

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

4 December 1985

DIVISION HEARING

IN THE MATTER OF:

Application of Murphy Operating Cor-
poration for statutory unitization,
Roosevelt County, New Mexico;
and

CASE-
8779

Application of Murphy Operating Cor-
poration for a waterflood project,
Roosevelt County, New Mexico.

CASE
8780

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

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MR. CATANACH: We'll call Case 8779.

MR. TAYLOR: The application of Murphy Operating Corporation for statutory unitization, Roosevelt County, New Mexico.

MR. CATANACH: Are there appearances in this case?

MR. EZZELL: May it please the Examiner, my name is Calder Ezzell, with the Hinkle Law Firm in Roswell, New Mexico. I represent the applicant, Murphy Operating Corporation, and inasmuch as we have a lot of duplication in testimony, I would request that Case 8779 and 8780 be consolidated for the purposes of hearing.

MR. CATANACH: Cases 8779 and 8780 will be consolidated for the purpose of testimony.

Call Case 8780.

MR. TAYLOR: Application of Murphy Operating Corporation for a waterflood project, Roosevelt County, New Mexico.

MR. CATANACH: Mr. Ezzell, you may proceed.

MR. EZZELL: Mr. Examiner, I have two witnesses to swear.

MR. CATANACH: Will the witness-

1 ses please stand?

2

3

(Witnesses sworn.)

4

5

MR. EZZELL: My first witness'

6

testimony will be primarily but not exclusively to the sta-

7

tutory unitization request.

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9

ANN J. MURPHY,

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being called as a witness and being duly sworn upon her

11

oath, testified as follows, to-wit:

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DIRECT EXAMINATION

14

BY MR. EZZELL:

15

Q

Would you state your name and your resi-

16

dence?

17

A

Ann J. Murphy, Roswell, New Mexico.

18

Q

And what is your occupation?

19

A

I'm the co-owner and Chief Executive Of-

20

ficer of Murphy Operating Corporation.

21

Q

And have you previously testified before

22

the Commission and had your qualifications accepted as a

23

matter of record?

24

A

No, I have not.

25

Q

Well, then would you briefly describe

1 your educational and employment background?

2 A I received a BS in petroleum engineering
3 in 1979 from Stanford University.

4 I also received a JD from UCLA School of
5 Law in 1982.

6 I have worked as a petroleum engineer for
7 three major oil companies including Mobil, Exxon, Southern
8 California Gas Company, and as an attorney for two major law
9 firms in Los Angeles, and my current occupation is the Chief
10 Executive Officer of Murphy Operating.

11 Q Are you familiar with Murphy's
12 applications in these consolidated cases?

13 A Yes, I am.

14 Q What does Murphy seek by its
15 applications?

16 A We ask the Commission to approve the
17 unit, the waterflood plan, and to statutorily unitize the
18 unit area.

19 MR. EZZELL: Mr. Examiner, I
20 would offer Ms. Murphy as an expert in the field of
21 petroleum engineering and also qualified to give testimony
22 as to legal issues involved in these applications.

23 MR. CATANACH: Ms. Murphy is
24 considered qualified.

25 MR. EZZELL: Thank you, sir.

1 Q Ms. Murphy, I direct your attention to
2 the exhibits you have in front of you, and what is Exhibit
3 One and Exhibit One-A?

4 A Exhibit One is a map of the unit area.

5 Exhibit One-A is a map that shows all the
6 wells within ten miles of the proposed unit boundary. The
7 injection wells are marked in red on Exhibit One-A.

8 Q Okay, with respect -- I notice that the
9 exhibit -- on Exhibit One-A it does not quite go two miles
10 to the east. Is that because the Texas line is less than
11 two miles away?

12 A That's correct.

13 Q Okay. Turning your attention to Exhibit
14 One, would you please describe your unit area and how the
15 tracts are numbered?

16 A Yes. Exhibit One shows that the unit,
17 the proposed unit area consists of 1800 acres of contiguous
18 leases. All the leases are Federal leases and the tracts
19 are divided according to common ownership. The tract num-
20 ber, the lease, and the operator is shown on the exhibit.

21 Q Okay, and what is the unitized formation
22 in your proposed unit area?

23 A The unitized formation consists of the
24 subsurface portion of the unit area in the San Andres forma-
25 tion.

1 The vertical limits are found in the in-
2 terval between 4640 and 4676 feet, measured by the nuclear
3 log run in the Murphy Operating Corporation's Bluitt Federal
4 Well No. 3. This well was drilled and completed in October
5 of 1977 and it is located in Section 13, Township 8 South,
6 Range 31 East.

7 Q And that's located 660 feet from the
8 south line and 1980 feet from the east line?

9 A That's correct, Roosevelt County, New
10 Mexico.

11 Q And that unitized formation is marked on
12 Exhibit Two that you have submitted to the Division?

13 A Yes, it is.

14 Q Okay. I refer you to your Exhibits Three
15 and Four. Would you please identify them?

16 A Exhibit Three is a unit agreement for the
17 Bluitt San Andres Unit.

18 Exhibit Four is a unit operating agree-
19 ment for the same unit.

20 Q Are you familiar with these agreements?

21 A Yes, I am.

22 Q And did you prepare these agreements?

23 A Yes, I did..

24 Q Who is designated unit operator?

25 A Murphy Operating Corporation is desig-

1 nated unit operator.

