

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 24, 1963

EXAMINER HEARING

IN THE MATTER OF:

Application of Marathon Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its State Warn A/c 3 Well No. 5, located in Unit H of Section 33, Township 17 South, Range 35 East, Lea County, New Mexico, to produce from the Vacuum-Abo Reef Pool and either an undesignated Blinbry or Glorieta pool through parallel strings of 2 1/16" OD tubing.

Case No. 2869

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

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ALBUQUERQUE, N. M.
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MR. NUTTER: We will Call Case 2869.

MR. DURRETT: Application of Marathon Oil Company for a dual completion, Lea County, New Mexico.

MR. MORRIS: Mr. Examiner, I'm Richard Morris of Seth, Montgomery, Federici, and Andrews, Santa Fe, appearing for the Applicant, Marathon Oil Company. We will have one witness, Mr. John Barber, and ask that he be sworn at this time.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1, 2, and 3 marked for identification.

JOHN R. BARBER

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

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DIRECT EXAMINATION

BY MR. MORRIS:

Q Please state your name and position.

A John R. Barber, employed by Marathon Oil Company in the capacity of Area Petroleum Engineer in Hobbs, New Mexico.

Q Have you previously testified before the Oil Conservation Commission or one of its examiners, Mr. Barber?

A Yes, I have.

Q Your qualifications are a matter of record?

A Yes, they are.

Q What is it that Marathon seeks by its application in Case 2869?

A Marathon seeks authority to complete its State Warn A/c 3 Well No. 5 as a dual completion, conventional, to produce oil from the Vacuum-Abo Pool and oil from an undesignated Glorieta Pool through parallel tubing strings. This well is located in Unit H, Section 33, Township 17 South, Range 35 East, Lea County, New Mexico.

Q Mr. Barber, I note on the application in this case and from the advertisement that the Commission has given that Marathon was asking, in the alternative, to produce oil either from the Blinebry or Glorieta. What is the status of that alternative request at this time?

A At the time the original application was submitted, the Blinebry zone had not been tested. As I will show later, this

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zone was found to be productive of water. Therefore, the Blinebry zone should no longer be considered a part of this case.

Q Do you have a plat of the subject lease showing the well in question?

A Yes, I have. Exhibit No. 1 is a plat of the State Warn A/c 3 lease. This lease contains 120 acres and has been outlined in yellow. Marathon Oil Company owns a 100 percent working interest in this lease. All offset operators to the Warn A/c 3 lease have been shown on Exhibit 1, to the best of my knowledge.

The pool designation for each individual well is also shown on Exhibit 1, to the best of my knowledge. State Warn A/c 3 Well No. 5, the subject of this application, is circled in red. This well is located 310 feet from the north line and 330 feet from the east line of Section 33, Township 17 South, Range 35 East.

The nearest Abo production to Well No. 5 is offsets to the south and east. The nearest Glorieta production is approximately three miles west of the subject well.

Q Now referring, if you will, Mr. Barber. to what has been marked Exhibit No. 2, that being the log of the subject well, would you explain the information shown there?

A Exhibit No. 1 is a gamma ray sonic log of State Warn A/c 3 Well No. 5 with the tops of the producing zones, the total depth, and the respective perforated intervals indicated thereon.

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The subject well was spudded May the 28th, 1963, and drilled to a total depth of 9040. After running open hole logs, 5-1/2 inch, 17 pound casing was set to 9038. The Blinebry zone was then perforated, treated, and tested. We perforated the Blinebry from 6460 to 6480 as is indicated on Exhibit No. 2.

The treatment was 3,000 gallons of acid, and we swabbed 110 barrels of fluid, of which 98 percent was water. These perforations were squeezed with 200 sacks of cement, as may also be noted on Exhibit No. 2.

Q Still referring to Exhibit No. 2, could you point out and explain the information concerning the Abo section?

