

CASE 4406: Application of RESERVE  
OIL AND GAS COMPANY FOR WATERFLOOD  
PROJECT, LEA COUNTY, NEW MEXICO.

15

2  
11

Case Number

4406

Application  
Transcripts.

Small Exhibits

ETC.

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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
August 19, 1970

EXAMINER HEARING

IN THE MATTER OF:

Application of Reserve  
Oil and Gas Company  
for a unit agreement,  
Lea County, New Mexico

Case No. 4405

AND

IN THE MATTER OF:

Application of Reserve  
Oil and Gas Company  
for a waterflood project  
Lea County, New Mexico.

Case No. 4406

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING



MR. NUTTER: First Case, No. 4405.

MR. HATCH: Application of Reserve Oil and Gas Company for a unit agreement, Lea County, New Mexico.

MR. LOSEE: I am A. J. Losee, Artesia. I have two witnesses who have earlier been sworn. This is a companion case to 4406. I request they be consolidated for hearing purposes only.

MR. NUTTER: We will call 4406.

MR. HATCH: 4406, Application of Reserve Oil and Gas Company for a waterflood project, Lea County, New Mexico.

MR. NUTTER: For purposes of testimony, Case 4405 and Case 4406 will be consolidated. Both your witnesses are sworn and under oath. You may proceed, please.

MR. LOSEE: Let me first, Mr. Examiner, in our application on 4405, which is for the unit agreement approval of the South Langlie-Jal Unit agreement, ask to amend it so that the unadvertised formation is shown to be the Seven Rivers and down to a 150 feet above the base of the Queen, in affect, deleting the bottom 150 feet of the Queen.

MR. NUTTER: You are amending your application since the vertical limits are not specified in the legal notice of this case.

MR. LOSEE: We also wish to amend our application in 4406 to delete three proposed injection wells at this time

realizing that they may subsequently be converted to injection. It's unit tract No. 7, Well No. -- page two, Unit K, Section 8. Delete it down the last two wells, Unit Tract 9, Well No. 1, Unit K, Section 17, Tract Unit, Tract 10, Well No. 2-D, Unit M, Section 17.

MR. NUTTER: The three or four mentioned wells will be deleted from the application and so the application, Mr. Losee, in 4406 would be for institution of waterflood project of water injection through ten wells into the Seven Rivers and Queen formations.

MR. LOSEE: Yes, sir.

MR. NUTTER: So the application is amended, then, and we will hear the case for ten wells in this waterflood.

JOHN N. PINGRIE,

a witness, being first duly sworn according to law, upon his oath, testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q Mister Pingrie, when did the engineer commence study on the South Langlie-Jal Unit agreement?

A In June 1969.

Q How many acres are within the proposed unit area?

A One thousand eighty acres.

Q Are any of these lands owned by the US or State of New Mexico?

- A No, no land owned by either one.
- Q What formations are unadvertised under the South Langlie-Jal Unit agreement?
- A From the top of Seven Rivers down to 150 feet above the base of the Queen formation.
- Q What participation formula is adopted in Article 5 of the unit agreement?
- A It has just one phase, which is a hundred per cent primary.
- Q What are some of the other participation factors considered by the operators?
- A Six other developed acres, 1968 oil production, 1968 casing head production, 1968 current income cumulative oil and remaining primary.
- Q Why were these other factors disregarded?
- A Because the working interest owners could not agree on equitable participation using any of these factors.
- Q Under the provisions of Article 9 of the unit agreement, when does a tract become qualified for participation?
- A When we have received one hundred per cent of the interest owners, of the working interest owners for application unit and 85 per cent of the royalty owners for ratification of the interest and 85 per cent of the royalty interest owners for ratification of the unit.

Q Who is designated as unit operator?

A Reserve Oil and Gas Company.

Q Has Reserve contacted all of the interest owners and given them an opportunity to commit their interest to the unit agreement?

A We have contacted all the owners with the exception of two, one owner under Tract 5 and one royalty owner under Tract 6.

Q Why did you not contact those people?

A These people -- we were unable from pipeline purchasers or from internal records -- we have in one case contacted the people's attorney and believe we will be able to get ahold of them soon.

Q Under the requirement of one hundred per cent of the working interest and 85 per cent of the royalty interest are all of the tracts within this unit qualified for participation?

A Yes, upon the ratification of Atlantic Richfield Company. We have not secured their ratification. However, we understand they have wired the New Mexico Oil Conservation Commission to the effect they are agreeable and have ratified the unit subject to ratification by their production payment holders.

Q Did they also advise you that their production payment holders had orally consented on the telephone to

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commitment of their interest to this unit?

A They have so advised.

Q What tracts are affected by Atlantic's ratification or without their ratification would not be committed?

A Two, three, four and eleven.

Q Please refer to what is Exhibit 2 and explain what is shown by this exhibit, Mr. Pingrie.

A Exhibit 2 is a schedule by tract listing the working interest owners and of the overriding royalty and the royalty interest owners under each tract. The percentage tract ownership interest set over for each owner is their net interest in that lease and tract. The total interest figures total forty-seven hundred dollars, which, in addition to showing, calculate the hundred per cent ownership under the least. You will note in pencil that there has been some percentages set out as to the signed and unsigned portion under each tract and under each owner of the per cent that is signed and unsigned.

Q Does this Exhibit 2 show that all tracts have at least a hundred per cent of the working interest and at least 85 per cent of the royalty interest except for Atlantic's commitment under Tracts 2, 3, 4 and 11?

A Yes, it does so show.

Q Under Article 17, when does the unit become effective?

A The unit will be effective as determined by the working



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interest owners and set out by a Certificate of Effectiveness in Lea County, New Mexico, after the current three things: first, that we have 80 per cent of the unit area has qualified by ratification of each tract as to one hundred per cent of the working interest owners and 85 per cent of the royalty interest owners and after approval of the unit by the Oil Conservation Commission and three, the filing of the unit agreement of record in Lea County, New Mexico.

Q Now, with Atlantic's commitment all of these things will have been accomplished except one, the approval of the Commission and the Certificate of Effectiveness?

A And the recording.

Q And the recording. In your opinion, is the plan contained in the unit agreement for development of and operation of the South Langlie-Jal unit agreement a proper conservation measure?

A Yes.

Q Will it protect the correlative rights within the unit area?

A Yes, it will.

MR. LOSEE: That's all the questions I have.

MR. NUTTER: Are there any questions of Mr. Pingrie?

You may be excused.

MR. LOSEE: We would ask the Commission to make the telegram a part of the record.

MR. NUTTER: Yes, it will be made a matter of record. You might read that into the record right now.

MR. HATCH: "A telegram addressed to the Oil Conservation Commission dated August 18, 1970, Reference Case 4405, unit agreement, Case 4406, waterflood docket number 19-70, South Langle-Jal Unit, Lea County, New Mexico. Atlantic Richfield Company has this date approved the referenced unit agreement dated May 1, 1970 and has executed ratification thereof. The execution of said ratification is subject to obtaining the consent of the production payment owners. John Nolan for Atlantic Richfield Company."

WYNDELL THOMAS,

a witness, after first being duly sworn according to law, upon his oath, testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q You are the same Wyndell Thomas that testified earlier in 4402, 3 and 4?

A Yes, sir.

Q What is the purpose of this application in 4406?

A Reserve Oil and Gas Company seeks approval to install a waterflood project in a portion of the Jal-Mattix and Langle-Mattix Pools located in Lea County, New Mexico in order to inject water into Seven Rivers and Queen formation for the purpose of recovering oil reserves

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which otherwise would not be produced.

Q How many acres are included within the project area?

A We have a total of 1,080 acres in the project area.

Q How many wells are there within the project area?

A A total of twenty-seven wells.

Q Are there any other waterflood projects in this area?

