STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
State Land Office Building
Santa Fe, New Mexico

5 June 1985

EXAMINER HEARING

IN THE MATTER OF:
Application of MorOilCo, Inc. for salt water disposal, Eddy County, New Mexico. CASE 8617

BEFORE: Gilbert P. Quintana, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Maryann Lunderman
Attorney at Law
Energy and Minerals Department
Santa Fe, New Mexico 87501

For the Applicant: Randolph M. Richardson
Attorney at Law
Roswell, New Mexico 88201

I N D E X

E X H I B I T S

MR. QUINTANA: We'll call next Case 8617.

MR. LUNDERMAN: Application of MorOilCo, Incorporated, for salt water disposal, Eddy County, New Mexico.

MR. RICHARDSON: Randolph M. Richardson, Roswell, New Mexico, appearing on behalf of applicant.

I again have two witnesses, the same two witnesses as in the prior case.

MR. QUINTANA: Okay, let the record show that these two witnesses have been sworn in previously in Case 8616.

You may proceed.

MR. RICHARDSON: Mr. Quintana, the -- both witnesses sworn in and the application, MorOilCo Form C-108, was filed April 22nd and along with the application for salt water disposal well was a bound copy of our water study, which water study contained a written report, a cross section marked Exhibit One, a land plat, marked Exhibit Two, and a plat showing cumulative production and producing zones of wells surrounding the Guajalote area, which is marked Exhibit Three, and we would like to use this previously submitted material in this hearing as exhibits but

with verbal testimony and correction of errors in the letter of application, dated April 22nd, and I will give you the corrected letter of application and go over the corrections, and those are corrections on the application on the very first page of the old application.

The first well mentioned, being the Miller Brothers Jones and Watkins, is located in the southeast of the northwest instead of the southwest northwest. The original application had the well in the southwest northwest.

And on the second page in the fifth line from the top of the page, the perforations should read 2576 to 2658 instead of 3576 to 2658, which is simply a hitting a 3 instead of a 2 on the typewriter.

And also on the second page in the first full paragraph, last line, the injection pressures should be average injection of 250 pounds and operating maximum of 1100 pounds.

I think the original letter was both too high, 650 and what, 2000, so those pressures were cut considerably.

You do have a copy of that water study and --

MR. QUINTANA: Yes I do have.

MR. RICHARDSON: -- the exhi-

bits in there?

Would you like me to remark those? I think they're marked but not as to this particular case.

MR. QUINTANA: I don't understand your question.

MR. RICHARDSON: You want the rubber stamp on them?

MR. QUINTANA: Yeah, we do want to bring them in as evidence today.

MR. RICHARDSON: Okay.

MR. QUINTANA: Why don't we do that now?

You may proceed.

FRANK MORGAN,

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

DIRECT EXAMINATION

BY MR. RICHARDSON:

Q Mr. Morgan, would you please state for the record your name and position?

A Frank Morgan, Operator, MorOilCo, Incorporated, Artesia, New Mexico.

Q And, Mr. Morgan, would you please state the name and location, footage location, of the well sought to be used as a water disposal well?

A It's the Guajalote State No. 2, located 660 from the south line, 1980 from the east line of Section 5, Township 19 South, Range 29 East.

Q And again, this is a repetition, but what is the name and address of the operator of this well?

A Operator is MorOilCo, Incorporated, Drawer I, Artesia, New Mexico.

Q Would you please refer to the land plat marked Exhibit Two, which is a part of the water study which was -- marked Exhibit Two and called the Guajalote Water Study, and would you please name the operators of wells above the base of the San Andres whose leases will fall within a half mile radius of this proposed injection well?

A Okay. The offset operators in the area of review will be Conoco, Incorporated, Hondo Oil and Gas Company, Husky Oil, Depco, Yates Petroleum Corporation, and Anadarko Production Company.

Q That is all of them?

A Yes, sir.

Q Would you please state the name and quarter quarter section locations of each well within the half mile radius?

A Okay. Miller Brothers Oil Company, Jones-Watson State No. 1, located southeast northwest, Section 5.

Lubbock Machine Company, Incorporated, located southwest northeast, Section 5.

MorOilCo, Incorporated, Guajalote "A" State No. 1. This was the former Amoco State "EW" Com No. 1, located northeast southwest, Section 5.

MorOilCo, Incorporated Guajalote State No. 1, located northwest southeast, Section 5.

MorOilCo, Incorporated Guajalote State No. 3, located southwest northeast, Section 5.

The Jone L. -- or Stanley L. Jones Continental Delware No. 1, located northeast northwest of Section 8.

