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

25 June 1986

EXAMINER HEARING

IN THE MATTER OF:

Application of Sage Energy Company for salt water disposal, Lea County, New Mexico. CASE 8926

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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I N D E X

E X H I B I T S

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MR. STOGNER: Call next Case Number 8926.

MR. TAYLOR: Application of Sage Energy Company for salt water disposal, Lea County, New Mexico.

MR. STOGNER: Call for appearances in this case.

MR. KELLAHIN: If it please the Examiner, I am Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant and we have one witness.

MR. CARR: May it pleases the Examiner, William F. Carr, with the law firm Campbell & Black, P. A., in Santa Fe, appearing on behalf of Yates Petroleum.

MR. STOGNER: Do you have any witnesses, Mr. Carr?

MR. CARR: We do not expect to call a witness.

(Witness sworn.)

MR. STOGNER: You may proceed, Mr. Kellahin.

MR. KELLAHIN: Thank you, Mr. Stogner.

JAY H. HARDY,

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

DIRECT EXAMINATION

BY MR. KELLAHIN?

Q Will you state your name, please?

A Jay H. Hardy.

(Reporter's Note: Due to reporter error a portion of the case at this point was not recorded properly.)

Q -- of the Commission Form C-108 and the attachments to that form?

A Yes, I have.

Q What are you seeking from the Oil Commission with regards to this application, Mr. Hardy?

A What I want to do here is dispose of produced water from one well on an 80-acre lease into a temporarily abandoned well on the same lease.

Q In what pool or formation is the disposal well to dispose of water into?

A It's in the Saunders Permo Upper Penn formation.

Q And this will be produced water from the

same lease --

A That's correct.

Q -- that's put back into the same formation.

A That's correct.

MR. KELLAHIN: We tender Mr. Hardy as an expert petroleum engineer, Mr. Stogner.

MR. STOGNER: Mr. Hardy is so qualified.

Q Mr. Hardy, let me direct your attention first of all to Exhibit Number One, which is simply the Form C-108, is it?

A Correct.

Q And that's your signature on this exhibit?

A Yes, it is.

Q All right, let's turn now to Exhibit Number Two and have you give us some background about the purpose and intent of the Yates Petroleum Corporation letter that's represented as Exhibit Number Two, insofar as it affects your project.

A In notifying the offset operators concerning this project, Yates notified us that they originally were going to oppose us because of the volume that we intended to put into the producing formation and once I in-

formed them that we were only talking about 40 barrels of water a day they presented me with this letter agreement where we would agree to not dispose of any more than 40 barrels a day of produced water and we would not take any water from any other leases or any other properties and dispose of in this well.

Their concern was that they do have a direct offset there and they did not want that well to be watered out, and thus the letter agreement.

Q All right, sir. So the Examiner can see the relationship of the disposal well to the Yates well, let's turn to Exhibit Number Three, and have you -- is that Three or Four?

All right, Three is simply the second page of the letter from Yates?

A That's correct.

Q All right, let's turn to Four and have you identify for us the spacing unit for the well first of all. Where is that?

A The spacing unit of the Sage wells are the 80 acres in orange.

Q When we look at the disposal well, where is that well located?

A The well is in the number one, the Lowe State No. 1, which is in the northwest of the southwest.

Q And that's the center of the half mile radius circle.

A That's correct.

Q And when we look south of that spacing unit there is a No. 2 Well?

A That's correct. That's the Lowe State No. 2 Well, which makes 11 barrels a day and approximately 35-to-40 barrels of water.

Q It is that well, the water produced from, which will be disposed of in the No. 1 Well.

A That's correct.

Q All right. Show us where the Yates well is that they were concerned about that's completed in the same pool.

A They were concerned about the Robin "UT", which is in the southeast of the southwest, which is their best well.

They also have a direct offset, the Valentine State No. 1, which is in the northeast of the southwest, but their main concern was with the diagonal offset.

Q Are there other wells completed in this pool by other operators within the half mile radius?

A Yes, there are.

Q And are the Yates wells the closest well

to your disposal well?

A That's correct.

Q Do you have an opinion as an engineer, Mr. Hardy, as to whether or not the disposal rate of up to but not in excess of 40 barrels a day would jeopardize existing production in this pool from this operator, the Yates Petroleum Corporation, or any other operator?

A I really don't think they'll ever see that 40 barrels a day, in my opinion.

Q Do you have some reasons behind that opinion?

A The depletion nature of the reservoir; the thickness of the pay; and the minimum rate.

Q Will approval of this application allow your company to continue to produce production that it might not otherwise produce?

A That's correct. We would temporarily abandon the No. 2 if this -- if this permit is not granted.

Q All right, sir, let's turn now to the tabulation of wellbore information indicated on Exhibit Number Five.

