BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
June 5, 1963

EXAMINER HEARING

IN THE MATTER OF:

Application of Humble Oil & Refining Company for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an amendment to Order No. R-2433, which order authorized the triple completion (tubingless), of applicant's State "S" Well No. 24 located in Unit J, Section 2, Township 22 South, Range 37 East, to produce oil from the Blinebry, Drinkard, and Abo formations through parallel strings of 2-7/8 inch casing cemented in a common well bore. Applicant now desires to substitute the Granite Wash for the Blinebry formation in said Order No. R-2433.

CASE 2830

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 2830.

MR. DURRETT: Application of Humble Oil and Refining Company for a triple completion, Lea County, New Mexico.

MR. BRATTON: Howard Bratton appearing on behalf of the Applicant.

MR. UTZ: Are there other appearances? Swear the witness, please.

(Witness sworn.)

(Whereupon, Applicant's Exhibits Nos. 1, 2, & 3 marked for identification.)

JAMES WHITTEN

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, by whom you are employed and in what capacity?

A My name is James Whitten, employed by Humble Refining Company as a geologist.

Q Is that in the Hobbs office?

A That is correct.

Q Have you previously testified before this Commission as an expert witness?

A I have.

Q Are you familiar with the matters in Case 2830 and the area covered by the application?

A I am.

Q What is Humble requesting in this application, Mr. Whitten?

A We have received approval to complete a triple in this well, and upon drilling deeper than we anticipated because of shows that we encountered, we kept going deeper and we discovered a new pay. We wish now to substitute, rather than complete in the Blinebry formation we would rather substitute to complete in the Granite Wash, which is the new pay we discovered.

Q We had originally asked for and obtained approval to complete in the Blinebry, the Drinkard, and the Abo. Now we would like to triple complete in the Drinkard, the Abo, and the Granite Wash, is that correct?

A That is correct.

Q Now referring to your Exhibit No. 1, does that show the location of the well, the subject well?

A This does, together with the legend, using symbols showing the producing intervals in the other wells surrounding this particular lease.

Q This lease and this well are in the Drinkard Pool, is that correct?

A Yes, that is correct.

Q And is this well also in the Wantz-Abo Pool?

A It is.

Q That was recently extended, the Wantz-Abo?

A That is correct, by Order R-2485.

Q Now the Granite Wash completion that we're talking about is a new completion in a new reservoir?

A Yes, sir.

Q Is there anything else you care to state about Exhibit No. 1?

A No, sir.

Q Actually the bulk of the Wantz-Abo is to the north and west of this map, is that not correct?

A That is correct.

Q Now turn to your Exhibit No. 2, Mr. Whitten. This is your log of the well, is that correct?

A This is one of the logs of the well. We ran several logs, and I would refer the Commission to pay particular attention to the detailed section where most of the information is. I have labeled the formation tops only on the 2-inch scale, but on the 5-inch scale I've put more information. I would refer you to that section, the bottom of the hole.

Q Now, start with your Drinkard; where does it start on here?

A The top of the Drinkard is at 6245. We are completing or going to attempt to complete in the zone that's shown and in the perforated interval 6425 to 29, and 6436 to 38. This is in the Drinkard Pool. We have other Drinkard wells on this lease.

Q Immediately below that lies your Wantz-Abo, is that correct?

A The top of the Abo is at 6488 and we are attempting now to complete in the perforations 6880 to 86.

Q What is your information shown on the right-hand side of your log here?

A The information I will explain on the right-hand side is the DST's that were taken as the well was being drilled, and on the left is the core interval, core number, and we continuously cored in the Abo from 6600 to T.D. The information is, I think,

self-explanatory. I will go over the abbreviations I used if anyone desires.

Q Please do.

A For instance, in that DST from 6842 to 6895, this tool open 120 minutes, gas to surface in 6 minutes; initial 60-minute shut-in pressure, 2839 pounds, final 60-minutes shut-in pressure, 2797 pounds; initial flow 84 pounds, final flow 210 pounds; recovery, 90 feet of heavy oil and gas-cut mud plus 750 feet of free oil.

Q Go further on down your log, Mr. Whitten, and explain your formation as you go down. You are in the Abo there?