A Yes, sir, there are several projects in operation in this reservoir. The nearest project is the Langlie-Mattix Woolworth Unit located approximately one and one half miles to the northeast of this proposed unit. There are two projects of the north boundary of the Langlie-Mattix Woolworth Unit which are cooperative injection projects operated by Shell and George Buckels on the south boundary of the Langlie-Mattix Woolworth Unit. Gulf operates the Stewart Langlie-Mattix Unit. There are several other projects planned in the general area and Union Texas Petroleum is in the final stages of forming their Langlie-Jal Unit, which will join the northern and eastern boundaries of this proposed unit.

Q This proposed waterflood project covers only a portion of the pool, does it not?

A That's correct.

Q Have you negotiated or entered into any lease or borderline agreements?

A Not as yet. However, we plan to cooperate with the



Langlie-Jal Unit on our north and east boundaries.

It will be necessary for the Langlie-Jal Unit to become effective before any agreement can be reached. We will show later the initial well has only one injection well which will directly offset the proposed Langlie-Jal Unit and as the injection program is expanded, two additional wells will offset the Langlie-Jal Unit and we feel confident we will be able to work out a suitable boundary agreement with that unit which will be mutually beneficial.

Q Do you feel there will be any need for any lease-line agreements on the west and south boundaries of the unit?

A No, all the wells which are adjacent to the west unit boundary are producing from the Yates zone which is above the interval proposed for unitization. Two of these wells, the Dowport Winters "B" Number 2 and the Ralph Lowe, Maggie Rose Number 3 are Yates gas wells and the remaining wells to the west are Yates oil wells. Initially, no lease-line injection agreement will be required or desirable on the southern boundary of the unit since we do not plan to inject any water into the wells located adjacent to this boundary. If there is response to our initial injection program, we do plan to convert the Reserve Oil and Gas Company and Woolworth D-2 from a producer to an injector at such time as this well



is converted. It may be possible to work out a suitable boundary injection agreement with the offset operator to the south which would be beneficial to both parties.

Q If any of these previously mentioned waterflood projects responded to water injection?

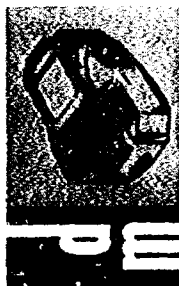
A Yes. Langlie-Mattix Woolworth Unit and the Shell and Buckles projects have all shown favorable response to the water injection operation. The Gulf Stewart Langlie-Mattix injection program has not been in operation for a sufficient time to obtain response to the program.

Q Are each of these units in the Langlie-Mattix Pool designated by the Commission?

A Yes.

Q Are the wells in the South Langlie-Jal Unit also classified in the Langlie-Mattix Pool?

A No, the wells in the proposed South Langlie-Jal Unit are classified in the Jal-Mattix Oil Pool by the Commission. The proposed vertical unitized interval of the project area covers the lower portion of the Jal-Mattix Pool classification and all but the lower 150 feet of the Langlie-Mattix Pool classification. The vertical limits of the Jal-Mattix Oil Pool are designated to be from the top of the Tansil formation to a point 100 feet above the base of the Seven Rivers. However, we do not



propose that the entire interval designated as the vertical limits of the Jal-Mattix Oil Pool be included in the unitized interval. Only that interval from the top of the Seven Rivers formation to a point 100 feet above the base of the Seven Rivers. In summary, the vertical interval to be unitized is the entire Seven Rivers formation and all but the lower 150 feet of the Queen formation.

Q And the reason you actually have deleted the lower hundred and fifty feet of the Queen formation is by reason of ownership of the horizons?

A That is correct and as well as the zones dipping into water along the western boundary.

Q You previously stated that the purpose of the waterflood application was to inject water into Seven Rivers and Queen formations. Would you tell us about the reservoir in this project area?

A If you will refer to Exhibit 2, we have shown a typical well log from one of the wells within the unit area and we have noted on this log the top of the proposed unitized interval and the bottom of the proposed unitized interval, the average depth of these sands, producing sands, in the proposed unit is approximately 3,270 feet. The reservoir rock consists of dolomite in the Seven Rivers formation, having a fine crystalline

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anhydrite imbedded with fine grained sandstone. The Queen sands may be described as fine grained sandstone slightly anhydritic with some silty shale partings. The subsurface formations within the unit lie on the west flange, on the northeast, southwest and the anticline structure in the proposed area is elongated anticline dipping steeply to the southwest. If we would refer to Exhibit 3, which is a structure map contoured on top of the pay zone, you will note the nosing of the contour lines down towards the southwest portion of the unitized area. Oil-water contact at approximately 312 feet subsea defines the down-dip productive limit to the west and southwest side of the unit boundary. The gas-oil contact is present at an estimated 100 feet subsea. Pay sections made up of a series of alternating layers of sand and anhydrite. Generally, the thickness of these layers is fairly uniform. Three zones are contoured throughout the entire unit area with the lower zones dipping into water on the west and south of the unit area. From the data that we had available we determined the average porosity to be approximately 23 per cent and the average permeability and the net pay to be 23 milidarcies with a range from 0.1 to 177 milidarcies.

Q What data was available to determine these reservoir

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characteristics?

A Approximately twenty-four of the twenty-seven wells in the proposed unit have been logged and there was also core analysis available for study.

Q Is the reservoir information to determine the original oil in place?

A No, there was not sufficient core analysis for this purpose and the quality of the log is not sufficient for qualitative determination of the net pay. Therefore, no attempt was made to construct a net pay isopac map from which an estimate of the original oil in place could be computed.

Q Would you please tell us something about the primary operations in this area?

A The initial production from the unit area was in April of 1948 and by 1955 the last well had been completed. The greatest rate of development occurred during 1952 and '53 when fifteen wells were completed. The original reservoir pressure was approximately 1,450 psi at 200 fee subsea datum. However, as the development of this area was later than some of the other areas of the reservoir, reservoir pressure was less than the original reservoir pressure. The cumulative oil production from the proposed unit area to January 1, 1970, was 1,246,000 barrels. This is average of 46,000





barrels per well based on declining curve analysis. The remaining primary reserves as of January 1, 1970 were 16,400. If primary operations continue the primary reserves are anticipated to be produced by January 1 of 1971. As of January 1, 1970, the reservoir under the unit area was 98.7 per cent depleted as to remaining primary reserves. The ultimate primary recovery is estimated to be 1,262,000 barrels. As is normal for solution gas dry reservoir in the final stages of depletion the gas-oil ratio is quite high. December 1969 the average gas-oil ratio was 21,600 cubic feet per barrel. Water production during December of 1969 amounted to only 195 barrels.

Q What is the daily average production per well?

A December 1969, the average daily production per well was approximately 1.35 barrels which indicates we are in the later stages of depletion.

Q Would you please outline briefly your plans to recover additional oil by waterflood?

A If you would refer to Exhibit 4, we have shown thereon our proposed injection pattern. The initial injection program will include ten injection wells forming four closed, eighty acre, five-spot patterns. Three additional injection wells will be provided after a satisfactory response to the initial injection and

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operation will be observed. You will note those wells are shown with dashed lines. This pattern will permit cooperative lease-line injection wells with the proposed Langlie-Jal Unit on the north and east boundaries of this unit. The injection pattern will utilize existing well with no additional drilling contemplated at the present time.

Q What injection rate is contemplated at this time?

A With the initial we will inject 350 barrels per day to each injection well. The injection pressure will not exceed twelve hundred psi at the well head. However, we have designed our injection plan and distribution system for a maximum of eighteen hundred forty-five psi.

Q Specifically, how do you plan to inject water into these ten wells?

A If you will refer to Exhibit 5 and 5-A, Exhibit 5 is a diagrammatic sketch of a typically proposed singly completed injection well, whereas Exhibit 5-A is a similar sketch of the proposed dually completed injection well. Injection will be down two and three-eighths internally coated tubing below a tension-type packer, set approximately fifty feet above the casing shoe and into the Seven Rivers and Queen formation through perforations or open holes as the case may be. Except for dually completed wells, the tubing casing annulus will contain

fresh water inhibited for corrosion.

Exhibit 6 is a tabulation of the casing, tubing and packer settings for all ten injection wells. The minimum amount of cement coverage above the injection interval is 224 feet with the rest of the wells being in excess of that.

