

BEFORE THE  
OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
July 27, 1960

EXAMINER HEARING

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IN THE MATTER OF: )

Application of Amerada Petroleum Corporation )  
for an order authorizing the triple completion )  
of its Wimberly Well No. 13, located in Unit )  
M, Section 24, Township 25 South, Range 37 )  
East, Lea County, New Mexico, in such a manner )  
as to permit the production of gas from the )  
Langlie Mattix Pool, the disposal of salt )  
water into the Grayburg and San Andres forma- )  
tions in the interval from 3500 feet to 4200 )  
feet, and the production of oil from the )  
Justis-Blinbry Pool by means of two parallel )  
strings of 3½-inch casing cemented in a common )  
well bore. Applicant would dispose of the )  
salt water through one string of casing, pro- )  
duce the Blinbry oil through 1½-inch tubing )  
set in the second string of casing, and produce )  
Langlie Mattix gas through the annulus of the )  
1½-inch tubing and the second casing string. )

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Case 2020

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

(Amerada's Exhibits 1 through  
5 marked for identification.)

MR. NUTTER: The hearing will come to order, please.

The next case will be Case 2020.

MR. PAYNE: Application of Amerada Petroleum Corporation  
for an order authorizing the triple completion of its Wimberly  
Well No. 13, located in Unit M, Section 24, Township 25 South,

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Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of gas from the Langlie Mattix Pool, the disposal of salt water into the Grayburg and San Andres formations in the interval from 3500 feet to 4200 feet, and the production of oil from the Justis-Blinbry Pool by means of two parallel strings of 3½-inch casing cemented in a common well bore.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, Santa Fe, representing the applicant, and we will have one witness, Mr. Miller.

MR. PAYNE: I'll swear you in, Mr. Miller.

(Witness sworn.)

HERBERT MILLER

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Herbert Miller.

Q By whom are you employed and in what position?

A Amerada Petroleum Corporation. I'm a proration engineer.

Q Have you previously testified before this Commission as a petroleum engineer and had your qualifications accepted?

A Yes, I have.

MR. KELLAHIN: Are the witness's qualifications acceptable?



MR. NUTTER: Yes, sir, they are.

Q Are you familiar with the application in case No. 2020 now before this Commission?

A Yes, sir, I am.

Q Would you state briefly what is proposed in this application?

A The proposal is to instigate a combination twin dual completion on the Amerada Winberly No. 13 Well by running two strings of 3½-inch casing and dualing one of the strings in the Langlie Mattix to produce gas from 2900 to 3250 and oil from the Blinbry open hole from 5300 to 5500 and utilize the other string as a salt waster disposal string into the San Andres at approximately 3500 to 4200. Our diagram there, we show Grayburg, that should be just the San Andres. There is an arrow there, it should be 3575 to 4200.

MR. NUTTER: Rather than 3500?

A Rather than 35.

Q Are you referring to one of the exhibits?

A Exhibit 2.

Q Now, referring to what has been marked as Exhibit No. 1, would you identify that, please?

A Exhibit No. 1 is a plat of the Amerada Winberly Lease and surrounding leases within a two mile radius. The various producing pays are identified on that site, each of the wells,

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with the letters. For instance, our Wimberly No. 4, which is an East offset to the red arrowed No. 13 is a "D", and that would mean a Drinkard and Montoya dual completion.

MR. NUTTER: Drinkard and Montoya?

A Or Drinkard and Fusselman.

Q The key showing the well designations appears on the exhibit, does it not?

A Yes, sir. The key corresponds to the Commission's designation of these various reservoirs.

Q Under your application you propose to dispose of salt water in the San Andres. Is there any reduction within the two mile radius from the San Andres?

A No, there is not.

Q Referring to what has been marked as Exhibit No. 2, would you identify that exhibit?

A Exhibit 2 is our diagrammatic sketch of the proposed completion.

Q Would you discuss how this completion will be made?

