STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:	CASE NO. 12,023
APPLICATION OF HANAGAN PETROLEUM CORPORATION FOR AMENDMENT OF DIVISION ORDER NO. R-8611 TO AUTHORIZE A 40-ACRE FIVESPOT INJECTION PATTERN IN ITS TWIN LAKES SAN ANDRES UNIT WATERFLOOD PROJECT AREA AND TO QUALIFY THIS PROJECT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE ENHANCED OIL RECOVERY ACT, CHAVES COUNTY, NEW MEXICO	ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

August 6th, 1998

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, August 6, 1998, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

August 6th, 1998
Examiner Hearing
CASE NO. 12,023

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A P P E A R A N C E S

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By: WILLIAM F. CARR

ALSO PRESENT:

MARK W. ASHLEY
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* * *

WHEREUPON, the following proceedings were had at 8:55 a.m.:

EXAMINER STOGNER: At this time I'll call Case Number 12,023.

MR. CARROLL: Application of Hanagan Petroleum Corporation for amendment of Division Order Number R-8611 to authorize a 40-acre fivespot injection pattern in its Twin Lakes San Andres Unit waterflood project area and to qualify this project for the recovered oil tax rate pursuant to the Enhanced Oil Recovery Act, Chaves County, New Mexico.

EXAMINER STOGNER: Call for appearances.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan.

We represent Hanagan Petroleum Corporation in this matter, and I have one witness.

EXAMINER STOGNER: Any other appearances?

Will the witness please stand to be sworn?

(Thereupon, the witness was sworn.)

EXAMINER STOGNER: Mr. Carr?

MR. CARR: May it please the Examiner.

MICHAEL G. HANAGAN,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?

A. Michael G. Hanagan.

Q. Mr. Hanagan, by whom are you employed?

A. Hanagan Petroleum Corporation.

Q. And what is your position with Hanagan Petroleum Corporation?

A. I'm president and owner of the company.

Q. Have you previously testified before this Division and had your credentials accepted and made a matter of record?

A. Yes, I have.

Q. And were you qualified as a geologist at that time?

A. Yes, I was.

Q. Are you familiar with the Application filed on behalf of Hanagan Petroleum Corporation?

A. Yes, I am.

Q. Are you familiar with the proposed expansion of the Twin Lake San Andres Unit waterflood project?

A. Yes, sir.

Q. Have you made a technical study of this unit and this secondary recovery program?

A. Yes, I have.

Q. Are you prepared to share the results of that study with Examiner Stogner?

A. Yes, sir.

MR. CARR: May it please the Examiner, are Mr. Hanagan's qualifications acceptable?

EXAMINER STOGNER: They are.

Q. (By Mr. Carr) Would you briefly summarize what Hanagan Petroleum Corporation seeks with this Application?

A. We seek to amend Division Order R-8611, so as to authorize a 40-acre fivespot injection pattern within the Twin Lakes San Andres waterflood project. Order R-8611 approved the Twin Lakes San Andres Unit waterflood project and was dated March 11th, 1988.

Additionally, we'd seek to qualify this secondary recovery project for the recovered oil tax rate, to the New Mexico Enhanced Oil Recovery Act.

Q. When was the Twin Lakes San Andres Unit originally formed?

A. It was statutorily unitized in 1987 by Division Order R-8557, which was dated December 2nd, 1987.

Q. And when did waterflood operations commence in the unit area?

A. First injection of water was in April of 1988. There's been one expansion to the project since then by Division Order WFX-582, which was dated May 24th, 1989.

Q. At that time the operator of the unit was Pelto Oil Corporation?

A. Yes, sir, Pelto was originally the operator in the waterflood project, and we're the succes- -- Hanagan Petroleum is presently operator and successor to Pelto.

Q. Let's refer to what has been marked for identification as Hanagan Petroleum Corporation Exhibit Number 1. Would you identify that and review it for the Examiner?

A. Yeah, Exhibit 1 is a map showing the unit, outline of the unit and the surrounding area. The blue line would be the boundary of the unit, and the area in yellow, inside that blue line is the unit area itself.

All of the acreage surrounding the unit is all fee acres, fee mineral ownership, and none of it is present land or lease except for those areas shown up in the green and red. There's two offset operators to the north up there. Both of those are HBP by San Andres wells out of the same zone as production.

Currently within the unit we have 125 well, of which 59 are injection wells, 66 are producing wells. The injection wells are shown by diamonds with a little arrow

through them, with the current producers designated by the double circle.

Cumulative injection into the project since March, 1988, has been 25.5 million barrels, and we're currently injecting at around 5000 barrels a day.

