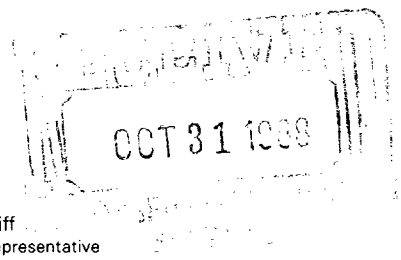


Steven K. Setliff
Negotiations Representative
J. Mark Littlefield
Supply Specialist

Amoco Corporation
Post Office Box 1725
Midland, Texas 79702
Crude Oil Supply
915 - 684-4471

October 25, 1988

NEW MEXICO STATE LAND OFFICE
Mr. Bill Lemay
310 Old Santa Fe Trail
Santa Fe, NM 87501

File: MLD-4-88-SKS

RE: Case # 9497

Dear Sir:

In reference to case number 9497, Amoco supports the position that operators should be able to convert wells for salt water disposal at the operators discretion. This of course should be in appliance with any environmental regulations in the area.

S. K. Setliff

SKS/bgw

bcc: Ernest Padilla - Attorney for Corinne Grace Oil Co.
Matt Gallo
Suzette Johnson - Corinne Grace Oil Co.

PADILLA & SNYDER
ATTORNEYS AT LAW
200 W. MARCY, SUITE 212
P.O. BOX 2523
SANTA FE, NEW MEXICO 87504-2523

(505) 988-7577

ERNEST L. PADILLA
MARY JO SNYDER

FAX 988-7592
AREA CODE 505

October 6, 1988

RECEIVED
OCT 6 1988
OIL CONSERVATION DIVISION

HAND-DELIVERED

Mr. William J. Lemay, Director
Oil Conservation Division
310 Old Santa Fe Trail, Room 206
Santa Fe, New Mexico 87503

RE: Application of Corinne B. Grace for Salt Water Disposal; Case No. 9497

Dear Mr. Lemay:

Please consider this letter as a request for a continuance of the above-referenced application from the October 12, 1988, date to the regularly-scheduled hearing of the Division on October 26, 1988.

Should you have any questions regarding this request, please do not hesitate to call me.

Very truly yours,

Ernest L. Padilla

ELP:crk

cc: Corinne B. Grace
Chad Dickerson, Esq.

TERRA RESOURCES, INC.

SOUTHWEST DISTRICT OFFICES 10 DESTA DRIVE, SUITE 500-WEST
MIDLAND, TEXAS 79705
(915) 684-3861

October 24, 1988

State of New Mexico
Department of Energy and Minerals
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

Case No. 9497

Attn: Mr. David Catanch

Re: Zac Federal No. 1
Conversion to Salt Water Disposal
660' FSL & 1980' FWL
Section 25, T-26-S, R-30-E
Eddy County, New Mexico

Dear Mr. Catanch,

In response to the hearing scheduled on October 26, 1988 for the conversion of the subject well to salt water disposal, I hereby enter this letter as Terra Resources, Inc. official protest to said conversion.

Terra Resources, Inc. currently operates the Ross Draw No. 7 located 1980' FSL and 1980' FEL, Section 28, T-26-S, R-30-E, Eddy County, New Mexico. Although this well is producing from the Wolfcamp, we are planning on recompleting to the Delaware before year end. Mud log and electric log analysis in our well shows potential hydrocarbon zones corresponding to the proposed injection interval in the Zac Federal No. 1. A successful recompletion would justify further development of our acreage which would result in wells offset directly west of the Zac Federal No. 1. The proposed injection could adversely affect Terra's future production in these wells. To date, Corrine Grace has not proven these zones to be non-productive, therefore Terra Resources, Inc. opposes the conversion to salt water disposal of the Zac Federal No. 1.

We regret that we have not had time to prepare a case for this hearing, but we were only recently advised of the proposal. As an alternative, we want to go on record as supporting Mr. Ralf Williamson in his protest of said conversion.

I respectively request that the New Mexico Oil Conservation Commission enter this letter into the hearing on October 26, 1988.

Sincerely,

TERRA RESOURCES, INC.

C. Robert Winkler III
Operations Engineer

ksk

cc: Ralf E. Williamson
One First City Center, Suite 805
Midland, Texas 79702

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

January 5, 1989

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Mr. Ernest L. Padilla
Padilla & Snyder
Attorneys at Law
Post Office Box 2523
Santa Fe, New Mexico 87504-2523

Re: CASE NO. 9497
ORDER NO. R-8816

Applicant:

Corinne B. Grace

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Sincerely,

Florene Davidson

FLORENE DAVIDSON
OC Staff Specialist

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other Chad Dickerson

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

12 October 1988

EXAMINER HEARING

IN THE MATTER OF:

Application of Corinne B. Grace for salt water disposal, Eddy County, New Mexico. CASE 9497

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Robert G. Stovall
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico

For the Applicant:

MR. CATANACH: Call next Case 9497.

MR. STOVALL: Application of Corinne B. Grace for salt water disposal, Eddy County, New Mexico.

Applicant requests this case be continued to October 26th, 1988.

MR. CATANACH: Case Number 9497 is hereby continued to the October 26th, 1988 docket.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9491, heard by me on October 12, 1988.

David R. Catanach, Examiner
Oil Conservation Division

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

26 October 1988

EXAMINER HEARING

IN THE MATTER OF:

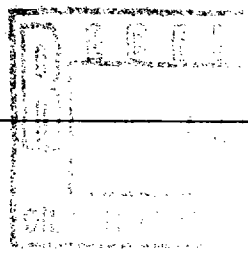
Application of Corrine B. Grace for salt water disposal, Eddy County, New Mexico.	CASE 9497

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:	Robert G. Stovall Attorney at Law Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico
For the Applicant:	Ernest L. Padilla Attorney at Law PADILLA & SNYDER P. O. Box 2523 Santa Fe, New Mexico
For Ralph B. Williamson and J. C. Williamson:	Chad Dickerson Attorney at Law DICKERSON, FISK & VANDIVER Seventh and Mahone/Suite E Artesia, New Mexico 88210



I N D E X

I N D E X Cont'd

E X H I B I T S

MR. STOGNER: The hearing will come to order.

We'll call next Case Number 9497.

MR. STOVALL: Application of Corinne B. Grace for salt water disposal, Eddy County, New Mexico.

MR. STOGNER: Call for appearances.

MR. PADILLA: Mr. Examiner, I'm Ernest L. Padilla, Santa Fe, New Mexico, for the applicant. I have three witnesses to be sworn.

MR. DICKERSON: Mr. Examiner, I'm Chad Dickerson of Artesia, New Mexico, appearing on behalf of Mr. Ralph E. Williamson and Mr. J. C. Williamson.

I have two witnesses to be sworn and we will try to get by with calling one.

MR. STOGNER: Are there any other appearances? There being none, will the witnesses please stand to be sworn, all witnesses.

(Witnesses sworn.)

MR. STOGNER: Mr. Padilla.

MR. PADILLA: Mr. Examiner, my first witness is Harry Gunn.

HARRY LEWIS GUNN,

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. Gunn, for the record would please state your full name and where you reside?

A I'm Harry Lewis Gunn.

Q Where do you live, Mr. Gunn?

A I live in Artesia, New Mexico.

Q Mr. Gunn, what is your connection to Corinne B. Grace?

A I'm currently on a retainer to Corinne B. Grace as a geologist, consulting geologist.

Q How long have you been on a retainer for her?

A About three months.

Q And have you made a study of the salt water disposal application under consideration here today?

A Yes, I have from a geological stand-point, I've examined that area and the intervals that we

plan to use for perforations very carefully.

Q Mr. Gunn, have you ever testified before the Oil Conservation Division?

A No, I have not.

Q Would you tell us where you were educated and where you received your professional degree?

A I graduated from Texas Technological College in Lubbock in 1951 with a Bachelor of Science in petroleum geology.

Q Mr. Gunn, what is your experience in the oil and gas industry since 1951?

A Since '51?

Q Yes, sir.

A I don't get to count the years before that? I grew up in the oil fields; never knew anything else. Since 1951 I've worked for a geophysical company for a couple of years. I worked for a mudlogging company for a couple of years. I finally began employment with Cosden Petroleum in Big Springs, Texas; stayed there approximately five years.

I moved from there to Midland, Texas, and worked for the Permian Basin Sample Laboratory; was there for nine years; and left there and went to Monsanto Company, Midland, Texas, and worked for them almost five years and since 1969 I've been consulting for myself and in

business for myself.

Q Mr. Gunn, how much work have you done with regard to the Delaware formation and particularly in Eddy County, New Mexico?

A Oh, actually participating in exploration in Eddy County, not necessarily just for Delaware but for the Morrow and Atoka and the Strawn, Cisco, all the other deeper Pennsylvanian formations, we always looked at the Delaware, since 1964.

MR. PADILLA: Mr. Examiner, we tender Mr. Gunn as a petroleum geologist.

MR. STOGNER: Mr. Dickerson, are there any objections?

MR. DICKERSON: No objection.

MR. STOGNER: Mr. Gunn is so qualified.

Q Mr. Gunn, have you prepared certain exhibits for introduction here today?

A Yes, we have. We've started with a --

Q Would you proceed on to the exhibits you have handed on -- or -- or hung on the wall?

A We started with a general location plat of our well in relation to the other wells and --

Q You're now looking at or referring to what we have marked as Exhibit Number One, is that correct?

A That's correct, this is Exhibit Number One which is a plat of the land area locating the well that we plan to use for disposal of the salt water.

It is currently a marginal producer. It will be abandoned and used for our purpose.

Q Which is that well, Mr. Gunn?

A That well is the Corinne Grace Zac in the southeast of the southwest quarter of Section 25.

Q Mr. Gunn, I notice that you have another attachment to the land plat. Can you tell us what that is up in the righthand corner?

A Right, we have highlighted in this expanded plat up here in the limited area showing exactly where her leasehold interests are in relation to that well. Currently producing wells are the Grace CG in the northeast of 25 and then all of Section 24, the Grace plat up here in the limited area showing exactly where her leasehold interests are in relation to that well currently producing, the Grace CG in the northeast of 25 and then all of Section 24, the Grace Ginger Federal, and the dry hole that has the number 2. We have that on the cross section.

Q Mr. Gunn, is that expanded portion of the map on the upper righthand map, is that a newer version of the --

A Yes, it is. It shows the --

Q -- other map?

A It shows us some new -- I was working with this older map and started following it and we became aware that there were some changes in the land ownerships while we were working on this, and so we did include those specifically to demonstrate that we are aware of who all owns what.

Q Now you have a line of cross section drawn on that land plat.

A Yes. My second exhibit will be locating and correlating that well that we intend to use back over into all of the other water disposal wells that are currently, as far as we know, being used in this close-by area, which belong to CRW SWD, salt water disposal company, and Mr. Williamson owns part of that.

They are predominantly within his field area in the unit where his production wells are close in and convenient to his use. They are not particularly convenient to our use.

Q Mr. Gunn, what is the general -- can you give us a general description of the geology across your lines of -- line of cross section?

A Generally across that cross section is almost a dip section. The cross section that will be Exhibit Two will illustrate that rather low dip around 90

feet a mile and the intervals that we plan to use. The sands of the Bell Canyon and the upper part of the Cherry Canyon. They are all part of the Delaware Mountain Group.

Generally it just demonstrates the relationship to these wells. The same interval that we plan to use are the same intervals that he is currently using in the disposal wells in the CRW, so we're not doing anything new or different. We plan to take advantage of the knowledge that we get from looking at the logs that are currently used as disposal, and we plan to use exactly the same plans.

Q Mr. Gunn, would you go on now to Exhibit Number Two and tell us what that is?

A Exhibit Two is a cross section that in orange runs east to west, being right to left. It starts with our Zac Well in the interval contained within the heavy lines and then this first good sand down below the heavy line which is in the upper part of the Cherry Canyon. This is the best zone that we looked at for water disposal.

MR. STOGNER: What zone is that?

A It's, oh, it may have a name. but it's the upper part of the Cherry Canyon. The base of the Manzanita Lime is right here (not clearly understood.)

Q At what depth is that, Mr. Gunn?

A That is at a depth of 48-to-5000, 4800-to-5000.

Q What other disposal intervals do you --

A They are outlined in our application.

Q Let me hand you what we have marked as Exhibit Number Six, which is the application itself, and maybe you can tell the Examiner on what page that is.

Q What we did in picking these is not only use our well, with it's best porosity and permeability from clean sands, but we also compared them with ones which had been previously used and then perforated in the CRW Well. We know that they take a lot of water. We know that they are able to dispose of 80-to-90,000 barrels a month and with the use of two wells they double that and each well take about in the vicinity of 70-to-80,000 barrels a month, a total of the two wells that we have the longest history on, which is the AZ Well and the Ross Draw No. 7, they have put in and still are putting in some 60-to-80,000 barrels a month in each one of those.

