IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

APPLICATION OF ALAMO PERMIAN RESOURCES, LLC FOR APPROVAL OF THE HIGH LONESOME QUEEN UNIT, ESTABLISHMENT OF A WATERFLOOD PROJECT AND CERTIFICATION OF THE WATERFLOOD PROJECT AS AN ENHANCED WELL RECOVERY PROJECT PURSUANT TO THE ENHANCED OIL RECOVERY ACT, EDDY COUNTY, NEW MEXICO.

CASE NO. 15116

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

May 1, 2014

Santa Fe, New Mexico

BEFORE: PHILLIP GOETZE, CHIEF EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, Phillip Goetze, Chief Examiner, on Thursday, May 1, 2014, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

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EXHIBITS OFFERED AND ADMITTED

(9:55 a.m.)

EXAMINER GOETZE: That brings us to the last case on the docket, Case 15116, application of Alamo Permian Resources, LLC for approval of the High Lonesome Queen Unit, establishment of a waterflood project and certification of the waterflood project as an enhanced well recovery project pursuant to the Enhanced Oil Recovery Act, Eddy County, New Mexico.

Call for appearances.

MR. FELDEWERT: May it please the Examiner, Michael Feldewert, Santa Fe office of the law firm of Holland & Hart, on behalf of the Applicant.

I have three witnesses here today, and if you give me one minute, I will track them down.

(Pause in proceedings, 9:56 a.m. to 9:57 a.m.)

MR. FELDEWERT: We're ready. Mr. Examiner, I have my witnesses here today.

EXAMINER GOETZE: Very good.

Would the witnesses please stand, identify yourself for the court reporter, and she will swear you in.

MR. WOODRUFF: Tyler Woodruff, Alamo Permian Resources.

MR. SEALE: Patrick Seale, Alamo Permian

Resources.

MR. FEKETE: Thomas Fekete, Alamo Permian Resources.

(Mr. Woodruff, Mr. Seale and Mr. Fekete sworn.)

EXAMINER GOETZE: There are no other appearances?

Very well.

Mr. Feldewert.

MR. FELDEWERT: Mr. Examiner, we call our first witness.

TYLER WOODRUFF,

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. FELDEWERT:

Q. State your name, identify by whom you are employed and in what capacity.

A. My name is Tyler Woodruff. I'm employed by Alamo Permian Resources as a senior landman.

Q. Would you spell your last name for the court reporter, please?

A. W-O-O-D-R-U-F-F.

Q. Mr. Woodruff, how long have you been a senior landman with Alamo?

A. Four years.

Q. And have your responsibilities included the Permian Basin?

A. Yes.

Q. Have you previously had the opportunity to testify before the Oil Conservation Division as an expert in petroleum land matters?

A. Yes.

Q. Were your credentials outlined and put into the record at that point?

A. Yes.

Q. Are you familiar with the application filed in this case?

A. Yes.

Q. Are you familiar with the status of the lands in the subject area?

A. Yes.

MR. FELDEWERT: Mr. Examiner, I would tender Mr. Woodruff as an expert witness in petroleum land matters.

EXAMINER GOETZE: He is so qualified.

Q. (BY MR. FELDEWERT) Mr. Woodruff, would you turn to what's been marked as Alamo Exhibit Number 1 and identify what the company seeks. First identify the exhibit and then what the company seeks under this

application.

A. This is a C-108 form, and we are seeking the approval of the High Lonesome Queen Unit, as well as the approval of water injection into six initials wells for unit waterflood operations in the project area, which consists of the entire unit.

We're also seeking qualification of the project for an incentive tax rate authorized by the Enhanced Oil Recovery Act.

Q. And how many acres are involved in your proposed unit?

A. 680.

Q. If I turn to what's been marked as Alamo Exhibit Number 1, on the bottom, right-hand corner, there are page numbers. Okay? I'd like you to turn to what's been marked as page number 12 of Exhibit 1. And does page number 12 of Exhibit Number 1 provide a map of your unit area?

A. It does.

Q. And why don't you explain what is shown with the colors on this particular page of this exhibit?

A. The red-hatched outline identifies the unit boundaries. The unit consists of 680 acres made of three state leases, all owned 100 percent by Alamo. The black dots represent the existing, producing Alamo

wells. The red triangles are identifying the locations of the proposed six injection wells, and the dashed circles around each of the triangles represent the area of review for each injection well.

Q. Now, the red circles, what do they signify?

A. Some potential locations for future producing wells.

Q. And the black circles, I think you testified, are your existing producing wells?

A. Yes.

Q. And you mentioned that there were the proposed injection wells identified with the black triangles. Is there a list of those wells on page 2 of Exhibit Number 1?

A. Yes.

Q. And it provides, then, for the Division the footages of the injection wells shown in black triangles on page 12, correct?

A. Yes. In red triangles.

Q. I'm sorry. Red triangles. Yes.

If I then turn to what's been marked as Alamo Exhibit Number 2, is this a list of the current producing wells that are reflected as black circles on page 12 of Exhibit 1?

A. Yes.

Q. And this provides the API number for those wells?

A. Yes.

Q. And does it also provide what would become the unit well name for these wells when the unit is approved by the Division?

A. Yes.

Q. Going, then, back to your map and the circles that are around your triangles, on page 12, Exhibit Number 1, did the company compile a list of surface owners for each of the six injection wells identified on that map?

A. Yes.

Q. And did the company also identify all leasehold operators within a half mile of each injection well, within a half mile of that circle?

A. Yes.

Q. And if I look at what has been marked as Alamo Exhibit Number 3, is that an affidavit prepared by my office, with attached letters, providing notice of this hearing to these affected parties?

A. Yes.

Q. And that list includes the New Mexico State Land Office, correct?

A. Yes.

Q. Have you had discussions with the New Mexico State Land Office about inclusion of the three leases into a unitized area?

A. Yes.

Q. If I turn to what's been marked as Alamo Exhibit Number 4, is that a copy of the -- most recent copy of the unit agreement that has been discussed with the New Mexico State Land Office?

A. Yes.

Q. And it follows their form; does it not?

A. Yes, it does.

Q. Where would I find the description of the horizon that is being unitized?

A. That would be Section 2 under Definitions.

Q. So if I go to page 4 of this exhibit, Section 2, would you state for the record the stratigraphic interval that is being unitized under this agreement?

A. "'Unitized Formation' is defined as that stratigraphic interval occurring between the surface to a point 100 feet below the base the Penrose sandstone interval of the Queen Formation."

Q. And does this Exhibit Number 4 contain an Exhibit A to the unit agreement which identifies the unit boundary?

A. Yes, it does.

Q. And that corresponds to the area that we previously reviewed under Exhibit 1, correct?

A. Yes.

Q. And does it also contain an Exhibit B that provides the ownership breakdown for the ownership in question?

A. Yes.

Q. And then if I look at Exhibit C, it provides a percentage of the tract participation; does it not?

A. Yes.

Q. Has the New Mexico State Land Office given preliminary approval of this proposed unit?

A. Yes, they have.

Q. If I turn to what's been marked as Alamo Exhibit Number 5, is that a preliminary approval letter from the New Mexico State Land Office signed by Mr. Warnell?

