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

13 February 1985

EXAMINER HEARING

IN THE MATTER OF:

Application of Blanco Engineering, Inc., for salt water disposal, Eddy County, New Mexico. CASE 8480

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Jeff Taylor
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: W. Thomas Kellahin
Attorney at Law
KELLAHIN & KELLAHIN
P. O. Box 2265
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. STOGNER: We'll call next Case Number 8480.

MR. TAYLOR: The application of Blanco Engineering, Inc., for salt water disposal, Eddy County, New Mexico.

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. STOGNER: Are there any other appearances in this matter?

If not, will the witness please stand and be sworn?

(Witness sworn.)

MR. KELLAHIN: Mr. Examiner, Blanco Engineering, Inc., seeks a salt water disposal well in Eddy County.

This application represents our effort to find an alternative wellbore. Mr. White of Blanco Engineering in the last few months had applied for use of the Flint Well in this area for salt water disposal. As a result of that application, it was contested by Yates and another examiner has entered an order that allowed Yates Petroleum Corporation to test a well, the Flint Well, for

production, and in the event that that wellbore is not suitable for production it will be turned over to Mr. White for use as a disposal well.

Because of the length of time involved in that process and because the current method of trucking the produced water from Mr. White's wells is an expense of about $1000 a day, it's necessary for, and Mr. White seeks approval of this LaRue Muncy well as a disposal well, understanding that our first choice is the Flint well, but we would seek approval of this well as an alternative.

PAUL G. WHITE,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A My name is Paul G. White and I'm President of Blanco Engineering, Incorported.

Q Mr. White, are you a petroleum engineer, sir?

A Yes, sir.

Q And have you previously testified before the Oil Conservation Division?

A Yes, sir, I have.

Q And have you made a study of the facts surrounding the use of the LaRue Muncy Well as a salt water disposal well?

A Yes, sir.

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

MR. STOGNER: Mr. White is so qualified.

Q Mr. White, I think it might be helpful if in the package of exhibits you'll turn to the area map first, sir. You'll find that contained in the C-108 package of information.

And if you'll help orient the Examiner as to what -- to the location of the proposed disposal well and to your producing wells in the area for which you need a disposal well.

First of all, identify for us, sir, the proposed salt water disposal well.

A The proposed salt water disposal well is the C. E. LaRue and B. N. Muncy, Jr. Nix and Curtis No. 1 in Unit E. It's located 1980 feet from the north line and 660 feet from the west line, Section 25, Township 18 South, Range 26 East, Eddy County, New Mexico.

Q Mr. White, have you obtained the right to use this wellbore for disposal purposes as requested in the Wolfcamp formation?

A Yes, sir, we have.

Q What is the status of the well now?

A The present status of the well now, it's temporarily abandoned.

The well was drilled and completed in July of 1959 as an Abo producer. It produced 8,258 barrels of oil up to May of 1975, and at that time was abandoned, temporarily.

Q Would you describe for the Examiner what the source is of the water that you propose to dispose of in this well?

A The water is produced in four wells that are completed in the Glorieta Yeso formation and all of these wells are in Section 25, Township 18 South, Range 26 East, Eddy County.

Q All right, sir, let's turn back to the front of the package of exhibits and have you identify for us first of all Exhibit Number One.

Exhibit Number One consists of three letters written to Mr. Stamets, Director of the Commission, the Oil Conservation Division, and these letters are from three of the offset operators in the area, one of which is the La-Rue and Muncy people, and we also had telephone conversations with Yates petroleum and Ralph Nix, the other two offset operators, and they agreed that there would be no protest to the application.

Q All right, sir, let's turn now to what is marked as Exhibit Four, Five, and Six, and perhaps it might

be convenient, Mr. White, to simply place all three of those exhibits in front of you, and using those exhibits describe for the Examiner what your first proposed alternative is for the recompletion of this well for disposal.