Now we knew that these were good sands. They would take the water that we want to put in there at pressures that are allocated.

I'm not an engineer, I don't claim to be one, I knew that there was a problem with pressures and we tried to pick the most porous, permeable interval so we

wouldn't have to bother with pressures. So we selected these various sands. Let me find that page.

Q Look at page nine, Mr. Gunn, that may help you.

A All right. Well, starting at the top it's the same as cross sections if you care to fold them out and examine them, we picked the same, starting at 3886, which is this interval up in here, to 3892; 3904 to 28; 4026 to 4040. Each one of these, if you look through the logs, are water-bearing. The laterologs indicate very high water saturation, and to us they are water sands to begin with. All we're going to be doing is just putting in some more.

And the most prolific one that we plan to use is this bottom one. It can take more water than probably any of the these others, but that's -- we want permission to use these just in case. We don't know, we don't have much data on that lower sand. It is not real well developed in this first CRW Well, which is in Section 34, I believe. It's not too well developed at all in the in 33, and the one, the AZ, I don't think got that deep. If it did, I don't have any information on it. It's open hole from back around 3900 or something.

Those intervals are the ones that we've selected with the idea that the -- that's what we wanted to

do, the same thing they were doing.

We were concerned about damage to our wells. We're close to the CG. We're 23 - 2400 feet from a good producing oil well. It produces out of the Lower Cherry Canyon Sand and the water will be put in at least 1200 feet above the top of that basin.

We won't take any chances. We have examined very carefully all the wells that we drilled, looking for these upper zones. It would be real nice to have a good Ramsey well. It's a lot shallower and a lot cheaper than the (unclear).

Q Mr. Gunn, you have another log attached to that cross section.

A Yeah, I do.

Q What is that?

A We put that on there for emphasis in that the possibility of damage or enhancement, however it worked, if you put water in those pay sections, or in the near vicinity of the pay sections, well, we found that in this old Ike Lovelady Well back over here in Section 33, is one of the water disposal wells that's had almost 6-million barrels of water put into that Ramsey section that is producing in Well 3 up in 28, and we haven't been able to determine that there's been any adverse effect at all to it, and we've looked at the production history back as far as

this well goes, and it doesn't seem to bother it one way or another. It doesn't make any more or any less water than anyone else. This is a nice well. It was carried at one time as a gas well. I guess it was a high ratio oil well because now it's being carried, currently carried as an oil well and these perforations are into that same sand.

Q Mr. Gunn, are you perforating that same section?

A No, we're going to stay away from that primarily because over in our area that sand is not porous enough, it isn't well developed, doesn't have the nice, clean sand that this well has, or this one. We don't feel like --

Q When you say "this one" what do you mean?

A In the Williamson Abby Federal No. 3.

Q You also mentioned that same sand was in the well to the left there?

A Right. It's also in the old Ike Lovelady, which is the CRW disposal. Those are nice clean sands and they'll take a lot of water. They'll also give up a lot of hydrocarbons where you find them. Over here it wouldn't do us any good to try to perforate. That would be more trouble to try to get water into it than it would be worth, and we have these good zones to select from, and so

we stay away from the upper zones.

Q For water disposal?

A Yeah, for water disposal.

Q What is the regional dip in that area?

A Well, it's about 90 feet to a mile.

Q And it dips to the east?

A It dips to the east, to the southeast.

Q In terms of the wells of J. C. Williamson, where would the water have a tendency to run to?

A It would be going downhill from any of these wells that he is currently producing. We're a long ways from most of these producing wells and the Abby lease is back over here to the west. He currently has a well that was originally drilled by Penco that's not productive from the other zones that ordinarily -- it doesn't produce from the Williamson Sand, as I understand it. We -- the last information we had it produced from the sands what were probably Pioneer if it does anything at all. There's also a new well that sets between our Ginger Federal and the old gas well there in 25, which produces some Wolfcamp gas. It isn't involved in this other than that there was a show in the Williamson Sand in that well that also helped set up that prospect for Corinne Grace's CG.

Q Mr. Gunn, how is the water going to be contained within the vertical limits of the injected zone?

A There's very effective permeability barriers within those sands. Migration of water vertically would be in my opinion nil. We can expect water between these zones on the logs and the cross sections that everyone has to be shaley, limey. Those zones don't have any porosity or permeability, particularly permeability. They're dirty and water won't go through them. Water will go into the sand intervals so that protects anything either side of where we're going to perforate. There won't be any vertical up or down, one way or another. This zone will be blocked off completely. The Manzinita Lime is real dense.

Q Mr. Gunn, in relation to the productive zones of the Cherry Canyon in the area, how much separation is there between the disposal interval and those productive zones?

A Oh, it varies, but there's approximately overall about 1200 feet. You know, just distance alone would be a benefit, but these same things occur, these thicknesses are repetitive, you get these shale lime sections that don't have any permeability.

Q Mr. Gunn, are you ready to go now to Exhibit Number Three?

A Yes. We have been looking at everything. We wanted to particularly protect ourselves, look to see if we'd overlooked anything and wanted to make sure

we weren't going to put any water into a potential pay section (not clearly audible), so we was very careful to do that. I have worked personally on all of these wells with the exception of the CG and I examined those samples before I went to work and worked on this original well, the Zac Well, the Ginger Federal Well, the No. 2 Ginger Federal, personally on location looking at samples as they were drilled and we have a mudlogging unit, a gas detector unit on location, operative at all the times that we drilled these wells. We didn't see anything significant until we got to the Williamson Sand. We had some little insignificant shows in the Zac and that kind of alerted us, so in order to be extra careful when we drilled the No. 1, we cut some core to make sure that we were right, that they weren't anything and we do have one exhibit that shows a core analysis of one of the sands at the 4100 interval.

Q Where is that in relation to the Zac well?

A That well is actually a good distance from it. It's up in the next section, but those things do correlate, go well to well and follow these sands, particularly along the strike and within reason the upper sands seem to have more lateral extent than the lower ones, the lower sands.

When you find a good clean sand you can

follow it for miles.

So that well in relation to that is approximately a mile from it.

We cut those cores up there to verify what we're talking about.

Q Mr. Gunn, in relation to where you took the core, on your Exhibit Two, where would -- where did you take the core from?

A We took that core --

Q What depth?

A 4086 to 41 --

Q Am I getting ahead of you at this point?

A Yeah, a little bit. Okay, 4078 down to an interval of 4136, which is one of the intervals that we did show a core for the perforations in the Zac well.

Q And how does that sample, or that core compare to the other disposal zones?

A Well, we compared the core back to the laterologs, porosity logs, and then compared our porosity logs to theirs. We found out, you know, that that is a good wet zone with water saturation by core analysis running as high as 78 percent and there's no oil and the porosities were very good. They run from as low as 12 to as high as 19 percent and that's not really one of the stronger zones. There is a slight variance between core

analysis porosity and what you ordinarily calculate on a log.

Q What, Mr. Gunn, let me get back now to Exhibit Number Three and ask you to tell us what this shows in terms of salt water disposal.

A What is shows, and the reason we did it, was to see if we were going to be putting any water into a potential pay zone, not only in the Pinto Well but we'd be looking --

Q Now when you say the Pinto Well, that's the well on the --

A The Williamson well, the well on the --

Q On the far left of the cross section.

A -- far left of the cross section. It comes north and south to the Zac and then turns back north to pick up this well, which is one of the closest wells that is operated by someone else.

There are some other wells that are in that area. We didn't include them.

So what we were looking for was a potential pay zone that we might do damage to and didn't find any at all. These sands and these wells are correlative to our wells. They're all the same. They're all high porosity, high permeability, and good clean sands. They'll take the water. I keep calling these sands. They're

really siltstone. I know Mr. Williamson is aware of this. They're very fine grained sands. They do give up a lot of water and they will take a lot of water.

Q So if I understand what you're saying, it is that Exhibit Three shows that basically in that cross section, that shows that there is no production in -- hydrocarbon production in there.

A That's correct. There is no hydrocarbon production in this area of 24, 25. The closest one is back over here in the Section 34, the Well No. 2 on the Williamson lease there and it does produce from an interval up in that area, but it's three miles from where we're going to be and apparently this is offset to a No. 9 Ross Draw Well. They have an application and I don't know what the status is right now, but it is currently in their plans, as we understand it, to use that as a water disposal well, so we -- what we want to do is basically the same thing. We want a place to economically get rid of our water. As far as I'm concerned, these sands will do that and won't do any damage to anyone. We understand that Terra Resources will be an offset operator and we would be close to the southeast quarter of Section 26, and our well would still be 2310 feet from any well that they could drill in this sand, and I'd like to see them drill another

Cherry Canyon test down there.

Q Mr. Gunn, do you have anything further concerning the three exhibits on the wall?

A I really don't. I think we've tried to demonstrate and outline what we're trying to do and we're not doing anything new or different. We just want a place to put our water economically for us. This well being cased, --

Q You're referring to the Zac Well.

A The Zac Well, yes, sir, I'm sorry. I forget that thing doesn't see. So, okay, yes, we are referring to the Zac Well and it already has casing and it will be a lot more economic for us to use that well than to -- which we did consider an application I understand, to the No. 2 Well, which we didn't run pipe in in order to do anything with it, and at one time we even considered drilling another well, and those things get awfully expensive. In the meantime the price of crude kept going down, down, down, and so this is kind of our best shot, and we feel like it's a very good shot, good place to put water and will work out well for us.

We'll also be able to drill another well, probably.

Q Would you take your seat now and let me hand you what we have marked as Exhibit Number Four and ask

you, you've already testified concerning that exhibit but do you have anything further to add concerning Exhibit Number Four?

A Somewhat. I'd like to back up just a minute. We did catch part of the top part of one of those shale barriers before we got into the sand, beginning there from 4078 down to 4092. Their description is that that was was silty, slightly sandy laminated shale, and we caught about 4 or 5 foot stringer of shale there and you can see that the permeabilities both vertical and horizontal, and those are real, real low compared to when you get down into the sand. The second column says permeability maximum and the second of that comparing that shale lamination is only .28 to 13, and that's in millidarcies, so those things are very tight, very impervious and they bracket it. They rate about or above the sand, they fall below and above, above and below these sand bodies.

Q Mr. Gunn, let me now hand you what we have marked as Exhibit Number Five and have you tell the Examiner what that is.

A This is a gas detector and a mud log, it includes both the gas detection equipment and picks up minute oil and gas shows while we're drilling along with a sample description and the second page. the first page is just a heading telling us where it's located and whose it

is. Also, it describes an interval of 100 feet there that's anhydrite, which is a barrier from anything above the Delaware Mountain Group. That anhydrite is a very effective barrier and takes care of that little question because, you know, that is a question is what's going to go up.

Also it includes the top part of the Delaware Mountain Group. It indicates there at 3660, there's a slight gas show. At 3680 there's a slight gas show. These gases we found over the years have encountered this same interval. It happens in Texas and New Mexico, everywhere we run across it. Down there they call it the Lamar Lime; actually it's shaly lime, and there is invariably, always a slight gas show. The proposed producing interval doesn't come in until we get down here to 3700, where there's a very slight oil show and a slight gas show.

You know, those were things that we were aware of and that's one reason we've spent so much time and effort looking at these things. That is not productive. We looked at it on the logs. We ran sidewall cores in those intervals and did everything that we could feasibly do to determine whether or not they would be productive in there and they are not. They're wet. They're tight. They won't give up anything.

Also have one on the Zac Federal, which

is the well that we plan to use for water disposal; fundamentally the same thing. You get that anhydrite stringer, top of the Delaware Lime, the Lamar, a little bit of a gas show and in this case that productive sand, which is named the Ramsey, doesn't have anything at all in it, so there's nothing there in that interval.

Then we moved up to our Ginger Federal, same thing, we have the anhydrite section; back into the Lamar; a little slight gas show; into the Ramsey, which is tight and dirty in this particular area; also a little, minute show, this fluorescence is 5 percent. 5 percent is hardly anything. 5 percent is what you put down when you can see one or two pieces. I know this gentlemen that did this work and a I was there with him when he did it, and everybody that does borehole cuttings for a living understands all this. In order to put it on a log a 5 percent line's about as low as you can put on there and have anybody ever see it. So if there's two or three pieces we put down 5 percent.

These little gas shows are insignificant and we have compared them to the better porosity. You have to remember that these are shallow, the hydrostatic is real low. We're using a light weight fluid. It weighs around 9-2. There's hardly anything to hold this back. If there was anything there we'd see it. A real good Ramsey well,

if you drill into it light, you'll know it in a hurry. The same thing going on to the Ginger Federal No. 2, which is a well north; has the anhydrite section, the Delaware Lime, and into the Ramsey Sand, which had nothing in it; didn't drill very good; no show whatsoever.

