BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 5, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Pan American Petroleum Corporation for salt water disposal, Eddy County, New Mexico.

Case No. 2979

BEFORE: DANIEL S. NUTTER, EXAMINER

TRANSCRIPT OF HEARING

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MR. NUTTER: We will call Case 2979.

MR. DURRETT: Application of Pan American Petroleum Corporation for salt water disposal, Eddy County, New Mexico. If the Examiner please, we have received a telegram from Pan American to which reads as follows: "Pan American Petroleum requests that Case 2979 on the docket for February 5, 1964, be rescheduled for hearing. Adverse weather conditions make it impossible for Pan American's witnesses to attend February 5, 1964 hearing."

On the basis of this telegram, I would move the Examiner to continue this case.

MR. NUTTER: Case Number 2979 will be continued to the

Examiner hearing to be conducted by Mr. Elvis A. Utz at this same place on February 19, 1964.

* * * *

STATE OF NEW MEXICO)

COUNTY OF BERNALILLO)

I, ROY D. WILKINS, 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 of Office, this 10th day of February, 1964.

NOTARY PUBLIC

My Commission Expires:

September 6, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2979, heard by me on 2/5, 1964.

Examiner
New Mexico Oil Conservation Commission

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

BEFORE THE
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Santa Fe, New Mexico
February 19, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Pan American Petroleum for salt water disposal, Eddy County, New Mexico.

Case No. 2979

BEFORE: ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 19, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Pan American Petroleum Corporation for salt water disposal, Eddy County, New Mexico.

CASE NO. 2979

BEFORE: ELVIS A. UTZ: EXAMINER

TRANSCRIPT OF HEARING

MR. UTZ: Case 2979.

MR. DURRETT: Application of Pan American Petroleum Corporation for salt water disposal, Eddy County, New Mexico.

MR. COOTER: Paul Cooter, of Atwood and Malone, appearing for the applicant. We have one witness, Mr. Harpke.

(Witness sworn)

MR. UTZ: Are there other appearances in this case?

CARL F. HARPKE,

called as a witness herein, having been first duly sworn, on oath,

was examined and testified as follows:

DIRECT EXAMINATION

BY MR. COOTER:

Q Would you state your name for the record?

A Carl F. Harpke.

Q By whom are you employed and in what capacity?

A I am employed by Pan American Petroleum Corporation as a reservoir engineer in Lubbock, Texas.

Q Have you previously testified before this Commission and are your qualifications as a petroleum engineer a matter of record?

A Yes, sir.

Q Please describe the purpose of Pan American's application before the Oil Conservation Commission in this case?

A Pan American is requesting that the New Mexico Oil Conservation Commission grant permission to dispose of produced salt water from the Abo formation into Pan American's USA Malco Refineries "G" Well Number 13. This well is located 2302 feet from the South line and 1650 feet from the West line, Section 10, Township 18 South, Range 27 East, Eddy County, New Mexico.

Q Into what formation will the water be disposed?

A The produced water will be reinjected into the base of the Abo formation.

Q What depth will that be?

A We are proposing to perforate the interval at 6,001 to 6,093 feet.

Q Is this proposed injection well now producing?

A No, this well is currently temporarily abandoned, after we made three unsuccessful attempts to establish commercial oil production from the Abo.

Q Mr. Harpke, your attention first to Exhibit Number One in the brochure that has been prepared. Please describe this exhibit, what it shows?

A Exhibit Number One is a base map of the portion of the Empire-Abo Field in which the proposed disposal well is located. I have the proposed disposal Malco "G" 13 indicated here by a red arrow. Also shown on the map is a large circle which describes the two mile radius from the injection well, as is required to be shown by Rule 701. Also shown on this map are the names of the leases and operators and all producing- - well, rather, all completions,both producing and dry holes, within this two mile radius. Also shown on Exhibit Number One is a heavily dashed border area which encloses the leases and wells, which will initially deliver produced water to the proposed disposal well. All of these wells within this bordered area are operated by Pan American, and most of the wells are owned jointly by Pan American and Hondo.

Q Next, invite your attention to Exhibit Number Two, would you relate that, please?

A Exhibit Number Two is a lateral log, Gamma Ray Nuetron log, of the proposed injection well. On Exhibit Number Two we have

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the top of the Abo Reef noted at 5910, which is minus 2447 Sub-C elevation, and we have shown the proposed injection interval from 6001 feet to 6,093 feet, which is TD of the well.

I would like to point out at this time that our initial letter to the New Mexico Oil Commission, which requested that this hearing be called, stipulated a proposed injection interval from 6,001 to 6,018 feet. After this letter was written, we had then further reviewed this thing, and we decided we would like to apply for injection into the entire interval from 6,001 to the TD of the well. The additional injection interval above that, which was noted in our initial application, or a letter of that application, is beneath the interval which had been described and shouldn't effect the State Engineer's approval of the project, which has been received.

