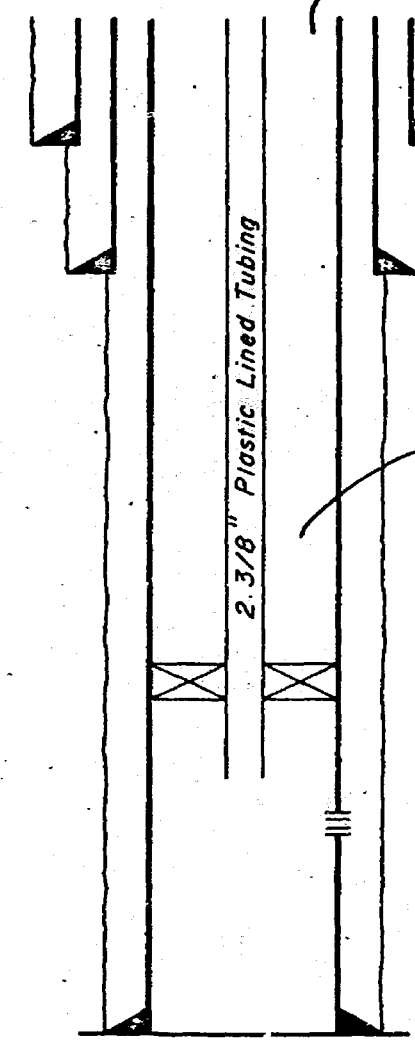
Log Depths Measured From KB 15.0 Ft. above GL

RUN NO.	1	
Date	10-29-57	
First Reading	11922	
Last Reading	73	
Footage Measured	11849	
Max. Depth Reached	11923	
Bottom Driller	11918	
Maximum Temp. °F.	160	
Fluid Nature	Chem-Gel	
Fluid Level	73	
Casing Size	8.58 in.	in.
Casing Weight	lb. 0 to 4575	lb. to
Casing Size	in.	in.
Casing Weight	lb. to	lb. to
Bit Size	7 7/8 in. CSG to TD	in. to
Bit Size	in. to	in. to
No. Counters Used	1	
Type Equipment	GNAM-4	
Type Panel	GNP-C	
Opr. Rig Time	4 Hrs.	
Truck No.	1762-Hobbs	
Observer	Howe	
Witness	Wright	



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Tamarack EXHIBIT NO. 7
CASE NO. 4959-4960

Texaco — No. 3
Harris



13 3/8" at 454'
with 450 sx.

8 5/8" at 4520'
with 1500 sx.

SI since 1969
Cum Prod 53,000 bbls

gauge at surface.

inert fluid

Set Packer at 9027'

Perfs. 9077'-90'

5 1/2" at 9168'
with 400 sx.

T. D. 9168'

EXHIBIT 4

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TAMARACK EXHIBIT NO. 8
CASE NO. 4959-4960

