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

18 February 1987

EXAMINER HEARING

IN THE MATTER OF:

Application of BTA Oil Producers for salt water disposal, Lea County, New Mexico. CASE 9077

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Commission: Jeff Taylor
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For BTA Oil Producers: W. Thomas Kellahin
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I N D E X

E X H I B I T S

MR. CATANACH: Call next Case 9077.

MR. TAYLOR: The application of BTA Oil Producers for salt water disposal, Lea County, New Mexico.

MR. CATANACH: Are there appearances in this case?

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness to be sworn.

MR. CATANACH: Are there any other appearances in this case?

Will the witness please stand and be sworn in?

(Witness sworn.)

JOE D. RAMEY,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A Joe D. Ramey, and I'm an oil and gas consultant.

Q Mr. Ramey, as an oil and gas consultant have you previously testified before the Oil Conservation Division?

A Yes, I have.

Q And you're a petroleum engineer by education?

A Yes, sir.

Q And pursuant to your consulting practice, Mr. Ramey, have you been employed by BTA Oil Producers to make a study of their application with regards to the approval of a salt water disposal well in Lea County, New Mexico?

A Yes, I have.

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

MR. CATANACH: Mr. Ramey is so qualified.

Q Mr. Ramey, let me show you what is marked as a package of exhibits and ask you first to simply skip the C-108, which is marked as Exhibit Number One, and then

turn to Exhibit Number Two and identify the plat for us showing us where the proposed disposal well is located.

A The disposal well is located in -- in Unit G of Section 36 of Township 17 South, Range 35 East, Lea County, New Mexico.

The well is the BTA Oil Producers 8601 JV-P Buckeye B No. 2, and it is -- on the plat it is the well that is in the center of the two circles.

Q What does the smaller circle represent, Mr. Ramey?

A The smaller circle is the half -- half mile area of interest.

Q And then the larger circle?

A Is the 2-mile radius around the well.

Q Let's turn to Exhibit Number Three and again using that exhibit would you locate for us the proposed disposal well?

A The -- did you give the Examiner a new copy of exhibits?

Q Yes.

A All right, it is the well that is yellow colored in the Section 36.

Q What is the reason BTA is seeking to have this well designated as a disposal well?

A They have one well on this lease in Unit

A. On this plat it's the one with the "6"; however, it 's the JV-P Buckeye B No. 2, Well No. 1.

They have also spudded a well, or getting ready to spud a well, in Unit F, and they plan -- they plan to develope the lease and they have -- have about thirty barrels of water per day right now on the lease but they anticipate water in probably all of the wells that they intend to drill and complete in the Abo.

Q Okay. From what formation does the producing well in Unit A of the Section produce from?

A It is producing from the Abo.

Q And the proposed disposal well is to reinject produced water back into the Abo formation?

A Yes, at some point below the oil and gas contact; as you can see from the contour lines, these are 100-foot contours and the disposal well is some 100 feet below or lower structurally than the producing well in Unit A, and the disposal zone is even lower than that.

Q In your opinion is there any potential risk of watering out the producing interval in the Abo with the disposal of water being injected in this well at this location?

A No, it is -- the water will be injected below the zone that is oil productive and I would anticipate that the water will, you know, stay below the woter/oil con-

tact.

Q Using this plat for a reference point, would you identify for the Examiner what your understanding is about the location of the nearest fresh water sources?

A There is a freshwater well in Unit P of Section 25. I believe it is the well that is this dry hole symbol that -- with a "1" on it in Unit P. I think that well has been converted to a water well on plugging.

Q All right, sir. Let's turn to Exhibit Number Four now, Mr. Ramey, and have you identify and describe for us the way the disposal well was completed.

A This is a schematic of the disposal well. As you can see, it has three strings of casing in it and they're all -- all cemented to the surface.

The well was originally the -- originally an Amoco well that was drilled by Amoco to a total depth of about 9300. The well was drilled as an oil well and it was perforated in the Abo at 9080 to 94 and 9120 to 57, and then a bridge plug set over those perforations and then it was perforated in the San Andres from 4974 to 98 and 5075 to 84.

I think it produced a total of about 90 barrels out of the San Andres; nothing out of the Abo.

BTA re-entered the well and squeezed both sets of perforations and then they -- they drilled the hole deeper to a total depth of 9580.

Water will be injected down 2-7/8ths inch plastic-coated tubing. There will be a Baker Loc-Set packer set at 9200 and the annulus will be filled with -- with an inhibited packer fluid, and disposal will be into the open hole from 9300 to 9580.

