BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 20, 1962

EXAMINER HEARING

IN THE MATTER OF:	
Application of The Pure Oil Company for permission to dispose of salt water, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian formation through its State Lea "I" Well No. 1-36, located in Unit M of Section 36, Township 18 South, Range 35 East, South Vacuum-Devonian Pool, Lea County, New Mexico.	CASE 2706

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 2706.

MR. DURRETT: Application of The Pure Oil Company for permission to dispose of salt water, Lea County, New Mexico.

MR. MORRIS: Mr. Examiner, I'm Richard Morris of the law firm of Seth, Montgomery, Federici and Andrews, Santa Fe, New Mexico appearing for the applicant. This is the application of The Pure Oil Company for permission to dispose of salt water into the Devonian formation through a well completed by the applicant as a dry hole in the south portion of the South Vacuum-Devonian Pool in Lea County, New Mexico. We will have two

witnesses to present testimony in this case and ask they be sworn at this time.

(Witnesses sworn.)

GEORGE E. FISH

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. MORRIS:

Q State your name and position.

A George E. Fish, District Development Geologist for The Pure Oil Company, Midland District.

Q Mr. Fish, have you previously testified before this Commission?

A Yes, I have.

Q Have you prepared an exhibit, that being a structure map of the South Vacuum-Devonian Pool?

A Yes.

MR. MORRIS: I ask that be marked Exhibit No. 1.

(Whereupon, Applicant's Exhibit No. 1 was marked for identification.)

Q Referring to that exhibit, Mr. Fish, will you describe the data shown thereon?

A This is a structure map of the South Vacuum-Devonian Pool. The wells which are producing from various formations are

indicated by color code. The orange well producing from the Wolfcamp, the brown wells from the Bone Springs, the red wells from the Pennsylvanian, and the green wells from the Devonian formation.

This structural interpretation shows a south-east-north-west trending anticline bounded on the Northeast flank by a fault. Contour interval is 100 feet. The present estimated oil-water contact is shown by a dashed red line at subsea level of minus 7,355 feet. The South Vacuum Unit is shown by yellow outline. This map is contoured on top of the main Devonian porosity, which is the chief reservoir in the South Vacuum-Devonian Pool.

Q On this exhibit, Mr. Fish, is there also shown a line A-A^1 which will be a cross section which you'll present later?

A Yes, this is a cross section I've prepared through the three southernmost wells on the South Vacuum structural feature. One of these wells, the southernmost, was completed as a dry hole. This is The Pure Oil Company State Lea 1-36, which is located in the Southwest Quarter, Southwest Quarter of Section 36, Township 18 South, Range 35 East, Lea County, New Mexico.

This well was non-productive in the Devonian horizon. The main Devonian porosity was encountered below oil-water contact. The original oil-water contact was at minus 7,380. The presently-estimated oil-water contact is a calculated average oil-water

contact based on total pool withdrawals.

Q The present depth of the Pure's Well 1-36 is what depth?

A The driller's depth is 11,794 feet. I had better check my log to be sure. The log depth reached by Schlumberger was 11,737 feet. We feel there was probably some fill in the bottom of the hole so that we are presently assuming that the driller's total depth is the correct total depth.

Q Under Pure's proposal here today, would that well be deepened?

A Yes, the reason for the deepening is shown on the second exhibit, cross section A-A^{1}.

MR. MORRIS: I would like to have that exhibit marked as Exhibit 2.

(Whereupon, Applicant's Exhibit No. 2 was marked for identification.)

Q Referring to this Exhibit No. 2, your cross section, Mr. Fish, will you point out the features of that exhibit, please?

A This exhibit shows the structural attitude of the three wells at the southern portion of the South Vacuum-Devonian Pool. The top correlation line is the top of the Devonian marker, the second line from the top is labeled "top of main

porosity". This is the top of the reservoir, and this is the contour horizon which was used to prepare the structure map presented as Exhibit 1.

The estimated oil-water contact is shown by horizontal line. Referring to The Pure Oil Company's State Lea "I" 1-36 at the right-hand portion of the cross section, we see from the sonic log that the uppermost portion or interval of the Devonian is for the most part tight or non-porous. This interval was cored and drill stem tested during the drilling of this well, and was found to be non-productive or tight.