INJECTION WELL
BRONCO (WOLFCAMP) UNIT
BRONCO (Wolfcamp) FIELD
LEA COUNTY, NEW MEXICO

P

SCHLUMBERGER WELL SURVEYING CORPORATION

COMPANY WHITEHALL OIL COMPANY

WELL H. H. HARRIS # 1

FIELD N. W. BRONCO

LOCATION SEC. 35, 12S-38E

COUNTY LEA

STATE NEW MEXICO

Other Surveys
IES, ML

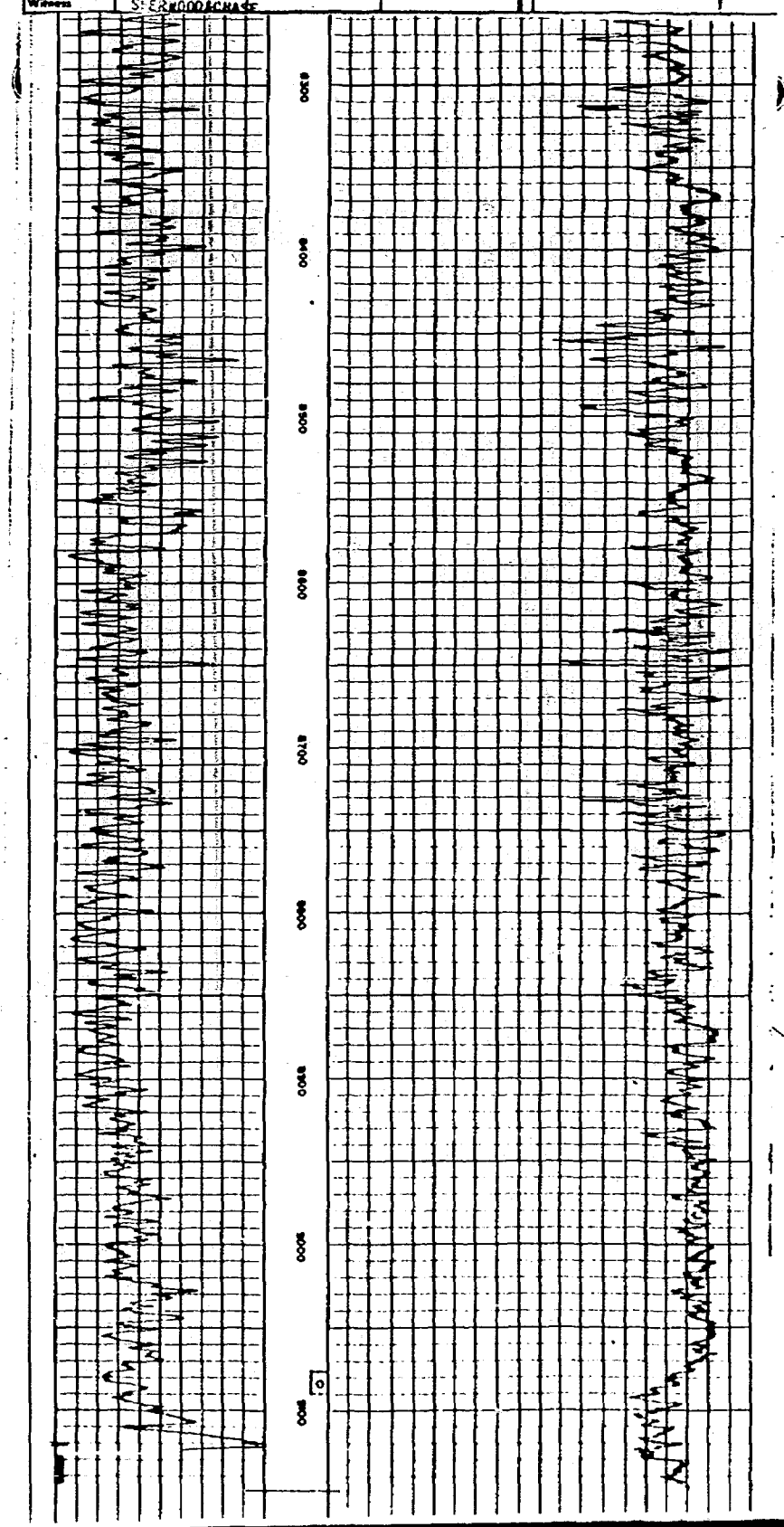
Location of Well
990'FWL
660'FSL

Elevation: K.B. ____
D.F. ____
G.L. 4765

COUNTY LEA | FIELD or LOCATION N. W. BRONCO | WELL H. HARRIS # 1 | COMPANY WHITEHALL OIL CO.

Log Depths Measured From KB 14.5 Ft. above GL

RUN No.			
Date	12-19-59		
First Reading	9145		
Last Reading	4519		
Feet Measured	4627		
Cas. Schlum.	4518		
Cas. Driller	4520		
Depth Reached	9148		
Bottom Driller	9150		
Mud Net.	CHEM. GEL		
Dens. | Visc.	8.7 | 44		
Mud Resist.	.45 @ 90 °F	@ °F	@ °F
" Res. MHT	.25 @ 153 °F	@ °F	@ °F
" pH	8.5 @ ' °F	@ °F	@ °F
" Wtr. Loss	7.8 cc-30 min	cc 30 min	cc 30 min
" Rmf	.14 @ 153 °F	@ °F	@ °F
Bit Size	7 7/8"		
Spacing			
3'	CSG. To TD	To	To
	To	To	To
Opr. Rig Time	4 HRS.		
Truck No.	2524 LIB		
Recorded By	BIRKHEAD		
Witness	STERNBERGER/CHASE		



