

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 28, 1964

EXAMINER HEARING

IN THE MATTER OF: Application of William A. and)
Edward R. Hudson for expansion of a waterflood)
project and for certain unorthodox locations)
Eddy County, New Mexico. Applicants, in the)
above-styled cause, seek authority to expand)
their Maljamar Grayburg-San Andres Waterflood)
Project by the drilling of three injection) Case No. 3136
wells at unorthodox locations not more than)
100 feet nor closer than 25 feet to the)
Northeast corner of Units H, M and P of Section)
24, Township 17 South, Range 31 East, Eddy)
County, New Mexico. Applicants further seek)
authority to convert from oil production to)
water injection their Puckett "A" Well No. 26)
located in the Southeast corner of Unit D and)
Wells Nos. 27 and 28 located in the NW corners)
of Units K and C, respectively, all in)
said Section 24.

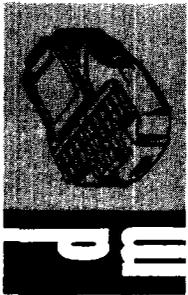
BEFORE: DANIEL S. NUTTER

TRANSCRIPT OF HEARING

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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

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MR. NUTTER: Case 3136.

MR. DURRETT: Application of William A. and Edward R. Hudson for expansion of a waterflood project and for certain unorthodox locations, Eddy County, New Mexico.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Kellahin and Fox, Santa Fe, representing the applicant.

We have one witness I would like to have sworn, please.

(Witness sworn.)

RALPH L. GRAY

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

(Whereupon, Applicant's Exhibits 1 through 6 Marked for Identification.)

Q Would you state your name, please?

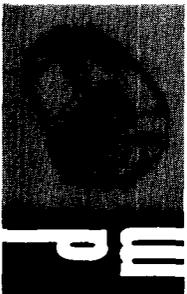
A Ralph L. Gray.

Q What business are you engaged in, Mr. Gray?

A Consulting Engineer.

Q In connection with your work as a Consulting Engineer, have you any connection with the application of William A. and Edward R. Hudson in Case 3136?

A Yes, sir. I look after their operations in New



Mexico.

Q Have you testified before the Oil Conservation Commission and made your qualifications a matter of record?

A Yes, I have.

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

MR. NUTTER: Yes, sir.

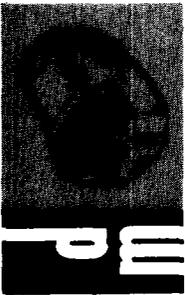
Q (By Mr. Kellahin) Mr. Gray, what is proposed by William A. and Edward R. Hudson in Case 3136, application of William A. and Edward R. Hudson for expansion of a waterflood project and for certain unorthodox locations?

A I'll refer you to Exhibit No. 1. This is a map of a part of the Maljamar Pool. This map shows the waterflood project which is now in existence.

The applicant proposes to inject water into their Puckett A No. 26, 27, and 28 wells. These are shown on the map with the red dots.

The applicant also proposes to drill their Puckett B No. 22 well, and also they propose to drill two wells as line injection wells. These are located close to the east line of Section 24, and these are also indicated on the map by the red circles.

The applicant, in addition to proposing the three new unorthodox locations, also proposes to inject water into



these wells after completion.

In regard to the injection of water into Puckett A No. 27 and 28 wells, we propose to inject down-tubing without a packer which is a continuation of our present program.

In regard to injection into our Puckett A No. 26 well, because of the difficult program used in drilling this well, we propose to inject water down two-inch tubing, but with a packer set at the bottom part of the tubing.

Q Is that in accordance with the request of the State Engineer?

A Yes, that's right.

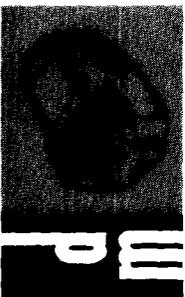
Q Referring to what has been marked as Exhibit No. 2, would you identify that exhibit and discuss it, please?

A Exhibit No. 2 shows a diagrammatic sketch of what we consider a typical injection well program in this flood. Generally, 8 and 5/8 casing is set at about 600 feet or into the top of the rustler anhydrite section and then usually 5-1/2 casing is cemented near the bottom of the hole and completion is made by perforating various zones.

Q That completion will be utilized except as modified by your comments on the well No. 26, is that correct?

A Yes, sir, that's correct.

Q Referring to what has been marked as Exhibits 3, 4, and 5, would you identify those exhibits and state what's



shown on them.

A These three exhibits are electric logs of Puckett A 26, 27, and 28, and these logs show the top of the San Andres formation and they also show the perforated intervals and treatments performed on each zone.

These logs just merely indicate the zones that we will flood.

Q A flood has already been instituted in this area for some time, has it not?

A Yes, sir.

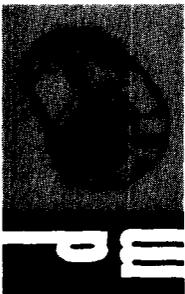
Q Has it met with any success up to this point?

A Yes, this is what we consider a slow flood, but the response has been very effective and each month we have been getting a steady small increase.