Q Mr. Morgan, what volume of salt water do you intend to dispose of by injection on an average daily basis, and what is your maximum daily volume?

A At the present time we will probably dispose of 150 to 175 barrels of water per day. We have a, probably a maximum that we believe will be around 350 barrels per day. We asked for a maximum of 500 barrels per day.

Q And what will be your average daily rate of injection and the proposal as far as maximum rate of

water?

A Our average daily rate will be a half a barrel per minute with an average daily -- or with a maximum rate, we anticipate, of one barrel per minute.

Q What is your proposed average and your proposed maximum injection pressure and will your maximum injection pressure be clearly below the frac breakdown pressure?

A Our -- we expect an average of approximately 250 pounds, a maximum of 11,000. We do not see that this maximum will be reached, at least not for a period of years, anyway.

Q And is the maximum pressure below a frac breakdown pressure?

A Yes, sir, ISDP pressures, the lowest was at 1150 pounds.

That was in the Queen formation. Grayburg frac pressure was 1200.

Q So your water injection, maximum water injection pressure, is below any possible frac pressure.

A Yes.

Q Would you please review the history of this Guajalote No. 2 Well with particular reference to the present condition, open perforations, casing, and plugs? In other words, what does the well look like now mechanically?

A Okay. A brief history, we ran 8 and 5 casing to total depth of 350 feet, cemented with 400 sacks of Class C cement.

We ran a long string, 4-1/2 95-pound, cemented with 400 sacks of Class C. Top of cement approximately at 1200 feet. We found this out by running a bond log, cement bond log. Total depth, as I said, was 2877.

Injection interval will be between 2264 to 2650. These zones will be separated by a Halliburton Model R packer, which will be nickel-plated.

Q Well, Mr. Morgan, your well, before you started any injection work on it, in other words when it was completed you did have the casing set there. Your perforations have not been made, which they may question that.

What shape is the well in now before any additional work has been done?

A Okay. It doesn't --

Q Present condition, in other words.

A Okay. At this time we have perfs from 1231 to 1272 and perfs 2260 -- 2264 to 2213.

The perfs from 1231 to 72, if approved, will be squeezed and drilled out and Seven Rivers will be shut off. We will not inject into the Seven Rivers zone at all.

At that time we will perforate from 2570

to 2650 in the Grayburg formation.

At that time we will be disposing into the Queen or Lower Penrose and Grayburg formations.

Q In other words, you do have open perforations in the hole that will be squeezed.

A Yes.

Q And only have one set of perforations.

A Yes, 1231 to 1272. These are random shots.

Q What test will be run, if any, to check the integrity of the hole prior to injection?

A Well, we just run a surface pressure test on our packer to make sure it's not leaking back.

Q Will you maintain any pressure test on the well after you commence?

A Yes, sir, it will be gauges on surface to determine pressures that we're injecting into it and if we're having a buildup of pressure, and so forth.

Q Have you determined the location and depths of any fresh water wells within a one mile radius?

A Yes, we have. There is -- we believe there is no fresh water contact at all. The fresh water, I believe, is approximately 150 feet from surface.

Q You found no fresh water wells in the area that would be affected?

A No, sir.

Q You have previously named several operators within a half mile of this proposed injection well. Did you give each of these operators notice of your proposed application by registered or certified mail?

A Yes, sir, we did.

Q When was this notice mailed and what responses have you had?

A I believe it was mailed May the 14th. We have received verbal approval from Yates Petroleum.

We have not received any letter or commitment from Conoco, and all other operators have approved it by letter.

MR. RICHARDSON: Mr. Quintana, can I hand you these approved letters now?

MR. QUINTANA: Yes.

MR. RICHARDSON: And, as Mr. Morgan said, he has not heard anything from Conoco --

A No. I talked --

MR. RICHARDSON: -- and Yates has not written back but they did say they wouldn't oppose anything.

Q The surface, Mr. Morgan, is owned by the State of New Mexico.

Did you notify the State Land Commis-

sioner of your application and what has the Commissioner done, if anything, and I believe, Mr. Examiner, that Floyd Prando brought up yesterday the State's formal waiver letter. You did get that?

MR. QUINTANA: Yes, I did.

MR. RICHARDSON: Is there anything I need to be doing in connection with that letter? Isn't it kind of a qualified letter, or --

MR. QUINTANA: He just sent me a letter stating he had no objection to you placing that well there, but you'll still have to deal with them, you know, to receive permission to go across state land.

He's still not sure if the state still owns it or if they -- or if they sold it to somebody else.

If they sold it to somebody else, you'd have to deal with them.

A I believe the -- I believe the State does still own it. I know that Pardue Farms lease, they lease the surface, as far as I know.

