STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

20 January 1988

EXAMINER HEARING

IN THE MATTER OF:

Application of Penroc Oil Corporation for salt water disposal, Lea County, New Mexico. CASE 9297

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

For the Applicant: W. Thomas Kellahin
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I N D E X

MOHAMMED YAMIN MERCHANT

E X H I B I T S

MR. CATANACH: Okay, we'll call next Case 9297, which is the application of Penroc Oil Corporation for salt water disposal, Lea County, New Mexico.

Are there appearances in this case?

MR. KELLAHIN: Yes, Mr. Examiner. I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of Penroc Oil Corporation and I have one witness to be sworn.

MR. CATANACH: No other appearances. Will the witness please stand and be sworn in?

(Witness sworn.)

MOHAMMED YAMIN MERCHANT,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Merchant, for the record would you please state your name and occupation?

A My name is Mohammed Yamin Merchant. I'm consulting as well as practicing petroleum engineer based

out of Hobbs, New Mexico.

Q What is your relationship with the applicant, Penroc Oil Corporation, Mr. Merchant?

A I am president and 100 percent stockholder of Penroc Oil.

Q Have you previously testified before the Division as a petroleum engineer?

A Yes, sir, I have.

Q And pursuant to your ownership interest in Penroc and your professional degree, have you made a study of the facts surrounding this application for a salt water disposal well in Lea County, New Mexico?

A Yes, sir, I have.

MR. KELLAHIN: We tender Mr. Merchant as an expert petroleum engineer.

MR. CATANACH: He is so qualified.

Q Mr. Merchant, for informing the Examiner of where this well is located, would you please utilize the plat which I've marked as Exhibit Number One and describe for the Examiner where this well is located?

A The subject well, State "AF" No. 3, is located in the northwest quarter of the southwest quarter of Section 8, Township 18, Range 35, Lea County, New Mexico, as marked inside the half mile radius on the map.

Q The advertisement for this case generally identifies this well as being approximately three miles southeast of Buckeye, New Mexico. Is that about right?

A Yes, sir, it is correct.

Q And what is the identification of the highway or the roadway that lies to the east of the well location? Is that a road?

A Yeah, that's the highway which runs from, oh, that's just a highway. I can't remember the highway number.

Q It's not a pipeline or anything. It's --

A No, no.

Q -- a highway right-of-way?

A No, I believe it's Highway 8.

Q All right.

A Yeah, it's Highway 8.

Q On this plat you've identified two circles. One is the 2-mile radius circle and the other is the 1/2-mile radius circle?

A That is correct.

Q Did you prepare yourself or cause to be prepared the Commission Form C-108 and the attachments?

A Yes, sir, I did.

Q Let me direct your attention then, Exhibit Two is the Commission Form C-108. Let's refer to Exhi-

bit Three, which is the Commission Form C-103. Would you identify that for us?

A Yes. C-103, Form C-103, which is a requirement by the OCD, shows our intent to rework this well to a disposal well from its current status and basically outlines the steps of what we need to do to get to that status.

Q Summarize for the Examiner what has been the history of the State "AFE" No. 3 Well.

A The "AF" No. 3 was drilled and completed as an East Vacuum Wolfcamp producer by Texas Pacific Oil Corporation and it has produced over 50,000 barrels of oil when it was temporarily abandoned in the early seventies because of too much water.

It has been in that status ever since then until last Thanksgiving we tested it to see what it would do, and it tested 8 barrels of oil and 1000 barrels of water on a submersible pump out of the Wolfcamp.

And that's where it stands today.

Q Do you have an opinion as to whether or not this wellbore can be further utilized for commercial oil or gas production?

A Not in this zone. The well, as we can see, is watered out in the Wolfcamp formation. The Devonian is not very structurally low and the Abo, which is up above,

which is above the Wolfcamp zone was tested and was noncommercial by the previous operator.

Q How do you propose to utilize this wellbore for disposal purposes?

A Explain to me a little bit.

Q Yes, sir. What formation will you put the water in?

A We will be putting the water in the Wolfcamp formation, which -- where it is presently completed.

Q And is this an open hole completion or through perforations?

A No, it is a cased hole.