Cumulative oil projection through June of this year has been just over 4.8 million barrels, with just under 800,000 of that coming since the secondary -- since inception of waterflooding.

Q. Let's go to Exhibit Number 2 and review for the Examiner the current injection pattern in this unit.

A. Exhibit 2 shows our current injection pattern at Twin Lakes Unit, designated by the lines connecting -- squaring up each unit. Presently we're on an 80-acre fivespot injection pattern that's oriented with the injection oriented northeast to southwest.

Our studies indicate that this existing pattern is not efficiently sweeping the patterns, since it's incorrectly oriented and doesn't have sufficient well-spacing density.

Q. All right, let's now go to Exhibit Number 3, and I'd ask you to review the proposed injection pattern.

A. Okay, Exhibit 3 is our proposed injection pattern, which basically converts the existing pattern over into a 40-acre fivespot, oriented north-south through the

highest producing parts of the field, past producing parts of the field.

The red circles would be new wells that would be required to be drilled, of which I believe there's 42. And the blue squares are presently producing wells that would need to be converted to injectors.

This pattern --

Q. How many wells are you actually going to be converting?

A. Forty wells?

Q. And additional drilling?

A. Should be 42 new wells drilled.

Q. And what impact is this going to have? How are you actually going to be changing the injection in the reservoir?

A. Well, the injection patterns will be changed where the fluid injection is oriented north-south, to be parallel with the fluid -- the preferred permeability direction.

As the present pattern exists, water injection is being directed directly into producing wells, causing premature watering out of those wells. This would reorient the sweep.

Q. What is the current status of the project, and when do you hope to actually commence operations in the

project area?

A. We're hoping to commence actual drilling conversion operations in September or as soon as we receive authorization from the OCD. We'll begin submitting the C-101s for the new wells next week, and we've just finished the process of bidding out services for the project and it should be ready to go by September.

Q. And when do you anticipate initial water injection in the proposed project area?

A. Well, we plan to have -- to be doing conversions at the same time we're drilling, so there will be some wells converted in September, and so we'll be ready to commence water injection by late September. It's my understanding that we can't commence the injection until the project's been qualified for the EOR tax credit, so we would not begin injecting into the new wells until that was received.

Q. Mr. Hanagan, let's move to Exhibit Number 4, and I'd like you to explain to Mr. Stogner your reasons for expanding the project at this time.

A. Okay, Exhibit 4 shows the historical production curve for Twin Lakes field. It's compressed so the slopes are fairly steep. But the production up through the end of June, 1998, is shown in black. On the right side is a forecast of what we expect to gain from this new program.

Peak production from the field occurred in November of 1982, I believe it was, at about -- almost 2800 barrels a day. There was 4.04 million barrels recovered from a primary production. Decline rate during primary production was around 30 to 35 percent a year.

The first injection of water shown in that trough, in 4 of 1988. Peak waterflood production occurred in October of 1991 at 450 barrels a day, and we've recovered about 800,000 barrels under the current waterflood. Decline rates's been more on the order of around 10 percent, versus the 30 to 35 percent under this pattern.

The green line that's shown just below the 100,000-barrel-a-year mark reflects a production level of around 6000 barrels a month, and that's proven to historically be the economic boundary for this field. And as you can see, it's -- for two or three years, it was crossed under that.

We've actually brought the production back up in the field, but it still hovers near that break-even point. And without the proposed program, we believe we'll only recover about another 350,000 to 400,000 barrels. With the proposed program, we forecast that we'll pick up between 3.25 and 3.5 million barrels.

Q. When we look at this exhibit, your forecast shows

a peak oil production of approximately what? 1300?

A. 1300 barrels a day.

Q. And when should that occur?

A. About a year after we commence the project, the conversion and drilling program.

Q. And your cumulative recovery from this project is 3.3 million barrels?

A. Yes, sir.

Q. Anything else with Exhibit Number 4?

A. No.

Q. Let's go to Exhibit Number 5. I'd ask you to identify that first and then review it for the Examiner.

A. Exhibit 5 is a type log from the Twin Lakes San Andres Unit Well Number 80. It was previously -- This is the same well that was the type log in the -- under Order Number R-8557 and R-8611, so it's the same type log.

It's showing the unitized interval, which is from the stratigraphic equivalent between 2708 and 2798 feet in this well, which basically consists of the P1 and P2 intervals of the San Andres.

Q. Could you generally describe for Mr. Stogner the characteristics of the San Andres formation in the area?

A. Within the field the P1 is by far and away the most productive interval, of the unitized interval. And basically in the lower portions of the P1 are the main

producing zones.

