cant, and we will have one witness.

(Witness sworn.)

JOE GORDON, JR.

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

DIRECT EXAMINATION

BY MR. ERREBO:

Q State your name, please, and by whom you are employed and in what capacity?

A Joe Gordon, Jr., with Mobil Oil Company as Senior Production Engineer.

Q You are located in Hobbs, New Mexico?

A Yes, sir.

Q Have you previously testified before this Commission as an Engineer?

A Yes.

Q Mr. Gordon, are you familiar with the application in this matter?

A Yes, I am.

Q Will you please state to the Commission where you propose to drill the well which was the subject of the application?

A We propose to drill the subject well on the E. O. Carson Well No. 22, located 1880 feet from the South line, and 660 feet from the West line of Section 28, Township 21 South, Range 37 East, Lea County, New Mexico.

Q Do you propose to complete this well in more than one zone?

A Yes, we want to complete this in the Paddock pay at approximately 5200 feet and in the Wantz-Abo pay at approximately 7100 feet.

Q And, the presented diagram sketch containing information relating to this proposed completion and also showing the round-hole completion which you propose to make?

A Yes, sir. It's listed here as Exhibit 1.

Q Will you refer to that Exhibit and briefly state to the Examiner what your Company proposes to do?

A As shown here on Exhibit 1, proceeding from the surface down, we propose to drill and set conventional size pipe at 10-3/4 at approximately 300 feet and circulate the 8-5/8 string at approximately 2900 feet, cement circulating and then to drill out from the 8-5/8 inch casing with a 2-7/8 inch hole to a total depth of approximately 7300 feet. This hole will be all the way to the full TD and then we propose to run two strings of casing, one a long string to be set on the bottom at approximately 7300, and a second string, a short casing string, to be run to approximately 5300 feet. These dual strings, or double strings of casing would be 2-7/8 O.D. casing. We plan to cement both strings into the drilled hole with the cement circulating, as shown here, to approximately 2700 feet to tie into the 8-5/8 inch casing. Following cementing we would perforate the long string of casing into the Wantz-Abo pay, using con-

ventional small size equipment, perforating equipment, and perforate the shorter string of casing into the Paddock pay with oriented perforating gun to perforate only the short string of casing and not endanger the long string of casing that runs right next to it. From there on out the completion techniques would be conventional inside or the conventional techniques used inside of the 2-7/8, or 2-1/2 inch tubing.

Q What saving do you anticipate would be made were the Commission to permit you to complete this well as you propose here this morning?

A We estimate approximately $16,000.00 saving in the use of this proposed method of completion as compared to the conventional dual completion, whereby we would set a seven inch pipe, or liner, from 2900 to TD and then run dual strings of two inch tubing inside of the seven inch casing.

Q I take it the saving is primarily derived from, by not placing the casing immediately below the 8-5/8, is that correct?

A Yes, sir.

Q You stated that oriented perforating gun would be used in perforating the Paddock, is that correct?

A Yes, sir.

Q Do you know of any other cases involving multiple completion which has been approved by the Commission where orienting guns have been used?

A I believe in the Case 1911, which was an application by

Jensen or Shell for a triple completion using similar techniques to what we outlined here in this case, and they wanted to use oriented type perforating.

Q Actually, in that case, there were two others, there were two other strings of tubing which had been missed by the perforating gun, rather than one string in this case.

A One set of perforations in that triple, there would have been two strings of casing to miss.

Q Now, insofar as the exception to Rule 107 (e) are concerned, can you state to the Commission what will be the nature of these exceptions that will be necessary?

A Both of the proposed completions are below the 5,000 foot depth bracket set forth in Rule 107 (e). This is also a dual, whereas Rule 107 (e) contemplates single completions.

Q Have you checked the production from the Paddock pay and from the Wantz-Abo pay in this area, and have you determined whether or not either of these zones are productive of sour fluids?

A The Wantz-Abo is sweet crude and the Paddock is a sour crude.

Q Have you any information indicating just how sour the production from the Paddock is?