A The Abo section was selectively perforated from 8705 to 8905. These perforations were treated with 250 gallons of Spearhead acid and 25,000 gallons of retarded acid. Following swab test on these perforations, we set a retrievable bridge plug, isolating the bottom three sets of perforations. That left the perforations open from 8705 to 8812. We treated these perforations with 40,000 gallons of retarded acid.

We are presently swabbing back acid water, and the latest test on this zone was 57 barrels of oil and 70 barrels of water in 12 hours. The percentage of oil is increasing. We have not determined a static bottom hole pressure on the Abo section as yet; however, it's expected to be approximately 2700 psi. This assumption is based on a bottom hole pressure of 2772 obtained on Mobil's State "M" Well No. 10. This well is an east offset to



State Warn A/c 3 Well No. 5.

The pay section for the Abo zone is a fine to medium crystalline dolomite containing secondary crystalline porosity. It is my opinion, based on the available data, that the reservoir mechanism for this zone is solution gas drive.

Q Could you give the information that you have concerning the Glorieta zone in this well?

A Yes, sir. The Glorieta zone in State Warn A/c 3 Well No. 5 will be selectively perforated within the interval 6097 to 6120. We anticipate that this zone will be productive of oil, based on a DST taken during drilling operations. The results of the DST follows: The test interval was from 6,095 to 6,145. After taking a 30-minute initial shut-in pressure, the tool was opened for two hours with gas to surface in five minutes. We did not have fluid to surface within a two-hour interval. The recovery was 5460 feet of gas-cut oil, 180 feet of mud-cut oil, and 180 feet of free water.

The 30-minute initial shut-in pressure was 2300 psi. The 60-minute final shut-in pressure was 2245 psi. The initial flowing pressure was 170 psi and the final flowing pressure was 910 psi.

MR. NUTTER: You didn't actually recover any free oil?

A We recovered gas-cut oil. What happened to us there, they started out of the hole and the well unloaded on them after they had pulled about three stands, so it was heavily gas-cut,

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but it wasn't mud-cut.

MR. NUTTER: I see.

A It was water-free oil, so as far as recovering dead oil, we did not recover a dead column of oil as such. The pay section for the Glorieta zone is a very fine to fine crystalline dolomite containing pinpoint to secondary crystalline porosity. It is my opinion that the reservoir mechanism for this zone will be solution gas drive.

Q (By Mr. Morris) Mr. Barber, would you refer to what has been marked Exhibit No. 3 in this case, that being the diagrammatic sketch of the mechanism installation of this well?

A Exhibit 3 is a diagrammatic sketch illustrating the downhole equipment that we propose to use in the completion of this well. This sketch is essentially the same as the one that was submitted with the original application. The casing program that we utilized is illustrated on Exhibit No. 3.

This program conforms to the provisions of Rules 106 and 107 of the general rules and regulations of the Conservation Commission, and adequately protects all oil, gas, and water-bearing strata which were encountered in the drilling of this well.

Briefly, we propose to use the following procedure to effect the illustrated dual completion. After we perforated, treated, tested, and squeezed the Blinbry section, we perforated, treated, and are presently testing the Abo section. On Exhibit 3



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it shows a bridge plug isolating the bottom three sets. At present we have a retrievable bridge plug at this point, and when we complete our test we will run a permanent bridge plug and put a cement cap on top of it, as is illustrated on the exhibit.

Also following this Abo test and the setting of the bridge plug, we will run an Otis Type WA production packer on wireline and set it at approximately 8600 feet. This packer will be run with the tail pipe and landing nipples attached. We will then set a retrievable bridge plug at approximately 6300 feet, isolating the Abo zone. At that time we will perforate, treat, and test the Glorieta section.

Following the testing of the Glorieta section, we will remove the bridge plug from the well and run the Abo tubing string of 2-1/6 inch OD tubing and latch into the lower packer. The upper packer will be run on this tubing string. Then the Glorieta tubing string, 2-1/16 OD tubing will be run and latched into the upper packer. The inside diameter of the Abo and Glorieta tubing strings is the same, or 1.75 inches.