Q Next, please describe Exhibit Number Three?

A Exhibit Number Three is a diagrammatic sketch of the proposed completion and hook up of the proposed injection well, Malco "G" Number 13. We have 8 5/8ths inch surface casing set at 1509 feet with 700 sacks of cement, cemented with 700 sacks, which was circulated to the surface. This surface casing was pressure tested to 800 PSI for 30 minutes. Production casing is 4½ inch 9.5 pound J-55 casing set at 6,093 feet; the top of the cement behind the 4½ inch casing was found to be at 675 feet from the surface of the well, as indicated by temperature survey. The 4½ inch casing was cemented with 850 sacks of cement, pressure

tested from 3150 PSI for 30 minutes. The well was perforated at the Abo interval of 6,001 to 6,093 feet. We will set, then, a tension packer with 2 3/8ths tubing. The packer will be set at approximately 5990 feet, approximately ten feet above the proposed disposal interval. This annulus between the 2 3/8ths tubing and the 4½ inch production casing will be loaded with inhibited water to prevent internal casing corosion and the tubing and the packer will be plastic coated for corosion protection.

Q Would you describe Exhibit Four?

A Exhibit Number Four is a tabulation showing the lease names and well numbers of the wells which will be initially connected to the proposed disposal well. These are the lease names and well numbers of the area included in the bordered area that we have discussed on Exhibit Number One. Also shown on Exhibit Number Four is the daily water production of each well, as estimated from the latest available well tests. Initially, a total of approximately 365 barrels of water per day will be injected into the proposed disposal well. This water within this area, we have several storage systems. We have what we describe as our storage system number one, which is located in the Northwest Quarter of Section 11. We have wells, 13 wells, producing approximately 200 barrels of water to this storage system. We have another storage system located in the Southwest Quarter of Section Three, 29 wells producing approximately 70 barrels of water per day. Then, we have three separate batteries serving four

wells, which are located in the East Half of Section 15, and the Northwest of the Northwest Quarter- - In the East Half of Section 16, and the Northwest-Northwest Quarter of Section 15. These four wells produce approximately 100 barrels of water per day.

Q How much water then will be initially injected into this proposed Malco "G" Number 13?

A Approximately 365 barrels of water per day from these 46 wells. However, there is a strong possibility that in the near future, we may be adding additional leases to this, such as our Humble Chalk Bluff Draw Unit, located to the west of the bordered area here. This unit is currently producing approximately 35 barrels of water per day. They are working- - a working interest in this unit, which Humble operates.

Q Next direct your attention to Exhibit Number Five, and would you relate to the Examiner why that is included?

A Exhibit Number Five is a cross section through the Abo Reef, which shows the structural comparison of the proposed disposal well with other offsetting wells. A trace of this cross section is shown in red on figure- - Exhibit Number One. This cross section goes through wells G-3, G-4 and G-13. Shown on Exhibit Five are the pertinent completion intervals for each of the wells. For the Malco "G" 13, we have noted the three intervals which Pan American tested, and which failed to produce commercial quantities of oil. The lower intervals, the two lower intervals,

have been cemented and squeezed, however, the upper interval from 5910 to 5915, which is completed in the upper five feet of the Abo Reef, is still open. When we go in, if permission is granted to convert this well to disposal service, we will go in there.

Q The top of this proposed injection, I think it is 6,001, and this Malco "G" 13 is lower than the perforations in the Number "G" 4 well, is it not?

A Yes, the top of the proposed disposal interval at 6,001 feet. This Malco "G" 13 is at Sub-C elevation minus 2538. This is below the perforation in the Malco "G" Number 4.

Q Next, I invite your attention to the Exhibit Number Six. Please describe that exhibit and why is it included?

A Exhibit Number Six is another cross section, a tracing of which is also shown on Exhibit Number One. This cross section is through the Malco Refinery "G" Number 12, "G" Number 13, Number Nine and "D" Number Five. This is similar to to Exhibit Number Five. This exhibit also shows the completion intervals of the wells offsetting the proposed injection well. The proposed disposal interval in Malco "G" 13 is 29 feet below the bottom of the perforation interval in the Malco "D" Number Five, and it is approximately 100 feet below the bottom of the perforation or perforated interval in the Malco "G" Number Nine.

Q Has the upper portion of the proposed injection interval been perforated?

A Yes, sir. Our final completion attempt to establish

commercial oil production from this oil well was in the interval 5910 to 15. I had previously described the top of the Abo Reef in the well as being at 5910, so that this final completion attempt was in the upper five feet of the Abo Reef. This perforated interval was acidized with 5,000 gallons of acid. We pump tested the formation for 28 days, produced all load water plus 498 barrels of formation water and no oil. So, we feel that the entire reef in this well is beneath the water-oil contact.

Q Were the exhibits, One through Six, either prepared by you or under your direction?