A We experienced no exceptional difficulties from our Paddock crude, our stock tanks now, on the Paddock, in the unit area, after approximately twenty years are beginning to show signs of excessive deterioration. There is no exceptional problem encountered

either above ground or below ground with the Paddock.

Q Actually, between the tanks, is there much corrosive difference?

A They're approximately the same, it's hard to differentiate between them.

Q Would it be your opinion, then, this fluid produced from the Paddock is a mildly sour crude, is that correct?

A Yes, it's mildly corrosive and I believe there the remedies are readily at hand and the start of any corrosion could be detected so that suitable counter-measures could be made before any danger or damage to the permanently set casings.

Q Do you anticipate any less likelihood of corrosion below surface where the fluid is not in contact with the air, than there would be on the surface?

A Yes, we noticed for quite some time in our vapor formations of our tanks, they are much more subject to the tank than the sour crude than are the wet portions of the tank.

Q Is it your feeling, then, that the mildly sour characteristics of this crude would not constitute any hazard or problem?

A No.

Q Now, with regard to one other item, Mr. Gordon, concerning annual testing, you have had the opportunity, no doubt, to observe the orders that this Commission issued in other dual completion matters, have you not?

A Yes, sir.

Q Certain of those orders do contain requirements for annual testing for communication, is that correct?

A Yes.

Q Do you feel that situation is any different from the situations represented by those orders?

A Yes, in our conventional dual completion whereby you are in one side, inside of one string of casing, with only a packer, permanent or retrievable packer, set as a block between these zones. I believe there is ample reason for an annual test to determine if that block is still present and preventing communication. However, in this case, method of completion here between the two pays, which are not inside of any common string of casing, we have approximately 2,000 feet of cement sheath and cement block to prevent communication. Also we have in routine dual completion two strings of tubing here. However, we need two in order to actually obtain communitization or lining between the two zones, we need to penetrate two strings of tubing or 2,000 feet of cement. I believe here there is a rather outstanding difference between the 2,000 feet of cement and the packer, which is present in a routine type of dual completion and that this does away with the absolute necessity of annual testing of packer leakage, or communication type of test. There is the annular space which will be filled with completion fluid from approximately 27 feet onto the surface where you had only the two strings of tubing as the barrier between communication. I think there, that with normal production practices you would readily detect any leak al-

most immediately and you would proceed to take your corrective measures. The necessity for annual communications type test here is time consuming, paper consuming on both the operator and the Commission. I believe here that a completion type of communication test would be sufficient.

Q Is there any other information concerning any other aspects of your application which I have not covered which you would desire, at this time, to present to the Examiner?

A On our cementing procedure here, we plan to cement, using both strings of casing. The exact cementing procedure we would use, a plug pump, down plug, and cement first the lower, or long string of casing, and then circulate completion fluid from the upper string to clean out all excess cement and we would be using excess to bring it back over the short string and circulate after you have cemented your long string, until you were sure you cleaned up your remaining bore and then cement from the short string of casing back up to the 2700 foot and tie in this point with the 8-5/8 inch casing. The centralizer would most certainly be used at thirty pay zones in order to insure that in the vicinity of that pay zone we did have and we could guarantee a good sheath across the pay. We have indicated here in our notes, Item No. 3, that we would clamp our tubing, at the present time that has not been actually decided on, it is a possibility, but we have not decided yet as to whether we want to use clamps to fix those strings of tubing. In some ways it is not needed at all in this type of completion since we oriented the gun it-

self and not with any manual mounted in one string of casing. We also plan to put in five sheathing shoes four in both string casings and above the pay for future installation of rod-type pumps or other equipment. I believe that is all we have that is exceptional.

MR. ERREBO: Mr. Examiner, we would like to offer, at this time, the Applicant's Exhibit Number 1.

MR. UTZ: Without objection, it will be entered into the record.

MR. ERREBO: That is all we have, Mr. Examiner.

MR. UTZ: How far above and below the pay zones do you intend to use centralizers?

THE WITNESS: In cases like this we usually extend one joint or additional thirty feet above and additional thirty feet below.

