

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

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

APPLICATION OF SAGA PETROLEUM, L.L.C.,)
FOR STATUTORY UNITIZATION, LEA COUNTY,)
NEW MEXICO)

CASE NO. 12,417

APPLICATION OF SAGA PETROLEUM, L.L.C.,)
FOR APPROVAL OF A WATERFLOOD PROJECT)
FOR ITS CROSSROADS SILURO-DEVONIAN UNIT)
AREA AND QUALIFICATION OF SAID PROJECT)
FOR THE RECOVERED OIL TAX RATE PURSUANT)
TO THE ENHANCED OIL RECOVERY ACT,)
LEA COUNTY, NEW MEXICO)

CASE NO. 12,417

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

September 7th, 2000

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner on Thursday, September 7th, 2000, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

September 7th, 2000
Examiner Hearing
CASE NOS. 12,417 and 12,418 (Consolidated)

	PAGE
EXHIBITS	3
APPEARANCES	4
APPLICANT'S WITNESSES:	
<u>LORIN J. RULLA</u> (Geologist)	
Direct Examination by Mr. Carr	8
Examination by Examiner Catanach	23
<u>ROBERT G. SETZLER</u> (Engineer)	
Direct Examination by Mr. Carr	30
Examination by Examiner Catanach	37
<u>JOE N. CLEMENT</u> (Landman)	
Direct Examination by Mr. Carr	46
Examination by Examiner Catanach	54
REPORTER'S CERTIFICATE	59

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E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	11	23
Exhibit 2	11	23
Exhibit 3	12	23
Exhibit 4	12	23
Exhibit 5	13	23
Exhibit 6	14	23
Exhibit 7	15	23
Exhibit 8	15	37
Study Exhibit 1	16	23, 37
Study Exhibit 2	17	23, 37
Study Exhibit 3	18	23, 37
Study Exhibit 4	19	23, 37
Study Exhibit 5	19	23, 37
Study Exhibit 6	19	23, 37
Study Exhibit 7	20	23, 37
Study Exhibit 8	21	23, 37
Study Exhibit 9	21	37
Study Exhibit 10	31	37
Study Exhibit 11	33	37
Study Exhibit 12	34	37
Study Exhibit 13	35	37
Study Exhibit 14	35	37
Study Exhibit 15	36	37
Exhibit 9	49	54

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A P P E A R A N C E S

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By: WILLIAM F. CARR

* * *

1 WHEREUPON, the following proceedings were had at
2 1:40 p.m.:

3
4 EXAMINER CATANACH: Call the hearing back to
5 order, and at this time I'll call Case 12,417, the
6 Application of Saga Petroleum, L.L.C., for statutory
7 unitization, Lea County, New Mexico.

8 Call for appearances in this case.

9 MR. CARR: May it please the Examiner, my name is
10 William F. Carr with the Santa Fe law firm Campbell, Carr,
11 Berge and Sheridan. We represent Saga Petroleum, L.L.C.,
12 in this matter.

13 I would request at this time that you also call
14 Case 12,418. It's the Application of Saga Petroleum for
15 approval of a waterflood project. A waterflood project
16 area is the unit area which is the preceding case. I would
17 request that case be called and they be consolidated for
18 the purpose of testimony.

19 EXAMINER CATANACH: At this time I'll call Case
20 12,418, which is the Application of Saga Petroleum, L.L.C.,
21 for approval of a waterflood project for its Crossroads
22 Siluro-Devonian Unit Area and qualification of said project
23 for the recovered oil tax rate pursuant to the Enhanced Oil
24 Recovery Act, Lea County, New Mexico.

25 MR. CARR: Mr. Examiner, at this time we would

1 request that the portion of Case 12,418 which relates to
2 qualification of the project for the recovered oil tax rate
3 be dismissed.

4 EXAMINER CATANACH: Okay. Mr. Carr?

5 MR. CARR: Mr. Examiner, Saga is before you today
6 seeking statutory unitization of the Crossroads-Siluro-
7 Devonian Unit area. The area was unitized approximately a
8 year and a half ago as a voluntary unit.

9 As you may be aware, at the time the voluntary
10 unit was implemented to effect certain savings that will
11 come with unitization, we encountered opposition from a
12 royalty interest owner, Floos, Inc., Mohammed Merchant.
13 The order that resulted at that time provided that only the
14 working interests would be unitized.

15 We're coming here today seeking statutory
16 unitization to combine all interests in the unit area for
17 the implementation of waterflood operations.

18 As you are also aware, there have been several
19 communications from Floos, Inc., again expressing concern
20 about the project. And I can tell you today that we have
21 reached an agreement with Mr. Merchant, and we will be
22 offering a letter as part of our case whereby he withdraws
23 his objection.

24 We have talked with other royalty interest owners
25 in the area, and we believe at this time the effort to

1 unitize is unopposed.

2 When you look at this case you'll see that in the
3 unit area there have been, and for some time, three wells
4 that have been used for disposal to -- are now active
5 disposal wells. And as a result of the disposal of water
6 in the Devonian formation, there has been certain water and
7 pressure support in the unit area for some time.

8 We'll present you today our study, a study which
9 has been conducted in the last year, which shows that the
10 reservoir is actually broken into three compartments or
11 regimes within the unit area, and each of these
12 compartments will benefit substantially from waterflood
13 operations.

14 We'll show you how we intend to change the way we
15 are injecting in the existing wells, redirecting water into
16 the particular new pay zones, and we will also present a
17 C-108 in which we seek authority to add one additional
18 injection well.

19 When we make these changes, we believe we can
20 show you that we will substantially increase the recovery
21 from the unit area.

22 I have three witnesses who need to be sworn.

23 EXAMINER CATANACH: Will the witnesses please
24 stand to be sworn in?

25 (Thereupon, the witnesses were sworn.)

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LORIN J. RULLA,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Lorin John Rulla.

Q. Where do you reside?

A. Midland, Texas.

Q. By whom are you employed?

A. Saga Petroleum.

Q. And what is your position with Saga Petroleum?

A. I'm a petroleum geologist.

Q. Have you previously testified before the Oil
Conservation Division?

A. Yes, I have.

Q. At the time of that testimony, were your
credentials as an expert in petroleum geology accepted and
made a matter of record?

A. Yes, they were.

Q. Are you familiar with the Applications filed in
each of these cases?

A. Yes, I am.

Q. Mr. Rulla, are you familiar with the status of
the lands involved in the Crossroads-Siluro-Devonian Unit

1 Area?

2 A. Yes, I am.

3 Q. And are you familiar with the efforts of Saga to
4 reach voluntary agreement with other interest owners in the
5 unit area for the development of these lands?

6 A. Yes, sir.

7 Q. Are you familiar with the proposed unit
8 agreement, the proposed operating agreement, and the status
9 of ratifications of the proposed unit plan?

10 A. Yes, sir.

11 Q. In addition to that, have you made a geological
12 study of the unit area?

13 A. Yes, I have.

14 Q. And are you prepared to share the results of your
15 work with Mr. Catanach?

16 A. Yes, sir.

17 MR. CARR: We tender Mr. Rulla as an expert
18 witness in petroleum geology.

19 EXAMINER CATANACH: He is so qualified.

20 Q. (By Mr. Carr) Initially, would you state what it
21 is Saga seeks in these cases?

22 A. Statutory unitization of the Crossroads-Siluro-
23 Devonian Unit Area comprised of 800 acres, more or less, of
24 fee lands, approval of a waterflood project for the unit.

