

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 27, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Amerada Petroleum Corporation for a water-flood project, Langlie-Mattix Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a water-flood project in the Langlie-Mattix Pool in Sections 27, 28, 33 and 34, Township 24 South, Range 37 East, Lea County, New Mexico; the injection of water initially to be through six wells located in said sections, said project to be governed by the provisions of Rule 701.

BEFORE:

ELVIS UTZ, Examiner

(Whereupon Amerada's Exhibits 1 through 6 marked for identification)

TRANSCRIPT OF HEARING

MR. UTZ: Case 2497

MR. MORRIS: Application of Amerada Petroleum Corporation for a water-flood project, Langlie-Mattix Pool, Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox,
representing the Applicant. We have two witnesses to be sworn.

MR. UTZ: Are there any other appearances?

MR. BUELL: For Pan-American, Guy Buell.

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MR. UTZ: Are there any others? You may proceed, Mr. Kellahin.

R. W. BOYLE,
called as a witness herein, having been first duly sworn on oath,
was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q State your name, please.

A R. W. Boyle.

Q By whom are you employed and in what position, Mr. Boyle?

A By Amerada Petroleum Corporation as a Unitization Supervisor for the Land Department.

MR. UTZ: Would you spell your name?

A B-O-Y-L-E.

Q (By Mr. Kellahin) Have you ever testified before the Oil Conservation Commission of New Mexico?

A No, sir.

Q How long have you been employed in the Land Department with Amerada?

A Thirteen years.

Q And how long in your present position?

A A little over nine years.

Q During all of this time have you worked with matters such as unit agreement leases and matters pertaining to land



acquisitions?

A Yes, sir.

Q Have you had any educational qualifications in that field?

A Well, I have a Bachelor of Science in Commerce from the University of Notre Dame and have had extra courses on the oil and gas law.

Q In connection with your duties in the Land Department of Amerada Petroleum, have you had anything to do with the Langlie-Mattix Woolworth Unit?

A Yes, sir, I was responsible for the effort to secure the situation of the working interest owners involved in this matter as well as the royalty owners.

MR. KELLAHIN: Are the witness' qualifications accepted?

MR. UTZ: Yes sir.

Q Do you have a copy of the Unit Agreement designated as Langlie-Mattix Woolworth Unit?

A Yes, sir.

Q First, do you have a plat of the area involved here, Mr. Boyle?

A Yes, sir, Exhibit No. 1.

Q Now, referring to what has been marked as Amerada's Exhibit No. 1, would you discuss the information that is shown on that Exhibit?

A This Exhibit shows in a hatched outline the four areas



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involved in this unit effort, being Sections 27 and 28 then 33 and 34 of 24 South, 37 East, Lea County, New Mexico. The total acreage involved is 2,559.48 acres of which 2,239.40 are fee land and 320.98 acres being a federal lease which on this Exhibit is the east half of Section 27.

MR. UTZ: Are those figures shown on one of the Exhibits?

A Yes, sir, on Exhibit B of the Unit Agreement.

Q (By Mr. Kellahin) What is the area outlined in the center of the plat, Mr. Boyle?

A The area in the center is the pilot area in which the initial effort for rejection will be commenced.

Q And that will be discussed--

A By another witness.

Q Now, referring to what has been marked as Exhibit No. 2, would you identify that Exhibit?

A This is a copy of the Unit Agreement for the Langlie-Mattix Woolworth Pool, Lea County, New Mexico.

Q Now, have all the working interest executed that Unit Agreement?

A Yes, one hundred percent of the working interest have joined.

Q What about royalty interest?

A On the total of 103 individual royalty interest owned, we have at the present time 83 consenting royalty owners



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representing 80.60 percent of the total royalty burden and are continuing our efforts to secure the joinder of the presently unsigned owners, and as of this date have had no one refuse to join the Agreement. We have many estates involved and other interest owned in producory capacity. It is just taking time. We are continuing our effort to secure more.