MR. UTZ: Even with centralizers you only have approximately 3/4 of an inch cement sheath around and between the two casings, is that correct?

THE WITNESS: Approximately, yes, sir.

MR. UTZ: And, so in between these centralizers it's quite possible and, as a matter of fact, short of remarkable if you don't have the casing laying against each other in places, is that correct?

THE WITNESS: Yes, sir. That would occur above the upper pay zone.

MR. UTZ: Yes, sir?

THE WITNESS: Yes.

MR. UTZ: I believe you stated that through production practices you could detect any communication between the two strings of the casing above the upper pay zone. Do you intend to commingle these two zones at any time?

THE WITNESS: These are sour crude and sweet crude. They are taken by different pipe lines and we haven't been able to commingle them yet.

MR. UTZ: And the only way you could detect from normal producing practices is your type of crude, is that correct?

THE WITNESS: No, sir. I believe here normal completion fluid, which would be in the annulus, which I regard as the danger spot, would be water and these pays are not normally productive of water, and if there were any leakage into the annulus it would represent a water displacement, and water production of water could indicate the presence of a leak or the change of production characteristics in the rate at which a well was flowing or pumping would be indicative of some change in sub-surface conditions which would be your starting point, and our reason to start looking for trouble.

MR. UTZ: Now, you intend to circulate cement on these two strings up into the 8-5/8, do you not?

THE WITNESS: Yes, sir.

MR. UTZ: So there should be enough cement to keep the formation water out of the annulus, shouldn't there?

THE WITNESS: Yes, sir.

MR. UTZ: So the main zone of danger would be in the areas of where these two casings are very close together, if not together?

THE WITNESS: Yes, sir, but now, of course, we are still looking at required penetration of two strings of casing or tubing.

MR. UTZ: That is right.

THE WITNESS: In order to complete a leak until it actually penetrates both, we would have no leak or loss from one formation to the other.

MR. UTZ: And, I believe that the formation waters would have higher pressure than your producing fluid inside your tubing, therefore, you produced formation water, rather than to have production go out into the formation.

THE WITNESS: No, sir, I believe, there, our completion fluid would probably be a salt water, that completion fluid would be left in this annulus above 2700 feet and there, if there was a leak from the oil inside of the tubing into the annular space, it would displace oil back into the tubing and then the water would be produced; that would be not formation waters, but our completion fluids.

MR. UTZ: Explain to me how you are going to have completion fluid left in there when you circulate cement to the top of the hole?

THE WITNESS: We will circulate cement inside the 8-5/8 only to 2700 feet, and above 2700 feet inside the 8-5/8 we are left with an annular space. The cement circulated in the 8-5/8 is outside of the 8-5/8 inch pipe.

MR. UTZ: I see. How long do you think that circulation completion fluid is going to stay in the hole without going out into the formation?

THE WITNESS: I don't see why it should ever leave the annular space. With time, and in a few cases, you might have an eventual breaking of your bond, the cement to the inside of the 8-5/8 and in some cases it might lose that completion fluid.

MR. UTZ: Do you have any idea of the bottom hole pressure in these two zones?

THE WITNESS: In the deep pay, it's approximately, the initial pressure has been observed as high as 2500. The upper pay I have no numbers on.

MR. UTZ: Any other wells in this area?

THE WITNESS: Yes, sir. This is a dual completion method and has been authorized in the case of an offsetting well, or nearby well, the Gulf Oil J. N. Carson. The CT-A No. 11 is offset on our same lease, our E. O. Carson No. 20 is a dual completion. In these same two pays, the Gulf, we will have received the initial dual completion authorization by Order Number R-1620.

MR. UTZ: Do you have any other magnitude of the bottom hole pressures in those wells?

THE WITNESS: No, sir, I do not.

MR. UTZ: It's pretty safe to say probably over 1500 pounds, wouldn't it?

THE WITNESS: In the case of the lower pay, the Wantz-Abo,

I believe so.

MR. UTZ: The Paddock?

THE WITNESS: 5300, possibly.

MR. UTZ: Wouldn't it be good completion to have your intervals extend above that zone a little bit farther than thirty or forty feet to insure that you have a good cement bond between those two zones for a reasonable distance?