25 Q. And what is the current status of the acreage in

1 the unit area?

2 A. The unit consists of three tracts.

3 Q. Are they all fee lands?

4 A. Yes.

5 Q. And this acreage was voluntarily unitized?

6 A. Yes, it was unitized by Order Number 12,133,
7 entered July 6th, 1999, approved voluntary unitization of
8 this acreage.

9 Q. At that time, only the working interest was
10 unitized; is that correct?

11 A. That's correct.

12 Q. And how has royalty been paid?

13 A. It's been paid on a lease basis.

14 Q. Why does Saga now seek to statutorily unitize the
15 area?

16 A. Because the wells in the area produce huge
17 quantities of water, and we currently have two active
18 disposal wells in the area and another currently
19 temporarily abandoned, which we intend to return as an
20 injector.

21 Q. Are you also seeking authority to add one
22 additional injection well as part of the waterflood or
23 pressure maintenance effort in the Devonian formation?

24 A. Yes, sir.

25 Q. Could you refer to what has been marked for

1 identification as Saga Exhibit Number 1, identify it and
2 review it for Mr. Catanach?

3 A. This is a map of the unit tracts. It shows the
4 Texaco tract in the south half -- or the east half of
5 Section 34, as being Number 1. The Santa Fe tract is
6 Number 2, in the northwest quarter of Section 27, and the
7 U.D. Sawyer tract in the east half of Section 27 as being
8 Tract 3.

9 Q. It also shows the wells in the unit area, does it
10 not?

11 A. Yes, it does.

12 Q. And there is a code which explains the well
13 symbols in the lower left-hand portion of the exhibit?

14 A. That's correct.

15 Q. What is Exhibit Number 2?

16 A. It's a unit agreement.

17 Q. Exhibit Number 2. Is Exhibit Number 2 the
18 ownership schedules?

19 A. Yes.

20 Q. And these are the same as Exhibit B to the unit
21 agreement; is that correct?

22 A. Yes.

23 Q. Do these show the ownership broken down by each
24 of the three tracts in the unit area?

25 A. Yes, it does.

1 Q. And it shows the working interests, royalty
2 interests and overriding royalty interests by tract; is
3 that correct?

4 A. That's correct.

5 Q. All right. Now, let's go to Exhibit Number 3.
6 That's the unit agreement, correct?

7 A. Correct.

8 Q. Basically, could you just describe Exhibit 3 for
9 us?

10 A. It's a typical form based on the state waterflood
11 form. It shows the character of the lands, provides for
12 waterflooding and sets out the basis for participation of
13 each of the parties.

14 Q. And what is the tract participation formula as
15 set forth in this exhibit?

16 A. It's based on 45-percent reserves and 55-percent
17 production.

18 Q. And what is Saga Exhibit Number 4?

19 A. It's the unit operating agreement.

20 Q. And can you just summarize briefly what the key
21 provisions are in this operating agreement?

22 A. It outlines supervision and management of the
23 unit, defines the rights and duties of all the parties,
24 shows how investments and costs are to be shared,
25 establishes voting procedures for decisions to be made by

1 the working interest owners. This is equal to each working
2 interest owner's participation in the unit. It sets forth
3 accounting procedures, show how costs will be allocated and
4 paid, contains other standard provisions.

5 Q. Mr. Rulla, is Exhibit Number 3 [sic] a table
6 which shows unit participation by tract?

7 A. Yes, sir.

8 Q. And if we would take the participation, the
9 allocated working interest participation, from this
10 exhibit, we could then, by using Exhibit Number 2 where
11 everyone's ownership percentage is set up by tract, we
12 could determine the exact ownership in the unit of every
13 interest owner, working interest, royalty interest,
14 overrides; is that correct?

15 A. Yes, sir.

16 Q. What percent of the working interest ownership is
17 presently committed to the unit?

18 A. A hundred percent.

19 Q. And Saga Exhibit Number 2 also shows the override
20 and royalty interests, correct?

21 A. Yes, it does.

22 Q. And what percentage of the royalty interest at
23 this time is committed to the unit plan?

24 A. Eighty-five percent.

25 Q. And that includes the interest of Floos, Inc.,

1 does it not?

2 A. Yes, it does.

3 Q. Do you anticipate any difficulty in obtaining
4 ratification of the order that results from this hearing by
5 the necessary 75-percent working interest or non-cost-
6 bearing interest owners?

7 A. No, sir.

8 Q. Now, you are familiar with the objections that
9 were raised by Floos, Inc., are you not?

10 A. Yes.

11 Q. You've seen the letters that were sent to the
12 Commission and Division concerning the participation
13 formulas set forth in the unit, correct?

14 A. Yes.

15 Q. What is the status of the negotiations at this
16 time with Floos?

17 A. We've reached an agreement.

18 Q. And is Saga Exhibit Number 6 a copy of the letter
19 from Floos withdrawing the objection to the proposed unit?

20 A. Yes, sir.

21 Q. Do you believe Saga has done all that reasonably
22 can be done to obtain voluntary commitment of all interests
23 to the unit plan?

24 A. Yes, sir.

25 Q. And that includes working, royalty and overrides,

1 correct?

2 A. Yes.

3 Q. Is Exhibit Number 7 an affidavit confirming that
4 notice of this hearing has been provided in accordance with
5 Division rules?

6 A. Yes.

7 Q. To whom was notice provided?

8 A. All the interest owners subject to a statutory
9 unitization order, all the leasehold operators and surface
10 owners within the areas of review for any new injection
11 well with a copy of completed Form C-108, all owners within
12 a half a mile of the unit boundary.

13 Q. Let's now go to the geological portion of this
14 case, and I'd ask you to first identify what has been
15 marked Saga Exhibit 8.

16 A. That's a copy of the proposed statutory water
17 injection unit.

18 Q. Is that the study that you prepared --

19 A. Yes, It is.

20 Q. -- as part of this plan?

21 A. Yes, it is.

22 Q. And you prepared the geological portion of this
23 study?

24 A. Yes, I did.

25 Q. And who prepared the engineering portion?

1 A. Robert Setzler, an engineer with Saga.

2 Q. And will Mr. Setzler also be testifying about the
3 information contained in the study?

4 A. Yes, he will.

5 Q. Generally, what does this study show?

6 A. It shows that the Crossroads-Siluro-Devonian
7 Unit looks like it can be subdivided into three separate
8 porosity regimes, that water has been disposed into this
9 unit for some time, and that by redirecting the water we
10 can maintain an increased reservoir pressure and
11 efficiently sweep reserves to producing wells in each of
12 the three specific Devonian zones.

13 Q. If we look at your study, the first portion of
14 the study is a text that explains the exhibits which start
15 on about page 7 or 8 of the study; is that correct?

16 A. Yes.

17 Q. Let's go to what has been marked as Saga Exhibit
18 Number 1.

19 A. Okay.

20 Q. And here we're looking at the exhibits to the
21 study, so again we're going to have some overlapping
22 numbers, and I'll clarify that when we move admission of
23 the exhibits. But this is Study Exhibit Number 1. What is
24 that?

25 A. That shows the proposed unit outline. It also

1 has a code at the bottom that shows the current status of
2 each of the wells within and outside the unit. And it's
3 identical to the first -- to Exhibit A, map of the unit
4 tracts.