Is this also an exhibit that you prepared?

A Yes, I did.

Q What is included when we describe in this

exhibit wells in the area of review?

A The location, the operator, the name of the well, the location, the type of well, completion date, the total depth, plugged back depth, the casing program, and the overall perforated interval is -- is what's included here.

Q And this will include all wells that produce from or penetrate through the disposal formation?

A That's correct.

Q In making an examination of the wells in the area of review, do you find any wells that produce below the base of this producing formation?

A Not below the base of the Permo Penn.

Q The wells we've identified on the exhibit, are there any plugged and abandoned wells on that list?

A Yes, there are.

Q Could you show us on the list which ones are the plugged and abandoned wells?

A The Amerada State "SG" 1, which was plugged in 1958, is one. That's also in Section 10.

Then we have the Imperial American Saunders State Y-1, which was plugged in 1971. That's in Section 9.

Q That's on the second page of our Exhibit Six?

A Exhibit Six.

Q All right.

A And then the Imperial American State "AC" 1, which was P & A the same date, which is also in Section 9.

Q Okay. Let's save the plugged and abandoned wells for a moment and concentrate just on those producing wells.

Have you satisfied yourself as an engineer, Mr. Hardy, that the producing wells within the area of review are properly completed and cemented in such a way that any disposal fluid that you introduce into this formation will remain confined in that formation and not migrate out of the formation to another zone through any of these offset wellbores?

A Yes, I have.

Q Okay, and what is your conclusion?

A My conclusion is that the formation that we're talking about here is isolated and water will stay in that zone.

Q All right, let's turn now to the plugged and abandoned wells and have you review each of the schematics, commmencing with Exhibit Number Seven, by identifying the well, showing us where it is on Exhibit Number Four.

A The first well is in Section 10, the Amerada State "SG" 1, which was plugged in 1958 and that is in the center of the northeast of the southwest.

That well was drilled to a TD, referring to Exhibit Seven, of 10,069 and plugged back to 9960.

The 5-1/2 was cemented with 500 sacks. It was pulled at 5792. They put a 30-sack plug at 5660 to 5770 and then on the 8-5/8ths they have a 30-sack plug inside and outside 4195 to 4095.

They pulled the 8-5/8ths at 735 feet. They have a 25-sack plug inside the 13-3/8ths, or inside the hole across that stub there, 689 to 718, and then on the 13-3/8ths they have a 25-sack plug inside and outside the base of that.

Q Where would the corresponding disposal interval be located on the schematic?

A The corresponding interval would be down there at 9845 to 9860, which is right at the base of the 5-1/2.

Q As an engineer, Mr. Hardy, do you have an opinion as to whether this plugged and abandoned wellbore would serve as a conduit for allowing fluids in the disposal formation to migrate to some other formation?

A I don't think it would provide a conduit. I don't think there would be any migration here at all.

Q Let's go then to the next plugged and abandoned well schematic, Exhibit Number Eight, and have you give us the same information as to where the well is located and whether or not in your opinion it is also adequately plugged and abandoned.

A This is the Imperial American Saunders State No. 1, which is in Section 9, 660 from the south and east line.

It's identified on your map as the 2 "AC". This was originally drilled by Cities Service but Imperial American went in and tried to make a well there and they were the last ones to be in the wellbore and they were the ones to plug it like we have on this schematic.

Q Have you reviewed the plugging methods and have you satisfied yourself that in your opinion this well will not serve as conduit to allow fluids disposed of in the disposal formation to migrate into some other formation?

A Yes, I have.

Q Okay, and what is your conclusion?

A I don't believe there will be any migration out of the disposal formation.

Q And there was a third plugged and abandoned well?

A Correct. It's the Saunders State Y-1,

which was also drilled by Imperial American. It's 990 from the south and east lines in Section 9, and that was plugged in October, 1971.

They have 5-1/2 set at 10,020. That was cemented with 400 sacks, which brings the top of cement, according to my calculations, at roughly 7120.

They shot the 5-1/2 and pulled it to 5283. They also have a cast iron bridge plug set above the perforations in the 5-1/2 at 9275.

And the 8-5/8ths is set at 4280 with a 30-sack plug inside and outside of that.

They have a 30-sack plug in the 8-5/8ths at 2500 to 2600; a 30-sack plug inside the 8-5/8ths at 1500 to 1600; and they have a 10-sack plug at the surface. They never were able to pull about 150 feet of that 8-5/8ths, and you have that plus the 13-3/8ths still in the hole.

Q Is the method by which this well has been plugged and abandoned adequate to isolate out the disposal foramtion from any other formation?

A Yes, it is.

Q And all that is depicted on Exhibit Number Nine?

A That's correct.

