

1 STATE OF NEW MEXICO
2 ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
3 OIL CONSERVATION DIVISION
4 CASE 10102 and CASE 10103
5
6

7 EXAMINER HEARING
8

9 IN THE MATTER OF:

10 Application of Sage Energy Company for a
11 Unit Agreement, Lea County, New Mexico.
12 Application of Sage Energy Company for a
13 Waterflood Project, Lea County, New Mexico.
14

15 TRANSCRIPT OF PROCEEDINGS
16

17 BEFORE: JIM MORROW, EXAMINER
18

19 STATE LAND OFFICE BUILDING

20 SANTA FE, NEW MEXICO

21 October 3, 1990
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A P P E A R A N C E S

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1	I N D E X	
2		Page Number
3	Appearances	2
4	LEE PATRICK	
5	Examination by Mr. Bruce	5
6	TERRELL DOWNING	
7	Examination by Mr. Bruce	11
8	JAY H. HARDY	
9	Examination by Mr. Bruce	16
10	Examination by Hearing Examiner	28
11	Certificate of Reporter	32
12	E X H I B I T S	
13	APPLICANT'S EXHIBITS:	
14	Exhibit A	6
15	Exhibit B	7
16	Exhibit C	9
17	Exhibit D	12
18	Exhibit E	21
19	Exhibit F	25
20	Exhibit G	25
21	Exhibit H	26
22	Exhibit I	28
23		
24		
25		

1 EXAMINER MORROW: Call the first case, No.
2 10102.

3 MR. STOVALL: Application of Sage Energy
4 Company for a unit agreement, Lea County, New Mexico.

5 EXAMINER MORROW: Call for appearances in
6 this case.

7 MR. BRUCE: Mr. Examiner, my name is James
8 Bruce from the Hinkle Law Firm in Albuquerque,
9 representing the Applicant. I have three witnesses to
10 be sworn, and I would also request that this case be
11 consolidated with Case 10103.

12 EXAMINER MORROW: We'll consolidate this
13 case with 10103 for the hearing today. I'll call Case
14 10103.

15 MR. STOVALL: Application of Sage Energy
16 Company for a waterflood project, Lea County, New
17 Mexico.

18 EXAMINER MORROW: Will the witnesses please
19 stand and be sworn.

20 (Thereupon, the witnesses were sworn.)

21 MR. BRUCE: I would call Mr. Patrick to the
22 stand. Before I begin, Mr. Examiner, by the
23 Prehearing Statement we filed last Friday, this case
24 was advertised as just approval of a unit agreement.
25 The Applicant is seeking statutory unitization.

1 Today we want to put on enough evidence to
2 support the waterflood and some of the evidence for
3 the unitization, but we would ask that this case be
4 continued to October 31 to finalize the statutory
5 unitization portion of the case.

6 EXAMINER MORROW: Yes, sir, that will be
7 done.

8 LEE PATRICK

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

11 EXAMINATION

12 BY MR. BRUCE.

13 Q. Would you please state your full name and
14 city of residence?

15 A. Lee Patrick, San Antonio, Texas.

16 Q. And what is your occupation and who are you
17 employed by?

18 A. I'm division landman for Sage Energy
19 Company.

20 Q. Have you previously testified before the
21 OCD as a petroleum landman?

22 A. Yes, I have.

23 Q. Were your credentials accepted as a matter
24 of record?

25 A. Yes, they were.

1 Q. Are you familiar with the land matters
2 involved in Case Nos. 10102 and 10103?

3 A. Yes, I am.

4 MR. BRUCE: Mr. Examiner, is the witness
5 acceptable?

6 EXAMINER MORROW: Yes, we'll accept his
7 qualifications.

8 Q. Mr. Patrick, would you briefly state what
9 Sage Energy Company seeks in these two cases?

10 A. In Case 10102, Sage seeks to statutorily
11 unitize all interest in the Abo formation, underlying
12 all or parts of Sections 35 and 36, in 16 South 34
13 East, and Sections 1, 2 and 12 in 17 South, 34 East.

14 The unit area is 100 percent State of New
15 Mexico minerals, and in Case 10103 we seek approval
16 for secondary recovery of a waterflood project for the
17 unit.

18 Q. Would you please refer to Exhibit A and
19 describe its contents for the Examiner, briefly?

20 A. Exhibit A is a plat which outlines the
21 proposed unit area and which identifies the separate
22 tracts which comprise the unit area. These tracts
23 form the common mineral ownership. There are 22
24 tracts, and Sage operates 20 of these tracts. The
25 unit consists of 1,762.79 acres of state land.

1 Q. Who is the operator of the other two
2 tracts?

3 A. Marathon.

4 Q. Would you please describe the unitized
5 formation?

6 A. The unitized formation is the Abo carbonate
7 formation underlying the unit area, which is defined
8 in the Unit Agreement as the Abo Carbonate oil-bearing
9 zone, the top of which is encountered at a depth of
10 8,440 and the base of which is encountered at a depth
11 of 9,012 feet in the Shell Oil Shell State 6 No. 1
12 well, which is located 990 feet from the south line
13 and 900 feet from the east line of Section 1, Township
14 17 South, Range 34 East in Lea County, and is recorded
15 on the compensated neutron log of the well dated
16 1-30-83. This formation would include all the
17 subsurface points throughout the unit area.