2 Q All right. How were you able to deter-
3 mine who the working interest owners and the royalty owners
4 are in the proposed unit area?

5 A My Land Department and the law firm of
6 Hinkle, Cox, Eaton, Coffield, and Hensley provided us with
7 abstracts. We've done a courthouse check. We've also
8 checked the Federal records and verified the information
9 with the other owners listed in Exhibit B of the unit agree-
10 ment.

11 Q Did you make a good faith, bona fide ef-
12 fort to obtain voluntary unitization from all of the working
13 interest owners in the proposed unit area?

14 A Yes. All of the interest owners have
15 been notified and have been requested to join the unit.

16 Q Could you briefly describe the history of
17 the effort to voluntarily unitize the Bluitt San Andres?

18 A Certainly. My records indicate that the
19 first unit meeting was held in October, 1979. A large
20 majority of the interest owners were present and Stevens En-
21 gineering Company, an independent consultant, presented a
22 preliminary waterflood study at that point.

23 The owners present agreed that it was the
24 time to attempt to unitize this area for a waterflood pro-
25 ject to enhance production.

1 The effort continued until I joined with
2 the operating corporation in October of '83, and we notified
3 all the owners in the area that there would be an interest
4 owners meeting in December.

5 We circulated the proposed agenda,
6 engineering report, all the agreements prior to the meeting
7 and that meeting was well attended. Over 83 percent of the
8 working interest owners in the unit area attended, and unan-
9 imously agreed that -- that negotiations should continue to
10 unitize the Bluit; that Murphy Operating Corporation should
11 be elected unit operator.

12 The unit documents were reviewed and they
13 were approved unanimously at that meeting.

14 The participation factor was discussed.
15 A formula was adopted and these were all unanimously ap-
16 proved.

17 Q You mentioned participation factors and a
18 formula. I assume you mean a formula for the allocation of
19 unit production and costs to the various tracts?

20 A Yes, I do.

21 Q Would you elaborate a little bit on this
22 formula?

23 A Yes. The formula for tract
24 participation was determined to be 20 percent of the total
25 usable wells in the unit plus 80 percent of the total

1 ultimate primary production to be recovered.

2 Q Ultimate primary production --

3 A Yes.

4 Q -- to be recovered from each tract.

5 A Yes.

6 Q Do you feel that this allocation and the
7 formula used is fair and equitable?

8 A Yes, I agree with the other owners that
9 it is fair and equitable.

10 Q And you testified that this procedure was
11 accepted by the owners of 83 percent of the working interest
12 in the unit at the December 13, 1983 meeting?

13 A That's correct.

14 Q Does the unit agreement contain provi-
15 sions for operations, voting procedures, satisfactory provi-
16 sions for the removal of the operator or substitute opera-
17 tor, and have these provisions been agreed upon by all of
18 the parties?

19 A Yes, they have been.

20 Q Okay. Has the Bureau of Land Management
21 designated your proposed unit as a logical unit area for se-
22 condary recovery by waterflood?

23 A Yes, I would refer you to a copy of a
24 letter --

25 Q Is that Exhibit Five and Five-A?

1 A Yes. Exhibit Five and Five-A are letters
2 from the BLM which approve the unit area as a designated
3 logical -- and then Exhibit Five-A is a reaffirmation of
4 their initial approval and discusses their current progress
5 and work --

6 Q Not only --

7 A -- with the unit.

8 Q Not only has the BLM designated the pro-
9 posed unit as a logical unit for a waterflood, but they have
10 in fact given you preliminary approval of the unit and the
11 unit agreement itself, is that --

12 A That's correct.

13 Q -- correct? Okay.

14 I would now refer you to your Exhibit Six
15 and ask you to identify that, please.

16 A Exhibit Six is a schedule of working in-
17 terest owners within the unit area. The ratifications of
18 the working interest owners that have joined the unit are
19 attached to this exhibit.

20 Q Okay, I see that according to the key,
21 those working interest owners that have an "X" to the left
22 of their name have committed and have ratified, and those
23 ratifications are attached to this Exhibit Six, is that cor-
24 rect?

25 A That's correct.

1 Q All right, then there are a few owners
2 who have a "0" by their name. The first one is Mr. Ralph H.
3 Viney. Would you explain?

4 A Yes. Mr. Viney's been supportive of the
5 unit since 1979 and he has agreed to sign. We've had some
6 delay in processing his application. He's been out of town
7 quite a bit and he's involved in a number of other business
8 dealings at this point, and he indicated last Friday that he
9 would mail them in time for the hearing but we did not re-
10 ceive them.

11 Q And so that is why --

12 A But we expect them.

13 Q -- he was included in the total commit-
14 ted.

15 A Yes, we felt certain that we will receive
16 those ratifications in the near future.

17 Q And what is the total that -- of the per-
18 centage of the working interest owners that have committed
19 to participate in the unit?

20 A Approximately 97.7 percent of the inter-
21 est within the unit area.

22 Q All right. The remaining 2.28 percent is
23 shown as outstanding.

24 Would you elaborate on the interest of
25 Mr. Baumgartner, et al?

1 A Yes. Mr. Baumgartner indicated that he
2 would like to sell his well to us rather than join the unit
3 and we were unable to arrive at a satisfactory price for his
4 well, so he indicated that he would contest this hearing,
5 and then apparently his attorney, Scott Hall, of the Camp-
6 bell and Black firm, called on Monday and said Mr. Baumgart-
7 ner would either accept the statutory unitization proceed-
8 ings or join the unit, and we're -- we'll determine that in
9 the near future.

