BEFORE THE
OIL CONSERVATION COMMISSION
MABRY HALL
Santa Fe, New Mexico
August 24, 1960

EXAMINER HEARING

File:

IN THE MATTER OF:

Case 2053 ~~2054~~

Application of Continental Oil Company for a triple completion utilizing three strings of casing. Applicant, in the above styled cause, seeks an order authorizing it to triple complete its Jicarillo 22-22 Well No. 1, located in the NW/4 SE/4 of Section 22, Township 25 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to permitthe production of oil from the Gallup formation, the production of oil from the Dakota formation through parallel strings of 4½ inch, 2-7/8 inch and 4½ inch casing respectively, cemented in a common well bore, Applicant proposes to install tubing to the Gallup and Dakota formations.

Application of Continental Oil Company for a triple completion utilizing three strings of casing. Applicant, in the above styled cause, seeks an order authorizing it to triple complete its Jicarilla 28-27 Well No. 3, located in the NW/4 SE/4 of Section 27, Township 25 North, Range 4 West, Rio Arriba County, New Mexico, in such a manner as to permit the production of oil from the Gallup formation, the production of oil from the Dakota formation through parallel strings of 4½inch, 2-7/8 inch and 4½ inch casing respectively, cemented in a common well bore. Applicant proposes to install tubing to the Gallup and Dakota formations.

BEFORE:
Daniel Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order. The first case will be 2053.

MR. PAYNE: Application of Continental Oil Company for a triple completion utilizing three strings of casing.

MR. KELLAHIN: My name is Jason Kellahin of Kellahin and Fox. I am representing the applicant, Continental Oil Company, and I am associated with Mr. William Griffith, a member of the Colorado Bar, who will present the case.

MR. GRIFFITH: It it would please the commission, Continental would like to consolidate case 2053 with case number 2054 for the purposes of testimony.

MR. NUTTER: We will also call case 2054. Its your motion for consolidating for taking testimony. Case 2053 and 2054.

MR. GRIFFITH: Continental has one witness, M. A. Mac Lennan and who should be sworn.

(Whereupon the witness was sworn)

M. A. MAC LENNAN

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

MR. GRIFFITH: Continental has marked Exhibit 1, a map. At this time we would like to move for administrative notice of the locations of these proposed triple completion as set forth in the C101 of the notice of intent to drill in both cases.

MR. NUTTER: Does this exhibit apply to both cases?

MR. GRIFFITH: Yes, sir it has both well locations for the two cases.

MR. NUTTER: Very good. Proceed.

(Whereupon Exhibits 2 and 3 were marked for identification.)

DIRECT EXAMINATION

By MR. GRIFFITH:

Q Would you please state your name.

A M. A. Mac Lennan.

Q And by whom are you employed?

A Continental Oil Company.

Q What is your position with Continental Oil Company?

A Acting District Engineer in Durango District.

Q Have you ever testified as an expert witness, as a petroleum engineer before the New Mexico Conservation Commission before?

A Yes, I have.

MR. GRIFFITH: I move that this witnesses qualifications as an expert witness be accepted by the commission.

MR. NUTTER: His qualifications are accepted. Will you proceed.

MR. GRIFFITH: Will you please explain Exhibits 2 and 3?

A Exhibit 2 and 3 are skematic diagrams of the proposed triple completion. Exhibit number 2 is the proposed casing cement program for the Jicarilla 22-22 Well No. 1 and number 3 is for the Jicarilla at 28-27 No. 1.

Q Exhibit Number 2 is offered in connection with Case No. 2053 and Exhibit Number 3 is offered in connection with Case No. 2054, is that correct?

A That is correct.

Q Were those exhibits prepared or directed under your supervision?

A Yes, sir.

Q Would you briefly state what Exhibit Number 2 shows.

A These exhibits show the diameter of the hole size we propose to drill, the various sizes of casings to be used, setting depths, proposed estimate depths in the basis of the producing formations and location of cementing collars for stage cementing.

Q What formations in these two wells will be completed.

A In both wells we propose to complete the wells as an oil producer, in the Gallup and oil producer, in the Greenhorn an oil producer and in the Dakota.

Q What is the estimated top and base of each of these three formations in the two wells?

A On Exhibit number 2 for Jicarilla at the 22-22 Number 1, the estimated top of the Gallup will be at 6653. The estimated base at 7083. The estimated top of the Greenhorn will be 7540 and the estimated base will be 7600. The estimated top of the Dakota will be 7620 and the estimated base will be 7908. For the Jicarilla 28-27 Number 3, the estimated top of the Gallup will be 6393. The estimated base will be 6825. The estimated top of the Greenhorn will be 7280 and the estimated base at 7340. The estimated top of the Dakota will be 7360 and the estimated base at 7648.