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TRANSRACK EXHIBIT NO. 9
CASE NO. 4959-4960

Martin Water Laboratories

P. O. BOX 1468
MONAHANS, TEXAS 79756
PHONE 943-3234 or 563-1040

WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

406 W. ILLINOIS
MIDLAND, TEXAS 79701
PHONE 683-4521

June 22, 1971

Mr. J. L. Davis
Enjay Chemical Company
P. O. Box 2100
Hobbs, New Mexico

Subject: Recommendations relative to analyses #671120 and #671121 (6-21-71), Tamarack Oil's Wolfcamp water & Amerada-Hess's Devonian water.

Dear Mr. Davis:

The attached analytical study was primarily designed to establish compatibilities between these two waters. The interpretations of these results are as follows:

1. Neither of the individual waters show evidence of either calcium carbonate or calcium sulfate scaling tendencies. In like manner, any mixture of these waters should not have any problem in this regard.

2. It is noted that the Wolfcamp water contains 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. The equal mixture of these two waters would result in the precipitation of approximately 7.85 mg/l or 2.75 pounds of iron sulfide per 1,000 barrels of the mixed water. We generally classify this as a significant incompatibility, in that this would result in a water quality that would be undesirable for injection or disposal.

3. Other than the above item #2, we find no evidence of any significant detrimental condition resulting from the mixing of these two waters.

Yours very truly,

Waylan C. Martin

WCM/sb

cc: Mr. J. P. Kindle

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
TAMARACK EXHIBIT NO. 10
CASE NO. 4959-4960

TAMARACK PETROLEUM COMPANY, INC.

910 BANK OF THE SOUTHWEST BLDG.
MIDLAND, TEXAS 79701

TELEPHONE: MUtual 3-5474

April 12, 1973

Case 4960

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico 87501

Attention: Mr. D. S. Nutter

Gentlemen:

Please consider this our request for hearing to approve, both Unitization and Secondary Recovery by water flooding the Unit Area, our Bronco Wolfcamp Unit, Bronco Wolfcamp Field, Lea County. It is requested that these hearings be placed on your docket for May 9, 1973.

The following described land constitutes the Unit Area:

S/2 of Section 35, T-12-S, R-38-E, N.M.P.M.

N/2, E/2 SW/4 and W/2 SE/4 of Section 2,
T-13-S, R-38-E, N.M.P.M.

The Unit Area contains 761.62 acres, more or less, which is all Fee land.

As required by Rule 701-B of the Rules and Regulations of the New Mexico Oil Conservation Commission, the following material is submitted with the application.

1. Plat showing the unit area and the location of the proposed injection wells.

2. Logs of proposed injection wells.

3. Diagrammatic sketch of proposed injection wells.

The "Unitized Formation" is the Wolfcamp zone, more specifically defined as occurring between 8940 feet and 9138 feet on the Schlumberger Gamma Ray - Sonic log dated May 22 and June 18, 1963 for the Tamarack - Harris "A" No. 1 Well.

It is anticipated that a total volume of 3,000 barrels per day will be injected in the Unit Area. This water will be supplied by Amerada Hess Corporation from their Bronco (Devonian) wells to the south of the Unit Area.

If any additional information is required in connection with this application, please advise.