We also, in order to carry on what we started out to do, we did secure a sample log on the old well that was drilled originally by Earl M. Craig, which is in Section 25. It's called the Spitfire 25. And he had --

Q On what page is that? Is that the second to the last page, Mr. Gunn?

A It's the second to the last page.

Q Go ahead, Mr. Gunn.

A All right, and you'll have to consider that this -- this is a little bit of an older well. It was drilled back in '85. It's not that old but it -- some of the older wells it doesn't matter when you do this, it does the same.

We drilled into, they did, drilled in there, got the Lamar, the Delaware shale section, called the Delaware Lime, and they did get the same thing that we'd gotten before, a little bit of a gas show and a little bit of a spot of yellow thing there, probably a little sandy streak in there. They drilled down into the Ramsey Sand, got a little trace of show and a little gas. They

drilled on, they didn't bother to stop and test anything.

Down in their producing interval where they had a -- they did have a very significant show and were aware of it when they drilled it. Of course, their shot was to go to the Wolfcamp, so they put that behind pipe. I'm sure they're aware of it yet, that that well, there probably is a producing well behind the pipe from the Williamson Sand.

Q Mr. Gunn, do you have anything further concerning Exhibit Number Five?

A Well, I do briefly. We did pick up the Williamson well, which is the Amoco Federal that's also in 25, originally drilled by the Pento Exploration Well. We'd heard some rumors about some gas in that well when we were drilling in that area and we were -- one reason, is one reason we were real aware of it, and they had the same thing we'd had, the anhydrite coming into the top of the Lamar Lime section, shaly thing, and they have even just hardly a bobble of shaly gas coming into that; not as much, even, as the other wells had had. They don't have any show coming to the top part of the Ramsey at all. They don't have the little show that we ordinarily get (unclear). They don't have the little gas show. There's a spike out there, but that's a test to see if their equipment is working. I'm sure by this time they were concerned, and we

also looked at the -- we have a complete log on all this, clear to the bottom, and we looked at all the intervals down through the zones that we do plan to use for water disposal and there aren't any shows down there.

So that's all I have on that particular exhibit.

Q Mr. Gunn, where are the water producing, fresh water producing zones in this area? Are there any?

A There is one. We do have a fresh water well on the pad of the Ginger Federal No. 1. It produces from an interval about 400 feet to 480.

Q Where is that well?

A It's in Section 25 of -- wait a minute, 24, in the southwest of the southeast.

Q What other water sources are there in that area, fresh water sources?

A There aren't any at all. That's the only well that was out there. Years and years ago there was supposed to be a windmill back off up there in 23 but it hasn't been operative for many years. There's no mill or anything up there.

Probably it produced out of this same zone. It's called the Ross Draw Water Sand and some of those ranchers out in through there used it. We used it to drill the No. 2 Ginger Federal.

Q Mr. Gunn, is there any possibility that the injected water would somehow migrate to reach this fresh water source in Section 25?

A No, that's an absolute impossibility. There's no way it would ever get up there based on the formations alone. The well we're going to use will have two strings of pipe across that and they will be cemented.

So we don't -- we're not concerned about our fresh water.

Q Mr. Gunn, can you tell us something about the general water production that -- or produced water that is produced in association with oil in this area of Eddy County? In other words, I guess my question is how --

A What do I know about the water?

Q How much water does the average well produce out there?

A Well, let me preface this with some of my local experience. I did work for Challenger Energy, which had some producing wells, ten or twelve of them, back west of this area. I also worked in those. I also worked closely with them picking the perforations and trying to find some good zones and we found that there isn't any water free completions in this Cherry Canyon section and I've never seen it really in the upper part in the Bell

Canyon, either.

The Brushy Canyon, the same thing. These sands are going to make some water and those ratios vary. I've seen some really outstanding wells that flowed oil and they made some water. You get, if you can get 400 barrels of oil out of a real good zone, then you might make 10 barrels of water. That's not the normal thing. The normal thing is if you make a 100 barrel well you're going to be looking at least 200 barrels of water, and that's -- when you put a beam pump on there and start pumping it, you're going to make 200 to 250 barrels of water and water in the oil you get and it will range as low as 18 or 20 barrels and it will do that for a long, long time, and that's why this water disposal wells are so every important in the economics of trying to pump 220/230 barrels of fluid a day, and the have to pay somebody to haul off the water and sell the oil for whatever you can get for it, leaves us in a heck of a bind and the prospect of some more of this same type production.

There is a lot of good Delaware production scattered around in Eddy County, and other areas, too, and at the present time we'd like to, you know, get rid of our water so we can go ahead and develop some of those acreages that Mrs. Grace holds currently.

Q Have you been working on some kind of a

development for further development of lands controlled by Mrs. Grace?

A Yes, I have. I was -- have been busily prospecting for her for about six months before I got involved in this water disposal thing, and we've made some -- made a lot of a little different cross sections. It was never our intention to try to get over and map Williamson's field over there. That's, you know, that takes a lot of time. We looked at it enough to understand what was going on and our prospecting area has more locally in our area and north and to the east, and, you know, in the general vicinity, and yes, we did, and are currently still doing some prospecting in there. Right now we're looking at some geophysical data that we've gotten from Amoco and hopefully that will tell us a lot more.

We've got a lot of information out of the wells that Mrs. Grace drilled. We've got dipmeters on every one of them. We've got microscanners on the wells. I brought one with me. It's a real bulky thing. One foot is like this. It is one foot to one foot. It's a full scale log, and it's about that thick and it includes the entire well and is very informative to looking at those zones.

We feel like we know what the Delaware looks like and if nothing else, we can look at this --

these things are like pictures and we have that information and intend to utilize it to, hopefully, not ever drill another dry hole.

Q Mr. Gunn, on page 34 of the application you authored an affirmative statement. Is that still your basic conclusion with regard to the geology in this area insofar as water disposal is concerned?

A Yes, it is.

Q What is that general conclusion?

A The general conclusion would be that these sand intervals would be well suited for disposal of waters. They are isolated from other porous sands by shaly limes and shales. There's no known oil/gas production nearby from these intervals and we have given there the overall thickness, the 1380 feet, a selected interval of 1120, a trap to the surface taking our surface water, which would be 2000 feet of anhydrite and salt, that's the Castile formation. To our knowledge and the best we can find out, there are no open faults and, you know, that has to do with walking around on the ground, well, I've walked around on the ground.

Our seismic information and mapping the other wells, there are no faults that would affect us in those sands and there is no potable water down there. Those waters would be either salty or brackish, salt water,

they're not drinking water at all; about like Artesian.

Q Mr. Gunn, in your opinion would approval of this application be in the best interest of conservation of oil and gas?

A Yes, I do.

Q Why is that?

A I think it would give Mrs. Grace an opportunity to go ahead and develop her leases and continue to prospect for Delaware oil and allow her to increase her production, thereby increasing the amount of water that she's currently managing to get rid of.

And I think, yes, it would be in the best interest because these are Federal leases and close into some State leases and it would be beneficial to have a good disposal well in that eastern end.

Q Mr. Gunn, how about would approval of this application have the effect of impairing correlative rights?

A I don't think there's any way we will damage anybody else's producing property. We would be a long ways from them. If they're in any potential pay zones that we're not aware of, I don't think the water would ever get there to begin with, so I don't see any problem with it myself.

Q Okay.

MR. PADILLA: Mr. Examiner, we have no further questions and I'd pass the witness.

MR. STOGNER: Mr. Dickerson.

CROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Gunn, did you personally pick the proposed perforations in Mrs. Grace's injection well?

A It was a joint effort. I worked in conjunction with Mike Butts, who is a log expert, at that time an employee of Mrs. Grace's --

Q Well, what --

A -- and he and I together picked those.

Q Okay. You reviewed them.

A Yes, I have.

Q You've examined the logs out there?

A Yes.

Q Okay. Mr. Gunn, let me ask you to turn to page nine of your exhibit, the C-108, Exhibit Number Six, I guess, and that sets out at the bottom there intervals. I counted those and I think that there are fifteen separate intervals and I point out that the bottom perforated interval from 4474 to 4518 is duplicated at the top of the next page, so I've eliminated that.

A Good for you. I didn't catch that.

Q You have reviewed all 15 of those proposed perforated intervals.

A Yes. We looked at those and Mike and I calculated water saturations on those and the porosity for each one of them. These look like kind of a scatter shot. We could have gone in there and said that we were going to perforate everything from 3886 to 39 -- to 4990 with two shots per foot, but we like to select where our perforations are going to be. It works better and we feel like we have a better job by doing that.

Q Do you know --

A It's really our intention to start at the bottom with the best sand and work up and, see, if that bottom zone will take the water we want it to take, it will be -- till we have to, we won't perforate any of these upper intervals, but we want the right to use them if we want to.

Q You've then anticipated my line of questioning, Mr. Gunn. I was going --

A Oh, sorry.

Q -- to ask -- no, that's fine, it will save us some time.

It is then Mrs. Grace's intention to not perforate each and every one of those possible zones all at once in converting this well to injection?

A Yes, sir, that's my understanding. I'm not in her operations staff, but, yes, that is my understanding of what they're going to do.

Q When you're referring to the bottom zones that you, don't let me put words in your mouth, but anticipate may take enough water to solve your disposal problem, can you isolate for us, describe which of those bottom zones you're talking about on the top of the page?

A Yes, sir, I can.

Q You can?

A I can do that, I think, over here on this cross section.

That is the zone that we really anticipate starting with. It would be the interval from 4990 back to 4873. And that's the zone that we really anticipate getting our water.

Q And from looking at some of the intervals that you have set forth in your application there, those zones encompass, really, the thickest segments that you have picked out, do they not?

A That's correct.

Q Looks like your proposed perforated intervals range from a minimum of 6 feet in the very first one, up to about 40 feet in that one that you've described as 4586 to 4624.

A Yeah, that's correct.

Q Is it your opinion as a geologist, Mr. Gunn, that -- that it's necessary for this Division as this time, assuming it grants authority for Mrs. Grace to dispose of her water in this well, is it your opinion that it's necessary to have such a large, my calculations show it to be in excess of 1100 foot, interval authorized to perforate when you do not anticipate requiring all that interval for the injection of water?

A In my opinion, but this is not my expertise, we do have an engineer, and I think that includes part of his testimony, but in my opinion if we get the continued development that we want to and drill the wells we'd like to, and we know we're going to get water with them, we'll need this interval, because it's the history of the other wells in the area, they require periodic workover. They have a problem with pressure development, pressure build-up on them. You don't move just water when you move this stuff out of the Delaware. You move a certain amount of material that's very difficult to get out of it. You move some chemicals in solution and you move some very fine material that won't dissolve that aren't chemicals, they're just solids there, more colloidal than anything else, and they have a tendency over a period of time to block these perforations, and they will ultimately, over a long period

of time block the whole formation. So that's one reason we want as much area as we can get.

Q Let me ask my question again and hopefully a little bit clearer. I didn't hear an answer to it.

You're seeking authority to perforate virtually the entire interval from 3886 feet to 4990 feet, are you not?

A That's correct.

Q Based on your current information is an interval that large, in excess of 1100 feet, necessary for Mrs. Grace' purposes at the present time?

A I say yes to that because of the one interval that we do think is going to take the most water, we're not sure of, it hasn't been utilized to our knowledge in any other wells, we're sure of the others. We know what they'll do. We'd like to use them and this bottom one.

Q Your question -- your answer to me seems to be yes because we think in the future whatever happens is going to show that that's the question. My question, I'm trying to isolate it, is based on your present interpretation of these various zones, and in your opinion, as I understand your testimony, the lower zones and the thicker zones are the most prospective for accepting your injected water.

What information do you have right now

that the necessity exists right now for the entire 1100 feet perforated interval to be approved at this time?

A Well, for one thing, it would keep us from having to come back up here and spend three days going to one of these hearings, which is very expensive and time consuming.

Q But on the other hand, if you --

A That in itself is a pretty good reason, but yes, I think it would be necessary. I think those zones would be necessary to get rid of the water in the long run.

Q But if it turns out to be the fact that these lower zones from 4586 feet down to some other more restrictive interval there in that wellbore do in fact accept the water, there won't be any necessity for perforating those upper intervals, will there?

A Well, that's a possibility, yes, but we probably will ultimately do that.

Q You don't really know at the present time; what the future holds is a little cloudy for all of us.

A That's right, we don't really know what the future holds.

Q Right.

A But I can pretty well guarantee the sun

will come up tomorrow, I expect.

