

DEARNLEY-MEIER REPORTING SERVICE, Inc.

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ALBUQUERQUE, N. M.
PHONE 243-6691

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

March 28, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Skelly Oil Company for approval) CASE
of the Gallegos-Gallup Sand Unit Agreement, San Juan) NO.
County, New Mexico. Applicant, in the above-styled) 2512
cause, seeks approval of the Gallegos-Gallup Sand)
Unit Agreement embracing 22,997.51 acres, more or)
less, of Federal, State, Indian and fee lands in)
portions of Townships 26 and 27 North, Ranges 11, 12)
and 13 West, San Juan County, New Mexico.)

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 2512.

MR. WHITFIELD: In the matter of application of Skelly
Oil Company for approval of the Gallegos-Gallup Sand Unit Agree-
ment, San Juan County, New Mexico.

MR. SELINGER: The next case is a companion case. I
wonder if the Examiner has any objections to combining the two
for taking testimony, or, we could treat them separately.

MR. UTZ: 2512 and 2513?

MR. SELINGER: Yes.

MR. UTZ: Is there any objection to consolidating
2512 and 2513 for the purposes of testimony? We will so do.

(Whereupon, Applicant's Exhibit
No. 1 and 1-A in Case 2512
Marked for Identification.)



MR. UTZ: Are there any other appearances to be made in Cases 2512 or 2513?

Mr. Selinger, you may proceed with your Unit Agreement testimony.

MR. SELINGER: We would like to make part of the record the appearance of our local counsel in writing. We have two witnesses, one for Case 2512 and one for Case 2513 that we would like to have sworn at this time.

(Witnesses sworn)

KENNETH E. JONES,

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

DIRECT EXAMINATION

BY MR. SELINGER:

Q State your name.

A Kenneth E. Jones.

Q And you are associated with what company?

A Skelly Oil Company.

Q In what capacity?

A I'm senior petroleum engineer in charge of the unitization section.

Q Are you a graduate of an accredited school in petroleum engineering?

A Yes, I am.

Q What is your experience with respect to the type of

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work you are doing now and generally in petroleum engineering?
For example, how long have you been at your profession?

A I graduated from the University of Pittsburgh in 1951 and since July of 1951 I've been in the petroleum end of the business. I served three years as a field engineer and then was transferred to the general office for Skelly Oil Company, and since that time I have been working primarily on units, unit operation and the formation of units.

Q As such, have you been actively engaged in working on the Gallegos-Gallup Sand Unit area of San Juan County?

A Yes, I have.

Q As a result of your activities have you had under your supervision and with your help, worked out the Unit Agreement which is Exhibit One in Case 2512?

A Yes.

Q Is this Unit Agreement a usual and normal agreement in the oil business?

A Yes. This is what we call the Federal type Unit Agreement. As a matter of fact, it's modeled after Central Bisti and West Bisti Agreement.

Q Attached to this Unit Agreement you have what you have marked as Exhibits A, B and C, the tract map, the tract data and the percentage participation, is that correct?

A That's right.

Q Is the U. S. Geological Survey or the State involved in



this Unit Agreement?

A Yes, both of them are.

Q Have both of these agencies been contacted?

A Yes.

Q In the filing of the application was there attached thereto a list of all possible working and royalty interests to whom were given notice of this Hearing?

A Yes, there was.

MR. SELINGER: We would like to offer in evidence Skelly Exhibit Number One to which is attached Exhibit A and on the railing is a blown-up copy of the Unit area which is similar to Exhibit A which indicates the unit area as outlined in the Unit Agreement, Exhibit One. That's for the benefit of all parties here to have a blown-up version of Exhibit A. I believe that's all we have of this witness.

MR. UTZ: Without objection, Exhibits 1 and 1-A will be entered into the record of this Case.

(Whereupon, Applicant's Exhibits
No. 1 and 1-A in Case 2512
Introduced into Evidence.)

MR. UTZ: Are there questions of the witness?

MR. MORRIS: Yes, sir.

CROSS EXAMINATION

BY MR. MORRIS:

Q. Mr. Jones, would you point out on your Exhibit the acreage that is owned by the Frontier Refining Company, please?



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A You want me to point it out on the map?

MR. SELINGER: Yes, put it on the map.

Q (By Mr. Morris) Yes, if you could indicate it with a red "X" on the Exhibit, please.

A All right.

Q Mr. Jones, the acreage that you have marked, I believe in Township 27 North, Range 12 West, the west half and the southeast quarter of Section 31, the east half of Section 5 and the south half of Section 4.

A That's right within the participating area and then they own the northwest quarter of Section 6, the northeast quarter of Section 1 in the area which lies outside the participating area.

Q Mr. Jones, have you been informed by the Frontier Refining Company that they will not commit their acreage to your unit?

A Yes, we have.

Q The Commission has also received correspondence in that regard. Will the nonjoinder of this particular acreage detrimentally affect your plans for the formation of this unit?

A The nonjoinder will not effect the immediate plans. It could possibly be that in the immediate future we plan a pilot area, it could possibly be that when the pilot is expanded that it may give us some control difficulty.

Q Is your pilot area projected to cover any of the



acreage belonging to Frontier?

A No, it isn't.

Q How close to it would the pilot area be?