I would like to refer you to Exhibit 6, which shows the monthly oil production on the Puckett A lease, and this curve shows that after, shortly after the start of flooding operations, that we started getting a gradual increase in our production and this increase is continuing.

Exhibit No. 7 shows the same data for the Puckett B lease, and in this case the production has been arrested whereas normally a decline is experienced.

The Puckett B lease is getting more or less an edge effect with the flood at the present time.



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(Whereupon, Applicant's Exhibits 7 and 8 were marked for identification.)

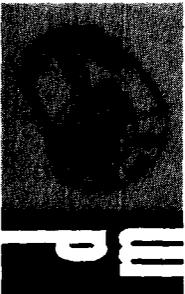
Q Referring to what has been marked as Exhibit No. 8, will you state what is shown on that exhibit?

A Exhibit No. 8 is a tabulation which shows the well test for all of the wells which offset an injection well. This shows the first column there, showing the tests before injection started, oil and water in barrels per day; second column shows the recent test made in October, 1964, and the third table, or third column, indicates the change since the original tests were made.

You'll note from this table that excellent response has been obtained on the wells which are completely surrounded by injection wells. For example, Puckett A No. 5 well originally started out at about 23 barrels of oil and two barrels of water per day, and our last test shows that this well is now producing 53 barrels of oil and 5 barrels of water per day.

The Puckett A No. 7 originally started out at 11 barrels of oil and 25 barrels of water per day. This well now is producing 74 barrels of oil and 13 barrels of water per day.

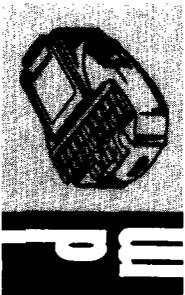
Exhibit 8 will also show that we're starting to get small responses now on wells which are outside of the active injection area. For example, Puckett No. 4, that well has



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experienced an 8 barrel of oil per day increase, and I might add that actually the response is somewhat greater than this table would indicate because normally these wells would have been declining since the original test was made, so actually, the response will be somewhat more than the figures would indicate.

Puckett A No. 11 has experienced an 11 barrel of oil per day increase. Both of these wells are east of the present line of injection wells, and over on the west side of the flood area, well No. 12 for example, has gotten a 9 barrel of oil per day increase, so we're reaching the point where we're starting to get some response outside of the active injection area.

Q Is it necessary in your opinion to drill the new injection wells in order to adequately develop the waterflood project and protect your lease lines?

A Yes, sir.

Q The wells on the eastern side are within approximately 25 feet of your lease line, is that correct, or proposed to be?

A We propose these be located within 100 feet and not closer than 25 feet to the corners of the units as indicated.

Q Have you made any effort to get a line agreement with the offsetting operator?

A Yes. Approximately two years ago when this flood was



started, we had a meeting with Continental Oil Company and at that time we proposed a line agreement based on the pattern that we show on Exhibit No. 1. Then our last test contacts with Continental, we had a meeting on August the 31st with their representatives in Hobbs, and then this was followed up by my letter dated September 3rd, 1964, in which we proposed that wells, four wells be drilled along the common lease line as shown on the map, two of which would be drilled by Hudson.

We haven't actually received an answer from Continental so I can't say what their intentions are at this time in regard to the two located on their property.

Q It's essential though, in your opinion, that Hudson and Hudson go ahead and drill their wells, is that correct?

A Yes, in order to protect our correlative rights we think it's necessary that these be drilled.

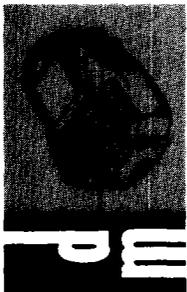
Q Is that the reason for the location of the wells?

A Yes, sir. That's the principal reason for these locations.

Q In connection with your injection well completions, Mr. Gray, are there any fresh water zones encountered in this area?

A No, sir.

Q But the Santa Rosa formation is present, is that correct?



A Yes, the formation is present.

Q Will the completion as proposed by you, with the injection in your No. 26 well under a packer and the other two open holes through the tubing, in your opinion, adequately protect the Santa Rosa formation or any producing formations?

A Yes, sir, we think so.

Q Were Exhibits 1 through 8 inclusive prepared by you or under your supervision?

A Yes, they were.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 through 8.

MR. NUTTER: Applicant's Exhibits 1 through 8 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 8 were offered and admitted into evidence.)

MR. KELLAHIN: That's all I have on Direct Examination.

MR. NUTTER: Are there any questions of Mr. Gray?

MR. IRBY: I would like to ask Mr. Gray a question.

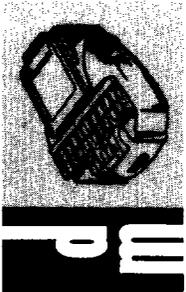
CROSS EXAMINATION

BY MR. IRBY:

Q I didn't catch anything in your testimony, Mr. Gray, with regard to the construction of these three proposed new wells and the equipment that would be placed in them. Did you discuss that in your testimony?