A As previously stated, the completion will be utilizing two strings of 3½-inch casing and a third string of 1½-inch tubing. The water well will be using a 3½-inch casing which is to be plastic coated. The Blinbry will produce through the 1½-inch tubing with a packer set below the Langlie Mattix. The Langlie

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Mattix gas will be produced through the annulus of the  $3\frac{1}{2}$ -inch casing. The diagram shows the cement sheath between the two strings of  $3\frac{1}{2}$ -inch casing. The way we propose to cement this well is in the following manner: We plan to pump cement down the long string of  $3\frac{1}{2}$ -inch casing and displace back up to the base of the short string of  $3\frac{1}{2}$ -inch casing the calculated amount of cement. To do that, would, of course, depend on the caliper run on the well. However, I have calculated that 350 sacks of cement on an 8-3/4 hole would bring it back up to the base of the  $3\frac{1}{2}$ -inch string. Then we would pump cement down the  $3\frac{1}{2}$ -inch salt water string and displace back to above the top of the Tancil formation, which is the top of the Jalmat Gas Pool, which is at approximately the top of our cement, would be approximately 2100, the top of the Tancil is at 2127, the top of the Yates, which is the pay zone in the Jalmat, is at 2265. Our 9-5/8's casing would be set at 850 feet, and it would be circulated back to the surface. This should protect all the fresh water sands.

MR. IRBY: What was the depth, please?

A 850 feet.

Q Do you know the depth of any fresh water sands in this area?

A It's my understanding that they're all above that figure.

Q Did you complete your description of the cementing of the  $3\frac{1}{2}$ -inch salt water disposal string?



A Possibly I did not. I calculate that there would be, it would take 516 sacks to bring that cement back up to the 2100 figure, or a total of 866 sacks. We would, of course, run centralizers below the salt water string on the long string. We would utilize turbulizers above the base of the short string.

Q Now, this cementing program will leave an open interval between the 850 feet and below that to the --

A To the top of the cement.

Q -- top of the cement? A Yes, that is correct.

Q What would that interval be?

A It would be the difference between 850 and 2100, 1250 feet.

Q Are there any producing zones in that interval?

A No, sir, there aren't.

Q Are there any fresh water zones in that area?

A No, sir, not to my knowledge.

Q Now, referring to what has been marked as Exhibit No. 4, will you discuss that, please?

A Oh, Exhibit No. 4 is an electric log of the Wimberly No. 4 which is the offset to the proposed-to-be drilled Wimberly 13. The intervals of production are marked in red on the log. The top of the Tancil, as was previously stated, is at 2127, the top of the Yates, 2265, the base of the Yates and the top of the Seven Rivers is 2380. Incidentally, the vertical limits of the



Jalmat Gas Pool extend from the top of the Tancil to a point a hundred feet below the base of the Seven Rivers and thereby including all of the Yates. The base of the Seven Rivers is at 2938, that's also the top of the Queen, and the base of the Queen, 3224 and that's the top of the Grayburg. The top of the San Andres is 3575, the base of the San Andres at 4623, the top of the Clear Fork, which is, of course, the top of the Blinebry, is at 5,015, and, of course, this well that we propose to complete will be a Blinebry well in the interval 5300 to 5500, as marked on the log, as the probable producing interval of the well.

Now, this log extends below our proposed-to-be drilled depth of Wimberly 13, but I went ahead and marked it since this Wimberly 4 was carried deeper. The Tubb sand top is 5680, the base 5739, the Drinkard, 5886 to 5942, the top of the Wichita Albany, which is the base of the Clear Fork, is 6300 and the top of the Fusselman is 6820.

Q I believe, Mr. Miller, you said the Jalmat extended to the point 100 feet below the base of the Seven Rivers?

A Above the base of the Seven Rivers, I stand corrected on that. The Langlie Mattix extends a hundred feet above the base of the Seven Rivers to the base of the Queen.

Q Now, are the completion intervals, the proposed completion intervals in the proposed well marked on that exhibit?

A Yes, they are.



Q Do you have an exhibit showing the turbulizer you propose to use?

A Yes, sir, I believe that was Exhibit --

Q 3, and I passed it up.

A The purpose, of course, of that turbulizer is to reduce channeling by spacing the tubing strings apart so that the cement can flow evenly around each tubing string and it reduces the possibility of channeling. It's a rubber affair and it just sets up a turbulence and holds the strings apart. It also centralizes the string.

Q In your opinion, will the use of the centralizers and the turbulizer, as you have outlined, assure a cement sheath completely around each string of a 3½-inch casing?