Q In this manner, will there be a positive protection against pollution of the fresh water, aquifers?

A Yes, all aquifers from the surface down to total depth of the completed interval will be protected by the existing casing streams and by maintaining their condition, also periodic checking of the pressure of tubing casing annulus by use of gauges will provide any indication of any problem.

Q Now, you mentioned some dual wells. Will you explain these a little further, please?

A The Dowport-Harrison Well No. 1 and Reserve-Bosberg Well No. 1 are both dually completed wells. Also, both of these wells are proposed injection wells. These wells are dually completed in the Yates gas zone and the proposed unitized interval. The Yates gas is produced through the tubing casing annulus and water will be injected beneath a packer into the unitized interval as previously explained from the diagramatic sketches.



Q Do you see any difficulty in preventing injection water from entering the upper gas zone?

A No, sir, in the Dowport-Harrison Well No. 1 the Yates gas is produced through casing perforations from 2,820 to 2,976 feet. Five and one half inch casing is set at 3,234 feet. The water will be injected into the open-hole interval from 3,234 to 3,355 feet with the injection packer set at approximately 3,181 feet. The Yates gas zone will be adequately protected by 208 feet of cemented casing. Essentially, the same condition exists in the Reserve-Bosberg Well No. 1. In this well, the Yates gas is produced through perforations in the seven inch casing from 2,792 to 2,900 feet. The casing set at 3,168 feet. The total depth of the well is 3,336 and in this well 224 feet of cemented casing will separate the injection interval from the bottom of the gas zone. Any communication between the water injection zone and the gas producing zone will be immediately apparent.

Q Are any of the producing wells duals?

A Yes, the Dowport-Winters "C" No. 1 is a dual completion. It produces from the Yates gas zone and the Seven Rivers Queen oil zone.

Q Would you explain the status of Reserve-Woolworth No. 4

well?

A This is a Yates well. It has never produced from the unitized interval and as a result this well will not be in a proposed unit. The same is true of the Dowport-Winters "E" No. 1 gas well. This well produces only from the Yates gas zone. Another well producing from the Seven Rivers Queen zone is also completed in the same forty acre tract. Reserve-Woolworth "B" No. 1 Well is in a similar catagory. This well is completed only in the Yates formation. Reserve-Woolworth No. 5 Well is completed in the same forty acre proration unit as the aforementioned Well No. 1. Also, the Texas Pacific Oil Company Gutman No. 1 is producing only from the Yates formation. This well will not be in the unit as the Gutman three located on the same forty acre proration unit is completed in the unitized interval and will be in the unit.

Q What is the source of your water for the project?

A The injection water will be purchased from Skelly water system. In addition to the water purchased from Skelly, all water produced with the oil will be reinjected.

Q What is the quality of the water from this system?

A The water is saline and classified as nonpotable.

Q Will you treat it prior to injection?

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A No, our injection system and tubing will be coated to prevent corrosion. However, a test or performance indicates a filtration or chemical treatment is desirable. Appropriate action will be taken at that time.

Q How much additional oil do you estimate will be recovered from the project as a result of waterflood operations?

A The proposed project is similar to another proposed and operating waterflood project in this pool. As previously mentioned, sufficient reservoir data are not available to prepare net oil isopac maps on a producing horizon. As a result, it was not possible to compute the original oil in place. Based on an analysis of the permanence of waterflood project in the area the additional oil to be recovered as a result of the injection program is estimated to be 75 per cent of the ultimate primary recovery or approximately 940,000 barrels. Recovery of this additional oil will increase the production life of the wells in the unit.

Q Do you think the waterflooding is in the best interest of conservation and prevents waste?

A Yes, on the primary operation the reservoir drive of solution gas which recovers only a small portion of the oil in place. However, under the proposed waterflood project the ultimate recovery of the oil in place from

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both primary and secondary will probably approach a total of thirty-five to forty per cent of the original oil in place.

Q How long do you think it will take you to recover this secondary oil?

A We estimate that approximately ten years will be required to recover the secondary reserve.

Q Did you prepare or were they prepared under your supervision, Exhibits one through six?

A Yes, sir.

Q Again, Mr. Pingrie, did you prepare Exhibit No. 2?

MR. PINGRIE: Yes.

MR. LOSEE: Mr. Examiner, we move the introduction of applicant's Exhibits one and two in 4405 and one through six in 4406.

MR. NUTTER: Applicant's exhibits in these cases will be admitted in evidence.

MR. LOSEE: I have no further direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Thomas, I was noticing on your Exhibit No. 6 there, the Harrison No. 1 is obviously a dual and Bosberg is obviously a dual but this Winters "D" 2 has a perforated interval as well as open-hole interval. Are those two

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both intervals in the Langlie-Mattix or what is the score on that one?

A All right, sir. The perforated interval would, in referring to Exhibit 2, would indicate that that interval is open in the Yates formation in that. that would occur on top of the Seven Rivers.

Q That would be a dolomite, wouldn't it?

A Yes, sir.

Q So this would be a dual too, wouldn't it?

A In that case, it would.

Q Will this well continue to be on production, do you know?

A The upper portion?

Q Yes.

A Not as a unit well. Not to the best of our knowledge, be continued as operated well by the present owner or --

Q Well, it appears though, from the perforated interval, that it should be classified as a dual completion there.

A Yes, sir, I do not have information available at this time to determine how the well is presently being produced.

Q And also this Woolworth B-4 apparently has a long, open-hole interval at the present time, being from 2,814 to 3,397 but I see you covered that on footnote. The lines will be set on that, won't they?



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A Yes, sir.

Q And you have an interval from 3,200 to 3,397 for injection?

A That's correct.

Q Which is the Langlie-Mattix only?

A Right.

Q Could you find out what the status is of the Winters D-2 and the upper formation there and let us know?

A Yes.

Q Before we enter an order in this case?

A Yes, sir.

MR. NUTTER: Are there any other questions of Mr. Thomas? He may be excused. Do you have anything further Mr. Losee?

MR. LOSEE: No, Mr. Examiner.

MR. NUTTER: Does anyone have anything else they want to offer in Cases 4405 and 4406? We will take the case under advisement.

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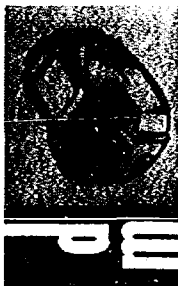
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STATE OF NEW MEXICO )  
 ) ss  
COUNTY OF BERNALILLO )

I, SOVEIDA GONZALES, 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.

*Soveida Gonzales*  
COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Bernalillo hearing of Case No. 4405-4406 held by me on 8/19, 1971.

*[Signature]*, Examiner  
New Mexico Oil Conservation Commission

# RESERVE OIL AND GAS COMPANY

1700 FIDELITY UNION TOWER, DALLAS, TEXAS 75201  
TELEPHONE: RIVERSIDE 8-0881, AREA CODE 214

April 19, 1971

Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Attention Mr. A. L. Porter, Jr.