Q All right. Exhibit Ten is your summary of the proposed operations which you've already reviewed for

us. Let me ask you this while we're looking at Exhibit Number Ten.

Do you have any knowledge and have you made an investigation of any faults or other hydrologic connections by which disposal fluids could migrate into any sources of drinking water?

A Yes, I have, and I don't -- I don't see any problems there.

Q Let's talk about sources of fresh water in the area.

Have you made an examination to determine whether there are any windmills or other producing water in the area of review?

A Yes, I have. There are no windmills in the area of the Lowe State No. 1.

Q If we use Exhibit Number Four can you tell us approximately where the two windmills are located?

A I'm really not sure of the distance but I know that there's a windmill just west of the No. 1 and there's one southeast of the No. 1.

Q Are all those windmills completed at such depths as they are shallow enough to be included within the interval in the disposal well that has been cased and cemented from surface to below the producing water sands?

A They are.

Q Do you have an opinion as to whether or not the disposal well serves as any source of contamination for the produced fresh water in the area that's now being placed to a beneficial use?

A I believe it's well isolated across any fresh water interval there.

Q Let's turn to Exhibit Eleven, if you'll identify that exhibit for us.

A That's just an analysis of the water from the respective windmill wells and you can see it's pretty good water.

Q Okay. And you've not submitted an analysis of the produced water because you have the same water going back into the same formation.

A That's correct.

Q All right. Exhibit Twelve is simply the surface location survey, the C-102 form?

A That's correct.

Q All right. Now let's get to Exhbiit Thirteen and have you describe for us the mechanics on the disposal well.

A The Exhibit Thirteen is the way the well is completed as far as the casing program is concerned and also depicts where we plan to set our tubing, plastic-coated tubing and a Baker Model R at 9500 and put the water in the

existing perforations from 9565 to 9890.

Q Is the well to be completed in a manner consistent with the Commission rules for injection in disposal wells?

A Yes, it is.

Q And you'll fill the annular space between the casing and tubing with an inert fluid?

A Uh-huh.

Q You'll have a pressure gauge or some device on the surface to detect leaks?

A That's correct.

Q All right, sir, and Exhibit Number Fourteen, then?

A Exhibit Fourteen is by certified mail our letter to notify the surface owner there, who does own the surface, Jerry Dean.

Q All right, sir, Exhibit Fifteen?

A Fifteen is a certificate of notice from the offset operators, being MWJ in Midland, and Charles Gillespie, also in Midland.

Q With Mr. Gillespie's notice and MWJ's notice including the Yates agreement, does that constitute all the operators within the half mile radius?

A Yes, it does.

Q And the last exhibit is the newspaper

publication?

A That's correct, in the Lovington newspaper.

Q Thank you, Mr. Hardy.

MR. KELLAHIN: That concludes our examination of Mr. Hardy.

We move the introduction of Exhibits One through Seventeen.

MR. STOGNER: Exhibits One through Seventeen will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Referring to Exhibit Number Four, so I'll make sure everybody got notified --

A Uh-huh.

Q -- I have Yates Petroleum to the west.

A Uh-huh.

Q And to the northwest, that is MWJ?

A That's correct.

Q That's over there in Section 9.

A That's correct.

Q And immediately to the north, that's Mr. Gillespie's acreage?

A That's correct.

Q And also to the northeast in Section 10, the northeast quarter, that's Mr. Gillespie's also?

A That is correct.

Q Okay. Now I get kind of confused directly to the east, those little 40-acre plats offsetting your 80 acres.

A Uh-huh.

Q Whose are those?

A Okay, those are Yates.

Q Those are both --

A Yates Petroleum.

Q -- Yates?

A Yes, sir.

Q Then referring due east of them, I show that to be Morano or --

A That's Maralo.

Q Maralo.

A Maralo in Midland.

Q Okay. Were they notified?

A Well, they were; they should have been.

Q And while we're at that, too, --

A Uh-huh.

Q -- I show an Amerada well, the State "SG" No. 1.

A Yes, sir, that's the one that's plugged

and that's the one that's in my drilling report there. Yates now has that lease.

Q Yates now has that lease.

A That's right, and they drilled the Valentine State No. 1 there.

Q And while you're looking for that, let's go to the south and to the west. Now I show that to be Gulf, which is Chevron now, is that right?

A The south is Yates Petroleum Coquina State.

Q So they control all of Section 16?

A They control, let's see, that is Gulf, I'm sorry. I was looking at -- I was looking at 15. Gulf may have -- I guess they do have that, the north half of 16.

Q Okay, did you notify them?

A No, I did not.

Q Okay, directly to the south, that shows -- now that's Yates Petroleum, is that right?

A That's correct.

Q How about the northeast quarter of Section 15? I show that to be a D. E. Gonzales?