18 Q. Would you please refer to Exhibit B and
19 describe what it is for the Examiner?

20 A. Exhibit B is a copy of the Unit Agreement
21 for the proposed unit, and it's a standard form as
22 recommended by the Commissioner of Public Lands. It
23 has been approved by them, preliminary approval, and
24 the same form has been approved by the Oil
25 Conservation, a similar form, by the Oil Conservation

1 Division in the past.

2 It describes the unit area and the unitized
3 formation, and the unitized substances include all the
4 oil and gas produced from the unitized formation. The
5 designated operator is Sage Energy Company, and the
6 agreement also provides for an expansion of the unit
7 area should it become necessary.

8 Q. Is this a voluntary unit?

9 A. No. Sage seeks statutory unitization.

10 Q. Would you please identify the number of
11 working and royalty interest owners in the unit?

12 A. Okay. They're identified in Exhibit C of
13 the Unit Agreement. There are 46 working interest
14 owners, one royalty interest owner--and that would be
15 the State of New Mexico--and 13 overriding royalty
16 owners. Four of those overriding royalty owners also
17 own a working interest.

18 Q. Today, what percentage of working interests
19 and royalty interest owners have agreed to join the
20 unit? And by royalty I mean both royalty and
21 overriding royalty.

22 A. As far as the working interest cost-bearing
23 today it's 88.12 percent, and as far as the revenue,
24 83.9 percent, and that includes the Commissioner of
25 Public Lands, State of New Mexico.

1 Q. Now, is Exhibit B-1 a letter from the
2 Commissioner of Public Lands giving preliminary
3 approval to the unit?

4 A. Yes, it is.

5 Q. In your opinion, does this Unit Agreement
6 provide for a fair and equitable plan of unitization?

7 A. Yes, it does.

8 Q. Would you please identify Exhibit C for the
9 Examiner?

10 A. Exhibit C is a Unit Operating Agreement
11 which provides for supervision and management of the
12 unit area and for the allocation and payment of unit
13 costs.

14 Q. To the best of your knowledge, is this
15 similar to other operating agreements used in this
16 area of New Mexico?

17 A. Yes, it is.

18 EXAMINER MORROW: Excuse me. Which one?
19 Was that Exhibit C?

20 MR. BRUCE: Exhibit C, Mr. Examiner.

21 Q. Mr. Patrick, in your opinion, will the
22 granting of the unitization and waterflood
23 applications be in the interests of conservation, the
24 prevention of waste and the protection of correlative
25 rights?

1 A. Yes, it will.

2 Q. Were Exhibits A, B, B-1 and C prepared by
3 you, under your direction, or compiled from company
4 records?

5 A. Yes, they were.

6 MR. BRUCE: Mr. Examiner, I move the
7 admission of Exhibits A through C.

8 EXAMINER MORROW: Those exhibits are
9 admitted.

10 MR. BRUCE: And, Mr. Examiner, as a
11 comment, we have not gone into detail on the
12 negotiations between the parties for the Unit
13 Agreement. We will reserve some of that, if we can,
14 until the October 31 hearing, but in addition Mr.
15 Hardy, the engineer, will go into some of that when
16 discussing the negotiations with the working interest
17 owners for the technical committee.

18 EXAMINER MORROW: You do plan to present
19 additional evidence on the 31st?

20 EXAMINER MORROW: Yes.

21 MR. BRUCE: I have no further questions of
22 the witness.

23 MR. STOVALL: Mr. Bruce, in submitting the
24 Unit Agreement and Unit Operating Agreement, you're
25 not seeking their approval at this time? You're just

1 submitting them to get them in the record, and they'll
2 be discussed further at the 31st hearing?

3 MR. BRUCE: That's correct, Mr. Stovall,
4 and Mr. Patrick will be back at that time.

5 EXAMINER MORROW: Has Marathon signed the
6 agreement? Oh, you indicated they have not, I
7 assume?

8 THE WITNESS: No, they have not. In fact,
9 none of the parties have actually signed the
10 agreement. The 89 percent that have approved have a
11 signed letter saying they will participate. We have
12 89 percent of the working interest that have agreed to
13 participate in the unit at this point in time.

14 TERRELL DOWNING

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

17 EXAMINATION

18 BY MR. BRUCE:

19 Q. Would you please state your full name and
20 city of residence?

21 A. My name is Terrell Downing, I live in
22 Midland, Texas.

23 Q. What is your occupation and who do you work
24 for?

25 A. Petroleum geologist. I'm employed by Sage

1 Energy Company.

2 Q. Have you previously testified before the
3 OCD as a geologist?

4 A. Yes, I have.

5 Q. Were your credentials accepted as a matter
6 of record?

7 A. Yes, they were.

8 Q. Are you familiar with the geological
9 matters involved in these two cases?

10 A. Yes, I am.

11 MR. BRUCE: Mr. Examiner, is the witness
12 considered acceptable?

13 EXAMINER MORROW: He's acceptable.

14 Q. Referring to Exhibit D, Mr. Downing, would
15 you please refer to some of the exhibits marked toward
16 the back and discuss the geology of the unitized
17 formation? And would you please, for the Examiner,
18 refer explicitly to which exhibit numbers you are
19 referring to?

20 A. To begin with I'll refer to Exhibit D-2.
21 It would be approximately page 10. This is a type log
22 of the Shell State 6 No. 1, and it shows the proposed
23 recommended unitized interval of the Abo formation,
24 with the main pay zone identified within the hash
25 marks.