A Yes, sir, we believe it will. There will be a number of those turbulizers; incidently, they'll be run about every third joint.

Q If you get a cement sheath around the 3½-inch strings, you will have two wells completed in one well bore?

A Yes, sir, that's the way we feel. It's hard for us to name this type of completion. We have looked around and found that in Canada it's called associated completion and they don't require packer leakage tests on this type of completion. They feel that the two strings are separated; of course, on our gas-oil dual that is more or less a conventional completion on that.

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MR. NUTTER: How do they know it's separated in Canada if they don't take tests?

A Beats me, I don't know.

Q Will this type of completion--

A I would assume if you had communication you would find out in your surface pipe that you had pressure up.

Q Will this type of completion achieve complete separation of the two producing zones?

A I believe so, yes, sir.

Q Will it also separate the salt water disposal well from the producing horizon?

A Yes, sir, I believe so.

Q How would you make leakage tests on this type of completion, Mr. Miller?

A A conventional packer could be run at any time to test the salt water string, it could be pressured up and if a leak should happen to occur above the cement, it could be squeezed with a conventional squeeze tool and cement could be put clear back up into the surface pipe. Of course, the other string could be tested by a surface measurement and a conventional packer leakage test.

Q Insofar as the dual completion for production is concerned, that is a conventional completion, is it not?

A Yes, sir.

Q Of the type that has heretofore been approved by this



Commission?

A Yes, sir.

Q Now, this type of completion will require directional perforation, will it not?

A Yes, sir. We brought an exhibit. It's probably basic, but we thought it might be of interest to some of the Commission on this new type self orienting radiation device. That's Exhibit No. 5. We just photostated Schlumberger's pamphlet in which they explain their new type of perforator. The principle of the perforator is you use a weak radioactive focus source in one of the strings in combination with a gun that is self orienting in the other string. It has a measurement, the gun does, that measures the radioactive intensity, and as it's rotated, the intensity either increases or decreases and the optimum time to perforate is shown in this diagram. It's rather obvious the "C" position, the radioactivity is at the highest point and the gun is so geared to shoot in the opposite direction, perforate away from the highest radiation intensity, and it enables the Schlumberger people to positively never shoot into the opposite string.

In our particular completion we would have to use this or some other type of perforation device. We would have to use it when we perforate the salt water string and also when we perforate the Langlie Mattix string.

Q Has this device been used successfully in other areas?

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A Yes, this and others mention purely mechanical means is sometimes used. The advantage of this over a mechanical means, in the mechanical means the two strings, or three strings, of tubing have to be clamped together to keep the tubing itself from rotating. With this the tubing doesn't necessarily have to be clamped together.

Q Mr. Miller, what is the source of the water which you propose to dispose of in this well?

A The source is the least produced water from the Wimberly lease. Actually, it's primarily Fusselman water.

Q What volumes will you propose to dispose of?

A Our application called for a thousand barrels per day; at the present time we're producing 743 barrels per day.

Q Have you made any test of the San Andres formation with respect to its ability to take water?

A Yes, sir, we have tested another well on the lease and it will take water under gravity, under vacuum.

Q Your injection in this well will be under vacuum?

A Yes, sir.

Q Will this be an open or closed system?

A It will be a closed type system.

Q I believe you've already testified that your 3½-inch disposal string will be plastic lined?

A Yes, sir.



Q Is the water corrosive?

A I have an analysis of the produced water which was made last week by Dowell. They list the parts per million; calcium, 2,665; magnesium, 5995; sodium, 19,550; the chloride, 34,400; the sulphate, 3,300; the bicarbonate, 345; the carbonate, 35, and the hydroxide, 0. This, in my opinion, is a mildly corrosive water. All salt water is of corrosive nature, but this indicates a mildly corrosive water.

Q What is being done with that water at the present time?

A It's being put in pits, open pits.

Q Do you anticipate any increase in the amount of produced water in the area?

A Yes, sir, there's that possibility. The Fusselman is a water drive formation and about 90 percent of the produced water at the present time comes from one of the wells, which is No. 6, and it's anticipated that we will have more water later on from the other wells.

