STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

ORIGINAL

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

APPLICATION OF THE NEW MEXICO OIL CONSERVATION DIVISION COMPLIANCE AND ENFORCEMENT BUREAU FOR A COMPLIANCE ORDER AGAINST OWL SWD OPERATING, LLC FOR THE MARALO SHOLES B WELL NO. 2 OPERATED IN LEA COUNTY, NEW MEXICO.

CASE NO. 15753

REPORTER'S TRANSCRIPT OF PROCEEDINGS

SPECIAL EXAMINER HEARING

Friday, September 15, 2017

Santa Fe, New Mexico

BEFORE: WILLIAM V. JONES, CHIEF EXAMINER
SCOTT DAWSON, TECHNICAL EXAMINER
GABRIEL WADE, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, William V. Jones, Chief Examiner, Scott Dawson, Technical Examiner, and Gabriel Wade, Legal Examiner, on Friday, September 15, 2017, at the New Mexico Energy, Minerals and Natural Resources Department, Wendell Chino Building, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

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(9:59 a.m.)

EXAMINER JONES: This is a special hearing docket, and we're going to call Case Number 15753, which is the application of New Mexico Oil Conservation Compliance and Enforcement Bureau for a compliance order against OWL SWD Operating, LLC for the Maralo Sholes B Well No. 2 operated in Lea County, New Mexico.

At this time may I have appearances in this case?

MR. BROOKS: I'm sorry. Did you call for appearances?

EXAMINER JONES: Yes. Call for appearances.

MR. BROOKS: Mr. Examiner, David Brooks, of the New Mexico Oil Conservation Division, appearing for Applicant.

EXAMINER JONES: Other appearances?

MS. MOSS: Katherine Moss for the State Land Office and our new attorney, Haley Scavone.

EXAMINER JONES: I'm sorry. Can you state your name one more time?

MS. SCAVONE: Haley Scavone.

MR. MOELLENBERG: And for OWL, Dalva Moellenberg and Rikki-Lee Chavez, and Mr. Trujillo will probably be in and out.

EXAMINER JONES: Okay. I haven't met him yet.

So any other appearance in this case?

The Applicant in this case is the Division's Compliance and Enforcement Bureau.

So do the parties have any opening comments?

MR. BROOKS: Mr. Examiner, there is one matter that I think would be good to get resolved before we start. I believe that all parties are in agreement that the evidentiary record in Case Number 15723, to the extent that it is relevant to the issues here presented, can be considered by the Examiner as a part of the record in this case, although I don't believe that agreement has ever been articulated in exactly that form between the parties. I would like to know if it can be stipulated that that is the case.

EXAMINER JONES: Other comments?

MR. MOELLENBERG: From OWL's standpoint, yes, we're in agreement to that stipulation. We don't want to repeat what you've already heard. And, again, subject to Mr. Brooks' qualification, to the extent you deem it relevant to this case -- we're not conceding that it is, but it's there if you need it.

EXAMINER JONES: That does seem like an

elephant in this room, how it's relevant.

Ms. Moss?

MS. MOSS: I'm in agreement with both attorneys. I do want to make sure that the objections we made to the Bobcat well, all of them, would be continued in this case. Otherwise, we would need to present that evidence, and I think we agreed previously that we would not like to do that, and you would not like to hear it because the record's already been made. But I want to make sure that's clear.

MR. BROOKS: That qualification is acceptable to me.

MR. MOELLENBERG: Yeah. We understand that position.

MS. MOSS: Excellent. Great. Thank you.

OPENING STATEMENT

MR. BROOKS: With that said, I would like to make a very brief opening statement, and the reason for doing so is that our objective is to -- is to get an order requiring OWL to remediate the existing Maralo well -- disposal well, which I'm sure you will remember from the last hearing was discussed.

It is true that the present structure of that well was reported to the OCD, and the OCD granted a permit for it. However, it is our position that the

duty of the operator to protect fresh water is a continuing duty. And particularly in light of the evidence used in Case Number 15723 about what is going down in that area in terms of water resources, that the Santa Rosa Formation, which we deemed to be possibly exposed, has assumed greater importance than perhaps it had at another time. That's all we have to say at this point. We don't want to prolong the proceedings.

EXAMINER JONES: Ms. Moss?

MS. MOSS: I don't have an opening statement. I just want to make sure what we are preserving. That would include rebuttal. I had written that to Mr. Moellenberg yesterday, but I didn't say it specifically just now.

EXAMINER WADE: We're talking about the whole record of the last case?

MS. MOSS: Right. Right. But we can also do rebuttal in this case.

EXAMINER WADE: You have the opportunity to do rebuttal.

MS. MOSS: Thank you. I just wanted to make sure. Sorry to take that out of order.

EXAMINER WADE: Okay.

MR. MOELLENBERG: Mr. Hearing Examiner, we'll reserve our opening in case we need to make one at

the beginning of our presentation following OCD.

EXAMINER JONES: Okay. So I would like to say formally on the record that the testimony and exhibits and basically the case as presented in 15723 shall be incorporated into the record in this case as to where it is relevant.

And, also, we have Gabriel Wade as the attorney for the Examiner today, and Scott Dawson, and my name is William Jones, in case you didn't know.

The Applicant can proceed.

How many witnesses?

MR. BROOKS: We have one witness.

EXAMINER JONES: We could swear all the witnesses for all of the parties today, unless you expect a myriad changing of witnesses as the case proceeds.

MR. MOELLENBERG: Yeah. Mr. Examiner, actually I should explain one thing that I haven't yet. We do have one witness, Kevin Burns, who is delayed in flight.

EXAMINER JONES: Okay.

MR. MOELLENBERG: So he will be later. We can proceed and see how that goes. We do have Mr. Kronkosky here who we will present as a witness, and possibly Mr. Johnson, although it really depends.

That's probably more to rebuttal.

EXAMINER JONES: Okay. Let's just swear the Applicant's witness then.

MR. BROOKS: Call Phillip Goetze.

PHILLIP R. GOETZE,

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

DIRECT EXAMINATION

BY MR. BROOKS:

Q. Good morning, Mr. Goetze.

A. Good morning, Mr. Brooks.

Q. State your name for the record, please.

A. My name is Phillip Rodney Goetze.

Q. By whom are you employed?

A. I'm employed by the Oil Conservation Division within the Engineering Bureau.

Q. Very good.

Have you previously testified before the Hearing Examiners of the New Mexico Oil Conservation Division?

A. I have.

Q. Have your qualifications been made a matter of record?

A. They have.

Q. Have you familiarized yourself with the issues

and the subject matter involved in this case?

A. I have.

Q. And what is your profession?

A. My profession is geologist, hydrogeologist, petroleum engineer and environmental scientist.

Q. Okay. Thank you.

MR. BROOKS: We submit Mr. Goetze as an expert in geology and hydrogeology.

EXAMINER JONES: Objections?

MR. MOELLENBERG: No objection.

MS. MOSS: No objection.

EXAMINER JONES: Mr. Goetze is qualified as an expert in geology and hydrogeology.

MR. BROOKS: At this time that's all I'm requesting. If we have objections to any of his testimony, then we can go ahead and do his qualifications. I believe the Commission has -- before the Commission, it was stated that they had his resume memorized, so perhaps the Examiners are in a similar situation.

EXAMINER JONES: It's too long for me to remember (laughter). With all these witnesses, it's too long for me to remember.

MR. BROOKS: Very good.

Q. (BY MR. BROOKS) Mr. Goetze, what do you know

about the Maralo Sholes B No. 2 injection well?

A. This injection well was approved as a disposal well with a quarter of -- let's see -- SWD -- everywhere but where you want it to be -- SWD Order Number 1127. It is located in Unit Letter P, Section 25, Township 25 South, Range 36 East. The API number on this well is 30-025-09806. It is a disposal well approved for disposal in the Seven Rivers-Yates. It has been in operation since 2006 and currently is disposing in the interval as approved in the order.

Q. Okay. Who is the operator of that well?

A. It is OWL SWD Operating, LLC.

Q. Did you prepare a map showing the -- showing the vicinity location of this well?

A. Exhibit 1 of the package by the Applicant shows the location of the well with regards to the City of Jal and its location within the state of New Mexico.

Q. And it's also in Lea County, right?

A. That is correct, sir.

Q. Now I'll call your attention to Exhibit Number 2 in the Defendant's [sic] exhibit folder and ask you to identify it.

A. Exhibit 2 is a well-completion diagram prepared by the Division, by me, in response to a review of this well as part of another case, Case Number 15723. This

diagram is a compilation of what was available in the database managed by the Oil Conservation Division.

Q. And does it incorporate some conclusions that you made as a result of examining that data?

A. When reviewing that information for the well, it was identified that one particular string of casing -- that would be the 8-5/8-inch intermediate casing -- was shown to be what's called mudded in. In other words, the placement of this casing has not been sealed with cement, which is typically what is required in many of our situations.

Q. Okay. I'm going to ask you more questions about Exhibit Number -- about Exhibit Number 2, but I want you to look at Exhibit Number 5, and tell me what that exhibit is.

A. Exhibit Number 5 is a miscellaneous report for this well filed by the original operator. It has a description or detailed work. It is what we know today as a sundry. It is a report on the result of testing the casing using shut-off. It details that the 10-3/4-inch casing, when tested, was shut off, and that qualified it passing at that time. The 8-5/8 casing is noted only as mudded in, and then the 7-inch casing is noted as shut off also.

Q. Now, does that detailed account support your

indications about how the 8-5/8-inch casing is installed, as they are incorporated into Exhibit Number 2?

A. That's correct.

Q. Would you note for the record the date of Defendant's Exhibit -- of Division Exhibit Number 5?

A. Number 5 was filed on June -- well, it was sworn and subscribed on June 30th, 1947.

Q. So it's older than even I am, right?

A. That's subjective.

(Laughter.)

Q. Okay. Did you examine the entire well file on this well?

A. Yes, I did.

Q. Did you see any indication that any remedial work had been done that's changed the way the 8-5/8-inch casing was installed in 1947?

A. I have not found any indication of any type of activity for the 8-5/8.

Q. Now, tell us about the submitting of the 7-inch casing, as depicted on Exhibit 2.

A. The 7-inch casing was sealed with -- and if I could refer to Exhibit Number 4. It shows a total cement of 150 sacks placed using the Halliburton method for the 7-inch casing. There has been a variety of

interpretations as to the top of cement. It is documented that the original application for the C-108 for this well, the top of cement was shown as 2,000 feet below surface. Subsequent applications for sundry notices have also described the top of cement at 515 feet. I have done a little bit of a survey in the area and, in doing so, came up with a calculated top of cement 1,660 feet. There is no measured method for the top of cement either by cement bond log or temperature survey.

Q. Okay. You referred to Exhibit 4. What is Exhibit 4?

A. Exhibit 4 is the well record, which is filed with the State of New Mexico once a well is completed providing all the details with regards to the location, the construction, any noticeable occurrences, as well as the lithology and formation record.

Q. And what is the date of that exhibit?

A. This has a date of June 30th, 1947.

Q. Okay. And are your conclusions on Exhibit Number 2 about the top of cement for the 7-inch casing derived from the data shown on Exhibit Number 4?

A. It is derived from this information.

Q. Do you have any reason -- did you find in the well file any indication that that status had changed

due to any remedial work done since 1947?

A. There is no indication.

Q. Now, you said you did a survey. Would you tell us a little more about that. What did you survey?

A. Well, I looked at all wells in the area with regards to production spanning out from the Sholes Well No. 2 and tried to locate and identify wells that had measured top of cement using similar construction design and similar cement process. Of that, I was able to identify ten wells that I could correlate with accurate information enough to feel confidence. With that, I determined an efficiency and used an average of these efficiencies as the basis of the calculation for what I selected the top of cement.

Q. Now, what do you mean by efficiency?

A. Efficiency is the ability of the cement to fill in what is estimated to be the annular space, and with that, the efficiency of that cement to come up in the annular space towards surface. In some cases, there may be impacts to that cementing efficiency due to subsurface washouts, drilling type formation characteristics that change, as well as operational such as replacement of cement.

Q. Did you calculate the efficiency of the cement by comparing the measured depth reported in these files

for these other wells to the amount of the cement used in the cementing?

A. I correlated that efficiency over and used with it with the volume reported by the 150 sacks.

Q. And what did you conclude the probable efficiency would be?

A. It came up with an average of 51 percent.

Q. And based on that, did you calculate the probable top of cement?

A. Yes. I calculated a top of 1,660 using a Society of Petroleum Engineering calculation and spreadsheet.

Q. Okay. 1,650, did you say?

A. 1,660.

Q. 1,660.

Okay. So the top of cement that you calculated is actually significantly below the top of cement that you show on the -- for the 7-inch casing that you show on the diagram of this Exhibit 2?

A. That's correct. The -- one of the sundries for the test had shown, on well diagram, a top of cement of 515 feet.

Q. And, of course, if it were 515 feet, it would -- if it were 515 feet, would it still be below the casing shoe of the surface casing?

A. If it were 515 feet, it would be below the surface casing, which is a 10-3/4-inch casing.

Q. And if it were where you have it drawn in, which is well above 1,660 feet but well below 515 feet, would it still be below the mudded-in 8-5/8 casing?

A. It would be below the mudded-in 8-5/8 casing.

Q. Okay. At this point I need to -- I realize I have qualified you as a geologist or a hydrologist, but you considered some other -- you mentioned expertise in other areas. Do you have significant experience in well construction?

A. I was, for three years, a technical field representative at Los Alamos National Laboratory for oversight of well installations, 5-1/2-inch, as well as 8-inch monitor well installation. I was also oversight of construction, drilling and installation of wells on Sandia National Labs and -- with the solid waste facilities. I have also done calculations and efficiencies for wells associated with completions that have been submitted for saltwater disposal.

Q. Okay.

MR. BROOKS: Okay. We submit Mr. Goetze, in addition to his previous qualifications, as being an expert on well construction.

MR. MOELLENBERG: Accepted as far as

general well construction, not necessarily oil and gas well construction.

MR. BROOKS: Anything else?

MS. MOSS: (Indicating.)

MR. BROOKS: Okay. We submit him as stated -- as we stated, as an expert on well construction.

EXAMINER JONES: Mr. Moellenberg, can you elaborate? You said you don't want him presented as an expert on oil wells?

MR. MOELLENBERG: Oil and gas well construction. What I -- what I heard from the testimony is experience specific to monitor-well installation and, I think, reviewing some information on saltwater disposal wells, but this well was constructed as an oil and gas well. I haven't heard anything specific to that.

EXAMINER JONES: Ms. Moss?

MS. MOSS: I have no objection to him being qualified as an expert on well installation, including oil and gas well construction, but maybe some additional testimony would be needed for the record.

MR. BROOKS: May I ask Mr. Goetze another question?

EXAMINER JONES: Sure.

Q. (BY MR. BROOKS) Mr. Goetze, in your employment for the Oil Conservation Division, do you review a significant number of Form C-108 applications for injection?

A. That is correct.

Q. And does this include wells that are being converted to injection from other purposes, including oil and gas production?

A. That is correct.

Q. And is one of your jobs to assess the sufficiency of the construction of those wells and advise the Division regarding so?

A. That is correct.

MR. BROOKS: Okay. We renew our tender of Mr. Goetze's expertise.