A The first option, because of the expense involved, would be to look at Exhibit Number Five, and that exhibit diagrams the condition of the wells if we were to convert it to salt water disposal using an open hole Lyons inflatable packer between the Abo zone and the Wolfcamp zone.

The packer would be run on 2-7/8ths inch plastic-lined tubing. The plastic-lined 2-7/8ths would be run to about 5200 feet. This would be reduced to 2-3/8ths tubing and that would be run to a depth of 6200 feet and seal off the formation, the formations between the Abo, which is located from 5408 down to 5680, and the Wolfcamp, which is located below the packer setting depth, the Lyons packer setting depth, and this would be our first option.

Q Let's compare your first option on Exhibit Five with the present condition of the well as represented on Exhibit Four so the Examiner will have an opportunity to see exactly what you propose to do.

A Okay, Exhibit Four is a schematic well diagram, and that shows the present condition of the well. That's what's in the well at the present time.

It shows the 8-5/8ths casing at 1155, circulated cement to the surface.

Then it shows the 5-1/2 casing which was run, cemented at 5373 feet with 100 sacks of cement.

Then it has a short 4-inch flushed joint liner, the top of which is inside the 5-1/2 at 5293, the bottom of which is at 5408, and this liner was cemented back into the 5-1/2 casing.

It shows the Abo zone open hole and there is presently a Hydromite (sic) plug from 5680 to 5700 between the Abo and the Wolfcamp zone.

Q Now in looking at your preferred option for the completion for disposal, as depicted on Exhibit Five, will you tell us what, in your opinion, are the advantages to using the Lyons inflated open hole packer arrangement?

A The advantages of this option for us would be the fact that we would not have to try to recover the short 4-inch flushed joint liner out of the well. That could be an expensive operation. We, with 20 sacks of cement we might be able to jar it out and pull it, but if we could not, we'd have to mill it out.

The -- the running of the Lyon inflatable packer would eliminate pulling the short liner.

The Lyons inflatable packer, in my opinion, would be -- it would be more easily to check the injection of fluids into the Wolfcamp and the absence of contamination of fluids into the Abo zone because of the -- the effect of the packer against the open hole.

If a liner were cemented in the well from the 5-1/2 down to total depth and perforated, I don't believe you'd have as effective a check with a packer in between the two zones in the casing as you would with a packer set in the open hole, and it would be cheaper. That's another distinct advantage.

Q What causes you to believe that there would not be flow into the Abo in the event that there was a leak in the inflatable packer?

A If the inflatable packer developed a leak, we would begin to circulate -- we would fill the annular space full of inert fluid on top of the Lyons packer. In the event of a leak in the Lyons packer, we would begin to pressure up and see evidence of it on the monitor valve and gauge on the surface.

Q Why would not that leak migrate into the Abo formation?

A That leak would not migrate into the Abo formation and the packer would be pulled and repaired, of course, and set back in the wellbore. The leak would not migrate nor penetrate the Abo formation because the permeability of the Abo formation in the area, it would not leak into there without pressurization at the surface where the pumps are or some other means of pressure.

Q Is your pressure at the surface one that would be restricted by the Division guideline of 0.2 psi per foot of depth?

A Yes, sir, it is, and with that restrictive pressure there's no way we could pump into the Abo zone.

Q Is the Lyons inflatable open hole packer used in salt water disposal operations in other areas, Mr. White?

A Yes, sir, it's been used quite a bit. I don't know in New Mexico. I'm not sure about New Mexico; possibly in the Hobbs area.

I know it's used quite a bit over in some of the Texas operations. In fact, we have one over there where it's used, but I don't know. I'm not sure.

Q All right, sir, in -- in the event the Division is not comfortable using the Lyons inflated open hole packer as a method of setting this well up for disposal, do you have an alternative as diagramed for us on Exhibit Number Six?

A Yes, sir, I do.

Q All right, sir, would you describe that for us?

A This alternative would be to go ahead and retrieve, try -- attempt to retrieve the short 4-inch flushed joint liner that's in the well now, and that might be done with a center spear and hydaulic jars; if not, the short liner would have to be milled out.