Q Mr. Gunn, you have more or less condemned all the zones in this prospective injection interval as far as their productivity for oil and gas, have you not, in your --

A Yes.

Q -- earlier testimony?

A Yes, sir, I have.

Q In your opinion are there no zones in that 1100, in excess of 1100-foot interval that offer any opportunity whatsoever for production of hydrocarbons?

A Not in this area that we're working in.

Q It's your opinion there are no zones that offer any hope of productivity in that perforated interval?

A In this area, yes.

Q You mentioned your examination of some of those zones which correlate, I guess, do they not, with your proposed perforated intervals as far as you're picking the intervals to be perforated based on your log interpretation and the porosity and permeability factors reflected by those logs, aren't you?

A Yes, that and sample examination and our mud logs. Yes.

Q And so the mud logs and sample examina-

tion, together with your interpretation of these logs for porosity and permeability are also examined in reviewing those same zones as far as their potential for production of oil and gas, aren't they?

A Yes, they were.

Q How -- has any of those zones in any of Mrs. Grace's wells that you've worked on actually been tested for oil and gas?

A Yes, they have.

Q And --

A We didn't get anything. We ran cores through there, which is, you know, really, in reality is probably better than a drill stem test. A drill stem test in the Delaware is a waste of time and money in my opinion. Some people may not agree with that but they don't give very much information.

Q Was it the one core that --

A We did core. We cut other cores in those intervals.

Q Other cores that you did not testify to --

A Well, they're below --

Q -- in your testimony?

A They're below our interval that we plan to use.

Q But your core data that you testified to today was, as I understood it, from 4078 feet to 4170 or 4136 feet, I believe.

A That's correct.

Q Is it your opinion that that core data from that interval is representative of each and every interval that you propose and seek authority to perforate and inject water into?

A Yes, it is. It's correlative to that zone that we plan to use and we've also correlated these same zones and they are correlative back over into the other salt water disposal, the intervals that are currently being used, and that's, you know, we went to school on what was already done. We knew that they would take the water. Apparently, even if there is production in a local area, it doesn't seem to have any effect on that production. Proximity to a salt water disposal well isn't particularly detrimental to oil and gas production. If you can have a producing oil well 1320 feet from one of them, it apparently doesn't hurt them very much at all.

Q Assuming --

A But we don't plan, as far as we're concerned, there isn't anything (not clearly understood.)

Q Assuming further development for oil and gas occurs in the area, let's just isolate it to the area

of review, within a half mile or thereabouts of your proposed injection well, you have participated and I suppose from your testimony that you're familiar with the completion, overall completion attempts in the Delaware and general techniques of drilling, and what not, as well as your --

A Yes, generally, yes, I am.

Q Would it concern you at all in this future development to have an injection well currently injecting water into an 1100 foot interval, that you have to drill through, set pipe through, and cement, in some of these wells that may be drilled in the future?

A Not really. That's not a problem. It takes probably in the vicinity of eight hours to drill that section. We can shut down a salt water disposal injection pump for eight hours and not create any problems, and that would be the only time that that would be an adverse pressure, the addition of the hydrostatic and the surface pressures and we'd just shut it down, if need be, probably not, so we have more problems with natural water flows coming out of the Cherry Canyon that are there already than we would anticipate with our water disposal system.

I've drilled some wells in some waterfloods and it gets a little wooly, but this isn't that kind of a deal.

Q Thank you, Mr. Gunn. I have no further questions.

A All right, thank you.

MR. STOGNER: Are there any other questions of this witness?

MR. PADILLA: I believe I have a couple.

CROSS EXAMINATION

BY MR. PADILLA:

Q Mr. Gunn, if you were to perforate the -- all of the perforations as shown on page 9 and 10 of the application, and you started injecting water into the well using all of those perforations, would that have the effect of minimizing the horizontal expansion of the water disposal?

A Yes, it would. It would spread these zones out so that each one of them took whatever water that it could take and so the horizontal extent would not be felt as much. Each little zone would get its own, oh, I call them pieplates. You get a water expansion zone where you'll get a little pressure and a little movement. So the more of these zones you have, then the less horizontal expansion you get for the water.

Does that answer your question?

Q Yes, sir.

A I hope. I'm not a hydrologist nor an engineer and those folks come into (unclear), but yes, as far as I know, that's the way I look at it and it's reasonable to assume that each one of those that you have open, that the less water will go into each one and so the less likely it would be to go out horizontally.

Q Mr. Gunn, did you take any sidewall cores from any of the wells in the area of review?

A Yes, we did. We sidewall cored but we don't have that information as an exhibit, I don't think.

Q Well can you testify about your knowledge about those sidewall, sidewall cores?

A Well, yes, I can. We picked from the logs while we were in our logging program. At the end of the job another geologist and myself from Roswell picked the intervals to use for sidewall cores, taking the zones that looked like they had some porosity and permeability and were clean and had those examined by Litton Core Lab and none of those, with the exception of the one producing zone that we took some through the Williamson Sands and they looked pretty good, like they were good. They were saturated with sand cores and it's easy to see a good oil show.

But these other zones didn't have any-

thing in them at all. They were no show. We didn't have any kind of a hydrocarbon show in any of the zones that we did take sidewall cores in and we covered those intervals pretty well. We have that material.

MR. PADILLA: I believe that's all I have, Mr. Examiner.

Mr. STOGNER: Any other questions of Mr. Gunn?

RECROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Gunn, excuse that question, first question and answer Mr. Padilla asked you raised one further question from me.

If you in fact receive authority to perforate the entire interval from 3886 feet to 4990 feet, you will not have any control over where that injected water actually goes into, will you?

A Not really. Just with a normal opening of the perforations a certain amount of acid put away in there to clean everything up, which is normal to oil production, which is my expertise, really, that water is going to seek the least resistance. It's going to go where the most permeability is and the cleaner sand and it will also tend to go to the deeper zones due to the hydrostatic

column and so who know, you know.

Q And if you are wrong, Mr. Gunn, and there is open or more prospective commercial zones for oil and gas production in your perforated interval, because of those factors. The porosity and permeability that exists, that water will seek to go into those, that specific zone, too, will it not?

A One thing about that is -- would be a proximity to the water disposal well itself. If water is to run off across somebody else's lease, it's first got to leave our borehole and the zones that we are using, the poorest permeable ones, are the ones that we can demonstrate going west to the other wells over there, mainly the ones we do have -- have compared it the one in 26, if I'm not mistaken, which is that Wolfcamp gas well that belongs to Terra in the area.

Q Mr. Gunn, I don't really mean to belabor this too much. I might just ask you one question.

A No, I -- give me a minute. I'm going to answer your question to the best of my ability. We did compare the log in our Zac Well there in Section 25 to the well that was originally drilled, I think, by Florida Exploration and Apache came in there and then Mr. Williamson bought it and now I understand that Terra Resources, that company does own that well are, or at least Mr. Williamson

doesn't own it, that's our information at the current time.

Anyhow, we were looking to see if there were any continuous zones that would come down in the -- our interval that looked like they might be productive in that well, and did not see any. It looks like any of the rest of them; calculates water saturations will be low or high; no oil. In my opinion they don't have any better prospect of getting any oil from that interval than we did.

Anyway, there are other zones that are lower and of course we're not dealing with them. I think everybody realizes that we're not going to be putting any water into the lower part of the Cherry Canyon or the Brushy Canyon and there are some pay zones down there. We're not going to be doing any damage at all to them.

Q Mr. Gunn, if you perforate the entire interval from 3886 feet to 4990 feet for whatever volume of water is injected, you will have no control nor will you have any knowledge as to where that water actually goes, will you?

A Well, we know where it will go. It will follow those sands just like a pipeline. It will be trapped in the --

Q Which sands? Which intervals are my question? You will not know, will you?

A Any and all of them.

Q It will equally into each interval that you are seeking to perforate?

A No, sir, it won't do that, but each one will take whatever water that it can.

Q But you will not have any way of knowing how much each separate interval took, was my question, will you?

A Well, yes, we can find out.

Q But you -- expensive tests.

A Well, no, we can find out. It can be done and it is not all that bad. Yes, we can --

Q Well, are you willing to commit to conduct those tests to ascertain that information?

A Well, now, we'll have to talk to Mr. Chandler, I think, who's our production superintendent and supervisor for that area. I don't know what monies they're going to want to spend to do it, but it very definitely can be done. We can determine where that water is going.

Q It's just a question of cost.

A Well, sometimes it's not as expensive as others. It's just a matter of selective perforating and taking our time doing it.

MR DICKERSON: I have no further questions of Mr. Gunn.

MR. STOGNER: Is there any

other questions of this witness?

If not, he may be excused.

MR. GUNN: Thank you, sir.

MR. STOGNER: Mr. Padilla.

MR. PADILLA: We'll call Mr. Chandler at this time.

DOUGLAS CHANDLER,

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. Chandler, for the record would you please state your name and where you live?

A Douglas Chandler, Carlsbad, New Mexico.

Q Mr. Chandler, you work for Corinne B. Grace?

A That's correct.

Q And what are your duties with Corinne Grace?

A I'm a drilling and production superintendent for her.

Q How long have you been a drilling and production superintendent?

A For Mrs. Grace?

Q For Mrs. Grace.

A For one year.

Q Have you previously testified before the Oil Conservation Division?

A No, I haven't.

Q Tell us, sir, what your educational background is.

A Well, I attended Artesia High School. From there I went to work in the oilfield. I roustabouted (sic), pumped, roughnecked, drilled. In 1976 I went to work for Mermis Engineering and I was employed with them for five years out of Houston, Texas, as a company representative overseeing all drilling and production operations, laying of pipelines.

Q What else have you done?

A And I worked for Texas Oil and Gas for five years as a drilling foreman for them, and I also worked for Bill Baker as a consultant, Baker Engineering.

Q Where did you do that?

A In Carlsbad.

Q In Carlsbad. What experience do you have with regard to the Corinne Grace wells as far as the Delaware production that she has?

A Well, I've drilled all of them but the

first one they drilled there, the Grace CG.

Q Did you prepare this salt water disposal application or had it done under your supervision?

A I had it done under my supervision', kind of a join effort in our company.

MR. PADILLA: Mr. Examiner, we tender Mr. Chandler as a practical oilman.

MR. STOGNER: Mr. Dickerson, do you have any objection?

MR. DICKERSON: Nope, no objection.

MR. STOGNER: Mr. Chandler is so qualified.

Q Mr. Chandler, I'd like to direct your attention to what we have marked as Exhibit Number Six and have you turn to page number 4 and this is the application.

That page number 4 what the purpose of this salt water injection well is. I wonder if you could elaborate for us what the purpose is and how it came -- why it became necessary to file for a salt water disposal well.

A The reason being it's economical purposes. We need a place to dispose to make our wells more economical.

We have the CG Well will make about 10 barrels of oil a day and about 250 barrels of water and

that's not feasible to put that kind of -- have that kind of water hauled every day.

Q How much does it cost to have that water hauled?

A It runs us $56.00 an hour, I think.

Q It's not on a per barrel basis?

A No it's not.

Q Is that $56.00 on a 24-hour basis?

A Well, the time starts whenever they leave the yard till they get back to the yard.

Q Okay. Does that affect the economics of the wells in the area that Corinne Grace operates?

A Greatly. The CG right now is only being run 3 to 4 days a month because of that. There's just no way you can get -- have that much water hauled and come out on 10 barrels a day at the current price of oil prices.

Q What plans do you have for the CG Well if this application is granted?

A Well, with this disposal, we know from the CG at one time we pulled it real hard and we can make, if we put a bigger pump in there and pull about 400 barrels of water a day, we can make 35 - 40 barrels of oil.

Q Is this true for the other wells that are operated by Corinne Grace?

A It's a possibility in the Ginger Federal

No. 1. We're not pulling it real hard right now but we're probably looking at another frac in the near future and usually whenever you refrac you're going to get a little more water.

Q What plans does Corinne Grace have for developing Sections 24 and 25 as far as further development?

A Well, right now we're planning on developing it. We have a seismologist at work in Houston right now with Amoco on some seismic plans to pick our next location in 24 and also look at 25.

Q Do you anticipate that you will encounter water production in future development of this area?

A Yes, it's -- I think Mr. Gunn pointed that out quite readily. You -- anywhere to drill down there is going to give you some water, and the proportions there are usually, like he says, 100 barrels of oil, 200 barrels of water, at least.

Q Mr. Chandler, I'd like for you to turn now to page 8 of the application and have you describe for the examiner the schematic of the disposal well.

A Okay. This is our Zac Federal No. 1. We set 13-3/8ths to 920 feet; circulated cement on that string.

We then set intermediate at 3480 with

8-5/8ths and we circulated cement to surface on that string.