1 Q. Now, this well is not a unit well, is it?

2 A. No, it's not.

3 Q. What is the reason for that?

4 A. This is a deep Morrow well drilled by Shell
5 Oil Company, and we utilized it because it covered the
6 whole unitized interval across the Abo.

7 Q. Which none of the other wells in the unit
8 do, is that correct?

9 A. That's correct.

10 Q. Would you please move on to Exhibit D-5.

11 A. Okay. Exhibit D-5 is a main zone net
12 isopach of the Abo formation, with a porosity cutoff
13 of greater than five percent and constraint intervals of
14 two foot, identifying the extent of the porosity
15 development across the proposed unit.

16 Q. Now, is the field continuous across the
17 proposed unit area?

18 A. Yes, it is.

19 Q. Does the unit area include the entire North
20 Vacuum Abo Pool?

21 A. No, it does not.

22 Q. What is the reason for that?

23 A. The entire North Vacuum Abo Unit extends to
24 the south for an extensive area.

25 Q. Okay. There's the North Vacuum Abo Unit

1 and the North Vacuum Abo East Unit?

2 A. That's correct.

3 Q. Would you please refer to Exhibit D-7 and
4 describe it briefly for the Examiner?

5 A. Okay. Exhibit D-7 is simply a regional
6 geologic map of the area where the unit is situated in
7 New Mexico.

8 Q. And then move on to Exhibits D-8 and D-9
9 and please describe in a little more detail the
10 geology.

11 A. D-8 is a cross-section submitted to Sage
12 Energy by Marathon as a contribution to the committee,
13 and it shows the pay across the field, the east/west
14 cross-section across the field of the unit, with the
15 main pay zone identified across it.

16 And Exhibit D-9 is a structural contour map
17 and top of the Abo shale marker, which is a regional
18 marker in the area. It shows the north plunging nose
19 of the structure of the formation.

20 Q. Has the geology of the unit also been
21 briefly described at pages 4 and 5 of Exhibit D?

22 A. Yes, it is. On page 4, subtitle E, you can
23 go through the geology of the unit.

24 Q. Okay. In your opinion, has this portion of
25 the pool been adequately defined by development?

1 A. Yes, it has.

2 Q. In your opinion, is the granting of these
3 applications in the interest of conservation and the
4 prevention of waste?

5 A. Yes.

6 Q. Were Exhibits D-2, 5, 7 and 9 prepared by
7 you and do you agree with the contents of Exhibit D-8?

8 A. Yes, I do.

9 MR. BRUCE: Mr. Examiner, I would move the
10 admission of those portions of Exhibit D referred to
11 by Mr. Downing.

12 EXAMINER MORROW: They're accepted.

13 MR. BRUCE: I have no further questions of
14 the witness at this time.

15 EXAMINER MORROW: Do you plan to put Mr.
16 Downing back on on the 31st also?

17 MR. BRUCE: If it's required by the
18 Examiner, we will.

19 EXAMINER MORROW: The remainder of
20 Exhibit D--

21 MR. BRUCE: Will be testified to by our
22 engineer.

23 EXAMINER MORROW: I don't have any
24 questions, unless Mike has some of the witness.

25 MR. STOGNER: No, I don't have any.

1 JAY H. HARDY

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

4 EXAMINATION

5 BY MR. BRUCE:

6 Q. Would you please state your full name and
7 residence, please?

8 A. My name is Jay H. Hardy and I live in
9 Midland, Texas.

10 Q. Who are you employed by and in what
11 capacity?

12 A. I'm an engineer for Sage Energy Company.

13 Q. Have you previously testified as an
14 engineer before the OCD?

15 A. Yes, I have.

16 Q. Were your credentials accepted by the
17 Examiner at that time?

18 A. Yes, they were.

19 Q. As part of your job, have you been in
20 charge of the engineering matters related to the
21 proposed North Vacuum Abo North Unit and the
22 waterflood for the unit?

23 A. Yes, I have.

24 MR. BRUCE: Mr. Examiner, is the witness
25 acceptable?

1 EXAMINER MORROW: He's acceptable.

2 Q. Mr. Hardy, regarding Case 10103, what does
3 Sage Energy seek permission to do?

4 A. Sage Energy seeks to institute a secondary
5 recovery waterflood project for the unit area that's
6 been described by Mr. Patrick. The waterflood will
7 include 19 injection wells, 18 producing wells and
8 related injection and production equipment.

9 Q. Was an engineering study of the proposed
10 unit prepared?

11 A. Yes, it was.

12 Q. And were you in charge of the technical
13 committee which prepared that report?

14 A. Yes, I was.

15 Q. Is that study marked Exhibit D?

16 A. That's correct.

17 Q. Would you please describe the production
18 history of the proposed unit area?

19 A. This area is the north end of the North
20 Vacuum Field, which the field itself was developed in
21 1960 but this end of it here was developed 1971
22 through 1976.

23 The wells were perforated in the Abo from
24 about 8500 to 8600 feet, and acidized with 5- to
25 10,000 gallons of acid. Potentials were pumping

1 potentials of 100 to 300 barrels of oil per day.