Re: Reserve Oil and Gas Company  
South Langlie Jal Unit, Lea County  
Order Nos. R-4021 and R-4022

Gentlemen:

Please be advised that water injection into the below listed wells in the South Langlie Jal Unit, Lea County, commenced on April 16, 1971:

Well No.	Location			
	Unit	Section	Township	Range
South Langlie Jal Unit No. 1	G	7	25-S	37-E
No. 2	K	7	25-S	37-E
No. 4	I	7	25-S	37-E
No. 8	O	7	25-S	37-E
No. 10	M	8	25-S	37-E
No. 13	A	18	25-S	37-E
No. 15	C	17	25-S	37-E
No. 16	G	18	25-S	37-E
No. 18	E	17	25-S	37-E
No. 21	I	18	25-S	37-E

Very truly yours,

RESERVE OIL AND GAS COMPANY



Erd M. Johnson

cc: Mr. Joe Ramey

APR 23 1971

PLEASE REPLY TO:  
FIRST SAVINGS BUILDING  
MIDLAND, TEXAS 79704

*File 4406*  
*Case*



## OIL CONSERVATION COMMISSION

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

GOVERNOR  
DAVID F. CARGO  
CHAIRMAN

LAND COMMISSIONER  
ALEX J. ARMIJO  
MEMBER

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

October 14, 1970

Mr. A. J. Losee  
Attorney at Law  
Post Office Box 239  
Artesia, New Mexico 88210

Re: Case No. 4406  
Order No. R-4022-A  
Applicant:  
Reserve Oil and Gas Company

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 State Engineer Office

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

CASE No. 4406  
Order No. R-4022-A

IN THE MATTER OF THE APPLICATION  
OF RESERVE OIL AND GAS COMPANY FOR  
A WATERFLOOD PROJECT, LEA COUNTY,  
NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE COMMISSION:

It appearing to the Commission that due to error, Order No. R-4022, dated August 25, 1970, does not correctly state the intended order of the Commission,

IT IS THEREFORE ORDERED:

(1) That Langlie-Mattix Oil Pool is hereby stricken in all places wherein it appears in Order No. R-4022 and Jalmat Pool is hereby interlineated in lieu thereof.

(2) That the name of the subject waterflood project is hereby corrected to read Reserve South Langlie-Jal Jalmat Waterflood Project rather than Reserve South Langlie-Jal Langlie Mattix Waterflood Project.

(3) That the corrections set forth above shall be effective nunc pro tunc as of August 25, 1970.

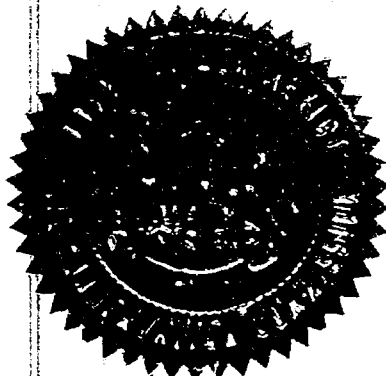
DONE at Santa Fe, New Mexico, on this 14th day of October, 1970.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

ALEX J. ARMISTEAD, Member

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



esr/

OIL CONSERVATION COMMISSION  
P. O. BOX 2088  
SANTA FE, NEW MEXICO 87501

August 25, 1970

Mr. A. J. Losee  
Attorney at Law  
Post Office Box 239  
Artesia, New Mexico 88210

Dear Sir:

Enclosed herewith is Commission Order No. R-4022, entered in Case No. 4406, approving the Reserve South Langlie Jal Langlie Mattix Waterflood Project.

Injection shall be through the ten authorized water injection wells, each of which except the Dalport Harrison No. 1 and the Reserve Vosburg No. 1, shall be equipped for injection down plastic-lined tubing set in a packer which shall be located as near as is practicable to the uppermost perforation or in the case of open-hole completions, to the casing shoe. The casing-tubing annulus in each of the said injection wells shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge at the surface.

In the case of the aforesaid Harrison No. 1 and Vosburg No. 1 wells, which are to be dual completions producing gas through the casing-tubing annulus, injection shall also be down plastic-lined tubing set in a packer.

In the case of the Dalport Winters "D" Well No. 2, it shall be necessary upon conversion to water injection to properly squeeze-cement the perforations from 2898 feet to 3073 feet and to load the casing-tubing annulus with corrosion inhibited fluid and equip it with a pressure gauge at the surface.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1050 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

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Mr. A. J. Losee  
Attorney at Law  
Post Office Box 239  
Artesia, New Mexico 88210

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

Enclosure  
ALP/DSN/ir

cc: Oil Conservation Commission  
Hobbs, New Mexico

Mr. D. E. Gray, State Engineer Office  
Santa Fe, New Mexico



Docket No. 19-70

DOCKET: REGULAR HEARING - WEDNESDAY - AUGUST 19, 1970

OIL CONSERVATION COMMISSION - 9 A.M. - MORGAN HALL, STATE LAND OFFICE  
BUILDING, SANTA FE, NEW MEXICO

- ALLOWABLE:
- (1) Consideration of the oil allowable for September and October, 1970;
  - (2) Consideration of the allowable production of gas for September, 1970 from fifteen prorated pools in Lea, Eddy, Roosevelt and Chaves Counties, New Mexico.  
Consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba and Sandoval Counties, New Mexico, September, 1970.

THE FOLLOWING CASES WILL BE HEARD BEFORE DANIEL S. NUTTER, EXAMINER, OR ELVIS A. UTZ, ALTERNATE EXAMINER, IN THE OIL CONSERVATION COMMISSION CONFERENCE ROOM ON THE SECOND FLOOR OF SAID BUILDING AT 9:30 a.m.

CASE 4414: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Lea, Chaves, and Eddy Counties, New Mexico:

- (a) Create a new pool in Lea County, New Mexico, classified as a gas pool for Morrow production and designated as the Town-send-Morrow Gas Pool. The discovery well is the Avance Oil & Gas Company State ETA No. 2 located in Unit 1 of Section 8, Township 16 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM  
SECTION 8: SE/4

- (b) Extend the Allison-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 36 EAST, NMPM  
SECTION 12: S/2

- (c) Extend the Baum-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 13 SOUTH, RANGE 32 EAST, NMPM  
SECTION 36: NW/4

August 19, 1970 - Regular Hearing

-2-

Docket No. 19-70

(d) Extend the Drinkard Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM  
SECTION 24: E/2 NE/4

(e) Extend the EK Yates-Seven Rivers-Queen Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM  
SECTION 19: SE/4  
SECTION 20: SW/4

(f) Extend the Hobbs-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 38 EAST, NMPM  
SECTION 19: S/2

(g) Extend the Indian Basin-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 23 EAST, NMPM  
SECTION 21: N/2 and N/2 N/2 N/2 S/2

(h) Extend the Paduca-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 25 SOUTH, RANGE 31 EAST, NMPM  
SECTION 1: W/2  
SECTION 12: W/2

(i) Extend the Springs-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 25 EAST, NMPM  
SECTION 3: Lots 1, 2, 7, 8, 9, 10,  
15 and 16

(j) Extend the Sulimar-Queen Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 15 SOUTH, RANGE 29 EAST, NMPM  
SECTION 26: SW/4 NE/4

(k) Extend the Tres Papalotes-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 34 EAST, NMPM  
SECTION 33: NW/4

(l) Extend the Northwest Vacuum-Wolfcamp Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM  
SECTION 5: SW/4

CASE 4413: In the matter of the hearing called by the Oil Conservation Commission upon its own motion to permit Stanley Leonard Jones dba Francisca Corporation and all other interested parties to appear and show cause why the Francisca Corporation Beeman Well No. 1 located 1980 feet from the South and West lines of Section 2, Township 24 South, Range 28 East, Eddy County, New Mexico, should not be plugged and abandoned in accordance with a Commission-approved plugging program.

CASE 4172: (Reopened)

In the matter of Case No. 4172 being reopened pursuant to the provisions of Order No. R-3816, which order established 80-acre spacing units for the Northeast Lovington-Pennsylvanian Pool, Lea County, New Mexico. All interested parties may appear and show cause why the said pool should not be developed on 40-acre spacing units.

CASE 4399: Application of Pan American Petroleum Corporation for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle in the wellbore production from the Blinbry, Tubb, and Drinkard Oil Pools in its Southland Royalty "A" Well No. 8 located in Unit O of Section 4, Township 21 South, Range 37 East, Lea County, New Mexico.

CASE 4400: Application of David C. Collier for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico. Said exception would be for applicant's Southern Federal Lease in Units A, C, E, G, I, K, and M of Section 30, Township 19 South, Range 31 East, North Hackberry Yates-Seven Rivers Pool, Eddy County, New Mexico.