A The pilot area is a mile, two miles; no, a mile from Frontier property. You want me to give you where the pilot area is?

Q No, sir, that will probably be covered later. Do you foresee any difficulty in getting other interest owners within your unit to commit their acreage to the unit in view of the fact that Frontier has indicated their reluctance to join?

A No, we don't. As a matter of fact, we are trying to iron out the difficulties between us and Frontier, also.

Q Your Unit Agreement has the standard nonjoinder clause in it, does it not?

A Yes, it does.

MR. MORRIS: I have no further question.

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

Mr. Nutter.

BY MR. NUTTER:

Q What percentage of the actual working interest has actually committed itself to the unit, Mr. Jones?

A Skelly has committed its interests, El Paso has committed their interest, Western Development has committed their interest and Gulf has informed us that they will commit their interest tomorrow; that would be approximately sixty-five percent.

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Q What percentage of the total would Frontier represent?

A Approximately nine percent.

Q This leaves approximately twenty-six percent then that you haven't covered. Is this just tentatively committed or tentatively not committed, or what --

A Oh, --

Q -- on the remaining twenty-six percent?

A We believe that the remaining percentage will sign with possibly the exception of Pan American. Of course, we have high hopes that these people can be convinced.

Q At this time you have sixty-five percent committed, including the acreage that will be committed to them?

A That's right.

Q Are you speaking of the percentage as being a percentage of the participating area or the acreage within the unit area?

A Participating area.

Q But the unit does have a provision of subsequent joinder?

A Yes, it does.

MR. NUTTER: Thank you.

BY MR. UTZ:

Q What seems to be the difficulty in obtaining the permission of these people to join this unit?

A In the Pan American instance it boils down to a return on investment basis. The area, of course, hasn't returned too



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much money on a primary basis and just the fact that some of the companies don't think that it will ultimately turn out to be a paying flood. That's part of the reason why we're going to pilot first. In Frontier's instance I'm at a loss to tell you exactly what the cause is. They've blown hot and cold for the last three or four years. They are going to go and then they are not going to go. We have had meetings where the Minutes reflect that they voted to go along. As a matter of fact, we were quite sure they would go along up until just recently. We're negotiating with Frontier, trying to straighten that out.

Q Is it a matter of interest?

A By "interest" you mean participation?

Q Yes, their interest in the participation formula?

A That could be some of it, yes.

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

The witness may be excused.

(Witness excused.)

MR. SELINGER: We would like to offer Skelly Exhibit Two, a letter from El Paso and I don't know whether your Commission files reflect missives from any other interested parties.

(Whereupon, Applicant's Exhibit No. 2 in Case 2512, Marked, and Offered into Evidence.)

MR. MORRIS: Mr. Selinger, the Commission has received a letter and a telegram from the Frontier Refining Company stating that they would not commit any of their leases to the



proposed unit area and they will be made part of the file.

MR. SELINGER: No objection. I presume the Commission will give weight to the fact that it's in written form and no appearance by them.

JOHN B. CHAMBERS,

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

DIRECT EXAMINATION

BY MR. SELINGER:

Q State your name.

A John B. Chambers.

MR. SELINGER: Just a minute. We would like to have the record reflect in Case 2513 the local appearance by Mr. White in this case.

Q (By Mr. Selinger) Now, state your name.

A John B. Chambers.

Q And you are associated with what company?

A Skelly Oil Company.

Q In what capacity?

A As a Petroleum Engineer in the Unitization Section.

Q Are you familiar with Skelly's application with respect to a proposed pilot flood in a proposed unit called the Gallegos-Gallup Sand Unit?

A Yes, sir.

Q Have you been actively working on this proposal?



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A Yes, sir.

Q Both as to the Unit Agreement and as to the proposed injection program?

A Yes, sir.

(Whereupon, Applicant's Exhibit
No. 1 in Case 2513
Marked for Identification.)

Q I'll show you what has been marked as Exhibit One and ask you to state whether or not you prepared or had it prepared under your supervision?

A Yes, I did.

Q Now, referring to Exhibit One, I'll ask you to state what the heavy black line and what the yellow and green colors are.

A The heavy black line on the Exhibit designates the boundary of the unit area, the proposed unit area, the hashed line within the dark line designates the initial participating area. The area in green being the participating area, the area in yellow being the unit area outside the initial participating area.

Q What do the red colors surrounding the six locations indicate?

A Those are the six proposed injection wells for a pilot water flood.

Q Are these six proposed injection wells on Skelly acreage?



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A Yes, sir.

Q Does Skelly offset these units either directly or diagonally?

A Skelly offsets these wells on the north, on the west and on the south; El Paso Natural Gas Products Company offsets them on the east along with Skelly.

Q There are approximately ninety-five wells in the field, is that correct?

A Ninety-four, I believe.

Q Ninety-four. And the schedule indicates an allowable of four hundred sixty-one barrels a day for an average of approximately five barrels, is that correct?

A Yes, sir.

Q There are no wells that produce the top unit allowable of ninety-four barrels at this time?

A Not to my knowledge.

Q Is it true that the majority of wells have extremely high gas-oil ratio and are penalized or are not affected by a non-effective penalty?

A Would you repeat your question?

Q Is it true that the majority of the wells are penalized by a gas-oil ratio or have a non-effective penalty?

A Yes, sir.