Q Do you anticipate you will get all the royalty interest signed up?

A At the moment we hope so.

Q Now, referring to what appears in Exhibit 2, as Exhibit A, would you discuss the information shown by that portion of Exhibit 2?

A Exhibit A, within Exhibit 2, is a map showing the unit area and within the unit area are the tracts so designated under which there was common royalty ownership and each tract has been given a percentage of participation in the Agreement as shown on Exhibit B.

Q As I understood your testimony awhile ago, this acreage consists of federal and fee land?

A Yes, there are twenty tracts involved. There is one federal tract and nineteen fee tracts.

Q No state land?

A No.

Q Has the Unit Agreement been approved by the U.S.G.S.?

A It has not been approved as yet. It has been submitted.



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We are presently awaiting the approval and expecting it. We might receive 80.60 percent of the total royalty burden. The U.S.G.S. royalty interest is 9.23 percent which will materially increase our total consent of royalty interest.

Q Now, upon what event does the Unit Agreement become effective?

A The Unit Agreement requires that you have eighty-five percent of the working interest joining in the Unit. We have one hundred percent. It requires seventy-five percent of the royalty interest. We have in excess of that. That is one condition. The second is the approval of the directors authorized representative and the Commission and lastly filing a copy, an executed copy of this Agreement together with the ratification of the record in Lea County, New Mexico. When these three things are accomplished, the Agreement will become effective on the first day of the month next following.

Q The Unit Agreement requires approval of this Commission?

A Yes, sir.

Q Is the Unit Agreement substantially in the same form as the agreement involving federal lands heretofore been approved by this Commission?

A Yes, sir, it has been patterned after that.

Q And upon completion of the agreement, will you furnish this Commission with a conformed copy?

A Yes, sir.



MR. MORRIS: Could I interject a question?

MR. KELLAHIN: Yes, sir.

MR. MORRIS: I don't believe that this case has been properly advertised for the approval of the Unit Agreement.

MR. KELLAHIN: I am aware of that. It was advertised for the approval of the order project which has been created by the Unit Agreement. If the Commission readvertises the approval of the Unit requiring the approval of the Commission, we would be happy to continue for that purpose and advertise just that portion if the Commission so desires. I personally don't see the necessity of it.

MR. MORRIS: As you know, the Commission in the past in approving Unit Agreement, has specifically called a case for that purpose and has considered water-flood projects quite separately.

MR. KELLAHIN: I am aware of that. I know it has been the practice and if the Commission feels it is without jurisdiction at this time to consider the Unit Agreement I would like to ask that it be advertised for that purpose and that at the time of that hearing we would be permitted to introduce records from this case if there is no opposition.

MR. BUSHNELL: May I make a statement? H. B. Bushnell, attorney for Amerada. I personally prepared the original application and amendment. At the time of doing so I was aware that the Commission adopted the policy of approving, not only the

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Unit's plan of operation, but the Unit Agreement. I was not aware until I arrived yesterday that the Commission had not adopted a policy of requiring this matter to be in the notice. We are concerned about this matter in two respects: First, the company is anxious of course to get an order approving this Unit plan prior to April 1st, but secondly, at the time I prepared the applications, I of course reviewed 701 and yesterday and last night reviewed all of the rules and the statutes and I don't find any basis for requiring this to be the subject of a separate notice. If the Commission has adopted that as a policy for which I don't argue the pros or cons here, I feel that Rule 701 ought to be amended to require notice and hearing for that purpose. I don't see why this requirement should be made in this particular hearing.

MR. MORRIS: If the Examiner please, Rule 701 is intended as a rule governing secondary recovery projects which may or may not be conducted upon unitized lands and I don't believe that one could expect to find any requirement in that particular Rule with respect to hearings upon units. I would agree with Mr. Bushnell, however, that the matter is largely one of policy with the Commission in requiring separate hearings upon unit agreements. I would recommend to the Examiner that we go ahead and hear this case subject to a later determination by the Commission of whether they feel it necessary to consider again the approval of the Unit in a separate hearing.