A. Yes.

Q. And finally, Mr. Woodruff -- and I forgot to do this with Exhibit 1 -- that is the C-108 application, correct?

A. Yes, it is.

Q. And is that a full, complete and accurate copy of that application?

A. Yes.

Q. And did you sign that application?
A. Yes.
Q. And were you assisted in preparing that application by both a geologist and an engineer?
A. Yes, I was.
Q. And are they here today to discuss the technical portions of this application?
A. Yes, they are.
Q. Were Alamo Exhibits 1 through 5 prepared by you or compiled under your direction and supervision?
A. Yes, they were.

MR. FELDEWERT: Mr. Examiner, I would move the admission into evidence of Alamo Exhibits 1 through 5.

EXAMINER GOETZE: Exhibits 1 through 5 are so admitted.

(Alamo Permian Resources, LLC Exhibit Numbers 1 through 5 were offered and admitted into evidence.)

MR. FELDEWERT: And that concludes my examination of this witness.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. So in the process of filing your C-108, in doing notification, you have not received anybody's

objections or comments?

A. No, I have not.

Q. And I'll ask the question real fast: Do we have copies of notification, return receipts in here to complete the C-108?

A. Yes. They're at the back of Exhibit 3.

MR. FELDEWERT: Do you have a page number?

EXAMINER GOETZE: I found it.

MR. FELDEWERT: Okay. Good. I'm sorry.

EXAMINER GOETZE: Usually you see them stapled with the C-108 and not all over the place.

Okay. I have no more questions for this witness.

MR. FELDEWERT: Call our next witness, Mr. Examiner.

THOMAS FEKETE,

after having been previously sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. FELDEWERT:

Q. Would you please state your name, identify by whom you're employed and in what capacity?

A. Thomas Fekete. I'm a geologist with Alamo Permian Resources.

Q. And how long have you been a geologist with

Alamo?

A. Four years.

Q. And have your responsibilities included the Permian Basin of New Mexico?

A. Yes, they have.

Q. Mr. Fekete, have you previously testified before the Division as an expert in petroleum geology and had your credentials accepted and made a matter of public record?

A. Yes, I have.

Q. Are you familiar with the application filed in this case?

A. Yes, I am.

Q. And have you conducted a geologic study of the area at issue?

A. Yes, I have.

MR. FELDEWERT: I would tender Mr. Fekete as an expert witness in petroleum geology.

EXAMINER GOETZE: He is so qualified.

Q. (BY MR. FELDEWERT) Mr. Fekete, if I go to Exhibit Number 1 and I go to Section 8 -- 52 of that exhibit.

A. Yes.

Q. So if I go to Exhibit Number 1, page 52, there is a geologic summary comprised of Section 8, correct?

A. Yes.
Q. It is Section 8 of the application, correct?
A. Yes.
Q. Did you prepare that summary?
A. Yes, I did.
Q. And does it accurately summarize your analysis?
A. Yes, it does.
Q. The first attachment I see to that summary, which is actually page 53 of Exhibit Number 1, is a type log for the Skelly State Well #3.
A. Yes.
Q. Is that one of the producing wells in the unit area?
A. Yes, it is.
Q. In reviewing this matter in preparation for the hearing, did you notice that there was an error with respect to the legal description for that type log?
A. Yes, I did. I made an error on the header. I typed "1,980 from south and west." The actual location should read "1,980 from north to west."
Q. If we keep our finger here, okay, and I flip over to Alamo Exhibit Number 6, is that a corrected type log for that same well?
A. Yes, it is.
Q. And it provides the correct legal description?

A. It does, yes.

Q. And does it also, then, identify the vertical extent of the proposed waterflood operation?

A. It does, yes.

Q. And how is that identified on Exhibit Number 6?

A. The formations are labeled, "Yates, Seven Rivers, Bowers, Queen, the Penrose" Unit. Penrose sandstone is the target of our water injection project. It's a sandstone. On the type log, it appears at a depth of 1,835 feet. The base being around 1,865. The average depth of this in our acreage is about 1,850 feet. It's a radioactive sandstone. It generally 30 feet thick. It develops porosity usually at about, oh, half of that sand. So, generally, there's about 10 to 15 feet of actual reservoir in that 30 foot interval.

Q. And does your geologic summary discuss the nature of this particular sandstone in the unit area?

A. Yes, it does.

Q. And if I go back to that, which is page 52 of Exhibit Number 1, it notes in there, does it not, that this is a continuous east-to-west trend for at least eight miles?

A. Yes, it is.

Q. And does that trend include the unit area?

A. Yes, it does.

Q. Did you then prepare cross sections for this hearing using wells within the unit area?

A. I did.

Q. Now, these are rather large documents, correct?

A. Yes, they are.

Q. If I then turn to what's been marked as Alamo Exhibit Number 7, is that the first cross section for this unit area?

A. Yes, cross section A to A prime.

Q. Why don't we pull it out?

A. (Witness complies.)

Q. Using your legend in the bottom, right-hand corner of the exhibit, why don't you describe what wells are utilized and what you're showing here?

A. All right. This is a south-to-north structural cross section across our acreage. The wells that are in the cross section are surrounded by a red box colored in red. There are seven wells. The south is on the left side. North A prime is on the right side. It's a structural cross section. Our datum is plus 1,900 feet. The Penrose interval is bracketed by these two black lines (indicating) that go all the way across the cross section.

My experience has been that about 8 percent porosity is the required threshold for production from

this interval. And so I've got 8 percent porosity marked on all these porosity logs. I have then colored in yellow that part of the Penrose sand that meets or exceeds 8 percent. And I think what the cross section shows, starting from the south, is there are two dry holes with very little to no reservoir. Then on the very edge of the southern part of our acreage, there is a well that has no well log available.

But then as we move farther to the north along the cross section, what we see is the amount of yellow, the amount of porosity, both in terms of thickness and in terms of magnitude of the porosity increases. So we're getting better and better sand as we move up into the body of the sandstone, until finally, the northernmost well, the porosity is absent. The sand up there has been plugged by halite and anhydrite. So the sandstone has been occluded to the north. And that happens on the very northern part of our acreage.

Q. And do you know exactly where that occurs?

A. My interpretation is that it occurs at about where this dark black dashed line is on the map attached to the cross section.

Q. So your legendary [sic]?

A. Yes, sir.

Q. And that particular acreage is part of a single state lease, correct?

A. Yes, it is.

Q. And your unit area includes the entirety of three state leases?

A. Yes.

Q. And the State Land Office has approved that designation of the unit boundary?

A. Yes, they have.

Q. Now, does the sand that you see here and depict, that extends across at least most of your unitized area that you show here?

A. Yes, at least 80, 85 percent.

Q. And no question of how far it extends to the north, and that's a state lease, correct?

A. That's correct.

Q. Have you also -- let's see. That's the south-to-north cross section.

Have you also done an east-to-west cross section?