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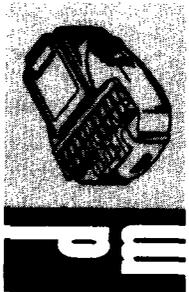
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A Only in a general way. We do propose to drill these three new locations with cable tools and drill and complete them in a similar manner that is shown on Exhibit 2 as a typical injection pattern. In each case, the 8 and 5/8's casing had been cemented in the top of the anhydrite section and cement will be brought up over the Santa Rosa formation.

Q That 8 and 5/8's is the surface casing?

A Yes, sir.

MR. IRBY: Thank you.

A There is one more point that perhaps I ought to mention. You will note that we are proposing these line wells be drilled close to the line rather than trying to utilize the old wells and using, for instance, a diagonal pattern. We believe that the drilling of these wells close to the line is essential.

We've made adequate study of various floods that are in operation at the present time and we have found that in practically all floods that we have studied, quite often they find that these old holes are not suitable for injection wells and that's principally due to the fact that several hundred feet of open hole are exposed in these old wells, several formations are exposed and it has been found by experience that quite often when water is injected into these old holes, it will go into formations or zones that are not intended to be



flooded.

So, we have found a great deal of evidence that a substantial amount of difficulty is being experienced in trying to utilize these old holes. We feel that in order to offer adequate protection for both parties that it's essential that these wells be drilled close to the line as indicated on our map.

CROSS EXAMINATION

BY MR. NUTTER:

Q The eight wells colored in blue are on active injection, is that correct?

A That is correct.

Q Which is the well that was recently authorized as an unorthodox location for the Glorieta?

A That's the No. 26 well and that is shown as the red circle on the map.

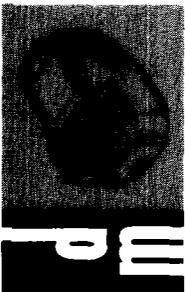
Q It was non-productive in the Glorieta and is going to be used as an injection well now in the San Andres?

A Yes.

Q The 27 and 28 have also been drilled, is that correct?

A That's correct. Three wells have actually been drilled and we're just waiting on authorization to use them as injection wells.

Q And the request today is also for the authorization



of drilling the unorthodox locations of the other three wells?

A That's correct.

Q And these would be not closer than 25 feet to the 40-acre lines?

A Yes, sir.

Q And not more than a hundred feet from those lines?

A Right. And, of course, we are also asking for authorization to inject water in them.

Q And to put them on injection.

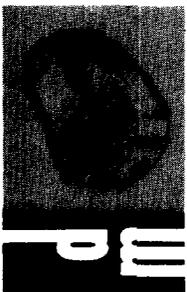
A Yes.

Q As I understand it, all of these wells will be equipped with casing, the injection of water will be through the casing without tubing or packers with the exception of the No. 26?

A No, sir. That's not quite right. We intend to use a packer on the tubing at No. 26. In all of the other wells, we do propose to use tubing, but it will be open ended.

Q On this 8 and 5/8's inch surface pipe that you cement with a hundred sacks on your typical well here, does that hundred sacks of cement circulate?

A No, it doesn't circulate. Our best estimate that it comes up to the top of the Santa Rosa. One reason that we don't make too big an attempt to circulate that is that even if we did circulate it, there's a shallow formation that takes





it and we end up with it down the hole anyhow.

Q This is one of the areas where you cannot obtain circulation?

A Right.

Q How high does your cement come on your 5-1/2 inch pipe?

A It comes up into the salt section or approximately the base of the salt.

Q Normally, how many feet above the top of the pay in your San Andres is this?

A Pardon?

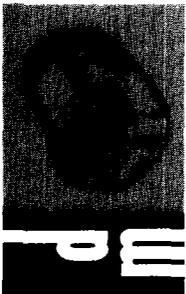
Q Normally, how many feet above the top of the pay in the San Andres is the top of the cement?

A Oh, well, our pay will probably average about 3700 feet and the base of the salt will be about 1800, so we're talking about roughly 1800.

Q Seventeen to eighteen hundred feet above the pay?

A Two thousand, yes.

Q We have a letter dated October 15, 1964, from Mr. Irby of the State Engineers Office in which he objects to the granting of the application insofar as the Puckett A 26 is concerned. This is to satisfy the State Engineers Office as the reason for using the tubing and the packer on this particular well?



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A That is correct.

MR. NUTTER: And then the State Engineers Office withdraws this objection, is that correct, Mr. Irby?

MR. IRBY: That's correct, Mr. Examiner.

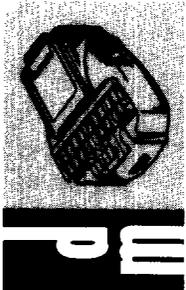
MR. NUTTER: Any other questions of Mr. Gray? He may be excused.

(Witness excused.)

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

MR. KELLAHIN: No.

MR. NUTTER: Does anyone have anything further to offer in Case 3136? We'll take the case under advisement.



I N D E XWITNESSPAGE

RALPH L. GRAY

Direct Examination by Mr. Kellahin 2

Cross Examination by Mr. Irby 9

Cross Examination by Mr. Nutter 11

E X H I B I T S

<u>Number</u>	<u>Marked</u>	<u>Offered</u>
1 through 6	2	9
7 and 8	6	9