Q And both of these wells will be completed in the same formation, is that correct?

A Yes, each of the two proposed completions will be completed in the Gallup, Greenhorn and Dakota.

Q Would you briefly describe each of the proposed producing formations?

A The Gallup formation is a sequence of fine grained sands interbedded in a matrix of fractured marine shales and silt stones. This formation is bounded above and below by impermeable shales. The Greenhorn is a series of interbedded fractured marine lime stones and limey shales. This formation is considered as having a common source of supply separate from the Dakota. The source being the marine lime stones and shales. The Greenhorn is isolated from zones above and below by impermeable shale. The Dakota is a fine grained fractured sane stone interbedded with black marine shales. The Dakota is considered a common source of supply based on the environment of deposition. The Dakota is also isolated from zones above and below by an impermeable shale.

Q What is the basis of your information on these proposed producing formations and their various depths?

A The description of these formations and the estimated tops were obtained from geologic studies of available logs and core analysis from wells in the immediate area.

Q Is the manner of completion of the two wells substan-

tially the same in both cases?

A Basically it is the same, with the exception of the different depths of the producing formations.

Q Will you please describe the manner of the proposed drilling of completion of these two wells.

A We propose to drill a 16 inch hole to the depth of 200 feet and run and cement 200 feet of 13-3/8 surface pipe. We propose to drill a 12 OD hole to the base of the Gallup formation and 9 inch from the base of the Gallup to TD at the base of the Dakota. Then we plan to run ES induction and sonic logs and a section gauge. The section gauge will be used to calculate the amount of cement required to adequately cover each of the formations as shown on exhibits number 2 and number 3. The following on the ruling of logs and the section gauge, we plan to run a string of 4½ inch OD casing to the base of the Dakota and a string of 2-7/8 OD tubing to the Greenhorn formation and a string of 4½ inch OD casing to the Gallup formation. We plan to cement the Dakota string and the Greenhorn formations through the 4½ inch Dakota string and we plan to cement the Gallup formation too through the 4½ inch Gallup string. We then plan to cement the Mesaverde formation with the stage collar located in the Dakota string and cement the Pictured Cliffs formation with the stage collar located in the Gallup string. And after allowing the cement to set, we plan to perforate the Dakota string with a conventional

perforating gun and then perforate the 2-7/8 inch Greenhorn string and the 4½ inch Gallup string using a nuclear oriented perforating gun.

Q His this nuclear oriented perforating gun been used before in New Mexico?

A Yes, it has.

Q What additional action will be taken to complete the well?

A We plan to select sand oil to treat the Gallup and Dakota formations and in addition the Greenhorn formation and then we plan to run a 2 inch tubing for production strings in the 4½ inch Gallup string, the 4½ inch Dakota string.

Q What type of well head will be used?

A We propose to use a triple casing head designed to prevent commingling of hydro-carbons from each of the three formations.

Q I show you what has been marked as Exhibit 4 and ask if you can identify this exhibit.

A Yes, this is a skematic drawing of the well head assembly for a triple casing completion.

Q Was this exhibit prepared by you or under your supervision?

A Yes, it was.

Q And what does this exhibit show?

A This exhibit is merely to show the type of head used and will provide for straight control valves and tubing heads on each of the three production strings.

(Whereupon Exhibit 5 was marked for identification.)

Q I show you Exhibit 5 and ask if this exhibit was prepared by you or by whom was this exhibit prepared?

A This exhibit was prepared by Rector Well Equipment Company for Continental Oil Company.

Q What does Exhibit 5 show?

A Exhibit 5 is a detailed drawing of the specific head we intend to use, and the components of the head are identified on the drawing.

Q What are the advantages in using this type of head?

A The main advantage of this type of head is the ease in which the majority of workovers can be conducted in any of the three producing strings of casing. With this type of head it is possible to work on one of these zones without disrupting production from either of the other two.

Q Will this type of plan completion provide for separation of production in the well and on the surface?

A Yes, it will.

Q With this manner of completion will it allow for surface investigation for pressure testing?

A Yes, it will be possible to obtain sub-surface pressure measurements with conventional measure bond.

Q Is there any way of testing whether there is possible communication between the completed zones?

A Yes, it will be possible to test for communication between the various strings of casing by a test similar to that used for apacker leakage test on the dual completion.

Q Will your manner of proposed completion allow for the determination of the oil gas ratio for each zone?

A Yes, it will.

Q Why does Continental Oil Company desire to triply complete these two wells?