MR. QUINTANA: As far as I'm concerned, you know, you've met your obligations here by notifying the surface owner, who is the State. If you have to deal with them in receiving further permission to place lines across their property, why you deal with them in that

area.

MR. RICHARDSON: Fine.

Q Mr. Morgan, you have previously mentioned six wells within a half mile radius and the completion data for each well was given in your April 22nd application.

How many of these wells are being operated by Maralo -- or MorOilCo, and how many are still producing, and how many are plugged and abandoned?

A We have three plugged and abandoned wells and all (not understood) are being operated by MorOilCo, Incorporated.

We do have a fourth well, which we have just drilled which does not show to be on the map. We have not completed it.

We have run logs to show us that we are structurally high to the No. 1, which puts us approximately 18-0 feet high to the No. 2 Well.

Q Assuming that the Division grants approval of your injection and disposal of produced water, can you foresee any damage that might be caused to any of these wells due to your injection?

A No, we don't.

Q This present application is for disposal of water from your Guajalote lease at an average volume of 350 pounds at a rate of a half a barrel a minute and 250

pounds pressure with a maximum of 500 barrels, one barrel per minute at 1100 pounds pressure.

You currently have three producing wells and the fourth drilled but not completed.

Will the volumes, rates, and pressures applied for adequately dispose of produced water from existing wells, as well as additional wells which you might drill?

A Yes, we believe that this will handle all water we foresee in the future.

Q On your Guajalote lease?

A Yes.

Q Will the granting of this application in your opinion be in the interest of conservation, the prevention of waste?

A Yes, we do.

Q Will the correlative rights of any party be damaged?

A No, we believe not.

MR. RICHARDSON: That is all the questions I have, Mr. Quintana.

I'd like to, which we've already done, enter those exhibits that were with the April 22nd application as exhibits.

MR. QUINTANA: Okay, Exhibits

One through Five will be entered as evidence.

CROSS EXAMINATION

BY MR. QUINTANA:

Q I have a question for you, Mr. Morgan.

Yes, you stated that you were going to inject into what intervals, the footage intervals?

A We will inject in perfs 2264 through 2313 and then inject into 2570 to 2650.

Q Right.

A And we have perfs at 1231 to 72, which are random shots and I believe there are a total of 11 altogether in that space. These perfs will be squeezed off and drilled out. We do not want injection in the Seven Rivers zone up the hole, definitely.

Q Fine.

MR. RICHARDSON; Mr. Quintana, that probably will be a little clearer on the cross section --

MR. QUINTANA: Right.

MR. RICHARDSON: -- that Mr. Mitchell will get into.

MR. QUINTANA: Right. Any further questions of Mr. Morgan?

Mr. Morgan, you may be excused.

STEPHEN T. MITCHELL,

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

DIRECT EXAMINATION

BY MR. RICHARDSON:

Q Mr. Mitchell, will you please state your name, address, and position for the record?

A My name is Stephen T. Mitchell, and I'm from New Mexico. I'm a geologist for Los Siete Exploration.

Q Would you please refer to a cross section marked Exhibit One contained in the water study which was filed with the Division last April and further identify the logs shown on the cross section, the name, date run, and production sections copied on the cross section?

A Okay. The wells, identifying the wells, to the north is the No. 1 Guajalote State, MorOilCo No. 1 Guajalote, and to the south is the No. 2 Guajalote State.

Covered on the this cross section is the -- it extends from the Queen formation down through the Grayburg formation, and the No. 2 Well only drilled into the Grayburg. The No. 1 Well does go into the San Andres.

Q Would you please tell the Division the significance of this cross section and what information is

shown, mentioning well numbers, formation tops, depths, and so forth?

A Okay. The significance of this cross section, exhibits that we are structurally low to the No. 1 Well, which is the closest producer to the No. 2 Well, the proposed injection well.

At the Queen formation, at the upper perfs at 2264, we're running approximately 130 feet high on the No. 1 Well to the No. 2, and at 2580 we're running approximately 170 feet high on the No. 1 Well to the No. 2 Well.

The significance of this, it also indicates that we have a dense dolomite zone separating -- separating these proposed injection intervals.

Q Mr. Mitchell, specifically, this waste water, or injected water, will be put into what formations?

A They will be injected into the Queen formation and the Grayburg formation.

Q And your Queen perforations are at what depth?

A The Queen perforations are at 2264 to 2314 and the Grayburg perforations are from 2580 to 2650.

Q The Grayburg has not yet been perforated, is that correct?

A I believe it's not been perforated or --

yes.