Then we would clean up the hole to 6531 and run a liner down to the top of the Wolfcamp zone and

cement it into the 5-1/2, and then we would have pipe and cement across the entire Abo interval.

Q What's the disadvantage, if any, Mr. White, of using the approach as diagramed on Exhibit Number Six?

A Exhibit Number Six, the -- the disadvantage for us, of course, the major one is expense. We'll have to use, probably, to mill this up, it will take, probably, four mills. We'll be spending $100,000 on just the milling tool, and that would be the distinct disadvantage to us to do this.

The other disadvantage is, as I stated, I feel there's a more adequate check -- system of checks set up by using the open hole Lyons inflatable rather than having the Abo zone behind a liner of casing and cement, because it's very difficult in the best of conditions to get a cement job on a liner.

Q What did you anticipate or estimate for the cost of using the method of completion shown on Exhibit Number Five?

A On Exhibit Number Five I think $60,000 would convert to the -- the well for salt water disposal.

Q All right, sir, and using Exhibit Number Six, what are the estimated costs for the completion in that manner?

A It would be $182,000.

Q What are the volumes of water you antici-

pate to dispose of in the disposal well?

A We have projected a minimum, depending on how many more wells we drill, of course, but we've projected a minimum of 2000 barrels of Glorieta Yeso water per day and a maximum of 3500 barrels per day.

Q All right. The minimum is 2000 barrels a day and the maximum is 3500 a day?

A Yes, sir.

Q And the disposal interval, again, sir, is what?

A The disposal interval would be the Wolfcamp zone from 6302 to 6531.

Q All right, sir, let's go through some of the requirements of the C-108, now, Mr. White.

We have discussed briefly the area map. On that map you've identified for us a 2-mile radius and a 1/2-mile radius?

A Yes, sir, that's correct.

Q Within the 1/2-mile radius, Mr. White, have you identified any wells that penetrated through the Wolfcamp formation?

A There are none except for the well on the application.

Q All right, the proposed disposal well.

A Yes, sir.

Q All right. Attached to the package of exhibits is simply a tabulation of all wells in the 1/2-mile

radius regardless of their depth?

A Yes, sir, that's right. That's just a tabulation made up showing the condition and present status of all the wells around the proposed salt water disposal well.

Q And those are all shallow San Andres, Glorieta Yeso wells?

A Yes, sir, and these are taken from records at the New Mexico Oil Conservation Commission.

Q Have you caused to be submitted or are there on file with the Division District Office, Mr. White, copies of the suite of logs for the proposed disposal well?

A Yes, sir, they're on file with the District Office.

Q In terms of water analysis, Mr. White, have you submitted to the Division copies of water analysis on the water produced from your wells --

A Yes, we have --

Q -- being disposed of?

A -- on the Glorieta Yeso wells we have submitted those samples and the analysis are attached to the package.

Q Are you aware, Mr. White, of any fresh water sources within a 1-mile radius of the disposal well?

A Yes, sir, I am.

Q And what is the approximate producing depth or interval for fresh water wells?

A The fresh water producers in this area from the -- basically from two different sections, there's a shallow water that produces down to a depth of about 270 feet, and the Artesian water produces from the formation down to about 860 feet.

Q So the depth of the deepest producing fresh water is about 860. Your perforations in the Wolfcamp are 6302?

A Yes, sir, that's right.

Q Within that vertical difference of in excess of 5000 feet, are you aware of any hydrologic connnection, any fracture system, or other methods by which disposal in the Wolfcamp would place that formation in communication with any fresh water aquifers?

A No, sir, there are none above nor none below with the proper casing and cementing.

Q In your opinion is the engineering method for completion of the disposal well, whether it's the one with the inflatable packer or the second alternative, are both of those methods consistent with sound engineering practices so that the disposal of water in the Wolfcamp formation will not pose a risk to, or potential contamination of, fresh water supplies as designated by the State Engineer?

A Yes, sir, that is correct.