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MR. UTZ: The Examiner will hear the testimony pertaining to the Unit Agreement and he will make a later determination as to whether or not that will be accepted, after we have re-advertised it.

MR. KELLAHIN: We appreciate that. We would request, Mr. Utz, if it is determined that a separate hearing is to be held, that it be advertised immediately and as soon as possible so the effective date can be made.

MR. UTZ: Yes.

Q (By Mr. Kellahin) Mr. Boyle, was Exhibit No. 2 prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibit No. 2. That completes our examination.

MR. UTZ: How about No. 1?

MR. KELLAHIN: That will be identified by the other witness.

MR. UTZ: Exhibit No. 2 will be accepted into the record.

(Whereupon Amerada's Exhibit
No. 2 admitted in evidence)

MR. KELLAHIN: No. 1 will be offered later.

MR. UTZ: Are there any questions of the witness? The witness may be excused.

(Witness excused)



A. E. SNYDER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name please?

A A. E. Snyder.

Q By whom are you employed and in what position?

A Amerada Petroleum Corporation as District Engineer in
the State of New Mexico.

Q Have you previously testified before the Oil Conserva-
tion Commission and made your qualifications a matter of record?

A Yes, sir.

MR. KELLAHIN: Are the witness' qualifications accepted?

MR. UTZ: The witness is qualified.

Q (By Mr. Kellahin) Mr. Snyder, referring to what has
been marked as Exhibit No. 1 in this case, would you discuss
further the information shown on that Exhibit?

A This Exhibit primarily shows a portion of the area
covered by the Langlie-Mattix Pool as our previous witness testi-
fied. In Sections 27, 28, 33 and 34 in Township 24 South, Range
37 East, in the portion of the Langlie-Mattix Pool that we are
attempting to unitize at this time in water flood. On this
Exhibit we have outlined two eighty acre pilot water flood areas.
The injection wells for these pilot flood areas will be Amerada-



Johnson No. 1 located in Unit L and Johnson No. 4 located in Unit N, both in Section 27. The Schermerhorn-Woolworth No. 2 located in Unit H there, Woolworth No. 7 located in Unit P and a well to be drilled in Unit J, all in Section 28 and R. J. Johnson located in Section 27, and the Humble-John Williams located in Unit D of Section 34.

Q Then, all of the injection wells are drilled with the exception of one?

A Yes, sir.

Q Now, referring to what has been marked as Amerada's Exhibit No. 3, would you identify that Exhibit and discuss the information shown on it?

A Exhibit No. 3 is a log of Amerada's R. J. Johnson No. 3 located in Unit K, Section 27. On this log, near the base, we have marked the top of the Queen Formation at 3342 and the top of the Langlie-Mattix producing interval 100 feet above that 3242 as the Commission ordered.

Q Is there any other information you want to mention?

A No, sir.

Q Now, referring to what has been marked as Amerada's Exhibit No. 4, would you first identify that Exhibit?

A Exhibit No. 4 is an engineering summary of the work that has been done by the engineering committee.

Q Does this contain information as to the geology of the area?



A Yes.

Q Would you discuss that?

A Within this engineering summary, what is referred to as Figure 2, is a structure map of the proposed unit area showing that this part of the unit is located on the general northwest, southeast anticline of the Langlie-Mattix. It is on the western slope, we have a dip to the west. The producing interval here as pointed out in our Exhibit 3, the log of the well, is a Langlie-Mattix interval as set up by what the Commission ordered to be that part of Seven Rivers of the lower 100 feet of Seven Rivers and all of the Queen Formation. These intervals are all of permian age.

Q Now, do you have something on the history and the development of this area.