2 Q. Is the unit area, in your opinion, in an
3 advanced state of depletion with respect to primary
4 production?

5 A. Yes, it is. The average production out
6 there is four to five barrels a day per well.

7 Q. And, in your opinion, is this portion of
8 the pool suitable for unitization and waterflood?

9 A. Yes, it is.

10 Q. In your opinion, will unitization of this
11 portion of the pool adversely affect other portions of
12 the pool?

13 A. No, it won't because to the South we
14 already have a waterflood which is Mobil's North
15 Vacuum Abo Waterflood Unit, and to the southeast we
16 have Mobil's Northeast Vacuum Abo Unit.

17 Q. Okay. Would you please describe how
18 production will be allocated among the various tracts
19 under the Unit Agreement?

20 A. Under the Unit Agreement we plan to
21 allocate production based on a single-phased formula,
22 consisting of 40 percent current rate plus 60 percent
23 ultimate primary for each tract.

24 Q. Now, is this a compromise from the initial
25 proposal?

1 A. This was a compromise because Sage
2 preferred to have 100 percent ultimate primary and in
3 order to reach an agreement here, which we really
4 weren't able to reach, we reduced it to 60 percent
5 ultimate primary and 40 percent current rate.

6 Q. In your opinion, does the participation
7 formula contained in the Unit Agreement allocate the
8 produced and saved oil and gas to the separate tracts
9 on a fair, reasonable and equitable basis?

10 A. In my opinion it does.

11 Q. Have you calculated the amount of secondary
12 reserves which will be recovered by the waterflood?

13 A. Right. The estimated secondary reserves
14 are two million barrels of stock tank oil.

15 Q. What is the estimated life of the
16 waterflood?

17 A. 10 years.

18 Q. Will waterflood operations in this portion
19 of the pool prevent waste and, in your opinion, result
20 in the increased recovery of substantially more
21 hydrocarbons than would otherwise be recovered from
22 the pool?

23 A. Yes. We're talking about essentially two
24 million barrels of oil.

25 Q. Will unitization and secondary recovery

1 benefit the working interest and royalty interest
2 owners within this portion of the pool?

3 A. Yes, it will.

4 Q. When did you first propose the unit to the
5 other working interest owners in the unit area?

6 A. We first proposed that this be unitized on
7 January 26, 1988, and the original unit boundaries can
8 be seen, as we proposed it, for instance on Exhibit
9 D-9, just to take one for instance.

10 Q. Looking at Exhibit D-9, the original unit
11 boundary included acreage in Sections 6 and 7?

12 A. That is correct.

13 Q. Now, would you go through a little bit the
14 course of events since January of 88 in putting
15 together the unit?

16 A. Right. Well, we've had four technical
17 official engineering committee meetings and we voted
18 on unitizing the area, as I just mentioned through
19 there in Exhibit D-9, and we did have enough percent.
20 We had 75 percent to statutory unitize it. At the
21 request of Marathon, who was vehemently opposed to
22 being a part of this unit over there, we acquiesced to
23 leave them out. And so it's taken us two years to
24 hammer all this out, and we are adamant about
25 statutory unitizing them in Tracts 21 and 20, which

1 would leave a window if they want it.

2 To go on and say further, they do plan to
3 form their own unit and they're calling it the
4 North/Northeast Unit Abo formation, and they have had
5 one engineering committee meeting.

6 Q. What you are referring to is the
7 North/Northeast unit by Marathon, including the
8 Section 6 and 7 acreage--

9 A. That is correct.

10 Q. --which you omitted as an accommodation to
11 them, is that correct?

12 A. That's correct.

13 Q. Now, besides the official technical
14 committee meetings, was there various correspondence
15 and discussions among the parties informally over the
16 years?

17 A. Yes, there was.

18 Q. Moving on to the waterflood, would you
19 describe it in more detail? And I refer you to
20 Exhibit E, the C-108.

21 A. All right. What we plan to do here is,
22 this field was developed on 80-acre spacing and we
23 plan to go to 40-acre spacing, essentially, is what it
24 amounts to.

25 The wells that are listed on the long sheet

1 here on the C-108, essentially the first 19 wells
2 there will be the injection wells. We plan to convert
3 them to injection and drill new producing wells on
4 40-acre spacing, which will give us an 80-acre
5 five-spot which will coincide with Mobil's two floods
6 to the south. Marathon does plan to continue that
7 there to the northeast. So, everything will be
8 compatible with the institution of this flood on a
9 pattern basis.

10 Q. Would you please discuss your plans for
11 reworking the 19 injection wells?

12 A. The 19 injection wells, we plan to pull the
13 current assembly tubing, and pressure test it, run it
14 back in the hole, set it on a Baker lock-set packer
15 and commence injection.

16 We're looking at two phases, and Exhibit
17 D-10(A) shows the first phase and Exhibit D-11(A)
18 shows the second phase; the first phase consisting of
19 drilling two wells and converting eight to injection,
20 and the second phase which will follow right on with
21 that first phase, consists of converting 11 wells to
22 water injection and drilling nine producing wells, for
23 a total of 19 injection wells.

24 Q. Okay. What additional facilities will Sage
25 Energy need to install for the waterflood, and what is

1 the estimated cost?

2 A. We plan to install, of course, the
3 injection lines buried, the injection plant. We plan
4 to use fresh water here. We have to drill a couple
5 fresh water wells, and we're looking at an overall
6 cost, the completed unit, of \$6.3 million.

7 Q. Will the oil and gas recovered by unit
8 operations exceed those unit costs plus a reasonable
9 profit?

10 A. Yes, it will. At \$18.75, the rate of
11 return is 25 percent before tax and we're looking at
12 about a five-year pay out.