EXAMINER JONES: Okay. The actual records Mr. Goetze is using are Division records that are in our files, and his ability to calculate efficiencies on cement fill-up between the hole and the pipe, we're going to go ahead and qualify him on his ability to do that.

MR. BROOKS: Okay. But I'm going to ask him some other questions -- a couple of other questions about -- opinion questions about well construction -- about the construction of this well. So the Examiner

may proceed as he chooses, of course.

EXAMINER JONES: Yeah. Go ahead and ask him, and we'll approach it at that time.

MR. BROOKS: Very good.

Q. (BY MR. BROOKS) Mr. Goetze, based on your knowledge of well construction and groundwater hydrology, do you have an opinion as to whether or not this construction of the Maralo Sholes B Well No. 2, as shown on Exhibit 2, is sufficient to protect -- to provide reasonable protection to the freshwater formations that exist in between the base of the surface casing and the top of the cement in the 7-inch casing?

A. I believe that based upon the review of the information and available data, that the areas described with regards to the Santa Rosa Formation and the occurrence of the water in the Rustler Formation, that the casing does not provide sufficient sealing of the annular area between the top of cement of the 7-inch and the bottom of the 10-3/4-inch.

Q. Okay. Thank you.

Is there anything else you need to tell us about Exhibit Number 2?

A. With regards to Number 2, we also would refer back to the well record, which is Division Exhibit Number 4, which notes in the log that we have from 1,050

to 1,060 a 10-foot interval of water, sand. Along with that, we also note that occurrence at the shoe of the 8-5/8 casing and above, that we have a salt stringer from 1,120 to 1,140.

Q. Very good.

Does the water that can possibly be at risk, if this well structure were not sufficient to prevent the escape of fluids from the Maralo Sholes B Well No. 2, does that -- does that strata include portions of the Santa Rosa Formation?

A. The Santa Rosa is exposed in the annular space.

Q. Was that the formation that was recommended pursuant to a study introduced in evidence in the prior case as a public drinking water source for the City of Jal?

A. It has been identified as such.

Q. Okay. Does that conclude your discussion of Exhibit Number 2?

A. Yes, sir.

Q. Okay. What is Exhibit Number 3?

A. Exhibit 3 is a copy of Administrative Order SWD-1127 issued June 1st, 2018 -- I mean 2008. Essentially, we're providing in the record a copy of the SWD order for the Examiners' consideration.

Q. Is there anything further you need to say on

Exhibit Number 3?

A. Not at this time.

Q. Okay. Exhibit Number 4, you have discussed some things about that. Do you have any other comments on Exhibit Number 4?

A. No, I do not.

Q. Exhibit Number 5. We've mentioned the casing record that is included there. Do you have any other comments on Exhibit Number 5?

A. No, I do not.

Q. Okay. What is Exhibit Number 6?

A. That is an exhibit I don't think I have.

Q. Well, it appears to be a sundry notice --

A. Yes, it is.

Q. -- with a plugging --

A. Exhibit Number 6 is a sundry notice which was provided by the operator at the time when the well was an oil well, the operator being Marlow, Inc. This was provided based upon the fact that this notice of intent to abandon identified a portion of the 7-inch casing being uncemented, that item five of the plan was to determine the free point, cut and pull the 7-inch casing, as well as item number eight, which is as identified being determine free point, cut and pull the 8-5/8-inch casing. This identifies the operator as

being aware that portions of the 7- and the 8-5/8-inch casings were not submitted.

Q. The then operator, of course?

A. Correct.

Q. Anything else you need to say about Exhibit Number 6?

A. No, sir.

Q. Okay. Let's look at Exhibit Number 7.

A. Exhibit Number 7 was the well completion report filed upon the conversion of the SWD -- of the oil well, too, and SWD well. It is received by the BLM on March 14th, 2000. And here we just note the fact that -- the submittal to the BLM. We have not listed the 8-5/8-inch casing and that we list the only two 10-3/4- and 7-inch casing, and that the record states that there's been no change in the construction.

Q. Thank you.

Now, Exhibit Number 8. This is, I believe, an exhibit that was also introduced and admitted in the prior hearing?

A. That is correct.

Q. And what is Exhibit 8?

A. 8 is a resubmittal of a letter that -- is the final report that I prepared. I wanted to just make sure that we highlighted what is relevant, and that

would be page 7 of the report in which the recommendations to the operator was to submit a remedial plan to seal the shoe in the length of 8-5/8 intermediate casing, to isolate the specific items, in which case this was the Rustler Formation and the Santa Rosa Formation. Other than that, there is no -- I think the other portions of it have been discussed in the previous case.

Q. Pursuant to your recommendation, number three on page 7 is the Division serve a demand on OWL to remediate the casing situation in the Maralo?

A. We requested, through their attorney, that they submit -- OWL submit a remedial notice of intent within 30 days.

Q. Did they respond to that?

A. No, they have not.

Q. Thank you.

What is Exhibit Number 9?

A. Exhibit Number 9 is a permit from the State Engineer's Office. It is identified as CP-1310. In this case, it would be CP 1310 Pod 1. In reference to this, it is a location for a proposed well to test the Santa Rosa. If the Examiners were to refer back to Exhibit Number 1, the location of this proposed groundwater well is shown west of the existing Maralo

Sholes well. It is estimated that is approximately 300 feet west of the well -- the disposal well. This permit authorizes the Applicant, Fulfer Oil & Cattle Company, to install and test primarily the Santa Rosa for use for industrial and commercial.

Q. And what is significant about Exhibit 9 for this case?

A. It is of my opinion, with its proximity close to the SWD and having the open annular space of the 8-5/8-inch casing, that this offers the possibility of either communication and/or compromising of the targeted interval which was approved in this application, approved by the State Engineer's Office.

Q. Okay. Now we get to the thick one, Exhibit Number 10. What is that?

A. Number 10 was provided as -- for the Examiners to review the original application. This was revisited -- this is the C-108 application for the Maralo Sholes, which was used for approval of the SWD order. It is a record of the approval, as well as the information provided for the administrative order.

Q. What is significant for purposes of this hearing?

A. Well, there is a little bit of issue with what was submitted. The well diagram and the injection well

data sheet do not show a consistency. The well diagram does show the 8-5/8 mudded in, but it's not provided in the injection well data sheet. Otherwise, it also notes that the calculated top of cement, which in this case was 2,000 feet, was provided during application. Other than that, it just provides a plan form, the specifics that were identified and considered with the issuance of the Administrative Order.

MR. BROOKS: Now, unlike Mr. -- unlike Jim, in the case yesterday, I have not numbered the pages through this exhibit, and if the Examiners want, I will make Mr. Goetze go through and number all the pages so he can identify which page the information which he testified is found. Otherwise, we will proceed ahead.

EXAMINER JONES: Yeah, proceed ahead. Just refer to the pages very clearly so we know what they are.

MR. BROOKS: Okay. Very good.

Q. (BY MR. BROOKS) Mr. Goetze, is Exhibit Number 11 a copy of your resume?

A. It is.

Q. I'm not going to ask anything more about it at this point.

MS. MOSS: Have we clarified -- I'm sorry to interrupt -- what he is an expert in for purposes of

this hearing?

MR. BROOKS: Well, at this point I have submitted Mr. Goetze as an expert in geology and hydrogeology generally, and I have submitted him more specifically as an expert in well construction.

EXAMINER JONES: We clearly can't qualify Mr. Goetze as a drilling engineer who --

MR. BROOKS: No. I'm not suggesting he's a drilling engineer.

EXAMINER JONES: As a geologist, he gives guidance to any drilling engineer as to what intervals need to be covered with casing and covered with cement, so I would recognize him as that.

MR. BROOKS: Very good.

Q. (BY MR. BROOKS) Mr. Goetze, were Exhibits 1 through 11 prepared by you or compiled under your direction from OCD records?

A. They were, sir.

MR. BROOKS: At this time I submit Exhibit Numbers 1 through 11 for admission into evidence.

EXAMINER JONES: Objection?

MR. MOELLENBERG: If you'll give me just a moment to look at 10.

EXAMINER JONES: Mr. Brooks, would you describe Exhibit 10 one more time or --

EXAMINER WADE: Well, is Exhibit 10 --

MR. MOELLENBERG: That's okay. It was -- it's lengthy. I just wanted a moment to look through it here.

No objections.

EXAMINER JONES: Exhibits 1 through 11 are admitted.

(NMOCD Compliance and Enforcement Bureau Exhibit Numbers 1 through 11 are offered and admitted into evidence.)

MR. BROOKS: Very good. With that, I pass the witness.

EXAMINER JONES: Ms. Moss?

MS. MOSS: I don't have any questions.

EXAMINER JONES: Mr. Moellenberg?

MR. MOELLENBERG: Thank you, Mr. Examiner.

CROSS-EXAMINATION

BY MR. MOELLENBERG:

Q. Good morning, Mr. Goetze.

A. Good morning, sir.

Q. Let me go first to Exhibit Number 2. As I understand it, this is a diagram with some notes that you prepared?

A. That's correct, sir.

Q. Did you take the wellbore diagram from anything

else, or did you create it new by yourself?

A. No. I created the wellbore diagram.

Q. And then to clarify here, so you show a couple of formations, and then you show a salt stringer. What is the significance you attach to the salt stringer?

A. That the upper portion of it is within the shoe of the mudded-in 8-5/8.

Q. But no other significance than to there being a salt stringer there?

A. That's correct, sir.

Q. And if -- just for clarity, there are a couple of gray lines that appear to be indicated outside of the 7-inch casing. And the top of those two gray lines, if you see -- do you see where I'm referring to there?

A. No. Where are we? Which footage?

Q. If you look at the 7-inch casing toward the bottom --

A. Uh-huh.

Q. -- you have a gray line on either side.

A. The perforations?

Q. No. Just the solid vertical gray.

A. Oh. That is just a representation of what cement would be. It is not to scale.

Q. Right.

And the point I was getting to, if I recall

your testimony, the top of that as shown there would be the 515 level?

A. No. The 515 level is located by the red 515 on the left side --

Q. Oh, okay.

A. -- and top of the 7-inch and the reference to the C-103 calculated.

Q. Okay. So I must have misunderstood your testimony a little bit then. So I think you testified there was a reference somewhere in the record to the possibility that the top of the cementation for the -- for the 7-inch casing was at 515. Did I understand that correct?

A. There was a sundry notice provided by a consultant for OWL upon the testing of the well, which was requested by the Division, in which they presented an estimate calculated top of 515.

Q. Okay. But that would just be denoted by this red number?

A. That's correct.

Q. And then you have -- in the yellow-shaded area to the left of the well diagram, you have 1,660 and 2,000 figures, and those are the two other calculated or indicated potential tops of the cementation for the 17-inch -- or for the 7-inch casing?

A. The 1,660 was the number that I generated with my research. The 2,000 was a number provided in the C-108 application by the Applicant, Fulfer.

Q. So you have some notes in the box of perforation history, one about a 1961 plugging back the well and then a few other notes after that. You haven't testified on those. Do you attribute any particular importance for those notes for this case?

A. No. But this was a wellbore diagram used for many purposes.

Q. Okay. Now, I think you were asked by Mr. Brooks to give some conclusions in relation to the interpretation that the 8-5/8 casing was mudded in and not sealed with cement. And if I recall your testimony, you said that cementation is required in typical situations. I take it by that that cementation is not always required?

A. That's true. In areas where you have liners, deeper strata sealing off, we have intervals of casing which are not. But typically in the areas which are covering potential underground sources of drinking water, we do make it a practice that we have this sealed off.

Q. Okay. So aside from the cementation issue, to your knowledge, the production casing extends from the

surface to the bottom of the well; is that right?

A. The 7-inch does extend down to the -- the shoe should be at 2,935.

Q. Okay. And then there is -- inside of that, there is a tubing, and that's where the injected fluids actually flow, right?

A. That's correct.

Q. Turning to Division Exhibit 3, as I understand it, this is a copy of Administrative Order SWD-1127?

A. Correct.

Q. And that was issued following Fulfer Oil & Cattle, LLC's application to convert this Maralo Sholes B Well No. 2 to a saltwater disposal well?

A. That's right.

Q. And the information about the construction of that well was available in the OCD records when this order was issued; is that correct?

A. That's correct.

Q. You are aware, I believe, that following some discussion with the Division, OWL conducted several tests on the Maralo Sholes B Well #2; is that right?

A. That is correct.

Q. All right. And you haven't discussed those in your testimony here, right?

A. That's correct.

Q. Your final report of March 15th, 2017, which is Division Exhibit Number 8, that references that testing; does it not?

A. Yes, it does.

Q. And you discuss that testing on -- if you would turn to Exhibit Number 8, to page 3 of 9, that's a discussion of your understanding of the injection surveys; is that right?

A. Correct.

Q. And then on page 4 of 9, the next page, you reach some conclusions regarding your review of those injection surveys and the related reports; is that right?

A. That's correct.

Q. Okay. So there is a conclusion there labeled "Conclusion Number 1." Do you see that?

A. Yes, sir.

Q. And with respect to the first sentence there, that the injection fluids are entering the approved interval, is that still your conclusion or opinion about what's shown by the injection surveys?

A. That's correct.

Q. And then the second sentence indicating that there is no vertical migration of disposal fluids to shallower formations, that's still your opinion about

the results of the injection tests?

A. That's correct.

Q. And then going to your Conclusion Number 2, that begins, "Though the injection surveys did not demonstrate migration to shallower formations...." I take it in that regard, you're talking about something different than vertical migration, as you talked about in Conclusion Number 1?

A. Well, in number 2, we're talking about the open annulus --

Q. Right.

A. -- where you have two -- you have existing water, which was identified. You have -- in the Rustler. And you have exposed salt, and you have a potential underground -- identified underground source of drinking water. And sealing off of strata is one of the requirements of any well that we have. And so at that point, our identity of this was based upon its construction and our requirements under the particular specific New Mexico Administrative Code, which is the sealing off of strata.

Q. But as it relates to the injection surveys, your conclusion at this time was that it did not demonstrate migration to shallower formations; is that correct?

A. That's correct. And we never said it was going out from above, that the shoe was sealed for the 7-inch casing.

Q. Now, Mr. Brooks asked you about your Recommendation Number 3 on -- I believe it would be the one that's circled in red on page 7 of 9 of Division Exhibit Number 8. Do you recall that?

A. Yes, sir.

Q. And I believe you responded that OWL did not submit a remedial plan in response to that recommendation?

A. The request from OWL was for an extension, and we followed -- that was in a response, April 20th. And so our request had been for a notice of intent, and with that, the Applicant responded by pushing forward with a replacement well.

Q. And that's the point I was getting to.

A. Uh-huh.

Q. So OWL's response was actually to propose to replace this well with a new well as opposed to submitting a plan to remediate the Maralo Sholes well; is that right?

A. Yes.

Q. And obviously that application is the subject of the other case we've been talking about, 15723,

right?

A. That is correct.

Q. So my understanding is that in this case, the Division's request of the Hearing Examiners is to -- if it finds that the Maralo Sholes well is in violation of the rules that you've cited, to require OWL to submit a remedial plan for the Maralo Sholes wells within -- is it 30 days or 60 days?

A. 30 days is what we originally petitioned.

Q. Okay.

A. But with the understanding that this is a federal well, and there will be a requirement for the Bureau of Land Management to participate.