Q A number of wells are shut in or are temporarily abandoned, is that correct?



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A Yes, sir.

Q And the highest allowable within the unit area is approximately fifteen barrels, is that correct?

A Yes, sir. Fifteen to twenty barrels.

Q The highest allowable in the field is the Pan-Am Well on their Randel, which is outside the unit area having an allowable of twenty-two barrels?

A Yes, sir.

Q There has been negotiation on this matter for several years, approximately four to five years, is that correct?

A That is correct.

Q Would you say that this field is in a salvage state at this time?

A Very definitely.

Q And there have been doubts as to the success, either economically or feasibility from a reservoir standpoint, as to water flooding. Is that the reason why you are attempting to start out initially with a pilot project?

A Yes, sir.

Q You are not concerned with allowable, either by the individual wells or by the project at this time since the wells are capable of producing so small an amount?

A That is correct.

Q It is immaterial whether the allowable is assigned under the Commission's Rules 701 or whether it follows the top



unit allowable of ninety-four barrels per unit at the present time, we are not particularly concerned with allowables, is that correct?

A That's correct.

Q At least during the initial pilot flood stage?

A Yes, sir.

MR. SELINGER: I believe that's all we have of this witness. We would like to offer in evidence Exhibit One in Case 2513.

(Whereupon, Applicant's Exhibit
No. 1 in Case 2513
Introduced into Evidence.)

MR. UTZ: Without objection, Exhibit One will be introduced in the record in this case.

Are there questions of the witness?

MR. MORRIS: Yes.

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Chambers, are you recommending to the Commission that this project be considered a pressure maintenance project or a water flood project under the definitions in our rules?

A I believe under the definitions of a water flood project.

Q And it's your testimony that the allowable provisions of Rule 701 which would govern the water flood projects should be applicable to control your project?



A Yes, sir.

Q I believe you stated that the area was definitely a salvage type of a proposition. By that, do you mean that the wells should be classified as stripper wells?

A I'm afraid they are stripper wells.

Q Mr. Chambers, would you give me an acreage description of your pilot project area? I believe you just described the wells that would be in the area in your previous testimony.

A Yes, sir, these six injection wells would be located in Section 1, 2, 11, and 12 in Township 26 North, Range 12 West.

Q Is it your recommendation that the six 160-acre tracts upon which those wells are located form the original pilot area or is it your recommendation that the original pilot area be larger than that?

A I believe the original pilot area should be larger than the 160-acre tracts.

Q What plans does Skelly have at the moment for expanding this pilot project area, which directions will it move in and how fast do you foresee the expansion of this pilot area?

A We don't calculate initiating this pilot project until such time as this unit becomes effective. The Engineering Committee has estimated approximately eight to twelve months will elapse before we can determine any results as to whether this pilot project will be successful and as to whether we should expand the pilot to a field-wide flood. In answer to your direct

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question, until we have some results from the pilot project, we would be unable to state in which direction or what type of flood pattern would be used to expand the pilot project.

MR. SELINGER: I might say, Mr. Morris, in that connection that we will comply with Rule 701 as to expansion of the project in compliance with that rule.

MR. MORRIS: It will be expanded in stages rather than any -- no plans are made at this time to put a large area outside the pilot area on injection if the pilot area proves successful?

MR. SELINGER: No, as the witness said, it depends on the sign up and what the unit participating area will be and, of course, that will govern the direction of the expansion along with whatever data is secured from the initial pilot project, but in other words, the injection will not be on a vast scale until the unit has been properly formed.

MR. MORRIS: Thank you, Mr. Selinger, and thank you, Mr. Chambers.

BY MR. UTZ:

Q Mr. Chambers, in this pool are there not two or three, possibly four stringers in the Gallup pay?

A Yes, sir, there are four zones or benches, whichever they might be called, in the Gallup formation here.

Q Do you intend to flood all four of those in this area?

A No, sir. The six proposed injection wells and the wells immediately concerned with the pilot project within the

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double five spot pattern are completed only in the fourth zone which is the better quality zone of the four.

Q You have no plans at all to flood the three upper sections?

A The Engineering Committee has discussed the possibility of flooding the upper sections and certainly if the pilot project is successful we would make some attempt to flood the upper zones. However, we felt by injecting into this fourth or bottom bench we could determine the results of the pilot more rapidly and also determine if there is communication between these zones of which we are not aware at the present time.

Q Approximately how thick is your fourth zone?

A Approximately eighteen feet.

Q Do you have anything as to permeability?

A Yes, sir, the fourth zone is approximately one and a half millidarcies as the permeability that has been established.

MR. SELINGER: One and one half. That's all.

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

MR. SELINGER: Mr. Examiner, I might add that attached to our application is the casing program for the six wells that we're proposing to use and it has the casing and cementing program attached to our application.

MR. NUTTER: That answers some of my questions.

BY MR. NUTTER:

Q Mr. Chambers, what has been the primary recovery in



this area, not only by individual wells, but as the area as a whole is concerned?

A The primary recovery, I believe, around the first of September last year, or the latest figures I had as I recall, was nine hundred sixty-one thousand barrels of oil.

Q Would that be for the participating area?

A Yes, sir. That would be within the participating area.

Q How about per well recoveries, what have they been in the neighborhood of?