Our long string, we ran a DV tool at 5174. Our bottom at 7020. We circulated our first stage and then opened our DV tool and we circulated cement off of it.

And then we cemented our second stage and with a bomb log we established top of cement at 3291, which is about 200 foot up inside of the intermediate pipe.

Q Do you have anything further concerning the schematic of the injection well?

A No, other than we have some -- this will be after getting ready for the disposal, this particular schematic.

Q Okay. Would you briefly go on now to what is shown on page -- well, starting on page 14 -- correction, page 15 of the application? What does that show?

A On page what?

Q 15, 16 and --

A Okay, 16 is a --

Q -- 17.

A -- is the Zac Federal No. 1 with a half mile radius line. It shows that there is -- currently

there is only two wells in that 1/2 mile radius. One of them is our Zac and the other one is our CG Federal No. 1.

Q Mr. Chandler, to your knowledge did you give notice to all of the operators within that half mile circle?

A Yes, sir, we did.

Q Who were those operators that you gave notice to?

A I believe that's on page 44. I gave notice to the surface owner, which is Bureau of Land Management and all the operators, Mobil Producing, Amoco, Ralph Williamson, J. C. Williamson, Yates Petroleum, ARCO Oil & Gas, and Chevron.

Q Okay. Go on now to page 17 and you now have two circles on that. What does that mean?

A Well, that was showing our -- our fresh water wells of which there is none within a half mile but we have a fresh water well on the Ginger Federal No. 1 pad but it's just outside the mile line right there and Mr. Gunn did bring that well up and we do have it in this application, but it is outside the mile line.

Q Okay. Starting on page 18 you have a tabulation of well data. Could you run through that --

A Okay.

Q -- tabulation of well data and tell the

Examiner what that is?

A That's our Grace CG and what it is showing is that we have a good cement job on that particular well.

Then also on the Zac, and it also showed what we've done, where we're perforated, and the acid jobs and frac jobs.

Q Okay.

A It also shows a plugged hole, the Win State No. 1, which is ours, and we drilled it down to 201 foot and plugged it from the bottom to surface.

Q Mr. Chandler, let me hand you what we have marked as Exhibit Number Seven and have you tell us what that is.

A Okay, these are -- these are certified -- well, it --

Q Are those return receipts?

A Yes.

Q Copies of those?

A That's what I'm wanting to say.

Q Okay. And that corresponds with -- that means that all the people listed on page 44 received the notice of this application?

A That's correct.

Q Mr. Chandler, have you communicated with

any other companies in this area, in the area of the proposed injection well for -- or to seek their approval for this salt water disposal?

A Yes, we have. We had talked to Mobil about converting it to a disposal and if we did that, then we would have to reassign back to Mobil, but Mobil sent us a letter and waived that option there and consented to let us go ahead and dispose. And also Amoco is in the process of -- they want to see us develop our acreage up there in 24 and they're in the process of sending Mr. Lemay a letter in support of this salt water disposal.

Q Let me hand you what we have marked as Exhibit Eight and tell the Examiner what that is.

A Okay. This is -- this is your letter to Mr. Cox at Mobil and his reply where he waives reassignment

Q Now, attached to my letter is -- are some tables. Can you tell the Examiner what those tables contain?

A Okay. These are the CG Federal production reports from 1987 through April of 1988, and as you can see, we can produce a tremendous amount of water through the CG but it will give us some oil and at the present time we can't run it because of the water and we're just having to leave it down.

Q How about the next page?

A Okay, the Zac Federal production report is very tight sand and we fraced it twice and we still can't get any production out of it. We make about 2 barrels or 145 barrels of oil a day off of it, which is not commercial at all, and I just don't think this -- this one's ever going to make a well here.

Q So I take it you made the decision to convert this well to a salt water disposal well.

A Yes, sir, we did.

Q Tell us, Mr. Chandler, what are the pros and cons of being able to divert this well to salt water disposal to Corinne Grace.

A Well, there again it's economics. We had a dry hole up there that we'd thought about making into a disposal but we'd have to re-enter --

Q Where was that well?

A That was the Ginger Federal No. 2. It's right north of the Ginger Federal 1.

Q And that's in Section 24?

A That's correct.

Q Okay.

A And the cost of re-entering, running pipe and cementing, when we've already got one that's cased, and also some -- some tank batteries there, plus --

that tank battery, we can expand it for the salt water disposal water.

Q So I take it that this well is a better conversion prospect than the well in Section 24.

A Yes, sir, it will cost us about $106,000 to convert this one where if I had to re-enter and drill out the other one it would cost about another $250,000.

Q What other options have you had for getting rid of your water, produced water?

A We could -- we could sell it to Mr. Ralph Williamson at 35 cents a barrel with a 3-year contract or have it hauled.

Q What are the economics in terms of this application with respect to the Williamson contract, or proposed contract?

A On the Zac, if it cost me $106,000 to convert and make a disposal out of it, and the current production that we have now that we know we can probably enhance our oil production on the CG, but by doing that you're going to rise the water, we're going to say you can put away 400 - 450 barrels of oil and in three years we can pay this water disposal out with our own fluids.

Q And would you still be able to use this well for further development in the area?

A Sure.

Q Mr. Chandler, do you have anything further to add to your testimony here today?

A No, sir.

MR. PADILLA: Mr. Examiner, we tender Mr. Chandler for cross examination.

MR. STOGNER: Mr. Dickerson, your witness.

MR. DICKERSON: I have no questions of Mr. Chandler.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Chandler, let's look at Exhibit Number Six. Let's see, what page, page 4. In your paragraph A, "Operator may accept disposal water from other operators." Do you want to enlighten me by what you mean by that?

A Well, I think originally when that was put in there, that's if a -- well, if another operator wants to dispose into that well, if we have room and the well has capacity to handle all of our wells, that we will let him do that.

Q So you're proposing to make this into a commercial operation if need be.

A Well, as I understand it, if you haul

water from one federal lease to another federal lease, it is termed as a commercial well. Is that not correct?

Q Well, you'd be taking somebody -- other operator's water, is that correct, and you'd be charging them, right, and off of another lease?

A That would be correct. We really hadn't -- hadn't really thought about that too much.

Q Would you be accepting other -- water from other formations besides the Delaware?

A There's a possibility, yes.

Q But as it stands right now your CG Well, that is a Delaware --

A That's correct.

Q -- producer, and your proposed operations in Section 24 and 25, which is your Ginger Federal No. 1, now that's also a Delaware producer, is that correct?

A That's correct.

Q Is there any other producing formations in this area that you're anticipating bringing on line in the next few years?

A I don't understand what you're saying there, Mr. Stogner.

Q Well, what other formations do you propose to open up?

A In this --

Q In this area.

A That's about it for us. It's strictly from the Delaware play for us.

Q Okay. That's -- that's what mostly this area is producing, is from the Delaware Sands.

A That's correct. There's a few Wolfcamp wells spotted here and there but mostly Delaware production.

MR. STOGNER: Are there any questions of this witness? He may be excused.

MR. PADILLA: Call Mr. Ramey at this time, Mr. Examiner.

JOE D. RAMEY,

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

DIRECT EXAMINATION

BY MR. PADILLA:

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

A Joe D. Ramey.

Q Where do you live, Mr. Ramey?

A Hobbs, New Mexico.

Q What do you do for a living now?

A I'm an oil and gas consultant.

Q Mr. Ramey, I take it you're a consultant for Corinne Grace in this case?

A Yes, I am.

Q And you've familiarized yourself with the application made by Corinne Grace for salt water --

A Yes, I've looked at the application, I've looked at logs, I've looked at mud logs, core analysis.

Q Your credentials have been accepted by the Oil Conservation Division in the past, have they not?

A Yes, they have.

MR. PADILLA: Mr. Examiner, we tender Mr. Ramey as a petroleum engineer.

MR. DICKERSON: No objection.

MR. STOGNER: Mr. Ramey is so qualified.

Q Mr. Ramey, let me hand you first of all, or have you refer to what we have marked as Exhibit Number Six, and which is the application.

I'd like for you to go through that and tell the Examiner what changes you have made since your review of the application.

A Well, I found several -- several little

mistakes which have been corrected on the Examiner's copy. I think Mr. Chandler covered part of them. The main change I want to call your attention to is on page 29. The application shows a maximum injection pressure of 888 pounds and that's applying the .2 to the top of the perforations. That figure should be 777 pounds.

Q Did you also make another change on pages 9 and 10 of that application?

A On page 9 under 2b it says the cement top calculated at 300 feet with 35 percent wash out factor. That should read cement circulated, cement circulated on the intermediate string there on the Zac Federal.

And then on page 10 on the first line under 4 at the very end it shows setting a cast iron bridge plug at 5710 and that should read 5770.

Q Mr. Ramey, I'd like to direct your attention now to page 29 of the application and have you discuss that for us, discuss the contents of that page for the examiner, or tell him about that page, I should say.

A Well, this shows the injection rate, the average daily we anticipate would be 1500 pounds, or 1500 barrels, with a maximum daily of 7500.

At present we would have about 250 barrels with the -- with no change in the pumping equipment on the CG. We can improve that, you know, the producing po-

tential on the CG to around 35 barrels of oil with 450 barrels of water, so we would have an immediate 500 barrels of water to dispose of and then we -- we anticipate further development in this area up to probably beyond 1500 barrels and somewhere in the neighborhood of maybe 3000 - 4000 barrels. And we have potential to drill several wells in this area and I understand that there are other farmouts available in the area where there could be the possibility of Mrs. Grace expanding her acreage situation to greater than what she has at the present.

Q Mr. Ramey, is the 7500 barrel per day limit, the maximum limit as shown on this page, realistic?

A I think it could be. In looking at the other disposal wells in the area, the one well, the first one on Exhibit Two, is injecting into the open hole and probably has more over all footage open to injection than we would have in our well.

We also have a so-called lower zone and this is a new zone that has not been tried for injection in this area, so it's a good porous zone and looks like it would be an excellent zone. So it's possible we could -- we could get up to 7500 barrels in this well at the pressure limitation.

Another pattern we saw was, I think, Mr. Williamson's latest application, was for 7500 barrels of

water in one of his disposal wells.

Q Do you have anything further to tell us about what's on page 29?

A The last portion is "Disposal zone formation water is very similar to all produced Delaware water." I don't anticipate any -- any problems in disposing Delaware water into -- into the Delaware. I think we've got a -- we've got a good history of Mr. Williamson putting some 10-1/2 to 11-million barrels into his two disposal wells with -- at very low pressures. I think they're under 800 pounds. And so I don't anticipate we would have any problem in exceeding the pressure, and putting good volumes of water away.

We may not be able to get to 7500, but that -- we -- we will certainly inject up to the maximum injection pressure if need be.

If any other waters besides the Delaware are to be disposed of in our well, we will run compatibility tests on these waters prior to disposal to determine if they are compatible and they can be disposed safely without doing any damage to our well.

Q Mr. Ramey, on pages 30, 31 and 32 of the application, there are some water analyses. Would you tell us what those -- what -- about those water analyses?

A Yes. These are water analyses. The

first page is on the two -- two of the Grace wells, the Zac Federal and the CG Federal. Those are analyses of the Williamson Sands and they show chlorides of 190,000 plus.

The second page, page 30, are analyses from the Cherry Canyon and Bell Canyon. The Cherry Canyon is high in chlorides, 169,000. The Bell Canyon is also fairly high, not as high as the Cherry Canyon, 76,000.

And then on page 32 there are two more analyses that we had available, one being from the Brushy Canyon of 197,000 and then the Wolfcamp of 48,000.

Q Are the analyses -- what conclusion do you draw from these analyses?

A Well, it's bad water. Certainly needs to be disposed of and the best disposal would be to put it back where it belongs, where it came from.

Q Are these waters compatible for injection into the -- into the proposed injection zone?

A I think -- I think all of the Bell Canyon, Brushy Canyon, Cherry Canyon are -- are compatible because I think those waters are being disposed of presently by Mr. Williamson in his disposal wells to the west of our proposed disposal well.

The Wolfcamp I think would -- if any Wolfcamp were offered at some future date, I think we would have to run a compatibility test on that to determine that

it is compatible before we would dispose of it.

Q Mr. Ramey, do you have any other testimony concerning the application itself? Anything contained on Exhibit Number Six?

A I think we should refer back to the schematic of the disposal well, page 8. The disposal will be down plastic lined tubing below a Guiberson UNI VI packer which will be set within 100 feet of the uppermost perforations.

The annular space will be filled with -- of the 2-7/8ths injection casing, with an inert fluid. We will have a pressure gauge on the annulus to detect any packer leakage and a pressure gauge on the -- on the tubing itself to insure that we do not exceed the allotted pressure on the well.