The wellhead equipment that we propose to use on this dual completion conforms to the provisions of Rule 115 of the general rules and regulations.

Q Mr. Barber, would you comment on and give us your opinion on the effectiveness of this type of completion?

A This installation is designed and will be installed in accordance with sound engineering practices and principles,



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and it is my opinion that it will effectively prevent communication between producing zones. This installation or types of this installation is widely used in Southeastern New Mexico. By utilizing this type of installation, it will be possible to measure the reservoir pressure on each zone without necessity of shutting in the zone not being tested. We will also equip the well with all necessary connections for conducting packer leakage tests and we will also install surface equipment such that the production from the oil and gas, production from each zone will be separately and accurately measured. We do not anticipate any corrosion problems of any consequence in this installation. We base this on the fact that these two crudes are characteristically sweet and offer little or no corrosion problems.

Q Now, Mr. Barber, if it should be necessary to artificially lift either or both of these zones, would that be possible with the installation that you propose?

A Yes, it will. If we have to lift either of these zones, it is my opinion that they can be efficiently lifted by gas lift means. By equipping the existing Abo and Glorieta tubing strings with gas lift valves, approximately 150 barrels of fluid per day may be lifted from the Abo zone and approximately 200 barrels of fluid may be lifted from the Glorieta zone. It is my opinion that these zones can be safely, efficiently, and effectively depleted by this method.

Q Do you have any information concerning the costs of



this installation, the costs of individual well completions, and the savings that might be effected by this type of installation?

A Yes, I have. The cost of drilling and dual completing Well No. 5 is estimated to be \$147,130. The cost of drilling a single well to each of these zones and completing therein is estimated to be \$195,685. By dual completing this well, it is estimated that it will result in a savings of \$48,555. The application for authority to dual complete this well is in the interest of conservation and will protect correlative rights. The proposed dual completion will not cause waste and will prevent the drilling of unnecessary wells.

Q Were Exhibits 1 and 3 prepared by you or under your direction, and was the information placed on Exhibit No. 2 done under your supervision or direction?

A Yes, it was.

MR. MORRIS: We offer at this time Marathon's Exhibits 1, 2, and 3 into evidence.

MR. NUTTER: Marathon's Exhibits 1 through 3 will be admitted in evidence.

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

MR. MORRIS: That's all we have at this time.

CROSS EXAMINATION

BY MR. NUTTER:

Q What was the reason that the three lower sets of



perforations in the Abo will be bridged off?

A After we treated those, we swabbed 27 barrels of oil and nine barrels of water. We assumed that the biggest part of our water production was coming from the lower part of the formation. Therefore, we set the bridge plug.

Q They weren't squeezed, however?

A They were not squeezed.

Q And they won't be squeezed?

A No.

Q You cemented the 5-1/2 with 780 sacks?

A Yes.

Q What is the top of the cement?

A 2650. It's tied back into the intermediate string. We have cemented behind the entire length up to 2650.

Q What was your 30-minute shut-in pressure on your drill-stem test on the Glorieta?

A 2300 psi.

Q The nearest Glorieta production is three miles to the west?

A Yes, sir, it's in the new area that's being developed over there.

Q What type of a packer is this production packer at 8600?

A This is an Otis type WA.

Q Would that be regarded as a permanent type packer?

A Yes.



Q Drillable permanent type?

A Yes, very similar to the Baker model D with opposing set of slips set on wireline.

MR. NUTTER: Any other questions of Mr. Barber? He may be excused.

(Witness excused.)

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

MR. MORRIS: No, I do not.

MR. NUTTER: Does anyone have anything further to offer in Case 2869? We will recess the hearing until 1:30.

(Whereupon, a 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 22nd day of August, 1963.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I certify that the foregoing is a true and correct record of the proceedings in the hearing of Case No. 2869.
Heard by me on 7/24, 1963.

[Signature] Examiner
New Mexico Oil Conservation Commission

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