A. I have.

Q. Is there anything else on this particular cross section you want to point out?

A. The only thing I would note -- and I can do that. I think the other cross section possibly shows it

even better -- is that the sandstone is bounded above and below by an anhydritic dolostone layer of some ten feet thickness. In my opinion, that dense low-porosity -- those dense low-porosity boundary layers should serve to confine any water injected in the Penrose sand -- to the Penrose sand instead of allowing leak-off.

Q. And is that going to be shown more clearly in your east-to-west cross section?

A. Yes.

Q. Let's turn to what's been marked as Alamo Exhibit 8, and pull that cross section out.

A. Okay.

Q. Now, this particular cross section, which is Alamo Exhibit Number 8, likewise has a legend in the bottom, right-hand corner, correct?

A. It does.

Q. Starting with that, why don't you walk us through that again?

A. Okay. This is a cross action I prepared for Alamo Permian Resources. It is a west-to-east structural cross section, same datum, plus 1,900 feet as cross section A. Again, the wells involved in the cross section extend across our entire acreage block. They are shown surrounded by squares and colored in red.

Q. Let me stop you right there. The wells that you have used, did it include the type log for that Skelly State Well #3, which is marked as Alamo Exhibit Number 6?

A. Yes, it did. And both cross sections actually contain that type log. The type log is the second from the west.

Similarly, what I did was I went through, I noted 8 percent porosity on the logs. I colored 8 percent greater. And what this cross section shows is the very good continuity of the sandstone across our block from west to east, and, again, the anhydritic dolostones underlying and overlying the sandstone. It appears they are continuous, very, very good porosity. It looks like an ideal flood candidate to me.

Q. Now, you mentioned your -- this shows more clearly what you believe to be good confinement for that zone?

A. Yes, it does. And I think it's because several of these logs penetrate a little deeper, shows a little more of the section.

Q. In your opinion, will the confinement that you've shown here in the black lines at the bottom of Exhibit Number 8 prevent vertical migration of the injected fluids into this Penrose sand?

A. Yes, they will.

Q. And with respect to what you have shown as you move to the north with the sandstone being plugged, will that prevent, in your opinion, the lateral migration the injectant?

A. Yes, I think so.

Q. And this trend that you show here, does this exist throughout the eight-mile area that you discuss in your geologic summary?

A. It does.

Q. And does it include, then, your unitized interval?

A. Yes.

Q. Anything else about this cross section before we leave it?

A. No. I think those are the points I wanted to make.

Q. From a geologic perspective, Mr. Fekete, do you have any concerns with freshwater zones in this area, the impact, to the extent they exist?

A. No, I don't. Besides these anhydrite layers that we have down here, we have at least 800 feet of overlying anhydritic dolostones, embedded anhydrites, and embedded halites or salts. Those will be much more apparent to see on my cross section cc later on. But we

have a very, very thick section of, basically, evaporite that I think will serve well to seal off any kind of water injection that goes here from migrating vertical.

Q. You mentioned that your cross section includes the type log of the Skelly State Well #3?

A. That's correct.

Q. If I look at Exhibit Number 6, does that depict, for the Division, this 800 feet or so of -- what did you call that?

A. Well, they're anhydritic dolostones, embedded anhydrites, embedded halites. Yes, it does show them.

Q. Could you just describe that for the record? What does it show?

A. It would be from the top of the -- it would extend, basically, from the top of the Penrose unit at 1,835 feet up to, I would say, 1,000 feet on the type log.

Q. Now, do you have any evidence as to whether there are any freshwater zones in this area?

A. Our regulatory department did a very thorough exhaustive study. They could find no freshwater wells within a mile of our acreage. We employ an environmental firm called Tetra Tech. It is their belief that there is a freshwater zone located between 75 feet and 110 feet below the surface in this area.

Q. In this area?
A. Yes, sir.
Q. And what is the depth of -- you said 75 to 110 feet?
A. That's correct.
Q. What is the depth of your injection zone?
A. The top of out injection zone is an average of 1,850 feet.
Q. And between the two, you have that 800 feet of --
A. Well, between the two, we have 1,740 feet of rock section, of which at least 800 feet will be these inter-bedded dense dolostones, embedded anhydrites and embedded salts, which would serve to confine the water down low.
Q. Then let me ask you the next question: Did you find any evidence of open faults or hydrogeologic connections between your injection interval and the potential sources, if they exist, of potable water?
A. No, we did not. And given the high-evaporite content of that 800 feet, we do not expect a fault, even if it ever were present, to be open. It's sealed.
Q. So in your opinion, does this proposed waterflood operation pose any risk to any potable water that may be in this region?

A. No, no risk.

Q. In your opinion, are there sufficient geologic impediments to prevent migration of the injected water out of zone?

A. Yes. I believe that the sandstone is bounded, top and bottom, immediately by those dolostone layers, and laterally -- the sandstone is to the north -- is bounded by that evaporite flow sandstone boundary. So we're closed on at least three sides.

Q. Did your analysis also include a structure map for the unitized area?

A. Yes, it did.

Q. And if I go back to Exhibit Number 1 and I flip over to page 54 -- so Exhibit Number 1, page 54, that's part of your geologic summary, correct?

A. Yes, that's correct.

Q. And is that the structure map of the area?

A. Yes, it is.

Q. What does it show?

A. This is a geologic map on the top of the Penrose interval, which is shown on the type log. The Alamo acreage is shown in yellow for the High Lonesome Queen Unit. The red dots indicate historical and current Penrose producers in this area. The red dots with the slash through them are plugged producers. So

they would be historical. But without slashes, those are currently active.

The blue triangles with red outlines indicate wells that were drilled as dedicated original water injection wells in the Penrose interval. Over on the west side of the map, there are many wells that -- a red dot surrounded with an open purple triangle, those wells were originally producing wells in the Penrose, which, at some point in their history, were converted to water injection wells in the Penrose.

The contour interval here is 25 feet. It dips gently from the northwest down to the southeast. We lose about, oh, 135 feet of structural elevation from northwest to southeast. There is no closer [sic] associated with this production.

Along the top -- the top of our acreage is a green-dashed line. North of that green line are numerous dry-hole symbols. Looking at the logs, studying the scout tickets, my interpretation is that those wells are sandstone that were plugged with evaporite minerals, specifically anhydrite and halite. Those are basically nonreservoir sandstone up to the north of that green line.

To the south of the green line, the sandstone continue to have porosity, and they are

productive of oil.

Q. Now, does your analysis here -- do you see any structural impediments to a waterflood operation in this particular zone?

A. No, I do not.

Q. Is this interval that's at issue here currently subject to similar waterflood projects in the immediate area?

A. It is. There are at least three large historical and current waterfloods flanking our acreage.

Q. And if I look at an example on page 54 of Exhibit 1, directly to the west there are a number of wells and symbols there. Is that part of the existing waterflood operation?