We will conduct a mechanical integrity test on completion to determine that the packer is holding and then at least every five years thereafter, as required by -- by the Division.

Q Mr. Ramey, let me had you what we marked as Exhibit Number Nine, or you have one in front of you. Why don't you tell the Examiner what that is?

A That is a volume/time calculation for a 1980 foot circle. The well is 1980 feet from the -- from the west property line and from the north property line,

and water would have to move 1980 feet before it would leave -- leave our property. I determined the pore volume and then with -- under two scenarios here, one with 117 feet perforated, which is the lowermost zone, and the second with the -- an additional four zones, which are below the lower horizontal line on the cross section, it would be this zone plus these four zones in here.

MR. STOGNER: Which zones are those, Mr. Ramey?

A Mr. Stogner, it's the zone around 40 -- one at about, oh, 4680 to 4630, and then one from 4650 to 70; one from 4700 to 4750 and one from 47, looks like 70 to about 90; and then the large, long zone, from 48, looks like 80 to about 4980 or 90. But that's the total.

The lower zone is 117 feet and the upper zone, the upper four zones would be a total of 102 feet.

But with 117 feet perforated and injecting at 1500 barrels a day, it would take us 117.2 years, and at 7500 barrels a day, it would take us 23.6 years for our water to reach the edge of our lease line to the north and to the west.

With 219 feet perforated at 1500 barrels a day it would take 219.4 years and at 1700 barrels a day injection rate it would take 43.9 years.

Q Mr. Ramey, do you have anything else

concerning your testimony today?

A No. I think not. I think the well is cemented properly. It looks like a good, good mechanical, well, it's a mechanically fit injection well. There is one other well within the half a mile, which is the Grace CG and it -- it is also well cemented and I think that water put within these perforated intervals will certainly stay within these intervals. There's nothing mechanically to, that I can see, that would allow the water to escape, so I think the water that's injected into these Delaware zones in this area would stay within those zones.

Q Mr. Ramey, would approval of this -- in your opinion would approval of this application be in the best interest of conservation of oil and gas?

A Yes, it certainly would. We can, you know, upon conversion of this well we can show an immediate increase in production of about 25 barrels a day that we can't, frankly, can't at this time afford to produce, and then we can certainly look at drilling more wells with -- with lower operations costs. We will also increase the producing life of the wells that we now have, which will increase the overall production from the well and thereby, you know, will not create waste.

Q Mr. Examiner -- Mr. Ramey, would you -- in your opinion would correlative rights be impaired if

this application was approved?

A No, it would not be.

MR. PADILLA: Mr. Examiner, we pass the witness for cross examination.

MR. STOGNER: Mr. Dickerson, your witness.

CROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Ramey, I've had petroleum engineers tell me that water is more or less incompressible. Would that be your opinion, as well?

A Yes, I think it more or less --

Q By your calculation -- excuse me.

A I think it is more or less incompressible. I think at extreme depths, why, there is a -- there is a little bit of compressibility. I think that's been proven, also.

Q The calculations that you made on the -- your Exhibit Number Nine, Mr. Ramey, in the best case your 117 foot interval, you calculated it would be 23-1/2 years before the water that is physically injected into that wellbore under those circumstances will actually migrate outside the boundary of your circle.

A Yes.

Q That pore space that you calculated the volumes necessary to fill it is filled with something now, is it not?

A Yes, that's right.

Q What?

A With water, yes.

Q And as injected water is made into this proposed well, the existing fluids that are in that pore space are moved elsewhere, are they not?

A Yes, they would move elsewhere.

Q So while your calculations show that the water which Mrs. Grace physically injects will not exceed the boundary, it does not really direct itself to whether or not her injected water forces migration of fluids away from that wellbore to further distances, does it?

A Oh, I think it, you know, there will be migration of fluids.

Q Something will be moving.

A Yes, it will be --

Q For every barrel that she puts in the ground, a barrel of something moves somewhere under that ground.

A Yeah, I think the, you know, the pore spaces may not be completely filled. We may get some -- some filling. I think that is probably illustrated, I

imagine that when we do the initial injection that, you know, the water will probably go in on a vacuum, and so to me this would indicate that the pore spaces aren't completely filled, but they will fill and water will move and it may, you know, it may affect things off the lease.

Q Mr. Ramey, was there any particular reason that you chose a 117 foot perforated interval in the first case and a 219 perforated interval in the second case? Why did you not choose the 1100 foot interval that Mrs. Grace proposed for her injection well for your calculations?

A Well, we anticipate, I think, probably under practical operations we'll probably go in and perforate the first 117 feet, treat it, and see -- see what it will do for injection. And then if that won't take the water, if it does not take the water at we term satisfactory, we will come up and perforate the next 102 feet and treat that and then look at that and if that doesn't work, why, we've got another, oh, gosh, --

Q 900 feet.

A Well, not -- not that much overall. I had that here some place. We've got another 196 feet of perforated -- or of interval that we could perforate higher up.

Q But if you had made that calculation for

the entire requested interval in this application, we would have come up with -- it would have been hundreds of years according to your calculations --

A Well --

Q -- would it not --

A Yeah, I think it would probably in the neighborhood of 90 to 100 years with the other 196 feet; the porosity is not as good in those intervals as, you know, less pore space per foot, and so something in the range of -- I don't think it would be hundreds of years, but something in the neighborhood of 100 years.

Q In your review of this information and your calculations on Exhibit Nine, Mr. Ramey, did you form an opinion as to the likelihood that one or both of these zones that you assume are being injected into will be sufficient to accept all the water that Mrs. Grace needs to dispose of?

A Mr. Dickerson, I think initially they can probably get all the water they need to dispose of in the lower zone; however, if development goes as we would like to see it go, why, you know, we've got potential for 10, 12 wells that we could drill; at 400 barrels a well, why, that -- that puts us up in the 4-to-5000 barrels of water a day. I don't -- I would think we would need more -- more area open, more -- more of the zone open, and --

Q In the future.

A Yeah, in the future.

Q But not based on current water problems that Mrs. Grace has in the area?

A And then as -- as those zones build up, as they have done in the Williamson injection, pressure -- pressure goes up. We want to, you know, for a practical matter, we want to inject at the lowest pressure we can and as the pressure goes up, why, I think we would want to open more intervals, have more, more area open for injection purposes.

Q I want to shift gears on you, Mr. Ramey, and ask you, have you reviewed the logs and the other well data available that Mr. Gunn testified to regarding likelihood or lack thereof of oil and gas production from these porous intervals that Mrs. Grace seeks to inject into?

A I looked at the -- I looked at the core analysis from their well and I looked at the mud logs that had been submitted here, and -- and that's -- I looked at -- I looked at the logs but I -- you know, the electric logs, but I did not make any analysis, did not try to pick out water saturations or anything like that. But I looked at them to the extent that I was satisfied that you could correlate these zones for miles across here.

Q So did I understand you, you do not have

an opinion of your own as to whether or not any of these zones from 3886 to 4990 feet are or are not respectively prospective for oil and gas production?

A Oh, I think they aren't. They -- I've listened to Mr. Gunn's presentation and I've looked at these and I think the -- there's indications, I think there's a couple wells that are producing in -- in the uppermost area where we proposed to inject. The one is the -- the third log on the left on Exhibit Two. That is -- that is producing from the uppermost Delaware there, but it's also the same zone that Mr. Williamson has perforated in one -- in the disposal well that's approximately 1320 feet away and he's, you know, injected some 5-to-6 million barrels in that well and there doesn't seem to be, you know, any appreciable effect on that well from -- from the injection. It makes maybe a little bit of water and I think it's making around 300 plus barrels of water a day, but -- and the oil production has declined at kind of a uniform rate, but that -- that injection does not seem to be hurting that well.

And then there was another well, I'm not sure where it is, that is perforated lower in that interval but it is also in an interval that is perforated in another one of Mr. Williamson's disposal wells, so we're not -- we don't have any indication in our immediate area that any of

these zones are potentially productive of oil and gas and we've looked at all the mud logs and, you know, I've correlated the cored area from the Ginger lease down to the Zac lease and the zone -- the zone is comparable. It looks the same on the logs and I just don't think that there is potential for oil and gas. There is the potential for disposal. There is good porosity, good permeability, and I think they're good disposal zones, and I think it's been indicated by Mr. Williamson's wells to the east.

MR. DICKERSON: I have no further questions of Mr. Ramey.

MR. STOGNER: Thank you, Mr. Dickerson. Any other questions of Mr. Ramey?

MR. PADILLA: No further questions.

MR. STOGNER: He may be excused. Let's take a 15 minute recess.

(Thereupon a recess was taken.)

MR. STOGNER: The hearing will come to order.

Mr. Dickerson?

RALPH E. WILLIAMSON,

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

DIRECT EXAMINATION

BY MR. DICKERSON:

Q Mr. Williamson, will you state your name, your occupation, and where you reside, please?

A I'm Ralph E. Williamson. I'm a petroleum engineer, oil operator, and I live in Midland, Texas.

Q Mr. Williamson, you have previously testified before this division as a petroleum engineer, have you not?

A Yes, I have.

Q And you are interested in this area as an oil and gas operator, as well, are you not?

A Yes, I am.

Q And are you familiar with the situation surrounding the injection well at issue here and your acreage in the area?

A Yes, I am.

MR. DICKERSON: Tender Mr. Williamson as an expert petroleum engineer, Mr. Stogner.

MR. STOGNER: Are there any objections?

MR. PADILLA: No objections.

MR. STOGNER: Mr. Williamson is so qualified.

Q Mr. Williamson, let me direct your attention first of all to the plat we've submitted as Exhibit Number One, and if you would, just very briefly orient the Examiner with respect to your acreage in the area in question.

A Well, the acreage which we have active oil and gas operations on is located in the north half of Section 25, Township 26 South, Range 30 East, Eddy County, which is located in the immediate proximity of all the current Corinne B. Grace wells in the area.

Q Do you also operate the southeast quarter of Section 26 immediately to the east?

A Well, my father, J. C. Williamson, is the unit operator of the Ross Draw Unit and I do most of the field operations and conduct that. Legally he is the operator of the Ross Draw Unit.

Q All right. Looking at that map, Mr. Williamson, would you tell the Examiner about your most recent development in the area, what it consists of --

A Well, we are --

Q -- and where the well is located?

A We have drilled and are in the process

of completing the Amoco Federal No. 2 Well. That's in the northwest of the northeast of Section 25. And this well in our opinion we are going to complete, attempt completion in the zones similar to the Corinne B. Grace Ginger No. 1, but we feel that we had significant shows of oil and gas in the proposed injection interval that the Grace folks are wanting to inject water into.

Q How recently has that well been drilled, Mr. Williamson?

A Oh, I think I got off of it a week ago Saturday.

Q Have you -- you have not completed that well at the present time?

A We are just starting in, the completion started Monday.

Q All right. The trace of the cross section A-A' is a reference to your next exhibit, the cross section, is it not?

A Yes, that's correct.

Q Will you step up to your Exhibit Number Two, Mr. Williamson, and before you speak to it directly, would you briefly summarize why you are here, why you and Mr. J. C. Williamson oppose the Grace application in this case?

A Well, we are not opposed to the injec-

tion of water in the Zac, per se. Our objection is the shotgun pattern of picking random porous zones, several of which we feel have an excellent chance of producing hydrocarbons, oil and gas, in the future.

We have designated several zones which also correspond to the lower zones of the -- that Corinne B. Grace desires to inject on as very known water-bearing zones, and these zones are very large and porous capacity and they can take all the water that anyone would ever want to inject into them.

Q Mr. Williamson, let me ask you to step to your cross section now and indicate the zones that you're describing for us.

A Well, these zones are marked on the cross section colored in blue and coincidentally, each one of them was in approximately the same zone that Corinne B. Grace desires to convert to salt water injection.

The zones shown in yellow are sands in the Delaware that we feel have hydrocarbon content in the area and some of these zones correspond to a possible salt water injection zone and we just feel like that that would be a waste.

Q Mr. Williamson, let me direct you to the third cross section from the left. On that cross section you have marked, have you not, the zones which are set

forth in the Grace application for which authority to inject is sought?

A Yes, that's correct.

Q Indicate to Mr. Stogner and the rest of us your marking of those zones on that cross section.

A Well we just went from the top and indicated the first one as an A and went through an O zone and what has been selected is just about every porous sand in this whole interval for a possible salt water injection, and several, like the 5th and 6th ones correspond to a sand that we feel has hydrocarbon in it; the -- what would be the H zone does; J zone does, and we feel like that -- that these are just not necessary for the permit sought, that there's 1100 foot of gross interval and these sands that we're indicating will take all the water that could be possible to put in there.

Q You're indicating the zones in blue.

A The zones in blue.