5 Q. And also to Exhibit 1 that was presented earlier;
6 is that correct?

7 A. Yes.

8 Q. Okay, let's move to Exhibit Number 2. Can you
9 identify and review this?

10 A. Exhibit Number 2 is a structure map on the top of
11 the Devonian porosity. The gray lines are fault traces
12 that occur within the Devonian, and we hope to show
13 distinctive separation between each of those areas as a
14 result of the faulting, and also the deposition that
15 occurred beneath the major unconformity that occurred at
16 the base of the Woodford, and also the porosity will be
17 shown to vary from location to location over the Crossroads
18 field. And in this study we discovered that we have a
19 possible new pay zone in the area.

20 The area is bounded on the west by a controlling
21 fault that controls the production, and all of the wells on
22 the north and east have been abandoned.

23 Q. When we look at the wells on the north and the
24 east, they're actually downstructure, are they not?

25 A. Yes, they are.

1 Q. And they are --

2 A. They're all water wet.

3 Q. Okay. And the southern boundary is basically --
4 There is no reservoir beyond the southern boundary of the
5 proposed unit?

6 A. No, the Well Number 4 and the Texaco tract was a
7 dry hole in the Devonian.

8 Q. Okay. Let's go now to Study Exhibit Number 3.
9 Will you identify and review this exhibit for Mr. Catanach?

10 A. This is a map made on the top of the Devonian
11 porosity, depth to the top of the Devonian porosity, which
12 it measures down from the base of the Woodford to the
13 occurrence of the first porosity in the Devonian. And
14 coupled with the faults you can begin to see that the
15 center portion, which was probably the highest portion in
16 the field, the pay was eroded off, and we have additional
17 pay shown on the north and south, occurring very close to
18 the top of the Devonian, while the center portion, you have
19 to go down about 50 to 60 feet before you encounter
20 porosity.

21 And this resulted in what we call the new pay
22 occurring on the north side of Section 27, and I'll
23 elaborate more on that with the other maps.

24 Q. And this map also indicates the location of the
25 injection wells --

1 A. Yes.

2 Q. -- in each of the regimes in the unit area?

3 A. It shows the disposal wells, Well Number 11 and
4 Well Number 6 in Section 27, and Well Number 4 in Section
5 34.

6 Q. Let's go now to Exhibit Number 4 and review that
7 for the Examiner.

8 A. Exhibit Number 4 is a map of a net porosity in
9 the upper Devonian, or the new pay, as we call it, versus
10 the main pay, which is beneath it, and it shows that the
11 new pay occurs mostly in the north half of Section 27 and
12 is also present in Section 34, and it's practically gone in
13 the center portion of the field where the faults have
14 caused it to be eroded off.

15 Q. When you implement the full waterflood in the
16 area, you're going to be flooding the old section as well
17 as the new pay; isn't that correct?

18 A. That's correct, yes.

19 Q. Let's go to Exhibit Number 5. Would you just
20 identify that for Mr. Catanach?

21 A. That is the index to the cross-section that I'm
22 going to show you.

23 Q. Let's keep that out and go to Exhibit Number 6,
24 your east-west cross-section A-A'. Will you review the
25 information set forth on this exhibit?

1 A. It shows the location of the new pay with regard
2 to the main pay, and it shows that most of the wells were
3 completed in the main pay in this area.

4 It shows the type log for the waterflood, Well
5 Number 11 on the cross-section, and it shows that the new
6 pay has not been perforated in a good number of the wells
7 in the north part of the regime, and that we hope to go in
8 there and perforate that and waterflood it.

9 Q. Let's go now to cross-section B-B', your north-
10 south cross-section.

11 A. The north-south cross-section shows that wells
12 north of the unit area were all completed in the new pay,
13 and most of them didn't penetrate the main pay, because
14 they didn't have to, and because it would have been below
15 the oil-water contact.

16 And two of the wells have not been perforated in
17 that pay. These two wells are on Saga acreage.

18 It shows the current water disposal wells, Well
19 Number 11 and Number 6, and it shows where we crossed the
20 fault and go back into the new pay, which occurs right at
21 the base of the Woodford, and the abandoned Devonian
22 producer, Well Number 4 at the right end of the section.

23 Q. If we look at the two wells on the north end of
24 the cross-section, those are outside the unit area. Are
25 those wells structurally low and wet?

1 A. Yes, they are. The single well is.

2 Q. All right, let's go to cross-section C-C'

3 A. C-C' is an east-west section showing the first
4 well that defined the new pay in the area, and it was
5 completed in 1949 and has produced 1.4 million barrels of
6 oil.

7 It also shows the new pay areas that will be
8 attempted to be perforated and the proposed future water
9 injection well, Well Number 4, on the right-hand side of
10 the section. It was originally completed open hole in 1952
11 and then plugged back and completed in the new pay in 1974
12 and potentialled for 593 barrels of oil and 1173 barrels of
13 water a day.

14 And we intend to complete this as an injector in
15 both the new pay and the old -- and the main pay.

16 Q. Let's go now to Saga Exhibit Number 9. Would you
17 identify the exhibit for Mr. Catanach and then review the
18 information set forth thereon?

19 A. Number 9 shows the unit outline, and it shows the
20 current proposed recompletions of the three wells on the
21 north unit, with squares which show the recompletions into
22 the new pay. It shows the proposed water injection well in
23 the northeast corner of Section 27. It shows the proposed
24 Injection Well Number 4 at the south end of Section 34.

25 It shows the two current water disposal wells,

1 Number 11 and Number 6. And it shows the current status of
2 each of the wells in the area as to where they were
3 completed, whether in the main pay or in the new pay.

4 Q. With this information, this much well data, it's
5 fair to say that the area to be unitized has been
6 reasonably developed -- or defined by development; isn't
7 that correct?

8 A. Yes, sir.

9 Q. Can the portion of the pool which is included in
10 this proposed unit area, in your opinion, be efficiently
11 and effectively operated under a unit plan of development?

12 A. Yes, it can.

13 Q. And the boundaries of the unit are well
14 established?

15 A. That's correct.

16 Q. You have a fault on the west?

17 A. That's correct.

18 Q. No reservoir on the south?

19 A. That's correct.

20 Q. And you're downstructure and wet, both to the
21 east and the north?

22 A. That's correct.

23 Q. In your opinion, do each of the compartments or
24 regimes within the unit area have good waterflood
25 potential?

1 A. Yes, sir, they do.

2 Q. Were Exhibits 1 through 7, and then in the study
3 Exhibits 1 through 8, prepared by you or compiled under
4 your direction?

5 A. Yes, they were.

6 MR. CARR: At this time, Mr. Catanach, we would
7 move admission into evidence of Saga Exhibits 1 through 7,
8 and also Study Exhibits 1 through 8.

9 EXAMINER CATANACH: Exhibits 1 through 7 and
10 Study Exhibits 1 through 8 will be admitted as evidence.

11 MR. CARR: And that concludes my direct
12 examination of Mr. Rulla.

13 EXAMINATION

14 BY EXAMINER CATANACH:

15 Q. Mr. Rulla, this field has been around a long
16 time; is that correct?

17 A. Yes, it has.

18 Q. When was it first developed, do you know?

19 A. 1947.

20 Q. And as far as the areal extent, is this field
21 much larger than you've shown it here, or was it at one
22 time?

23 A. Yes, it was a very large field. All of the wells
24 that you see on these maps, with the addition of some more
25 that are beyond the limits, were part of the Crossroads-

1 Siluro-Devonian field. But all of the wells surrounding
2 this unit area are now abandoned. They were abandoned
3 because they made too much water.