- CASE 4401: Application of Read and Stevens, Inc. for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Queen, San Andres, Glorieta, and Delaware formations in the open-hole interval between the 8 5/8 inch casing shoe at 3998 feet and the top of the cement at 6109 feet in its Getty State "B.G." Well No. 1 located in Unit K of Section 12, Township 19 South, Range 34 East, Quail-Queen Pool, Lea County, New Mexico.
- CASE 4402: Application of Reserve Oil and Gas Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Cooper-Jal Unit Area comprising 2581 acres, more or less, of Federal and fee lands in Township 24 South, Ranges 36 and 37 East, Lea County, New Mexico.
- CASE 4403: Application of Reserve Oil and Gas Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by water injection through 26 wells into the Lower Seven-Rivers and Queen formations underlying its Cooper-Jal Unit Area, Langlie-Mattix Pool, Lea County, New Mexico.
- CASE 4404: Application of Reserve Oil and Gas Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by water injection through 23 wells into the Tansill, Yates, and Upper and Middle Seven-Rivers formations underlying its Cooper-Jal Unit Area, Jalmat Pool, Lea County, New Mexico.
- CASE 4405: Application of Reserve Oil and Gas Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the South Langlie-Jal Unit Area comprising 1080 acres, more or less, of fee lands in Township 25 South, Range 37 East, Lea County, New Mexico.
- CASE 4406: Application of Reserve Oil and Gas Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by water injection through 13 wells into the Seven Rivers and Queen formations underlying its South Langlie-Jal Unit Area, Langlie-Mattix Oil Pool, Lea County, New Mexico.
- CASE 4407: Application of Tenneco Oil Company for an unorthodox oil well location, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks approval for an unorthodox Dakota oil well location 1980 feet from the South and East lines of Section 13, Township 17 North, Range 9 West, Hospah Field, McKinley County, New Mexico, said location being closer than 330 feet to an inner boundary line.

- CASE 4408: Application of Keohane and Westall for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicants, in the above-styled cause, seek an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico. Said exception would be for applicants' State Well No. 1, located in Unit D of Section 2, Township 19 South, Range 31 East, Shugart Pool, Eddy County, New Mexico.
- CASE 4409: Application of Anadarko Production Company for two waterflood expansions, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the expansion of its Federal Q Waterflood Project by the conversion to water injection of three additional wells in Units J, L, and P of Section 3, Township 17 South, Range 30 East, Square Lake Pool, Eddy County, New Mexico. Applicant further seeks the expansion of the Stallworth Oil and Gas Company Parke Waterflood Project by the conversion to water injection of one additional well in Unit H of said Section 3.
- CASE 4410: Application of Major, Giebel & Forster for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests underlying the SE/4 of Section 28, Township 25 South, Range 37 East, Crosby-Devonian Pool, Lea County, New Mexico, said acreage to be dedicated to a well to be drilled in said quarter section. Also, to be considered will be the cost of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.
- CASE 4411: Application of Continental Oil Company for an exception to Rule 104 C I, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 104 C I of the Commission Rules and Regulations to permit the completion within 660 feet of another producing well in the same formation of its State H-35 Well No. 10 located 2030 feet from the North line and 1780 feet from the East line of Section 35, Township 17 South, Range 34 East, Vacuum Pool, Lea County, New Mexico.
- CASE 4412: Application of Continental Oil Company for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the Yates and Seven Rivers formations through two wells on its McCallister "A" lease in Section 24, Township 26 South, Range 36 East, Scarborough Yates-Seven Rivers Pool, Lea County, New Mexico.

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. 4406  
Order No. R-4022

APPLICATION OF RESERVE OIL AND GAS  
COMPANY FOR A WATERFLOOD PROJECT,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9:30 a.m. on August 19, 1970,  
at Santa Fe, New Mexico, before Examiner Daniel S. Mutter.

NOW, on this 25th day of August, 1970, 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, Reserve Oil and Gas Company, seeks  
authority to institute a waterflood project in the South Langlie-  
Jal Unit Area, Langlie-Mattix Oil Pool, by the injection of water  
into the Seven Rivers and Queen formations through 10 injection  
wells in Township 25 South, Range 37 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.

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CASE No. 4406  
Order No. R-4022

(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, Reserve Oil and Gas Company, is hereby authorized to institute a waterflood project in the South Langlie-Jal Unit Area, Langlie-Mattix Oil Pool, by the injection of water into the Seven Rivers and Queen formations through the following-described wells in Township 25 South, Range 37 East, NMPM, Lea County, New Mexico:

<u>Operator</u> <u>Lease</u>	<u>Well</u> <u>No.</u>	<u>Unit</u>	<u>Section</u>	<u>Township</u>	<u>Range</u>
Dalport					
Harrison	1	G	7	25S	37E
	(a dual completion)				
Winters "B"	4	K	7	25S	37E
Winters "C"	2	O	7	25S	37E
Winters "C"	4	I	7	25S	37E
Winters "D"	2	G	18	25S	37E
Winters "E"	2	A	18	25S	37E
Reserve Oil and Gas Company					
Woolworth	5	M	8	25S	37E
Woolworth "B"	3	G	17	25S	37E
Woolworth "B"	4	E	17	25S	37E
Vosburg	1	I	18	25S	37E
	(a dual completion)				

(2) That the subject waterflood project is hereby designated the Reserve South Langlie-Jal Langlie Mattix Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

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CASE No. 4406  
Order No. R-4022

(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.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION



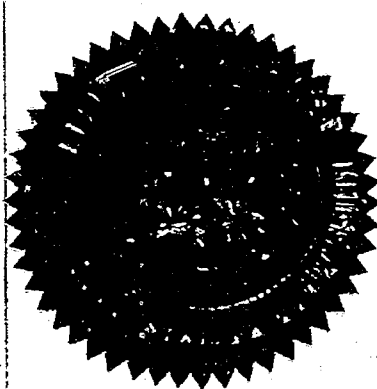
DAVID F. CARGO, Chairman



ALEX J. ARMILLO, Member



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



esr/



COMPANY	SOUTHERN PETROLEUM	Location of Well
WELL	WELLS 2-3	
FIELD	LANDER-FATHER	
LOCATION		
COUNTY	LA	Division of Oil & Gas
STATE	MISSISSIPPI	75-311

*Case #466*

Run No.	2-3-53
Time	3:19
Test Depth	2000
Test Interval	110
Csg. Depth	3211
Grains Reached	3351
Grains Below	3490
Grains Below	3630
Grains Below	3770
Grains Below	3910
Grains Below	4050
Grains Below	4190
Grains Below	4330
Grains Below	4470
Grains Below	4610
Grains Below	4750
Grains Below	4890
Grains Below	5030
Grains Below	5170
Grains Below	5310
Grains Below	5450
Grains Below	5590
Grains Below	5730
Grains Below	5870
Grains Below	6010
Grains Below	6150
Grains Below	6290
Grains Below	6430
Grains Below	6570
Grains Below	6710
Grains Below	6850
Grains Below	6990
Grains Below	7130
Grains Below	7270
Grains Below	7410
Grains Below	7550
Grains Below	7690
Grains Below	7830
Grains Below	7970
Grains Below	8110
Grains Below	8250
Grains Below	8390
Grains Below	8530
Grains Below	8670
Grains Below	8810
Grains Below	8950
Grains Below	9090
Grains Below	9230
Grains Below	9370
Grains Below	9510
Grains Below	9650
Grains Below	9790
Grains Below	9930
Grains Below	10070
Grains Below	10210
Grains Below	10350
Grains Below	10490
Grains Below	10630
Grains Below	10770
Grains Below	10910
Grains Below	11050
Grains Below	11190
Grains Below	11330
Grains Below	11470
Grains Below	11610
Grains Below	11750
Grains Below	11890
Grains Below	12030
Grains Below	12170
Grains Below	12310
Grains Below	12450
Grains Below	12590
Grains Below	12730
Grains Below	12870
Grains Below	13010
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Grains Below	13710
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Grains Below	13990
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Grains Below	14270
Grains Below	14410
Grains Below	14550
Grains Below	14690
Grains Below	14830
Grains Below	14970
Grains Below	15110
Grains Below	15250
Grains Below	15390
Grains Below	15530
Grains Below	15670
Grains Below	15810
Grains Below	15950
Grains Below	16090
Grains Below	16230
Grains Below	16370
Grains Below	16510
Grains Below	16650
Grains Below	16790
Grains Below	16930
Grains Below	17070
Grains Below	17210
Grains Below	17350
Grains Below	17490
Grains Below	17630
Grains Below	17770
Grains Below	17910
Grains Below	18050
Grains Below	18190
Grains Below	18330
Grains Below	18470
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Grains Below	18890
Grains Below	19030
Grains Below	19170
Grains Below	19310
Grains Below	19450
Grains Below	19590
Grains Below	19730
Grains Below	19870
Grains Below	20010
Grains Below	20150
Grains Below	20290
Grains Below	20430
Grains Below	20570
Grains Below	20710
Grains Below	20850
Grains Below	20990
Grains Below	21130
Grains Below	21270
Grains Below	21410
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Grains Below</	