Q Let's turn to Exhibit Number Four and have -- and I believe that's Part 3-A to the C-108. Would you identify that information?

A Yes. This exhibit shows different casing sizes which were set, like 13-3/8ths at 360 feet; 9-5/8ths at 3876; and 5-1/2 production casing set at 10,387, cemented with 2440 sacks; the top of cement approximately at 1780 feet from surface.

Like I mentioned earlier, the well was tested in the Abo from 8714 to 8770 and it was noncommercial and the perforations were squeezed with 150 sacks.

The well was later completed in the Wolfcamp from 9883 to 9927 and, again, like I mentioned earlier,

it has made over 50,000 barrels of oil and currently we do about 8 barrels of oil and 1000 barrels of water and it's TA'd.

Q Turn to Exhibit Number Five, Mr. Merchant, and have you describe the current wellbore schematic as well as the proposed wellbore schematic.

A The wellbore sketch for the current shows the casing, different casing depths, 13-3/8ths, 9-5/8ths, and 5-1/2.

It also shows the perforations in the Wolfcamp from 9883 to 9927, which -- where we propose to inject, and it also shows the squeezed perforations from 8714 to 8770.

The proposed wellbore sketch shows 2-7/8ths plastic-coated tubing set at 9700 with a plastic-coated 2-7/8ths Model AD-1 packer, and we'll be injecting into the presently open perforations in the Wolfcamp.

Q Do you have an opinion, Mr. Merchant, as to whether the cement jobs in this well adequately and efficiently tie back the cement from the perforations on up to the surface?

A As is evident from these sketches of where the 9-5/8ths casing is set and it's cemented with 2300 sacks circulated, and even on the production string, the long string, the cement is at 1780 feet from surface, I

don't see any problem.

Q Okay. In your opinion is the proposed method for utilization of this wellbore for disposal purpose one which confines the disposable fluids to the perforated interval and then into the Wolfcamp formation?

A That is correct.

Q Do you see any potential for contamination of fresh water sources if there are any in the area?

A We're not aware of any fresh water sources in the area. Even if there was to be one, since it's almost 10,000 feet deep, there is no problem.

Q Let's turn now, sir, to Exhibit Number Six, which is the written summary of additional information for the C-108. Would you -- you've already talked about some of the information on this exhibit. Would you describe for the Examiner the approximate daily volumes you propose to dispose of in this well?

A Yes. We'r'e looking at approximately 2-to-3000 barrels a day. I would say 2000 and that came from the offsetting producer where we were producing 24 -- 1800 to 2400 barrels of water a day.

Q What will be the source of that water to be disposed of in this well?

A The source of the water is the well in

the lease, Well No. 1, which is one location due south of the proposed disposal well. It's called the State "AF" No. 1, which approximately four months ago was completed as a Devoniain producer.

Q So it's produced Devonian water that will be disposed of into the perforations in the disposal well.

A That is correct.

Q What is the approximate maximum injection pressure to be used?

A Well, we -- we ran injectivity tests down the back side and it was on strong vacuum throughout the test at 2-1/2 barrels a minute. Again, not having any experience in what the Wolfcamp will do, and looking at the data during the injectivity test of maximum of 500 pounds should be plenty at a later date. Initially I don't think we'll see any pressures.

Q Have you satisfied yourself, Mr. Merchant, that there are no geologic or engineering information available by which the shallow fresh water sands, if there are any, might be connected to the Wolfcamp foramtion?

A Yes, sir, I have.

Q And what have you found?

A We found that first of all, there are no fresh water wells in the area. Fresh water is present between 2-to-300 feet from surface and once again, we're in-

jecting at approximately 9900 feet. So that shouldn't be a problem with the well properly cemented.

Q I believe the next exhibit, and I've lost track of the exhibit numbers, perhaps it's Six, is a copy of the portion of the log showing the Wolfcamp interval and then the perforations in the disposal well.

All right, sir, would you identify and describe for us that portion of the log that's before you as Exhibit Number Six?

A Mr. Examiner, this is a copy of the acoustic log through the Wolfcamp section. The perforations are marked from the interval 9883 to 9927, and that's the only log available on that lease to my knowledge.