The P1 consists of permeable dolomite having intercrystalline sucrosic porosity that's -- with permeability reduced by an anhydrite occlusion to varying degrees. It's normally 60 to 65 feet, the P1 is, across the whole unit area, and we have net pays from two to 25 feet within that. The P1 is overlain by 500 feet of dense anhydrite and anhydritic dolomites occurs about 600 feet from the top of the San Andres.

The P2 zone is separated from the P1 by about 15 to 25 feet of anhydrite, and the P2 zone is lithologically very similar to the P1. It usually shows higher porosity on the logs but seems to have experienced a higher degree of anhydrite occlusion, which has reduced the permeability and the productivity of the zone.

Q. Was the continuity of the San Andres formation in the unit area established in the original waterflood hearing?

A. Yes, detailed geologic and engineering testimony was given at the September 9th, 1987, hearing for Case Number 9211, which was the case for -- which Order R-8611 was based on.

MR. CARR: May it please the Examiner, we would request administrative notice be taken of the record, including the exhibits that were offered to the Division in

Case Number 9211.

EXAMINER STOGNER: The record in Case 9211 -- And that was for just the waterflood --

MR. CARR: Yes, sir. Yes.

EXAMINER STOGNER: -- or was it a cumulative -- or was it a double-type of a case in which we also heard the unitization?

MR. CARR: That was actually the waterflood project portion of the -- and that's where the technical evidence will be found.

EXAMINER STOGNER: Administrative notice will be taken of the record in Case Number 9211.

Thank you, Mr. Carr.

Q. (By Mr. Carr) Mr. Hanagan, let's now go to Exhibit Number 6. Please identify this for Mr. Stogner.

A. Number -- Exhibit Number 6 is actually a blow-up of the area of review for our C-108s for the proposed injection wells. This map is also contained within the C-108 application. The pink circles designate wells which -- that we're going to need to convert in this program. And each of those wells has a half-mile-radius circle around it.

As you can see, by far the vast majority of the area of review stays within the unit boundaries, which was already -- you know, has been subject to the -- Case Number

9211.

The only areas that conflict the areas of review that have any producing wells affecting any offset operators on the very north end on Sections 25 and Sections 30. Both of these -- There's actually five wells in there, owned by Willow Pipeline and Sandco, Inc. Notice has been given to both of those operators.

Once again, this area that they're -- where these areas of review go outside the unit boundary and affect those wells, those were also included when the Number 2, 4 and 6 wells were -- and 1 well, was submitted for approval. So these have already been subject to review.

Q. Let's go to Exhibit Number 7. Would you identify --

EXAMINER STOGNER: Excuse me, Mr. Carr --

MR. CARR: Yes.

EXAMINER STOGNER: -- before we leave this map. Okay, the pink ones are for the new converts, right?

THE WITNESS: Yes, sir.

EXAMINER STOGNER: And what are the yellow ones?

THE WITNESS: The yellow ones are wells within the area of review of each of these circles. Those are the only wells that have either been drilled or have had borehole conditions that have changed since the September 9th, 1987, hearing. So -- And that comes within the C-107.

Those -- There are schematics submitted for them.

EXAMINER STOGNER: Sorry, Mr. Carr.

Q. (By Mr. Carr) Let's go now to Exhibit Number 7, which is a copy of Form C-108. This has previously been filed with the Division, originally filed seeking administrative approval; is that right?

A. Yes, sir.

Q. And you met the notice requirements through the administrative application, but since you were amending or seeking amendment of an R order, the matter came for hearing; is that correct?

A. Yes, sir.

Q. Would you identify for Mr. Stogner where the well data sheets are located in this exhibit? Explain what wells are covered.

A. This is our C-108 for 38 -- or 34, the conversion of 34 wells, approximately.

Well data sheets for each of the proposed conversions start about the fifth page and consist of a well data sheet and a well schematic for each of the proposed conversion wells, with all of the information required under item 3, I believe it is, of the C-108-III a and b sections.

Our casing program, cement, cement tops, we're going to be using an internally plastic-coated 2 3/8

tubing, plastic-coated packers set within 50 -- about 50 foot above the zone.

Q. Does Exhibit Number 7, the C-108, include well data sheets on all wells within the area of review for each of the injection wells which penetrate the injection zone, containing all information required by the Division?

A. No, this C-108 just includes well data sheets and wellbore schematics for each of the proposed injection wells to be converted. And then at the very back of it, the last six, eight pages or so are -- There's actually a table that shows those wells that were marked in yellow on Exhibit Number 6, the wells that have either been drilled or had changed wellbore conditions since the September 9th, 1987, hearing.

Those were the only sheets within the area of review that are attached, as all the other sheets were already submitted and accepted in the September 9th hearing.