A Yes, sir, the Langlie-Mattix Pool in this particular area was primarily developed a number of years ago, most of it between the years of 1934 and 1940. The bay interval consists of 200 feet of gross sections. It has a gas oil contact about minus 150 feet, water oil contact minus 350 feet. Most wells were completed in open hole and then had initial potentials ranging 200 to 500 barrels per day.

Q Now, is the reservoir at a state of near depletion on primary?

A Yes, sir. Referring to Figure 5 of Exhibit 4, Figure 5 is a plat of production versus time from the wells drilled



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within this interval. You will notice that during the years 1936 to 1940 as development continued the production increased and in 1940 when development was essentially completed production started declining rapidly. That rapid decline continued until 1955 when many wells were sand tracked and we had a slight increase in production. The producing rate is now declining again. During the year 1961 the area is produced a total of 69,566 barrels of oil which is an average of 191 barrels a day for an average of 3.4 barrels of oil per day. The gas oil ratio slightly below 3,000 cumulative recovery has been 5.4 million barrels for an average of 84,000 barrels per well. Water production has never been substantial, it is currently about 60 barrels a day from the unit area.

Q Now, there has been a drop then in the production, a considerable drop?

A Yes, sir.

Q Was it accompanied by a decline in pressures?

A Yes, this reservoir is without a water drive, the bottom hole pressure declined quite rapidly parallel with the amount of production taken from the reservoir. The initial pressure was 1450 pounds, about two-thirds dissipated by the end of 1941 when we took the last pressure. It was down about 600 pounds since then. All the wells are producing by artificial lifts of some kind. We assume pressure is somewhere below 200 pounds into the area.



Q Do you have any core data on any wells in the project area?

A There is one, Phillips-Woolworth No. 8 located in Unit B, Section 33 where the Langlie-Mattix interval was cored from 3416 feet to 3565 feet, recovered from 132 of the 149 feet, seventeen feet not recovered. The analysis of the recovered portion showed that there is about fifteen feet of net pay porosity, 12.1 percentage and permeability 8.7 millidarcies.

Q Do you believe this information is representative of the formation in the area?

A It is rather hard to tell if it would or would not be representative. It is probably doubtful that it is representative of the entire area. It is one well out of four total sections and all of the core was not recovered.

Q Well, actually it would not account for the recoveries that have already been made?

A No, sir.

Q In other words, reservoirs would be somewhat better?

A Yes, sir.

Q Now, in your opinion, Mr. Snyder, does this area lend itself to secondary recovery by water flooding?

A I believe that it does. I think that it has possibility.

Q Now, what type of flood do you propose to institute here?



A In Figure 6 of this Exhibit 4 again it is a plat of the four-section area of the proposed unit showing the pilot flood in the center of the unit and a possible expanded pilot pattern beyond that point. We do not know that this will be the expansion of the pilot flood but it would be the logical expansion if everything works right.

Q The actual expansion to be made will depend upon the success of the pilot area?

A Yes, sir.

Q And you will keep a close watch on the pilot area to determine what further steps are to be taken?

A Yes, sir.

Q Would you keep the Commission advised on your program in that connection?

A Yes, sir, they will be advised.

Q Now, referring to what has been marked Exhibit No. 5, identify that Exhibit.

A Exhibit No. 5 is the log of the Humble-John Williams No. 4, one of injection wells that we previously mentioned on this log. Again we have marked the top of the Langlie-Mattix interval at 3308 feet.

Q Referring to what has been marked as Exhibit No. 5, would you identify that?

A Exhibit No. 5A is the log of the Schermerhorn Woolworth No. 2, also one of the injection wells in the pilot area previously



mentioned. It also has the top of the Langlie-Mattix interval marked on it.

Q Do you have the log for any of the injection wells?

A No, sir.

Q Do you plan to log the wells you are going to drill for injection purposes?

A Yes, sir.

Q Will you furnish the Commission with that?

A Yes, they will be furnished.

