BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
APRIL 5, 1961

EXAMINER HEARING

IN THE MATTER OF

CASE 2231: Application of Humble Oil & Refining Company for an oil-gas dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Chalf Bluff Draw Unit "C" Well No. 1, located in Unit G, Section 17, Township 18 South, Range 27 East, Eddy County, New Mexico, in such a manner as to permit the production of oil from the Empire-Abo Pool and the production of gas from the Red Lake-Pennsylvanian Gas Pool through 2-inch tubing and the casing-tubing annulus, respectively, by means of a crossover.

BEFORE:

Daniel S. Nutter, Examiner

TRANSCRIPT OF PROCEEDINGS

MR. NUTTER: We will call Case 2231.

MR. MORRIS: Case 2231. Application of Humble Oil & Refining Company for an oil-gas dual completion.

MR. BRATTON: Howard Bratton, appearing on behalf of the applicant. We have one witness.

(Witness sworn)

WILLIAM S. DAVIS,

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Please state your name, and by whom you are employed, and what capacity.

A William S. Davis. Humble Oil & Refining Company. I am a Senior Engineer in the Midland office.

Q You are familiar with Case 2231 and the area and the matters covered therein?

A Yes.

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

A Yes.

Q Mr. Davis, what is the nature of Humble's request in this case?

A We are requesting permission to dual an existing Red Lake-Pennsylvanian Gas Well with what we hope will be an extension of the Empire-Abo Field.

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

Q Now, referring to your Exhibit No. 1, which is a plat of the area, will you locate the well in question and its relation to the field and the Chalk Bluff Draw Unit?

A This plat includes the Chalk Bluff Draw Unit, and lies

at the western extension of the Empire-Abo Pool. The two gas wells shown in Section 17 and Section 8 are Red Lake-Pennsylvanian gas wells. The well in question is Well 1 "C", which is near the center of Section 17, and shown by a large arrow on your Exhibit. The other wells are Empire-Abo oil wells. You can see that there are oil wells, now. There is one oil well, now, in Section 17. Unfortunately, there are two dry holes in that section.

Q Those are dry holes in the Abo?

A In the Abo. They are recent failures in the Abo. It is possible that in Chalk Bluff Draw Unit 1 "C" we will be able to extend the Empire-Abo production. However, if we have found the edge of the field, we would like the experience to be as least costly as possible.

Q That is one purpose for this application, isn't it, Mr. Davis, the fact that you are getting well along to the edge of the field?

A It is. Chalk Bluff Draw Unit 1 "C" was completed back in July, 1959. It was tested at 6.6 million cubic feep open flow potential with a bottom hole pressure of 5138 pounds. It has been shut-in since that time for a lack of market. We are negotiating for a market now, and hope to put the well on production.

Q It is completed in the Pennsylvanian?

A Pennsylvanian -- Red Lake-Pennsylvanian.

Q Do you have anything further you care to state with reference to the field, in general, and the history of the develop-

ment there?

A No, other than there is one other Red Lake-Pennsylvanian well in the Chalk Bluff Unit, Chalf Bluff Unit 1. They have been producing limited volumes of gas, so we have some limited production on those two wells, although none on Well "C."

Q The outline of the Unit --

A The hashed line outline is the Chalk Bluff Draw Unit.

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

Q Refer, then, to your Exhibit No. 2, Mr. Davis, which is what your proposed installation will be.

A Exhibit 2 shows the casing program and the existing Pennsylvanian Bend actual perforations. At 9446 to 9488 the 5⅛-inch casing was set at 9621 and cemented only to 6300 feet. We propose to perforate the casing just above 6300 feet, circulate cement. Well, 600 sacks should cover approximately 3000 more feet of the annulus. Then refrac the Bend perforations through 3-inch frac tubing, complete in the Abo and the perforations shown on our Exhibit in 5393 to 5454. Separate these perforations by a permanent packer below the Abo perforations approximately 5500 feet and run a retrievable packer just above these perforations approximately 5350, and in the assembly with that retrievable packer with the standard Otis cross-over assembly, and we propose to run the cross-over tool to put the Abo oil into the tubing, and the Bend gas into the annulus. The Bend gas is sweet gas. Unfortunately,

it's extremely dry in the Chalk Bluff Draw Unit 3 north of there. For instance, the average gas condensate ratio has been in the order of two million to one. We anticipate that the annulus will be fairly safe.

Q You anticipate no corrosion problems in the annulus?

A No. Although Abo oil is corrosive at the surface, we have experienced no corrosion in the tubing. We have been checking that by caliper surveys.

MR. PORTER: You have a lot of paraffin trouble?

A Yes. At least, we don't have down-hole corrosion, so far. The Otis installation is corrosion resistant also. This is the standard Otis cross-over. We have an Exhibit to show the details of that, which was --

Q (By Mr. Bratton) Actually, those are Exhibits 3 and 4. I believe Mr. Nutter has the only copies of those. They're the actual catalog pages?

A Yes, these are two pages from the current Otis catalog which show the details of the actual installation from Page 4317 of the Otis 1960 catalog.

Q Have you had considerable experience with this type of installation?

A There are many, many installations of this type.

Q It is a standard --

A It's normal production to put lower production into the annulus.

Q This Otis type has cross-over as standard installation and is perfectly safe in this regard?

A Yes, indeed. It's the normal tool for this type of operation. I will merely refer to Exhibits 3 and 4, which show in one instance the flow patterns in more detail of dual completion of this type, and the diagram of the assembly itself, unless there's some question about it.