Very truly yours,

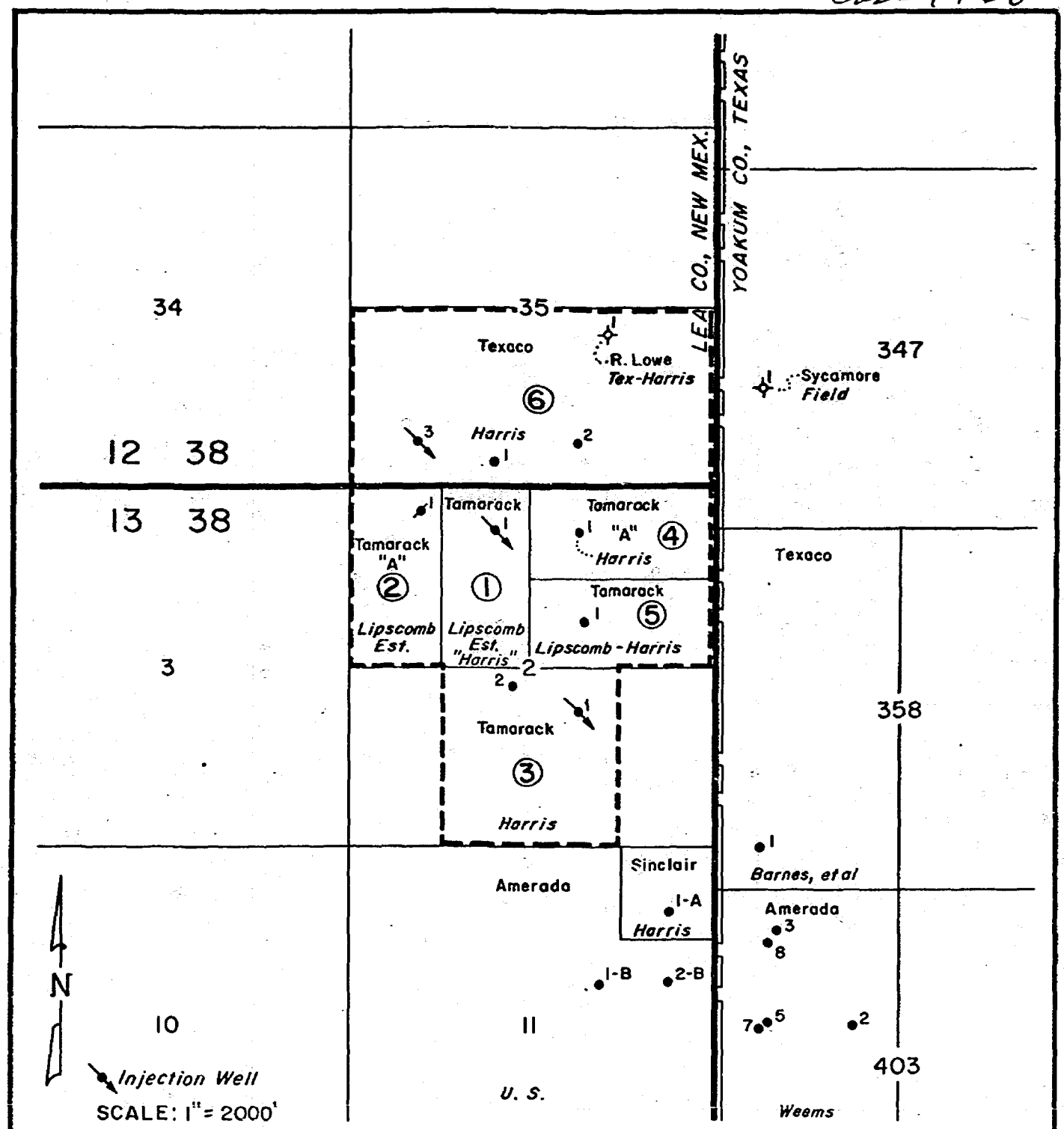
TAMARACK PETROLEUM COMPANY, INC.