Q. And you have submitted only these additional wellbore schematics based on the -- your conversations with Ben Stone of the Oil Conservation Division and his instruction that there was data on file with the Division on those other wells; is that right?

A. Yeah, he informed me that what had been previously submitted didn't need to be submitted again, and

just to submit it on the injections, on the conversions, and any changes that have occurred since that time.

Q. Now, with the data that was previously submitted in Case Number 9211, and with the information contained in Exhibit 7, your C-108, has the data required by that Form C-108 been submitted to the Division for all wells that penetrate the injection interval which are located within any of the areas of review for any injection well in the project area?

A. Yes.

Q. Have you reviewed the data available on the wells within the areas of review for each of the proposed injection wells and satisfied yourself that there's no remedial work required on any of these wells to make them safe to operate in close proximity to this waterflood?

A. Yes, I have. The only possible exception is in the northeast quarter of Section 25, the two Sandco wells, which, if you'll refer to Exhibit Number 6, is the Number 2 and 6 wells, located just out of the unit boundary.

Those two wells haven't produced since 1986. They were originally included within the September 9th hearing. In fact, the Number 2 was approved to be converted to an injection well if the previous operator could come to an agreement with Sandco, which apparently was never reached.

Anyway, in October-November of 1997, the OCD mailed out by certified mail a show-cause why these wells haven't been plugged, to Sandco. The letter was returned as undeliverable, and there's been no other subsequent action within the files, at least at the Artesia OCD Office.

We physically have -- My operations managers physically inspected those wellsites. There is production equipment on -- still on location, in an apparently workable condition. The tanks don't have holes in them, the pumpjacks are there, attached to rods.

The back side -- The annulus between tubing and casing was open, and there's no detectable blow or flow coming from them. So, you know, apparently there is no flow coming out of the wells, and they appear to be in workable order.

Q. These wells existed prior to the original waterflood approval?

A. Uh-huh.

Q. And they were addressed in the prior hearing?

A. Yes, sir.

Q. And as far as you can ascertain from the record, there's been no change in the mechanical status of those wells that would at this time change or modify the prior approval that they can and -- they do not, in fact, pose a

problem being operated in proximity to the waterflood; is that correct?

A. That's correct.

Q. What is the source of the water that you propose to inject into this expanded waterflood project?

A. We'll be utilizing the same water sources which are currently in use at Twin Lakes, which is a combination, and have been approved by the Order R-8611. This source water is a mixture of Ogallala water from water rights that we have that have been appropriated to the project, and produced -- filtered produced water.

Q. And has analysis and information concerning the compatibility of the injection water previously been submitted to the Division?

A. Yes, it was submitted at the September 9th hearing, and we currently have no compatibility problems.

Q. And again, that's in the record of Case 9211?

A. Yes, sir.

Q. What volumes are you proposing to inject?

A. We'll be increasing injection from around 5000 barrels a day to 10,000 and possibly even up to 15,000 barrels a day.

Q. What will be the maximum daily injection rate?

A. Maximum injection rate would be 750 barrels a day. We anticipate most of it being under 500.

Q. Do you anticipate the injection rates for the unit to exceed that 15,000-barrel number you provided for any significant period of time?

A. No, not really. At the most, we would -- Our water rights appropriation are for 23,000 barrels a day, and at the most we can't foresee ever using more than 21,000 for a short period of time.

Q. Will your system be a closed system?

A. Yes, sir, a closed system.

Q. And are you going to be injecting by gravity or under pressure?

A. It will be under pressure, not to exceed the 0.2 pounds per foot from the surface to the top perforation.

Q. And was any injection pressure approved in the original waterflood order?

A. Yes, sir, the .02 pounds per foot was approved.

Q. Was information provided in that previous hearing concerning freshwater zones in the area?

A. Yes, sir, that information was submitted and accepted at the September 9th hearing for 9211.

Q. Is that information still valid today?

A. As far as we can determine. We've done a search, July 2nd, did a search of the State Engineer's records.

The only change within that area has been that the -- a large area has been included into the expansion of

the Roswell water basin. It was about half -- half of Chaves County was expanded into it. And the records actually show no water wells within two miles of the unit.

Physical search of the area shows there is one water well just on the northwest edge of the unit. That water well was drilled in the late 1970s. It's currently inactive. It was drilled in the late 1970s by the original operator out there, Stevens Oil, for a drilling water source. It hasn't been used since the early 1980s, and the rancher hasn't -- When I talked to the rancher, he said it was too salty for his cattle, so that's why he never has used it since.

There's got to be limited freshwater sources out there, because the ranch takes water from our pipeline of the Ogallala water at times, so there's very few water sources out there.