A That's -- that's what I see here, too. We did not notify him.

Q Looks like circle extends over --

A Yeah, just kind of a little bit in there.

Q So notice needs to be sent to Mr. Gonzales and you have -- you said that you did notify --

A I thought we did. I was just checking. We did; I'm sure that we did, yeah. I just don't have that in this packet.

Q All right, would you please submit to me evidence showing that Maralo, Gulf, and Mr. Gonzales --

A Yes, sir, I will.

Q -- have been notified?

Also on Exhibit Number Six, now you show Imperial American.

A Uh-huh.

Q They are no longer in business there and now --

A That's correct.

Q -- Yates Petroleum, or Yates took their acreage over, is that right?

A That would be in the -- that's correct. Yates has that south half there of 9.

Q Okay. Okay, let's go to the Lowe Well No. 1.

A Okay.

Q Could you give me some production history on that well?

A The Lowe No. 1, when we shut it in, was

making 2 barrels of oil and 60 barrels of water, if that's sufficient.

Q Were those the original perforations you show on your Exhibit Number Five?

A Yes, that's correct.

Q Were other exhibits -- I mean were other zones opened up either below or above it?

A Yes, there's a cast iron bridge plug set there at 10,020 and there were some perforations below that, but they were wet.

Q Water wet with no gas or oil?

A That's right, that's correct.

Q And how much water was that Lowe No. 1 making? I got 2 barrels of oil per day but how much water?

A 60 barrels.

Q 60 barrels of water, okay. And that was shut in when?

A That was shut in about six months ago.

Q I show there's about, what, 60 to 70 feet between the -- your completion in your No. 1 and No. 2 Well, is that right?

A Yes, sir.

Q Okay, what is between those two?

A Just -- there's really nothing productive between there.

Q Is there an impermeable zone, is there communication?

A No porosity. It's cemented.

Q How about geologically speaking between the two, between that 60-foot interval? Is there any permeable zones?

A It's nonproductive. It's impermeable, right.

Q With what?

A Well, it's in the Permo -- in the top part of the Permo Upper Penn, and it's cemented through there, so --

Q Mr. Hardy, the 60 foot between 9890 and 9951, geologically, is that -- is there communication or the reservoirs, are they contiguous between that footage, or is there an impermeable layer of shale or something that separates those two?

A Well, there's an impermeable layer that separates that; below that is what you -- I mean it's not perforated there.

Q Could you please explain to me what the impermeable layer is?

A It's just a tight dolomite, dolomite lime; no porosity.

Q Now, you didn't submit any evidence on

the water to be injected. You said it was from the same zone.

A Yes.

Q Is this indeed the same water?

A Yes, it is.

Q Although there is a tight dolomite separating the two zones?

A Uh-huh.

Q Would you care to elaborate on that? Why do you think those two water zones are the same if there's no communication between them?

A Well, it's just Permo Upper Penn water which is basically -- it's all about the same as far as characteristics are concerned; chlorides.

Q Now, you alluded to the windmills to the west and southeast. About how far are those windmills, roughly?

A Mr. Examiner, I really don't know the distance.

Q Can you see them?

A Yes, sir, you can see there. They're in there in the same section.

Q They're in the same section?

A Right.

Q So they would be within a quarter of a

mile?

A Yes, sir, I would say that.

Q And I assume Mr. -- those are Mr Dean's wells, Jerry Dean?

A Yes, sir.

Q I'm sorry, I probably missed the injection pressure. What is the maximum injection pressure you plan to use?

A We plan to put this in in a vacuum and if it won't go on a vacuum we won't -- this won't be a disposal well.

Q How would you -- how do you intend to limit yourself to 40 barrels a day and what mechanical mechanism?

A We plan -- well, that's -- we know what the well makes. It's 35 to 40 barrels a day, and that's what we're going to put in there and if Yates doesn't feel that that's right or they want more, they said they'll pay to have it monitored, which suits us fine.

Q Okay.

MR. STOGNER: I have no further questions of Mr. Hardy at this time.

Are there any other questions of this witness?

MR. KELLAHIN: No, sir. We'll

go ahead and notify those other offset operators and provide you notification proof.

MR. STOGNER: It would maybe expedite it if they could send a waiver and we could get this out.

MR. KELLAHIN: Okay.

MR. STOGNER: Mr. Carr, do you have anything you wish to add in this case?

MR. CARR: No questions.

MR. STOGNER: Okay, Mr. Hardy, you may step down.

Is there anything further from anybody in Case 8926?

If not, this case will -- I'm going to leave the record open pending the information from or for Mr. Gonzales, Gulf, and Maralo.

(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 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. _____, heard by me on _____ 19____.

_____, Examiner
Oil Conservation Division