Q Can you identify for us, Mr. White, who the owner is of the surface at the proposed disposal loca-

tion?

A The surface is owned by Donald Fanning and Sons, Incorporated.

MR. KELLAHIN: Mr. Examiner, Exhibit Eight, attached to our exhibits, represents the return receipt cards by which we've notified the surface owner. We've sent him a copy of the C-108 and attachments. The balance of those cards represent operators within the 1/2-mile radius.

Mr. Examiner, there were four individuals, or companies, that in our efforts to notify we were unable to obtain a current address.

We have searched the Oil Conservation Division records in Santa Fe, and in Artesia.

The list was compiled based upon the operators and working interest owners of any of the old wells and new wells within the half mile radius, of which there are considerable.

Of the four individuals, or companies, that we could not obtain more accurate information on, they were National Drilling Company of Artesia; that attempt to notify them has been returned to us.

There's a Gary A. Swartz, S-W-A-R-T-Z, of Roswell; that attempted notification was returned to us.

There's an R. D. Collier, C-O-L-L-I-E-R, of Artesia that was returned to us.

And then there's a Nelson and Pope Bearing Equipment of Artesia and that notice was returned.

With those exceptions, Mr. Examiner, all others have received and acknowledged receipt of the appropriate notices.

MR. STOGNER: Excuse me, that's the Bearing Equipment?

MR. KELLAHIN: Yes, sir, rather than "hearing". It's a "B" instead of an "H".

A I might add, Mr. Kellahin, that Mr. Collier, that Collier, and the Pope and Nelson are deceased.

Q Let me have you described for the Examiner, Mr. White, what you currently are doing with the produced water and why it is no longer, if it ever was, a suitable way to dispose of the produced water.

A Our produced water now we're hauling, at $1.12 a barrel, to a disposal well near Loco Hills, New Mexico; probably about thirty miles away.

It costs us $1.12 to haul it.

Q I characterized for the Examiner that the expense involved in disposing of the water for all your wells was about $1000 a day. Is that a fair estimate?

A Yes, that is very close. It will run from $700 a day to $1200 a day, just depending on what the wells make that particular day.

Q Without the use of a suitable and con-

venient disposal well for your own wells, will you cause your producing wells to be prematurely abandoned?

A Oh, yes, sir, there's no question about that. When our wells get down to 25 barrels a day, the economic limit is reached if we have to dispose of the water by hauling it.

Q Have you made a thorough and comprehensive search for possible disposal wellbores that might be utilized by you in this area?

A Yes, sir, we have. We've made an exhaustive search for the previous hearing on salt water disposal well.

We have, yes, sir.

Q And what -- what remains your first alternative for a disposal well in the area, Mr. White?

A At this present time we would still like very much for the Commission to return the Flint Well to us as soon as Yates has had an opportunity to test for hydrocarbons.

The second alternative and option, of course, is this well, preferably on option one with the Wolfcamp being isolated with a Lyons inflatable open hole packer.

Q Why is your -- why do you have a preference for the use of the Flint Well as opposed to the LaRue Muncy Well?

A We have already tested the Flint Well and

know that we can get our proper water injected at the restrictive pressures that the Commission will allow us.

This well we have not physically tested the Wolfcamp zone, and until we do and have the Commission witness the pump-in test, we don't know for sure if it will take the water.

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

We move the introduction of Exhibits One through Eight.

MR. STOGNER: Exhibits One through Eight will be admitted as evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. White, on your land plat are there any Abo and/or Wolfcamp producing wells within a 2-mile radius?

A Yes, sir, there is. There's not in the 1/2-mile but there is in the 2-mile radius, Mr. Stogner.

There's a well in Section 36 and I -- I believe it -- I know it produces from the Abo and I think it's the Kendall (sic) oil well up in the northeast quarter of the northwest quarter of Section 36, and it's an active producer in the Abo. It's very light. It doesn't produce, probably, 2 barrels a day of Abo oil.