Q. And this well is inactive?

A. Yes, sir.

Q. Were you unable to get a sample from it because of its inactive status?

A. Yes, sir, there was -- It has an electric pump in it that doesn't work.

Q. Will the expansion of this project, in your opinion, pose a threat to any underground source of drinking water?

A. No, it will not.

Q. Have you examined the available geologic and engineering data on the area, and have you found as a result of that examination any evidence of open faults or hydraulic connections between the injection zone and any underground source of drinking water?

A. No, sir, I find no indication of any connection.

Q. Would you identify what has been marked as Hanagan Exhibit Number 8?

A. Exhibit Number 8 is our Application for enhanced oil recovery project qualification for the recovered oil tax rate at the Twin Lakes San Andres Unit. The Application provides the information necessary to meet the requirements of items D 1-4 of Division Order R-9708, which was dated August 27th, 1992.

This proposed expansion should qualify for the recovered oil tax rate, since the proposed project involves the expansion of an existing EOR project, as defined by that order.

Q. What are the estimated capital costs to be incurred in this project expansion?

A. Total cost for a project expansion should be around $7.7 million.

Q. And those costs are related to what?

A. That reflects drilling 42 new wells and

converting 40 wells, and a small amount of capital for facility expansion.

Q. How much additional production do you hope to obtain from this expansion?

A. We should gain -- recover an additional 3.3 million barrels of oil, with very little to no additional gas.

Q. And what is the estimated value of this additional production?

A. At $15 a barrel, the gross value would be $49.5 million.

Q. Do Exhibits C and D to this Application, marked our hearing Exhibit 8, set out production history and the production forecasts for oil, gas and water from the project area, as are required for an application of this nature?

A. Yes, they do.

Q. Can you identify and review Hanagan Petroleum Corporation -- Well, Exhibit Number 9 would be our notice affidavit --

A. Yes, sir.

Q. -- is that not correct?

MR. CARR: Mr. Stogner, we provided notice to the three affected parties with the administrative application, and we provided notice in the paper as required.

We also have provided notice to those individuals, but the notice letter that we sent did not advise them of hearing date. We had talked with them -- We only have one, in fact, that we can even get to accept the mail. But to be certain that we don't have a notice problem, we renotified everyone several weeks ago, but we had not made the 20-day deadline.

And for that reason we're going to have to request that the Application, at the end of the hearing, be continued for two weeks, at which time I can provide the notice affidavit, and we'll be certain that our third letter to them notifying them of this Application and sending the Application is in full compliance with OCD requirements. All right? Sorry that --

EXAMINER STOGNER: Thank you, Mr. Carr.

Q. (By Mr. Carr) To whom did we provide notice, Mr. Hanagan?

A. We provided notice to all the offset operators within a half mile of the unit, which was just two, Willow Pipeline Company and Sandco Oil and Gas. And we also provided notice to the surface owner of the land, which is David Gabel of Hereford, Texas.

The notice from Sandco was returned as undeliverable, and the notice to David Gabel was unclaimed on three attempts.

Q. And Willow is the operator of the wells that are the subject of a possible show-cause hearing; is that right?

A. Sandco is.

Q. All right.

A. Willow is -- actually operates two or three wells within the area of review that's -- that they're still there.

Q. As you go about the actual physical expansion of this project, is it possible that you will need authority to add an occasional additional injection well as you go forward?

A. Yeah, it's possible that we could need that up to five or six more wells than we've applied for on the -- under our Application.

Q. And would those be in any one particular area, or potentially throughout the project area?

A. No, they're pretty much throughout the project, just kind of on the edges.

Q. If you get to that circumstance where you need to add an additional well in the project area, do you request that you be permitted to do that administratively, without returning for an additional hearing?

A. Yes, we do.

Q. In your opinion, will approval of this

Application and the expansion of this waterflood project in the Twin Lakes San Andres unit be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, sir, it should.

Q. Were Hanagan Petroleum Corporation Exhibits 1 through 8 prepared by you or compiled under your direction and supervision?

A. Yes, they were.

MR. CARR: At this time, Mr. Examiner, we would move the admission into evidence of Hanagan Petroleum Corporation Exhibits 1 through 8.

EXAMINER STOGNER: Exhibit Number 1 will be admitted into evidence.

MR. CARR: Through 8.

EXAMINER STOGNER: 1 through 8.

MR. CARR: Yes, sir, thank you.

EXAMINATION

BY EXAMINER STOGNER:

Q. Let's refer back to the Exhibits 2 and 3 at this time --

A. Okay.

Q. -- and also the -- your large map, showing the area of review.

A. Okay.

Q. I want to cover that injection well up in Section 5. That's outside of the unit area, and on your present injection pattern you include that, but you don't in your new one. Is that still an injection well, or what's the status or what's the story on that one?