10 MR. EZZELL: Mr. Examiner,
11 originally when we found out at the late date that Mr. Baum-
12 gartner did intend to contest this hearing, they asked for a
13 continuance. As we'll explain later, there is some amount
14 of urgency to expedite the initiation of unit operations,
15 and we agreed to go ahead and present our primary case at
16 the hearing today with the understanding with Mr. Baumgart-
17 ner and his counsel, Scott Hall, that we would leave the re-
18 cord open until the 18th hearing in case he wanted to enter
19 rebuttal evidence, and we are now advised by Scott Hall that
20 there is no necessity to leave the record open so that we
21 would, at the conclusion of our primary case, ask that the
22 record be closed today.

23 I believe Mr. Hall confirmed
24 that to your office in a telephone conversation Monday.

25 Q So you have 97.7 percent who have either

1 ratified or agreed to ratify and the other 2.2 percent have
2 agreed to either operate under the order of the Commission
3 or join the unit as the order will give them the opportunity
4 to.

5 A Yes, and we have talked with Mr. Baum-
6 gartner's overriding royalty interest and one of his working
7 interest that has ratified.

8 Q Okay.

9 A And those are attached.

10 Q There are other names besides Mr. Baum-
11 gartner listed as uncommitted: Hamersley, the Kelly Family
12 Trust, Sanburg, and Southworth.

13 A Yes, sir. They are nonoperators in that
14 well and they have provided us with letters which I have
15 with me today that indicate that they asked Mr. Baumgartner
16 to speak on their behalf and that they would go along with
17 whatever he recommended, so --

18 Q So you have written evidence that Mr.
19 Baumgartner speaks for the entire group that you show as to-
20 tal outstanding.

21 A Yes, I do.

22 Q Thank you. What is your Exhibit Seven?

23 A Exhibit Seven is the schedule of record
24 title holders in the unit area.

25 Q And again the same key is used, "X's" for

1 those who have committed, "O's" for those who have not com-
2 mitted.

3 You have zeros by HNG, Kerr-McGee, and
4 Ralph Viney. Is it true that they have all given you evi-
5 dence of their intention to execute ratifications but they
6 have just not mailed them to you yet?

7 A Yes. Kerr-McGee and HNG have executives
8 out for vacation and they have indicated that now that
9 they're back in that they'll send them to us this week.

10 Q Okay.

11 A And Mr. Viney, I'm sure we'll be receiv-
12 ing his soon.

13 Q And then Mr. Baumgartner, the same thing
14 goes --

15 A Yes.

16 Q -- as with his working interest. What is
17 your Exhibit Eight?

18 A Exhibit Eight is a schedule of overriding
19 royalty interest in the unit area.

20 Q And again you use the same key, "X's" for
21 ratifications which are attached and zeros for ratifications
22 that have not come in yet.

23 A Yes.

24 Q We have zeros by HNG, George Judd, and
25 that's it.

 A And Kerr-McGee.

 Q And Kerr-McGee, excuse me. What is the
situation with those people?

1 A Well, we've discussed HNG and Kerr-McGee.
2 We expect their ratifications any day, and Mr. Judd indi-
3 cated he'd been out of town and that he would Federal Ex-
4 press his ratification to us on Monday and that we'd receive
5 them in time for the hearing.

6 Q So with respect to the overriding royalty
7 interest owners, and I would point out to the Division that
8 it is 100 percent Federal land so there are no royalty
9 owners other than the Federal government, but the overriding
10 royalty owners that appear of record, you have either rati-
11 fications or evidence of an intent to ratify from 100 per-
12 cent.

13 A That's correct.

14 Q Okay. Were each of Exhibits one through
15 Eight prepared by you or under your direction?

16 A They were.

17 Q With the exception of Exhibits Five and
18 Five-A, which were letters from the BLM?

19 A That's correct.

20 MR. EZZELL: I'd like to offer
21 into evidence Exhibits One through Eight at this time.

22 MR. CATANACH: Exhibits One
23 through Eight will be admitted into evidence.

24 Q Ms. Murphy, is the unitized management of
25 the Bluit San Andres Pool necessary to conduct secondary

1 recovery?

2 A Yes, it is.

3 Q And will that secondary recovery have a
4 legitimate expectation of recovering oil that would not have
5 been recovered under primary only?

6 A Absolutely.

7 Q And does your proposed plan have a
8 reasonable expectation of recovery which would not only
9 cover the costs of the secondary project but return a
10 reasonable profit to those participants?

11 A We believe it will.

12 Q Do you believe that your proposed plan
13 will benefit working interest owners and royalty owners
14 alike?

15 A Yes, we do.

16 Q And you've testified that the participa-
17 tion formula which has been agreed to by 97.7 percent of the
18 owners is fair and equitable?

19 A Yes, it is.

20 Q In your opinion would the granting of the
21 applications now before the Division serve the interests of
22 conservation, prevent waste, and protect the correlative
23 rights of all owner -- interest owning parties in the unit?

24 A Yes, it will serve that purpose.

25 MR. EZZELL; I have nothing

1 more of this witness.

2

3

CROSS EXAMINATION

4 BY MR. CATANACH:

5 Q Ms. Murphy, the unit agreement and your
6 unit operating agreement, are those agreements that have ap-
7 proval from the BLM; I mean the form, the type of agreement?