Q Do you have an opinion, Mr. Ramey, as to whether or not this method of disposal is one in which the disposal fluids will remain confined to the Abo formation and not pose a risk to any shallower fresh water sands?

A Yes, I am. I think that is a safe assumption to make.

If the Examiner would look at the log that he has in his case file, there's a copy of the log, I think you'll find two, you know, two excellent disposal zones. One -- one is just about a 4-foot interval just above 9400, and then the second zone is down at about 9520 to 30. The porosity went off the log there and I think it probably indicates fracture porosity from this interval and I think the majority of the water will go into those two intervals; however, there are other porous intervals that are better marked on the log that will probably take some water.

Q Would you turn to Exhibit Number Five now and describe and identify this exhibit?

A Exhibit Number Five is just an injection well data sheet. It -- it shows just about everything that

was previously covered. I think I have --

Q All right, sir, let's turn to Exhibit Number Six, then.

Within the half mile radius of review, Mr. Ramey, can you identify for us any wells that are producing in this interval or below this interval?

A The BTA Buckeye B Well No. 1 in Unit A is the only producing well, but it is producing from the -- from the Upper Abo in relation to -- to the disposal zone; it is higher structurally, and higher in the formation.

Q Within the half mile area of review are there any plugged and abandoned wells?

A Yes, there are two plugged and abandoned wells.

Q Would you describe for us the information on those two wells? Is that information contained on the tabulation of information on Exhibit Six?

A Yes, there's a tabulation of the construction of the wells and the plugging program and when they were drilled and --

Q All right, in addition are wellbore schematics furnished for those two wells?

A Yes.

Q Let's turn to Exhibit Number Seven, then, and look at the first plugged and abandoned schematic for

the Sunray MidContinent Oil Company New Mexico State AC Well in 36.

A This -- this well has 8-5/8ths to 3706, circulated, and 12-3/8ths to 358, circulated; has open hole from 3706 to its total depth of 9156, which is into the Abo, and it is -- it is plugged as illustrated there with 40 sack -- three 40-sack plugs in the open hole and then they -- a 70-sack plug at -- across the intermediate shoe with a 10-sack plug at the surface, and it should be adequate to confine the water within the Abo.

Q All right, sir, let's turn to the second schematic of the other plugged and abandoned well, which is Exhibit Number Eight, and have you locate that well for us.

A That well is in Unit letter E of Section 36 and that well had 13-3/8ths to 333, circulated, and 8-5/8ths to 4531, circulated.

It had 5-1/2-inch casing in it and was a producing oil well from the Abo. On plugging the well they shot off the casing at 7,036, which is probably reasonably close to the top of the cement that was behind the pipe, and in plugging the well there is a 50-sack plug within the 5-1/2 casing and then a 25-sack plug at the -- at the shoe at 7036 and then one other plug, 25-sack plug at 6630 and then a 25-sack plug across the 8 and 5 shoe and 10 sacks at the surface.

Q Do you have an opinion as to whether or not this well has been properly plugged and abandoned in such a way that it will not serve as as conduit for disposal fluids in the Abo to migrate out of that formation?

A No, I think this is plugged sufficiently to contain the fluid within the Abo.

Q All right, sir. Let me have you identify and describe Exhibit Number Nine.

A Exhibit Number Nine is a water analysis of the Abo water in the area from the No. 1 Well on the lease. It shows, you know, the total -- total solids of 226,931.

Q All right, sir, and Exhibit Number Ten?

A Exhibit Number Ten is another analysis of Abo water which is different. The total solids on it are only 120,000, approximately half of what the other one showed, but I think this is from a well to the -- to the north and east.

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

A That is Exhibit -- oh, and Exhibit Number Eleven is the analysis of the fresh water in the area, taken from the well previously pointed out in Unit P of Section 25.

Q What is the known source of the drinking

water used in the area?

A Ogallala.

Q And it's found at approximately what interval, Mr. Ramey?

A Oh, I think the depth to the base of the Ogallala is about 200 feet in this area.

Q Do you have a recommendation to the Examiner as to what, if any, pressure limitation should be placed upon the well?

A Well, BTA anticipates that they'll only need about 750 pounds to dispose of the water but we would request the normal .2 of a pound per foot, which will be -- I had that some place -- 1860 psi.

Q Can you estimate for us what BTA's anticipated maximum daily disposal rate for the well will be?

A About 1000 barrels a day is what -- what they anticipate would be the maximum with full development of the two leases in the area.