Q. Okay. One thing just to kind of go back and -- let me get to the right document here. I think it's Exhibit 7. Just for clarity of the record, I think you had testified that you thought the date of this document was 2000, if I understood you correctly.

A. Oh, excuse me. That looks like 2009, down at the bottom.

Q. Right. Right. I just wanted to make sure that was not confusing.

A. As a matter of fact, for the record, the signature date on it is 3/6/2009.

Q. Let me go back to something that you probably

talked about a little earlier and that was Mr. Brooks' question about the Santa Rosa Formation. And just for clarity, based on the testimony presented in the 15723 case, is it your understanding that the Santa Rosa Aquifer is currently used as a drinking-water source or that it potentially could be used as a drinking-water source.

A. Well, if we look at the State Engineer's application, there is a balance equation shown in there -- I believe I included it. Maybe I did not. But it looks like consideration of all production in the area. And in doing their balance equation, they noted several wells in the Jal area which are used for drinking-water sources. It's not included in my Exhibit 9, but that was attached to the original application.

Q. Okay. But that's something that's not in Exhibit 9?

A. That is not, but it's a matter of public record.

Q. If you'll give me a minute, I think that may be all I have.

EXAMINER WADE: Do you want to take a break?

MR. MOELLENBERG: That will be fine.

EXAMINER WADE: Five minutes.

(Pause in proceedings, 11:01 a.m. to 11:05 a.m.)

EXAMINER JONES: Go ahead.

MR. MOELLENBERG: Mr. Hearing Examiner, thank you for the break.

Q. (BY MR. MOELLENBERG) Mr. Goetze, I have a question or two about Division Exhibit Number 6.

A. Oh, the one I don't have.

Q. And is it your understanding, Mr. Goetze, that this was a notice of intent related to consideration of abandonment of this well at one time?

A. That is correct.

Q. And that abandonment was not carried out, correct?

A. That's correct. This is only a notice of intent.

Q. Right.

So that the -- the list of 13 items, two of which you have circled here, those are tasks or items that would have been done had they proceeded with the well abandonment but were not actually carried out?

A. That is correct. It was merely presented to show that the operator was aware of the issues regarding top of cement.

Q. And how can you tell that from this boxed

information?

A. Because to do a free point, you're trying to find top of cement and then cut off. It is a method to retrieve casing. Even though it is a 1947 casing, it also provides for the ability to plug properly if you have casing that does not have annular spacing still to cement.

Q. Okay. That's all the questions I have.

MR. MOELLENBERG: Pass the witness.

EXAMINER JONES: Okay. We're going to do redirect before we ask the Examiner questions.

REDIRECT EXAMINATION

BY MR. BROOKS:

Q. There is only one subject I have to deal with on redirect. There was some testimony in cross about the response -- you were asked some questions on cross about the response of OWL to the demand for remedial action -- or for a proposal for remedial action. Now, they mentioned -- or there was a mention of the proposal for a new well. But do I correctly understand your previous testimony that they never did propose any remedial action, to your knowledge?

A. We have never received any type of remedial plan for this well.

Q. Have you examined the well file to determine if

anything relevant has been done to the well since the date of that demand?

A. The only activities associated with this well have been cleaning out and testing and re-installation of tubing and the MIT, but there has not been any indication of the notice of intent.

Q. Have you examined the production reports -- the injection reports of this well since the date of the demand?

A. I have -- yes. They've been made part of the record in Case 15723.

Q. Very good.

So they are a part of the record?

A. Yes, they are.

Q. And do they indicate that OWL is still injecting into this Maralo Sholes B No. 2 well?

A. They are injecting, based upon the records since that request, and they continue to inject.

Q. Thank you.

MR. BROOKS: That's all I have on redirect.

MS. MOSS: I'm good. Thank you.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. Good morning, Mr. Goetze.

A. Good morning, Mr. Examiner.

Q. Looking at Exhibit Number 6 --

A. Yes, sir.

Q. Oh, I'm sorry. Exhibit Number 5. So this well was initially drilled June 30th -- roughly June of 1947?

A. Correct.

Q. That would mean that well is 70 years old, going on 71?

A. Correct.

Q. And that well has been squeezed -- in your review, that well has been squeezed over twice, anyway, in the life of the well?

A. The request, as shown on Exhibit Number 2, the perforation history, as part of the SWD order, the shallower perfs and the deeper perfs, the 2,733 to 2,824, were squeezed in 2008; 2,871 to 2,910 were squeezed in 1981. This was a movement up to capture gas in the reservoir as opposed to oil production.

Q. So I guess they didn't really get the production they were anticipating, so they -- they -- afterwards, they squeezed those perfs?

A. Well, the lowers were squeezed as the oil production was reduced. They came up to the shallower perfs and developed the gas, at which time it was deemed uneconomical, and it was -- at that point the application was made to convert to an SWD. And in the

SWD order, there is a requirement that the shallower perfs be squeezed off prior to initiation of injection.

Q. So they've squeezed over -- you're looking at the shallower perfs there, 2,733 to 2,824, it's almost 100 feet they squeezed in that upper perforation interval?

A. That's correct.

Q. And then in the lower production -- producing interval, the oil zones you're referring to, from 2,871 to 2,910, that's probably -- that's over 100 feet down there, right, that they squeezed?

A. That's correct.

Q. Okay. And in your review of utilizing this well for injection with the squeezed perfs, sometimes there could be some conduits or maybe some insufficient cement in those perfs, in your opinion? Could be?

A. Well, the shallower perfs have shown to have been properly sealed. The last MIT was successful. There was a 3 percent reduction in pressure, but it met the requirements even at 500 psi.

Q. Okay. And on your top of casing on your diagram, you were talking about 1,660 -- the depth of 1,660?

A. For top of cement that I calculated, yes.

Q. Okay. So that's quite a bit different than the

515 up there?

A. That's correct.

Q. So it's really -- it's really not -- not really -- you can't really tell exactly where the top of that cement could be in the 7-inch string, correct?

A. In my analysis efficiency range, anything from 17 percent to 87 percent.

EXAMINER DAWSON: That's all the questions I have. Thank you.

CROSS-EXAMINATION

BY EXAMINER WADE:

Q. Well, I just want to clarify. What is the specific relief that the OCD is asking for?

A. That this well be sealed so that at least the two identified water sources, the Rustler Formation and the -- at least the Santa Rosa portion of the Dockum Group, be properly sealed off and that annular space of the 8-5/8 casing.

Q. That's all the questions I have.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. To continue on that, have you talked to any field people about a design that would be workable and practical, or have you talked to the BLM?

A. We have had discussions with both Mr. Mark

Whitaker and Mr. Maxey Brown of District 1 about possible viabilities of using some block squeeze in various types. The discussion also included Bradenhead squeeze. We don't know if that's possible, but yes, they gave several options. And, again, the concept is to seal off these portions which are the aquifers and not necessarily the entire length.

Q. Okay. I guess we've -- I don't want to ask what other people said when they're not here, I guess, so I'll just abandon that.

The lithology tract that you've shown in this well, does that mean that that well was drilled by a cable tool or a mud log from surface TV or -- it's in Exhibit --

A. That's your driller's log.

Q. Driller's log.

A. And in 1947, it probably was both. I believe it is cable -- yes, it was -- to 2,950. So it was a cable tool.

Q. So it was a cable tool drilled well, which is pretty nice because you were able to identify -- it's kind of key to your recommendation theory that the Rustler water sand needs to be protected. Is that reasonable for them to see a 10-foot water, sand in between those anhydrites?

A. The occurrence of it could not be regionally found, but the Rustler is known to contain water and has been used in some places, or at least I know, for stock water.

Q. The other water zone that you want to have covered is in the Santa Rosa at 450. So that's a State Engineer's aquifer; is that correct?

A. It is something that is recognized by the State Engineer as a source of water.

Q. The Rustler water zone, is that also recommended -- recognized by the State Engineer?

A. I would not know.

Q. What about the water above the surface casing depth of 410? Is there surface water out here? Is that Ogallala we're talking about?

A. No. It would not be that far south. But the surface casing has never really been an issue, that it has been cemented to our satisfaction.

Q. Are you aware of the MIT history on this well or --

A. I am aware of the current MIT. It has had a good history, so it was never per se an issue. The MITs were within the standard we request.

Q. So do you know when the last MIT was done on it?

A. Beginning of 2017, I believe.

Q. Okay. So it's got a recent MIT.

As far as the previous history of the well, was there any squeeze -- or any knowledge that you saw in the well files about what happened uphole besides that Yates gas zone? Are there any issues like shallow squeezes or any cement remediation?

A. There is no record of any additional work.

Q. Okay. Okay. When you did your efficiency check on surrounding wells on the 7-inch, did you see that there were any issues with the problem of cementing up above the bottom of the salt? I mean, I'm puzzled why you show a top of cement on the 7-inch as 1,660 when that's almost in the middle of the salt, whether -- did you see where there is an issue with cementing over the salt on the surrounding wells?

A. Well, again, looking at the historical reference in the area, how well they did, how long you take, my experience with cable rotary, if you decide at the end of the day to go home and you're in the middle of a salt section and you've got water in the hole, you may develop a cavern there that may increase your volumes when you do your final calculations. There -- in, oh, about three of the wells, there was significant -- at least in my -- three of the wells in

the Sholes B, at least, there were, again, 17 to 28 percent efficiency and attributed to having a larger opening in the -- annular space in the salt, and those were drilled with rotary.

Q. Okay. I was going to ask you that. So the rotary drilled wells had more washouts than the salt?

A. That's correct.

Q. So this well may have not had such a washout?

A. That's true.

Q. So what efficiency did you use to get to 1,660?

A. 51 percent.

Q. 51?

A. 51 percent.

Q. Okay. So if you used a generally accepted 80 percent efficiency, it would go on up into the -- basically, there is no bond log or anything to really know --

A. There is nothing on this well. So, I mean, it is a conjecture as to where that top of cement is.

Q. And we didn't require a bond log when we approved the disposal back in --

A. No. I did not.

Q. -- 2007?

Speaking of that, if you saw a well like this and you were approving the disposal on that well

now days, is it the current practice to -- what would be your current practice on a well like this as far as writing your disposal permit?

A. On this, we would have probably gone with a remedial action on issuance and talked to the applicant. Again, the original application for this well was designed for another purpose, but that's the other case.

Q. So you don't want to open up a can of worms on that one (laughter)?

A. Well -- I won't.

Q. Okay. Then I won't either. I'll leave that to someone else.

If you were a geologist looking at a -- if this well, instead of 70 years ago, were proposed now as a producer and if you were the geologist looking at the drilling permit, would you -- what would you -- what would you say? Would you approve it the way it was drilled now?

A. Oh, the way it was drilled now --

Q. The way it is drilled now.

A. No. In the survey, a lot of the recent in the Jalmat have used DV and three strings.

Q. Three strings?

A. And certainly the circulation to surface has been -- in the more recent wells to the east in the

Jalmat have not been much of an issue, but then that's still farther to the east.

Q. As a geologist, would you -- if you were going to drill another well right beside this well to replace this well, would you -- would you require a shallow surface pipe and then an intermediate to the Rustler, or would you do a surface pipe all the way down to the Rustler?

A. The replacement well was two strings for the Bobcat, and we had no problems with that design.

Q. Because the Ogallala is not present here?

A. Well, because the placement of the surface casing and the placement of the production casing would be much better controlled than, say, 1947, different types of cement, different types of completion operation. And with that, you would also have -- either returns demonstrated a better record, as well as the potential for putting on a cement bond log.

Q. What kind of UIC responsibilities do you have when you review saltwater disposal permits? Do you have a dual responsibility? Is that correct?

A. Yes. Not only do you look at the design of the well proposed as is or re-entered -- and this is done in conjunction with the district supervisor -- but as part of our requirements for the area-of-review wells, we

would have to look at all wells in that one-half-mile radius to consider their construction and the potential for having upward migration should these wells that do penetrate the injection interval and to assure that where there is an issue identified, there is some sort of remedial action or corrective action is taken.

Q. Do you have to report to the EPA periodically on permits issued in New Mexico for saltwater disposals?

A. As part of our reporting requirements, yes, we do have to submit quarterly reports to the EPA describing wells, as well as the permits issued and the area-of-review wells and how many corrective action is required for those area-of-review wells.

Q. Okay. I don't have any more questions.

EXAMINER JONES: I guess that's it for you, Mr. Goetze. Thanks very much.

THE WITNESS: You're welcome. Thank you.

EXAMINER JONES: Is your case done, Mr. Brooks?

MR. BROOKS: Essentially, Mr. Examiner. I handed you -- may I approach?

I handed you what is marked as Exhibit 12 that I prepared this morning. However, it's not an evidentiary exhibit and I do not propose to submit it in evidence. But what it is is two rules -- the text of

two rules that I believe to be relevant.

EXAMINER JONES: Do you want to -- do you want your witness to talk about these?

MR. BROOKS: No. I don't need the witness to talk about them. I think that I have covered those areas. They are merely submitted for information because that'll make it easier for the Examiners than if they have to dig it out. And, furthermore, Exhibit 12 is much more readable than the New Mexico Administrative Code. But that is all that we have, and with that, the Division [sic] closes.

EXAMINER JONES: Do you want to admit this exhibit?

MR. BROOKS: I'm sorry. I said "the Division closes." I mean the Division rests. We reserve the right to present rebuttal should this become necessary.

Yeah. I'll submit Division Exhibit 12, understanding it's self-authenticating.

EXAMINER JONES: Any objection to Exhibit 12?

MR. MOELLENBERG: We haven't seen a copy of 12.

MR. BROOKS: Oh, I'm sorry. I'll get a copy to you.

MS. MOSS: I haven't seen one either, but I do need to put something on the record.

MR. MOELLENBERG: And, again, you're just -- this is just a demonstrative exhibit?

MR. BROOKS: It is. It's not evidentiary. It's just a copy of the rules, and the highlighting is my argument in the fact that those provisions are particularly relevant.

MR. MOELLENBERG: I don't have any objection to this coming in as a demonstrative exhibit. I haven't, obviously, had time to check it against the rule, but I assume Mr. Brooks has --

MR. BROOKS: If Mr. Goetze is to be relied upon, it should be --

MR. MOELLENBERG: Fair enough.

EXAMINER JONES: Okay. We'll admit Exhibit Number 12 for the Applicant.

(NMOCD Compliance and Enforcement Bureau Exhibit Number 12 is offered and admitted into evidence.)

EXAMINER JONES: Ms. Moss?

MS. MOSS: I would like to say for the record that the extent of the qualifications of the expert, I don't think, is sufficiently clear, particularly if we were on appeal. And, in particular,

I don't think what is clear is whether or not he is an expert on oil and gas wells.

EXAMINER JONES: Well design or --

MS. MOSS: The requirement -- well design is one thing, but these are the -- he's testifying about, as I understand it, the requirements that OCD would place on a well that was drilled for oil and gas purposes.

EXAMINER JONES: He was qualified as a geologist, which they pick the depth of casing and cement that needs to be covered and designed by a drilling engineer.

MS. MOSS: He does not have those qualifications.

EXAMINER JONES: He has the qualification as a geologist -- a hydrogeologist.

MS. MOSS: But not as a drilling engineer.

EXAMINER JONES: Not as a drilling engineer, no.