A. That well was included in the expansion of the project, the only expansion WFX-582, and it was included in the expansion at that time. It's presently an injection well which we're not injecting actively.

It's not included in the future pattern. We don't actually expect to inject into it, as it would inject straight back down into the producer that would be put in that pattern.

Q. When did it quit injecting, or when did injection cease?

A. Well, we still actually put injection into it at times to maintain its active status, but it's -- It doesn't have any noticeable effect on the unit, but it maintains an active status, just -- we just do that just to keep it in the active status.

Q. Now, when was that WFX-587 authorized?

A. 1989, I believe. Dated May 24th, 1989.

Q. Now, obviously whenever that was authorized, all those wells up to the north end were within the area of your review.

A. Yes, sir.

Q. And were those wells producing? And I believe -- Who did you say that belonged to? Sand who?

A. Sandco only actually owns two of the wells, and the other five wells shown within that area of review are Willow Pipeline. At the time it was Harlow Corporation.

What that order -- the subsequent order, the WFX-582 order actually did was, under the original application there was several wells, four or five wells -- I can't remember the exact number -- that required that the order -- What is it? 8611 required either surrounding wellbores to be -- something be done to bring them into compliance. There was different things on about five or six wells that needed to be done before those wells could be converted.

And then they added two more wells within that, so that's why it came under a new -- it was an administrative order. But the one in Section -- The Number 2 well up there in Section 5 was one of those. So it -- That order was actually a cleanup to bring the project to full -- to their full scale.

Q. So what was done to that Number 5 well? And which Number 5 well? The one in Section --

A. The Number 2 in Section 5, I'm sorry.

Q. Oh, the Number 2 in Section 5, okay. What --

A. That injection well. As I -- You know, that was long before I was operator. As I understand it, that well was owned by Harlow. Harlow never -- who is now Willow Pipeline, did not enter into the unit, and that well was -- a deal was worked out with Harlow to finally include that well into the -- even though it's not within the unit boundaries.

Q. Okay, now which Well Number 5 are you talking about? I'm getting a little confused.

A. I guess I'm confusing you. I keep saying 5, apparently. It's -- I'm referring to our Twin Lakes San Andres Unit Well Number 2.

Q. And that's the one in the south half of the northwest quarter of 30?

A. Yes, sir.

Q. Okay, now that was an injection well?

A. Oh, yeah, and I keep saying Section 5. That's where I'm getting to.

Q. Okay. So that well required some sort of work to be done to it during the --

A. Yeah, it was producing well that was previously operated by Harlow Corporation that under that WFX order was -- approved it to be converted to an injection well with that -- and that work has been performed, and it is currently an injection well.

Q. Okay. Was there any other wells that needed repair work done prior to the injection approval on that Number 2 well?

A. Yes, sir, I think within that order -- That was predominantly what that WFX order addressed, the WFX-582 or whatever, addressed, was wells that did have to have certain things done before they could be converted to injection wells.

Q. And do you remember which wells those were?

A. No, sir, I really don't. A lot of work was done, and all of it was accepted and approved.

Q. And that will be on the record of that WFX order?

A. Yes, sir.

Q. And those wells would be mentioned in that original Order R-8611?

A. Yes, sir. There's some reference back to them, and I'm not sure if that's all of them, but the WFX order goes into the specifics of what needed to be done and what was done.

Q. Now, you had mentioned that a couple of these wells were the subject of a force-plugging case or a force-plugging move?

A. Yes, it was a letter from OCD Artesia, to show cause why they haven't been plugged. Those wells would be in Section 29.

Q. And they're marked Number 2 and 6?

A. Number 2 and 6, and those are the Sandco wells. On Exhibit 1, that would be the area in the green up at the top.

MR. CARROLL: What was the date of that letter, do you know?

THE WITNESS: November -- It was November of 1997. I have it written down, the actual date.

MR. CARROLL: Okay, it was late last year?

THE WITNESS: Yes, sir,

MR. CARROLL: And the operator was Sandco?

THE WITNESS: November 18th, 1997. Sandco Oil and Gas, Inc. They have an address -- The last address shown is in Mesilla Park. Both our notice was returned as undeliverable and the OCD's notice was returned as undeliverable.

EXAMINER STOGNER: Mr. Carr, so there won't be any confusion, I've been debating here with myself silently. For the record, I would like to have some information in this particular case file on those wells within the half-mile area of review. We're only talking a few, and it would bring the record complete for additional review. That way we wouldn't be jumping back and forth.