8 A Yes, they do. They've gone over them
9 carefully and I think your Exhibit Five will show the re-
10 quest for small changes to the format and we've complied
11 with that in preparation to resubmit them for final appro-
12 val.

13 I think they asked us to re-number the
14 tracts from oldest to youngest or vice versa, and we did
15 that and that was really their only request.

16 Q I see.

17 MR. CATANACH: We have no fur-
18 ther questions of the witness.

19

20 JOE L. JOHNSON, JR.,

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

23

24

25

DIRECT EXAMINATION

BY MR. EZZELL:

Q Mr. Johnson, state your name, residence, and your occupation, please?

A Joe L. Johnson, Jr., 2405 Essex, Wichita Falls, Texas.

I'm a petroleum engineer with the firm of Stevens Engineering.

Q Do you have any specialties in the engineering field or emphasis in any particular areas?

A We have done waterflood work for the last, oh, I think the firm was originally established in the 1930's, so we've been doing it now for about fifty years.

Q Are you familiar with the area of Roosevelt County and specifically the San Andres formation that's the subject matter of these applications?

A Yes, I am.

Q And are you familiar with the specific applications of Murphy Operating Corporation?

A Yes, I am.

Q Have you testified before the Oil Conservation Division previously and had your qualifications accepted as a matter of record?

A Yes, I have.

MR. EZZELL: I would move his

1 recognition as an expert witness in the field of petroleum
2 geology.

3 MR. CATANACH: Mr. Johnson is
4 considered qualified.

5 MR. EZZELL: Thank you, sir.

6 Q Please explain the nature of your
7 involvement with this proposed waterflood, Mr. Johnson.

8 A We were contacted by the working interest
9 owners and in particular the operator at the time. The
10 operator at the time of the original survey which was done
11 in 1979 was Layton Enterprises.

12 Layton then later turned the operations
13 over to Murphy and due to the time lag from '79 to '83 and
14 the desires of the working interest owners, we prepared a
15 supplemental waterflood survey which brought the, basically
16 brought the survey up to date.

17 Q And this supplemental waterflood survey
18 which is dated as of September 1, 1983, is contained in the
19 booklet which we have marked for identification as Exhibit
20 Nine, is that correct?

21 A That is correct.

22 Q And this supplemental waterflood survey
23 was circulated to the working interest owners and operators
24 prior to the 1983 unit meeting?

25 A The original was. The supplemental was

1 prepared after that meeting. The original meeting, or the
2 meeting with Murphy was in the early part of December and
3 this was prepared in the latter part of December.

4 Q I see. Inasmuch as there's been a long
5 on-going effort to unitize the Bluitt-San Andres Field, you
6 have a special relationship with the working interest owners
7 as independent consulting engineer?

8 A Yes, that is correct.

9 Q And you were appointed to that position
10 and then that was confirmed by the 1983 meeting attended by
11 83 percent of the working interest owners?

12 A That is correct.

13 Q What is the productive interval in the
14 Bluitt San Andres Associated Pool, and we would refer at
15 this point to Exhibit One, which has already been intro-
16 duced, to show the specific wells in the -- well, One-A, to
17 show the specific wells. This is a reproduction of One-A
18 with the proposed injection wells noted in red.

19 A I believe your question is to what inter-
20 val. We're speaking of the P-2 interval of the San Andres
21 formation, and I don't have the description, but that is on
22 Exhibit Two, as I recall, or three, which is the log that
23 was presented earlier.

24 Q That is correct and that is correlated as
25 the P-2, lying between 4540 and 4676 feet in the Bluitt

1 Federal No. 3 Well.

2 A That is correct.

3 Q Is that interval the entire portion of
4 the San Andres commonly known as the P-2?

5 A Yes, it is.

6 Q Okay. If you will look at your exhibit,
7 there are several wells in the area -- you can either use
8 this one or the one out of your waterflood survey -- are all
9 of the wells within the unit area completed in the P-2?

10 A We have -- all of them are completed in
11 P-2 with the possible exception of the Ingram No. 1, Federal
12 No. 1.

13 Q And that's in the northeast quarter of
14 the northwest quarter of 24?

15 A Yes.

16 Q Where is that well completed?

17 A As best we can determine, it appears to
18 be completed in the P-1; that has been recompleted. Orig-
19 nally it was in the P-2.

20 Q It was originally completed in the P-2?

21 A That is correct.

22 Q And the operator came up the hole to the
23 P-1?

24 A As best we can determine, he did several
25 years ago, but I never did find proof of this.

1 Q And what are the -- what are the unit
2 operator's plans for the Ingram No. 1 Well after the initia-
3 tion of the waterflood?

4 A Initially the flood that we're suggesting
5 here is a pilot project. Once the pilot proves itself, then
6 we'll be moving to expand the project immediately, and in
7 the case of that particular well, it will be determined, if
8 that is the case, that it is in the P-1, it will require
9 that the well be squeezed and that the P-2 be reopened.

10 Q Okay. I also notice a dry hole identi-
11 fied as the Kirkpatrick 7 in Section 14, what appears to be
12 the northeast quarter of the southeast quarter.

13 Would you explain that well, please?

14 A That well did complete. In fact we've
15 checked and there was pipe out there the last time we were
16 in the area, but apparently was only productive of gas and
17 therefore was never produced.