MR. BROOKS: Well, he is certainly not a drilling engineer. However, I think that his answers to the questions regarding his experience would justify the conclusion that he is -- he has expertise more than ordinary people would have in terms of how an injection well should be designed.

EXAMINER JONES: We recognize that Mr. Goetze has had many lives before he came to this place.

MR. BROOKS: And he's also done a lot of injection work here.

MS. MOSS: Having to do with oil and gas wells.

EXAMINER WADE: I think the Hearing Examiners have recognized his expertise with regard to -- and keep in mind that appeals are de novo to the Commission, so they won't be relying on this record.

MS. MOSS: Thank you.

EXAMINER JONES: Okay. Okay. Let's -- if it's amenable for everyone, we'll break for lunch. If it's too early, we can go another 30 minutes or so.

MR. MOELLENBERG: I guess I just want to check on travel arrangements. I think we're good to break now.

Yeah. I think We're fine with that.

EXAMINER JONES: Okay. We would proceed probably --

Are you going to present a witness?

MS. MOSS: Only if there is a need for rebuttal, for clarification of the record. The witness is here who I would use for that purpose. I'm

optimistic. It may not be necessary.

EXAMINER JONES: Okay. Well, let's break until --

MR. BROOKS: It's 11:40 now.

EXAMINER JONES: -- 1:15.

(Recess, 11:38 a.m. to 1:18 p.m.)

EXAMINER JONES: Let's go back on the record in Case 15753.

And, Mr. Moellenberg, are you ready to present your case?

MR. MOELLENBERG: We are. OWL calls Kevin Burns.

EXAMINER WADE: Do you want to swear in all the witnesses?

(Mr. Burns and Mr. Kronkosky sworn.)

KEVIN BURNS,

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

DIRECT EXAMINATION

BY MR. MOELLENBERG:

Q. Good afternoon, Mr. Burns. Would you state your name and employer for the record?

A. Kevin Burns. My employer is OWL SWD Operating.

Q. And have you previously testified before the Division's Hearing Examiners and been qualified as an

expert?

A. I have.

Q. And is it correct you've been qualified as a petroleum engineer?

A. Correct.

Q. Okay. There is a stack of documents in front of you there, and I believe there is one marked Exhibit D. Is that a copy of your true and current resume that states your qualifications and experience?

A. It is.

Q. As a petroleum engineer, could you describe for us your experience with respect to oil and gas and injection well design?

A. My job in the past has been to not only design the casing and cement program but also proper tubing, packer, surface equipment associated with that for appropriate injection.

Q. Thank you.

MR. MOELLENBERG: I'd offer Mr. Burns as an expert in petroleum engineering and as experienced in well design.

EXAMINER JONES: Objections?

MR. BROOKS: No objection.

MS. MOSS: No objection.

EXAMINER JONES: So qualified.

Q. (BY MR. MOELLENBERG) As part of your experience, have you familiarized yourself with well design and construction from the 1940s on?

A. Yes, sir, I have.

Q. Okay. What were typical well construction methods for an oil and gas well in the 1940s?

A. Obviously, it varied based off the size of the company and who was doing the work, but in cable tool drilling, heavy mud -- mud with gel polymers, any type of lost circulation materials used to inflow or issues during certain drilling influences before setting casing and moving on to the next hole intersection, as well as packing in cement, you know, in certain intervals as well. So --

Q. Have you reviewed the well file and records for the Maralo Sholes B No. 2 well?

A. I have.

Q. Could you tell us, based on your review of that record and your familiarity with the well -- let me ask: Have you visited the well site?

A. I have.

Q. Okay. Tell us what you know about the construction of that well.

A. It's pretty standard for that time, for that interval and depth, not only in New Mexico but also in

Texas as well. Pretty standard shallow surface casing to protect the shallow water interval, appropriate for the county or area within the county that it's in. The intermediate string that has been put in to protect the deeper water zones and other nonproducing zones, also to protect the integrity of the long string or production casing, and also to protect the drilling operations while drilling the deeper intervals so that way they don't have to deal with lost circulation, kicks and other potential issues during drilling from those intervals.

Q. Mr. Burns, you have in front of you there, I believe, Division Exhibit 2. Do you see that?

A. Yes, sir.

Q. Do you recognize that as a schematic of the Maralo Sholes B No. 2?

A. Yes, sir, I do.

Q. And you didn't prepare this schematic?

A. No, I did not.

Q. So, Mr. Burns, could you tell us, you know, based on that schematic and your knowledge of the well, what the -- what the casing and -- the difference casings are for that well?

A. I can. Would you like me to break them down for you?

Q. Please do.

A. As you can see, the surface casing is set at roughly 410 feet, 10-3/4-inch casing cemented in with 150 sacks. And then for the intermediate string, they ran pretty typical 8-5/8 casing. Looks like it's been mudded in at this point, which is pretty standard for that time, because the mud they used was pretty heavy mud. I mean, it was pretty close to cement, to be honest with you, with the viscosity and type of chemicals they used during that time. And then you've got your typical 7-inch-long string casing. Looks like it's TD'd at roughly 2,950, 2,935, and then that's cemented in. I think the hole size is probably a little bit tighter than shown here, but based off of my knowledge of the OD and ID of the 8-5/8 casing, that was used to protect the drilling operation.

Q. Mr. Burns, with respect to the intermediate casing, you've talked a little bit already about the indication that that casing was mudded in, and you described what that might have been in the 1940s. Is there anything else about what mudding in means that you'd like to describe for the Hearing Examiners?

A. No. I think I touched on it to the extent we need to. I mean, the mud they used was a heavy mud, some kind of polymer gel. A lost-circulation type

material chemical was used to help cut off any flow in and out of the zones that might cause issues with the casing being inside, in the hole. So --

Q. Based on your knowledge of what mudding in would have meant in the 1940s, in your opinion, does mudding in provide an effective seal between the casing and the borehole wall to seal it off and prevent leakage to the geologic strata intervening?

A. It can.

Q. The diagram that you have in front of you, the notes indicate, do they not, that there was cementation used for the production casing?

A. That is correct.

Q. And were you here for the testimony this morning regarding some calculations and discussion about how far up that cementation might extend?

A. I was some, not all of it.

Q. Do you recall Mr. Goetze talking about using an estimated 51 percent efficiency for his calculations about the extent of that cementation?

A. I do.

Q. Have you done any calculations regarding the extent of that cementation based on other efficiencies?

A. I have.

Q. And what are those calculations?

A. What I have done is I assumed, based off of the 8-5/8 casing, ID'd that pipe maybe 8 inches. So with that, to be able to get a clean drift off the next tool, you're probably talking about a bit size of 7, 7-3/4 being ran in there, maybe even smaller, depending on what they had available. And so you're talking a really small gap between the wall of the hole and the 7-inch casing. And, you know, based off the typical waste of cement, about 14 pounds of cement, you're probably talking about 1.3 to 1.4 cubic yield per sack. And with that calculation and the depth interval, I don't see why it wouldn't be reasonable for that top of cement to be into the shoe of the surface casing at 80 percent and maybe even slightly less than that.

Q. Mr. Burns, are you familiar with some testing that was done on the Maralo Sholes B No. 2 well in the latter part of 2016?

A. I am.

Q. I'd ask you to take a look at what's been marked as Exhibit A for OWL and ask you to describe what is in that Exhibit A.

A. This is an injection profile done by Renegade Wireline Services to show the injection interval as far as where fluids are being disposed of. The slope on the right-hand side of the graph indicates your standard

slope based off of the way the fluid is going through the reservoir -- or excuse me -- through the wellbore. I apologize. And as you get into the open-hole section, that's where you start seeing the changes in slope, indicating where fluid is leaving the wellbore into the reservoir. You can even see up and through the casing. Even through the squeezed perforated portion, there is no change in slope to indicate that the casing and the squeeze on the perfs are holding appropriately.

Q. And, Mr. Burns, this particular testing was done on behalf of OWL; was it not?

A. Yes, it was.

Q. Is there anything else you'd like to tell the Hearing Examiners about Exhibit A?

A. Not at this time.

Q. Okay. I'd like you to turn to what's been marked as Exhibit B for OWL, and can you tell me what that exhibit shows?

A. This is a tracer log, again done by Renegade Wireless Services for OWL for the Maralo Sholes B well.

Q. And what's the difference between a tracer log and the injection profile that we were just speaking about?

A. One uses a tracer to track the fluids in through the wellbore into the reservoir, while the other

just monitors pressure and temperature to -- to do the same.

Q. Okay. And are these both pretty standard test methods used for wells?

A. They are.

Q. Okay. So tell me what you see in Exhibit B and what it tells you is going on in this well?

A. As you can see, the temperature did not change. The slope on the temperature log on the right-hand side of the graph maintains a pretty straight line until you get down there to the end of the bottom-hole section. And then also if you look on the left side, you can start seeing where the open-hole interval starts versus where the shoe of the casing is, and then also you can see, based on the tracers being read, where the actual fluids are leaving the wellbore and are going into the reservoir.

Q. So based on your review of the testing and reports in both Exhibits A and B, do you see any indication that injected fluids are escaping the wellbore?

A. Outside the approved injection interval, I do not.

MR. MOELLENBERG: That's all the questions I have for this witness. I will pass the witness.

EXAMINER JONES: Mr. Brooks?

MR. BROOKS: Thank you.

CROSS-EXAMINATION

BY MR. BROOKS:

Q. If I understood your testimony correctly, much of it is based on your study of drilling methods that were common in the 1940s, right?

A. Yes, sir. I was the manager of a field for Bass Operating over in the Keystone Field, which was originally owned by Sid Richardson and Perry Bass in the '30s and '40s, and I managed that field for over a year.

Q. What was the last part?

A. I managed the production and recompletion and operations of that field for over a year.

Q. Okay. The records of this well, the Maralo Sholes B No. 2, is there anything in those records to give you any specific information about the mud that was used in this well?

A. You mean as far as the actual chemistry of the mud?

Q. Yeah.

A. No, sir.

Q. Now, you said when mudding -- you were asked about mudding in and does it provide an effective seal. You said it can. That seems like something less than an

unequivocal response. What is your feeling about that? Do you think that's something we ought to be -- the Examiners ought to rely on?

A. Well, I can't attest to every person who has mudded in a well for every wellbore across -- I know it can be effective. I've seen it effective based off of MIT on wellbores and other things where it upholds in older than this particular wellbore.

Q. Those are other wells in other places, not this well, though?

A. Correct.

Q. Okay. If fluids from the well were moving up inside the production string casing -- inside the hole behind the production string casing, would that be apparent on your tracer survey?

MR. MOELLENBERG: Object to the form. Can we -- I know you sort of changed the question. Can we just get that clarified, the --

MR. BROOKS: Yeah. I'm talking about fluid movement -- not fluid movement inside the production string casing, but fluid movement inside the annulus -- or outside the production string casing through the annulus. Is that what you wanted to clarify?

MR. MOELLENBERG: Yeah. As long as the witness understands what you're asking.

THE WITNESS: So are you asking if these tests provide any indication about fluid movement on the annular of the 7-inch casing?

Q. (BY MR. BROOKS) Yes.

A. No, sir. These do not.

Q. Yeah. It was my understanding that those tests were designed to determine where -- how the fluid was moving after it got out of the hole in the injection zone; is that correct?

A. No. It monitors the fluid from the surface all the way down through the open-hole interval, all the way down to inside the 7-inch casing.

Q. Which test did that?

A. Both of them.

Q. Okay. And then how do you conclude from that that it is not -- that there has not been movement outside the -- in the formation, because I thought that was what those tests would determine?

A. No. These tests are to determine that no fluid escapes the wellbore outside the approved injection interval.

Q. Thank you.

MR. BROOKS: I think that's all I have. Pass the witness.

CROSS-EXAMINATION

BY MS. MOSS:

Q. Good afternoon.

A. Good afternoon.

Q. During the clean-out of the open hole to the original total depth that was done more recently, did OWL run a cement bond log to determine the top of the cement?

A. I don't -- I don't think we did.

Q. Would it have been possible to run such a log?

A. Yes, ma'am. It could have been done.

Q. Do you know what the -- what was involved in the choice not to do it?

A. I was not employed by OWL at the time, so I could not tell you.

Q. Thank you very much. That's all.

EXAMINER JONES: Redirect?

MR. MOELLENBERG: Yeah. I have one question on redirect.

REDIRECT EXAMINATION

BY MR. MOELLENBERG:

Q. Mr. Burns, Mr. Brooks asked you about your understanding of mudding in and its effectiveness given your experience with other wells, and I believe he referred to testing of other wells. And I think --

well, so my question is, in your answer to that question -- do you recall that question?

A. Yes, sir.

Q. Okay. Did you consider the testing that's -- that you've talked about as representative of Exhibits A and B in your answer to that question?

A. Yes, sir, I have.

MR. MOELLENBERG: That's all I have.

CROSS-EXAMINATION

BY EXAMINER WADE:

Q. It's dangerous when an attorney asks engineering type questions, but, you know, would an MIT show if the integrity of that mudded-in area was compromised?

A. It could. Yes, sir.

Q. It could, but not necessarily?

A. Well, it would -- the MIT would prove that if the mud was compromised and there was an effect on the casing because of it, there would be -- of any kind of adverse effect on the casing due to it. Excuse me. Let me clarify that. So -- does that make sense?

Q. Well, yeah. And this is where I don't know enough about it --

A. Yes, sir.

Q. -- to follow up the question, but, you know --

I guess it could, but it might not? Is that what you're saying?

A. Correct. I mean, I guess, just to clarify what you're saying is, while the casing is still good, I can't prove anything about the mud in and of itself. Okay?

Q. Okay.

EXAMINER WADE: Those are all the questions I have.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. But an MIT is an indication that there may be -- the cement bond may not be good? During an MIT test, there would be a loss of pressure, correct?

A. There could be, yes, sir, depending on the quality of the casing within the wellbore.

Q. All right. And you said that whenever you reviewed the Maralo Sholes B No. 2 well, you did a thorough review of the wellbore schematic. And did you prepare one yourself on that well? Have you done that?

A. No, sir. I have not yet.

Q. If you did a thorough review of that well, what would your -- you know, on your estimated top of cement on that 7-inch casing, what would you estimate the top of cement on that 7-inch casing, in your opinion?

A. I would assume up and around the surface casing shoe point, somewhere around there. I had the numbers done a while back, but I don't have the numbers off the top of my head, so I don't want to speak about it at this time.

Q. Okay. And then looking at your exhibits -- I'm going to start with Exhibit A, your depth-injection profile --

A. Yes, sir.

Q. -- and when I'm looking at this depth-injection profile and I look at the header on the log, when I look at this header, it says the top of the log interval is 2,700 feet. Is there a reason why Renegade or OWL did not run that log up to a higher -- up above 8-5/8 casing shoe?

A. Again, when this was physically done, I was not employed with OWL, so I'd have to -- I wasn't around when the decision was made.

Q. That was kind of leading up to my second question on Exhibit B. I noticed, on the top log interval on Exhibit B, it's at 2,600 feet. So I guess -- I was going to ask you that question, but since you weren't there, you really can't answer that question, correct?

A. Correct.

Q. So you really couldn't estimate why they stopped with those intervals at those depths?

A. My assumption would be it gets them above the perforated interval, which more than likely caused, potentially, the weakest point in the casing. If you're to see any kind of issues in the casing, it's usually in places that have been previously squeezed, the operator has perforated intervals or casing integrity issues and they've had to squeeze off those as well, but that usually holds pretty well.