A We top the Abo at 6488; as I mentioned, we drilled, encountered shows through the -- mainly through the DST intervals there are some shows that we recovered in the cores that we didn't test because we didn't think that there was sufficient porosity to test until we got to 7270. There we encountered a change in lithology. We went from a typical dolomite, shaly dolomite section and lime section of the Abo into a sandstone, a shaly sandstone, I should say. This sandstone, I have called it a sandstone although there is some lime and dolomite at the very top. I cannot determine the age. I only know that it's pre-Abo. We encountered this sandstone and cored on to 7324 when we encountered a Granite Wash, also age unknown; and coring further, at 7350 on this log we encountered a diorit which was a basic black igneous rock, and we bottom up in this diorit. We never

did actually reach granite.

Q Do you have with you some of the cores of this Granite Wash and your diorit?

A These are cores in this well in the Granite Wash. One footage is a cored interval which is a drilled interval, and the other we ran a core gamma on the core so that we could correlate with the logs, and we also have the log interval printed on that core.

Q Explain this core to me. Does it have portions of granite in it?

A Yes. You can see, of course, the first exhibit, the one that you have there in your hand, Mr. Durrett,you can see the large piece of granite embedded in the sand shale complex; actually there's pieces of granite all the way through it. The particular core that Mr. Utz has, there is actually some of the oil staining in the core and you can see the porosity in that particular area.

MR. UTZ: This is actually wetted granite?

A Yes, sir.

Q (By Mr. Bratton) Mr. Whitten, in your opinion is this Granite Wash area shown on this log, is this a separate reservoir from the Abo?

A Yes, sir, it is.

Q Do you have a sample of that diorit?

A Yes, I have this one particular sample.

Q Which you encountered immediately below the Granite Wash?

A Right. It's actually a rock composed mainly of plagioclase feldspars with augite and **hornblend,** and you can see some powder right in it.

Q So that in your opinion, Mr. Whitten, the three reservoirs in which you desire to complete here are separate and distinct reservoirs?

A Yes, sir.

Q Is there any further information on the log here down at the bottom that you would like to refer to?

A Yes, sir, I would. We have perforated the section as shown, 7327 to 7346, and after a 4,000 gallon sand-oil frac, we potentialed this particular zone for 190 barrels of oil per day on a 12/64-inch choke on 24-hour test. GOR was 1,110; corrected gravity, 42 degrees.

Q And your pressures as shown on there?

A Yes, flowing tubing pressure of 690 psi.

Q Is there anything else you care to point out in connection with Exhibit No. 2?

A No, sir.

Q Turn to your Exhibit No. 3, Mr. Whitten. Is that your proposed method of completion of this triple completion?

A That is correct. It is the three strings, 2-7/8 tubing set in a common well bore.

Q That reflects the various formations from the Queen down through this Granite Wash, is that correct?

A Down through the diorit, yes, sir.

Q Now explain if you will the actual mechanics of the completion and your cementing program.

A We ran these three strings; as far as centralizers is concerned, we have 101 positive type centralizers on the pipe. As far as our cementing, our first stage we cemented down the string one and two with 100 sacks of Low Fluid Loss cement, followed by 200 sacks of Incor Neat cement. We reciprocated both long strings while we were cementing, and at the same time circulated down string number three with brine. We anticipated the cement to come back up above the bottom of the string number three, which it did, and we circulated out some cement from this string.

On the second stage of cementing, we cemented down the third string with 1350 sacks of low fluid loss cement, reciprocating the short string while cementing; checking the top of the cement by temperature survey we determined the top of the cement to be 1845.

Q Then your surface program is shown at the upper right, is that correct?

A Right. We have 13-3/8ths inch set at 295 feet, circulated to surface. We then set 9-5/8ths inch casing at 2645 and this is cemented to 1600 feet.

Q Your perforated intervals are shown on here in the three strings?

A That is correct.

Q Would you explain why you ran the two strings, one and two, to total depth, Mr. Whitten?

A Yes, sir. We are anticipating that there is a possibility of having difficulty in the 2-7/8ths inch tubing and because of the short distance below the Abo that we have to set this other string, we have decided to set two strings for precaution only. This also, another reason would be to increase our volume at the bottom during cementing, increase our annular flow, our annular velocity, and therefore create turbulence and help us to clean the walls of the hole with mud cake and sample.