THE WITNESS: I think possibly instead of a centralizer, sir, in order to insure this cement sheath around both strings of casing, they have several products out which resemble centralizers, they are called "turbolizers" which maintain their rubber constructed coolers which are fastened on to the pipe and then some stand out between the pipe and also by their ribbed construction they set up some turbulence in there to get a good mixing action of the cement.

MR. UTZ: Any other questions of the witness?

MR. PAYNE: Do you anticipate any work-over problems in this type completion which would make it undesirable?

THE WITNESS: No, sir, they have work-over problems wherever you're dealing with any well, and I don't believe there would be any more of a problem than there would be in the conventional well.

MR. PAYNE: Do you feel the same way about cementing?

THE WITNESS: Yes, sir.

MR. PAYNE: Now, when you use this oriented gun for perforating, since you only got one side of your casing perforated, do

you feel your completions are as efficient in that zone as it would be if your casing was perforated on both sides, or all around?

THE WITNESS: Yes, sir. When you look at a plat of the forty acres which this well will drain, the difference between being perforated and, say four sides or three sides of this little 3 inch circle, and being perforated on one side, there is no difference as far as the forty acres, the drainage rate is concerned.

MR. PAYNE: It is unless this is necessary, do you use the conventional perforated gun or is it more expensive to use the oriented?

THE WITNESS: Yes, sir, but in the case of this short string of casing, we do not want to perforate back around and possibly perforate into the long string of casing.

MR. PAYNE: I understand that, but, now, on your long string you perforate all the way around?

THE WITNESS: Yes, sir.

MR. PAYNE: Because it's cheaper?

THE WITNESS: Yes, sir. The use of this oriented gun does require a special tool for which a charge is made.

MR. PAYNE: Have you known of any instances where this oriented gun became unoriented?

THE WITNESS: No, sir, in talking with some other operators we have found no troubles there.

MR. PAYNE: You admit you presume, Mr. Gordon, there are other ways of communication that can occur and through leakage in

the packer?

THE WITNESS: Yes, sir.

MR. PAYNE: But you feel it would be adequate to take a communication test upon completion?

THE WITNESS: Yes, sir.

MR. PAYNE: And that annular test thereafter should not be required?

THE WITNESS: That is right.

MR. PAYNE: Do you anticipate this well will be top allowable in both zones?

THE WITNESS: Yes, sir.

MR. PAYNE: And, you are going to have a central casing at thirty foot intervals throughout the entire pay zone?

THE WITNESS: The thirty foot is mentioned, that is normal length of tubing, the centralizers are normal, all fastened to the tubing collars.

MR. PAYNE: That is all, thank you.

MR. UTZ: Any other questions?

MR. ERREBO: Just a brief word.

MR. UTZ: Any statements? You may proceed.

MR. ERREBO: I think that the testimony here shows that with the several thousand or several hundred feet of block between the two zones in the open-hole, that the chances here as compared to the ordinary type of dual completion of communications between the two is pretty remote. Primarily the communication is in the upper

part of the string and when you have stock tanks where the oil is being exposed to the air, that will last for twenty years, and it looks like the corrosion problem shouldn't be very great especially in this case where the air would not be in contact with the zones in question.

MR. UTZ: Mr. Gordon, how long have you been using this type of completion?

MR. GORDON: If this is permitted, this would be our first double completion or dual slim-hole completion.

MR. UTZ: Then in spite of the fact of the leaking, we don't have much experience to bear that out, do we?

MR. GORDON: No, sir, we do not.

MR. UTZ: That is all. We will take the case under advisement, and we will recess until 1:15.

***

I N D E X

E X H I B I T S

Number	Exhibits	Marked for Identification	Offered	Received
Appl 1			9	9

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, LEWELLYN NELSON, Notary Public in and for the County of Bernalillo, State of 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.

DATED this 19 day of July, 1960, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Lewellyn Nelson
NOTARY PUBLIC

My Commission Expires:

June 14, 1960

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2011, heard by me on July, 1960.

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