Albert G. Metcalfe

AGM: ls

Enclosures

Case 4960



EXHIBIT

TO UNIT AGREEMENT

BRONCO (WOLFCAMP) UNIT

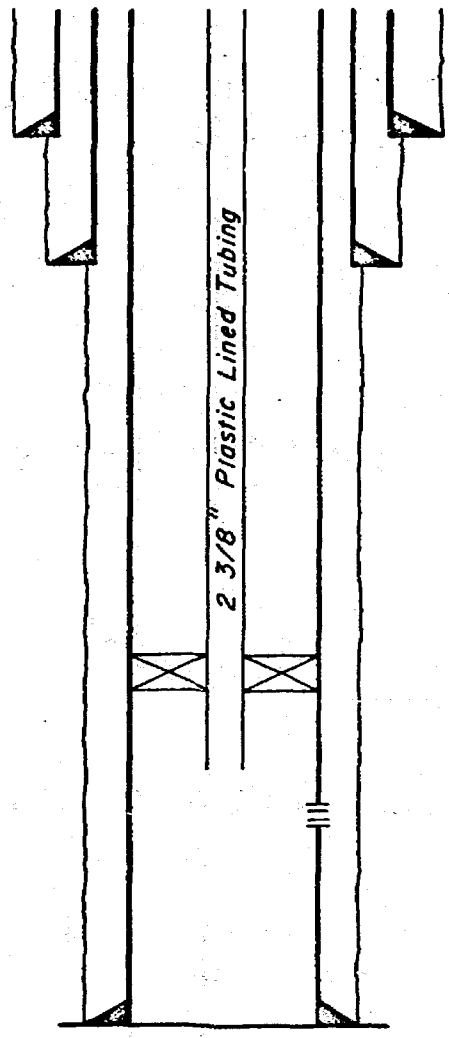
BRONCO (Wolfcamp) FIELD

LEA COUNTY, NEW MEXICO

Texaco — No. 3
Harris

13 3/8" at 454'
with 450 sx.

8 5/8" at 4520'
with 1500 sx.



Set Packer at 9027'

Perfs. 9077'–90'

5 1/2" at 9168'
with 400 sx.

T. D. 9168'

EXHIBIT

Case 4960

INJECTION WELL

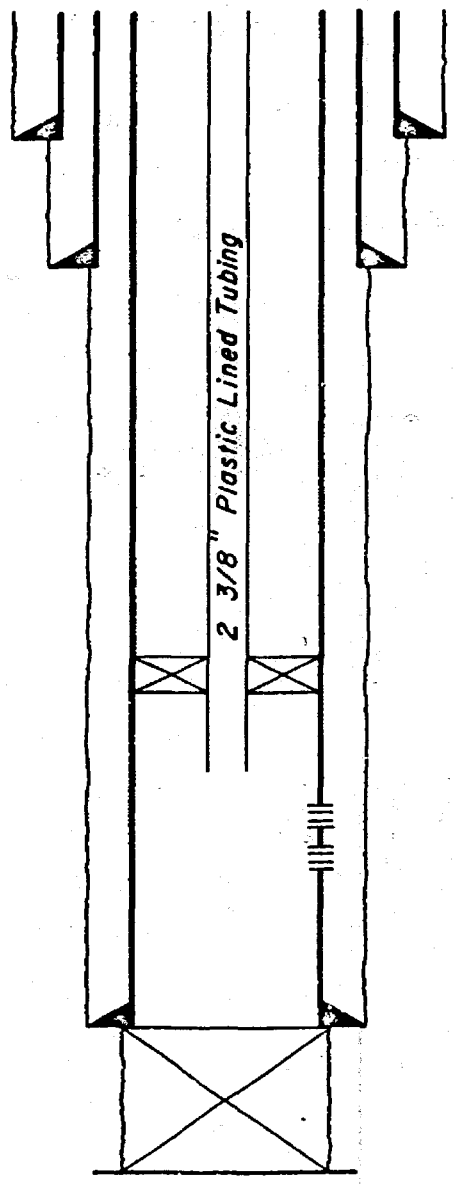
BRONCO (WOLFCAMP) UNIT

BRONCO (Wolfcamp) FIELD
LEA COUNTY, NEW MEXICO

Tamarack — No. 1
Lipscomb Est.

13 3/8" at 363'
with 350 sx.

8 5/8" at 4575'
with 2400 sx.



Set Packer at 8997'

Perfs. 9047'-64'
Perfs. 9072'-90'

5 1/2" at 9465'
with 200 sx.