A I would estimate the individual recoveries are between nine and fourteen thousand barrels.

Q Per well?

A Per well.

Q What percentage of the original oil in place does the primary recovery represent?

A Approximately five percent.

Q What percentage of the remaining ninety-five percent of the oil that's in place would you expect to recover from this project? Have you made any predictions on that?

A Well, the predictions, sir, would be based on the success of the pilot project. If the field can be successfully flooded we have estimated an additional recovery of approximately nine hundred seventy-two thousand barrels, which as I recall, would be in the neighborhood of four percent additional recovery over primary.

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Q What about your water supply source here?

A The water supply which we intend to use is fresh water from an Ojo-Alamo sand at a depth of approximately four hundred feet, sir.

Q Have the water supply wells been drilled as yet?

A No.

Q Has the Ojo-Alamo water been tested for compatibility with the formation fluids?

A Not by Skelly Oil Company.

Q Not by Skelly?

A No, sir.

MR. UTZ: Has it been tested at all to your knowledge?

A There are two wells owned by El Paso Natural Gas Company in the area north of the Gallegos-Gallup field and they have had water analyses run, but to my knowledge, there have been no compatibility tests between the Ojo-Alamo and the Gallegos water.

Q (By Mr. Nutter) So you don't know what treatment of the water will be necessary, if any?

A No, we don't know until they drill a well.

Q What do you expect your injection volumes to be?

A We estimate a maximum volume of six thousand barrels.

Q For the six wells?

A Six thousand barrels a day for the six wells.

Q Would this probably be in the neighborhood of a



thousand barrels each?

A Yes.

Q What kind of pressures are you estimating?

A We estimate maximum pressure of approximately around fifteen hundred pounds at the well head.

Q At the well head?

A Yes.

Q You mentioned that your flood will be confined to the fourth bench of the Gallup Sand; are these six wells, these injection wells opened to all four benches?

A No, sir. They are open only in the fourth bench.

Q And the offsetting producing wells are open to the fourth bench, also?

A That is correct.

Q Is injection here through perforation?

A Yes, sir.

Q Will this be open hole completion?

A No, sir, these wells are cased below the producing formation.

Q What has been the normal cement program here, Mr. Chambers?

A I can give you an example of our J. W. Goddard Number Six which is one of the proposed injection wells. This well, are you interested in surface casing or just the long string?

Q I'm interested in both of them, actually.



A This well had four hundred twelve feet of ten and three-quarter inch thirty-two point seven five pound-round 2-H40 casing, set at four hundred twenty-six feet. It would be a Kelly Burke elevation with four hundred twenty-five sacks of cement.

Q I presume that was circulated?

A Yes, sir. We ran five and a half fourteen pound eight round J fifty-five casing, fifty-one hundred fifty-four feet in this well, set it at fifty-one hundred fifty-nine feet, with a hundred twenty-five sacks, plus one hundred twenty-five sacks of Strata-Crete. That was our normal completion.

Q What was the estimated top on the cement?

A I don't have that information available. However, it's common practice with Skelly Oil Company to run temperature survey following a cement job on a long string.

Q This two hundred fifty sacks that were used here in the five and a half inch pipe, is this fairly typical cement job for the area?

A Yes, sir.

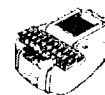
Q Under normal circumstances would that two hundred fifty sacks of cement bring the cement up above all the ventures of the Gallup Sand?

A I would estimate that it would.

MR. NUTTER: I believe that's all, thank you.

MR. UTZ: Are there other questions?

MR. IRBY: Mr. Examiner, I'm Frank Irby, State Engineer's



Office. I would like to ask one question, if I may. Whether or not this injection will be through tubing and packer or directly down the casing?

A We are calculating, sir, actually no decision has been made as to how we would inject this water. We are calculating at the present time of injecting down the casing since the fourth bench is the only bench that's open.

Q (By Mr. Irby) Are any of your proposed injection wells cased with a casing and cementing program inferior to the one that you mentioned?

A No, sir, they are identical.

MR. UTZ: Any other questions?

MR. SELINGER: Mr. Examiner, attached to our application are the logs of these six proposed injection wells and as Exhibit Two in Case 2513, we would like to offer a letter from El Paso.

(Whereupon, Applicant's Exhibit
No. 2 in Case 2513
Marked for Identification.)

MR. UTZ: Without objection these Exhibits will be entered into the record.

(Whereupon, Applicant's Exhibit
No. 2 in Case 2513
Introduced into Evidence.)

MR. IRBY: May I ask another question, Mr. Examiner?

MR. UTZ: Yes, sir.

BY MR. IRBY:

Q Is there a sufficiency of water in this Ojo-Alamo sand



to complete this project?

A We believe there is.

Q And you say you have no analysis of the water?

A I do not.

Q Would you furnish the State Engineer's Office a copy of the analysis as soon as it's run?

A Yes, sir.

MR. IRBY: I would further appreciate receiving the Exhibits that were mentioned. No copy of the application or the Exhibits have been furnished the State Engineer. This Exhibit that he mentioned pertaining to the casing program is the one I'm particularly interested in.

MR. SELINGER: I'm giving Mr. Irby a copy right now.

We rest. That's all we have.