Drill stem tests in the bottom portion of the hole, which included, if you can see the porosity beginning to occur at a depth of about 11,783 feet. There is an indication there that we are just beginning to enter the main porosity horizon. A test of that interval recovered 4650 feet of salt water.

Q This is going to be your injection well and the one that will be deepened 150 to 200 feet?

A Well, approximately 150 feet. The reason for that deepening is that we are attempting to reach an equivalent zone where circulation was lost in the South Vacuum Unit 2-35.

Q Also shown on the cross section?

A Correct, it's the center well on the cross section. There is a loss circulation shown which occurred in this zone at

11,312 feet, which is approximately 129 feet below the top of the main porosity.

Q What would that loss circulation zone mean to you as a geologist?

A Well, it would mean that at that point there is a zone of extremely high permeability. We have observed in the Devonian porosity, or the reservoir portion of the Devonian, that there are large vugs present from pinpoint size up to as large as three inches in diameter. There's intercrystaline porosity and some fracturing is evidenced.

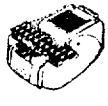
We feel that this is probably a zone where some very large vugs occur and with attendant high permeability, and that is the reason we lost circulation in that well.

Q By deepening your proposed injection well, you hope to encounter that same zone at a depth of 100 to 150 feet?

A That's true. That should be at approximately 11,915 feet in the State Lea "I" 36 if the sections in the two wells are comparable.

Q If that section is reached in your 1-36, what is your opinion with respect to the ability of that well to take salt water in large quantities into that zone, Mr. Fish?

A I believe that this well will be capable of taking large quantities of salt water due to the very high



permeability that we expect to encounter in this well and which has also been present in most of the wells in the South Vacuum-Devonian Pool.

Q This injection interval in your 1-36 well is how far below the present oil-water contact in this pool?

A Approximately 206 feet below the present oil-water contact.

Q How far would it be below what was the original oil-water contact in the pool?

A I believe that would be 179 feet.

Q Whatever the figure is, you figure that the oil-water contact has moved up 25 feet?

A Yes.

Q During the life of the pool?

A This field exhibits a strong natural water drive, and from the total withdrawals that have occurred, plus the fact that some of the wells are beginning to cut salt water in small amounts, one well which is producing salt water in a large amount, that the oil-water contact is moving updip.

Q In your opinion, Mr. Fish, will the injection of salt water in large quantities into the injection interval which you have outlined, will that injection harm the reservoir or any of the Devonian wells in the vicinity of this well?

A I don't believe that it will. It's my opinion that we will be adding a very minor amount of salt water to very large aquifier. That the percentages of water that we are putting into this well as compared to the Devonian aquifier as a whole will be of a very minor nature.

Q Do you have a log, a complete log on this proposed injection well?

A Yes, I do.

MR. MORRIS: I would like it to be marked Exhibit 3.

(Whereupon, Applicant's Exhibit No. 3 was marked for identification.)

Q Mr. Fish, were Exhibits 1 and 2 prepared by you or under your direction?

A Yes, sir, they were.

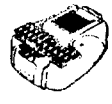
Q Exhibit 3, of course, is the log on the injection well.

MR. MORRIS: We offer at this time, Mr. Examiner, Applicant's Exhibits 1 through 3.

MR. UTZ: Without objection Exhibits 1 through 3 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 3 were admitted into evidence.)

MR. MORRIS: That's all we have of this witness on direct examination.



MR. UTZ: Are there questions of the witness?

MR. IRBY: Mr. Examiner.

MR. UTZ: Mr. Irby.

MR. IRBY: Frank Irby, State Engineer's Office. Are you prepared to testify with regard to the casing program set out in the application, or will the next witness do that?

A The next witness will cover that.

MR. IRBY: I have no questions, thank you.

CROSS EXAMINATION

BY MR. UTZ:

Q Are there any producing zones other than Devonian below 3800 in this pool?

A There are some wells that have been classified in the South Vacuum Pool. There is a South Vacuum-Bone Springs Pool. Those three wells are shown outlined with brown in Exhibit No. 1. There's also one Wolfcamp completion, I believe it is also called South Vacuum-Wolfcamp.

We were aware of these intervals during the drilling of all our wells on the South Vacuum Unit. We are aware of the productive possibilities. We examined the samples very carefully through these expected zones. In some cases we drill stem tested when there was an indication of a slight show, but we found that for all practical purposes on the South Vacuum Unit

itself that these intervals were non-productive. The Bone Spring production is limited to the North. It occurs in an East-West trending carbonate build-up, porosity occurring within this carbonate build-up.