4 Q. So your waterflood unit here is located at the
5 structural high position with --

6 A. Yes, it is.

7 Q. Okay. There's not been very many of these wells
8 that have been completed in what you're calling the new
9 pay; is that right?

10 A. That's correct.

11 Q. Just what? Three?

12 A. Three.

13 Q. And according to your exhibit there is
14 considerable potential, especially in Section 34, for that
15 pay to be present?

16 A. Yes.

17 Q. Is it prudent to produce that new pay under
18 waterflood operations instead of under primary operations
19 at this point?

20 A. We think so. Mr. Setzler -- We have some
21 additional information, because this whole area is making a
22 lot of water right now, and we're also proposing some
23 remedial operations in here.

24 Q. Well, do you know why that pay in these wells was
25 never tested or perforated?

1 A. It was tight. It's not as prominent or as porous
2 as the wells that currently produce.

3 Q. Now, when you say it's compartmentalized, there's
4 separate producing compartments. Are these what you've
5 shown to be isolated by faults; is that correct?

6 A. Yes, uh-huh, isolated -- The north portion is
7 isolated from the center portion because of an updip
8 pinchout of porosity. And the south portion is separated
9 from the center portion by the fault, structurally as well
10 as stratigraphically.

11 Q. And it's your opinion that these are effectively
12 isolated from one another?

13 A. Yes, sir.

14 Q. So in your waterflood project you'll have to
15 treat these almost like three different projects?

16 A. Yes.

17 Q. Are the pay intervals pretty consistent within
18 each of these compartments?

19 A. No, they're not. They vary a lot in the amount
20 and thickness of porosity.

21 Q. Are they consistent enough to where effective
22 waterflooding can occur in these areas?

23 A. They're in the same stratigraphic position
24 essentially, so that you would be flooding the same zone.
25 The variations occur in the amount and the thickness of

1 porosity.

2 Q. So you should get response from water injection
3 within all the producing wells?

4 A. Yes.

5 Q. And is somebody else going to talk about how many
6 wells you're going to have and that kind of thing?

7 A. Yes.

8 Q. Okay. Which parties are you actually unitizing
9 with this Application, or seeking to unitize? Can you
10 identify those for me?

11 MR. CARR: Mr. Examiner, I think they're
12 identified in Exhibit A to the notice affidavit. There are
13 a number of royalty interest owners.

14 EXAMINER CATANACH: Exhibit A to the notice?
15 This unit, if I understand correctly, was initially
16 unitized a year ago, voluntarily?

17 MR. CARR: That's correct.

18 EXAMINER CATANACH: Just the working interest?

19 MR. CARR: Correct. We had objections from Mr.
20 Merchant to the unitization, and it was set forth in the
21 order, because of his objection, that the working interest
22 was unitized but the royalty payments would continue to be
23 made on an individual lease basis or tract basis.

24 Q. (By Examiner Catanach) Since that time, have
25 there been further discussions with these interest owners

1 to try and get them to voluntarily participate in the unit?

2 A. Yes, sir.

3 Q. And the status of the interest owners on Exhibit
4 A here, do you believe any more are going to voluntarily
5 commit to the unit?

6 A. I can't answer that right now.

7 MR. CARR: Mr. Catanach, I've been involved more
8 in that than Mr. Rulla. We think there's a chance a
9 closing will commit.

10 We have also been engaged in recent negotiations
11 with Candace Jacobson, and we think there's a good
12 likelihood that she could commit her interest in two of the
13 tracts. Beyond that, we don't think that we're going to be
14 able to get any farther.

15 EXAMINER CATANACH: When did this negotiation
16 process start, Mr. Carr?

17 MR. CARR: My involvement in the negotiations has
18 been for the last probably -- since April of this year.
19 And they were ongoing prior to that time. I couldn't give
20 you a start date. My most recent conversations concerning
21 the interests of Candace Jacobson were on Tuesday of this
22 week with her attorney Doug Lunsford with the Hinkle firm.

23 Q. (By Examiner Catanach) Well, who with Saga has
24 been involved in contacting these people, Mr. Rulla?

25 A. Our president, Chuck Farmer.

1 Q. And he is not here today?

2 MR. CARR: No, he's not.

3 Q. (By Examiner Catanach) Well, do you have some
4 knowledge about when these negotiations took place or when
5 they started?

6 A. They started about two years ago, I believe.

7 Q. And Floos has waived objection?

8 MR. CARR: Yes, sir, they have.

9 EXAMINER CATANACH: To what?

10 MR. CARR: They have withdrawn their objection to
11 the unit. There have been meetings within the last two
12 weeks with Mr. Merchant, and the participation formula was
13 explained to him, and the result was the letter which is
14 in, I believe, as Exhibit 7, that he directed to me.

15 Q. (By Examiner Catanach) Okay. On Exhibit Number
16 2, that sets for the interest owners in the unit, and I
17 assume that the far right column sets forth their
18 participation in the entire unit; is that correct?

19 A. Yes. Each of the unit tracts has its own
20 participation.

21 Q. For instance, Tract Number 1 is allocated 37.7
22 percent of the unit?

23 A. Yes.

24 Q. Now, how were the tract participations
25 determined? Do you have something that shows that? I

1 assume that's based on the tract participation formula
2 contained in the unit agreement.

3 MR. CARR: That is correct, it was tract by
4 tract, 45 percent reserves, 55 percent cum production.

5 EXAMINER CATANACH: Do you have any evidence that
6 shows those numbers, that -- what numbers were utilized to
7 come up with those percentages?

8 MR. CARR: The 45/55 were agreed-to numbers.

9 EXAMINER CATANACH: No, not the percentages, but
10 the actual --

11 MR. CARR: The calculations?

12 EXAMINER CATANACH: Yes, sir.

13 MR. CARR: To get to the -- We do not have those
14 with us. We could supply those. I mean, they're --

15 EXAMINER CATANACH: Okay, I would appreciate it
16 if you would supply those. It's strictly past production
17 and --

18 MR. CARR: -- and remaining reserves, calculated.

19 EXAMINER CATANACH: -- remaining reserves.

20 MR. CARR: We can give you the base numbers, the
21 actual numbers, and show the calculation, it's easy. We
22 have that, we just don't have it with us.

23 EXAMINER CATANACH: Okay. I think that's all I
24 have of this witness.

25 MR. CARR: Mr. Catanach, at this time we call

1 Robert Setzler.

2 ROBERT G. SETZLER,

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

5 DIRECT EXAMINATION

6 BY MR. CARR:

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

8 A. My name is Robert Gaston Setzler.

9 Q. Spell your last name, please.

10 A. S-e-t-z-l-e-r.

11 Q. Where do you reside?

12 A. In Midland, Texas.

13 Q. By whom are you employed?

14 A. Saga.

15 Q. And what is your position with Saga

16 A. I am an engineer.

17 Q. Mr. Setzler, have you previously testified before
18 the Oil Conservation Division and had your credentials as a
19 petroleum engineer accepted and made a matter of record?