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

(Witness excused)

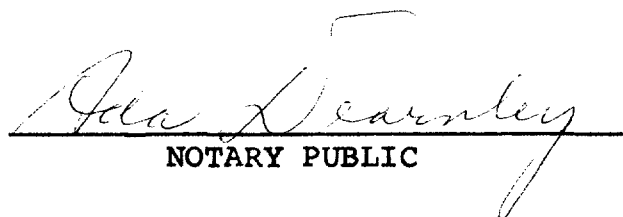
MR. UTZ: Any other statements in this case? The case will be taken under advisement.

Gentlemen, may I have your attention. Due to the fact that we have had four cases continued to after lunch and we have given notice that all cases after 1514 will not be heard until after 1:00 o'clock, counsel advises me that we shall not hear any of the cases so advertised until 1:00 o'clock. So I have no alternative except to break until 1:15.



STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, New Mexico, do hereby certify that the foregoing and attached transcript of Hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.


 NOTARY PUBLIC

My Commission Expires:

June 19, 1963

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner Hearing of Case No. 2512, heard by me on March 28, 1962.


 Examiner
 New Mexico Oil Conservation Commission

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BEFORE: Elvis A. Utz, Examiner

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Q State your name.

A Kenneth E. Jones.

Q And you are associated with what company?

A Skelly Oil Company.

Q In what capacity?

A I'm senior petroleum engineer in charge of the unitization section.

Q Are you a graduate of an accredited school in petroleum engineering?

A Yes, I am.

Q What is your experience with respect to the type of

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work you are doing now and generally in petroleum engineering?

For example, how long have you been at your profession?

A I graduated from the University of Pittsburgh in 1951 and since July of 1951 I've been in the petroleum end of the business. I served three years as a field engineer and then was transferred to the general office for Skelly Oil Company, and since that time I have been working primarily on units, unit operation and the formation of units.

Q As such, have you been actively engaged in working on the Gallegos-Gallup Sand Unit area of San Juan County?

A Yes, I have.

Q As a result of your activities have you had under your supervision and with your help, worked out the Unit Agreement which is Exhibit One in Case 2512?

A Yes.

Q Is this Unit Agreement a usual and normal agreement in the oil business?

A Yes. This is what we call the Federal type Unit Agreement. As a matter of fact, it's modeled after Central Bisti and West Bisti Agreement.

Q Attached to this Unit Agreement you have what you have marked as Exhibits A, B and C, the tract map, the tract data and the percentage participation, is that correct?

A That's right.

Q Is the U. S. Geological Survey or the State involved in



this Unit Agreement?

A Yes, both of them are.

Q Have both of these agencies been contacted?

A Yes.

Q In the filing of the application was there attached thereto a list of all possible working and royalty interests to whom were given notice of this Hearing?

A Yes, there was.

MR. SELINGER: We would like to offer in evidence Skelly Exhibit Number One to which is attached Exhibit A and on the railing is a blown-up copy of the Unit area which is similar to Exhibit A which indicates the unit area as outlined in the Unit Agreement, Exhibit One. That's for the benefit of all parties here to have a blown-up version of Exhibit A. I believe that's all we have of this witness.

MR. UTZ: Without objection, Exhibits 1 and 1-A will be entered into the record of this Case.

(Whereupon, Applicant's Exhibits
No. 1 and 1-A in Case 2512
Introduced into Evidence.)

MR. UTZ: Are there questions of the witness?

MR. MORRIS: Yes, sir.

CROSS EXAMINATION

BY MR. MORRIS:

Q. Mr. Jones, would you point out on your Exhibit the acreage that is owned by the Frontier Refining Company, please?

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A You want me to point it out on the map?

MR. SELINGER: Yes, put it on the map.

Q (By Mr. Morris) Yes, if you could indicate it with a red "X" on the Exhibit, please.

A All right.

Q Mr. Jones, the acreage that you have marked, I believe in Township 27 North, Range 12 West, the west half and the southeast quarter of Section 31, the east half of Section 5 and the south half of Section 4.

A That's right within the participating area and then they own the northwest quarter of Section 6, the northeast quarter of Section 1 in the area which lies outside the participating area.

Q Mr. Jones, have you been informed by the Frontier Refining Company that they will not commit their acreage to your unit?

A Yes, we have.

Q The Commission has also received correspondence in that regard. Will the nonjoinder of this particular acreage detrimentally affect your plans for the formation of this unit?

A The nonjoinder will not effect the immediate plans. It could possibly be that in the immediate future we plan a pilot area, it could possibly be that when the pilot is expanded that it may give us some control difficulty.

Q Is your pilot area projected to cover any of the



acreage belonging to Frontier?

A No, it isn't.

Q How close to it would the pilot area be?

A The pilot area is a mile, two miles; no, a mile from Frontier property. You want me to give you where the pilot area is?

Q No, sir, that will probably be covered later. Do you foresee any difficulty in getting other interest owners within your unit to commit their acreage to the unit in view of the fact that Frontier has indicated their reluctance to join?

A No, we don't. As a matter of fact, we are trying to iron out the difficulties between us and Frontier, also.

Q Your Unit Agreement has the standard nonjoinder clause in it, does it not?

A Yes, it does.

MR. MORRIS: I have no further question.

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

Mr. Nutter.

BY MR. NUTTER:

Q What percentage of the actual working interest has actually committed itself to the unit, Mr. Jones?