13 Q. Would you please discuss the status of the
14 plugged wells within one-half mile of the proposed
15 injection wells.

16 A. There are four plugged wells that penetrate
17 this formation within the area of the radius of
18 interest. They are on the schematics there.

19 Q. As part of Exhibit E?

20 A. Yeah, as part of Exhibit E. The first one
21 is the Cayman Corporation J Featherstone State. In
22 Section 35 it's shown on the map there, and that well
23 was a dry hole. They never did run their long string,
24 and there's 10 plugs from bottom to top there which I
25 think takes care of that one.

1 Then we have Mobil's Gallagher State, which
2 is in Section 3-H. That also was a dry hole. There's
3 seven plugs from bottom to top, especially across the
4 Abo Formation, and I believe that's well taken care
5 of.

6 Then we have the Pennzoil Marathon State
7 No. 2 which was also referred to as the Angle State,
8 in D of Section 2. That was also a dry hole. There's
9 seven plugs from TD to the surface on that one.

10 And then Sage Energy Company had a well,
11 the City Service State No. 2 where the casing
12 collapsed at 4710 in 1985 and we were not able to
13 reenter that well. So the Commission had us fill up
14 the volume there with cement, which we did, over a
15 thousand sacks, to cover the Abo all the way back to
16 the collapsed part of the casing. And I believe that
17 pretty well isolated that. So those are the four
18 outstanding plugged wells in the unit.

19 Q. Does Sage Energy request that the order in
20 this matter contain an administrative procedure for
21 approving orthodox well locations or changing
22 producing wells to injection wells?

23 A. Yes, we do.

24 Q. You don't have any plans at this time to
25 add any additional, is that correct?

1 A. That's right.

2 Q. But it might occur in the future, is that
3 , correct?

4 A. If we go to reduced spacing at some time
5 along the way; but at this point we don't have any
6 additional plans.

7 Q. Would you briefly describe the proposed
8 injection operations?

9 A. Okay. We plan to start out by injecting at
10 a rate of 400 barrels a day. We estimate added
11 pressure will be a thousand pounds. And based on
12 Mobil's flood to the south we'll probably end up with
13 200 barrels a day per well at 4500 pounds. And the
14 injection water will be fresh water and produced
15 water, and the produced water will come from the Abo
16 Formation, and the system will be closed.

17 Q. Is there any proposed stimulation program?

18 A. There's none at this time.

19 Q. Referring to Exhibit F, is that an analysis
20 of fresh water in the area?

21 A. Yes, it is. There's one commercial fresh
22 water well in the area there. It's in the southeast
23 quarter of the southeast quarter of Section 36, and
24 that's an analysis taken of that water.

25 Q. Referring to Exhibit G, is the injected

1 water compatible with the formation water?

2 A. Yes, it is.

3 Q. Is Exhibit G an analysis?

4 A. Right. Exhibit G is an analysis of a
5 mixture of the fresh water and the produced water, and
6 it shows that there's really essentially no scaling
7 density.

8 Q. Are there any faults or hydrologic
9 connections between the fresh water sources and the
10 injection formation?

11 A. No.

12 Q. What project allowable does Sage Energy
13 seek?

14 A. We would seek capacity allowable.

15 Q. Referring to Exhibit H, were the surface
16 owners and offset operators or lease owners notified
17 as required by Form C-108?

18 A. Yes, they were.

19 Q. Is Exhibit H a copy of the mailing list and
20 of the certified return receipts?

21 A. Yes, it is.

22 Q. Now yesterday, Mr. Hardy, you informed me
23 that there were one or two that were omitted from this
24 list, is that correct?

25 A. That's correct.

1 Q. Were they notified by mail last week of the
2 proposed waterflood?

3 A. Yes, they were.

4 MR. BRUCE: Because of that, Mr. Examiner,
5 I believe this case will also have to be continued to
6 probably the October 31st hearing to makes it
7 consistent with Case 10102, in order to give those
8 persons time to review the matter.

9 EXAMINER MORROW: All right.

10 Q. Mr. Hardy, in your opinion, is the unitized
11 management operation and development of this pool
12 necessary to effectively carry on secondary recovery
13 operations?

14 A. Yes, it is.

15 Q. Will it substantially increase the ultimate
16 recovery of oil from the pool?

17 A. I think it will.

18 Q. And, in your opinion, is the granting of
19 these applications in the interest of conservation and
20 the prevention of waste?

21 A. Yes, it is.

22 Q. And were Exhibits D through I prepared by
23 you, under your direction, or compiled from company
24 records?

25 A. Yes, they were.

1 MR. BRUCE: Mr. Examiner, I move the
2 admission of Exhibits D through I.

3 EXAMINER MORROW: Exhibits D through I are
4 admitted.

5 EXAMINATION

6 BY EXAMINER MORROW:

7 Q. Mr. Hardy, on the long sheet in this
8 Exhibit E, the surface casing program and the cement
9 is set out on this exhibit for each of the wells, and
10 it appears that sufficient volume is used to circulate
11 cement to the surface, but I didn't find an indication
12 there that cement was brought back to the surface. Do
13 you know if that's the case or not?

14 A. On those injection wells I gave a typical
15 schematic, Mr. Morrow, for the two types of
16 completions out there, and in our records for Sage,
17 the cement was circulated on the eight and
18 five-eighths. For instance, on the City State No. 2
19 and then on the Marathon State No. 3, which is the
20 other typical completion where they run that 12 and
21 three-quarter, it was circulated from 390 feet.