Q. And in going back to Exhibit 2, the Division's Exhibit 2 -- is that in front of you --

EXAMINER WADE: That's the schematic.

Q. (BY EXAMINER DAWSON) -- the wellbore schematic? Do you know of any other -- I know Mr. Goetze did a thorough review on this wellbore schematic when he -- when he prepared it, and he has a squeezed perf down there. The top squeezed perf that I'm looking at is 2,733 feet, and then there is another squeezed perf down below there, 2,871. Do you know if there are any other perforations within that well that have been squeezed?

A. Not to my knowledge.

Q. Okay. And in looking at Mr. Goetze's prepared exhibit and looking at just above the shoe on the 8-5/8 casing there, it does look like there is some cement in

there, correct, in your opinion?

A. Yes, sir.

Q. But then above that, you would think that would be the mud?

A. Correct.

Q. So you feel like the shoe was cemented in properly -- it was probably cemented in, just maybe -- just looking at the depths on the log, there might be -- on top of that 8-5/8 shoe, there might be 40 feet of cement in there?

A. Typically, during that time, we probably saw probably between 50 to 150 feet of cement.

Q. And then you -- also, looking at the 7-inch casing, it looks like the cement's roughly -- the top of the cement on the schematic there, it may be 1,350 feet, by looking at the schematic?

A. That's a rough --

Q. And that would be -- above that's mud, between the -- so there is some open hole between the mud and casing shoe on the 8-5/8?

A. There should be mud there. Yes, sir.

Q. And that would go to the surface?

A. Yes, sir.

Q. That's all the questions I have.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Mr. Burns, I'll be quick also. What kind of cement would they have been using back then in those days?

A. Your Class C cement with some sodium chloride and maybe a few other additives.

Q. So you think it would have been sulfate-resistant cement back in those days?

A. Potentially.

Q. What about the type and the yield on this well? Did you look at that?

A. I didn't see any specific data to the yield as far as the cement goes. Typically, like I said, they used about 14-pound cement, which typically they were between 1.3 and 1.4 cubic foot per sack.

Q. Almost neat?

A. Yes, sir. Yes, sir.

Q. So this well drilled with cable tools, you expect the salt section to be pretty -- pretty well -- not washed out?

A. I would expect it to be okay at this point due to the small interval that it is during the time that they drilled through it. As close as it is to that shoe point, I don't think they spent a lot of time on it.

Q. Okay. So 7-7/8 bit, maybe, or 7-3/4?

A. 7-7/8 would be pretty tight, you know, in there. That would be probably the absolute largest, but even then, that's risky.

Q. It is interesting, the 3/4, and then they finally run 7-inch pipe, because you don't have much room either -- on either side.

A. Correct.

Q. You know, so your bit size was tight, and your casing -- 7-inch casing would have been tight, too, going into that hole.

A. Yes, sir. I mean, they were -- I'm sure there were economics involved in those decisions at the time.

Q. The type of casing, and right after World War II, I've heard the term "wildcat casing." Is that -- have you heard that term before?

A. Yes, sir. I've heard a lot of stories about casing during World War II, especially getting to work for the Bass family for a few years. So -- (laughter).

Q. Did you witness this injection test?

A. No, sir, I did not. I was not employed with OWL at the time.

Q. Okay. I saw on the log there was no witness from the company people on this test. If they were, they usually -- the loggers usually would put the person

down that witnessed the test. And if you were running this test now, would you witness it?

A. Myself and a company man would.

Q. Yeah.

A. Yes, sir.

Q. Do you have somebody out there pretty much full time --

A. Yes, sir.

Q. -- to watch this well?

A. To watch this well, like, 24 -- what do you mean been monitoring? Excuse me. Let me clarify.

Q. Can you describe the surface facilities of this well and the tank batteries for it and the wellhead and how you guys keep track of it?

A. We have a pumper that does daily routes that attests to the facilities and then goes by his particular wellbores to monitor pressures and injection rates.

This wellbore isn't directly adjacent to the processing facility that we have. It's slightly to the north of there. The facility is comprised of a couple of gun barrels, several produced water tanks and skim oil tanks inside a containment wall that has a berm liner in there to protect. In addition, there is caliche rock to help protect the earth below that for

the pad, and plus there is the polyline that runs from the pumps to injection site. And we have, you know, your tubing head pressure gauge, your casing head pressure gauge and flowmeter to help monitor all the information I mentioned before, so the Hall plots and voluntary injectivity and efficiencies of the well.

Q. Do you have a working Hall plot on this well?

A. No, sir, I do not. I've been kind of focused on some other projects for Hall plots at this time.

Q. Do you have a marking [sic] switch or a SCADA System on it?

A. Yes, sir. We do have SCADA on this well and on the facilities associated with this well.

Q. So from your office, you can monitor this well with that SCADA System?

A. Yes, sir, through the rates and pressures.

Q. Rates and pressures.

A. Yes, sir.

Q. Now, speaking of rates, I noticed that this log said somewhere around -- I think they said -- they said that it was injected at 5 barrels a minute while they were running the test?

A. Which log are you looking at, sir?

Q. The pressure temperature log. They mentioned on the header somewhere that they were running 5 barrels

a minute while they were --

EXAMINER DAWSON: It's in the Comment section on the bottom of Exhibit A, on page 1, on the log header.

THE WITNESS: Okay. Yes, sir.

Q. (BY EXAMINER JONES) And then they checked -- they do the check, right, in the 7-inch before they drop down into the open hole? And that came out a little bit different. So are you confident that your water meter out there is pretty accurate for this well?

A. Yes, sir.

Q. It's reasonably accurate?

A. Yes, sir. But this wasn't used in our flowmeter for operations. This was using -- this rate comes from the pump truck and equipment they're using at the actual wellhead to perform the actual tests.

Q. What kind of calibration do you do on your meters -- on your water meter?

A. We try to at least quarterly check the K factor on the meters to make sure that it's appropriate, send it in to go through a proving loop so that way we can make sure the meter is accurate. If not, we swap it out and monitor it.

Q. But at this point, there is a line that comes in to this well. It's a closed system, or does it

accept trucks also?

A. Trucks -- trucks don't enter the line itself. Trucks will actually come into our facility, but this particular facility has not taken -- consistently taken trucks in a while. Most of the volume and capabilities of this facility and the -- have piped water from various customers.

Q. The 8-5/8 casing that was mudded in, is that -- I can see that -- I know there used to be problems -- and I'm sure there still is -- with Red Beds above the Rustler. You have to drill through them and get them quickly cased off, or it will swell on you.

A. Yes, sir.

Q. Do you think that was the reason they put the 8-5/8 in?

A. Yes, sir, to protect their drill string while drilling the long hole.

Q. And how often has the tubing been changed on this well? Do you have records on that?

A. I do not have records in front of me, so I couldn't tell you exactly what the timing and interval has been.

Q. What about the MIT frequency? Is this a normal five-year MIT frequency, or has the district office required a more frequent mechanical integrity test; do

you know?

A. I do not know. I do not know what the district --

Q. Sometimes the Hobbs office has problem areas where they will require a frequent MIT, and I just didn't know if this was --

A. We have regulatory personnel to help monitor that for us and apprise us of the time of those things.

Q. One of the big issues is if something happens uphole on this well above the salt zone and you do start working on it, you might -- you might never get back into that well on your problem area to properly plug the well from above. And it's to your advantage and everybody's advantage that that zone that you're injecting into is isolated and the bottom base of the salt is isolated. And so have you thought about that? Are you in favor of a replacement well, or would you like to just keep right on trucking with this well?

A. I'd like to keep on trucking with this well, the way you put it. I mean, at this time, between the mechanical integrity tests that have been performed on it, plus the log performance on it, I don't feel like it's a huge risk at this time. I mean, obviously, with the pressure gauges on the back side between the tubing and 7-inch casing annulus, we can start noting any

particular pressure changes which may indicate casing integrity issues at that point and hopefully allow us to remediate that issue properly, and, as you said, I mean, it becomes an economical decision on what that remediation is and how to move forward with it.

Q. So basically your SCADA System keeps track of your annular pressures and your tubing pressures?

A. That's done manually. The annular pressure is done annually. We have a manual -- we have a manmade gauge for the pumpers to monitor.

Q. Okay. Okay. So the pumper would probably keep in his chart book the pressure every day, or is it zero pressure? They just keep that annular loaded with inert fluid?

A. Yes, sir. We typically pump packer fluid down the back side to help protect just corrosion and just other issues downhole with some kind of chemical and the production chemical to maintain the integrity of the tubing and the casing.

Q. What about Bradenhead testing on this well? If you crack the valves, do you get a flow or a vacuum?

A. I have not been apprised of that.

Q. Okay. That's something that New Mexico does that kind of -- the EPA likes it. They like MIT tests better, but they also like our Bradenhead testing that

we do.

RECROSS EXAMINATION

BY EXAMINER DAWSON:

Q. Mr. Burns, if -- if this well was permitted to be utilized as a saltwater disposal well, would you suggest on OWL -- that they squeeze those uncemented intervals?

A. No.

Q. No? You don't think it's necessary?

A. No. I don't think it's necessary. Plus, it could potentially put the casing at risk for as old is, pumping on it hard enough to get the cement up and around the surface at those depths. I mean, I know that people like to 1-inch the back side of these remediation plants [sic], but I don't -- for this particular depth, I just don't think -- that's kind of risky in itself as well. So I think it could potentially harm the casing by trying to do something like that versus maintain, protecting that casing with the packer and injection tubing and keeping fluids from potentially risking that casing, as with any wellbore.

Q. So that's 2-3/8 tubing in there, right?

A. I believe so. Yes, sir.

Q. That's all the questions I have. Thank you, Mr. Burns.

A. Actually -- excuse me -- it's 4-1/2. I apologize.

Q. 4-1/2.

A. Sorry. I was thinking about another wellbore I recently remediated.

Q. Oh, 4-1/2.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. That's pretty heavy tubing.

A. Yes, sir.

Q. But it's sitting there with the back side loaded, and your packer is set in tension?

A. Yes, sir. Yes, sir. And plus the tubing is not metal. It's a lined tubing with a polymer material inside to protect it from corrosion and erosion and velocity and the type of fluids that we're putting into it.

Q. Your caliper shows some washouts in your open hole. Is that -- did you look at those? Did you look at that? I mean, is that in a zone that you would predict based on your -- you have a geologist you work with, right?

A. Yes, sir. I have a couple of contract geologists I work with.

Q. They would look at that.

I don't think I have any more questions.

EXAMINER DAWSON: I have one more question.

RECROSS EXAMINATION

BY EXAMINER DAWSON:

Q. If this well was permitted to be utilized as a saltwater disposal well again, would you suggest that OWL run a CBL on it?

A. Yes, sir.

Q. That's all the questions I have. Thank you.

RECROSS EXAMINATION

BY EXAMINER JONES:

Q. That would be if you pull the tubing -- if you have to pull tubing?

A. Correct. I would -- I would wait for the next time we have to pull the tubing to do something like that.

EXAMINER JONES: Is that it for this witness?

MR. MOELLENBERG: I have nothing more for this witness.

MS. MOSS: May I ask one more question?

EXAMINER JONES: Sure.

CROSS-EXAMINATION

BY MS. MOSS:

Q. Has OWL been monitoring the wellhead pressure

in the annulus between the 10-3/4 and the 8-5/8-inch casings?

A. Not to my knowledge. Typically, most of those casings are covered up when the cellar is put back in by most operators, even in some of the newer wells.

Q. So would that be the same answer if I asked between the 8-5/8 and 7-inch casing?

A. No. Yes, ma'am, as well. Most of that is done, covered up, when the cellar is put back in.

Q. Thank you very much.

EXAMINER JONES: I don't want to -- I don't want to -- we've got Mr. Burns as a witness, but I would add that back in -- I want to say the '80s or '70s, the Division required those annuluses to be plumb to the surface so they could run Bradenhead testing on them.

MS. MOSS: That wouldn't be the case here?

EXAMINER JONES: So it's possible -- this is his well so he knows, but normally they're equipped so you can check that.

MS. MOSS: Okay. Thank you.

EXAMINER JONES: We don't have anything further.

MR. MOELLENBERG: Okay. So OWL calls Chad Kronkosky.

CHAD KRONKOSKY,

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

DIRECT EXAMINATION

BY MR. MOELLENBERG:

Q. Mr. Kronkosky, would you state your name and employment for the record?

A. Chad Kronkosky, president of CEK Engineering.

Q. And, Mr. Kronkosky, have you recently taken on some new responsibilities?

A. I have. I am now a faculty at Mississippi State University in the Petroleum Engineering Department that they just started up. So I'd like to add: In no capacity is my statements related to Mississippi State or opinions, so (laughter) -- make sure the lawyers over there -- make sure that that was specifically addressed. But I do still continue to consult through my consulting engineering company.

Q. Mr. Kronkosky, have you previously testified in front of the Division Hearing Examiners and been qualified as an expert?

A. Yes, sir.

Q. And in what fields have you been qualified as an expert, if you recall?

A. I believe it was in geology and hydrogeology

and reservoir engineering.

Q. Mr. Kronkosky, we have provided a copy of your current and accurate resume, and could you see that in front of you marked as Exhibit E?

A. I believe it's current with that change of profession, so it's a fairly current resume.

Q. It just doesn't reflect the Mississippi State?

A. No, sir.

Q. Mr. Kronkosky, you've been involved for OWL looking at this Maralo Sholes B No. 2 well on various issues around it for some time, correct?

A. That is correct.

Q. Have you reviewed the well file and familiarized yourself with what's in that?

A. Yes, sir.

Q. Were you asked by OWL to review some testing that was performed on that well and prepare a report in that regard?

A. I was asked, I believe, back in October of last year to review an injection profile survey that was performed on this well, and then in the early part of December of last year, with an additional injection profile survey.

Q. Could you look at what's, I think you have over there, marked as Exhibit C?

A. Yes, sir.

Q. And could you tell me what that is?

A. That is a final underground injection control geological assessment for the Maralo Sholes B No. 2 well that I prepared on or about January 12th of this year regarding our opinions as to the injected interval and the fluids that were being injected in this wellbore and where they are going.

Q. And after preparing this report -- and I don't have additional exhibits to introduce on this. But after preparing this report, were you asked by OWL to review a report prepared by Mr. Goetze relating to the Maralo Sholes B No. 2 well?

A. Yes, sir. Sometime in March of this year, I reviewed a report prepared by Mr. Goetze.

Q. And did you prepare a separate report from Exhibit E that addressed Mr. Goetze's March 2017 report that was submitted in Case 15723?

A. I believe it was. Yes, sir.

Q. Is there anything -- as it relates to the particular issues in this case, are your -- is the extent of your review, as well as your opinions and conclusions reflected in this January 12th report that is Exhibit C, or is there anything else in your subsequent -- subsequent report that relates

particularly to the issues that we've been talking about today?

A. With regards to this particular well, the January report is the more appropriate report. With regards to the other case, the comments with those to Mr. Goetze's, is more appropriate for that particular case.