A Yes, sir.

Q Do you have any further evidence or testimony to offer in support of Pan American?

A No, sir, that concludes it.

MR. COOTER: We offer Exhibits One through Six, Mr. Examiner, into evidence.

MR. UTZ: Without objection, Exhibits One through Six will be entered into the record of this case.

CROSS EXAMINATION

BY MR. UTZ:

Q In your interval from 6,001 to 6,093 feet, what is its relative position in the Abo section?

A We did not penetrate the entire reef interval in this well. I would say that the TD of the well at 6,093 feet is probably

within 50 to 100 feet from the base of the reef. So, this interval of 6,001 to 6,093 would be approximately in the lower half of the reef.

Q What relative position of the Abo section do you most generally get production in this pool?

A We have most of our production from the offsetting wells and most of the wells are perforated in approximately the middle of the reef, the Abo, where we think we would run into water, the lowest elevation before running into water.

Q Is this a water drive pool?

A No, sir, this is solution gas drive. We have no evidence of water drive, although we do have water drive present in this portion of the field.

Q This is on the low portion of the pool?

A Yes, sir.

Q Lower portion of the strike, in other words, the southeast edge of the pool?

A This is on the southwestern edge of the field.

Q You feel that the injection of water in this section here will definitely be low enough to where if it serves any purpose at all, it will assist production in offset wells?

A Yes, any effect that it has on the oil zone would probably be favorable, however, the amount of water that we are looking at here is less than the combined withdrawal rate of the five wells which offset the injection well. So, I don't think we

are going to get much in the way of any recovery benefit. Actually, we do have a large aquifer in this area, amount of water which would be injected to the well, but would be negligible compared to the size of it.

Q Did you test this particular interval here in trying to complete this well?

A We had tested the interval 6,001 to 6,018 feet, and failed to make commercial well out of it. We pump tested it for a considerable time. The interval 6,001 to 6,018 feet was perforated, acidized with 2,000 gallons of acid, was then fraced with 71,000 gallons of water after 65,000 pounds of sand. We pumped in 66 days on a pump test and we produced all of our load water, plus 751 of new water, plus only 11 barrels of oil.

Immediately prior to temporarily abandoning the well, the well pumped zero barrels of oil and 25 barrels of water, indicating that there was no commercial oil production present.

Q But, there was plenty of water?

A There was plenty of water, yes, sir.

Q So, this zone now you feel is actually water bearing?

A Yes, sir.

Q Did you state whether, or not your tubing would be plastic coated?

A Yes, sir, our tubing and packer both will be plastic coated.

Q I believe you stated that you will load the annulus with

an inert water?

A Yes, sir.

Q With a pressure guage at the surface to detect any possible leaks?

A Yes, sir, install a pressure guage.

Q Now, your surface casing is 8 5/8ths, did the 800 sacks or rather, 700 sacks, did that circulate?

A Yes, sir, that was circulated.

Q And the cement behind your 4½ went back up inside the 8 5/8ths?

A Yes, sir. The top of the cement behind the 4½ casing was found to be at 875 feet from the surface.

Q So, it would appear that all zones behind the casing are well protected?

A Yes, sir.

MR. UTZ: Are there other questions of the witness?

CROSS EXAMINATION

BY MR. IRBY:

Q Was your surface casing set through the San Andres?

A I am afraid I cannot answer that, sir. I don't know the exact depth of the San Andres in this well.

MR. IRBY: That is all I have.

* * * *

RECROSS EXAMINATION

BY MR. UTZ:

Q The San Andres isn't marked on the log?

A No, sir.

Q I am afraid I couldn't look at that log and tell you, either.

A I may be able to find this in a well file. Well, I have an estimate. The top of the San Andres is approximately 1610, which is below where we have the surface casing set. Now, I will see if this is- - this is further verified. No, I am afraid I don't have the actual top of the San Andres noted here.

MR. IRBY: You estimate the top at 1610?

A Yes, this was on the- - I got this from the drilling procedure for the well before the well was drilled, and I don't have the actual top since we have the log.

MR. IRBY: Then, you would assume that this surface casing was set somewhere in the Artesian group?

A Yes, sir.

MR. IRBY: And possibly, or do you know, whether, or not it was set in one of the tighter members of this group?

A No, sir, I don't.

MR. IRBY: Thank you.

MR. UTZ: Are you a geologist, or engineer?

A Petroleum engineer.

MR. UTZ: Are there other questions of the witness? The witness may be excused. Is this the only witness you have?

MR. COOTER: Yes, sir.

MR. UTZ: Are there statements to be made in this case? The case will be taken under advisement.

* * * *

STATE OF NEW MEXICO)

COUNTY OF BERNALILLO)

I, ROY D. WILKINS, 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 of Office this 29th day of February, 1964.

NOTARY PUBLIC

My Commission Expires:

September 6, 1967.

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....., Examiner
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