A. Yes, it is. That's part of the West High Lonesome Penrose Sand Unit Waterflood.

Q. Now, if we continue within this exhibit to page 55 -- page 55 of Exhibit Number 1, does it provide a map of the surrounding waterflood operations in the same zone?

A. Yes, sir, it does.

Q. Why don't you orient us as to the zone in question and then the existing waterflood in the offsetting units?

A. Okay. The Penrose is a productive -- I believe

it's -- well, it's a high-energy beach that extended at least eight miles from west to east. The updip limit that would have been to the north, beyond the green line, I think it's some sort of an evaporative title flat. All four of these waterfloods are bounded on the north by evaporite-plugged sandstone. So they're all the same environment. They're all on trend.

There have been four historical waterflood projects in the Penrose as shown on this map. And the first one -- if I go through it chronologically, the first one was actually partially on our High Lonesome Queen Unit. It was a waterflood pilot project that was initiated in 1957, and it lasted until 1959. It was partially to the east.

Q. And where is that reflected on here?

A. That is shown in the very center of the map, by the black triangles with the plug symbols through them, on the light-green High Lonesome Queen Unit acreage. And then on the uncolored acreage, heading off to the east, there are 160 acres that shows a similar plugged injector.

That well -- we went through the old data records, the monthly production records. We went all the way back into the '40s to and document response to the injection, and what we found was there was excellent

response in oil production to water injection. And that graph is shown to the south of our High Lonesome Queen Unit. It's connected with a red arrow. What we've got on there, on that production graph, is -- we show a little red line, a vertical line, that says on top: "Start water injection 6/1957.

Q. Let me stop you right there. It's pretty small, right?

A. Yeah.

Q. You put this together in this fashion to make it easy to present. Is there -- and I don't know that we need to pull it out, unless you tell me otherwise. Is Alamo Exhibit Number 9 a much larger version of this particular page 55 of Exhibit Number 1?

A. Let's see. Yes, it is.

Q. So if the Examiner feels the need to see a larger copy of this, he can take a look at that exhibit?

A. Yes.

Q. With that said, why don't you continue with your discussion of page 55 of Exhibit Number 1?

A. All right. The injected water on all the curves will be shown in purple. The injected water is shown on the injection graph in purple, and it extends 1957 to 1959. The oil production in shown in green. At this scale, it's a little hard to see, but the

production, prior to waterflood, was on a pretty fair decline. The injection flattened that out. And it produced at a flat rate for several years as a result of that.

In fact, we've done extensive work on trying to document pre-water injection versus water injection. What we found is that prior to waterflood, that field of that area was making 310 barrels of oil per month. At maximum peak rate, due to water injection, it climbed to 620 barrels of oil per month, so very successful.

Q. So that's what you're hoping to duplicate --

A. We're hoping to do better than that.

Q. -- in the proposed unit?

What about the other units in the area?

A. That was the first one, 1957 through '59. It really was a pilot, we think.

The two waterfloods to the east, the purple one is called High Lonesome Penrose Unit. The grayish-yellow one is East High Lonesome Penrose Sand Unit. Both of those, again, produce out of the Penrose sandstone. They both initiated waterflood operations in 1962.

Q. Are they still active?

A. One is still active, the East High Lonesome

Penrose Unit. The very easternmost is currently active. The High Lonesome Penrose Unit, the one shown in purple, became inactive in 1998.

Again, the start of water injection is shown with little vertical red lines, and the response is excellent in the oil curve, which is the green curve. Both of them climb significantly. What we found was for the High Lonesome Penrose Unit, the next unit over from us, went from a 718 barrels of oil per month pre-water injection to 7,894 barrels a month, peak rate, so 11 times better. The East High Lonesome Penrose, the one on the east, went from a pre-injection rate of 7,461 barrels of oil per month to a peak rate of 40,508 barrels. Again, immensely successful. That one, again, is currently active.

The latest flood shown on this map is the West High Lonesome Penrose Sand. That's dark green, and it's shown immediately to the west of our High Lonesome Queen Unit. That waterflood was initiated in 2002, and, again, the curves show a very, very successful response. What we have documented is that field went from 300 barrels of oil per month pre-injection to 8,816 barrels per month, which is almost a 29-to-1 [sic] response. So extremely responsive to injection.

Now, the reason we're excited about this

opportunity is our High Lonesome Queen Unit has many things in common with these other successful floods. First of all, same stratigraphic zone. Second, all of these are bounded by that evaporative-plugged layer to the north, that boundary, so it's confined equally to the other floods.

They have several things in common, also, including our pilot; that being that all four waterfloods showed an initial response to water injection of about two to three months. So two to three months after initializing water injection, we're seeing a response in oil. Oil rates are coming up. Also, all of these showed a 36- to 40-month time period from initial water injection to peak rate of oil production.

Q. Now, you testified that these waterfloods are all in the same Penrose sand zone that you seek to initiate waterflood operations in the High Lonesome Queen Unit?

A. Yes, I have [sic].

Q. With that in mind, I want you to turn to page 6 of Exhibit Number 1. Now, on page 6 of Exhibit Number 1, which is page 5 of 9 in the application itself, the company sets forth its requested maximum volume for injecting, correct?

A. Yes, it does.

Q. And it also sets forth the requested maximum surface injection pressure?

A. Yes.

Q. Of 1,100 psi?

A. Yes.

Q. What is the basis for seeking that surface injection pressure?

A. That is the maximum water injection pressure that was approved by the Commission for the West High Lonesome Penrose Sand Unit Waterflood, which is -- on our last map, it was the waterflood directly to the west of our unit.

Q. And it's been an extremely successful waterflood operation, in your opinion?

A. It has been, extremely. Uh-huh.

Q. And they're injecting into the same Penrose sandstone formation?

A. Yes, they are.

Q. Did you create for the Examiner a cross section that would show the similarity between the West High Lonesome Queen Unit and the unit area that you seek to waterflood?

A. Yes, I did.

Q. And is that contained on Alamo Exhibit Number 10?

A. Yes. The line of that cross section is Exhibit 10.

Q. So this identifies the wells that you utilized for your cross section that we'll review in a minute?

A. Yes, it does. I picked five wells from our unit and four wells from the West High Lonesome Unit. They are representative of the wells in both of those units, both injectors and producers.

Q. And then if I go to Alamo Exhibit Number 11, this is a pullout, but it's a little smaller and it's a little more manageable?

A. Yeah. I'm going to have to work on that (laughter).

Q. Alamo Exhibit Number 11, is that the stratigraphic cross section that corresponds to the wells identified on Alamo Exhibit Number 10?

A. Yes, it is.

Q. And it goes from west to east?

A. Yes, west to east.

Q. Why don't you walk us through this exhibit?

A. Okay. This is a stratigraphic cross section. I'm hanging it on the top of the Penrose. That's our injection and production interval that we're seeking approval for.

On the west side, the first four wells are

wells from the West High Lonesome Penrose Sand Unit, operated by Beach. And then the remaining five wells on the east side, those are Alamo Permian wells. Both injectors and producers are shown on here.