Q. So to prepare your January 12th, 2017 report that is Exhibit C, what testing information did you review?

A. We relied upon the -- I believe it was the October 2nd injection profile survey and the December 12th injection profile survey, along with a litany of geological information and production information. So we studied this in quite detail.

Q. Okay. And do you have there Exhibits A and B that Mr. Burns discussed?

A. I do.

Q. And do those represent the results of some of the testing that you used for your January 12th report?

A. It is. I believe these are the December 2nd injection profile surveys.

Q. So let me just go ahead and ask you to differentiate the two reports in Exhibit A and Exhibit B.

A. So Exhibit B is the pump and tracer test that Mr. Burns had talked about where a radioactive dye is injected in the well, and the tools monitor the radioactive dye and try to look for leak-off into the formation. Exhibit A is a spinner survey that actually attempts to monitor the mass flow rates of fluid going down through the wellbore and as they exit the wellbore, so two slightly different technologies.

Q. And are you, in your experience, familiar with reviewing and interpreting the results of these kind of tests?

A. We've reviewed hundreds of these related to this similar types of wells and waterfloods all throughout Texas and New Mexico.

Q. Okay. So as -- as it relates to the issues in this case, tell us what information you have obtained from these -- these two test results that would be of interest to the Examiner?

A. In Exhibit B, on the -- I believe it's the second page underneath the Conclusions, I'll read the, I guess, sentence: "This survey was run to determine the zones of injection. There was no indication of channeling up from the 7-inch casing shoe" -- I put 7-inch because that's what they were monitoring -- "and that the casing rate was 6,500 barrels a day." This was

a remark written by the logging engineer for Renegade. They are very well-versed in the operation of these tools and the analysis of these tools. And I have reviewed the log itself in detail and agree 100 percent with the logging engineer's comments, that there is no migration of fluids channeling between the open-hole section and the 7-inch casing.

Q. And how about -- that's with respect to Exhibit B, right?

A. That is with respect to Exhibit B.

Q. So with respect to Exhibit A, what do you glean from that test?

A. Exhibit A, again, is the pump and -- I'm sorry. It's the spinner survey. So it's a mass flow rate survey, and in that survey, we have an indication of the amount of fluids of the 6,500 barrels a day that's being injected, what particular zones of interest those fluids are exiting and, basically, percentages of that volume. And so, again, that survey also indicates that 100 percent of the fluids are exiting into the open-hole section at 100 percent, and the fluids are being injected into the approved permitted interval.

On top of that, there was a bottom-hole pressure tool that was also run, which we utilized in

our, I believe, January 12th report to estimate a dynamic reservoir pressure near the wellbore of about 900 pounds. So the reservoir is extremely underpressure, and that explains why the wellbore takes fluids on vacuum.

Q. What's the significance of the wellbore taking fluids on vacuum?

A. It explains why this well takes fluids at such high rates with very minimum surface pressure. This surface pressure that we do observe is almost entirely friction pressure at 25,000 barrels a day. I believe we get friction pressure of about 5- or 600 psi at those rates, and that's basically what we see at surface. So that's an indication that the fluids are, you know, taking rates at a high volume under almost essentially no meaningful pressure on the formation itself besides hydrostatic.

Q. So, Mr. Kronkosky, in this particular case, given that there is particular interest in geologic formations that intersect the wellbore in, let's say, the intervals where the intermediate casing was placed, what does this testing tell you in that regard?

A. Given that the well was seated in the base of the Tansill, which is a very, very tight anhydrite and that the formations above them are essentially evaporite

salts and the well is essentially underpressured, there is, at this point in time, no degree of likelihood of fluids being able to migrate to the formation at -- I believe 1,000 feet is what we're concerned with. There's not enough reservoir energy to even put fluids up that high. So at this time, there is no -- no problem with it.

Q. And is that conclusion something that you deduce from these tests or from some additional information about --

A. No. It's deduced entirely from these tests and, I guess, general engineering principles.

Q. I believe you were here a few moments ago when some questions were asked about the limitations of the intervals shown by -- by these tests. Do you recall that?

A. Maybe rephrase it a little bit better. Sorry.

Q. Well, so let me ask you -- maybe it would be better to have Mr. Dawson ask that question because he can do a better job of it than I can. So when we get there --

EXAMINER DAWSON: I suppose you're referring to the question I asked him about the logging intervals --

MR. MOELLENBERG: Yeah.

EXAMINER DAWSON: -- why it was not logged up above?

Well, I'll start again.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. The in-depth injection profile log, Exhibit A, the top of the log interval, was it 2,700?

A. Uh-huh.

Q. And the pumping tracer survey log -- the pumping tracer log, the top log interval, was at 2,600. Do you know why they didn't run those logs to -- up to at least the 8-5/8 casing shoe?

A. So the tool itself, when they did the pump and tracer survey, showed there was no migration of fluids going up behind the 7-inch casing, and, therefore, it was, you know, determined that that was not a concern for fluids migrating behind pipe, and so that's why we didn't -- or they didn't log.

Q. So you are more concerned with the squeezed intervals that are above the open-hole interval, right?

A. That's correct. That's correct. At the time we weren't concerned that the 8-5/8 section -- it's got pipe and cement uphole and plus the reservoir is at such a low pressure, we can't even circulate this well. We actually had to go in with a CO2 foam to clean the

wellbore out. So it won't even circulate fluids to surface -- or it's not capable of circulating fluids to surface.

Q. Okay.

CONTINUED DIRECT EXAMINATION

BY MR. MOELLENBERG:

Q. Are you familiar with the injection rates used during these tests?

A. I am.

Q. What can you tell us about why particular injection rates were used?

A. At the time Mr. Burns, I don't think, had been employed with OWL at the time, and so in my capacity, OWL had employed another consulting engineering firm to manage the well side operations. So they had a field consultant out in the field that observed all this. I observed the daily reports, and so I did monitor both of these tests daily. I was not out there in the field.

The reason why 6,200 barrels a day or 5 barrels a minute was utilized is we could get a pump truck that could pump at those rates, and there was concern initially, when I specced out some of this initially, that we would not be able to observe the radioactive tracer at anything above 5 barrels a minute, the velocities inside; the casing would be too quick to

actually even monitor. So that's why -- 2,500 barrels a day, it's like 35 feet a second. So it would be pretty difficult on wireline to follow that tracer up and down, so we tried to do something more manageable. And even then 5 barrels a minute is pretty quick.

Q. In your view, the fact that that particular rate was used, does it limit the significance or importance of these tests?

A. No.

Q. And is that the case even at higher rates or considering that higher rates of injection might be used in this well?

A. You know, again, higher rates -- given the permeability and the low pressure, those zones are fully capable of taking fluids at those rates, and it still wouldn't circulate fluid to surface. So it's an extremely depleted reservoir with high permeability, so we're not concerned with fluids migrating uphole.

Q. So we've talked a little bit about Exhibit C, your report. Did you reflect your interpretation of these test results in that report?

A. I believe I did to the best of my ability at that time. Hopefully it came across. If it didn't, I guess I need to write a little bit better.

Q. Is there anything, you know, based on the

particular significance to this case that you would say about the test results that you haven't told us in your testimony today or in your report of January 12th?

A. No, sir.

Q. Attached to Exhibit C and to your report, there is some information on pressure transient analysis and certainty modeling. Is that something that's particularly important for this case or --

A. That's how we came up with the estimated bottom-hole reservoir pressure. It's the dynamic reservoir pressure. It's not the static reservoir pressure.

So at this time, I believe we estimated that the reservoir was roughly 1,000 psi, which puts it at .115 psi per foot under pressure. So we assume that normal pressure is something around .433. This would say it's something around .32, is the reservoir pressure. So the fluid level that this well, were it to be shut in for a significant period of time and stabilized, it would probably be something less than 900 psi, because this is the dynamic reservoir pressure while injecting. It's just a calculation to substantiate why this well takes so much fluid at such, you know, high volumes under vacuum. And everything supports that.

Q. Is there anything else about the testing that we've talked about or your January 12th report that you'd like to tell the Hearing Examiners?

A. I think that's all.

MR. MOELLENBERG: I move for admission of OWL Exhibits A, B, C, D and E.

EXAMINER JONES: Objection?

MR. BROOKS: No objection.

MS. MOSS: (Indicating.)

EXAMINER JONES: A, B, C, D and E are admitted.

(OWL SWD Operating, LLC Exhibit Letters A through E are offered and admitted into evidence.)

MR. MOELLENBERG: Pass the witness.

EXAMINER JONES: Mr. Brooks?

MR. BROOKS: I just have a couple of questions. Thank you.

CROSS-EXAMINATION

BY MR. BROOKS:

Q. Mr. Kronkosky, I didn't really gather what these test results would show specifically about the fluid situation around the base of the 8-5/8-inch casing. And I understood your testimony to be that you didn't think there was any likelihood of leakage in that

area of concern, but how is that derived from these test results?

A. There is no leakage from the 7-inch to the 8-5/8. We cannot -- I could not tell you from these tests if there was somehow leakage in the 8-5/8-inch casing -- or behind the 8-5/8-inch casing, not from these tests, no.

Q. There was testimony in the prior hearing that the Yates-Seven Rivers in this area is a highly prospective zone for injection. If additional injection wells were permitted in this area and there was substantial additional injection, would this have a -- would this entail the possibility of changing the downhole pressure situation so that might adversely affect this well?

A. I guess by that -- I mean, what do you -- what do you qualify as near -- are we talking a half mile? 1,000 feet?

Q. Well, since we don't know where they'll be, I can't be any more specific, but perhaps you can qualify your answer as to what you consider appropriate.

A. You know, like I said at the previous trial, I believe this to be an undersaturated res- -- I mean a saturated reservoir. So it's got a gas cap that is extremely depleted, a reservoir that is extremely

depleted oil-wise, and there is, I believe, something on the order of like 90 million barrels of pore space volume. So as, you know, that volume gets approached, the reservoir pressure will begin to pressure up, and at that time, there will be noticeable effects of the injection rates of these new supposed wellbores, new injection wells and even that existing well, if it's still injecting at that time. So the operator will know when this reservoir is pressuring up.

Q. If the reservoir were to pressure up, though, would that cause problems if there is a leak somewhere in the system?

A. Given that the NMOCD requires five-year MIT tests and pump and tracer surveys like this, I believe that there is a good monitoring program or a monitoring program could be established by my client to monitor fluids potentially going up the back side of that 7-inch casing string. And that would be observed in the testing, so we would know if fluids were migrating --

Q. Okay. Thank you. No further questions.

EXAMINER JONES: Ms. Moss?

CROSS-EXAMINATION

BY MS. MOSS:

Q. With regard to the continued saltwater disposal in the Maralo Sholes well, will the various waters

increase the total dissolved solids in the Yates-Seven Rivers zone beyond 600 feet of the wellbore?

MR. MOELLENBERG: Objection, relevance.

MS. MOSS: Well, given that everything from the previous hearing is being admitted and that our concerns are the same in terms of protectable waters, then --

MR. MOELLENBERG: And I would also add beyond the scope of his direct here.

EXAMINER WADE: Yeah. I have to agree with Mr. Moellenberg on this particular question.

EXAMINER JONES: Okay.

Q. (BY MS. MOSS) Do you know what the static water level for the Maralo Sholes well is at this time more recently?

A. It's going to be something less than 995 psi. And I would have to back that out, but I would probably say that that's something around -- let's just say 1,800 feet to 2,000 feet above the injected interval. So if I had do it off the top of my head, 1,200 feet from the surface, maybe.

Q. Thank you.

MS. MOSS: No more questions.

EXAMINER JONES: Redirect?

MR. MOELLENBERG: No redirect.

Mr. Trujillo was just telling me that Mr. Burns might have a correction to his testimony that he realized. So at some point, we should bring him back up for that, but no redirect.

EXAMINER JONES: Okay.

EXAMINER WADE: I don't have any questions.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. Mr. Kronkosky, do you know how long this well has been on a vacuum?

A. Since the day it was put on, since day one.

Q. So it was depleted in the '40s?

A. Oh, I think --

Q. Not in the '40s, not when it was drilled, but I mean when it was starting to be utilized as an SWD, which was in the '60s sometime?

A. It had certainly been utilized as an SWD in this particular well in 2008.

Q. Oh, 2008.

A. There were some wells that were in this same section and the section to the north that were made saltwater disposal wells. I think there are two or three wells that were put on in the late '60s. And yes, those were on vacuum as well, very high rates. Those wells also took -- what was it? -- 20-, 30,000 barrels a

day. The record shows in the '90s that there were some wells that were taking 30,000 barrels a day. There are also pressure tests that we've observed in the available production history that have bottom-hole pressures -- and then I believe it's even in the mid-'50s -- of 1 to 200 psi. So once they started blowing down the gas cap out here in the '50s, the reservoir pressures just went to almost nothing. Very high perm reservoirs, too.

Q. So in your review of the other wells in the area that were used for saltwater disposal purposes, do you know -- are any of those wells pressuring up yet?

A. I believe that as you go further to the east, the Yates and Seven Rivers obviously get a lot tighter; they get more anhydrite prone. So those rocks are less permeable, and they -- they do pressure up. In some of the waterfloods, some of the reservoirs have pressured up a little bit. But in this particular area, I don't think we've seen any indication of the reservoirs pressuring up. I believe everything is still on vacuum.

Q. So to the east, you're talking about, where those reservoirs may start pinching out, over in that direction?

A. Yes, sir. Yes, sir. To the north and east, I think there are a couple of waterfloods that the injection wells don't take rates at high volumes because

the reservoir has pressured up. But those are into the tighter parts of the reservoir.

Q. And they wouldn't have an effect on this well, in your opinion?

A. No, sir.

Q. All right. That's all the questions I have.

EXAMINER JONES: Congratulations on your doctorate.

THE WITNESS: Thank you. Well, I haven't finished the doctorate, so officially the title is instructor, and I'm quickly getting nudged to finish the doctorate. So hopefully that's another three or four months away.

EXAMINER JONES: Well, that's pretty close to a doctorate. Mississippi State, that's -- Dr. Smith from Texas Tech used to be there.

THE WITNESS: Oh, okay.

EXAMINER JONES: He was a pressure, transient teacher.

THE WITNESS: Yeah. Dr. Lee used to be there, and Bill McCain with the petroleum fluids --

EXAMINER JONES: McCain was there?

THE WITNESS: Mr. McCain has a building named after him.

EXAMINER JONES: Well, that is very

impressive.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. I don't really have a lot of questions. I wish I could ask you more, but I'll be going through the record on the other case to see if I see some of those. But as far as the tracer surveys, it is difficult, even 5 barrels a minute, to trace -- to watch those whips [sic] go by your tool and everything. But you could -- the temperature survey could be done --

A. Yes, sir.

Q. -- at the higher rates?

A. Yes, sir. And the temperature survey was run, and, again, we didn't see any indication of things cooling off uphole behind the pipe, which would have led us to believe that we were injecting fluids into those reservoirs.

Q. Have you done any -- or been exposed to any research over the years as to how long casing lasts and how long cement lasts, especially in this 70-year-old -- even us 70-year-old guys don't last very long.

A. That is actually something that I'd love to propose some research at Mississippi State. There are a lot of CO2 floods going on over there, and they've actually run into some problems with the old wells in

the CO2 floods. So we're actually interested in doing some research on these old wells and old cementing techniques and stuff like that. But I have not followed it fully yet.