22 Q. So is it your testimony that all the wells
23 are circulated to the surface?

24 A. Yes, sir.

25 Q. Are there any other water wells in the area

1 other than one commercial well you mentioned in
2 Section 36?

3 A. I believe there are a couple other wells in
4 Section 36, in the northwest corner there.

5 Q. Have you identified those on any of your
6 exhibits?

7 A. No, sir, I haven't.

8 Q. Would you submit that information for us so
9 we'll have that?

10 A. Sure will.

11 Q. Where is the base of the fresh water
12 bearing formation?

13 A. The base of the fresh water is at 200
14 feet. You come out of the Ogallala sand at 200 into
15 the red bed, and the top of the sand is 65 feet.

16 Q. So all the fresh water is, in either the
17 plugged wells or the producing wells, all the fresh
18 water is covered with casing and cement?

19 A. Yes, sir, it is.

20 Q. You may have pointed this out, but do you
21 plan to plastic coat the tubing? That may have been
22 indicated on one of your exhibits.

23 A. I would like exception to that, if that's
24 possible, because this system is closed and there
25 shouldn't be any oxygen in it. We are using fresh

1 water and we do leave the casing valves open, and any
2 leak would show up right away.

3 You're looking at about \$2 a foot to haul
4 this tubing in and have it plastic coated, which
5 equates to almost \$16,000 per well in the conversion
6 costs, and so we would like to run that bare.

7 We'll have packer fluid on the back side,
8 and we do have to do that annual test, and we think
9 that should be adequate.

10 Q. All right. Was an exception to that
11 written in your application?

12 A. I didn't write it in that application. I
13 left it off on the back of the form here, but I can
14 sure write that up for you if you want.

15 Q. I would appreciate that. Is Mobil--are
16 their surface injection pressures 4500 psi at this
17 time?

18 A. Yes, sir, they are.

19 Q. How much primary did you expect to recover
20 from it?

21 A. I could refer you to Exhibit D-3. The
22 ultimate primary is 2,910,952 barrels.

23 EXAMINER MORROW: Now, the reason for
24 readvertising 10102 is due to the requirement or the
25 need for statutory unitization rather than approval of

1 a unit agreement?

2 MR. BRUCE: That's correct, Mr. Examiner.

3 EXAMINER MORROW: You may be excused.

4 Thank you.

5 MR. BRUCE: I have nothing further at this
6 time, Mr. Examiner.

7 EXAMINER MORROW: All right. Both of these
8 cases, then, will be continued until October 31st.

9 (Thereupon, the proceedings concluded.)

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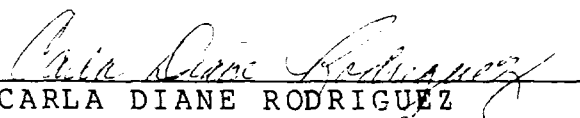
CERTIFICATE OF REPORTER

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

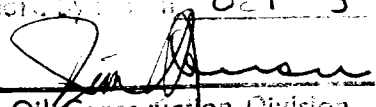
I, Carla Diane Rodriguez, Certified
Shorthand Reporter and Notary Public, HEREBY CERTIFY
that the foregoing transcript of proceedings before
the Oil Conservation Division was reported by me; that
I caused my notes to be transcribed under my personal
supervision; and that the foregoing is a true and
accurate 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 October 14, 1990.


CARLA DIANE RODRIGUEZ
CSR No. 91

My commission expires: May 25, 1991

I do hereby certify that the foregoing is a true and accurate record of the proceedings in Case No. 10102 and Case No. 10103
noted by me on Oct 3 1990.

Examiner
Oil Conservation Division

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

CASE 10,102, CASE 10,103

EXAMINER HEARING

IN THE MATTER OF:

Application of Sage Energy Company for Statutory
Unitization, Lea County, New Mexico; Application
of Sage Energy Company for a Waterflood Project,
Lea County, New Mexico

TRANSCRIPT OF PROCEEDINGS

BEFORE: MICHAEL E. STOGNER, EXAMINER

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

October 31, 1990

ORIGINAL

A P P E A R A N C E S

FOR THE DIVISION:

ROBERT G. STOVALL
Attorney at Law
Legal Counsel to the Division
State Land Office Building
Santa Fe, New Mexico 87504

FOR THE APPLICANT:

HINKLE, COX, EATON, COFFIELD & HENSLEY
Attorneys at Law
By: JAMES BRUCE
500 Marquette, N.W.
Albuquerque, New Mexico

ALSO PRESENT:

JAMES MORROW
Chief Engineer
Oil Conservation Division
State Land Office Building
Santa Fe, New Mexico 87504

* * *

I N D E X

Page Number

Appearances

2

Exhibits

3

LEE PATRICK

Direct Examination by Mr. Bruce

5

Examination by Mr. Morrow

11

JAY HARDY

Direct Examination by Mr. Bruce

12

Examination by Mr. Morrow

15

Examination by Mr. Stovall

17

Certificate of Reporter

19

* * *

E X H I B I T S

APPLICANT'S EXHIBITS:

Exhibit J

6

Exhibit K

8

Exhibit L

9

Exhibit M

10

Exhibit N

13

Exhibit O

13

* * *

1 WHEREUPON, the following proceedings were had
2 at 1:35 p.m.:

3 EXAMINER STOGNER: This hearing will come to
4 order. I'll call the next cases, Number 10,102 and
5 10,103.

6 MR. STOVALL: Application of Sage Energy
7 Company for statutory unitization, Lea County, New
8 Mexico, and Application of Sage Energy Company for a
9 waterflood project, Lea County, New Mexico.