Q Let's now direct your attention, Mr. Merchant, to Exhibit Eight, Nine, and Ten, which are simply three separate pages upon which you have listed the various informations of those wells that are within the half mile radius of the disposal well?

A That is correct. Starting with the Penroc Oil Corporation State "AF" No. 1, the Devonian producer, it basically lists the casing, where the casing is set and the weight and the cement, and some cementing information on all the wells within the half mile radius with the exception of two wells which I wasn't -- I did not know that we have not furnished the information with this package.

One of them is in Section 10 -- I'm getting ahead of myself, I think, what exhibit have you marked this last page?

You want me to go through each well?

This exhibit basically gives all the details, like I said, for cement, cement jobs, casing, and perforations for the producing wells as well as the plugged wells.

Q All right. Let's take the producing wells. Have you identified within the half mile radius all the current producing wells that penetrate through the Wolfcamp formation?

A We've not only identified all the wells which penetrate through the Wolfcamp formation but also which do not penetrate through the Wolfcamp formation.

Q Okay. You mentioned that you thought there had been two wells omitted from the tabulation?

A There are in the tabulation after the skectches, Mr. Examiner.

Q All right, let's come to those in a minute, then, Mr. Merchant.

A Okay.

Q By looking at Exhibits Eight, Nine, and Ten, based upon that information on those exhibits, do you find any of that information to cause you to believe that

any of those wells are completed in such a way that they will serve as a source by which water disposed of in the Wolfcamp can migrate out of the Wolfcamp and go up into some shallower zone, perhaps in the Ogallala, at the 2-to-250 foot interval?

A No, I don't. Once again, reviewing all the casing and cementing information on present producing as well as plugged wells, all the cement jobs have been done properly, so I do not feel that that will be any problem.

Q Do you find any of the wells -- identify for us any wells that produce from the same interval as the disposal interval.

A There aren't any.

Q Okay. So do you have an opinion as to whether or not there is any potential to have the disposal water adversely affect production from the Wolfcamp?

A No. The Wolfcamp in the State "AF" No. 2 was tested and it was dry and that was the only well we know which was tested in the Wolfcamp besides the "AF" No. 3. It's a one-well reservoir, to my knowledge.

Q Okay. Let's turn, then, to the schematic on Exhibit Eleven, which is the Getty Oil Company State "AN" No. 8 Well. This is one of the plugged and abandoned wells within the half mile radius?

A This is one of the plugged and abandoned

wells. It's located southwest of our proposed disposal well and it was originally a Devonian well as shown on the sketch, completed from 11,615 to 11,660. It has watered out and it was later plugged, and it has been plugged properly.

Q Turn now to Exhibit Twelve, which is the Getty Oil Company State "AN" No. 9 Well.

A State "AN" No. 9 Getty Oil Company have a similar history; was completed in the Devonian, produced and it watered out, and it was plugged and abandoned properly by Getty.

Q Now let's turn to Exhibit Thirteen, which identifies three wells and have you provide the Examiner with the supplemental information as to two of those wells.

First of all, what's the purpose of Exhibit Thirteen?

A Okay, the Exhibit Thirteen shows the additional three wells which is within that half a mile radius of -- the ARCO Oil and Gas Company Well, Lea 407 State No. 4, which is two locations south of our proposed disposal well and one location south of our presently producing Devonian well.

It's producing from the Abo Reef perforations 8807 to 8882.

The other two wells listed on the same exhibit, the first one, Getty Oil Company State "AN" No. 10,

has been plugged and abandoned, and the second one, Bishop Canyon Uranium Corporation Hookin Bull No. 1, it has also been plugged and abandoned right after it was drilled.

Q These are two P&A'd wells that are within the half mile radius?

A They are within the half a mile radius. We failed until about three hours ago, failed to include any information in terms of sketches and what not on these two wells. Right before the hearing I called the Oil Commission office in Hobbs and got all the details on the drilling and completion as well as plugging information.

MR. KELLAHIN: With your permission, Mr. Examiner, may we subsequent to the hearing submit the schematics on each of these?

MR. CATANACH: Yes, sir.

Q We should have you do that later, Merch.