And there's another Abo well located well

-- well over west. I think it's just on the fringe of the 2-mile radius.

Q In what section is it?

A Mr. Examiner, I'm not sure where it's at, but it is an Abo -- it's listed in the Dayton Abo Pool on the proration schedules.

Q How about any Wolfcamp producers?

A No Wolfcamp producers in the 2-mile radius or the 1/2-mile.

Q On your listing of all the wells within the 1/2-mile radius you show TD's on about 14 wells, or 13 wells.

What is the total depth on wells numbered 14 through 22?

You don't show the total depth of them.

A Well, we didn't pick them up but they're listed there, Mr. Examiner, as Grayburg, so they would be in that 12 -- 11, 1200 foot interval. They were just left off for some reason, but the Grayburg zone is the producing zone over on the right, so they'd all be in that eleven hundred thousand fifty to twelve hundred foot depth.

Q Well, that's where they show completions are first, but did they go down and test the Wolfcamp or Abo?

A Well, the well that I'm looking at, operated by Joe Finn (sic) is in 14 on down column. No, they did not. They did not drill deeper than the -- than the

zone they're completed in.

Q Okay, I take it that you will probably give me that information on the total depth of all those wells --

A Yes, sir, I certainly can.

Q Okay. Let's refer back to Exhibits Five -- Four, Five, and Six.

When was the 4-inch liner set in this well?

A That liner was set right after the -- right before they completed the well in July, 1959.

Q Okay. In Exhibit Five you show to place the Lyons inflatable packer, oh, roughly about 6300 feet, is that right?

A 6200.

Q 62.

A Yes, sir.

Q Okay. And is that within the -- is that within the Abo or the Wolfcamp formation?

A That will be below the Abo and just above the Wolfcamp zone.

Q Okay. What separates these two zones? What kind of --

A There's an interval of fairly hard drilling between the 5680 and down to 6302.

MR. KELLAHIN: Do you have a copy of one of the logs?

A Yes, I do.

MR. KELLAHIN: Let's show him the log and let him see it.

MR. STOGNER: If you have a log there, maybe make that an exhibit.

A All right, here, looking at the radioactive log, we've got an interval that starts at 50 -- actually starts at 5800, and the section shows no porosity on the radioactive logs and a fairly tight -- tight dolomite, probably, on the gamma ray, down to about -- about 6000 feet. There's a real tight, dense --

MR. KELLAHIN: What would correlate to the base of the Abo?

A Well, we're calling the base of the Abo 5860 on the -- on the information on the completion on the 105 filed with the Commission.

Q Well, I'm real interested about where your Lyons packer is going to be set, what that is.

A Okay, that would be down around 60 -- in the 6200 foot interval there is absolutely no porosity. There's a very tight zone at 6200 feet, as a matter of fact, and that would be -- that would be where we'd set the Lyons packer, 6200.

Q In your opinion what -- what do you think it is, shale?

A Well, it's got to be some -- there's got to be some shale, a little bit of shale, and probably a do-

lomitic substance. It's very tight. There's no porosity at all, just down on the zero line, and the porosity tends to develop around 6255.

MR. KELLAHIN: Indicate on the log for us, Mr. White, where you will set the Lyons packer.

A Okay, we would set the Lyons packer at -- try to set it at 6205, and that would be in a very dense part of the hole.

Q On the Lyons packer, the inflatable model that you will be running, how long of a tool is that?

A You can -- you can run double Lyons packer or single. The tool itself would probably be about 6-foot long. With a plug attached to it, it runs about 8 feet long.

Q How about the inflatable part itself?

A The inflatable part will run about 4 feet, 3-1/2 to 4 feet.

Q And if you run a double, that would be about 8 feet of --

A Yes, sir, that would be about 8 feet of inflatable packer.

Q Do you plan to run a dual?

A We can. Usually the only reason they run the dual is to straddle a section, but you can, if -- you can run the double packer above the formation, if that's the plan, we can do so, yes, sir.

Q But you're really planning to run just

one.