18 Q It had -- you said it has pipe in the
19 hole and it was perforated and are those perforations in the
20 P-2?

21 A Yes.

22 Q And so they are no wells within the unit
23 boundary which are completed in any other formation but the
24 P-2 except for the possible exception of the Ingram 1.

25 A That is correct.

1 Q What about wells lying outside the --
2 well, we do notice that there is one gas well in the south-
3 east southeast of 11. Is that well completed in the P-2 and
4 do you feel that it is producing from the gas cap?

5 A That well was the original discovery well
6 of the Bluitt Field. It produced for several years gas on-
7 ly; then later started converting to oil, which led to the
8 exploration to the southwest, or down structure -- excuse
9 me, to the southeast, or down structure from the well and
10 led to the discovery of the Bluitt Oil Field.

11 Q Okay, we notice there are four wells mar-
12 ked with red circles on this exhibit, which indicate that
13 those are to be the injection wells.

14 As you know, the C-108 information re-
15 quired by the Commission draws a one-half mile circle around
16 each of those wells, calling that the area of review for
17 each well.

18 All of the wells within the area of re-
19 view for each of those wells are within the unit, is that
20 correct?

21 A That is correct.

22 Q And the -- all the applicable data, we're
23 already heard your testimony that all, with the possible ex-
24 ception of the Ingram 1, are completed in the unitized for-
25 mation and Exhibit 3 of your supplemental waterflood survey,

1 which is Exhibit Nine, contains all of the data --

2 A You mean page 3.

3 Q Pages 3 of the exhibit.

4 A Yes. Yes.

5 Q Contains all of the data relative to the
6 completion of each of these wells that are required by the
7 C-108, right?

8 A Yes, that is correct.

9 MR. EZZELL: If it pleases the
10 Examiner, we will not go into a well by well analysis inas-
11 much as the owners of all of these wells have ratified the
12 unit.

13 Q Briefly inform us of the production his-
14 tory of this field. You said that the Kirkpatrick 1 was the
15 discovery well which was originally a gas well, then turned
16 to oil.

17 What happened after that?

18 A The Kirkpatrick 1 was drilled -- this is
19 contained in the write-up section of this report, of Exhibit
20 Number Nine.

21 Q Okay.

22 A And as indicated in Roman Numeral Number
23 I, which would be the second page of the write-up, the ori-
24 ginal discovery well was the -- was the Well No. 1. It was
25 completed as a gas well on November the 6th of '63.

1 After several years production, the well
2 turned to oil production and led to further development.
3 This drilling program was prepared in 1968 and 1969.

4 Q Has the Bluitt San Andres Associated
5 Pool, as designated by the OCD, been a prolific producer?

6 A Yes, it's made approximately 1.5 milion
7 barrels.

8 Q Okay, that figure is the 1.4 that is con-
9 tained in your report as of 1983, updated from current -- an
10 update of the current production?

11 A Approximately, yes.

12 Q What -- what is the current production?
13 Has it -- have we experienced a significant decline?

14 A The current production is barely able to
15 keep the -- keep the things alive. We're, I would say, at
16 the economic limit on all but possible one property.

17 Q What --have you experienced a significant
18 decrease in bottom hole pressure?

19 A Yes, it's very low.

20 Q Are all of the well in the unit area
21 classified as stripper wells?

22 A Yes, they are.

23 Q In your -- and in your Exhibit Nine you
24 have specific production curves plotted for each of the
25 wells within the unit area, do you not?

1 A Yes, these are not wells but lease pro-
2 duction curves.

3 Q Lease production curves, excuse me.

4 In your waterflood survey what geological
5 information did you discovery with respect to the field and
6 the limits of the field?

7 A We analyzed all of the data available in
8 the field and we were fortunate in that we had core analysis
9 as well as log information.

10 The information available from this
11 source indicates that there was an average porosity of ap-
12 proximately 8.5 percent, an average water saturation of 23
13 percent, and a formation volume factor of 1.2.

14 Normal primary recovery was estimated at
15 15 percent.

16 Based on this information we were able to
17 come up with an ultimate primary recovery estimate of 63.5
18 barrels per acre foot of the original 423 barrels per acre
19 foot in place.

20 Q I see. As you know, there are statutory
21 requirements for a waterflood project that the limits of the
22 field be reasonably defined.

23 How are the limits of this particular
24 field defined?

25 A Basically they were defined through

1 either -- there were a few cases where we had dry holes that
2 were drilled, but generally it was through the productive
3 range, or productive rate, indicated by the wells. In some
4 instances we felt like the reservoir would have gone
5 slightly further to the south, possibly, but we doubted at
6 the time if the production that had been obtained from that
7 area would have been commercial.

8 Q Okay. Specifically, we see, starting on
9 the left, we see the Kirkpatrick 7, which you've already
10 testified to its inability to produce.

11 A Basically it was gas.

12 Q And then the map indicates dry holes
13 literally on every side of the lease except the east, and we
14 also notice that the unit boundary divides a lease called
15 the Baumgartner Lease in the northeast quarter of Section
16 19. That lease appears to have two productive wells on it,
17 the No. 1 in the east half -- the west half, excuse me, and
18 the No. 2 in the east half.

19 Why were the unit boundaries drawn be-
20 tween those two wells?

21 A In the study it became apparent that the
22 No. 1 Well would correlate and fit much better over into the
23 project area that we're discussing.