A Primarily for economic reasons that we propose this type of completion. It will result in an estimated savings of approximately $40,000.00 over a convention dual completion utilizing 7 inch casing and 2 strings of tubing and also this type of completion is possible to complete in the Greenhorn formation which we do not feel has sufficient reserves to support an individual well and also it is anticipated that the cost for the majority of our original work will be substantially less than the dual completion due to the fact we will not have to disrupt production to all three strings for the majority of workovers.

Q Will the correlative rights of the landowner be protected?

A Yes, they will.

Q To your knowledge has the New Mexico Conservation Commission previously approved this type of completion using this type of well head?

A Yes, sir it has. A similar type of completion has been approved for the Jicarilla 28-27 No. 2 Well in Order No. R-1734.

(Whereupon Exhibit 6 was marked for identification.)

Q I show you Exhibit Number 6 which is a letter from the El Paso Natural Gas Company to the effect they do not object to either of these triple completions. Does the commission have any questions of this witness?

CROSS EXAMINATION

By MR. PAYNE:

Q Mr. Mac Lennan, have you completed the wells that were the triple completions that have been previously authorized?

A No, sir we are currently drilling on the Jicarilla well and yesterday morning we were down to 6600 feet.

Q Now, do you have any estimate of the gas oil ratio that has been encountered in each of these zones?

A Yes, I have. The gas oil ratios for the Gallup of the Dakota formations which are producing in our Jicarilla 28-27 No. 1 which is a dual completion.

MR. NUTTER: That is approximately 1 mile west, is that correct?

A Yes, sir.

MR. PAYNE: What are those ratios?

A They are for the Gallup, the gas oil ratio as recorded on 7-20-60 was 2375. The gas oil ratio for the Dakota on 7-28-60 was 762.

Q Do you have gravity figures on those zones?

A Yes, sir. The Gallup formation was 41.38, 60 degrees. The Dakota 41.0 has 60 degrees.

Q What led you to believe that the Dakota is going to be productive of oil rather than gas, your experience with that well that is about a mile away?

A Yes, sir.

Q Mr. Mac Lennan, would you give the footage on these calculated cement tops as shown on Exhibits 2 and 3?

A On all the cement tops we propose to bring the cement from two to three hundred feet above the top of the producing formation.

Q I see.

MR. NUTTER: That will be one continuous sheath of cement from the Dakota shoe to 200 feet above the top of the Greenhorn,

A Thas is currect, The Dakota and the Greenhorn will be cemented together.

MR NUTTER: And then the cement of the Gallup will be brought to 200 to 300 feet to the top of the Gallup.

A Yes, sir.

MR. PAYNE: Now this cement string that comes up above the Mesaverde, what will be the top of it, sir?

A There it will be similar to 200 to 300 feet above the top of the producing interval. The Mesaverde is similar to the well we are drilling at the present time.

Q Then you will use stage collars in the Gallup String and cement the Pictured Cliffs also?

A Yes.

Q And bring the cement up to 300 feet to the top of the Pictured Cliffs?

A Yes.

Q Now, centralizers will be used on these casing strings?

A Yes, sir we plan to use turbolizers on the 2-7/8 inch string and slim hole centralizers on the two strings of 4½.

MR. NUTTER: Do you have any bottom hole pressures on any of these formations, Mr. Mac Lennan?

A Yes, sir I have bottom hole pressures for the Gallup and Dakota. These are also obtained from 28-28 No. 1. For the Gallup formation I have 1937 at 6750 depth, that was 115 hour shut-in and was recorded on 5-14-60.

MR. NUTTER: And the Dakota?

A And the Dakota 2560 at 7320, that was a 72 hour shut-in on 12-21-59.

MR. NUTTER: Will it be possible to currently lift these

wells with these mechanical arrangements, Mr. Mac Lennan?

A Yes, sir it will.

MR. NUTTER: Does anyone have any further questions of Mr. Mac Lennan?

MR. PAYNE: You say centralizers on the 4½ inch strings?

A Yes, sir.

Q At what intervals?

A Through the cemented intervals for each of the strings through the producing formations.

MR. PAYNE: Thank you.

MR. NUTTER: Any further questions? Mr. Mac Lennan may be excused.

MR. GRIFFITH: Continental offers Exhibits 1, 2, 3, 4, 5, and 6.

MR. NUTTER: They will be entered. We will take the case under advisement and call case 2056 next and call 2055 at the end of the hearing.

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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, Lewellyn Nelson, Notary Publis 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 29th day of August, 1960, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Lewellyn J. Nelson
NOTARY PUBLIC

My Commission Expires:

June 14 1964

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2053-2054 heard by me on 8/24, 1960.

, Examiner
New Mexico Oil Conservation Commission

I N D E X

E X H I B I T S

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