Q Do you anticipate that the proposed salt water disposal portion of this well will be adequate to handle the volumes you will produce?

A Yes, sir.

Q What is the reason for Amerada applying for a completion of this type?

A Well, it's the same thing as Continental. It's purely



economic. We have made some studies of the various costs of combination completions, and the cost as estimated for this completion is \$72,263. A Blinebry and Langlie Mattix dual, we estimate will cost \$57,431. The cost of a single water well to the 4220 would be \$900,932. The cost of a single Blinebry would be \$55,081, and the cost of a single Langlie Mattix would be \$39,867. I have taken and added some of those figures up and the cost of the three singles would be \$34,910, and, of course, you could apply that \$134,910 against the estimated cost of the associated well of \$72,263 and you would arrive at a savings of \$62,647. Applying that further, our assoicated well less our dualled well to the Langlie Mattix and Blinebry gives us a figure of the cost, additional cost of the salt water well of \$14,832 as against a single salt water well of \$39,962. If you take the difference between those two figures the savings on the combined salt water disposal well would be \$25,130.

Q Were Exhibits 1 through 4 inclusive prepared by you or under your supervision?

A Yes, sir, they were.

MR. KELLAHIN: At this time we would like to offer in evidence Exhibits 1 through 5.

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

Q Do you have anything else to add to your testimony?



A Just as a matter of interest, possibly. The type of completion that we're proposing is similar to the type that received quite a bit of publicity in Sunray Mid-Continent's sextuple completion in the North Ward Field in Jackson County, Texas. They set three strings of, instead of 3½-inch pipe, they set three strings of 2-7/8's inch pipe and then they dualled each of the strings of the 2-7/8's inch pipe similar to our Langlie Mattix and our Blinebry and they wound up with six completions producing gas, and I thought it might be of interest. It's similar to that completion.

MR. KELLAHIN: That's all the questions I have, Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q What kind of a packer is this that's going to separate the Langlie Mattix from the Blinebry?

A It would be a Hook Wall Packer, I'd assume.

Q Will you be able to achieve complete separations between those two zones with that packer?

A Yes, sir, I believe so.

Q What kind of pressure do you anticipate in the Blinebry?

A I don't have the bottom hole pressure with me. I can send that to you. Those zones have been produced for quite a number of years and the pressure is not excessive. Likewise, the



Langlie Mattix is an old producing interval.

Q Will you be able to take packer leakage tests on that packer?

A Yes, sir.

Q Will you be able to artificially lift the Blinebry oil?

A Yes, conventional pumping through 1½-inch tubing could be instigated.

Q Now, this well hasn't been drilled as yet, is that correct?

A No, sir.

Q So you don't have any logs?

A No, sir, the only log we have is the four, and we anticipate this well will come in about 10 feet low to the No. 4.

Q The No. 4 is in the same acre tract as the proposed well?

A Yes.

Q I noticed here on the No. 4 well that the base of the Queen, which I believe is the lower limit of the Langlie Mattix Pool, is it not?

A That's right.

Q The base of the Queen is shown at 3224 on this well and you are talking about, on Exhibit No. 2, talking about the Langlie Mattix being produced from 2900 to 3250. What do you anticipate will be the perforated interval on the Langlie Mattix?

A It will depend, of course, on the log. I'm not just sure I follow. To the base of the Queen, 3224, it will probably

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have to be above that 3224. I stand corrected on that.

Q So, at any rate, these Langlie Mattix perforations will be limited and confined to the Queen formation?

A That's correct.

Q Approximately what interval will there be from the lowermost perforation of the Langlie Mattix to the uppermost perforation of the San Andres salt water disposal zone?

A That would be, roughly, from 3250, on our diagram, down to 3500. However, as corrected, it would be another 25 feet above that, so I'll lift 3224 to 3500.

Q I think you corrected that to 3575 also?

A Yes, 3575, that's right. 351 feet, if I didn't make an error there.

Q So you have approximately 350 feet of cement separating the Queen gas pay from the salt water disposal zone, is that correct?

A That's correct.

Q What interval do you have of separation between the lowermost perforation for the San Andres disposal zone and the uppermost perforation of the Blinbry producing zone?

A That would be from 4200 to 5300, which would be 1100 feet.