If you would, Mr. Hanagan, provide for those wells that were reworked a small, comprehensive, detailed

information about what was done and a schematic on each of those wells, so let's make sure that the record is clear that those wells have been reviewed thoroughly and that there won't be any chance.

I think it's a measure of preventive maintenance, you may say. And we're only talking a few wells, so -- And since we're going to have to continue this matter anyway, to September 3rd, I think we've got adequate time.

MR. CARR: We really would like to, if we could, Mr. Stogner, provide these in two weeks, instead of waiting until September the 3rd, because we think we can wrap this up in that kind of a time frame, if that would meet with your --

EXAMINER STOGNER: Oh, of course, the earlier the better. But I'd just like to have something in this record on those wells.

THE WITNESS: Those are the wells that were in WFX-582 --

EXAMINER STOGNER: Well, if you look at your map --

THE WITNESS: -- and the wells to the north up there?

EXAMINER STOGNER: You look at your map --

THE WITNESS: Yes, sir.

EXAMINER STOGNER: -- that's Exhibit Number 6,

and any of those wells that are within that half-mile area of review -- and it appears 1, 2, 6, 5 and 2 --

THE WITNESS: Okay, those ones outside the unit within the area.

EXAMINER STOGNER: Exactly.

THE WITNESS: Okay.

EXAMINER STOGNER: Then you have one well in the northwest quarter of Section 30 that's unidentified, but that will be on your area of review, so that will be taken care of.

THE WITNESS: Yeah, that's another San Andres well.

Q. (By Examiner Stogner) Okay. Now, while we're on this Exhibit Number 6, within this unit or within this area of review internally -- I say internally, within the unit -- are there any deep gas wells or wells that are producing or went beyond the Bone Springs formation?

A. Within the unit boundary, I believe the 54 is the only well --

Q. I'm sorry, the San Andres formation.

A. Yeah, over on the west side of the exhibit you can see there's some larger symbols that show -- the triangle with the -- I mean, a diamond with the larger black dot south -- on the west half of Section 1, there's the 9C. This is on Exhibit 6.

The 9C and the 54 are the only ones that were --

went into the Devonian. All of those wells on that side went to the Devonian; there was Devonian production.

One of them did make a little bit of gas out of the Penn, that 4C well that's just outside the unit.

All of those have been properly plugged. I believe the 54 there is one of the -- I know one of those wells on that side is one of the wells that they had to come back in under WFX-582, because it was previously -- it had been converted to a Devonian disposal well, and they had it -- they had some requirements for it to be fixed. But those were the only deeper wells.

There were actually no gas wells within the unit, deeper gas wells within the unit.

Q. So all the other well markings on here are San Andres or shallower?

A. Yes, sir.

Q. You had mentioned in changing the pattern as you're proposing, I believe you used something to the term of the reorientation of the sweep?

A. Yes, sir.

Q. Could you go into a little more detail about the geology of that? What's -- how -- Is the sweep actually going to change to conform with the fracture or the actual -- not the fractures but say the least path of

resistance and the formation?

A. Yes, sir. I mean, what seems to be going on -- We've done quite a bit of study over the last year and a half of this field. The fluid-flow direction, as we determined by production, injection information, production information, some attempts at actual dye injections -- everything suggests that the primary fluid -- preferred direction of fluid flow, the preferred permeability orientation, is actually from south to north, but -- is a north-south direction.

This flood was originally patterned using West Texas analogies, all of which show a preferential fracturing or fluid-flow direction of northeast-southwest. And so we're just immediately out of -- directly out of phase with our fluid-flow direction, which is resulting in our present injectors just pushing fluid straight into those producers.

And now, you know, this would hopefully bank oil into -- It will orient north-south, and so the in-between deals should -- wells where we put the new wells will be experiencing the push from the side, pushing oil inward into them, versus just water pushing straight.

Q. Are you proposing any new type of completion whenever you convert these wells to water injection? Are you going to use the same perfs? Are you going to do any

stimulation of any kind, or preparation?

A. There will be some stimulations needed. We'll go in, convert them and see how they respond. But you know, I'm almost certain that we'll have to do some stimulations.

We're considering and we're ready to start some pilot tests on using some microbio -- bugs to go in and enhance sweep by eating up the scale down in those. And it may actually reduce our acidizing cost too. But we do anticipate on a case-by-case basis.

Q. Now, are those costs for the stimulation, are they included in your last exhibit or next to the last exhibit?

A. Yes, sir.

Q. Let's see, what was that price? Capital cost of $7.7 million?

A. Yes, sir.

Q. Are you going to use the same perfs, perforations?

A. Yes, sir, in some cases we may need to go back and re-perf, but we're going to go into the same intervals. We're not going to go in and squeeze them.