(Whereupon, Humble's Exhibits 3 and 4 were marked for identification.)

Q Do you have anything further you care to state with regard to your proposed installation, Mr. Davis?

A No. Well, I might add that this particular retrievable packer is capable of withstanding up to 5000 pounds differential pressure, and the bottom hole pressure differentials, prior to any production from the Bend zone, are roughly 1600 pounds. That pressure differential will decrease inasmuch as our experience in the other two gas wells has shown they draw down rather rapidly on production.

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

Q Your Exhibit No. 5, which Mr. Nutter has a copy of, is a letter consenting to this type of installation, is that correct?

A Yes. That's a waiver received from Gulf. There are three other participants in the Chalk Bluff Draw Unit whose acreage surrounds the location; Pan American, Gulf Oil and Continental. All

three have been notified. Pan American, as part interest owner of Section 17, has approved the proposed workover. Gulf was kind enough to send us a waiver, which we have submitted.

Q Is there anything further you care to state with regard to this request?

A I don't believe so. We might just emphasize that this dual will make it possible for us to test the Abo extension here at roughly one-third the cost of a new well. We feel like it's in accord with good standard operating practices in the industry, and we have experienced no objections from the other owners in the Chalf Bluff Draw Unit.

Q It's particularly advisable to minimize your cost in view of the two dry holes just to the east?

A Yes. We are only too well aware of those at the moment.

Q Were Exhibits 1 and 2 prepared by you or under your supervision?

A Yes, sir. They were prepared at my direction. 3 and 4 were provided by the Otis Company, from their catalog, and 5 was provided by Gulf.

MR. BRATTON: We would offer Exhibits 1 through 5 in evidence.

MR. NUTTER: Humble's Exhibits 1 through 5 will be admitted.

A No, except decreasing pressure in the life of the well.

Q I notice your Exhibit shows non-retrievable at [illegible] feet. I believe you said that was a permanent type production packer.

A Yes. It will be either a Baker Model "D" or Otis equivalent packer, type "TB."

MR. MUTTER: You have type "WA" drillable underlined on Exhibit 3.

A Is it "WA," Mr. Mutter:

MR. MUTTER: Yes, sir.

A In that case, I stand corrected. Actually, the District's procedure submitted to us says Baker Model "D," and the Otis Company may be under the impression that they will be able to sell this particular type of retrievable packer. Baker does not make retrievable cross-over chokes. However, they do make equivalent packers of this type, and Baker is the most common packer. However, the Otis Company does make a comparable packer to the Baker Model "D" of the drillable non-retrievable type.

MR. MUTTER: Then, it may be a Baker or it may be an Otis for the permanent packer down hole, but the packer up above will be an Otis retrievable?

A Mr. Mutter, the District proposal includes an Otis retrievable with the Otis tools made on the installation.

MR. MUTTER: For the cross-over assembly?

A Yes.

Q (By Mr. Payne) You mentioned that the No. 1 Well was producing with a GOR of 250 to 1.

A Chalk Bluff Draw Unit 1 is in Section 5, which is not on this particular plat of the area.

MR. NUTTER: Where is that?

A It is located exactly 1980 feet from the South and West lines of Section 5, 18, 27.

Q (By Mr. Payne) That would be north, then, of your No. 3 Well, which is in Section 8?

A Yes, sir. The Chalk Bluff Draw Unit is a rather large unit, and stretches over considerable territory to the north of this immediate area.

Q Now, you said that the No. 3 has a ratio of two million to one, but that the No. 1 "C", on test, didn't measure any liquids.

A No, sir.

Q How about on production?

A 1 "C" has only been produced during the open flow potential test. It has been shut-in since that time while we were negotiating for a market. The recent development in that area has made a possibility of a market rather good now.

Q You have no production history on the 1 "C"?

A No. I was drawing the comparison with the northeast Red Lake No. 3. Those wells produced a small amount of gas; well, it was the Malco Refinery for fuel, so we have limited production history from the other two wells.

Q On your 5½-inch casing string, the top of the cement on the Pennsylvanian is 6300 feet?

A Yes.

Q You propose to perforate that casing just above 6200 feet?

A Yes. 6280, and circulate 600 sacks of cement.

Q Circulate?

A Well, to cement with 600 sacks. It will not constitute circulation. The 600 brought it from 9621 to 6200 originally. If the conditions were the same, you would get another 3000 feet, roughly.

Q The minimum amount of cement would be sufficient to cover the Abo interval?

A We propose to run a temperature survey to check that. The Abo is definitely covered.

Q With this installation, is it possible to artificially lift the Abo, if that would become necessary?

A You can artificially lift down the 2-inch tubing.

Q Will a seating nipple be run in that string of tubing?

A Yes, we propose to run seating nipples with the installation; the retrievable cross-over, you can work on either side or circulate the annulus above the upper packer. In order to pull the upper packer, you can switch back and forth and run all the way through.

MR. NUTTER: Any further questions of Mr. Davis? He may be excused.

(Witness excused)

MR. NUTTER: Do you have anything further, Mr. Bratton?

MR. BRATTON: No, sir.

MR. NUTTER: Does anyone have anything further they wish to offer in 2231? We will take the case under advisement, and take a fifteen-minute recess.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in machine shorthand and reduced to typewritten transcript under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this, the 11th day of April, 1961, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

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. 2231, heard by me on 4-5, 1961.

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