A Skelly has committed its interests, El Paso has committed their interest, Western Development has committed their interest and Gulf has informed us that they will commit their interest tomorrow; that would be approximately sixty-five percent.

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Q What percentage of the total would Frontier represent?

A Approximately nine percent.

Q This leaves approximately twenty-six percent then that you haven't covered. Is this just tentatively committed or tentatively not committed, or what --

A Oh, --

Q -- on the remaining twenty-six percent?

A We believe that the remaining percentage will sign with possibly the exception of Pan American. Of course, we have high hopes that these people can be convinced.

Q At this time you have sixty-five percent committed, including the acreage that will be committed to them?

A That's right.

Q Are you speaking of the percentage as being a percentage of the participating area or the acreage within the unit area?

A Participating area.

Q But the unit does have a provision of subsequent joinder?

A Yes, it does.

MR. NITTER: Thank you.

BY MR. UTZ:

Q What seems to be the difficulty in obtaining the permission of these people to join this unit?

A In the Pan American instance it boils down to a return on investment basis. The area, of course, hasn't returned too



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much money on a primary basis and just the fact that some of the companies don't think that it will ultimately turn out to be a paying flood. That's part of the reason why we're going to pilot first. In Frontier's instance I'm at a loss to tell you exactly what the cause is. They've blown hot and cold for the last three or four years. They are going to go and then they are not going to go. We have had meetings where the Minutes reflect that they voted to go along. As a matter of fact, we were quite sure they would go along up until just recently. We're negotiating with Frontier, trying to straighten that out.

Q Is it a matter of interest?

A By "interest" you mean participation?

Q Yes, their interest in the participation formula?

A That could be some of it, yes.

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

The witness may be excused.

(Witness excused.)

MR. SELINGER: We would like to offer Skelly Exhibit Two, a letter from El Paso and I don't know whether your Commission files reflect missives from any other interested parties.

(Whereupon, Applicant's Exhibit No. 2 in Case 2512, Marked, and Offered into Evidence.)

MR. MORRIS: Mr. Selinger, the Commission has received a letter and a telegram from the Frontier Refining Company stating that they would not commit any of their leases to the



proposed unit area and they will be made part of the file.

MR. SELINGER: No objection. I presume the Commission will give weight to the fact that it's in written form and no appearance by them.

JOHN B. CHAMBERS,

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

DIRECT EXAMINATION

BY MR. SELINGER:

Q State your name.

A John B. Chambers.

MR. SELINGER: Just a minute. We would like to have the record reflect in Case 2513 the local appearance by Mr. White in this case.

Q (By Mr. Selinger) Now, state your name.

A John B. Chambers.

Q And you are associated with what company?

A Skelly Oil Company.

Q In what capacity?

A As a Petroleum Engineer in the Unitization Section.

Q Are you familiar with Skelly's application with respect to a proposed pilot flood in a proposed unit called the Gallegos-Gallup Sand Unit?

A Yes, sir.

Q Have you been actively working on this proposal?



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A Yes, sir.

Q Both as to the Unit Agreement and as to the proposed injection program?

A Yes, sir.

(Whereupon, Applicant's Exhibit
No. 1 in Case 2513
Marked for Identification.)

Q I'll show you what has been marked as Exhibit One and ask you to state whether or not you prepared or had it prepared under your supervision?

A Yes, I did.

Q Now, referring to Exhibit One, I'll ask you to state what the heavy black line and what the yellow and green colors are.

A The heavy black line on the Exhibit designates the boundary of the unit area, the proposed unit area, the hashed line within the dark line designates the initial participating area. The area in green being the participating area, the area in yellow being the unit area outside the initial participating area.

Q What do the red colors surrounding the six locations indicate?

A Those are the six proposed injection wells for a pilot water flood.

Q Are these six proposed injection wells on Skelly acreage?



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A Yes, sir.

Q Does Skelly offset these units either directly or diagonally?

A Skelly offsets these wells on the north, on the west and on the south; El Paso Natural Gas Products Company offsets them on the east along with Skelly.

Q There are approximately ninety-five wells in the field, is that correct?

A Ninety-four, I believe.

Q Ninety-four. And the schedule indicates an allowable of four hundred sixty-one barrels a day for an average of approximately five barrels. is that correct?

A Yes, sir.

Q There are no wells that produce the top unit allowable of ninety-four barrels at this time?

A Not to my knowledge.

Q Is it true that the majority of wells have extremely high gas-oil ratio and are penalized or are not affected by a non-effective penalty?

A Would you repeat your question?

Q Is it true that the majority of the wells are penalized by a gas-oil ratio or have a non-effective penalty?

A Yes, sir.

Q A number of wells are shut in or are temporarily abandoned, is that correct?



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A Yes, sir.

Q And the highest allowable within the unit area is approximately fifteen barrels, is that correct?

A Yes, sir. Fifteen to twenty barrels.

Q The highest allowable in the field is the Pan-Am Well on their Randel, which is outside the unit area having an allowable of twenty-two barrels?

A Yes, sir.

Q There has been negotiation on this matter for several years, approximately four to five years, is that correct?

A That is correct.

Q Would you say that this field is in a salvage state at this time?

A Very definitely.