However, we failed to find any porosity in that carbonate build-up to the South. The whole dolomite interval thins to the South and the porosity disappears in a Southerly direction. The same thing is true for the Pennsylvanian production shown on the Northeast portion of this map. This is classified as the Reeves-Pennsylvanian Field or Pool. The production there occurs in a sandstone of Strawn age, and it also thins and disappears in a Southerly direction.

We feel that although the formations are present, the equivalent agewise formations are equivalent in our area, that these formations do not exhibit productive characteristics in the area of the South Vacuum Unit or in the area of the proposed injection well.

Q In regard to your Exhibit No. 3 which is a log of the proposed injection well, would you give me the top of the Wolfcamp, Bone Springs and Pennsylvanian? I think they're marked.

A They are marked.

Q But I'm not familiar with your geologic symbols.

A You have the copy of the log that they were marked on.

MR. MORRIS: Why don't you step around and point out to the Examiner where they are?

Q Why don't you just take them and mark them?

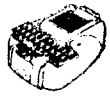
A (Witness complies.)

Q In your opinion is there any communication between the proposed injection well and the Wolfcamp-Pennsylvanian-Bone Springs with the producing zones in the pools to the Northwest?

A No, sir. It's my opinion that those reservoirs die out or pinch out, so-to-speak, South of the Jake Hammond well, which is located in the Northeast Quarter, Southwest Quarter of Section 27, 13 South, 35 East, Lea County, New Mexico. All the wells South of that point exhibited no porosity development or very minute scattered porosity development in the samples of the wells.

Some of those wells were drill stem tested on the basis of a slight sample show, but the recoveries in almost every instance were very small amounts of mud cut oil and pressures indicating that there was no permeability present in those wells. So, it's my opinion that no permeable communication exists between those wells and the Pure State Lea 1-36, which is our proposed injection well.

Q In your opinion, is there any likelihood of vertical communication in the vicinity of 11,600 feet?



A Is that in any particular well or --

Q Well, in the injection well.

A Yes. I would say that there is some probability of vertical permeability; oh, in the injection well?

Q Yes, sir.

A No, sir. At that depth the injection well is impermeable. The first permeability of any consequence occurs at approximately 11,783 feet in that well. The section above the main Devonian porosity is void of reservoirs or formations which exhibit any porosity or permeability to any great extent. Of course, there's also always a slight amount of permeability, but for all practical purposes it's zero.

Q M. W. would be what formation?

A Woodford. Woodford shale.

Q This packer would be set, in other words, the area 11,600 feet would be in the Woodford shale?

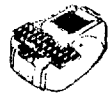
A Yes, sir.

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

(Witness excused.)

MR. UTZ: Mr. Morris, I believe we'll adjourn the hearing until about 1:30.

(Whereupon, a recess was taken until 1:30 P.M.)



AFTERNOON SESSION

MR. UTZ: The hearing will come to order. We'll continue in Case 2706.

J. R. MURPHY, JR.

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. MORRIS:

Q Please state your name and position.

A J. R. Murphy, Jr., District Petroleum Engineer, Pure Oil Company, Midland District.

Q You live in Midland, Texas?

A I do.

Q Mr. Murphy, have you previously testified before this Commission and had your qualifications accepted?

A I have.

Q Would you give to the Examiner a little of the background of this application from the standpoint of what administrative steps have been taken prior to this hearing?

A The Pure Oil Company, that is the major operator in the South Vacuum Field, has gotten together with the other operators and formed a cooperative water disposal system. As such we searched out all the possibilities for disposal in the area and

determined that the feasible interval would be the Delaware sand in The Pure Oil Company State Lea "I" No. 6-36. An application was made to the Commission for permission to dispose of the water into this well. Approval was given by S.W.D. 32 to dispose of the water into the Delaware interval, and this was dated December 16, 1961 and was amended April 26, 1962.

The amendment consisted of the use of a hydraulically inflammable open hole packer to serve as a seal and to confine the injection interval into the Delaware, with the open hole interval being from 5800 up to the intermediate casing set at 3701.

Q You say that authorization was by administrative order S.W.D. 32?

A Yes. sir.

Q Then was the amendment of that order by a separate order number?

A It was also S.W.D. 32.