Q And I understand your testimony to be that you have no opposition to injection into those zones.

A That's correct.

Q Is it also your opinion that those zones will accept, based on your experience in this area, the projected quantity of water, maximum of 7500 barrels per day that Mrs. Grace may dispose of?

A Well, I'm getting very familiar with these sands. I've just converted a salt water disposal well which is now my Ross Draw Unit No. 9, and they are -- the water will be going into these zones. We've already got it just about set up for injection. We've already acidized and fraced and tested the zones and they will take just an unbelievable quantity of water at very low pressures, and to have all this is just not necessary.

Q What in your experience leads you to believe that some or all of these other intervals which they propose to perforate and inject water into are or may be prospective for oil and gas?

A Well, when we drill a well we make a very careful examination of all the information available. My dad is a long experienced sample geologist dating back since the thirties and he has run samples on this well. We have log shows, log calculations that tend to indicate oil and gas is very possible in these zones and it's just -- we just feel like that with time that some of these will be developed and be commercial, commercially productive of oil and gas.

Q Mr. Williamson, in your opinion, if this Division were to limit the authority of Mrs. Grace to inject into the lower intervals, roughly corresponding with their interval beginning at 4586, indicate that for us,

would you, 4586 on your -- it's the top of your first blue zone. If this Division were to limit the order which permits Mrs. Grace to dispose of water into that interval below that, then you would have no objection to it?

A None whatsoever.

Q And it is your opinion that those intervals will accept all the water that she currently needs to dispose of?

A Oh, I -- these zones are currently being used not just in New Mexico but just over the line in Texas and they've been picked out and there's been millions of barrels put into those zones. They'll just take it and take it. Those zones go all over the country.

Q And if -- if that were done, and experience showed that the zones, the blue zones on your cross section pressured up or otherwise were not capable of accepting the water, your position would be that the Division at that time could reopen this matter for inquiry concerning other zones?

A Well, I feel like if the water to be injected in these zones is properly treated and gotten the grit and paraffin and what little oil that normally comes with water disposal, and you have good, clear brine water going in there, that you could put water in those zones till the world was wet. And it's just the pore volume of

these sands is just so massive that a million barrels would make no -- no impact on the carrying capacity of these zones.

Q So it your position that a blanket authorization to perforate from 40 -- from 3886 to 4990 feet is simply not at all necessary in this area and the risk that you're concerned about to your own operations can be avoided without harm to Mrs. Grace?

A Well, I just don't think there's any question about it.

Q Is there anything you'd like further to add about the Exhibit Number Two?

A I can't think of a thing.

Q Were Exhibits One and Two prepared by you or under your direction and supervision?

A Yes, they were.

MR. DICKERSON: At this time I'll move admission of Williamson Exhibits One and Two on behalf of both Mr. Ralph Williamson and Mr. J. C. Williamson, and I have no further questions of Mr. Williamson.

MR. STOGNER: Are there any objections?

MR. PADILLA: No objections. At this time I think, if I didn't already, I would move admission of our Exhibits.

MR. DICKERSON: No objection.

MR. STOGNER: Okay, I will at this time accept all exhibits from Corinne Grace and the Williamsons at this time.

CROSS EXAMINATION

BY MR. PADILLA:

Q Mr. Williamson, going from left to right on your cross section, which of those wells do you or your father operate?

A Well, the Florida No. 7 is over here and that's operated by my father's authority as unit operator of the Ross Draw Units. It's operated now in fact by Terra Resources.

Under what I do is this Pinta Exploration Amoco Federal 1, which I operate; Amoco Federal 2; and this Earl M. Craig Spitfire No. 1. That's all in the north half of Section 25, and we just purchased that lease and we're now operating that lease.

Q Of those four wells, Mr. Williamson has any one of those wells produced or been perforated in, for production of oil and gas, within any of the yellow zones?

A No, they have not.

Q What plans do you have to perforate any

of those four wells within the yellow zones?

A I would say that that would depend entirely on our good friends in the Middle East; if they can get their price up so we can make a little money on this, it's a very probable thing to do. Right now I cannot say it will ever be done.

Q How long have you operated those wells?

A We took operations June the 1st for the three, two Amoco Federal, the Amoco Federal lease and the Spitfire lease.

Q To your knowledge were those zones tested on the Spitfire all the way down when it was drilled?

A Tested meaning drill stem tested or --

Q Any kind of test.

A They were examined with a sample analysis and they were examined from a well log analysis.

Q In the yellow zones?

A In -- in -- we looked at everything. We've examined samples on all of these -- all of our wells.

Q And those wells were completed in the Cherry Canyon, I take it.

A They were completed in this bottom yellow zone, or my No. 2 Well is to be completed in this what's generally referred to as the Williamson Sand.

Q How about the other wells on your cross

section, other than those four? Do any of those wells produce in the yellow zones?

A No, There are no wells in this area that produce in any of these zones.

Q How many wells do you or your father operate in this area other than these wells on the cross section?

A Well, to the west, something like 50 wells in the Delaware; various zones in the Delaware.

Q How many of those wells operated produce oil or gas from within the yellow zones?

A I would say that we have quite a few wells that produce from the Ramsey Sand. In the sand that is marked Abby Sand we have some, and we have about two wells that are productive in some of these sands that are shown to be prospectively productive on this cross section.

Q Are those in the immediate vicinity of the proposed water injection zone?

A They are not within the half mile.

Q And how far is the closest well?

A I would say three miles.

MR. PADILLA: I believe that's all I have, Mr. Examiner.

MR. STOGNER: Mr. Dickerson, do you have any redirect?

MR. DICKERSON: I have no further questions at this time.

CROSS EXAMINATION

BY MR. STOGNER:

Q Okay, Mr. Williamson, I'm not sure I know which wells you're operating for a zone.

Exhibit Number One, kind of help me through here.

A Well, it would be the wells that are located in the north half of this section.

Q The north half of Section 25.

A Right.

Q And there are three, is that correct?

A Well, there's two completed wells and one in the process of being completed.

Q The Amoco Federal No. 2 is the one that's being completed?

A Yes, sir, that's right.

MR. STOGNER: I have no further questions of this witness.

He may be excused.

Mr. Dickerson, do you have anything else?

MR. DICKERSON: I have a short

statement I'd like to make and that's all.

MR. STOGNER: Mr. Padilla, do you have any witnesses you'd like to recall?

MR. PADILLA: I would like to recall Mr. Gunn.

Mr. Examiner, I'd like the record to reflect that Mr. Gunn has previously been qualified and sworn in.

MR. STOGNER: The record will so show.

HARRY L. GUNN,

being recalled as a witness and remaining under oath, testified as follows, to-wit:

REDIRECT EXAMINATION

BY MR. PADILLA:

Q Mr. Gunn, let me hand you what we will mark as Exhibit Number -- I only have one copy of this, Mr. Examiner, I will make copies at an appropriate time. I'll have Mr. Dickerson look at that first. Number Ten.

Mr. Gunn, let me hand you that log and have you tell the Examiner what that -- what kind of a log that is.

A Well, what this is is the sample log and

-- and a mud gas log that was run during the drilling of the No. 9 Well that Mr. Williamson mentioned that they are currently planning to use for a water disposal well down there.

Q What does that show, Mr. --

A What this reveals --

Q -- Gunn?

A -- is his selected sand injection intervals, which are from 4400 to 4600, and those are the zones that pretty well corresponds to what he has there marked in blue on this cross section, which is an excellent section. It's real nice.

They selected with the -- that zone, due to porosity and permeability, I'm assuming -- and I wonder if they ever tested those to see whether this gas show that's indicated on this mud log would give up any gas or oil. It indicates a pretty strong show of gas down through that interval.

MR. STOGNER: Now, which area -- what --

A Now this information I came through from the application that was made --

MR. DICKERSON: May I see this?

A That's contained in their application

for that well to be used as a salt water disposal well.

That's not the one?

MR. WILLIAMSON: No, that's a well in the area. That's not the one to be used for disposal. What is it?

(There followed a discussion off the record.)

MR. DICKERSON: I'm confused. Are you still asking questions, Mr. Padilla?

MR. PADILLA: I believe Mr. Williamson wanted to see that exhibit.

Q Mr. Williamson -- Mr. Gunn, can you tell us where the well shown on the log and the well on Williamson Exhibit Number One is located? Would you mark it on Exhibit Number One?

MR. DICKERSON: For the record that's not Exhibit Number One. That's just a land plat I had laying here.

MR. PADILLA: I'm sorry.

MR. DICKERSON: We have Exhibit Number One but I don't know if it's --

Q Would you show it on that land plat, please? Or I tell you, better than that, why don't you show it on our Exhibit Number One instead of that one.

A All right. All right, it's a little difficult to read the heading on this but from the description based on the location of this well, Penroc and I assume that was 5, is 1980 feet from the south line and 1980 from the west line of Section 27, which would be that indicated gas well in the southwest -- it would be the northeast of the southwest quarter of Section 27. I had thought when I first saw this that it was the same well but I realize that it's not.

Q How far away is that well from the No. 1 --

A Well, it looks like it's approximately a little over a half a mile, probably real close to a half a mile away from that injection well, and that is exactly the same perforated interval from the best we can tell from this information.

Q Would that sand core relate with the well (sic) in the No. 9 Well?

A Looks to me like it would, yes. We just ran onto this information, so these --

Q What is your conclusion from that log and the proximity of the No. 9 Well?

A In looking at that it's probably a -- one of these shows that we encountered periodically while drilling the Cherry Canyon and the Bell Canyon section,

where they have little gas shows and they're really, actually, in reality, water zones. These little zones of water like this occasionally have some trapped solution gas in them but they're not productive, I would say. Just one of those -- but I'm sure they were aware of this when they selected that well to use for water injection. We wanted to call your attention to this. You know, they do the same things we do. What we want to do utilize these sand zones. We don't think we'll ever damage a gas zone.

That's all I wanted to say. Thank you.

MR. PADILLA: Mr. Examiner, that's all I have.

MR. DICKERSON: I'm -- excuse me.

MR. PADILLA: And I would offer Exhibit Number Ten.

MR. STOGNER: Let me see Exhibit Number Ten before I accept it. That might be a novel idea.

CROSS EXAMINATION

BY MR. STOGNER:

Q Now which zone are you referring to?

A It's the one at 4400.

Q 4400.

A May I come down there?

Q How far down -- okay, starting at 4400 to what depth?

A Yes, to 4600.

Q 4600.

A The one that's where the proposed injection interval sands are marked. There are two different logs there.

The one on the left is the injection well and the other one is a correlative No. 5.

Q All right, the one on the right is the injection well.

A No, sir, the one on the left.

Q The one on the left is the injection well and that is the Ross Draw No. 9 in Section 34?

A Yes, sir.

MR. STOGNER: Are there any objections?

MR. DICKERSON: No objection. I have one or two questions of the witness.

MR. STOGNER: Exhibit Number Ten will be admitted into evidence.

Mr. Dickerson.

RECROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Gunn, I'm a little confused for the purpose of this exhibit.

You were under the mistaken impression at first that the log that you're referring to was that of the Ross No. 9 Well in Section 34 when in fact --

A Well, yes, yes, that's true, that's correct.

Q Okay, and the correlation that you're speaking of between the zones which you said Mr. Williamson proposed to inject into in the Ross No. 9 Well in the north half of Section 34 correlate to his blue zones on his cross section No. 2, do they not?

A I think that's right.

MR. DICKERSON: We think it's right, too, and I have no further questions other than that.

A Yes, that's correct. That's it. That is a good water zone and I just want to call attention to the fact that occasionally those do have a little gas shows in them and that doesn't rule them out for water, but it doesn't necessarily make them potential oil and gas zones at those intervals.

MR. DICKERSON: I have no

further questions of Mr. Gunn.

MR. STOGNER: Are there any other questions of this witness?

He may be excused.

MR. DICKERSON: Mr. Stogner, Mr. J. C. Williamson would like to take the stand very briefly.

MR. STOGNER: Okay, was he sworn in for this hearing?

MR. DICKERSON: Yes, sir, he was.

J. C. WILLIAMSON

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

DIRECT EXAMINATION

BY MR. DICKERSON:

Q Mr. Williamson, will you please state your name, your occupation and where you reside, please?

A J. C. Williamson, geologist and operator, Midland, Texas.

Q You have previously testified before this Division or one of its predecessors, have you not?

A Yes.

Q As a petroleum geologist?

A Yes.

Q Okay. Mr. Williamson, you have heard the testimony here today and you are aware of the issue in dispute, of whether or not the authority to inject water into the Grace well which is the subject of their application should be limited to the zones in blue on Exhibit Number Two of Mr. Williamson, or the entire 11 foot -- 1100 foot interval sought by Mrs. Grace.