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF  
RESERVE OIL AND GAS COMPANY FOR A  
WATERFLOOD PROJECT, SOUTH LANGLEIE JAL UNIT  
LEA COUNTY, NEW MEXICO

SOUTH LANGLIE JAL UNIT  
LEA COUNTY, NEW MEXICO

GENERAL

Operator: Reserve Oil and Gas Company  
Project: South Langlie Jal Unit Waterflood  
Pool: Jalmat  
Location of Project:

Township 25 South, Range 37 East, N.M. P.M.

Section 7: SW/4 NE/4, E/2 SW/4, SE/4  
Section 8: SW/4  
Section 17: W/2  
Section 18: E/2

No. of Wells  
in Project: 27

Unit and Pro-  
ject area: 1,080 acres

Other Waterflood  
Projects in Area: The nearest flood project is the Amerada Hess  
operated Langlie-Mattix Woolworth Unit,  
approximately one and one-half miles to the  
northeast.

GEOLOGICAL AND RESERVOIR DATA

Reservoir: From the top of the Seven Rivers formation to the  
base of the Queen formation.

Depth: From approximately 3080 feet to approximately 3650  
feet below the surface.

Productive Zones: The main reservoir sands found at an average depth  
of 3270 feet in the proposed unit are in either the  
Seven Rivers or Queen formation depending upon  
the structural position of the well.

GEOLOGICAL AND RESERVOIR DATA, Continued

Net Pay:

Sufficient data are not available to determine the net effective pay.

Description of  
Reservoir Rock:

The Seven Rivers formation is dolomite, having a fine crystalline anhydrite interbedded with fine grained sandstone. The Queen formation sand members may be described as fine grained sandstone slightly anhydritic with some silty shale partings.

Structure:

Elongated anticline dipping steeply to the southwest.

Reservoir Limits:

An oil-water contact at approximately 312 feet subsea defines the down-dip productive limit to the west and southwest sides of the unit boundary. A gas-oil contact is present at an estimated 100 feet subsea.

Average Porosity  
of Net Pay:

Estimated at 23% ✓

Average  
Permeability  
of Net Pay:

Estimated at 23 md. with a range from 0.1 to 177 md. ✓

PRIMARY OPERATIONS

Date of First  
Production:

April 18, 1948

No. of Wells  
in Project:

27

Cumulative Oil  
Production 1-1-70:

1,245,702 barrels

Remaining Primary  
Reserves 1-1-70:

16,435 barrels

Ultimate Primary  
Reserves 1-1-69:

1,262,137 barrels

*add'l oil  
on secondary:  
947,000 bbls  
based on  
75% of  
ult. primary*

### PRIMARY OPERATIONS, Continued

Daily Average Oil  
Production Per  
Well 12-69: 1.35 barrels

Original Reser-  
voir Pressure: 1450 psi at 200 feet subsea

Oil Gravity: 37° API

Drive Mechanism: Solution Gas Drive

Stage of Depletion: Late; the reservoir in the project area is approxi-  
mately 98.7% depleted of primary reserves.

Maximum Current  
Production Ability  
of a Well: During December, 1969, Reserve's Woolworth "D"  
No. 2 produced an average of 3.5 barrels of oil per  
day which was more than any other well in the  
proposed unit.

### WATERFLOOD OPERATIONS

Proposed Pattern: 80-acre five spot

No. of Injec-  
tion Wells: 10 initially; 3 additional wells may be converted from  
producers to injection at a later date.

Initial Injection Rate: 350 barrels of water per day per injection well.

Estimated Injection  
Pressure: Maximum of 1200 psi at wellhead. Injection plant will  
be designed for a maximum operating pressure of 1850  
psi.

Plan of Injecting  
Water: Inject into pay zone through internally coated tubing  
and below a packer. The annulus will contain inhibited  
fresh water.

Source of  
Injection Water: Injection water will be purchased from Skelly Oil  
Company. Produced water will be reinjected.

### WATERFLOOD OPERATIONS, Continued

#### Additional Oil

Recovery Anticipated: 946,000 barrels which is equal to 75% of the estimated ultimate primary oil recovery.

### CONCLUSIONS AND RECOMMENDATIONS

This pool produces by the solution gas drive mechanism and this portion of the pool is 98.7% depleted of primary oil and the daily oil production averages less than 2 barrels per well.

Engineering and geological studies and the performance of other nearby waterfloods indicate that the proposed unitized interval is susceptible to secondary recovery by water injection which will increase the life and the ultimate oil recovery from this productive zone. The increased recovery due to the proposed water injection operation should be approximately 946,000 barrels of oil.

Reserve Oil and Gas Company and the other working interest owners conclude that unitization of the 27 producing wells and the 1,080 acres outlined in Exhibit 1 for the purpose of waterflooding the Seven Rivers and Queen formations is in the best interest of conservation and prevention of waste.

Reserve, as designated operator of the South Langlie Jal Unit, respectfully requests that the New Mexico Oil Conservation Commission approve the proposed waterflood project and grant an unit oil allowable for the 27 qualifying and producing wells in the unit area as provided by Rule 701 of the New Mexico Oil Conservation Commission Rules and Regulations.

RESERVE OIL and GAS COMPANY  
Woolworth "B" Well No. 4  
Sec. 17 T-25-S, R-37-E

Exhibit 2

EXHIBIT 2  
Typical Well Log and Vertical Limit  
South Langlie Jal Unit  
Lea County, New Mexico