20 A. Yes, sir.

21 Q. Are you familiar with the Applications filed in
22 these cases?

23 A. Yes, sir.

24 Q. Have you made an engineering study of the area
25 which is involved in the case?

1 A. Yes, sir.

2 Q. And are you prepared to share the results of your
3 work with the Examiner?

4 A. Yes, sir.

5 MR. CARR: We tender Mr. Setzler as an expert
6 witness in petroleum engineering.

7 EXAMINER CATANACH: He is so qualified.

8 Q. (By Mr. Carr) Mr. Setzler, are you familiar with
9 the Statutory Unitization Act?

10 A. Yes, sir.

11 Q. And have you prepared exhibits for presentation
12 in this case?

13 A. Yes, I have.

14 Q. Could you refer to Exhibit Number 10 to the
15 study?

16 A. Yes, sir.

17 Q. Identify that for Mr. Catanach and review the
18 information on this exhibit.

19 A. Okay. Exhibit 10 is a production plot --

20 EXAMINER CATANACH: I don't think I have Exhibit
21 Number 10.

22 THE WITNESS: I'll be happy to let you see mine.

23 MR. CARR: It should be right there.

24 EXAMINER CATANACH: Oh. Gee, thanks.

25 THE WITNESS: All right, sir. This is just a

1 typical production plot of a well that exists in the
2 Crossroads Devonian field, but the reason I chose to show
3 you this plot is, it is an example of what we hope to
4 accomplish in reworking these wells.

5 It was treated with a polymer squeeze, with a
6 retainer set into its perforations. It is perforated in a
7 50-foot interval. The bottom 40 feet of the perfs were
8 treated with polymer, the top 10 feet were kept open by
9 pumping water in at the same time we were pumping polymer.

10 And as a result, we, on this particular well,
11 went from 11 barrels of oil a day and 1100 water to 7
12 barrels of oil a day and 200 water.

13 It tells us that we are now producing oil out of
14 a much tighter rock that we -- And that's also witnessed by
15 the fact that fluid levels prior to the work being done,
16 working fluid level was about 2100 feet from surface, and
17 after, following the work, the working fluid level dropped
18 to a little -- 6100 feet from the surface, for a total drop
19 of 4050 feet, which means that we have effectively cut off
20 a lot of the bottom water that is not really doing us any
21 good.

22 Now, our plan is to -- by injecting into offset
23 wells, we will put pressure back into the tighter zone and
24 be able to sweep oil out of the tighter zones, getting more
25 oil out of them, probably oil that would never be recovered

1 under current operations.

2 Q. (By Mr. Carr) Okay, Mr. Setzler, let's now go to
3 Saga Exhibit Number 11. Identify what this exhibit shows,
4 and then review the information on the exhibit for Mr.
5 Catanach.

6 A. All right, sir. Eleven is just kind of a summary
7 sheet of all the information we gathered, or I gathered, on
8 this field. It tells formation and when the field was
9 discovered, et cetera, depth and that sort of thing.

10 Also gives reservoir volumetrics, gives the area
11 of the total field and Saga's portion of the main pay and
12 Saga's -- the acreage in the -- what we've identified as
13 new pay. It's broken down into acre feet per each portion,
14 as you can see there, and the gross thickness and average
15 net thicknesses.

16 Item 3 on this summary gives the breakdown of
17 production as to what's been produced to date and what is
18 remaining. The total field to date has produced 48.1
19 million barrels of oil. Saga's portion of that is 21
20 million 771 million [sic] barrels of oil. And the new pay
21 that we've identified will recover an additional 1.8
22 million barrels of oil.

23 By doing this work, the proposed work, we will
24 gather an additional 844,000 barrels of oil from the main
25 pay and 517,000 barrels of oil from the new pay.

1 We will realize, as shown in item 4, a total
2 recovery of 23,615,000 barrels of oil at the end of the
3 project. We have remaining to the proposed work another
4 1,361,000 barrels of oil, which will be -- the 1.3 million
5 will be recovered over the next 50 years of operation out
6 there.

7 Original bottomhole pressure was 4885 pounds and
8 has now dropped to approximately 4300 pounds, and that also
9 points to us that we need to put water back into these
10 upper zones to maintain pressure and be able to recover the
11 reserves that are there in an economical fashion.

12 The rest of the page just gives parameters of
13 porosity, perm, that sort of thing.

14 Q. Mr. Setzler, what is Exhibit 12?

15 A. Exhibit 12 is a plot of percent water cut plus
16 cum oil. It's a way that people use with water drive
17 formations to project ultimate recoveries or to give a
18 reasonable estimate of what the ultimate recovery in the
19 field would be.

20 And this curve, when projected to 97-percent
21 water cut, shows that the main pay portion of the field
22 that's under our leases will recover 21,771,000 barrels of
23 oil, which is shown in item 3 on your main pay portion of
24 Saga, bottom EUR. All right, sir?

25 Q. When you talk about Saga leases, are you talking

1 about the three tracts which comprise the unit area?

2 A. Yes, sir, I am.

3 Q. Let's go now to Exhibit Number 13. Could you
4 identify that, please?

5 A. Yes, sir, I'd be happy to. Exhibit 13 is taken
6 from actual field data. It's a plot of -- since the field
7 was developed in 1947, of cum oil versus cum barrels fluid
8 produced. This plot was used to project future production
9 in this field.

10 And what I did was, I related this recovery that
11 is shown by this graph, I curve-fitted it with a
12 polynomial, a fifth-order polynomial, and reduced it to
13 recovery per acre-feet and then expanded it back to acre-
14 feet that we identified in the new pay zone, and was able
15 to get what I feel is a reasonable projection of oil
16 recovery from the new pay zone, and by extrapolating this
17 on out, get a reasonable recovery of what's remaining in
18 the main pay zone, which was used to develop the data
19 that's in Exhibit 11.

20 Q. Are you ready to go to Exhibit 14?

21 A. Yes, sir.

22 Q. Okay, what does this show us?

23 A. Exhibit 14 shows the field as it is now. And if
24 we don't do anything, if this work is not done, based on
25 the projections I've just discussed, we would follow the

1 black curve shown, the extension of the green curve. And
2 we would recover about 850,000 barrels of oil that way.

3 By combining the projection of the new pay with
4 the existing pay, you get the curve shown on Exhibit 15,
5 which shows that we should recover another 550,000 barrels
6 through proper maintenance and flooding of the new pay
7 zone.

8 Q. And is this 550,000 barrels production that would
9 be wasted or lost without the implementation of the
10 proposed waterflood effort?

11 A. That's correct, sir.

12 Q. In your opinion, are the unitized methods of
13 operation as applied to the area covered by this
14 Application feasible?

15 A. Yes, sir.

16 Q. Do you believe that unitization and -- it is
17 necessary to reasonably and effectively carry on secondary
18 recovery operations?

19 A. Yes, I do.

20 Q. Does Saga have plans to commit additional wells
21 to injection in the future?

22 A. Yes, sir, at least one.

23 Q. And do you request, to the extent possible,
24 authorization to add additional wells by filing Form C-108
25 with the Division, without the necessity of hearing?