Q Is it your opinion that the 1100 feet of cement will separate the zones?

A Yes, sir, I believe so.



Q You stated that you presently estimated that it would take how many sacks of cement to cement the long  $3\frac{1}{2}$ -inch string up to the base of the short  $3\frac{1}{2}$ ?

A 350 sacks, to displace up to the base of the short string.

Q In the event that it doesn't take 350 sacks and your cement comes up over the shoe of the short  $3\frac{1}{2}$ -inch string, what will you do then?

A We'll just immediately start pumping the other string. We would just put enough cement to place it up there, calculated it up there, and then we would, as soon as we finished clearing tool on the one zone, we would immediately start pumping on the other zone.

Q So, if the cement had actually come up above the shoe of the short string --

A We should shove it on up. There's a possibility that there might be a short interval that we wouldn't have just right below if the cement didn't come up quite high enough there on the short string, but we don't feel --

Q The short string will be cemented immediately after the cementing of the long string?

A Yes, it will be one operation.

Q And before the cement has set up?

A Yes.

Q You propose to use turbulizers throughout the entire



San Andres?

A Yes, sir, that's right.

Q Will they come on up into the Langlie Mattix?

A Yes, Langlie Mattix and on into the Jalmat.

Q And the long string of  $3\frac{1}{2}$  will be centralized below the shor string?

A Below the short string.

Q From the base of the short string clear down to T. D., is that right?

A That's right.

Q Is the gas that was produced from the Langlie Mattix a dry or wet gas?

A It's dry.

Q Do you anticipate that you'll have any production problems producing this dry gas through the annulus between the  $3\frac{1}{2}$ -inch pipe and  $1\frac{1}{2}$ ?

A No, sir, we don't.

Q What will the interval from the top of the cement to the base of the  $9\text{-}5/8$ 's inch pipe be filled with, mud?

A Mud, yes, sir.

Q Is there any San Andres production anywhere in the neighborhood, Mr. Miller?

A Not to my knowledge, and our geologists tell me that there is none.

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MR. NUTTER: Any other questions of the witness?

MR. PAYNE: Yes, sir.

MR. NUTTER: Mr. Payne.

BY MR. PAYNE:

Q Mr. Miller, are there any other salt water disposal wells in the area with injection into the San Andres?

A No, sir, I don't believe there's any salt water disposal wells in the area.

Q What was the depth of the shallow zone that's productive of oil or gas?

A That would be the Jalmat, which is 2100 and/or 2265 is the top of the Yates. And it's not productive right in the immediate area. It's productive away, about a mile away.

Q What's the depth of the deeper zone productive of fresh water?

A I can't give that exact figure. We checked and found that 850 feet would clear all of the fresh water sands.

Q Now, I believe you testified that your injection is going to be by gravity?

A Yes, sir.

Q You are going to use a closed system?

A Yes, sir.

MR. NUTTER: And your 3½-inch disposal string will be plastic coated?

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A Yes, sir.

MR. PAYNE: That's all.

MR. NUTTER: Any further questions of Mr. Miller? He may be excused. Oh, one question, Mr. Miller.

BY MR. NUTTER:

Q I understood you to say that there would be approximately \$15,000 difference between the cost of this proposed triple completion and between the cost of a Blinbry Langlie Mattix dual, one being about \$72,000 and the other about \$57,000?

A That's correct.

Q And it would cost \$40,000 to drill a single disposal well?

A That's right.

Q So the difference between the cost of drilling a dual and a single disposal well, or drilling a triple, as you proposed here, would be about \$25,000?

A That's correct.

MR. NUTTER: Thank you.

(Witness excused.)

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

MR. KELLAHIN: That's all I have, Mr. Nutter.

MR. NUTTER: Does anyone have anything further for Case No. 2020? We'll take the case under advisement and take Case 2021.



STATE OF NEW MEXICO )  
 : SS  
COUNTY OF BERNALILLO )

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal  
this 1st day of August, 1960.

Ada Kearney  
Notary Public-Court Reporter

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. 2020, heard by me on 7/27, 1960.  
\_\_\_\_\_, Examiner.

heard by me on 7, Examiner.  
James  
New Mexico Oil Conservation Commission

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