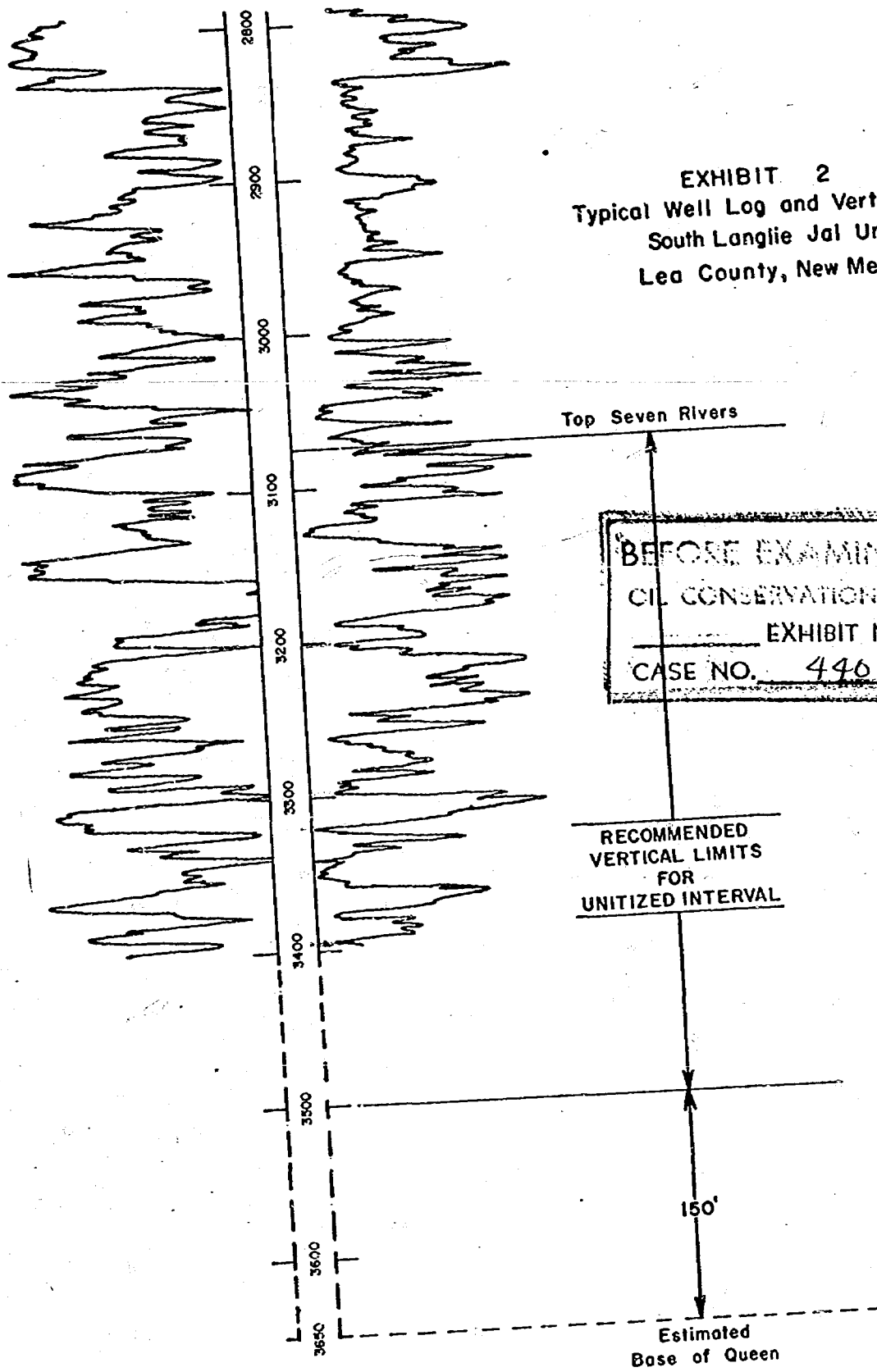


EXHIBIT 5  
SOUTH LANGLIE-JAL UNIT  
TYPICAL SINGLY COMPLETED INJECTION WELL  
DALPORT WINTERS "E" NO. 2

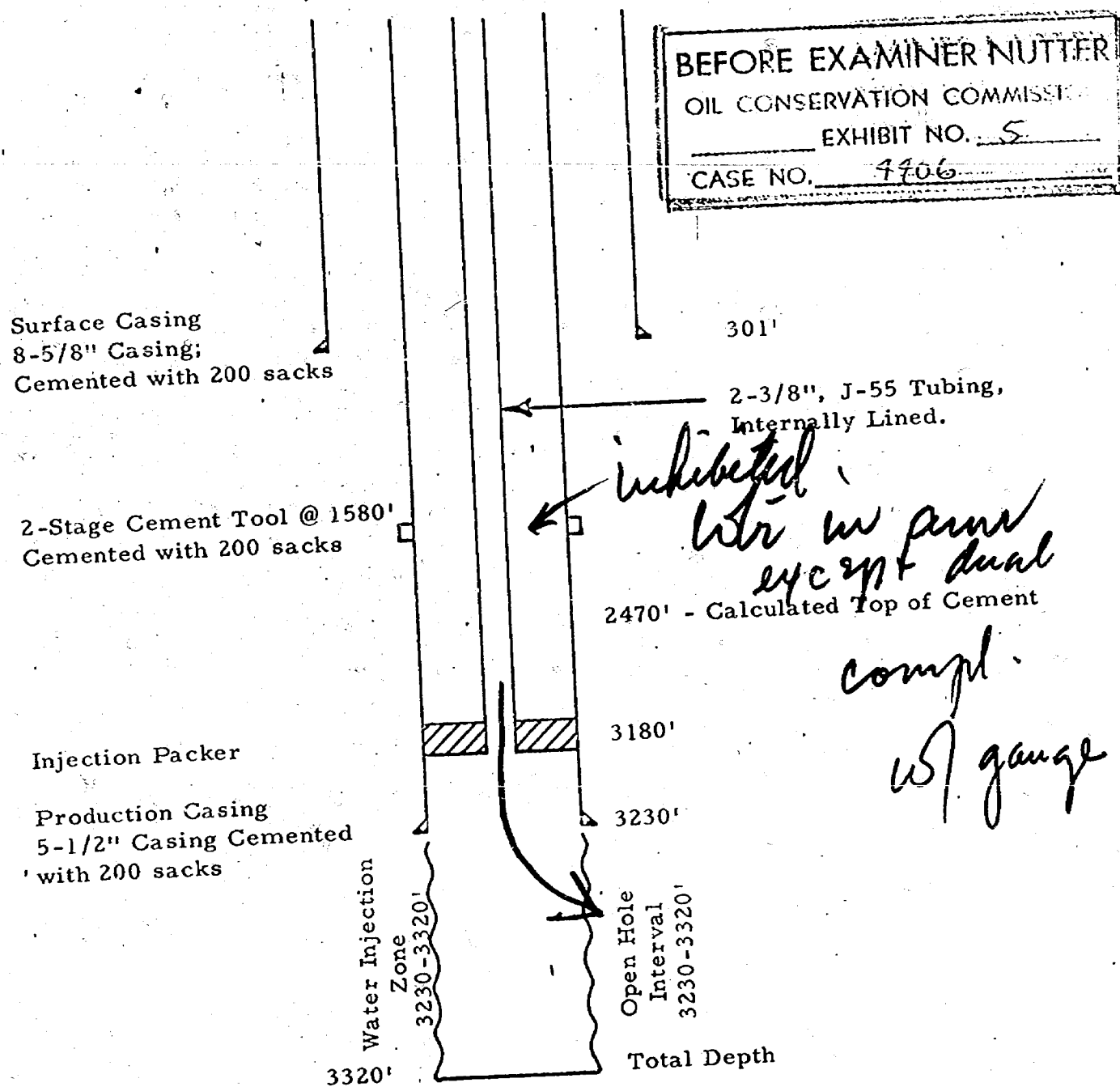


Exhibit 5



EXHIBIT 5A  
SOUTH LANGLEIE-JAL UNIT

TYPICAL DUAL PRODUCTION WELL  
PRODUCING GAS FROM YATES AND  
OIL FROM SEVEN-RIVERS ZONE  
ROG VOSBURG NO. 1

*Dalport Revision  
#1 is essentially  
the same  
as this  
well*

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 5  
CASE NO. 4406

Surface Casing 10-3/4"  
Cemented with 115 Sacks  
2-Stage Tool - Cemented  
with 200 Sacks

159'

1052'

2-3/8", J-55, Tubing  
Internally Lined

2568' - Calculated Top of Cement

2792'

Perforated Interval - Yates  
Gas Zone

2900'

Packer

3100'

Production Casing 7"  
Cemented with 200 sacks

3168'

Water Injection  
Zone

3168-3336'

Open Hole  
Interval

3168-3336'

Total Depth 3336'

Exhibit 5A

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF  
RESERVE OIL AND GAS COMPANY FOR A  
WATERFLOOD PROJECT, SOUTH LANGLEIE-  
MATTIX POOL, LEA COUNTY, NEW MEXICO.

*Case 4406*

APPLICATION

COMES RESERVE OIL AND GAS COMPANY, by its attorney,  
A. J. Losee, and states:

1. Applicant, pursuant to the terms of the South  
Langlie Jal Unit Agreement and Unit Operating Agreement, is  
designated as Operator of the Seven Rivers and Queen formations,  
comprising a portion of the Langlie-Mattix Oil Pool underlying  
the following lands in Lea County, New Mexico, which comprise  
the project area covered by this application, to-wit:

Township 25 South, Range 37 East, N.M.P.M.