P. B. 9465'

T. D. 11,918'

EXHIBIT

Case 4960

INJECTION WELL

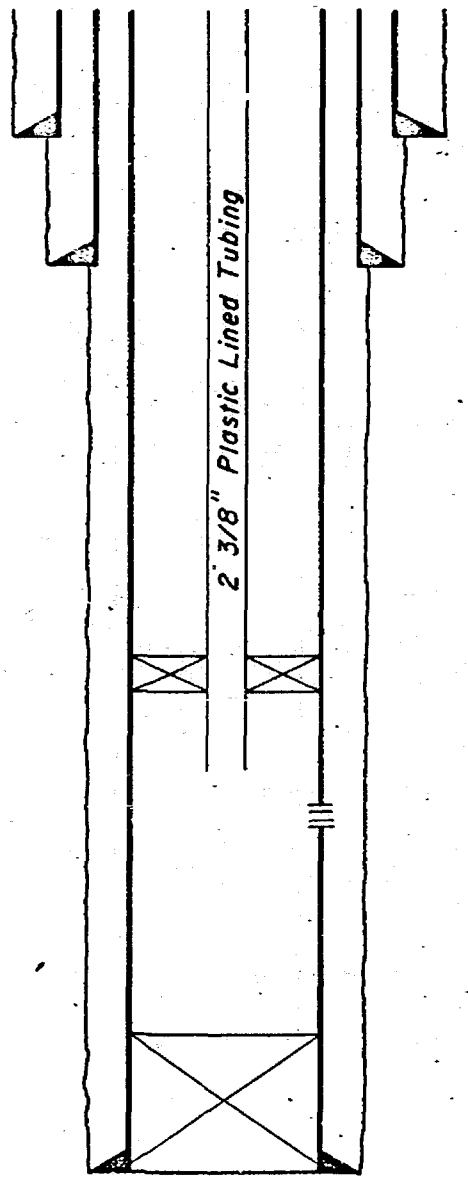
BRONCO (WOLFCAMP) UNIT

BRONCO (Wolfcamp) FIELD
LEA COUNTY, NEW MEXICO

Tamarack — No. 1
Harris

13 3/8" at 325'
with 260 sx.

8 5/8" at 4572'
with 200 sx.



Set Packer at 9018'

Perfs. 9068'-9100'

P.B. 9154'

5 1/2" at 9700'
with 370 sx.

T.D. 9700'

EXHIBIT

INJECTION WELL

Case 4960

BRONCO (WOLFCAMP) UNIT

BRONCO (Wolfcamp) FIELD
LEA COUNTY, NEW MEXICO

DRAFT

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 4960

Order No. R- 4528

APPLICATION OF TAMARACK PETROLEUM COMPANY, INC.
FOR A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 9, 1973, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of May, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Tamarack Petroleum Company, Inc., seeks authority to institute a waterflood project in the Bronco Wolfcamp Unit Area, Bronco-Wolfcamp Pool, by the injection of water into the Wolfcamp formation through three injection wells in Sections 35, Township 12 South, Range 38 East, NMPM, and Section 2, Township 13 North, South, Range 38 West, East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tamarack Petroleum Company, Inc., is hereby authorized to institute a waterflood project in the Bronco Wolfcamp Unit Area, Bronco-Wolfcamp Pool, Lea County, New Mexico, by the injection of water into the Wolfcamp formation through the following-described wells: ~~in Township~~ ~~North, South, Range~~ ~~West, East, NMPM,~~ ~~County, New Mexico:~~

Township 12 South, Range 38 East, NMPM

Texaco Harris Well No 3 Unit M Section 35

Township 13 South, Range 38 East, NMPM

Tamarack Lipscomb well No 1 Unit C Section 2

Tamarack Harris well No. 1 Unit J Section 2

(2) That the subject waterflood project is hereby designated the Tamarack Bronco Wolfcamp Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

(1) That injection into each of the aforesaid wells shall be through a 2⅜-inch plastic-lined tubing set in a packer located as near as practicable to the uppermost casing perforation; that the casing-tubing annulus shall be loaded with an inert liquid and equipped with a pressure gauge at the surface

Application of Tamarack Petroleum Company Inc for a waterflood project. Lea Co., N. Mex.

Applicant, in the above styled cause, seeks authority to institute a water flood project by the injection of water into the Wolfcamp formation through three wells in its Bronco Wolfcamp Unit Area, Bronco Wolfcamp Pool, Lea County, New Mexico.