Q It was just a letter of amendment to that order?

A Yes, sir.

After this permission was received, the regular forms were filed with the Conservation Commission to proceed with re-entering this well, drilling out the cement plugs and placing the plug in the hole at 7,000 feet to isolate the lower intervals in the well bore and to allow the injection interval to be from

5300 to 7,000 feet into the Delaware sand.

After stimulation, this well would take water only at a surface pressure of 16 to 1900 pounds, and at this pressure the rate would vary between one and seven barrels a minute, and there was no pressure variation with the variation in rate, which indicated that there was an interval in the well which was fracturing and taking the water.

This was determined to be an uneconomic process to start to dispose of the water at this initial high pressure. Permission was received to attempt the interval from 3801 to 7,000 feet on a test basis. The same results occurred in attempting to dispose of water in this interval. An examination of the logs showed that although there was some porosity present in this interval, there was apparently no effective permeability.

At this time another meeting of the operators was held, at which time a discussion was held and The Pure Oil Company presented the various possibilities for disposal, and it was determined that the only feasible place in which to dispose of the quantities of water which we anticipate is the Devonian formation.

In the 1-36 a study of this well shows that the present completion interval is only at the top of the main porosity in this well. We determined that it would be necessary to deepen

the well to expose the full porous interval in order to increase our effective permeability and to allow the minimum injection pressures.

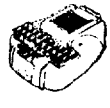
Q By deepening the well you also get your injection interval as far as practicable below the oil-water contact in this area?

A This is true.

Q In determining the feasibility of this probject, Mr. Murphy, was one of your considerations the cost involved?

A Yes, sir. This was a definite consideration, both the initial investment to equip a well in order to dispose of the water as well as the operating cost inherent to it. The operating costs are estimated if the Devonian is allowed as the disposal interval at $400.00 a month, whereas if we were required to dispose of the water into an interval the equivalent of the Delaware reservoir, initial pressure is in excess of 1500 pounds, the estimated cost would be in excess of a thousand dollars a month, operating cost.

The investment costs are minimized in this well by use of this well rather than any of the other surrounding wells in that it is in such a mechanical condition due to having no pipe shot off that the re-entry cost would be less than any other possibility.



Q Of course, this cost picture, as in other areas of the business, enters into the feasibility of the project?

A Yes, sir, it does.

Q Initially how many barrels of salt water a day do you plan to inject into this well?

A We initially estimate that we will inject approximately 2500 barrels a day of water at a surface pressure of zero.

Q What is the source of this water that you will be injecting?

A This is the produced water from the other Devonian wells in the field.

Q This project is proposed as a salt water disposal project rather than as a pressuring project of any sort?

A Yes, this is strictly a salt water disposal system.

Q Do you expect the volumes of water that you will be injecting into this well to increase over the life of the pool?

A Yes, sir, we do. We estimate that the future maximum water production from this pool will be approximately 16,500 barrels per day. This will increase over the next ten years, and we estimate that our maximum injection pressure will be approximately 1500 pounds at the surface.

Q Do you plan to meter this salt water and report the injected volumes to the Commission?

A Yes, sir, we do. We plan to equip the well with a suitable metering device and report the water injected on the customary Commission forms.

Q Do you have prepared in the form of an exhibit a diagrammatic sketch of this injection well?

A I do.

MR. MORRIS: I ask that be marked Exhibit 4, please.

(Whereupon, Commission's Exhibit No. 4 was marked for identification.)

Q Refer to this exhibit and describe what's shown there, please.

A This is a schematic well diagram of the mechanical condition of the well as we intend to equip it in order to dispose of the water. At present this well has 11-3/4" casing set at 455 feet and cemented back to the surface. We also have a string of 8-5/8" casing set at 3301 feet and cemented back to the surface.

The well in its present mechanical condition has a cement plug located at approximately 7,000 feet to 7200. It is our intention to drill out all the cement plugs down to the present total depth of 11,794 feet, then to deepen the hole to an estimated total depth of 11,950 feet, or to the equivalent lost circulation zone in The Pure Oil Company South Vacuum Unit 2-35.

Q That's the well and the zone that Mr. Fish referred to in his testimony?

A Yes, sir. Whichever of these two intervals may occur first, either the 11,950 or the lost circulation interval. During the drilling of this new hole it is our intention to carefully record the drilling time on this interval and the drilling conditions so that we may determine what is the best possible packer seat, or if there is an available packer seat in this interval.