1 A. Yes, sir, we do, or I do.

2 Q. Now, if we look at Exhibit 8, the study, Mr.
3 Rulla prepared the first portion of that study; is that
4 correct?

5 A. That's correct.

6 Q. You prepared Exhibits 10 through 15?

7 A. That's correct, sir.

8 Q. You collaborated on the text which precedes the
9 exhibits; is that correct?

10 A. That's correct, sir.

11 MR. CARR: Mr. Catanach, at this time I would
12 move the admission -- I think it's easier just to move the
13 admission of Exhibit 8, all parts.

14 EXAMINER CATANACH: Sorry, Exhibit 8?

15 MR. CARR: Eight. That's the study, text and all
16 exhibits.

17 EXAMINER CATANACH: Exhibit 8 will be admitted as
18 evidence.

19 MR. CARR: And that concludes my direct
20 examination of this witness.

21 EXAMINATION

22 BY EXAMINER CATANACH:

23 Q. Mr. Setzler, the polymer squeeze that you guys
24 are going to do, is that going to be done on all of the
25 wells completed in the main pay zone?

1 A. Yes, sir, as -- It will be done on a well-by-well
2 basis, but as we see the need, yes, it will be done, the
3 same way as we have already done -- I guess that is now
4 Unit Well 30 -- let me get back to my -- I'm sorry. Well,
5 it was Sawyer Number 3. That was the -- in Tract 3.

6 That work has been done, and will be done on
7 other wells, having new pay and main pay, because we know
8 as we get closer to the top of the Devonian the pay gets
9 tighter, and we need to shut off part of the fluid movement
10 back into the more permeable area so that we can force
11 water through the tighter zones.

12 Q. So the polymer effectively reduces the
13 permeability of that lower section?

14 A. Yes, sir.

15 Q. Is that on a permanent basis?

16 A. We can remove it if we have to, but it is meant
17 to be on a permanent basis.

18 Q. Okay. Now, if I understand your -- Let me just
19 go over your reserves that you hope to recover.

20 A. Uh-huh.

21 Q. From the new pay --

22 A. Yes, sir.

23 Q. -- you hope to recover 517,000 barrels of oil?

24 A. Yes, sir.

25 Q. That's within the whole unit?

1 A. Yes, sir.

2 Q. And from the main pay an additional 844,000
3 barrels?

4 A. That's correct.

5 Q. Okay. Now, the Exhibit Number 12 --

6 A. Yes, sir.

7 Q. -- is used to calculate remaining recoverable
8 reserves in the main pay?

9 A. Yes, sir.

10 Q. And that's just based on --

11 A. -- water cut versus cum oil.

12 Q. Okay. So this really doesn't take into effect
13 additional injection operations, does it?

14 A. No, sir. What I did is, I -- Using this curve, I
15 calculated how many barrels ultimate I thought we could
16 recover from main pay, which calculated out 21,770,000, and
17 knowing that, I -- and combined with the Exhibit 13, the
18 characteristic of that equation or of that curve, we were
19 also going to a 97-percent water cut.

20 We took the acre-feet, or I took the acre-feet in
21 the new pay and related the performance of this curve,
22 expanded back to the number of acre-feet in the new pay, to
23 project how many barrels and how it would be produced, not
24 just the total barrels.

25 Eleven was used -- I mean 12 was used just to

1 give total barrels in the main pay. And the actual
2 projection was developed from Exhibit 13. In both cases I
3 assumed I could go to a 97-percent water cut.

4 Q. Okay. So this is the oil that you hope to recover
5 simply by doing some polymer squeezes in existing wells and
6 opening up some pay in some wells?

7 A. Yes, sir.

8 Q. This really doesn't take into account any
9 additional reserves you might recover from water injection;
10 is that right?

11 A. Well, in the new pay, we're not producing from it
12 now, so when we perforate it and we open up that interval
13 in the injection well, we will be sweeping oil that we
14 couldn't recover otherwise.

15 Q. I'm sorry, can you run that by me again?

16 A. Okay, we are not at the current time producing
17 oil in the northern fault block from the main pay, and we
18 can move additional oil out of that main pay -- I mean out
19 of the new pay, excuse me.

20 And by perforating the new pay in the producing
21 wells up there and by opening up the new pay in the
22 injection well up there, we'll be able to sweep reserves
23 out of that. And we're going to be able to do -- recover
24 reserves that couldn't be recovered otherwise.

25 Q. So do you feel that in order to recover the

1 517,000 barrels from the new pay, that you feel like water
2 injection is a part of that?

3 A. Yes, sir.

4 Q. You definitely need that, to recover that
5 517,000?

6 A. Yes, sir, because since this field was first
7 drilled in 1947 to current, we know that we've had about a
8 580-pound bottomhole pressure drop, and as your pressure
9 drops, you are not nearly as liable to -- or it's not near
10 as easy to recover reserves from the rock. You need to
11 have your pressure up to where it was or even higher.

12 Q. So the pressure in the new pay zone, even though
13 it hasn't been produced in some areas, has still dropped
14 that much?

15 A. Yes, sir, I feel that it has. It's in connection
16 to the aquifers.

17 Q. Okay. And does that hold true for the other --
18 for the main pay section as well?

19 A. Yes, sir.

20 Q. You would need that injection operation to
21 recover the 844,000?

22 A. Yes, sir. As we stop a lot of the water going
23 down, where it's not doing any work, and put it back into
24 the area where we need it to do work, we will sweep
25 additional reserves out of the main pay as well as the new

1 pay.

2 Q. Okay. Up to this point you've been -- Have you
3 been injecting into that portion of the reservoir, the main
4 pay?

5 A. Yes, sir, but down below the water contact
6 primarily.

7 Q. In all three of the wells?

8 A. Yes, sir.

9 Q. So you intend to do the polymer squeeze on the
10 injection wells, I assume?

11 A. Yes, sir.

12 Q. And so you can get the water up into the section
13 you want it to go?

14 A. That's correct.

15 Q. Okay. And let's see, where is the third
16 injection well?

17 I show one in the northeast-northeast of 27 and
18 then one down in Section 34. Where's the other one?

19 A. Back to the -- are you -- in this exhibit here?

20 Q. Yes.

21 A. You have a saltwater disposal, Number 6, down in
22 the lower portion of Section 27, and directly --

23 Q. Okay.

24 A. -- north of it you have 11, and then north of
25 that you have 4. It has a big triangle around it.

1 Q. Okay.

2 A. And then to the south you have one.

3 Q. Now, the plan is to use those current wells and
4 possibly an additional well?

5 A. Yes, sir.

6 Q. Where would the additional well be located?

7 A. Well, right now the additional well would be the
8 one up in the corner of 27. It is not an active injection
9 well right now.

10 Q. Okay, so you initially plan to use three --

11 A. Three wells.

12 Q. -- and that's all?

13 A. No, we're going to convert that one up there in
14 that corner, as soon as the unit -- shortly after the unit
15 becoming totally effective.

16 Q. Okay, so that's three?

17 A. That would be four. Yeah, one, two, three, four.

18 Q. Okay. The 11, I got it.

19 A. Okay, yes, sir.

20 Q. Sorry about that.

21 A. No problem.

22 Q. It's been a long day. Okay, so you're going to
23 use four wells?

24 A. Four wells initially, and if we see extremely
25 good response to what we're doing, then we will probably

1 choose more wells to put on injection.

2 But that's something that will develop as the
3 project develops.

4 Q. Now, will that -- will using those four wells --
5 will you have an injection well in each of the three
6 compartments?