24 No. 2, however, appears to be in the
25 vicinity of the permeability barrier. That well produced

1 for a very short time; as I recall, made less than 1000 bar-
2 rels of oil, and has been plugged and abandoned.

3 Q I see, and so the other wells that we
4 see, most of them appear to be Union, Union Oil Company
5 wells, why would that not be a logical area to include in
6 this unit?

7 A The same situation; they did not have,
8 although they appeared to correlate, they did not have the
9 productivity or have the potential and recoveries that were
10 indicated by the other wells.

11 We felt like the barrier extended from
12 let's say the Baumgartner 2 through the Union Federal 18 No.
13 1, on up and the dry hole that is located in the northwest
14 part of -- excuse me, it would be the east half of the
15 northwest quarter of 18, and then again in a similar north-
16 northwest direction on up into the Oscar Robinson Well.

17 Q Okay, so it is your expert opinion that
18 there is a permeability barrier which separates the Union
19 wells from the wells in the Bluit San Andres Associated
20 Field?

21 A That is correct and it pretty well bears
22 it out with the ultimate production that has been obtained.

23 Q And isn't it true that Union, the
24 operator of the other wells, agrees with this analysis?

25 A They do, yes.

1 Q Okay. Is the unitized formation substan-
2 tially uniform throughout the entire unit area?

3 A Yes, it is.

4 Q What conclusions have you drawn relative
5 to the recovery of secondary reserves?

6 A We're of the opinion that with a suc-
7 cessful injection program, with a pilot and expansion there-
8 of at a later date, possibly within a year and a half to two
9 years, that a recovery estimate of 1.7 million barrels will
10 result from the waterflood.

11 Q How did you calculate these reserves?

12 A We calculated on the basis of the amount
13 of recovery to date and amount of recovery that would be ul-
14 timately unavailable due to residual oil saturation, and the
15 efficiency that we anticipate from the project on the re-
16 maining (not clearly understood.)

17 Q Considering the cost of the proposed
18 waterflood, if successful will it yield a reasonable profit
19 to the participants?

20 A Yes, it would.

21 Q Did you calculate personally the formula
22 used to allocate unit production to the various tracts?

23 A Yes, I did.

24 Q We've previously heard that that was a
25 formula which was a weighted average with 80 percent weight

1 given to primary production and 20 percent given to useful
2 wells?

3 A That is correct.

4 Q This formula was unanimously accepted at
5 the 1983 meeting of the unit owners?

6 A That's correct.

7 Q And I presume you feel this formula is
8 fair and equitable.

9 A Yes, I do.

10 Q How will your proposed waterflood be ini-
11 tiated?

12 A Initially we will start injection into
13 the four proposed wells after first testing the casing --
14 well, to back up, we will pull the wells, clean out the
15 wells to be sure the perforations are completely clear, and
16 we'll run lined tubing back into the well with a coated
17 packer, load the back side to be sure again that the neces-
18 sary casing integrity tests are taken, and begin injection.

19 We anticipate injection into the four
20 wells to be a maximum of 1200 barrels of water per day dur-
21 ing the test period as far as possible.

22 Q The information that was required to be
23 submitted to the Division in the C-108 contained a schematic
24 of a typical well. All of the wells that have been com-
25 pleted in the unit area, you've previously testified, are

1 all in the same unitized formation and the exhibit on page
2 three of the exhibits to your booklet, which is Exhibit
3 Nine, contains all the information which shows that each
4 well was completed in a similar, if not identical, manner?

5 A Yes, that is correct.

6 Q We have not submitted a schematic showing
7 what will be done to convert one of these typical wells to
8 injection. Why is that?

9 A To injection?

10 Q All right, in converting one of the exis-
11 ting wells to injection. You just testified that basically
12 there will be no changes in the schematics from a productive
13 well to an injection well, is that correct?

14 A That is correct.

15 Q You will be using plastic-coated tubing.

16 A Correct.

17 Q A packer will be set in cement at an ap-
18 propriate interval?

19 A Approximately 50 feet, 50 to 100 feet
20 above the perforated zone.

21 Q Okay, and in most situations you do not
22 expect any additional perforations because all of the wells
23 are currently perforated in the injection zone.

24 A That is correct.

25 Q Will the completion of these four wells

1 in the manner that you described confine the injected water
2 to the unitized formation?

3 A Yes, it will.

4 Q You have testified that the unitized for-
5 mation is the entire interval known as the P-2.

6 A That is correct.

7 Q There is no communication upwards from
8 the P-2 that would contaminate any fresh water?

9 A No, there is not.

10 Q Are you aware of any fresh water zones in
11 the unit area?

12 A No, I'm not.

13 Q Okay. Why is unitized management neces-
14 sary in this pool?

15 A Well, it would make it extremely diffi-
16 cult the way the leases are located to protect correlative
17 rights without unitization. That's why unitization has been
18 a very major point all the way through the six year history
19 of putting the project together.

20 Q Meaning by the very nature of a water-
21 flood oil is moved from in place under one owner's tracts to
22 possibly another owner's tract?

23 A That is correct.

24 Q Do you feel that this unit will benefit
25 both working interest owners and royalty owners alike?

A Yes, I do.