Q Why is a packer seat so important to you in this case?

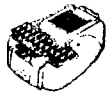
A It is our intention if a packer seat is available and approved by the Commission, to set our open hole packer in this interval to try to put the water in this lost circulation interval or into the more porous intervals deeper into the section.

MR. UTZ: Which interval is this area 11,794?

A It's the equivalent interval to the 11,312 in the 2-35. Our cross section, your middle well, that's the lost circulation interval.

MR. UTZ: Yes.

A We estimate this to be 11,915 on the 1-36. If the drilling characteristics indicate that there are dense intervals in the new hole drilled, then we will attempt to set the packer in this dense interval to isolate the water injection into this



lower interval. Should there not be indicated such, then our intention would be to set the packer in the interval of 11,750 up in the dense lime which lays on top of the porous interval, but into the Devonian formation itself.

Q Then in all events, whether you set the packer down in your deepened zone or at the more shallow level, in all events the packer will be set below the original water-oil contact?

A That is true.

Q Then you'll have this string of plastic-coated tubing, is that correct? It will be plastic coated?

A Yes, we will run a string of 3-½ internally coated tubing.
Q The injection will be through that tubing?
A Yes.

Q What will be the state of the bore between that tubing and the open hole?

A The tubing and the open hole will be filled with a heavy mud-laden fluid, and this will be from the interval of 3801 to the top of our hydraulically-set open hole packer at 11,300, or in whichever general vicinity we set it. The fluid will be of a type which will be in excess of the hydrostatic pressure that will be reasonably encountered in a point in that interval.

Q How would you be able to detect a tubing or packer leak in the injection process?

A We feel this will be able to be determined by pressure at the surface, whether there will be a vacuum due to lack of fluid or pressure increase by fluid going into the annular space.

Q Will this mud-laden fluid furnish adequate protection from the base of your casing at 3800 down to the top of your packer?

A It is my opinion that this will be done.

Q Of course, the casing set down to a depth of 3300 will protect all fresh water zones?

A Yes, sir, we were advised on drilling this well that fresh water protection was available in the order of 350 feet, and we set our surface string, initial string at 450.

Q Have copies of your application in this case been furnished to the office of the State Engineer?

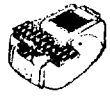
A Yes, sir, they have.

Q To whom else have the applications been furnished?

A Copies of the application were furnished to the surface owner and all mineral interest owners in the South Vacuum Field.

Q What response have you had from any of those persons to whom you have furnished applications?

A We have received waivers from the surface owner and the majority of the working interest owners in the field.



Q Do you have those waivers available?

A I do.

MR. MORRIS: I would like to have them collectively marked as an exhibit so that we may furnish them to the Commission.

(Whereupon, Applicant's Exhibit No. 5 was marked for identification.)

Q In your opinion, Mr. Murphy, what would be the effect, the general effect upon any conservation, of the approval of your proposed method of salt water injection?

A It's my opinion that the approval of this order will promote conservation in that it will lower the operating costs over any other method of disposal in this field, and therefore, extend the operating limit or the economic limit of the producing oil wells, therefore, increase the ultimate recovery.

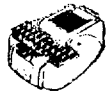
Q Was Exhibit 4, the diagrammatic sketch of the well, prepared by you or under your direction?

A It was.

MR. MORRIS: Mr. Examiner, we offer Exhibits 4 and 5. I believe Exhibits 1 through 3 were previously offered.

MR. UTZ: Yes, sir.

MR. MORRIS: That concludes the examination of Mr. Murphy.



MR. UTZ: Without objection, Exhibits 4 and 5 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits Nos. 4 and 5 were admitted into evidence.)

MR. UTZ: Any questions of the witness?

MR. DURRETT: Yes, sir, I have a question.

CROSS EXAMINATION

BY MR. DURRETT:

Q Mr. Murphy, I wish you would go over once again with me where you propose to set the packer. I'm interested mainly in the depth.

A That will depend on the data that is found while deepening the well. If we are able to find a suitable packer seat in the newly drilled interval between 7,094, it will be our intention to set the packer in this packer seat. If there isn't by the drilling characteristics of the well a suitable packer seat, then our intention will be to set it at 11,750, which is a dense interval in the Devonian above the main porosity.