What is your opinion on that issue and why is that?

A Well, my opinion is, giving full credits to Mr. Gunn's talk, and he was good, was they were -- Mrs. Grace seemed to be looking -- conducting an expensive operation looking for water that -- and we are in the opposite end of that, we're trying to find oil down there.

I see four zones, three of them in there and one just above in that upper part in that Bell Canyon --

Q Now you're indicating zones in the upper portion on Exhibit Number Two?

A Yes.

Q Step to that, Mr. Williamson, if you're going to speak of them, if you would, and --

A I will.

Q -- and describe for us, and remember that we're making a record here and a finger pointing won't do the job, so describe what wells you're talking about.

A Well, in this -- this is the well we just finished and we have had some very good analyses of it, of (not clearly understood) I think you know who he is, Bob Meyer (sic), and I'm doing myself, I always work these things --

Q Do you wish to make this an exhibit, Mr. Williamson?

A No, this is a log I have but I was going to use it to point out those -- this is a log I made on it and I wanted to use this to point out the places where we think that there is a real good chance of getting oil.

Q Let me ask you to do it this way, if it makes sense to you.

Since Exhibit Number Two is -- is in place behind you, can you indicate with respect to that exhibit what zones you think hold some likelihood of being prospective in which wells and for oil and gas production?

A Right here is the first place.

Q Which well are you indicating there, Mr. Williamson?

A This well is -- I'm talking from the Ralph Williamson No. 2 Amoco Federal because that is the

latest one we've got. I've never been allowed, or I've never had the opportunity, let's say, to work the samples on any of the other Grace wells, but only to have read the logs, and this one is our first.

Now I did get to work the samples on the Spitfire and I found excellent looking places, but in this one we used down there one of the best electric log men that I've ever known. He was raised with Schlumberger for many years and he was hired by Gearhart (sic). His name is Bill Beasley and for many years he was with (not clearly understood) and now he's a (not understood) down there. So when we have a well of this nature I get my sample logs and we go together and take about half a day, There's about 30 of these sands that we pass through.

Now it's my experience that these sands go west. These sands are very productive over in Texas over west, and every one of these, where you get these sands, somewhere almost every one of these sands is going to be productive. This is a vastly unexplored area. You cannot say that it's at all explored. You have to start from the bottom up and I'll say right now I think that Mrs. Grace has never drilled a dry hole over there. I think that those wells that they're using could make great wells some place, probably by one that was not ever tested.

And we found this out in this zone,

Ross Draw, that we pick out preconceived ideas, go through there, but we've come back and found that a lot of our ideas were not quite as good and found a better spot on the sand, and we have one up there, the Williamson is not so good over there, but we had a well in it and we had perforated in it and that well, you wouldn't have noticed it, it's just like these things here in the top of this one, the well's made about 30,000 barrels. That's our No. 11 Ross Draw.

Now, in looking at that well I see four zones above the -- above this that look strongly like that they would make oil and gas.

Q Which well are you referring to?

A In this Ralph Williamson No. 2 Amoco Federal.

Q Is that well on this cross section?

A Yes, it's right here. This is very small. I think I'll just mark it so I'll know it all the time. This is the Ralph Williamson right there, so I can pick it out.

Now, the first one is the Ramsey that has about 15 feet and --

Q Point to those, if you would, and indicate something that the record can show.

A Right there, that little porosity right

there.

Q Approximately what depth is that?

A It's at -- well, let me use my own log here -- it's from, oh, 3715 to 30. If I ever saw a piece of Ramsey that's going to produce, that will.

Q Okay, now, Mr. Williamson, that is above the injection interval that Mrs. --

A Yes, just above.

Q -- Grace is seeking today.

A But we've done a lot of talking on Ramsey here and I say that maybe it's not in their well, I wasn't examining it close, but it is in this one.

Q Which other zones are --

A The next one is this --

Q -- in that well?

A -- 3900. Let's see, this is very bad -- this is it, right here, 3900. Now, that 3900 zone is a very beautiful white sand and very porous and it has staining all the way through it and the electric log man picked out 10 feet right in the middle of it, and I can't see how it would be productive, but he just picked it out of the middle. He does that, though, from 3895 to 3905 and he said that is productive. Now, that's well within the (unclear).

The next zone that he picked out was

from 4420 down to 50, and that's 4400 -- right here. That is what we call the -- that is almost the bottom. I don't have that one named but he picked that out as a zone. I didn't see much sand -- oil staining in that but almost invariably where we agreed on it, it will make a commercial oil.

The next one that both of us picked out was from 45 -- no, 4490 down to 4540. Now that is what we call our AH section. It's producing over in Texas. It has good porosity and it has -- is a medium, porous sand and it's got a lot of staining all the way through it. There's no reason it won't produce.

Now, going on down into those that we think is easy to produce and we'd object to them injecting water into, is this group, but invariably you get a gas kick in those and that was what led to the discovery of the Ross Draw for us -- I mean not the Ross Draw but the Brushy Draw over there, which is four miles east to west of the Brushy Draw. When we went over there the first thing we did was go clear on down to this -- this sand right here.

Q Now you're indicating one of the blue sands on the cross section.

A Yes, the old Indian Draw Field. Now that is producing over farther. That's where that Indian Draw Field is producing and it has gas but it accumulates

along the contact, little stringers will always get to a gas deal.

Q Excuse me for interrupting, Mr. Williamson, you have these three zones indicated on your cross section as Old Indian Draw, Ford West pay, and Jess Burns, have you not?

A Yes. Now there's a Jess Burner Pool over there that's got 40 -- 40 wells in it.

There's a Ford West pay that -- there's two big pools, I guess, and there's Old Indian Draw here on up north. But all these sands finally end up showing gas, I mean showing oil and gas. It just sweeps out over there.

It's the biggest reserve that New Mexico has, to my way of thinking these days, and I think it should be handled very carefully. You can't -- you ask if they've been tested. No, you have to go down and pick it like we're picking there, the lowest, and do it. Now, the one that's been -- I don't think Mrs. Grace has got a dry hole over there. I think they will make commercial production and it just takes a detailed study of them and it does seem that we can't just shotgun those things. You said, well, shotgun them over here. We didn't. We bought that. It was already shotgunned when we -- when we bought that.

Q Mr. Williamson, let me ask you, in your opinion will the three zones indicated in blue coloring on

the cross section previously admitted as Exhibit Number Two, accept all the water that Mrs. Grace needs to inject --

A Yes, and --

Q -- and dispose?

A -- all that we want to inject into it, because those sands range up to, some of them, 23 to 24 percent and it's awful hard to fill those sands up.

Q And if this Division were to limit the authority to inject in this case to those intervals there, it would avoid the risk to the upper zones that you're worried about in your acreage in the area?

A Yes, it would. It certainly would. I don't particularly object to this one here. It's a big zone and it is a water zone. I'm saying that there is production over farther west in that one.

But these zones, if you say was it necessary, have you tested them, hell, no, we haven't tested them; we haven't got to them yet, but some of these days will get to them, and it's just a matter of time.

I think my son made a statement when we pulled out our log over in that Brushy Draw, that it had just pay, pay, pay, pay, pay on down, and he said, "I'll be drilling these things at the turn of the century."

Well, I think he would have been if the

Arabs had held the price down, but there's hesitation on it now, but there's all kinds of pays in these things and I see no reason in just wasting them by injecting water in them when it's not necessary to do so. The easy ones are this right here. You do get gas kicks in those, along that contact almost invariably you'll get a gas contact, but that's because there's small gas traps in them and the migration of the oil and gas has been on up.

Now, I stand for any questions you want to ask.

MR. DICKERSON: I have no further questions.

CROSS EXAMINATION

BY MR. PADILLA:

Q Mr. Williamson, do you confine your injection in your three wells to the zones colored in blue on your cross section?

A We didn't --

Q Answer the question yes or no.

A No, we bought those things. They were there when we started. We -- I wouldn't have never injected into those ones myself.

Q But you continue injecting water into those zones, correct?

A Yes, there's already in there, if you want to tear them up and --

Q Now where is the Brushy Draw Pool in relation to this area here?

A Four miles west, and there's about 107 wells in it.

Q And you're also injecting into the Ramsey, are you not?

A That one hole there that we bought is injecting into the Ramsey and it shouldn't be done.

Q And you're producing out of the Ramsey in an offset well in that -- in that same area.

A Yeah, and that one is a little kind of a gas well that's not too good production and it's a gas well in the Ramsey.

MR. PADILLA: I don't believe I have any further questions.

MR. STOGNER: Are there any other questions Mr. Williamson?

If not, he may be excused.

Does anybody wish to recall any witnesses at this time?

I believe we're ready for closing statements.

Mr. Dickerson, I'll let you go

first. Mr. Padilla, I'll let you finish it.

MR. DICKERSON: I'll be very brief, Mr. Examiner.

I think that -- I'm sure they will disagree with me at this point but if you can recall the testimony, I think all of our expert witnesses, all four of them, agreed that it most likely that the lower zones, which Mrs. Grace is seeking authority to inject water into, are most likely sufficient to handle her water problems and solve her economic problems. We're not arguing that has water problems, economic problems. All operators in the area have to solve them.

We're merely requesting this Division to limit her authority, to not give her blanket authority to inject across an interval in excess of 1100 feet, merely to restrict it to those zones which their own witnesses testified were most likely to accept the water. if, in fact, all our witnesses are wrong in their assumptions and those zones pressure up or for some other reason will not accept the water, she can seek authority to expand the authorization to inject some of the other intervals. But the problems that Mr. Williamson, or both Mr. Williamsons are concerned about, they are not willing to write off the zones that Mrs. Grace and her witnesses are willing to totally write off and abandon at this point.

They think there is some oil and gas that can be recovered in there. Nobody said that these were zones that would justify drilling of wells all by themselves, but the thrust of the testimony was that in Mr. Williamson's opinion they have zones in those wellbores that show some likelihood of recovering some amount of reserves. The interest of both parties can be accommodated very easily by the Division in your order that you issue out of this case by merely restricting her authority to inject to those intervals in the lower zone below approximately 4500 feet, and we really think that the future will prove everybody's interest will have at that point been corrected and the remedy if we appear to be wrong still exists, that this Division can expand the authority when it is proper for it to do so.

We're asking you merely not to give blanket authority to perforate two holes to a foot for 1100 feet when it may not be necessary to perforate more than 117 feet in Mr. Ramey's opinion.

MR. STOGNER: Thank you, Mr. Dickerson.

Mr. Padilla.

MR. PADILLA: Mr. Examiner, I believe that when we examined the cross section presented by Williamson, most of those proposed or so-called productive zones lie above the disposal intervals applied for

by Mrs. Grace.

Aside from that, you have heard testimony from Mr. Gunn. You have heard testimony from Mr. Chandler and of Mr. Ramey. All of that testimony shows that correlative rights are not going to affected.

The major company, the major person or entity that would be involved in this case is Mobil. They have granted approval by allowing Mrs. Grace to convert the Zac No. 1 to a salt water disposal well.

Sure. water is going to migrate. Mr. Ramey's calculations show that it's going to take years before this water is ever going to get over in the other direction.

The testimony has been concerning the production in the upper zones here and I want to caution at this time that we are not injecting into the Ramsey like the Williamsons are in their wells. Those wells are not really at issue but they are here opposed to us and so we have to somehow point the finger at them, too, in terms of what the production, where they're producing from seems that there is no material damage due to the horrendous amount of water that they have injected in some of their disposal wells to the wells that are producing close by.

So one is led to believe that maybe because they do have salt water disposal, commercial salt water disposal in the area that that really is a true motive for being here before the Division and not so much that the -- that there exist possible productive zones for hydrocarbons above or included inside the -- or within the zones that we have applied for.

Mr. Gunn's testimony is almost air tight as far as the endeavors that he made in order to determine what the productive limits of those injection formations are.

I would conclude finally that if Mr. Williamson wants to buy a dry hole, I suppose that Mrs. Grace would be willing to do that, but to say that those dry holes, that dry hole could be productive is -- without having looked at the well, and considering Mr. Gunn's testimony regarding the testing that he's done on that dry hole, we have to conclude that we're not going to impair anyone's correlative rights, nor create waste.

In fact, we are going to prevent waste by saving the production from the CG Well and all the other wells that are operated by Mrs. Grace by prolonging the productive life of those wells.

It's just a matter of economics and that's the way it is. But especially with the

price of oil, as has been alluded to by Mr. Williamson, that with the price of oil coming down, we have to find the best economic solution to recover the existing production from that area.

Thank you.

MR. STOGNER: If there is nothing else in Case Number 9497, it will be taken under advisement. Hearing adjourned.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9497, heard by me on 26 October 1988.

Examiner
Oil Conservation Division