1 Q You testified that you will initially in-
2 ject 1200 barrels a day?

3 A That is correct.

4 Q That is in your pilot program?

5 A Yes, sir.

6 Q Will you also ultimately inject produced
7 water, re-inject?

8 A Yes, we'll re-inject produced water on
9 expansion of the project and the injection rate at that time
10 is anticipated to climb to approximately 4800 barrels of
11 water per day.

12 Q What is the source of this water?

13 A Right now we're attempting to the north.
14 We have indication that there is water in that vicinity that
15 is available to the unit for use.

16 Q And Murphy Operating Corporation, who is
17 the unit operator, is currently negotiating with two private
18 sources --

19 A That is correct.

20 Q -- for the sale of the water necessary?

21 Do you feel that the proposed injection
22 wells are located so as to obtain the maximum effective
23 sweep for the recovery of oil that would not otherwise be
24 recovered on primary?

25 A That is correct.

1 Q In your opinion would it be advisable if
2 the order approving this unit and the waterflood provided
3 for administrative approval of any changes which might prove
4 necessary in the location of the injection wells?

5 A Yes.

6 Q You propose an initial pilot program.
7 What do you expect the duration of the pilot program to be?

8 A I think it will be less than two years;
9 probably a year and a half to two years would be my -- my
10 guess at this point.

11 Q And that will be enough time to determine
12 its success or failure and whether to proceed with the rest
13 of the program as has been described in your waterflood pro-
14 gram.

15 A That is correct.

16 Q And are you requesting a project allow-
17 able, as provided in Rule 701, so that the allowable as-
18 signed to the wells will be equal to the ability of the
19 wells to produce?

20 A Yes.

21 Q Based on your technical expertise and
22 knowledge of the facts concerning these specific applica-
23 tions, is it your opinion that the granting of these appli-
24 cations will result in the prevention of waste and the pro-
25 tection of correlative rights?

1 A Yes.

2 Q Is it further your opinion that the gran-
3 ting of these applications is also necessary to carry out
4 supplemental recovery operations?

5 A Yes.

6 Q And will those supplemental recovery
7 operations ultimately and substantially increase the re-
8 serves ultimately produced from the Bluitt Associated San
9 Andres Pool?

10 A We're of the opinion it will, yes.

11 Q Was Exhibit Nine, and all of its con-
12 tents, prepared by you or under your direction?

13 A Yes, it was.

14 MR. EZZELL: I would offer Ex-
15 hibit Nine into evidence at this time.

16 MR. CATANACH: Exhibit Number
17 Nine will be admitted into evidence.

18 MR. EZZELL: And I have no fur-
19 ther questions of this witness.

20

21 CROSS EXAMINATION

22 BY MR. CATANACH:

23 Q You have a possible source of water for
24 your initial injection. Do you know, is it fresh water or
25 is it brine water or do you have any idea what it is?

1 A We have no proof but it's been reported
2 as being fresh water from a private source.

3 Q Do you have any kind of water analysis
4 from the San Andres formation that you will be injecting in-
5 to?

6 A I may have one in the file. I have none
7 with me, no, sir.

8 Q Okay, can you provide that?

9 A Yes, sir.

10 Q Okay, what you are requesting today is
11 just authorization for a pilot waterflood using these four
12 injection wells?

13 A That is correct.

14 MR. EZZELL: Mr. Examiner, with
15 an administrative procedure to expand to additional wells as
16 may be deemed necessary in the conduct of the pilot project.

17 The exhibits indicate that
18 these four wells with the solid triangles are the initial
19 injection wells. The proposed additional injection wells
20 are as the key explains, and then possible relocations if
21 (not audible).

22 MR. CATANACH: Thank you, Mr.
23 Ezzell.

24 MR. EZZELL: Certainly.

25 Q You stated that you'll be flooding the P-

1 2 interval of the San Andres formation.

2 Is there -- is there a barrier between
3 the P-2 and the P-1?

4 A Yes, sir. Yes, sir.

5 Q On Division Form C-108 the operator is
6 required to provide us with detailed information on any
7 wells within a half mile radius. Is that information con-
8 tained in this presentation today?

9 A Yes, sir, I believe it is, satisfactory
10 for what you need.

11 MR. EZZELL: That would be in
12 Exhibit Nine, all the casing strings, depths, total depth,
13 initial production, what kind of well. We've referred to
14 that in the C-108, the waterflood survey.

15 Q Mr. Johnson, you're going to have to pro-
16 vide us with detailed information regarding cement tops on
17 all these wells in back of all these casing strings. I
18 don't see it anywhere.

19 A All right.

20 MR. EZZELL: I believe the
21 rules provide for a typical schematic, which has been pro-
22 vided with the C-108. We had expert testimony that all the
23 wells were completed in identical or nearly identical man-
24 ners, which is backed up by this page three and then you
25 have a schematic, typical schematic for the entire field,

1 which indicates, I think, everything you need to know. But
2 you're certainly the expert.

3 MR. CATANACH: I need to know
4 cement tops on all these wells.

5 MR. EZZELL: Cement tops on
6 each well.

7 A Each well within the area of review?

8 Q Within the area of review, yes, sir.

9 A Yes, sir. Cement tops, calculated cement
10 tops?

11 Q Calculated or whatever, you know,
12 whatever information you can take.

13 A That would be every well in the unit
14 area?

15 Q Every well --

16 MR. EZZELL: Within a half mile
17 of the injector.

18 Q -- within a half mile of an injection
19 well.

20

21 (Thereupon a discussion was had off the record.)