I think what this cross section shows is, number one, we are definitely dealing with the same stratigraphic unit. I don't think there would be any other way to correlate it. The other thing is that just the character of the porosity, the shape and the magnitude of the porosity, is very similar looking in both units. Our sand looks just like their sand does both in shape and in magnitude of porosity.

Q. So you see the same thickness in the reservoir?

A. Yes, I do.

Q. Same porosity?

A. Yes.

Q. Do you also see on here the same geologic barriers that you testified to earlier that will confine the injectant into the reservoir?

A. I do. And these density neutron logs, especially on the left, they really -- they show the lithology much clearer, that there are numerous thick beds of anhydrite and halite extending all the way from the top of the Penrose up to the -- well, up to the Seven Rivers and even above. So basically this entire

cross section shows those bounding layers.

Q. So in your opinion, Mr. Fekete, is the West High Lonesome Queen Unit injecting into the same formation as what you seek approval for here?

A. Yes, it is.

Q. And does it -- does the West High Lonesome Queen Unit have the same geologic setting and the same geologic barriers that you see with respect to your proposed waterflood area?

A. Yes. I think they're exactly the same.

Q. And in your opinion, is there any reason not to allow the same injection pressure for your impact area as has been approved for the West High Lonesome Queen Unit?

A. No, I don't think so.

Q. Finally, in your opinion, does the proposed injection interval extend throughout most of your proposed unitized area?

A. Yes.

Q. And is the proposed injection interval adequately confined to prevent migration of the injection to any potable water zones that may exist?

A. Yes. Again, I believe that 800 or so feet of stacked evaporite and dolostone serves as more than an adequate boundary.

Q. And in your opinion, is this interval well suited for a waterflood project?

A. In my opinion, excellently suited for a waterflood.

Q. Were Alamo Exhibits 6 through 11 prepared by you or compiled under your direction or supervision?

A. Yes, they were.

MR. FELDEWERT: Mr. Examiner, I would move admission into evidence of Alamo Exhibits 6 through 11.

EXAMINER GOETZE: Exhibits 6 through 11 are admitted.

(Alamo Permian Resources, LLC Exhibit Numbers 6 through 11 were offered and admitted into evidence.)

MR. FELDEWERT: That concludes my examination of this witness.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. One question with regards to your C-108 application. We do have Section 7, the affirmative statement for -- well, for disposal wells. "The applicants for disposal wells must make an affirmative statement that they have examined available geologic data, engineering data and find no evidence of local faults or any hydrologic connection between the disposal

zone and any underground sources of drinking water." I will take into testimony that you have made that statement?

A. Yes, sir.

Q. In this application, this is kind of not adequate, so we will take your testimony as a replacement for this item in the C-108.

A. Okay. Thank you.

Q. Okay?

The expected life of this project -- you're looking at two sets of wells being put in as far as injectors; is that correct?

A. We're looking at drilling an initial six injectors, three producers, and then as needed, additional drilling or additional conversion of existing producers to water injection should they water out. The waterflood will tell us, we think, what needs to be done.

Q. So under this waterflood, you would like to see the opportunity for administrative approval for changes and additions of various wells based upon what you see as a response in your waterfloods?

A. Yes, sir. Please.

EXAMINER GOETZE: We've got a reservoir engineer coming up?

MR. FELDEWERT: Yes, an engineer.

EXAMINER GOETZE: So I will save some questions for him.

I have no other questions. Very good presentation.

THE WITNESS: Thank you.

MR. FELDEWERT: We'll call our last witness.

H. PATRICK SEALE,

after having been previously sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. FELDEWERT:

Q. Please state your name, identify by whom you're employed and in what capacity?

A. My name is Patrick Seale. I'm employed by Alamo Permian Resources as senior vice president, and I'm a petroleum engineer.

Q. And how long have you been a petroleum engineer?

A. I'm sorry?

Q. How long have you been a petroleum engineer with Alamo?

A. Four years.

Q. And do your responsibilities include the

Permian Basin?

A. Yes.

Q. And, Mr. Seale, you have previously testified before the Division as an expert petroleum engineer, correct?

A. Yes, I have.

Q. Were your credentials accepted and made a matter of record?

A. Yes, they were.

Q. Are familiar with the application filed in this case?

A. I am.

Q. And did you assist in completing the Form C-108 and conducting the area-of-review analysis that is part of that application?

A. Yes, I did.

MR. FELDEWERT: Mr. Examiner, I would tender Mr. Seale, once again, as an expert witness in petroleum engineering.

EXAMINER GOETZE: He is so qualified.

Q. (BY MR. FELDEWERT) Mr. Seale, if I look at Alamo Exhibit Number 1 --

A. Okay.

Q. -- and I go to page 2 --

A. Yes.

Q. -- that contains a legal description of the six initial injection wells for this project; does it not?

A. Yes, it does.

Q. And if I go to page 3 of this exhibit, which is page 2 of 9 in the C-108 application, does it discuss at the bottom your design plans for these six injection wells?

A. What page, again? I'm sorry.

Q. Page 3 of the exhibit?

A. Okay. It got stuck together.

Yes, it does.

Q. And do you have the same design plan for all six injection wells?

A. I do.

Q. And then corresponding to that, I believe beginning on page 11 -- or it starts at page 11. Is that a design diagram for your six injection wells that corresponds with your description on page 3?

A. Yes, it is.

Q. Why don't you just briefly outline for the Examiner the design requirements that you're going to utilize, focusing on the casing and cement?

A. Okay. Our plan is to drill a 12-and-a-quarter-inch surface hole to a depth of approximately 400 feet. At such depth, we will set a

nine-and-five-eighths-inch casing string and cement it to the surface. We will then drill out that casing string and drill to a total depth, anticipated here, at 2,000 feet below surface, and that will just be a seven-and-seven-eighths hole, which will be cased with five-and-a-half-inch casing to a total depth of 2,000 feet. And once again, we will circulate cement to the surface.

After such time after the cement has cured, we will run a CBL log, a cement bond log, along the entire length of that production casing string -- or injection casing string.

Once we have logged the well and determined the injection interval, it will be perforated in the Penrose, four shots per foot. We will do an initial an acid breakdown job consisting of 15 percent non-NEFE hydrochloric acid, followed by a small gel-water frack job in those perforations of the size of approximately 30- to 40,000 pounds of sand at a moderate rate.

Q. Does your description on page 3 of this exhibit identify the type of tubing that will be utilized for the injection operation?

A. Yes, it does. And we will run an internal and plasticoated string of two-and-seven-eighths-inch tubing set within 100 feet of our top injection perforation on

a Model AD1 tension packer or equivalent, with the annulus filled with a noncorrosive -- or a corrosion-inhibited packer fluid.

Q. Will there be a gauge or some other leak-detection device attached to the annulus in order to detect if there is a leak in the tubing of the packer?

A. Yes, there will be.

Q. In your opinion, will the proposed design have sufficient casing and cement to prevent migration of the injected fluids out of the proposed injected interval?