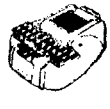
MR. UTZ: Any other questions?

MR. MORRIS: No.

BY MR. UTZ:

Q What type of packer do you intend to set in this well?

A Basically we intend to set a Lyens packer.



Q Lyens?

A It may be that we will have somebody else's name on it, but the Lyens manufactures the rubber for these hydraulic packers. There are several manufacturers who make a comparable hydraulically-set packer. If it would be preferable, we would state we will definitely use a Lyens packer rather than to buy on the open market the most economical packer.

Q Is that L-y-o-n-s?

A L-y-e-n-s.

Q L-y-e-n-s. Do you have any history as to the effectiveness of this type of formation packer?

A Yes, sir, primarily in the open hole testing of wells drill stem testing, swab testing, my personal knowledge is limited to that application. We have on numerous occasions used this type of packer to test where we were unable to get a standard drill stem test packer such as you normally employ to hold, where with this type of a hydraulically-set packer, we have been able to successfully test in the open hole to straddle pack intervals and at considerable depths.

This is a hydraulic packer that has been used for several years in California, and it is now approved and used in the State of Texas. We do have somewhat of an administrative precedent on it in that the Commission did approve this technique in their

amendment to S.W.D. 32.

Q Can this packer be unseated once it's set?

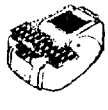
A Yes, sir. This is done by rotating the tubing. The mechanics of it are that you seal off the bottom of it and apply hydraulic pressure to the closed tubing seat and the greater the pressure the tighter the packer seats. They have a jack suit that moves in, or mandril, and by rotating approximately thirty times it jacks the inner mandril out from under the rubbers and allows you to unseat the packer. This is something that cannot be done accidentally.

Q You don't have to put hydraulic pressure on the packer and keep it seated?

A No, once it is set it is controlled by a double check valve system which is spring loaded.

Q How do you intend to determine whether or not you have a good packer seat available in the well bore?

A The primary way is through the observation of both drilling time and the way that the Kelly acts at the surface. If you are drilling a dense, compact formation, it drills rather smoothly. If you are drilling one that has a bumpy-type characteristic at the surface, it indicates fracturing and it would be our intention to by a comparison of the drilling time logs of this well and other wells which we do have data upon



and the observation at the surface of the drilling characteristics indicate whether we are at a dense section or not. If there is any question we will set the packer up the hole where we know it's dense.

Q Does caliper survey give you a more accurate information?

A It's doubtful in that calipers don't normally record fractures.

Q Will there be any way that you can test this packer for its effectiveness of seal prior to injection?

A Yes, sir. They are mechanically equipped with a circulating valve above the packer, and we can actually apply pressure above the packer to see if we have any fluid loss at that point. This will determine, because if we encounter the porous interval in this well such as we anticipate, then the water will go on a vacuum rather than requiring any pressure at all.

Q I wish you would go over once more your procedure for determining whether or not you have a leak in the tubing.

A We will maintain pressure recording, or pressure measuring devices on our 8-5/8, 3-½" annulus at the surface. This hole is a competent hole which we feel will support a column of mud-laden fluid. The drilling of the well testified to that.

Should we have either a packer failure or a leak in the tubing, under the initial conditions, it is felt that the fluid in the annulus would be lost into the tubing or the formation, whichever may be leaking, and that we would, that loss of fluid would cause a vacuum on this casing annulus. We can, by pressure measurement, tell that we have lost fluid.

Q Will the mud come actually up into the 3-5/3?

A Yes, we intend to fill it to the surface.

Q Then put pressure on top of the mud?

A No, sir, we did not intend to pressure the mud. We intended to put it in there in an equilibrium condition.

Q But you will put a gauge on the annulus?

A Yes.

Q And you figure that the loss of the fluid in the tubing will pressure up the annulus?

A Yes, sir.

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

(Witness excused.)

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

MR. MORRIS: That's all we have to offer, Mr. Examiner. I would ask that administrative notice be taken of the administrative orders that we referred to, S.W.D. 32 and its amendment.

MR. UTZ: We will do so. The case will be taken under advisement.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, 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.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 19th day of December, 1962.

Ada Dearnley
Notary Public-Court Reporter

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. 2706, heard by me on Nov. 20, 1962.

Elvis A. Utz, Examiner
New Mexico Oil Conservation Commission