22

23 Q Mr. Johnson, do you know if the one-half
24 mile radius around the injection well, if any portion of
25 that fell outside the unit boundary?

1 A Not to my knowledge, no, sir.

2 MR. EZZELL: It does not.

3 Q Does not? Mr. Johnson, did you present
4 testimony of the expected volume of water to be injected?

5 A Yes, sir, I did. 1200 on the pilot,
6 expanding to 4800 on the expanded flood.

7 Q 1200 barrels per day --

8 A Yes, sir.

9 Q -- per well?

10 A No, sir, 1200 total, equally distributed.
11 That would be 300 barrels per well.

12 Q Mr. Johnson, do you have any idea of the
13 pressures that you will be injecting at?

14 A We can very well stay under the .2
15 arrangement. At the present time the poor old reservoir is
16 so depleted it's going to take it pretty easy.

17 Q In your order would you like a provision
18 for increasing your pressure --

19 A Yes, sir.

20 Q -- upon demonstration that you will not
21 frac the reservoir?

22 A Yes, sir, please.

23 MR. TAYLOR: Mr. Ezzell, I
24 think just to be safe that you ought to give notice to
25 people who haven't joined if they don't join, give them no-

1 tice of a right to.

2 MR. EZZELL: They all have. We
3 have certified receipts that each of them have, even though
4 all of Mr. Baumgartner's operators have given us written
5 authorization that he speaks for them, we have certified re-
6 ceipts showing that they have gotten 74 pounds of mail.

7 MR. TAYLOR: Okay, if it ends
8 up that some of them don't join, then you can provide that
9 --

10 MR. EZZELL: We have all that
11 for your information and then we have --

12 MR. TAYLOR: Okay.

13 MR. EZZELL: -- certified re-
14 ceipts that were attached to the C-108 that each of the
15 operators of leaseholds within a half mile of any injection
16 well have been notified --

17 MR. TAYLOR: Yeah, I saw some
18 in here.

19 MR. EZZELL: Mostly it was us,
20 but Ingram --

21 MR. TAYLOR: That's the one I
22 was thinking of.

23 MR. EZZELL: He is outside the
24 area of review for any of the wells but we have the certi-
25 fied receipt that he was advised as well, and then this is

1 the only one within a half mile limit and again that's out-
2 side the limit of the field as defined by the dry hole and
3 the permeability as was testified to.

4

5 (Thereupon further discussion was had off the record.)

6

7 MR. TAYLOR: Why don't, just to
8 make it easier, you provide us with a draft order --

9 MR. EZZELL: Okay, we will pre-
10 pare one, okay.

11 MR. TAYLOR: -- because it
12 would be much easier for you to do it since you understand
13 how the costs should be allocated.

14 MR. EZZELL: Okay, we will as
15 rapidly as possible provide you with the cement tops and the
16 water analysis.

17 MS. MURPHY: We have that in
18 our files, probably.

19 MR. EZZELL: Right.

20 MS. MURPHY: It will be back
21 before the end of the week.

22 MR. EZZELL: It will be back
23 before the end of the week.

24 MR. TAYLOR: Okay, just so we
25 have those.

1 MR. EZZELL: My plan now is to
2 have a proposed order back by the end of the week. Because
3 of the delay many of the operators have had this budgeted
4 for 1985 and need to get it started and finished in 1986, if
5 possible. But BLM has told us we will have final approval
6 before year end and all the parties are expecting to start
7 unit operations January 1st, so if it is within the realm of
8 the possible, we would ask the Commission to give us an ex-
9 pedited order, which I plan on having to draw myself.

10 I'll be back here Friday and
11 I'll just bring it.

12 MR. CATANACH: I have two more
13 questions of Mr. Johnson.

14

15 RECROSS EXAMINATION

16 BY MR. CATANACH:

17 Q Mr. Johnson, you said there were not any
18 fresh water wells in this area?

19 A Not to my knowledge.

20 Q What do you base that on? Where did you
21 do your research or where did you get your information?

22 A Well, the best we can determine in the --
23 from a field investigation is that there is a -- two fresh
24 water wells that produce approximately 100 barrels of water
25 per day each. These wells are located approximately five

1 miles to the north.

2 There is also one fresh water well that
3 produces approximately the same amount and it's located ap-
4 proximately one to two miles northwest, but as far as in the
5 immediate area, I don't know of any.

6 Q Okay. Can you provide us prior to injec-
7 tion, a water analysis of your injected water?

8 A Yes.

9 Q Thank you.

10 MR. CATANACH: I have no fur-
11 ther questions of Mr. Johnson.

12 MR. TAYLOR: I do.

13

14 RE CROSS EXAMINATION

15 BY MR. TAYLOR:

16 Q Where did you say you're getting your
17 fresh water, or your water?

18 A We're still negotiating on that at this
19 time but we anticipate getting from the north of this
20 project.

21 Q So it's going to be a water purchase.

22 A Yes, it will be.

23 MR. EZZELL: And ultimately
24 produced water will be reinjected.

25 Q Okay.

1 MR. CATANACH: Are there any
2 other questions of the witness?

3 If not, he may be excused.

4 Is there anything further in
5 Case Number 8779 and 8780?

6 If not, they will be taken un-
7 der advisement.

8

9 (Hearing concluded.)

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C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY
CERTIFY 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. 8789-8780
heard by me on December 4 1985.

David R. Catanzaro, Examiner
Oil Conservation Division