7 A. Yes, sir.

8 Q. Okay.

9 A. Yes, sir. And we'll be able to affect the main
10 pay and new pay in each of the compartments.

11 Q. And do you think that having one injection well
12 in each of those compartments will be sufficient to do what
13 you plan to do?

14 A. I hope so. And as I said, if we see good
15 response to that, then we would be recommending more in the
16 future. But it's...

17 Q. And you're estimating a 50-year project life?

18 A. Yes, sir.

19 Q. Do you know what these wells are currently
20 producing?

21 A. Yes, sir, the total on the field right now is 110
22 barrels of oil a day and approximately 3000 barrels of
23 water.

24 Q. And when you say "field", you're just talking
25 about the unit area?

1 A. Yes, sir. That's the only place we have -- I'm
2 sorry, that's where the producing wells are right now.
3 They're in the unit.

4 Q. And how many producing wells will you utilize in
5 the unit?

6 A. All that are shown on this map.

7 Q. You better count them for me, because I can't
8 count.

9 A. Okay, I'll count them. Seven wells, I believe,
10 is that -- Five wells. We have --

11 Q. Five producing wells?

12 A. Uh-huh.

13 Q. Within the whole unit?

14 A. Uh-huh.

15 Q. Now, would those -- Looking at this exhibit,
16 would those be the wells with the green circle, innermost
17 circle?

18 A. It should be.

19 Q. Okay, I count six.

20 A. I count six too, I apologize. I count six.

21 Q. Are there any plans to bring on additional
22 producing wells?

23 A. Yes, sir, that will all go with the project. As
24 we see response, we'll be looking at reworking wells and
25 perforating them and most certainly recommending one or two

1 more injection wells to go with that.

2 Q. Now, the remainder of these wells, are they
3 plugged or are they temporarily abandoned?

4 A. They're temporarily abandoned.

5 Q. They are TA'd, okay.

6 A. Yes, sir.

7 Q. Do you know in what manner they're TA'd? Do they
8 have bridge plugs in the hole?

9 A. Many of them have bridge plugs.

10 EXAMINER CATANACH: I have nothing further of
11 this witness.

12 MR. CARR: At this time, Mr. Catanach, we would
13 call Joe Clement.

14 JOE N. CLEMENT,

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

17 DIRECT EXAMINATION

18 BY MR. CARR:

19 Q. Could you state your full name for the record?

20 A. Joe Neal Clement.

21 Q. Mr. Clement, where do you reside?

22 A. Midland, Texas.

23 Q. By whom are you employed?

24 A. Saga Petroleum.

25 Q. And what is your position with Saga Petroleum?

1 A. I'm area engineer.

2 Q. Have you previously testified before the Oil
3 Conservation Division?

4 A. Yes, I have.

5 Q. At the time of that testimony, were your
6 credentials as an expert in petroleum engineering accepted
7 and made a matter of record?

8 A. Yes, they were.

9 Q. Are you familiar with the Applications filed by
10 Saga in each of these cases?

11 A. Yes.

12 Q. Are you the individual who prepared the
13 Application for the permit to inject in one additional well
14 in this case?

15 A. Yes, I am.

16 Q. And are you prepared to present that and other
17 information concerning the proposed project to the
18 Examiner?

19 A. Yes.

20 MR. CARR: Are the witness's qualifications
21 acceptable?

22 EXAMINER CATANACH: They are.

23 Q. (By Mr. Carr) Initially, Mr. Clement, are you
24 the individual who would be responsible for preparing the
25 backup calculations concerning tract participations and

1 unit participations?

2 A. Yes, I am.

3 Q. And you will submit to the Examiner the backup
4 information that you utilized in setting those numbers?

5 A. Yes, I will.

6 Q. By using the parameters, 45 percent reserves and
7 55 percent production, do you believe that each interest
8 owner in the unit will receive their fair share of the
9 additional unit production which will be recovered as a
10 result of the waterflood project?

11 A. Yes, I do.

12 Q. And in your opinion, do you believe these numbers
13 and the data you will submit will show that unitization
14 will benefit all working interest owners and all royalty
15 interest owners in the unit area?

16 A. Yes, I do.

17 Q. Let's go to what has been marked Exhibit 9, a
18 copy of the Form C-108 for the additional injection well.
19 Initially, is this an expansion of an existing project?

20 A. Well, we're seeking to utilize three previously
21 approved disposal wells and add one new injection well.

22 Q. Could you give Mr. Catanach the numbers for the
23 orders that approve three previous injection wells?

24 A. The U.D. Sawyer Number 6 was approved under
25 SWD-690, U.D. Sawyer 11 was approved under SWD-662, and the

1 Texaco Sawyer Number 4 was approved under R-3613.

2 Q. Which of these wells are currently being used for
3 disposal?

4 A. The Number 6 and the Number 11.

5 Q. And the Texaco Sawyer is the well you hope to
6 return to injection?

7 A. Yes.

8 Q. Is the project area the same as the unit
9 boundary?

10 A. Yes, it is. Ownership was reviewed by the land,
11 and the wells are shown on Exhibit 9.

12 Q. If we look at the Exhibit Number 9, the C-108,
13 could you go to page 3 of that, identify the location for
14 the new well, and review the information on that page.

15 It's not a very good Xerox copy, but -- at least
16 the one I have. You might give the exact location for the
17 well.

18 A. It's U.D. Sawyer Number 4, Unit Letter A, 660
19 from the north, 660 from the east, Section 27, Township 9
20 South, Range 36 East.

21 Q. And this plat is designed to show wells within a
22 two-mile area; is that correct?

23 A. Yes, it shows ownership of all the offset leases,
24 and it shows the area of review covered by the C-108.

25 Q. What is the present status of the well you hope

1 to use for injection?

2 A. It is currently TA'd. It was a producer in the
3 Penn.

4 Q. Do pages 4 and 5 of Exhibit 9 in a tabular form
5 set forth the data on the wells within the area of review
6 which are required by Oil Conservation Division Form C-108?

7 A. Yes, it shows wells, spud dates, locations, all
8 casing strings, tops of cement, cement volumes and
9 completions.

10 Q. And are pages 6 through 18 of this exhibit
11 schematic drawings of all plugged and abandoned wells
12 within the areas of review, summarizing all the plugging
13 details?

14 A. Yes.

15 Q. Have you a well data sheet for each of the wells
16 within the area of review?

17 A. Yes, I do.

18 Q. Could we go to the schematic for the proposed
19 injection well, which is page 2 of this exhibit, and I'd
20 ask you to refer to that and review for Mr. Catanach your
21 proposal for the well.

22 A. This well will be re-entered, the Penn zone will
23 be squeezed off, cement-squeezed, drilled out, run in hole
24 with Baker Lok-Set packer with 2-3/8 plastic-lined tubing,
25 set the packer at 12,035 feet, circulate the hole with

1 packer fluid, pressure test the casing annulus in
2 accordance with state and federal laws.

3 Q. And you will have a gauge at the surface to
4 monitor the pressure in the annular space?

5 A. Yes.

6 Q. Into what formation are you proposing to inject?

7 A. We propose to inject into the Devonian.

8 Q. And what is the depth of the Devonian sands we're
9 going to be injecting into?

10 A. Across the unit they run from 11,948 to 12,178.
11 This particular well we propose injecting into the interval
12 12,085 to 12,100.