10 EXAMINER STOGNER: This case, I believe, was
11 heard on October the 3rd, but for notice and
12 advertisement purposes it was continued for today's
13 hearing. At this time I'll call for any additional
14 testimony or evidence.

15 MR. BRUCE: Mr. Examiner, Jim Bruce for the
16 Applicant. I would like to present Mr. Patrick, the
17 landman, to present a little extra evidence regarding
18 the statutory unitization, and I will also briefly
19 present Mr. Hardy, the engineer, and make him available
20 for any other questions the Examiner may have regarding
21 the waterflood.

22 EXAMINER STOGNER: Were your two witnesses
23 that you're going to call today previously sworn at the
24 last hearing?

25 MR. BRUCE: Yes, they were.

1 EXAMINER STOGNER: Let the record show that
2 the two witnesses were previously sworn and their
3 credentials accepted. So Mr. Bruce, you may continue.

4 LEE PATRICK,
5 the witness herein, having been previously duly sworn
6 upon his oath, was examined and testified as follows:

7 DIRECT EXAMINATION

8 BY MR BRUCE:

9 Q. For the Examiner, would you please state your
10 name?

11 A. Lee Patrick.

12 Q. And what is your position with the Applicant?

13 A. Division landman.

14 Q. And you were previously sworn in this matter?

15 A. Yes, I was.

16 Q. Now, at the last hearing, Mr. Patrick, we
17 presented, I believe, the unit agreement and the unit
18 operating agreement; is that correct?

19 A. That's correct.

20 Q. And also the preliminary letter of approvals
21 from the Land Commissioner?

22 A. Correct.

23 Q. Now, this is kind of rehashing things
24 slightly, but would you just briefly go back in time to
25 when the proposal was first made to the working-

1 interest owners for this unit and kind of bring it
2 forward, with respect to the working-interest owners?

3 A. In January of 1988 was the first technical
4 committee meeting. There were several subsequent
5 technical committee meetings after that, the most
6 recent one being January of this year. There were also
7 numerous contacts by Mr. Jay Hardy with the various
8 working-interest owner representatives concerning the
9 flood and the various concerns, problems, et cetera.

10 Q. And eventually a technical report on the unit
11 was prepared; is that not --

12 A. That's right.

13 Q. And I believe that was submitted as Exhibit D
14 at the last hearing; is that correct?

15 A. That's correct.

16 Q. Now, as to the first hearing, let me --
17 Referring to Exhibit J, Mr. Patrick, was that the
18 notice sent of the first hearing in this matter for
19 October 3rd?

20 A. Yes, it was.

21 Q. And those are also, attached to it, copies of
22 the certified return receipts?

23 A. Yes.

24 Q. And who was notified of the October 3rd
25 hearing?

1 A. All parties were notified with the exception
2 of Marathon.

3 Q. Okay. Now, when you first advertised or
4 requested a hearing in this case, you just asked for
5 the approval of a unit agreement; is that correct?

6 A. That's correct.

7 Q. And in fact, what you wanted was statutory
8 unitization?

9 A. Yes.

10 Q. And since that time, we have filed an amended
11 application, have we not, for statutory unitization?

12 A. Yes.

13 Q. Okay. Would you please briefly go into
14 approval, how that was obtained from the State of New
15 Mexico? And let me take a step back. What are the
16 lands -- What type of lands are in this unit?

17 A. They're state lands.

18 Q. All state leases?

19 A. All state leases.

20 Q. Okay. So there is really only one royalty-
21 interest owner?

22 A. That's right, Commissioner of Public Lands.
23 And then about the middle of August I made a telephone
24 contact with the land office, and then shortly
25 thereafter I submitted the unit agreement to the

1 Commissioner of Public Lands for their preliminary
2 approval. In fact, I believe that was -- I sent it to
3 them on August 24th, 1990.

4 Q. And Exhibit B-1, submitted at the last
5 hearing, was the letter of preliminary approval, was it
6 not?

7 A. Yes.

8 Q. Okay. After you obtained state approval, did
9 you then seek to negotiate with the overriding royalty
10 interest owners regarding approval of the unit?

11 A. Yes.

12 Q. And they were, of course, given notice of the
13 first hearing, were they not?

14 A. Yes, they were.

15 Q. Okay. Now, would you identify Exhibit K for
16 the Examiner?

17 A. This is an October 3rd letter to the
18 overriding royalty owners, advising them of the percent
19 of the parties that have agreed to participate in the
20 unit at this time, and we were advising them that we
21 were going to be here at this hearing on the 31st and
22 asking them to make decisions in the interim whether to
23 participate or not in this waterflood.

24 Q. Now, why did you wait until relatively late
25 in the game to contact the overriding royalty interest

1 owners?

2 A. Well, as far as royalty is concerned, the
3 State of New Mexico owns 96 percent of the royalty, and
4 until I gained preliminary approval for them, I didn't
5 feel like it was necessary to contact them yet.

6 Q. And what has the response been from the
7 overriding royalty interest owners?

8 A. All of them have agreed to participate. I've
9 got signed documents from six of them, and three I've
10 had verbal contact with over the phone that they're
11 mailing their unit agreements back to me.