Q And there have been doubts as to the success, either economically or feasibility from a reservoir standpoint, as to water flooding. Is that the reason why you are attempting to start out initially with a pilot project?

A Yes, sir.

Q You are not concerned with allowable, either by the individual wells or by the project at this time since the wells are capable of producing so small an amount?

A That is correct.

Q It is immaterial whether the allowable is assigned under the Commission's Rules 701 or whether it follows the top



unit allowable of ninety-four barrels per unit at the present time, we are not particularly concerned with allowables, is that correct?

A That's correct.

Q At least during the initial pilot flood stage?

A Yes, sir.

MR. SELINGER: I believe that's all we have of this witness. We would like to offer in evidence Exhibit One in Case 2513.

(Whereupon, Applicant's Exhibit
No. 1 in Case 2513
Introduced into Evidence.)

MR. UTZ: Without objection, Exhibit One will be introduced in the record in this case.

Are there questions of the witness?

MR. MORRIS: Yes.

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Chambers, are you recommending to the Commission that this project be considered a pressure maintenance project or a water flood project under the definitions in our rules?

A I believe under the definitions of a water flood project.

Q And it's your testimony that the allowable provisions of Rule 701 which would govern the water flood projects should be applicable to control your project?



A Yes, sir.

Q I believe you stated that the area was definitely a salvage type of a proposition. By that, do you mean that the wells should be classified as stripper wells?

A I'm afraid they are stripper wells.

Q Mr. Chambers, would you give me an acreage description of your pilot project area? I believe you just described the wells that would be in the area in your previous testimony.

A Yes, sir, these six injection wells would be located in Section 1, 2, 11, and 12 in Township 26 North, Range 12 West.

Q Is it your recommendation that the six 160-acre tracts upon which those wells are located form the original pilot area or is it your recommendation that the original pilot area be larger than that?

A I believe the original pilot area should be larger than the 160-acre tracts.

Q What plans does Skelly have at the moment for expanding this pilot project area, which directions will it move in and how fast do you foresee the expansion of this pilot area?

A We don't calculate initiating this pilot project until such time as this unit becomes effective. The Engineering Committee has estimated approximately eight to twelve months will elapse before we can determine any results as to whether this pilot project will be successful and as to whether we should expand the pilot to a field-wide flood. In answer to your direct

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question, until we have some results from the pilot project, we would be unable to state in which direction or what type of flood pattern would be used to expand the pilot project.

MR. SELINGER: I might say, Mr. Morris, in that connection that we will comply with Rule 701 as to expansion of the project in compliance with that rule.

MR. MORRIS: It will be expanded in stages rather than any -- no plans are made at this time to put a large area outside the pilot area on injection if the pilot area proves successful?

MR. SELINGER: No, as the witness said, it depends on the sign up and what the unit participating area will be and, of course, that will govern the direction of the expansion along with whatever data is secured from the initial pilot project, but in other words, the injection will not be on a vast scale until the unit has been properly formed.

MR. MORRIS: Thank you, Mr. Selinger, and thank you, Mr. Chambers.

BY MR. UTZ:

Q Mr. Chambers, in this pool are there not two or three, possibly four stringers in the Gallup pay?

A Yes, sir, there are four zones or benches, whichever they might be called, in the Gallup formation here.

Q Do you intend to flood all four of those in this area?

A No, sir. The six proposed injection wells and the wells immediately concerned with the pilot project within the

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double five spot pattern are completed only in the fourth zone which is the better quality zone of the four.

Q You have no plans at all to flood the three upper sections?

A The Engineering Committee has discussed the possibility of flooding the upper sections and certainly if the pilot project is successful we would make some attempt to flood the upper zones. However, we felt by injecting into this fourth or bottom bench we could determine the results of the pilot more rapidly and also determine if there is communication between these zones of which we are not aware at the present time.

Q Approximately how thick is your fourth zone?

A Approximately eighteen feet.

Q Do you have anything as to permeability?

A Yes, sir, the fourth zone is approximately one and a half millidarcies as the permeability that has been established.

MR. SELINGER: One and one half. That's all.

MR. UEL: Are there other questions of the witness?

MR. SELINGER: Mr. Examiner, I might add that attached to our application is the casing program for the six wells that we're proposing to use and it has the casing and cementing program attached to our application.

MR. NUTTER: That answers some of my questions.

BY MR. NUTTER:

Q Mr. Chambers, what has been the primary recovery in



this area, not only by individual wells, but as the area as a whole is concerned?

A The primary recovery, I believe, around the first of September last year, or the latest figures I had as I recall, was nine hundred sixty-one thousand barrels of oil.

Q Would that be for the participating area?

A Yes, sir. That would be within the participating area.

Q How about per well recoveries, what have they been in the neighborhood of?

A I would estimate the individual recoveries are between nine and fourteen thousand barrels.

Q Per well?

A Per well.

Q What percentage of the original oil in place does the primary recovery represent?

A Approximately five percent.

Q What percentage of the remaining ninety-five percent of the oil that's in place would you expect to recover from this project? Have you made any predictions on that?

A Well, the predictions, sir, would be based on the success of the pilot project. If the field can be successfully flooded we have estimated an additional recovery of approximately nine hundred seventy-two thousand barrels, which as I recall, would be in the neighborhood of four percent additional recovery over primary.