A Okay.

Q Let's turn to Fourteen, sir, and have you identify this exhibit for us.

A This exhibit is a water analysis done by Halliburton in Hobbs.

The first one is from a fresh water well. It's not within the area but that's the closest one on the Lee Ranch, and the second one is from the Devonian well, State "AF" No. 1, which we'll be injecting, or the water

from the Devonian will be disposing from the Wolfcamp formation.

Q This again comports with requirements of the C-108 for submission of water analysis.

A That is correct.

Q All right, and finally, identify for us Exhibit Fifteen, which is certified return cards.

A Exhibit Fifteen is barely a copy of the certified mail sent to all the offset operators, as well as the surface owner, on this lease.

Q And for the record, who is the surface owner?

A The surface owner on this lease is Lee Cattle Company, which is R. D. Lee and Bill Lee of Lovington, New Mexico.

Q Have you obtained documentation to your satisfaction, Mr. Merchant, that allows you to utilize this well for the disposal of produced water?

A From the landowners?

Q Yes, sir.

A A certified copy of this application was furnished to the Lees. We have not obtained any written permission, but I don't see that as a problem because they've already given me approval and if a written permission is required, we will do so.

MR. KELLAHIN: That concludes my examination of Mr. Merchant.

We would move the introduction of Exhibits One through Fifteen.

MR. CATANACH: Exhibits One through Fifteen will be admitted into evidence.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Merchant, you intend to use the well only for disposal of your Devonian produced water?

A That is correct.

Q Do you know of any problems that you might encounter mixing the Devonian and Wolfcamp produced water?

A I don't know of any. I really don't see why we would have a problem. Of course, there might be a little scale associated with it, which is pretty typical when you mix two waters, and we'll have continuous scale inhibition going downhole, like we do any other place.

Q Now you listed all the wells on Exhibit Number Nine and those are wells within a half mile that don't penetrate the Wolfcamp, I guess.

Did you look at the well construction, those well constructions, casing and cementing and all?

A Yeah, we don't have a sketch, as such, on each one of them but we do -- we did look at the -- all the casings and way they're set and the cementing information in each one of them.

Q I don't have that. It's the one that's got the Texaco, Phillips, Energy Reserves --

MR. KELLAHIN: These are all too shallow.

MR. CATANACH: Well, I realize that.

A Okay, I see what you're saying.

Q I was just making sure you looked at them and --

A Yeah, we -- we have -- I did look at it, or we did look at it, and they all have been properly cemented. They are mostly -- most of them are fairly new wells.

Q Okay.

A They're a lot newer than the "AF" lease and because of the history of problems in the Buckeye area, almost everybody has cemented casing to surface.

Q Okay.

A Or brought it up pretty high.

Q And there's probably little chance of -- of water going from the Wolfcamp into the Abo. What's your opinion on that?

A First of all, on the "AF" 3, the proposed disposal well, again we are very confident on our cement job and second, the offsetting Abo wells do have proper cement job through the pay interval.

And the cement, like I mentioned earlier, cement is brought -- has been brought up substantially higher. I don't see that as a problem.

Q Looking at your Exhibit Number Eleven, which is the Getty State "AN" No. 8, it seemed to me that the annulus down below 5190 would be open. Is that how you perceive that completion?

A Yes, from -- from 5100 feet up, from 3458 to 5190, except you got cement plugs stubs below the base of the 9-5/8ths and above the 4-1/2 casing stub.

Q But you would still have an open annulus from 5190 down to, well, at least across your injection inteval, is that right?

A Well, no, because you have -- let me see for a second here. Well, it's cemented; your casing -- the casing on both 2-7/8ths and 4-1/2 is cemented from that depth from 5190 down. That's why they didn't pull it.

See you had 2-7/8ths, 6.4 --

Q Okay, I hadn't noticed that.

A That's 1490 sacks of cement.

MR. CATANACH: I think that's

all the questions I have of the witness.

Is there anything further in Case 9297?

MR. KELLAHIN: No, sir.

MR. CATANACH: If not, it will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript if a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8997, heard by me on Jan 20 1988.

David R. Catanach, Examiner
Oil Conservation Division