Q So you just ran the extra 600 feet, one, to get a better cement job; and, two, as insurance if you do run into any troubles in the Granite Wash in the 2-7/8ths?

A That is true.

Q Is there anything else you care to explain in connection with this exhibit?

A Well, these -- if you might wonder what they call these hot collars, radioactive collars are just to help us locate our strings when we perforate. That's the only thing that I think of that has been unexplained on this exhibit.

Q The completions are in the three separate formations, is that correct?

A That is correct.

Q In your opinion, Mr. Whitten, will the granting of this application prevent waste and protect correlative rights?

A Yes.

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

A Yes.

Q Anything else you care to state in connection with this application?

A No.

MR. BRATTON: We offer Applicant's Exhibits 1 through 3, and we have no further questions at this time.

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

(Whereupon, Applicant's Exhibits Nos. 1, 2, and 3 received in evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Whitten, your cementing of your three 2-7/8ths strings comes back up into the 9-5/8ths, does it not?

A That is correct.

Q The 9-5/8ths has cement to 1600, the bottom of your 13-3/8ths surface is 295, which leaves about 1305 feet of open hole behind the casing, is that correct?

A That is correct.

Q What is in this area in the way of water or production?

A From 295 to approximately 1100. Well, you can see it on the detailed log, 1115 feet is the Santa Rosa formation; from 1115 feet to 1202 feet is the Rustler; from 1202 feet to 2610 -- I could be wrong about this, 2610 is approximate top -- no, I take that back, 2480 will probably be the bottom of our salt section.

Q Do any of these zones produce water or oil or gas?

A None of them produce oil and actually the Santa Rosa is used in some areas in Lea County, I don't know how far from this well, for irrigation purposes.

Q You don't know whether it's productive of water in this area or not?

A No, sir, I don't. I understand it is water-bearing, but I don't know of any wells, water wells completed in it.

Q If there is water in the Santa Rosa, wouldn't it be reasonable to assume that this water would escape from the Santa Rosa and go into other formations in this open hole zone?

A I don't know. It's common practice in this particular area, I know. I cite, oh, 30 some odd wells two or three miles to the southwest in which we brought cement up in the salt section and didn't bring it all the way up through the Rustler. The reason for this is that the salt section is extremely cavernous after it has been drilled, and as such takes a very large amount of cement; and we attempted, at one time, to bring the

cement to surface through this salt section, but I don't recall how many sacks we used. It was a tremendous amount. Normal practice in the area, I'll say this, is to bring the cement up into the salt and not all the way to the surface.

Q What would be the base of the Santa Rosa in this area, the top of the Rustler?

A Well, the Santa Rosa as such is a sandstone, a shaly sandstone. I think the probable equivalent sand section would be around 970 feet, bottom of the sandy section would be around 970 feet, below there will be shale. Of course, it's pretty hard to determine, I've tried from samples to determine where the sand, the major sandy section is; and it's very difficult because the sandy shale are common throughout this particular formation.

Q Would there be any particular difficulty in setting casing down to, say, 1,000 feet, and circulating?

A I don't think so.

Q The order that you're wanting to amend or supersede,--which is your desire, an amendment or superseding order to R-2433?

MR. BRATTON: I don't believe we care, Mr. Examiner, that would be up to the Commission.

MR. UTZ: Any other questions of the witness?

MR. DURRETT: Yes, sir.

BY MR. DURRETT:

Q Mr. Whitten, just one or two questions. Will it be more economic for your company to triply complete as proposed in

this application than it would be to drill separate wells?

A Yes, it would.

Q And due to the economic limits of production, would you therefore feel that you would recover oil if this application was approved that would otherwise be left in the ground?

A That is true.

MR. DURRETT: Thank you. That's all.

MR. UTZ: 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.

We'll take a short recess.

(Whereupon, a short recess was taken.)

* * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings to the best of my knowledge, skill, and ability.

WITNESS my Hand and Seal this 11th day of June, 1963.

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. 2630, heard by me on June 5, 1963.

, Examiner
New Mexico Oil Conservation Commission