Section 7: SW/4 NE/4, E/2 SW/4, SE/4  
Section 8: SW/4  
Section 17: W/2  
Section 18: E/2

containing 1,080 acres, more or less.

2. There is attached hereto and by reference made  
a part hereof, a plat showing the location of the proposed  
injection wells and the location of all other wells and lessees  
adjoining the proposed project area.

3. The applicant proposes to inject water into the  
Seven Rivers and Queen formations through 13 injection wells  
in Lea County, New Mexico, and described as follows:

Township 25 South, Range 37 East, N.M.P.M.

Unit Tract No. 1 - Well No. 1 - Unit G - Section 7  
Unit Tract No. 2 - Well No. 4 - Unit K - Section 7  
Unit Tract No. 3 - Well No. 2 - Unit O - Section 7

DOCKET MAILED

Date 8-6-70

*top of  
to 150  
of Queen  
above base*

*All for*

Unit Tract No. 3	- Well No. 4	- Unit I	- Section 7
Unit Tract No. 4	- Well No. 2-D	- Unit G	- Section 18
Unit Tract No. 5	- Well No. 2-E	- Unit A	- Section 18
Unit Tract No. 6	- Well No. 1	- Unit I	- Section 18
Unit Tract No. 7	- Well No. 2	- Unit K	- Section 8
Unit Tract No. 7	- Well No. 5	- Unit M	- Section 8
Unit Tract No. 8	- Well No. 3	- Unit C	- Section 17
Unit Tract No. 8	- Well No. 4	- Unit E	- Section 17
Unit Tract No. 9	- Well No. 1	- Unit K	- Section 17
Unit Tract No. 10	- Well No. 2-D	- Unit M	- Section 17

4. That all of the wells in the project area are in an advanced state of depletion and should be classified as "stripper" wells.

5. There is attached hereto and by reference made a part hereof, a diagrammatic sketch of a typical completed injection well.

6. There is attached hereto and by reference made a part hereof, a typical well log of a proposed injection well in the project area.

7. Injection of water purchased from Skelly Oil Company system is proposed to be made at the rate of approximately 350 barrels per day per injection well, at a pressure of approximately 1200 psi.

8. Applicant proposes to conduct this waterflood project under the allowable provisions of Rule 701 of the Commission.

9. The proposed waterflood project will prevent waste in that it will result in the recovery of oil that would not otherwise be recovered in the project area.

WHEREFORE, applicant prays that this matter be set for hearing before an examiner duly appointed by the Commission and that due public notice be given as required by law, that an order be entered authorizing the institution of the aforesaid

waterflood project in the South Langlie-Mattix Oil Pool, and  
for such other relief as may be just in the premises.

DATED this July 17, 1970.

RESERVE OIL AND GAS COMPANY

By: 

A. J. Losee

Attorney at Law

P. O. Drawer 239

Artesia, New Mexico 88210

DRAFT

GMH/esr

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. 4406

Order No. R- 4022

APPLICATION OF RESERVE OIL AND GAS COMPANY  
FOR A WATERFLOOD PROJECT, LEA COUNTY,  
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

9:30

This cause came on for hearing at 9 a.m. on August 19, 1970,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this        day of August, 1970, 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, Reserve Oil and Gas Company,  
seeks authority to institute a waterflood project in the         
South Langlie-Jal Unit Area, Langlie-Mattix Oil Pool,  
by the injection of water into the Seven Rivers and Queen formations  
through 10 injection wells in Section  
Township 25 ~~NXXXX~~ South, Range 37 ~~NXXXX~~ 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, Reserve Oil and Gas Company, is hereby authorized to institute a waterflood project in the South Langlie-Jal Unit Area, Langlie-Mattix Oil Pool, by the injection of water into the Seven Rivers and Queen formations through the following-described wells in Township 25 ~~North~~ South, Range 37 ~~West~~ East, NMPM, Lea County, New Mexico:

Operator Lease	Well No.	Distance	LOCATION			
			Unit	Section	Township	Range
Dalport Harrison ( <del>Dart</del> ) Winters "B" Winters "C" Winters "C" Winters "D" Winters "E"	1	(a Dual Completion) <del>1980 FNL &amp; 1980 FSL</del>	G ✓	7 ✓	25S	37E
	4	<del>1010 FNL &amp; 1050 FSL</del>	K ✓	7 ✓	25S	37E
	2	<del>300 FSL &amp; 2310 FSL</del>	O ✓	7 ✓	25S	37E
	4	<del>960 FSL &amp; 1450 FSL</del>	I ✓	7 ✓	25S	37E
	2	<del>1980 FSL &amp; 2310 FNL</del>	G ✓	18 ✓	25S	37E
	2	<del>990 FSL &amp; 990 FSL</del>	A ✓	18 ✓	25S	37E
Reserve Oil and Gas Company Woolworth Woolworth "B" Woolworth "B" Vosburg ( <del>Dual</del> )	5	<del>390 FSL &amp; 500 FSL</del>	M ✓	8 ✓	25S	37E
	3	<del>990 FNL &amp; 990 FSL</del>	C ✓	17 ✓	25S	37E
	4	<del>1980 FNL &amp; 990 FSL</del>	E ✓	17 ✓	25S	37E
	1	(a Dual Completion) <del>330 FSL &amp; 2275 FSL</del>	I ✓	18 ✓	25S	37E

(under)

... 701 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.

(2) That the subject waterflood project is hereby designated the Reserve South Rangier-Jal Rangier Matter 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.

ROUGH DRAFT FOR WATERFLOOD LETTERS

Mr. A. J. Losee  
Attorney at Law  
Post Office Box 239  
Artesia, New Mexico 88210

Dear Sir:

Enclosed herewith is Commission Order No. R-4022, entered in Case No. 4406, approving the Reserve South Langlie-Jal Langlie Mattie Waterflood Project.

Injection shall be through the ten authorized water injection wells, each of which except the Dalgart Harrison No 1 and the Reserve Vashung No 1 shall be equipped for injection down plastic lined tubing set in a packer which shall be located as near as is practicable to the uppermost perforation, or in the case of open-hole completions, to the casing shoe. The casing thickness As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1050 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

cc: OCC: Hobbs X  
Artesia         
Aztec       

USGS       

~~Mr. Frank Erby~~, State Engineer Office, Santa Fe, New Mexico

Mr. D. E. Gray

~~The~~ annulus in each of the said injection wells shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge at the surface. In the case of the aforesaid Harrison No 1 and Vashung No 1 wells, which are to be dual completions producing gas from the through the casing tubing annulus, injection shall also be down plastic lined tubing set in a packer. (over)



# In the case of the Dalpart  
Winters "D" Well No. 2, it shall be necessary  
upon conversion to water injection to  
properly <sup>squeeze</sup> cement the perforations from 2898 feet  
to 3073 feet and to load the casing  
 tubing annulus with corrosion inhibited  
 fluid and equip it with a pressure gauge  
 at the surface.

ORDER

GMH/esr

9

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

CASE No. 4406

Order No. R-4022-A

IN THE MATTER OF THE APPLICATION  
OF RESERVE OIL AND GAS COMPANY FOR  
A WATERFLOOD PROJECT, LEA COUNTY,  
NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE COMMISSION:

It appearing to the Commission that due to error, Order  
No. R-4022, dated August 25, 1970, does not correctly state the  
intended order of the Commission,

IT IS THEREFORE ORDERED:

(1) That Langlie-Mattix Oil Pool is hereby stricken in all  
places wherein it appears in Order No. R-4022 and Jalmat Pool  
is hereby interlineated in lieu thereof.

(2) That the name of the subject waterflood project is hereby  
corrected to read Reserve South Langlie-Jal Jalmat Waterflood Project  
rather than Reserve South Langlie-Jal Langlie Mattix Waterflood  
Project.

(3) That the corrections set forth above shall be effective  
nunc pro tunc as of August 25, 1970.

DONE at Santa Fe, New Mexico, on this \_\_\_\_\_ day of October,  
1970.