Q. That cement, do you think it was sulfate-resistant cement?

A. Probably not, back in those days. I don't know. Maybe so. Maybe into the late '40s, they may have been thinking about stuff like that, but I couldn't tell you. I just don't know enough about -- especially I don't think there was any indication of the types of cements that they utilized.

Q. Okay. This well was first -- oil was the first target, and then they moved up to the gas later on?

A. Yes, sir. Yes, sir.

Q. What was the philosophy there?

A. They thought that there was some gas behind pipe in the Yates uphole, but that gas was long since depleted in some offset injection wells. There are a couple of Yates producers that produce 6, 10 bcf not too far from here. So it was depleted. And there is like, I believe, two producing Yates wells further to the north that they drilled fairly recently, and they were terrible wells. So the Yates has long since been depleted out here.

Q. Okay. So that gas, was that casing at gas or -- was that oil well gas, or was that --

A. I think it was some residual gas from the gas cap even though it was capped.

Q. Oh, it was an original, you said, gas cap out here.

A. Yes, sir. There was a --

Q. And a secondary gas cap augmented that?

A. Yeah. As the gas cap -- as its oil and gas was produced, the gas evolved and helped fill that gas cap up. And that's why we have some recoveries in some of these wells that are very high. Some of these wells produced a half million, 700,000 barrels. And so we had that gas cap that was providing energy for a long time, and that explains why these wells flowed for years and years and years. We had that gas cap giving us a lot of pressure.

Q. Were you surprised about the caliper on this well as far as lack of scale in the open hole?

A. No, not tremendously. I think the rates that are hitting this formation are pushing that stuff pretty far back into the formation. I don't think we'll see any scale. I think you had mentioned that there were some washouts, and I think that might be expected due to some erosional effects taking place downhole in those

sands. I think that's where we observed some of that fill. In the original log, I think there is 50 feet of fill. So that may have been some of that original.

Q. So your pressure transient analysis, you assumed a radius of the well, kind of an average of this radius. Would you -- would it change your results if you had the actual caliper from this well when you did your --

A. I don't think it would change it substantially. I think there are a couple of zones that have a little bit. And I don't believe it was too, too far, maybe 15 inches or so. So I believe it was just a small interval that had a good washout. But we didn't do pressure transients. Assuming the individual beds, we bumped everything up as one.

Q. Did you see any -- so was it a negative skin?

A. No. We monitor it as just -- just a skin of zero.

Q. Okay.

A. So that's how we came up with these rates. We didn't assume that anything was fractured or anything like that. So we actually don't have an injection falloff test. That was not performed. It was -- I believe we were thinking about doing it, but we ran into some operational issues in trying to get the well

cleaned out and all that. So we actually didn't perform a falloff test or anything like that.

Q. Okay. So this was --

A. Strictly --

Q. I should have remembered that from the previous hearing.

A. It's strictly -- yeah. It was strictly about taking the bottom-hole pressure information and then doing some statistical modeling. We actually didn't do a, quote, unquote, "PTA analysis." We didn't have that information.

Q. Okay. Thank you very much.

A. Yes, sir.

EXAMINER JONES: Okay. I guess we're done.

MS. MOSS: Hold on. Done with what? I'm going -- I'm going to bring Mr. Holm.

EXAMINER JONES: Are you going to bring --

MS. MOSS: Yeah, as a witness.

EXAMINER WADE: We're done with this witness, is what he meant to say.

EXAMINER JONES: I meant this witness.

(Laughter.)

MS. MOSS: You looked like you were ready to take off with your arms.

EXAMINER JONES: Somewhere, somehow it's

5:00 (laughter).

MR. BROOKS: I'm going to call Mr. Goetze for one question, Mr. Wade.

EXAMINER WADE: Do you want to take five minutes?

(Recess, 2:35 p.m. to 2:42 p.m.)

EXAMINER JONES: I guess we can go back on the record.

Are you going to recall Mr. Burns?

MR. MOELLENBERG: Mr. Examiner, we've decided we don't need to recall Mr. Burns.

EXAMINER JONES: Okay. Then the State Land Office, I think, wants to --

MS. MOSS: Sorry.

EXAMINER JONES: Does the State Land Office want to call a witness?

MS. MOSS: We're going to call Anchor Holm as the rebuttal.

EXAMINER JONES: Will the witness please stand, and will the court reporter swear the witness?

ANCHOR E. HOLM,

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

DIRECT EXAMINATION

BY MS. MOSS:

Q. Will you state your name for the record?

A. Anchor E. Holm.

Q. Mr. Holm, have you previously testified before the OCD?

A. Yes, I have.

Q. Were you qualified as an expert at that time?

A. Yes.

Q. And do you recall in what areas you were qualified as an expert?

A. In petroleum engineering and in geology groundwater engineering.

MS. MOSS: So I'd ask at this time any rebuttal testimony he gives is accepted under those areas of expertise.

EXAMINER JONES: Any objection to Mr. Holm's qualifications?

MR. MOELLENBERG: No objection in general. I don't recall particularly what the extent of the petroleum engineering qualification was.

MS. MOSS: Okay. Julie, can you get his resume and give it to him?

Excuse me one second. I didn't anticipate that. That's a perfectly good question. I just --

MR. MOELLENBERG: Sure.

EXAMINER WADE: Well, I think even without the resume, you could ask him questions about his experience.

MR. MOELLENBERG: Yeah. I was going to say --

MS. MOSS: That's all right. I'd like to have it re-admitted at this time if there's going to be an objection. But I could ask him questions while she's looking for it.

Q. (BY MS. MOSS) Mr. Holm, could you discuss your background in petroleum engineering?

A. After I graduated from the University of Arizona --

Q. Which was? Go ahead.

A. -- which was in 1967, I was hired by Texaco as a petroleum engineer to go to work at the Aneth Oilfield in southeast Utah. And I spent the next 18 years either doing production engineering, drilling engineering or reservoir engineering for various companies before I moved to Midland, Texas and then started working on the evaluation engineering for banking and helping other clients. So I have -- altogether, throughout my career, I've used my petroleum engineering to understand how fluids flow. I learned, initially, how groundwater

flowed by the -- by my studies at the University of Arizona under Dr. Harshbarger. So I've always been working along that line.

In addition to my geological background, I studied the geology and realized that the reservoir engineering models, in order to be accurate, have to have a good geologic base. So if you don't have a good understanding of the geology, you can really have some pretty foul tests that will come up and be misinterpreted. So I've worked off that. So my first 18 years was purely petroleum engineering. After that, it was more of a combination that I did as I moved more and more into -- including environmental engineering, where I helped clean up the problems that I knew about.

EXAMINER JONES: You worked as a drilling engineer?

THE WITNESS: Yes.

MS. MOSS: Okay. So I just would like to have this admitted, his resume.

Q. (BY MS. MOSS) Is this your resume? Is this a copy of your resume?

A. Yes, it is.

MS. MOSS: It's marked as Exhibit 1, so I'd like to have --

EXAMINER JONES: Did you mark it as a State

Land Office exhibit?

MS. MOSS: I thought about it, but --

EXAMINER WADE: Maybe do that.

Is there any objection?

MR. MOELLENBERG: No objection.

MR. BROOKS: No objection.

(State Land Office Exhibit Number 1 is offered into evidence.)

EXAMINER WADE: And no other objections to his qualifications?

Mr. Brooks, any objection to his qualifications?

MR. BROOKS: No objection to his qualifications.

MR. MOELLENBERG: No objection.

Q. (BY MS. MOSS) Mr. Holm, have you been at the hearing today?

A. Yes.

Q. And have you been at the entire hearing?

A. Yes.

Q. Did you hear Mr. Kronkosky's testimony about the vacuum effect that's occurring in the well in this case, which is 15753?

A. In the Maralo Sholes, where he talked about the vacuum --

Q. Yes.

A. -- that the disposed water, when it enters the wellbore, it enters on a vacuum, which means if you were to measure that, you'd get a negative pressure at the surface.

Q. Uh-huh. Yes.

A. That's usually -- that could be measured -- from that, you could estimate what the dynamic fluid level would be in the wellbore, but that's a combination of static bottom-hole pressure, fluid flowing through the perforations or open hole, plus the friction. So a whole series of things could be involved in the negative or water -- a wellbore taking it on a vacuum.

Q. And did you hear -- and what is the role of migration?

A. Migration is where do those molecules go once they leave the wellbore and where could they migrate into the various formations, up -- up, out and below.

Q. And did you hear him talk about the fluid migration and the direction of the fluid migration in this case?

A. He talked about it going out in the Yates-Seven Rivers --

Q. Right.

A. -- the injection interval. He said it was

migrating outward.

Q. And what is your opinion of the impact of migration in this case?

MR. MOELLENBERG: I object as improper rebuttal. I don't think -- I would agree he mentioned briefly perhaps the migration, but to talk about impacts of the migration, I don't think he discussed that at all in his testimony today.

MS. MOSS: What he said was that he was 100 percent certain that it was exiting into the open-hole section, that he knew there was -- that's actually the one quote that I have here. And I have a concern, which I'll place on the record. Once I was not allowed to ask that question with him, I have to ask -- one moment, please -- whether our understandings are the same, to put in the nicest possible way, and whether we have, in fact, preserved State Land Office's objection to this well being put in place not only in the sealing of strata issue but also in the migration and impact on protectable waters. And if I could not ask that question, then I am, in fact, going to introduce the evidence this way, which I certainly think I can because he did bring it up. He himself testified about migration.

MR. MOELLENBERG: If I can respond to that?

EXAMINER WADE: Yes.

MR. MOELLENBERG: I understand your position on the admissibility and the consideration of the record from the other case and the position you indicated in your pre-hearing statement that -- that the State Land Office objects to this well on the basis of fluids migrating after they exit the wellbore. Our position is that really isn't related to the compliance action that the OCD has brought or the -- or the regulatory provisions that OCD has cited in its compliance action.

MS. MOSS: You can make this argument, Mr. Moellenberg, but it was not our --

MR. MOELLENBERG: Well, no. I -- I disagree. I don't disagree that we said you can't preserve that issue. However, in my view, by allowing you to have the record you made in the preceding case and the evidence that you presented on that point considered, I think that's fine, and that's as far as it goes.

As to what we're talking about on rebuttal testimony, that has to do with the testimony that's been presented today, and I don't think it's appropriate for you to have an opportunity, if this is what you're attempting to do, to try to rebut testimony that was

presented in Case 17523 [sic]. The opportunity for that was in that case.

MR. BROOKS: 15723.

MR. MOELLENBERG: 15723.

MS. MOSS: I'm not trying to rebut anything that was in 15723, and I would not be pushing this rebuttal, which I think I have a legal -- entitled to legally because of what your witness said, if I had been allowed to ask that one question. The failure to let me ask that one question of that witness indicates that you are, in fact -- although you say you understand my position, that has no legal significance. The legal significance only comes from the admitted evidence of the witnesses, and that evidence was ruled inadmissible by this board, which you may do. I understand that. But having once made that, I will do everything I can to make sure that my client's position is preserved.

EXAMINER JONES: Mr. Brooks, you're the Applicant in this case.

MR. BROOKS: We are the Applicant in this case, and we do not exactly see how this influences our case, but we have no objection to the State Land Office proceeding as they are proposing to do.

EXAMINER JONES: Well, if it's a legal thing, I'm --

EXAMINER WADE: Well, I agree with Mr. Moellenberg. It's not relevant to this case. You won't be answering this question. Okay?

THE WITNESS: Yes, sir.

EXAMINER JONES: You do have a drilling engineer sitting on the witness stand, and the application today is how valid the well is -- the 70-year-old well, and if you want to ask him questions related to the -- to the case directly about his opinion on the well, that sounds good.

Q. (BY MS. MOSS) Okay. Mr. Holm, would you give your opinion as to the integrity of this well based on the testimony you've heard today and your reading of the pieces of evidence?

A. On what I've heard today and the evidence I've seen is they did run a mechanical integrity test, so the 7-inch casing integrity -- well has integrity above the packer, which includes that squeezed set of perforations, which is down in the Upper Yates. That does demonstrate that that casing is still holding even after these many years, which is really pretty impressive, especially since we really don't know what quality steel they were really working with at that time. A lot of the standards, I don't think, were really firmed up entirely until the '50 and '60s.

As far as the string outside, which is the 8-5/8-inch casing, that annulus is probably open, based just upon the calculation of the amount of cement that was put -- put into the wellbore. But we don't know where it is, and there has not been a cement bond log. So as long as that interval is open to the formation fluids, we don't know the external condition of the 7-inch casing, so it may be becoming compromised. It may not be. But there are ways of doing it. Measuring those steel thicknesses on the casings, that might be appropriate. But that's as far as I can go on it. We just need to make sure we're protecting all the way up to the surface pipe.

Q. In terms of the state trust land, what are the problems that could arise because of the openings that you've referred to?

MR. MOELLENBERG: Objection, improper rebuttal.

EXAMINER WADE: I actually didn't hear -- can you rephrase the question? I didn't really hear the question.

Q. (BY MS. MOSS) The question was: With respect to --

MS. MOSS: Would you read back the question, please?

Thank you.

(The last full question was read by the court reporter as requested.)

MS. MOSS: Wait one second. There is a ruling.

EXAMINER WADE: Are you -- so are you asking what problems might occur because there is the possibility of migration of fluid? Is that really what you're asking?

MS. MOSS: I think that's what I'm asking. You said I could ask about well integrity and the problems with this well.

EXAMINER WADE: I think that's an appropriate question.

MR. MOELLENBERG: If we're talking about, I suppose, the theory about the Santa Rosa and the Rustler --

EXAMINER WADE: Being possibly affected by migration of fluids, yes.

MR. MOELLENBERG: Okay.

Q. (BY MS. MOSS) Was that clear?

A. Would you read that back one more time?

(The question on page 120, lines 14 through 16 was read by the court reporter as requested.)

THE WITNESS: The number one problem is that that interval has the Santa Rosa. It has other zones that have shown the water, which include the Rustler. And if you were to inject or have any water escape from this wellbore, it could go uphole and directly affect those. At this point in time, the testing that's been done has been really to examining the fluid flow within the wellbore from the top of the old perforations down to the base of the open hole. We don't really know what is happening up above in the interval -- in the uncemented interval.

And the key is that the State Land Trust owns lands 660 feet from the wellbore, and so it's a very close proximity. And as a result, even the injection within the disposal zone more than likely will spread out underneath state land, but that's just part of the migration within the Yates-Seven Rivers. And that's how it was modeled by CEK Engineering.

Q. (BY MS. MOSS) Mr. Holm, do you recall also that it's not just within the 660 feet --

EXAMINER WADE: If we're going to start talking about migration within the --

MS. MOSS: I'm not going to talk about migration, but he did not mention that we own the surface.

EXAMINER WADE: Go ahead.

Q. (BY MS. MOSS) Okay. Do you also recall that the State Land Office owns the surface directly where this well is located?

A. Where the Maralo Sholes B is located?

Q. Yeah.

A. I don't know that for sure.

Q. Okay. Okay.

EXAMINER JONES: Mr. Brooks?

MR. BROOKS: Well, there was something said about -- Mr. Goetze said something about his lawyer wearing out, and that's about to happen.

(Laughter.)

EXAMINER JONES: No jet lag allowed in here.

MR. BROOKS: Yes.