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Q What about your water supply source here?

A The water supply which we intend to use is fresh water from an Ojo-Alamo sand at a depth of approximately four hundred feet, sir.

Q Have the water supply wells been drilled as yet?

A No.

Q Has the Ojo-Alamo water been tested for compatibility with the formation fluids?

A Not by Kelly Oil Company.

Q Not by Kelly?

A No, sir.

MR. JTB: Has it been tested at all to your knowledge?

A There are two wells owned by El Paso Natural Gas Company in the area north of the Gallegos-Gallup field and they have had water analyses run, but to my knowledge, there have been no compatibility tests between the Ojo-Alamo and the Gallegos water.

Q (By Mr. Sutter) So you don't know what treatment of the water will be necessary, if any?

A No, we don't know until they drill a well.

Q What do you expect your injection volumes to be?

A We estimate a maximum volume of six thousand barrels.

Q For the six wells?

A Six thousand barrels a day for the six wells.

Q Would this probably be in the neighborhood of a



thousand barrels each?

A Yes.

Q What kind of pressures are you estimating?

A We estimate maximum pressure of approximately around fifteen hundred pounds at the well head.

Q At the well head?

A Yes.

Q You mentioned that your flood will be confined to the fourth bench of the Gallup Sand; are these six wells, those injection wells opened to all four benches?

A No, sir. They are open only in the fourth bench.

Q And the offsetting producing wells are open to the fourth bench, also?

A That is correct.

Q Is injection here through perforation?

A Yes, sir.

Q Will this be open hole completion?

A No, sir, these wells are cased below the producing formation.

Q What has been the normal cement program here, Mr. Chambers?

A I can give you an example of our J. W. Goddard Number Six which is one of the proposed injection wells. This well, are you interested in surface casing or just the long string?

Q I'm interested in both of them, actually.



A This well had four hundred twelve feet of ten and three-quarter inch thirty-two point seven five pound-round 2-H40 casing, set at four hundred twenty-six feet. It would be a Kelly Burke elevation with four hundred twenty-five sacks of cement.

Q I presume that was circulated?

A Yes, sir. We ran five and a half fourteen pound eight round J fifty-five casing, fifty-one hundred fifty-four feet in this well, set it at fifty-one hundred fifty-nine feet, with a hundred twenty-five sacks, plus one hundred twenty-five sacks of Strata-Crete. That was our normal completion.

Q What was the estimated top on the cement?

A I don't have that information available. However, it's common practice with Skelly Oil Company to run temperature survey following a cement job on a long string.

Q This two hundred fifty sacks that were used here in the five and a half inch pipe, is this fairly typical cement job for the area?

A Yes, sir.

Q Under normal circumstances would that two hundred fifty sacks of cement bring the cement up above all the ventures of the Gallup Sand?

A I would estimate that it would.

MR. NUTTER: I believe that's all, thank you.

MR. UTM: Are there other questions?

MR. IRBY: Mr. Examiner, I'm Frank Irby, State Engineer's



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Office. I would like to ask one question, if I may. Whether or not this injection will be through tubing and packer or directly down the casing?

A We are calculating, sir, actually no decision has been made as to how we would inject this water. We are calculating at the present time of injecting down the casing since the fourth bench is the only bench that's open.

Q (By Mr. Irby) Are any of your proposed injection wells cased with a casing and cementing program inferior to the one that you mentioned?

A No, sir, they are identical.

MR. UTZ: Any other questions?

MR. DELLINGER: Mr. Examiner, attached to our application are the logs of these six proposed injection wells and as Exhibit Two in Case 2513, we would like to offer a letter from El Paso.

(Whereupon, Applicant's Exhibit
No. 2 in Case 2513
Marked for Identification.)

MR. UTZ: Without objection these exhibits will be entered into the record.

(Whereupon, Applicant's Exhibit
No. 2 in Case 2513
Introduced into Evidence.)

MR. IRBY: May I ask another question, Mr. Examiner?

MR. UTZ: Yes, sir.

BY MR. IRBY:

Q Is there a sufficiency of water in this Ojo-Alamo sand



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to complete this project?

A We believe there is.

Q And you say you have no analysis of the water?

A I do not.

Q Would you furnish the State Engineer's Office a copy of the analysis as soon as it's run?

A Yes, sir.

MR. IRBY: I would further appreciate receiving the exhibits that were mentioned. No copy of the application or the Exhibits have been furnished the State Engineer. This Exhibit that he mentioned pertaining to the casing program is the one I'm particularly interested in.

MR. SELINGER: I'm giving Mr. Irby a copy right now. We rest. That's all we have.

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

(Witness excused)

MR. UTZ: Any other statements in this case? The case will be taken under advisement.

Gentlemen, may I have your attention. Due to the fact that we have had four cases continued to after lunch and we have given notice that all cases after 1914 will not be heard until after 1:00 o'clock, counsel advises me that we shall not hear any of the cases so advertised until 1:00 o'clock. So I have no alternative except to break until 1:15.



STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, New Mexico, do hereby certify that the foregoing and attached transcript of hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

Ada Dearnley
 NOTARY PUBLIC

My Commission Expires:

June 19, 1963

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2512 heard by me on *May 28* 19 *62*.
[Signature], Examiner
 New Mexico Oil Conservation Commission

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