Q. You'll just include new ones, as opposed to --

A. Yeah.

Q. -- just squeezing any --

A. Yes, sir. The biggest benefit of the whole

project is, the reorientation should help a fair amount, or hopefully significantly, but just the infill drillings, the project could be warranted just on infill drilling alone.

Q. Okay, let's talk about the supply, the water supply. You say -- and you kept referring that you have water rights in the Ogallala for this project. Are those water wells out here, or are they somewhere else and it's piped in? Where's the water --

A. They're 27 miles northeast, on the top of the Caprock. I believe it's 1032, is where the water wells are. Right around the -- It's actually the old water rights that -- I don't know if you remember the Texaco contamination case at Bagley or Moore. It was some of those contaminated waters out of the Ogallala, is where these waters come from.

Q. So is this Ogallala water fresh, or are they some of the old -- some of the past, quote, contaminations that you're referring to?

A. It's both.

Q. When you refer to this contaminated Ogallala water, what kind of contamination are we talking about? Hydrocarbons, salts?

A. Apparently it was more salt. It caused a chloride plume in the Ogallala over in that area.

Q. Okay. Now, do you have a water analysis of

either the fresh or the contaminated waters?

A. Yes, sir, we have several. In fact, they're submitted to the State Engineer's Office on a quarterly basis.

Q. And when you say the water rights, that's who you have them from, is the State Engineer's Office?

A. Yes, sir.

Q. Now, is this water that's just being utilized for this project, or are you transmitting it out to other projects?

A. It was actually approved and allocated for secondary oil recovery projects. This is the only one which is presently being utilized, where it's being utilized. I think the total allocation is somewhere around 23,000 -- 22,900 barrels a day, I believe it is.

Q. Was this allocation done prior to Order R-8611, or in conjunction with it, or after?

A. I believe it was done prior to -- I know all of it was settled by the time 8611 -- it might even have been what drug out -- That case lasted for a couple of years.

Q. Now, you talk about certain percentage of some additional water. Would this be in reinjection water within the area --

A. Yes, sir, that --

Q. -- or that unit?

A. -- that's -- It would be produced water that comes back out. We're currently doing that. Like of our 25 million barrels that we've injected, a big number of that is actually -- probably in excess of half of that is actually just reinjection. So we get a little bit through a filter system and reinject.

Q. And as far as the conversion of these existing wells, just reviewing shortly your -- the wellbore schematic, that's going to be 2-3/8-inch plastic-lined?

A. Yes, sir.

EXAMINER STOGNER: Let's see, Mr. Carr, you were going to supply with me some additional notification; is that correct?

MR. CARR: Yes, sir. And the wellbore sketches and supporting information on those wells north of the unit.

MR. ASHLEY: I've got a question for you.

In Section 1 of 9-28 --

THE WITNESS: Yes, sir.

MR. ASHLEY: -- I noticed on the original injection pattern that's included as far as the injection. It seems to be left out of the current modified injection pattern.

THE WITNESS: Yeah, most of that area over there is -- geologically, it's at the peak of the structure.

It's a closed structural high at that point that seems to have been a -- the permeability is greatly reduced in it. In fact, it's seen no response to waterflood. It still had a fairly significant recovery from the primary drilling. About a quarter of the production came out of that western edge area over there, but it's not due to waterflooding.

And at some time we may try a horizontal well going through there, but so far there's been none of those wells -- producing wells over there, see any response to injection. All of it's still primary chloride fluids. And so we don't plan to expand the waterflood into that portion.

MR. ASHLEY: So will the injectors over there be taken off line?

THE WITNESS: We'll still keep them go- -- They don't take much water as it is. I mean, you know, we still make -- I guess there's no real reason to have them going, so we could take them off, but it's -- Someday, maybe something's banking up somewhere in there.

EXAMINER STOGNER: Any other questions of Mr. Hanagan?

MR. CARR: That concludes our presentation in this case, and we will be prepared to submit the additional data and the notice affidavit on August the 20th, so we would request the case be continued to that date.

EXAMINER STOGNER: This case will be continued to not the September 3rd but the August 20th docket for any additional information. And in the meantime, if you can get the additional information prior to that --

MR. CARR: Yes, sir, we will.

EXAMINER STOGNER: -- that will be fine.

If there's nothing further in this matter -- I'll tell you what, we're going to call about a 10- to 15-minute recess at this time.

(Thereupon, these proceedings were concluded at 9:48 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 12023, heard by me on 6 August 1998.

, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL August 26th, 1998.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998