A Yes, sir, I was.

MR. STOGNER: What exhibit is this, Mr. Kellahin?

MR. KELLAHIN: It will be Number Nine, Mr. Examiner.

Q Mr. White, do you know if there's been a caliper log run on this well?

A No, sir, I don't think there was. I never could find one, Mr. Examiner, I could not find a caliper and it would have been on the -- more than likely on the gamma ray neutron log.

Q And this is the only log that exists that you know of at this time?

A Well, sir, there's three open hole logs, which I have here, but they didn't have any caliper written on it.

Q No caliper at all.

A No, sir.

Q These all -- these logs were all run around '59, I assume.

A Yes, sir, and the -- now they could very easily be -- we could easily take a caliper log across the zones of interest in this well. We could run a caliper log. In fact it probably would be a very good idea to run one before you selected the -- exactly the spot that you were going to set one.

Q Yeah.

A But a caliper log would be feasible, and we could run it.

Q If when you run this Lyons packer you will set it, test it, and see if it leaks.

A Yes, sir.

Q And if it happens to leak in that zone, will you then deflate it and move it up the hole some and then re-inflate it or --

A Well, if we -- of course, underneath the packer would be where we want to pump in the injection fluid, the salt water -- the salt water into that zone, and if we had any kind of communication around the back side of the packer, then we would probably, in all probability, close and run another packer until we got a seal.

Q Okay.

A The Lyons packer sets with pressure on the surface by blowing a plug down below the packer, and when we set that, once we set that, if we then start injecting on the tubing and we get some kind of -- of communication around on the back side, then we'd have to pull it. There's no resetting.

Q No resetting.

A No, sir, we have to pull it and run a new one.

Q I thought they had modernized that thing up somewhat, and I guess I was wrong.

A No, they're an all or nothing situation, Mr. Examiner.

Q Unfortunately. Let's see, you're going to have to run 2-7/8ths inch tubing down to approximately 5200 feet and --

A Yes, sir.

Q -- change over to a 2-inch tubing, a cat whisker configuration in your tubing?

A Yes, sir, we do plan to run -- the reason for that is, of course, to have room in that -- that little flushed joint liner, 2-7/8ths couplings are very close to the ID of the 4-inch liner, and we'd run our 2-3/8ths plastic-lined in that interval and then expand out to -- the tapered string to 2-7/8ths.

Q Okay. If all else fails and you have to go to plan B, or your alternate plan, you show that you would set a packer at the bottom of your 2-7/8ths inch tubing in the 5-1/2 inch casing. That would be above the 4-inch liner, would it not?

A Yes, sir, it would. Now, there -- the only reason for doing that is we could continue with our 2-7/8ths to the packer depth. There would be no problem running that packer down to a depth which is just above the Wolfcamp zone by again reducing to 2-3/8ths tubing and running just a regular (not clearly understood) packer.

Q Into the 4-inch.

A Yes, sir, there's no problem there, if

that would be the -- if the Commission so desired.

Q So in both configurations you would not be injecting into the Abo formation at all, would you?

A No, sir, we would not.

Q Although it was advertised as such.

MR. KELLAHIN: We've amended it since the advertisement, Mr. Examiner. I neglected to tell you that we only want to use the Wolfcamp.

MR. STOGNER: May I ask why you don't want to use the Abo?

MR. KELLAHIN: We received an objection from Ralph Nix.

MR. STOGNER: Thank you, sir. I have no further questions of this witness.

Is there anything else of this witness?

MR. KELLAHIN: No, sir.

MR. STOGNER: If not, he may be excused.

Anything further in Case Number 8480?

MR. KELLAHIN: No, sir.

MR. STOGNER: The case will be taken under -- I'm going to leave this case remaining opened until we get the supplemental --

A The total depth.

MR. STOGNER: Yeah.

A Okay, sir, I'll get those back in to you and thank you very much.

(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. 8480, heard by me on 13 February 1985.

Michael E. Stogner, Examiner
Oil Conservation Division