Q Referring to what has been marked as Exhibit No. 6, will you discuss the information shown?

A Exhibit No. 6 is merely a tabulation of the five injection wells that currently are existing. The names of the wells, the present operator, the location of the wells, the casing, size and setting depth and the amount of cement used on each string of pipe is indicated.

Q How do you propose to use those wells for injection purposes, will you inject through casing?

A No, sir, tubing will be set on these wells on packers.

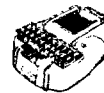
Q In your opinion, will that adequately protect any water or oil or other formation encountered?

A Yes, sir. I might point out one thing before we leave this. It was apparent on the logs and this tabulation also, that as I mentioned before, these wells were completed in open hole. The casing sometimes is set above the top of the Langlie-Mattix,

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producing interval. We are not sure what effect this will have on injection programs. We do plan to run tests as we start to see for sure where the water is going, we would take the necessary steps to see it does go into the Langlie-Mattix producing interval.

Q What is your water source going to be?

A We plan on drilling a well to the San Andres as our primary target, to get water for this flood. It will be salty, brackish water. We do plan on running tests on other zones as we drill this water well.

Q On the basis of your experience in this area, do you anticipate that a sufficient supply of water can be obtained from the San Andres?

A Yes.

Q What volume?

A Four pilots 3,000 barrels per day, we hope to have 500 barrels per day into each injection.

Q Do you anticipate it to be water on vacuum?

A We anticipate pressure out as time goes by. We designate we can operate on the order of 2,000 pounds, if necessary.

Q Now, what would you anticipate in the way of recovery in the secondary recovery program?

A It is real hard to tell with the information we have on this reservoir as to how thick the bay, actually how much oil is left there. Floods of this type in similar formation in the area have been known to recover somewhere from fifty to 100 percent of



what was initially recovered on a primary basis and we would expect to recover a minimum of fifty percent of primary.

Q Would you expect the secondary recovery program to be economical?

A Yes, sir.

Q Under the application we asked for approval of the secondary recovery program by order of an injection in administrative procedure for the expansion of the water flood--

A Yes, sir.

Q --program, is that correct?

A Yes.

Q And that is what you are asking the Commission for?

A That's right.

Q Can the project be operated under the provision of Rule 701?

A Yes, sir.

Q Without any modification?

A Yes, sir.

Q Were Exhibits 1 and 3 through 6 prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: I would like to offer in evidence Exhibits 1 and 3 through 6.

MR. UTZ: Exhibit 1 and 3 through 6 will be entered into the record in this case.



(Whereupon Amerada's Exhibits
1, 3, 4, 5, and 6 admitted in
evidence)

MR. KELLAHIN: This is all the questions I have, Mr.

Utz.

CROSS-EXAMINATION

BY MR. UTZ:

Q What size tubing do you intend to inject through?

A It will probably be two inch.

Q And that will carry the volume of water that you want
to inject?

A Yes.

Q What will be your injection breaker?

A We don't know what they will be. We are designing our
system where it operates at 2,000 pounds.

Q You feel that casing injection is capable of holding
that amount of pressure?

A The way that we planned on running and setting the
packers of casing, it will not be exposed to that pressure.

Q You will have a packer on the new tubing?

A Yes, sir.

Q Now, this was brackish water?

A Yes, it is brackish water.

Q Do you intend to treat the water?

A We are not sure what type of control we will need on the
water until we have our source developed but we will take the



necessary steps to clean or plastic coat our equipment as economics dictate.

Q I notice on your Figure 3 of Exhibit 4, that you have quite--I don't know where it is--a string or what is it, anyway your Langlie-Mattix has quite a contour, do you expect that this will hamper your efficiency in your program any?

A Yes, it undoubtedly will. It will create some problems. We will have to fact that as the time goes by.

Q Do you expect that the water then will follow parallel to the contours and go up into the gas section?