A. Yes, it will.

Q. As designed, will the project propose an unreasonable threat to any groundwater or the environment in the area?

A. No, it will not.

Q. Does the company plan to conduct a mechanical integrity test prior to commencing injection?

A. Yes, it will.

Q. And will the company then comply with the Division's obligations to conduct a mechanical integrity test at least every five years?

A. Yes.

Q. The Examiner asked this question. Does the company request authority to apply for additional

injection wells in the unit area as you move forward through the Division's administrative process?

A. Yes, we do.

Q. And will any additional wells follow the same design, unless modified by the Division?

A. If there are new drill wells, they will.

Q. If I then turn to page 6 of this application, this deals with some general data on your operations.

A. Page 6?

Q. Uh-huh.

A. All right.

Q. It notes that this identifies your requested injection rates and then your -- and average volumes, correct?

A. It does.

Q. It notes that this is going to be a closed system?

A. It'll be a closed system.

Q. And then it identifies the requested maximum surface injection pressure at 1,100 psi?

A. It does. Yes, it does.

Q. There was some discussion about the geologic basis for this request. What other additional reasons do you request this ~~municipal~~ maximum surface pressure of 1,100 psi?

A. Well, once again, it is the approved maximum surface pressure allowed by the Division for the West High Lonesome Unit, the West High Lonesome Penrose Sand Unit that sits directly west of our proposed High Lonesome Queen Unit.

Q. And was that injection pressure approved by the Division back in 2003?

A. Yes, it was.

Q. And did you have an opportunity to pull and review the order that approved that injection pressure?

A. Yes, I did.

Q. If I turn to what's been marked as Alamo Exhibit Number 12, that is Order Number R-11674-A, correct?

A. Yes, it is.

Q. Is that the order that was issued by the Division in 2003 approving 1,100 psi for that adjacent waterflood?

A. Yes, it is.

Q. And you went through this order?

A. Yes, I have.

Q. What does it reflect?

A. This order reflects the findings of fact and the conclusions of the Hearing Examiner for a hearing that was called by Beach Exploration, Inc., the operator

of the West High Lonesome Penrose Sant Unit. It was called on August 7th, 2003, and an order was issued on the 24th of November of the same year.

What it sought was to increase the original injection pressure assigned under R-11674 for the West High Lonesome Penrose Sand Unit of 341 psi up to 1,100 psi. And Beach Exploration, during the hearing, presented engineering testimony which showed that due to a tighter reservoir, conditions are less permeable in the Penrose sand -- in the Penrose sandstone anticipated, but they were only able to inject an average of 35 barrels a day at the currently allowed depth of 341 psi surface injection pressure. And they believed at that time that an injection rate of at least 200 barrels per day was necessary to fill a four [sic] volume and reach peak waterflood response and achieve economics for the project.

In this hearing, Beach Exploration also relied on an offset unit of their own, the Red Lake Unit, which was an offset to the West High Lonesome Penrose Unit, same formation, same zones. And they showed -- they had run some tests in 1991 and 1992 in that unit, and they were able to increase the maximum injection pressure in the Penrose there to 1,500 psi. Beach, additionally, ran six step-rate tests in the West

High Lonesome Penrose Sand Unit in April and July of 2003, with fracture pressures, they found, ranging from 830 to 1,220 psi, an average bottom-hole pressure gradient of about 1.01 psi per foot.

And with this pressure data that they had from the step-rate test, they then showed, in 1992, that they had run -- with Halliburton's help, created a frack height log for the Penrose Sand Unit in the Red Lake Unit, which showed that at 200 psi over frack pressure, the wells would fracture vertically and would tend to fracture up only 35 feet and down approximately 135 feet.

And additionally in 1992, in those wells, they presented evidence and testimony that four wells that -- they ran injection profiles logs on four wells in the Penrose, injecting 1,500 psi, and with the log depth of investigation, they could see migration of the injected fluids no more than six feet beyond the perforated area.

Q. So, Mr. Seale, in support of this order, they had actually run six step-rate tests in the West High Lonesome Queen Unit?

A. Yes, they did.

Q. And you were here for the geologic testimony indicating that it's the same geologic setting as you

have in your proposed unit?

A. Yes.

Q. And that it indicated that that pressure that was approved by the Division was necessary for them to conduct their unit operations?

A. That's correct.

Q. And does the company then seek the same injection pressure at the same rates that was approved by the Division in this order for the West High Lonesome Queen Unit?

A. Yes, we do.

Q. And do you ask that for that that not only does the Division take notice of this order but also the data from the step-rate tests that were done in the West High Lonesome Queen Unit?

A. Yes. I believe it's comparable in all instances.

Q. Have you had an opportunity to look at the well records to ascertain whether the operator of the West High Lonesome Queen Unit has actually been injecting at those approved pressures since 2003?

A. Yes. Yes, I have. In the OCD well history database on the Internet, you can see this on a monthly basis.

Q. As a result, have they been successful in that

waterflood operation?

A. Yes, they have.

Q. The wells that you utilize for injection in your unitized area, are they going to be equipped with a pressure-control device that will limit the maximum surface injection pressure to that sought under your application?

A. Yes, it will.

Q. What are your sources of water?

A. Our sources of water?

Q. Yes.

A. We have identified a source of water from Cimarex. It's from their -- I'll have to get -- the Spike -- hold on a second. Let me look through here.

The Spiketail battery of Cimarex's production is about six miles south of our proposed water injection station, and it's from primarily a production -- water produced from the Yeso Formation.

Q. So it is produced water?

A. It's all produced water.

Q. And are you intending to, as the unit moves forward, to not only use that alternate produced water but use captured produced water?

A. Yes, we will.

Q. So no fresh water is going to be used?

A. We will use no fresh water.

Q. Did the company run a compatibility of that alternate produced water with its proposed operations in issue?

A. Yes, we did. We included it in the C-108 package initially, the individual water analyses of our Skelly State battery production, which is the largest lease in our unit, and the water sample from the Spiketail battery operated by Cimarex.

Q. And in addition to what you provided with your C-108, have you been able to do some additional analysis of the actual water that you intend to use?

A. Yes, we have. We asked our chemical company -- chemical treating company to help us, and they arranged to do water analysis by Mitchell Analytical Laboratory in Odessa, Texas, in which we looked at comparisons of combinations -- three combinations of water, 25 percent our water, produced water, 75 percent makeup water, 50/50, and then 75 percent our water, 25 percent.

Q. And are the results of those additional tests reflected in what has been marked as Alamo Exhibit Number 13?

A. Yes, they are.

Q. And that has a page for each of your mixes that you just went through?

A. Yes, it does. It's a comparability study of the various water mixes over the range in conjunction with the two we had filed previously that show 01 to 100 percent, and likewise --

Q. And this is arranged by -- the first page is 25 percent, 75 percent, and the second page is 50 percent, 50 percent, and the third page is 75 percent, 25 percent?