CROSS-EXAMINATION

BY MR. BROOKS:

Q. As I understand your testimony -- the crux of your testimony is we really do not know what is happening from the tests that have been done. It is your opinion we do not know what is happening in the portion of the wellbore that has been the primary focus of discussion today, that is from the top of cement in the -- in the 7-inch casing, wherever that is -- behind

the 7-inch casing, wherever that is, up to the base of the surface casing?

A. Yes. The only thing we know about that breach of the 7-inch casing is it still will hold the 500-pound pressure that was applied to it, but we don't know the corrosion or anything that's going on on the outside that may be thinning that down that, in the near future, could fail. But right now, it has not.

Q. Okay. Thank you.

EXAMINER JONES: Mr. Moellenberg?

MR. MOELLENBERG: No questions.

EXAMINER WADE: I have no questions.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. Mr. Holm, do you feel a mechanical integrity test on the frequency that OCD requires in their rules would identify a casing leak in that open hole -- or the that noncemented interval?

A. It should. It should be protective if it's done routinely.

Q. Okay.

A. And I don't know what the current timetable you-all are using on this well, but I know you have it -- usually there is a Bradenhead test that's done annually, and every five years, an MIT, a mechanical

integrity test, but because we don't have piping to the annulus, to the wellhead and to the surface, it doesn't sound like they're monitoring those annuluses from the surface at this time. So Bradenhead would be meaningless.

Q. Okay. That's all the questions I have. Thank you.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Mr. Holm, when you drilled in the Aneth Field in the San Juan Basin, did you ever set protective pipe like this 8-5/8 to protect your well as you were drilling on deeper?

A. We -- well, in the '60s and '70s, when I was doing -- especially in the '70s, as a drilling engineer, we always cemented our surface pipe and then drilled on down and cemented the long string. At that time, in the San Juan Basin in particular, it was customary you just cemented a short distance up the hole, and you didn't worry about connecting back to the surface. The geologic situation there and groundwater conditions are radically different than in the Permian Basin, which has a lot of salts. The San Juan Basin doesn't have the same issues.

Q. Are you familiar with the type of cement

used? You weren't drilling in the '40s, though?

A. No, I wasn't. I've drilled a lot of holes and cases that I've had to testify on. And the quality of the cement was something that was a local issue. In other words, the cement up in Dakota was probably different than the one in the Permian Basin because it was locally derived. So the mixing of some of the properties sometimes were different, and it could be inconsistent in how you mixed it at the surface. And Class C cement, which is neat cement in most cases, doesn't have any additives to it. I recall a yield that was less than 1.3. Seemed to me like 1.18 per cubic foot per sack was more what I recall of the -- of the neat cement. But it doesn't take very much additives to get it up into the 1.3 range.

Q. I thought Class H had a lower yield than Class C for neat.

But the pipe in those days and the threads, was it 8 round threads back in those days?

A. That was fairly common, I think.

Q. And they're obviously holding pretty good?

A. And they were J55 or K55, so they were -- they held up well. And I've seen in the Permian Basin, as well as other basins, that particular grade of pipe is frequently used for shallower wells where you don't have

a lot of other issues going on.

Q. And in this well, you've heard testimony about the reservoir pressure being extremely low. And so you've got relatively new tubing and probably a pretty good packer in there, so -- and the wellhead, hopefully that's good, too. So the MIT, if it fails, it's going to fail at the casing. Would that be what you --

A. I would expect the casing to fail before the packer, but it could go either way.

Q. Yeah.

But there is no stress on it, is there, because there is no pressure above -- literally above the salt? There is no -- except --

A. Well, the hole is standing probably full above -- from the -- in the annulus, between the 8-5/8 and the surface pipe, it's probably standing with some level of water in it, and that water level, if it was open to the atmosphere, would be allowing pressure to move up and down. So when you start mixing oxygen getting pulled in when it goes down, come back up and corrodes on the outside. And I have seen that in the Permian Basin in New Mexico.

Q. The issue of if you did have a failure uphole in the future and they started working on the well and then started having problems and then the whole thing

turned out to be Swiss cheese, can you envision an instance where we couldn't get this well plugged properly? Are you worried about that at all?

A. If there is going to be continued offset injection in the saltwater disposal in the current zone, that might become a major issue because we know that over time, this zone will repressure. The question is when. And it may be local effects first before it's widespread. But we really don't have the experience yet to know when that'll really happen, but it could be a major problem. And getting the cement to squeeze off, you probably could squeeze it enough to plug it. You have to squeeze it in the outside of the 7-inch, and then you'd have to, of course, put plugs inside the 7-inch, as you normally do. I think you-all are very good at making sure things are plugged properly nowadays.

Q. If you had trouble uphole, how would you set a plug right above your injection zone? How would you get down in the hole to do that?

A. Well, you already have your tubing in the hole, so you could probably trip out by disconnecting from the packer if you couldn't unplug -- get it released. And you could run back in and set one above the top Yates perforation that was ever in the wellbore, somewhere

above there.

Q. So if the casing collapsed --

A. If the casing collapses, the game's over. Yeah.

Q. Okay. So if the casing collapsed at 1,000 feet, you couldn't get the tubing below that?

A. And there is -- there is salt in that interval. It may be open. So that could always happen.

Q. Right now it's okay, though?

A. Right now it's -- the test says it's okay.

Q. Okay. What about these -- this water zone in the Rustler and the water zone in the Santa Rosa and the possible surface alluvium waters? Are you concerned about any -- any cross-flow or any problems there, or would you be concerned about it if they started having trouble with the well?

A. If they started having trouble with the well, I think that the mudded-in portion of the wellbore may become compromised, and that would allow some fluids to move in and out, especially if gas was involved.

Q. Okay. But the well's been there for 70 years, and those zones have been there for 70 years. So is that -- is the Red Bed swelled in on that 8-5/8 casing where you know --

A. It has to be exposed to quite a bit of fresh

water to do that. I know the Rustler sometimes can have rather low-quality water, high TDS, but I don't know what it is in this exact area. I don't recall what the water quality is in the Rustler.

EXAMINER JONES: Any other questions?

EXAMINER DAWSON: Yeah. I've got a couple more questions. Sorry, Mr. Holm.

RECROSS EXAMINATION

BY EXAMINER DAWSON:

Q. I want to go back on the MIT testing. If this well was approved for saltwater disposal, would the SLO -- would they be in favor of more frequent MIT testing on this well?

A. I think it would prudent to do that. Yes.

Q. In your mind, how often would you think would be a prudent operation of MIT testing regarding this well?

A. Well, if it's been disposed of since 2008, I believe, so we're looking at less than ten years right now. And how many mechanical integrity tests have we had? I only know of one so far. I don't know if there's been more. And so I definitely think something less than five might be appropriate. Exactly what the number would be, I think that's something you would have to work out with the operator, but we definitely want it

monitored at least every five years.

Q. In Mr. Burns' testimony regarding the mud-laden fluid in the open annulus, do you agree with his testimony, that it's almost as good as cement?

A. It's got a hydrostatic head that's higher than fresh water significantly. It is not cement. And water and gas can flow vertically through it. But it's high. It's viscous. So initially it's going to hold for a little while, but over time, it will start -- by differential of gravity, it'll start separating things out. So it's not considered reliable in the long term, and we're getting pretty darn close to the long term.

Q. That's all the questions I have. Thank you.

EXAMINER JONES: Okay. Thank you very much.

THE WITNESS: Thank you.

MR. BROOKS: I want to call Mr. Goetze for rebuttal.

EXAMINER JONES: As a rebuttal witness?

MR. BROOKS: As a rebuttal witness. He's already had his chance to be everything else, but he hasn't had a chance to be a rebuttal witness.

(Laughter.)

EXAMINER WADE: Mr. Brooks, before you begin, I don't think we formally accepted into the

record the resume as an exhibit.

MR. BROOKS: No objection.

MR. MOELLENBERG: No objection.

MS. MOSS: I had made the motion.

EXAMINER WADE: State Land Office Exhibit 1.

EXAMINER JONES: Exhibit 1 is admitted.

MS. MOSS: Thank you very much.

(State Land Office Exhibit Number 1 is admitted into evidence.)

PHILLIP R. GOETZE,

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

DIRECT EXAMINATION

BY MR. BROOKS:

Q. Okay. Mr. Goetze, there's been a lot of talk about MIT testing and the fact that this well has passed some MITs, correct?

A. Yes, sir.

Q. So I want to clarify what the MITs do show and what they may not show.

A. So the five-year standard, what's known as internal mechanical integrity test, is a test of the immediate casing around the tubing. So if the pressure test is done, you are going to get a representation and

an assessment of the production casing or the immediate casing in the annular space that shares with the tubing. This will not provide any type of information with regards to either surface casing or the 8-5/8 intermediate. So you are looking at something that limits you to that specific casing string.

Q. Okay. There was also some testimony about Bradenhead tests.

A. Yes. As part of the tests conducted by OWL, the district did ask that new valves be installed for all the casing intervals which have annular space. Prior -- in January of 2016, prior to the testing, there was only one valve that was inspected on this, and that was for the 10-3/4 surface casing.

With the initial request, the cellar was dug out for the testing -- the first string of testing that was done, which -- in June. With that, the 10-3/4 and a second Bradenhead valve was put in by OWL prior to the first injection surveys. At that time there was no reported pressures on either valve. We have a picture of the installation on June the 1st. We will enter that as OCD Exhibit Number 13.

Q. Okay. With the permission of the Examiners, I suggest that you distribute copies of that.

EXAMINER JONES: Yes, please.

Q. (BY MR. BROOKS) Mr. Goetze, you did not take this picture, did you?

A. This was taken by Mark Whitaker in the field when the initial surveys were being done in June.

Q. Is it now an OCD record?

A. It is.

Q. Okay. Do you have anything further to say about --

A. Yes. I do have something further to say.

Q. Go ahead.

A. The final inspection, after the December test, as reported to be by Mr. Whitaker and Mr. Brown, indicated that the installation of the Bradenhead valve for the annular space of the 8-5/8, with the 10-3/4, was not properly installed. So the observations made during the injection surveys turn out to be a moot point, as the sampling portal was not properly installed. It has since been modified and corrected and is currently available for inspection.

Q. Anything further?

A. Not at this point. Thank you.

Q. Okay.

MR. BROOKS: Based on the testimony that the witness has knowledge of when and where this photograph was taken and that it is an OCD record, the

Division will offer OCD Exhibit 13.

MR. KRONKOSKY: There is a cellar around it now, so it doesn't look like that.

(Laughter.)

EXAMINER WADE: Any objection?

MR. MOELLENBERG: Only as to it shows the condition at that point in time. Other than that, no objection.

MS. MOSS: No objection.

EXAMINER JONES: Exhibit 13 is admitted.

(NMOCD Compliance and Enforcement Bureau Exhibit Number 13 is offered and admitted into evidence.)

MR. BROOKS: Pass the witness.

EXAMINER JONES: Ms. Moss?

MS. MOSS: I do not have any questions. Thank you very much.

EXAMINER JONES: Mr. Moellenberg?

CROSS-EXAMINATION

BY MR. MOELLENBERG:

Q. So, Mr. Goetze, talking about the mechanical integrity testing, the last MIT that was conducted, as far as you know, would have been when the tubing and packer were replaced on December 9 of 2016?

A. That's correct.

Q. And the Department witnessed that mechanical integrity test?

A. Yes, they did.

Q. And as to your -- as to OCD Exhibit Number 13, is it your understanding that some improvements have been made to this area since that photo was taken?

A. As far as filling in the well or to the plumbing or to what end?

Q. Or to putting in a basement structure or sump there. Are you aware of that?

A. I'm not aware of that.

Q. Not aware. Okay.

That's all I have.

EXAMINER JONES: You guys have any questions?

EXAMINER WADE: (Indicating.)

EXAMINER JONES: I don't have any questions.

EXAMINER DAWSON: I don't have any questions.

EXAMINER JONES: Thank you, Mr. Goetze.

THE WITNESS: Thank you.

EXAMINER JONES: Okay. Does that conclude --

Mr. Moellenberg, does that --

MR. MOELLENBERG: Yeah. That concludes OWL's presentation.

EXAMINER JONES: That concludes the State Land Office's?

MS. MOSS: Yes.

EXAMINER JONES: And the Applicant?

MR. BROOKS: Yes.

EXAMINER JONES: Any closing statements that the attorneys want to make?

MR. BROOKS: Well, I would just like to make one point.

EXAMINER JONES: Okay. Go ahead. I guess they'll agree to you going first.

(Laughter.)

MR. BROOKS: I should go first since I'm the Applicant.

EXAMINER JONES: Since you might go to sleep any minute.

(Laughter.)

MR. BROOKS: That's possible, too. But since no one's arguing, I won't like a spirited argument why I should go first.

CLOSING ARGUMENT

MR. BROOKS: My one observation would be that there is another reason that is in the evidence

other than, of course, the business about the importance of the Santa Ana Formation -- the Santa Rosa Formation -- I'm getting my saints mixed up -- the Santa Rosa Formation and the other formations that came out in the other proceeding. It also came out of the other proceeding, specifically in OCD Exhibit 5 in the hearing of Case 15723, that in the last year or year and a half, I believe it is, since OWL has become the operator of that well, there's been a very large increase in the amount of -- in the volumes of water that are being injected into the Maralo Sholes B No. 2. And I believe the testimony is consistent with the proposition that if the new well -- the proposed new well is not drilled and they continue to use the Maralo Sholes B No. 2, that increased injection will continue. And for that reason, we have to be -- I think it's appropriate for the Examiners to be somewhat more critical in their examination of the structural issues affecting that well than might otherwise be or might otherwise have been.

Thank you.

EXAMINER JONES: Ms. Moss?

CLOSING ARGUMENT

MS. MOSS: I simply want to say in closing what I said less formally before, that the State Land Office has the same concerns as the OCD does in making

this application and, in addition, the same concerns as we presented in the previous hearing in Case 15723 concerning migration and the disturbance to protectable water.

And I'd like to thank you very much.

EXAMINER JONES: Mr. Moellenberg?

CLOSING ARGUMENT

MR. MOELLENBERG: Thank you, Mr. Hearing Examiner.

Just briefly, I think we've examined this pretty carefully today, and I think the evidence shows that the Maralo Sholes B Well No. 2 is operating just fine. I don't think there is any evidence of communication with the Santa Rosa or the Rustler.

That said, as we had talked about previously, whereas the Division has asked you to first find the well in violation, which we do not agree with, that you issue an order that would require OWL to submit a remediation plan, that's certainly a possibility. But at any rate, again, given -- or understanding that the permit for the Bobcat well rests on your decision in the other case, certainly the preference is to put in the new well, in which case the issues we've talked about today with respect to the existing well should go away. And that's really the preferred course here and what we

think makes sense.

EXAMINER JONES: Thank you-all.

Case Number 15753 is taken under advisement, and the hearing is adjourned.

MR. MOELLENBERG: Thank you very much.

(Case 15753 concludes, 3:25 p.m.)

I hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. _____, heard by me on _____ _____.

_____, Examiner
Oil Conservation Division

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

CERTIFICATE OF COURT REPORTER

I, MARY C. HANKINS, Certified Court Reporter, 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, CCR, RPR
Certified Court Reporter
New Mexico CCR No. 20
Date of CCR Expiration: 12/31/2017
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