13 Q. The net thickness varies across the unit. Do you
14 have the numbers for the variation in thickness?

15 A. It varies anywhere from 15 feet to 75 feet.

16 Q. And what is the average porosity?

17 A. Average porosity is 13.4 percent, and
18 permeability is approximately 50 millidarcies.

19 Q. Are there other oil-productive zones in the
20 immediate area?

21 A. No.

22 Q. And what is the source of the water that will be
23 injected?

24 A. It will be produced water from our lease and, if
25 necessary, other leases of other Devonian producers.

1 Q. There is an adequate supply of water, not fresh
2 water?

3 A. Yes.

4 Q. What volumes are you proposing to inject?

5 A. We're proposing initially 1000 barrels of water
6 per day.

7 Q. And the maximum injection rate would be what?

8 A. 1500.

9 Q. Will this be an open or a closed system?

10 A. Closed system.

11 Q. Will you be injecting under pressure?

12 A. Initially, due to some drainage, we don't think
13 there will be any pressure, but it's potential that later
14 it will be under pressure.

15 Q. So initially, by gravity, you -- What pressure
16 would you propose to use?

17 A. Oh, 1000 pounds should be adequate.

18 Q. Would an injection pressure limitation of .2
19 pound per foot of depth to the top of the injection
20 interval be adequate for Saga's purposes in this project?

21 A. Yes.

22 Q. If an increase was needed above that level, would
23 those pressure increases be justified by step-rate tests
24 witnessed by the Division?

25 A. Yes, they would.

1 Q. Does Exhibit Number 9 contain a water analysis of
2 the injection fluids?

3 A. Yes, it does. It's a freshwater well.

4 Q. Is that what you're going to be injecting, or is
5 that water in the area?

6 A. That is just the water in the area that's
7 currently used by the ranch.

8 Q. And where is that in this exhibit?

9 A. It's approximately -- Oh, in the exhibit?

10 Q. Yes, what page? Page 21, the last page?

11 A. It's the last page.

12 Q. And how close is this to the injection well?

13 A. To the Number 4 injection well, it's
14 approximately a half a mile northwest.

15 Q. Are there any other freshwater wells in the area?

16 A. No, there are not. There's -- This well has some
17 Ogallala freshwater production, but it's very spotty and
18 very random, and this is one of the few wells -- freshwater
19 wells in the area.

20 Q. Are there any other freshwater zones in the area?

21 A. There's also some Santa Rosa, but it's more
22 brackish and not potable.

23 Q. Have you examined the available engineering and
24 geological data on this reservoir, and as a result of that
25 examination have you found evidence of open faults or any

1 other hydrologic connection between the disposal or
2 injection zone and any underground source of drinking
3 water?

4 A. No.

5 Q. In your opinion, will approval of this
6 Application and the implementation of this project be in
7 the best interest of conservation, the prevention of waste
8 and the protection of correlative rights?

9 A. Yes.

10 Q. Was Exhibit 9 prepared by you?

11 MR. CARR: At this time, Mr. Catanach, I move the
12 admission of Saga Exhibit 9.

13 EXAMINER CATANACH: Exhibit 9 will be admitted as
14 evidence.

15 MR. CARR: That concludes my direct examination
16 of Mr. Clement.

17 EXAMINATION

18 BY EXAMINER CATANACH:

19 Q. Mr. Clement, do you know what the condition of
20 the other two injection wells are at this point? Are they
21 mechanically sound?

22 A. Yes, sir. They're current with all testing out
23 of the Hobbs office of the OCD.

24 Q. Is there anything that needs to be amended with
25 regards to the intervals that those wells are injecting

- 1 into, adding any perfs or changing anything in those wells?
- 2 A. Not at this time.
- 3 Q. Have those wells pretty much been active
- 4 throughout the years, as far as you know?
- 5 A. The Number 11 was converted to saltwater
- 6 disposal, I believe, in 1997, and the Number 6 in 1998.
- 7 Q. Okay, they're fairly recent, then?
- 8 A. Yes.
- 9 Q. The disposal well in Section 34, that's not going
- 10 to be used, right?
- 11 A. Yes, it will.
- 12 Q. Okay. Is the one you want to permit in -- The
- 13 one you want to permit is in --
- 14 A. Section --
- 15 Q. That's up in 27?
- 16 A. -- 27 --
- 17 Q. Okay.
- 18 A. -- Unit A.
- 19 Q. So the Number -- Is that Number 4?
- 20 A. Yes, sir.
- 21 Q. Is that an active well?
- 22 A. No, not at this time.
- 23 Q. Okay, but you may convert that later; is that
- 24 what you're saying?
- 25 A. No, we will -- When the unit is approved, we will

1 convert the Number 4 in Unit A to injection.

2 Q. Right. What about the one in Section 34?

3 A. Yes, it will be -- Injection will resume into it
4 at the same time.

5 Q. That's the one that was approved by R-3612?

6 A. Yes.

7 MR. CARR: Yes.

8 Q. (By Examiner Catanach) Okay, there's two Number
9 4's here, that's why it's a little bit confusing.

10 A. I'm sorry.

11 Q. Now, has that been inactive for a while?

12 A. Yes.

13 Q. Do you know how long it's been inactive?

14 A. At least three years.

15 Q. Probably -- The authority for that well is
16 probably expired.

17 A. Okay.

18 Q. If this unit is approved and we authorize you to
19 inject, you may have to make a subsequent application to
20 get that approved administratively.

21 And have you satisfied yourself that all these
22 wells, the area-of-review wells, are completed and cased
23 and cemented adequately to confine the injection fluid?

24 A. Yes, I am.

25 Q. How about the plugged and abandoned wells?

1 A. Yes.

2 EXAMINER CATANACH: Okay, I have nothing further
3 of this witness.

4 MR. CARR: Mr. Catanach, that concludes our
5 presentation in this case.

6 EXAMINER CATANACH: Mr. Carr, one more thing, if
7 you could. Could I get you to maybe do a summary of the
8 negotiation process with these interest owners --

9 MR. CARR: We can do that.

10 EXAMINER CATANACH: -- what has occurred?

11 MR. CARR: The negotiations, Mr. Catanach,
12 started back with the original voluntary unit, and they
13 were very active at that time.

14 I don't know what happened right after the
15 voluntary unit, but we have been involved in this effort
16 since -- I believe it was in January of this year, during
17 one of the prorationing meetings in Midland that we
18 discussed going the statutory route. So it's been the
19 better part of this year.

20 I'll give you a chronology showing what interest
21 owners are involved and what contacts have been made.

22 EXAMINER CATANACH: Okay, that would be helpful.

23 MR. CARR: Yes, sir, be glad to do that.

24 EXAMINER CATANACH: Anything else?

25 MR. CARR: That's all we have.

1 EXAMINER CATANACH: Okay, there being nothing
2 further in this case, Case 12,417 and 12,418 will be taken
3 under advisement.

4 And this hearing is adjourned.

5 (Thereupon, these proceedings were concluded at
6 2:57 p.m.)

7 * * *

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12
13 I hereby certify that the foregoing is
14 a complete record of the proceedings in
the Examiner hearing of Case No. _____
15 heard by me on _____ 19____.

16 _____, Examiner
Off Conservation Division
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CERTIFICATE OF REPORTER

[illegible]

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

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

WITNESS MY HAND AND SEAL September 14th, 2000.

Steven D. Green

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002