A Probably, it would be expected to do that to some extent in the type of flood that we are planning. The pattern flood where you are using injection wells not too far apart we can hold to a minimum, then it would go over short distances. It would be able to hold migration to a minimum.

Q In other words you expect to pick up most of the oil before it can get into the gas section?

A Yes.

Q I believe you said these pressures were down in the neighborhood of 200 pounds?

A Somewhere below 200 pounds.

Q And all of these injection wells are open?

A No, sir, on Exhibit 6, the Humble-John Williams No. 4 is not in open hole, I believe the other four are in open hole.

MR. UTZ: Are there any other questions of the witness?



MR. MORRIS: Yes.

MR. UTZ: Mr. Morris.

CROSS-EXAMINATION

BY MR. MORRIS:

Q Mr. Snyder, referring to Figure 5 of your Exhibit No. 4, the production graph, how many wells did you consider in preparing this graph?

A I believe there were 56 wells.

Q Those are the wells shown on one of the tables in the--

A Yes, sir.

Q --Table 1 in the rear of Exhibit No. 4?

A Yes, sir, in times passed there were a total of 63 wells, I believe some of those wells have been either plugged or abandoned or plugged back into the Jalmet. This Exhibit 1 which you mentioned shows the current usable wells.

Q In preparing this graph, Figure 5, do these figures represent the average of 56 wells or does it represent some other figure?

A It represents the total amount of oil produced from this four-section area regardless of the number of wells at any particular time.

Q From the year 1955 to the year 1960, the graph would indicate a slight rise in yearly production, is that attributable to new wells or workover?

A It is attributed to the frac treatment. Nearly all

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wells in the area were stimulated during this period of time.

Q Do you feel that by additional frac treatments the production could be stimulated in the wells in this area to maintain them above the stripper level?

A No, sir.

Q Now, there were 56 wells that were considered in constructing this graph, some of the wells actually range as high as 25 barrels per day in production, do they not?

A The test data that is listed in this Table 2, in the back of this Exhibit, shows the tests that were taken sometime last year and according to those tests some of the wells do have a 24 and 25 barrel per day capacity. The wells currently are not producing that much. I didn't tabulate the current production figures but I checked the December figures and our engineering committee reports that none of the wells apparently are producing that much oil at the present time.

Q Taking the area as a whole, though, you would say the wells were stripper wells?

A Yes, sir, the average in the area as a whole was about 3.4 barrels per day per well.

Q Mr. Snyder, you have testified that the water-flood project can be governed by the provision of the Commission's Rule 701 with respect to allowable and the expansion of the project area, is that correct?

A Yes, sir.

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Q Is there any provision in the Unit Agreement that would be contrary in any way to these provisions of Rule 701, first I should ask, are you familiar with the provisions of the Unit Agreement?

A I am not real familiar.

Q So you could not say definitely whether the provisions of the Agreement might differ from the provisions of Rule 701?

A No, sir, I couldn't testify as to that.

Q As operator of this water-flood project and as operator of the unit, Mr. Snyder, does Amerada submit all production reports for all the operators or will each operator submit its own?

A No, Amerada will submit a project report. We will take over physical operating property and submit all reports that are to be submitted.

Q You will submit all the reports from just the water-flood project area or will you immediately upon approval of the unit, submit reports from all wells and properties within the unit?

A No, when the unit is agreed upon it has been approved, Amerada will immediately resume operation of all properties within the four-section areas, not just the pilot area.

MR. MORRIS: I believe that is all the questions I have.

MR. KELLAHIN: Mr. Utz, in connection with the question asked by Mr. Morris, in regard to provisions of the Unit Agreement, Section 23 of the Agreement makes a provision that all production in the disposal thereof shall be in conformity with allocation and



quarters made or fixed by duly regulatory bodies under any federal or state statutes. That will clearly put under reasons of 701. I know of nothing in the Unit Agreement which is contrary to 701.