Q Was this well drilled for injection and disposal purposes or was it drilled as oil test?

A This well was drilled as an oil test and much to our surprise to be so structurally low.

Q Did you all either produce oil from either or both zones you propose to inject?

A Yes. The Grayburg zone produced approximately 20 barrels of oil when we originally produced it and quite a bit of water, and after a short period of time we started producing only water and no oil at all.

Q You propose to inject both the Lower Queen Penrose sandstone and Upper Grayburg dolomite at the same time.

Both these formations are known producers of oil in different stringers or porous zones.

What, in your opinion, will prevent migration or communication between your injection zone and other possible oil productive zones within these formations?

A Okay. First of all, we have a dense dolomite segregating the perforated intervals from the other zones, producing zones, and we're structurally low to all production in the -- within the 2-mile radius.

Q It is your proposal to inject water that is being produced from the Penrose and Grayburg from other

wells on this lease. In other words, you are proposing to re-inject produced water except down structure.

A Yes, sir.

Q Will the granting of the application be in the interest of conservation, prevention of waste?

A Yes, it will.

Q Will correlative rights of all parties be protected?

A Yes, I believe so.

MR. RICHARDSON: And I have no further questions, Mr. Quintana.

The tremendous drop-off of these formations, 130 feet in our location, was real unexpected, but they will be injecting about 131 in the Queen, 131 feet low on the structure, down to about 170 on the Grayburg, and injecting water out of the same formation back into the same formation, except a lot lower structure.

MR. QUINTANA: That's very evident on the structure map.

I have no further questions of the witness.

Are there further questions of the witness?

If not, you may be excused.

Case 8617 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 was reported by me; that the said transcript is 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. 8617, heard by me on JUNE 5 1985.

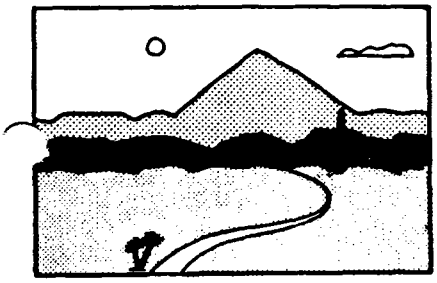
Gilbert P. Quintana Examiner
Oil Conservation Division

GUAJALOTE WATER DISPOSAL STUDY

Stephen T. Mitchell

George L. Scott

March, 1985



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March 17, 1985

Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico
87501

Gentlemen:

The following data is in reference to a water disposal proposal for the MorOilCo, Inc. #2 Guajalote State, located 660' FSL and 1980' FEL in Section 5-T.19S.-R.29E.

Exhibit #1 is a cross-section which displays two proposed water disposal zones between 2264 and 2650 feet in the Penrose and Grayburg Formations.

Exhibit #2 shows all wells and leases within a two-mile and a one-half mile radius around the proposed disposal well.

Exhibit #3 is a map which shows the cumulative production and producing zones for wells within a two-mile radius of the proposed disposal well.

The proposed water disposal zones in the #2 Guajalote State include a porous Penrose sandstone and porous Grayburg dolomite. (See exhibit #1.)

The Penrose sandstone zone was perforated in the #2 Guajalote on 8-12-84. After completion on 9-7-84, the initial potential was pumping 30 BOPD + 20 BW; however, high water cuts began immediately. Presently the well is making 100% formation water with just a trace of oil. This sandstone zone in the #2 Guajalote is structurally 131 feet low to the equivalent sandstone in the #1 Guajalote.

The porous dolomite zone in the Grayburg contains salt water in the #2 Guajalote. Although this dolomite produces oil and water in the #1 Guajalote State, it is structurally 170 feet low at the #2 Guajalote State. In the #1 Guajalote State, the zone had excellent mudlog shows while drilling, whereas no show was present in the #2 Guajalote.

All producing zones in the MorOilCo, Inc. Guajalote wells are structurally high to correlative zones in the #2 Guajalote State.

Oil Conservation Division

The proposed injection zones will be isolated between a cement plug at the plugged-back depth of approximately 2837 feet and a loc-set packer set at approximately 2250 feet inside 4½ inch casing. Vertical fluid communication from (or within) the injection zones is restricted by dense zones of laterally extensive dolomite.

There are no fresh water aquifers currently being produced within a two-mile radius of the proposed water disposal well. (See Exhibits 2 and 3.) There is also no evidence of faulting or any other hydrologic connection between potential fresh water aquifers and the proposed injection zone.

Sincerely,

Stephen T. Mitchell

Stephen T. Mitchell

George L. Scott

George L. Scott

GUAJALOTE WATER DISPOSAL STUDY

March, 1985