A. That's correct.

Q. And are there any compatibility issues that should be of concern?

A. No. Our chemical contractor said that they saw no compatibility issues, except both of which are fairly high -- very salty water, very high in chloride. And we'll have to treat that, and it won't be a problem. We will have to eliminate the possibility of salt precipitation. And both waters also exhibit a high calcium-sulfite scaling index. We face this in all our produced water from this area, and we treat for it routinely. So we have no trouble with compatibility of these two waters.

Q. Now, I want to turn to the request for qualification of the tax rate under the New Mexico Enhanced Oil Recovery Act. I think we can move through this fairly quickly by moving to the exhibit that's been

marked as Exhibit Number 14, which is actually, Mr. Seale, a copy of the application filed by the company?

A. Yes, it is.

Q. Have you had a chance to look at that?

A. I have.

Q. Do pages 2 through 4 of that application accurately identify the information on your proposed waterflood project?

A. Yes, they do.

Q. And if I look at page 3 --

A. Yes.

Q. -- does that accurately estimate the capital in total costs for this project?

A. It does, yes.

Q. And does it accurately reflect the additional oil production and the value of that oil production that the company expects from this project?

A. Yes, it does.

Q. Now, page 3 also indicates that the company hopes to -- or anticipates commencing injection operations in the third quarter of 2014. Is that still the case?

A. With expedited approval, we plan to be operational by the third quarter. If not, we'll slip

into the fourth quarter of 2014.

Q. How much time do you need? When do you expect injection to commence after you get an approved order?

A. Our current plans would suggest about three to four months after we begin operations.

Q. Then if I turn to what's been marked as Alamo Exhibit Number 15, is that a historical production graph?

A. It is.

Q. And is that the same graph that was submitted as attachment D, as in dog, to your application?

A. Yes, it was.

Q. And did you assist in preparing this graph?

A. I did.

Q. Why don't you tell us what it shows using the colors?

A. This graph -- the green on this graph -- first of all, it is a semi-log rhythmic production and forecast plot. Semi-log rhythmic along the production axis, vertical axis, and along the bottom are years. The green curves are oil production in barrels per month. The blue is water production in barrels per month. And as was previously pointed out, the little bit of purple over between 1957 and 1959 or so is water injection form the High Lonesome pilot project that was

conducted at that time.

This graph also contains a project of how we see the performance of our unit if approved. And if I can call your attention down to the bottom scale, you'll see there is the number ten down there, and then you'll see two division -- two tick marks. Well, the second tick mark after that is the beginning of 2014, and that's where our forecast begins. So everything left of that would be historical, and everything to the right of that is projection.

Q. And what do you project is the life of this project?

A. We project 38 years of life.

Q. And in your opinion, is the waterflood operation within this unit feasible and likely to result in the recovery of oil that would otherwise be wasted?

A. It is. I believe it is, yes.

Q. And will the estimated value of that additional oil to be recovered exceed the estimated cost of the waterflood operation?

A. Yes, it will.

Q. Now turn to the area of review. Okay?

A. Okay.

Q. And I think for that we'll go back to Exhibit Number 1. And first off, Mr. Seale, did you conduct an

area-of-review analysis?

A. Yes, I did.

Q. And what was the source of your data for your review of the wells within the area of review?

A. The principal source was, of course, the NMOCD database and online records. We also used our own Alamo Permian well records and well files where we had them for our wells. We then also employed information from the scout tickets from the Midland library, log library and subsurface library. And finally, we actually also found information on scout tickets and data from the his Petra database where it was available.

Q. First off, are there any freshwater wells within the area of review?

A. No. We found none.

Q. How many oil and gas wells exist within the area of review that actually penetrate the injection zone?

A. 42 wells.

Q. And how are the 42 wells broken down? How many are active? How many are inactive?

A. We found 16 active producing wells and 26 plugged and abandoned wells.

Q. I want to start with your 16 active producing wells.

A. Okay.

Q. If I turn to page 4 of Exhibit Number 1 --

A. Yes.

Q. I'm sorry. Page 13 of Exhibit Number 1. Is this four-page tabulation of those 16 active producing wells in the area of review?

A. Yes, it is.

Q. And how is it arranged?

A. Okay. Along the top -- it's in columns, 16 columns, one for each well in what we found in the area of review. At the top of each column is a number which shows the number of the wells, and they are arranged in order by section and unit letter. So when you go through them, you start with like Section 8 to 9 to 10 and on through.

The well name and number is shown at the top of the first line. The current or the last operator of the well is shown in the next line, and then the API number of the well is in the header.

The first section between the dark lines contains basic well information, which is location, type, status, the original well name and number and the original operator. And then the spud date, the date drilling ceased, the rig type used in the ground-level of their ovation [sic].

The next three sections below that are pertaining to casing and cement jobs, type of cement and, for the surface, the intermediate casing and the production casing. And each one contains the hole size that was drilled that we found, the size and depth of casing that was run and the grade if it was available, the number of sacks of cement pumped, the top of cement as we determined it and then how it was determined. And here the cement tops were determined either by if they were circulated to surface, in the records, from the cement bond logs that were run in the wells, if they were available, temperature logs, and then finally, calculated by me using a 75 percent safety factor to determine the top of cement.

Q. Let me ask you about that. So if I look at, for example, page 13 of Exhibit Number 1, about halfway down, on the surface casing, and I see, for example, the second well, the Davis Federal, calculation of 75 percent SF, what does that mean?

A. "75 percent safety factor." That means I use the volume -- the annular volume factors between casing strings or hole -- casing and hole. And then, for example, if that calculation from the volume of cement pumped would be say it would rise 100 feet in the annular space, well, my factors would reduce that to 75

feet. It's a factor -- it's a calculation we've done before and presumed before the Commission.

Q. So you were conservative in your estimates?

A. Try to be. Try to be.

Q. And in your opinion, is that an appropriate approach in circumstances where you don't have all the information to determine the top of cement?

A. Yes, it is. It's appropriate.

Q. And you said you utilized that before with the Division?

A. Yes, I have.

Q. In conducting your analysis of the 16 active and producing wells, did you find any issues associated with any of these wells?

A. No, I did not.

Q. In your opinion, are these 16 active wells within the area of review sufficiently cased or cemented to prevent migration of the injected fluids out of the proposed interval?

A. Yes, I believe they are.

Q. If I then turn to the remaining wells within the area of review -- I think you said there were 26.

A. 26.

Q. P&A'd wells?

A. Yes.

Q. And if I go to page -- I believe it's page --
A. It's page 17.
Q. Of Exhibit Number 1?
A. Uh-huh.
Q. Is that, then, a similar analysis and formatting for your review of those wells?
A. Yes. It contains seven pages, and it's the same basic format. I failed to cover the rest of the sections on this exhibit, on the last one. It also shows the completion intervals and the zones perforated and then the date of any initial -- whatever initial potential tests were available and then the total depth and plug-back depth.

And unlike the exhibit before this on produced wells, you will note a P&A'd date toward the bottom with comments shown.

Interestingly enough, 8 of the 26 wells that are included in these 26 wells were water injection wells that were drilled specifically for that original High Lonesome Penrose pilot.