MR. MORRIS: Would that include the provisions with respect to expanding the pilot area?

MR. KELLAHIN: It would conform.

MR. UTZ: Are there any other questions?

CROSS-EXAMINATION

BY MR. PORTER:

Q Mr. Snyder, did you testify as to percentages of the original oil and gas that would be recovered in the primary recovery? You gave a total figure of about something in excess of a million?

A No, sir, 5.4 million barrels.

Q And you think you might reasonably expect to recover that much here if this is successful?

A From 2.7 million to 5.4 million, yes, sir.

MR. PORTER: That is all.

MR. IRBY: I am Frank Irby, State Engineers Office.

CROSS-EXAMINATION

BY MR. IRBY:

Q I believe you testified that you anticipated taking your water from the San Andres?

A Yes, sir.



Q Where does the San Andres lie with respect to the producing formation?

A It is below the producing formation about 1,000 feet.

Q Do you have at this time an analysis of this water?

A No, sir.

Q Do you anticipate analyzing it before you put it to use?

A Yes, we would develop and analyze it for our own benefit. It would be necessary to know what treating program to make on the water.

Q Would you forward a copy of that to the State Engineer's Office in Santa Fe?

A Yes, sir.

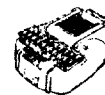
MR. IRBY: That is all the questions I have.

CROSS-EXAMINATION

BY MR. UTZ:

Q Mr. Snyder, in regard to the wells which have the casing set above a Langlie-Mattix bay, what type of test do you propose to make in order to determine that the water is going into the Langlie-Mattix Pool?

A There are several different types of injectivity tests that we can run to determine where the water is going and if the water, a portion of it, is going into this open interval above the Langlie-Mattix. Then, we would take the necessary measures to run the casing or whatever we would need to determine that the water is going into the Langlie-Mattix Pool.



Q How would you determine that it is going into the interval above the bay?

A By the method of running the surveys we can determine this. Say we are injecting 500 barrels and run an instrument in the hole and survey from the bottom up and see what percent of the water is going passed this instrument as at any particular depth so we can know when we get to the top of the Langlie-Mattix interval. If we still do not have 100 percent of the water going passed the instrument we will know that some of it is going above the Langlie-Mattix Pool. The same thing can be accomplished by radio activity traces and surveys.

Q If you determine water going above the Langlie-Mattix bay, then you set lines?

A Yes, sir.

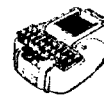
MR. UTZ: Are there any other questions? The witness may be excused.

(Witness excused)

MR. UTZ: Are there any statements in this case?

MR. BUELL: May it please the Examiner, Pan-American Petroleum Corporation is a working interest owner in this, and as such an interest owner we would like to concur in the recommendation made by Amerada in urging the Commission's approval of these requests.

MR. MORRIS: If the Examiner please, the Commission has received correspondence from Schermerhorn Oil Corporation, Kenwood



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Oil Company, Delhi-Taylor Oil Corporation, Humble Oil and Refining Company, Standard Oil Company of Texas, Continental Oil Company, Gulf Oil Corporation, the Pure Oil Company and Sinclair Oil and Gas Company, all concurring in the application of Amerada Petroleum Corporation.

MR. UTZ: Are there any other statements? The case will be taken under advisement.



I N D E XWITNESSPAGE

R. W. BOYLE

Direct examination by Mr. Kellahin

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A. E. SNYDER

Direct examination by Mr. Kellahin

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Cross-examination by Mr. Utz

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Cross-examination by Mr. Morris

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Cross-examination by Mr. Porter

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Cross-examination by Mr. Irby

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Cross-examination by Mr. Utz

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CERTIFICATE PAGE

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, KATHERINE PETERSON, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill, and ability.

Katherine Peterson
 COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2492, heard by me on Feb. 27, 1962.
[Signature] Examiner
 New Mexico Oil Conservation Commission

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