Q And you would seek approval on their behalf from the Examiner of a rate up 1000 barrels a day?

A Yes.

Q Do you see any difficulty in utilizing this wellbore for that volume of water on a daily basis?

A No, none at all.

Q Let's turn to Exhibit Number Twelve and

have you identify that exhibit for us.

A That is a list of -- of offset operators and the surface owners in the area that have been notified. I think the Examiner has one additional notification that was overlooked initially that was sent out last week.

Q In reviewing Exhibit Number Twelve, you discovered that one of the offset operators had been excluded from the list on Exhibit Number Twelve?

A Yes, Southwestern has 40 acres in Section 36, which is within a half a mile of the disposal well.

Q And you have caused BTA to send a supplemental notice to Southwestern of the proposed application before the Division?

A Yes. I requested they call Southwestern and advise them of the hearing today and then to send them a notice immediately in the mail.

Q With that supplemental notice to Southwestern, in your opinion has BTA notified all the offset operators and the owner of the surface at the disposal well location?

A Yes, they have.

Q In reviewing this information in preparation for hearing, Mr. Ramey, are you aware of any geologic reason that the Abo formation might be connected with any fresh water sources?

A No. I've looked at everything available and I can see no -- no faulting or any other hydrologic connection between the disposal zone and the Ogallala in the area.

Q Do you have an opinion, sir, as to whether or not approval of this application would be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A Yes, it would.

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

We move the introduction of BTA's Exhibits One through Twelve.

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

The notice to Southwestern, we'll make that Exhibit Number Twelve-A and admit that, also.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Ramey, has BTA had any response from Southwestern regarding the well?

A No. We invited them to come to the hearing, you know, if they had any -- any complaint about the

application. I assume that they had any complaint, they would have contacted you, Mr. Examiner, or been here today.

Q Now, you said the source of water would be just Abo re-injected to this Abo water, is that correct?

A Yes, that is -- that is the plan at this time. It will be Abo water going into the -- back into the Abo.

Q Do you know how BTA arrived at a figure of 1000 barrels a day?

A No, I really don't. I talked to them. They -- they have to the north and east about, oh, 350 barrels of water per day, and they just anticipate that -- that the wells that they're going to drill will -- will have up to 1000 barrels of water a day. It may be more, Mr. Examiner, and it may be less.

I would personally recommend that you -- you would put a pressure limitation on the well with no volume limit, if possible.

Q Looking at Exhibit Number Three, Mr. Ramey, are there any -- are there any producing Abo wells down structure from the disposal well?

A No, not -- the Southwestern well is a -- I don't believe it's an Abo well. I think it's something else. It's labeled NDE with an estimated, you know, top on the Abo. I'm not -- I'm not sure just what that well is

producing from.

I can't recall, you know, any other pool in there except Abo. There is -- there is a San Andres producer to the east and one location south, but it's marked Amoco 1-4, looks like.

Q That's a San Andres producer?

A Yes.

Q Is that what most of these wells are in this area, San Andres?

A No, most of them to the north are -- are Abo wells.

This is the South Midway Abo Pool, I think, to the north and the No. 1 Well in Unit A is also in the South Midway Abo.

Q So you don't see any chance of this disposal well having any adverse effects on any producing Abo well?

A No, I do not not, Mr. Examiner. I think most of the water will go into those two zones I previously pointed to you and they are, you know, several hundred feet before -- below the producing intervals in the wells, and I think -- I think any water injected into the open hole in the proposed disposal well will -- will certainly stay below the water/oil contact.

Q Do you know offhand where -- where the

producing interval is in the Abo? Approximately?

A Approximately, if you'll -- the log we have on the well is, of course, just the -- just covers the disposal interval, but the casing is set there at approximately 9290. The well was perforated at 9080 to 9157, and that -- that is the producing interval, so it's a couple of hundred feet or 100 feet or 150 feet above the casing in this well and I think the primary disposal interval is going to be down here at 9500. That's the -- the major porous interval in the -- in the open hole.

MR. CATANACH: I have no further questions of the witness.

He may be excused.

I do have a statement. We may have to give Southwestern, Incorporated, some additional time in which to evaluate the (not clearly understood) before we issue an order on this.

MR. RAMEY: That will be fine, Mr. Examiner. Thank you.

MR. CATANACH: Is there anything further in Case 9077?

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 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 this portion 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. 9077, heard by me on February 18 1987.

David R. Catanach, Examiner
Oil Conservation Division