Q. Pilot project?
A. Yes, they were.
Q. Did you also, then, include a diagram for each of these wells?
A. Yes, I did.

Q. And that begins on page 24 of Exhibit Number 1?
A. Yes, it does.
Q. And does it follow in order?
A. They are. They're in order. The same order as the wells are ordered in the exhibits.
Q. Okay. Now, what did you find? Were you able to determine sufficient plugging records for all of these wells?
A. I was able to find plugging records on 25 of the 26 wells.
Q. And those plugging records, what did they indicate with respect to the operations?
A. They indicate they had been plugged properly.
Q. In your opinion, do they pose any issues?
A. No, they do not.
Q. What is the one well that you had difficulty finding a plugging rate?
A. The one well, which is shown on the first page of the table, is well number four, which is the Davis Federal #1 well.
Q. So that would be the fourth diagram in?
A. Yes. It would be the fourth diagram in. I believe it's page 27, I believe, if I'm not mistaken. Yes, 27.
Q. Page 27 of Exhibit Number 1?

A. Yeah.

Q. Now, what did you find with respect to this particular well?

A. This particular well, we found all of the records on the OCD database for the drilling, the casing, the cementing of the two casing strings, its completion data, why it was -- we also learned from the data it was originally intended to be Penrose well. And they were going to do a conventional core in the Penrose from below the production casing, which is set at 1,902 feet. When they got in there with a core barrel, they dropped it and it jammed, and they could never recover it. And so they, at that time, back in 1955, they just abandoned the bottom part of the hole and completed it as a Seven Rivers completion at approximately 1,219 to 1,388 feet.

All the well files were there. I mean, all the sundries within the well file, except when it came to the sundry that pertained to the plugging and abandonment operations, and that record was completely illegible. I was able to determine that it was plugged by Moab Drilling in 1958, but then nothing else was available from there. We even looked and checked in other sources and could not find a copy of that sundry.

Q. Did you see any letters or notices or any other

indications in the file that the plugging was done improperly or had any issues associated with it?

A. There were no letters or notices ahead [sic] of the plugging operations to call any special problems or situations into light. And subsequently, after this illegible page, there were no subsequent notices of any problems.

Q. Now, you were able to determine that the plugging had been done by a company called Moab?

A. Moab Drilling Company.

Q. Were you able to ascertain whether that company had done any similar plugging operations in wells in this area at about that time?

A. Yes. Three years prior, they had drilled and plugged two wells on our Skelly State lease, the Skelly State #2 and the Skelly State #4, and P&A'd those. Those records are a part of this 26.

Q. And were those wells properly plugged?

A. I believe they were, yes.

Q. And so is there any indication, given this history, that there is any issue associated with plugging of this Davis Federal #1?

A. No. I saw nothing in the records that ever showed that Moab was not a good operator, and I have no reason to believe that this well was not plugged

properly either.

Q. If I look at the diagram on page 27, that's based on the Division records that you had, correct?

A. That's correct.

Q. Does the cement, as calculated accurately, cover the producing formations?

A. Yes. We determined a top of cement of 474 feet from the 250 sacks that were plugged, on 75-and-a-half-inch [sic] spacing. That would cover the producing formations.

Q. And does the cement in this well cover whatever freshwater zone may exist out here, as estimated by Tetra Tech, at that depth?

A. Yes. We calculated, once again, with a 75 percent safety factor, that the 150 sacks pumped, in setting the eight-and-five-eighths-inch casing at 375 feet would reach a top of 15 feet and would cover the fresh water.

Q. So in your opinion, Mr. Seale, are the 26 P&A'd wells within the area of review sufficiently cased or cemented to prevent migration of the injected fluids out of the proposed injected interval?

A. Yes, that would be my opinion.

Q. And in your opinion, do any of these wells pose an unreasonable threat to groundwater or the environment

if Alamo proceeds with its proposed waterflood operation?

A. No, they do not.

Q. In your opinion, will the granting of this application prevent waste and protect correlative rights?

A. Yes, it will.

Q. Were Alamo Exhibits 12 through 15 prepared by you or compiled under your direction or supervision?

A. Yes, they were.

MR. FELDEWERT: Mr. Examiner, I would move the admission into evidence Alamo Exhibits 12 through 15.

EXAMINER GOETZE: Exhibits 12 through 15 are so admitted.

(Alamo Permian Resources, LLC Exhibit Numbers 12 through 15 were offered and admitted into evidence.)

MR. FELDEWERT: And that concludes my examination of this witness.

CROSS-EXAMINATION

BY EXAMINER GOETZE:

Q. Roughly for the area-of-review wells, how many of them did you have to calculate cement pour, just ballpark?

A. On the production string?
Q. Yeah, please.
A. I count 17.
Q. And that's reflective of their age --
A. Yes.
Q. -- the older wells?
A. Yes. You know, the records on those older wells that were drilled in the '40s and '50s and probably the mid-'60s, they generally do show the volume of pump. For the newer wells, I have CBLs. Some of these are deeper wells, and I have CBLs, and I got the actual -- or they circulated those wells to surface, which is a much more prudent operation.
Q. Sometimes prudent is not economical, so there is always that problem.

How would you describe this waterflood for Mr. Ezeanyim? Is this sort of a spot? Driveway?
A. It's designed initially -- I mean, we have designed it as a peripheral waterflood. And there, again, we took -- a lot of input in our design -- as we were looking at our acreage, we were looking at what had occurred in the West High Lonesome Penrose Sand Unit just to our immediate west for several reasons. One, you know, it was a direct offset -- but the others had records that were much older. This one we could look at

all the records and look at all the injection histories and had all the information and had access to all the hearing documents and such and look at how -- and it made perfect sense, and we saw that it was very successful. So we raised our initial six wells.

And like Mr. Fekete -- in answer to your question, down the line, as we continue injection in this project, as the wells next to our injectors water out, we will continue to convert -- if they're mechanically sound at that time and we get administrative approval to do so, we will convert them to water injection wells. We will then force the oil into the center max line.

Q. That's good. That's what we like to hear.

EXAMINER GOETZE: I have no further questions. This has been a very thorough presentation, and it paid you well to come in and discuss this with us ahead of time. And you have a very good attorney who walks you through these things.

So I'm done with this witness.

MR. FELDEWERT: We have nothing more to present. Thank you for your time.

EXAMINER GOETZE: And at this point, we will go ahead and take Case Number 15116 under advisement, and that is the end of today's hearing.

(Case Number 15116 concludes, 11:20 a.m.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 15116, heard by me on May 1 2014.

Oil Conservation Division, Examiner

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

CERTIFICATE OF COURT REPORTER

I, MARY C. HANKINS, New Mexico Certified Court Reporter No. 20, and Registered Professional Reporter, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings that were reduced to printed form by me to the best of my ability.

I FURTHER CERTIFY that the Reporter's Record of the proceedings truly and accurately reflects the exhibits, if any, offered by the respective parties.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case and that I have no interest in the final disposition of this case.

Mary C. Hankins

MARY C. HANKINS, CCR, RPR
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