12 Q. Okay. And once again, since the Commissioner
13 of Public Lands has approved, 96 percent of the royalty
14 interest in the unit is committed; is that correct?

15 A. That's correct.

16 Q. Okay. Would you please identify Exhibit L
17 for the Examiner?

18 A. This is a letter dated October 10th, 1990,
19 that was mailed to the overriding royalty owners and
20 the working-interest owners who had not elected to join
21 by ballot into the waterflood at this time. This was
22 advising them that 88 percent of the owners had --
23 working-interest owners -- had agreed to join and it
24 was notifying them of this hearing today.

25 Q. Okay, and the certified return receipts are

1 attached, are they not?

2 A. Yes, they are.

3 Q. To date -- Well, let me refer you to Exhibit
4 M, and identify that for the Examiner.

5 A. These are the ballots that were mailed out by
6 Mr. Hardy, our Vice President of Engineering, to the
7 various working-interest owners, seeking their approval
8 of the unit.

9 Q. And to date, what percent of the working-
10 interest owners have committed their interests to the
11 unit?

12 A. 91.494 percent.

13 Q. Does Sage, pursuant to the Statutory
14 Unitization Act, seek a penalty against any working-
15 interest owners who do not voluntarily commit their
16 interest to the unit?

17 A. Yes, we do.

18 Q. And does Sage seek the 200-percent penalty?

19 A. Yes.

20 Q. In your opinion, will the granting of these
21 Applications be in the interests of conservation and
22 the prevention of waste?

23 A. Yes.

24 Q. And were Exhibits J through M prepared by
25 you, under your direction or compiled from company

1 records?

2 A. Yes, they were.

3 MR. BRUCE: Mr. Examiner, I would move the
4 admission of Exhibits J through M.

5 EXAMINER STOGNER: Exhibits J through M will
6 be admitted into evidence at this time.

7 Any questions of this witness?

8 MR. STOVALL: Mr. Bruce, what are N and O,
9 which I have in my packet?

10 MR. BRUCE: Mr. Hardy will testify as to
11 those.

12 MR. STOVALL: Oh, okay. Thank you.

13 EXAMINER STOGNER: If there are no questions
14 of Mr. Patrick -- Oh, I'm sorry.

15 EXAMINATION

16 BY MR. MORROW:

17 Q. You indicated you had notified everyone but
18 Marathon of the initial Application?

19 A. Back in September, yes, although the --

20 Q. Who all would that include? Who all do you
21 notify on a project --

22 A. Well, I notified every one of the working-
23 interest owners and the nine overriding royalty owners
24 and the Commissioner of Public Lands.

25 Q. Are there any offset operators to the unit

1 that are not included in the unit, offset operators in
2 this North Vacuum --

3 A. You mean that are not in this unit?

4 Q. Yes.

5 A. Yes, but they were all notified when Mr.
6 Hardy filed the C-108, I believe, application. They
7 were all given notice of the waterflood at that time.
8 And I believe Mobil to the south is not a party of this
9 -- They're not a party here.

10 Q. But they have been notified?

11 A. Yes, yes.

12 Q. Offset operators?

13 A. Yes.

14 MR. MORROW: I don't have anything else.

15 EXAMINER STOGNER: If not, Mr. Packard, you
16 may be excused.

17 Mr. Bruce?

18 MR. BRUCE: Call Jay Hardy.

19 JAY HARDY,

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

22 DIRECT EXAMINATION

23 BY MR. BRUCE:

24 Q. Would you please state your name for the
25 Examiner?

1 A. My name is Jay Hardy.

2 Q. And were you the engineer who testified when
3 this matter came up for hearing on October 3rd?

4 A. Yes, I was.

5 Q. Mr. Hardy, I believe in the previous hearing
6 you submitted as Sage Exhibit E the C-108 and the
7 notice given as a result of that C-108. Was there some
8 problems with the notice?

9 A. Yes, there was.

10 Q. And could you explain those briefly?

11 A. There were a few offset operators that we
12 missed on that original C-108.

13 Q. Okay. And were they subsequently sent a form
14 C-108?

15 A. Yes, they were.

16 Q. And is Exhibit N a listing of those operators
17 together with the return receipts from that mailing?

18 A. Yes, it is.

19 Q. Secondly, referring to Exhibit O, Mr. Hardy,
20 would you please identify that for the Examiner?

21 A. Exhibit O is a request on the part of Sage
22 Energy as directed by the Examiner, Mr. Morrow, at the
23 original hearing, where we request to run bare tubing,
24 injection tubing, without having it internally coated.

25 And because the water we are injecting there

1 will be fresh water from the Ogallala, we don't think
2 there will be any corrosion.

3 And we're talking about 19 injection wells,
4 approximately \$18,000 per well or \$325,000 investment
5 that we would have to make if we plastic-coat this
6 tubing. And this request asks that we not be required
7 to do that.

8 Q. So in short, you think there would be no harm
9 from the unlined tubing, and in addition it would save
10 substantial amounts of money?

11 A. Yes, it would. We'll be in compliance with
12 the Rule 704 A and B where you're required to monitor
13 the back side. We will pressure test the tubing to
14 7000 pounds before we run it. It will be set on a
15 Baker Lok-Set packer about 100 feet above the
16 perforations, and it will be fresh water.

17 Q. Okay.

18 A. And it will be a closed system also.

19 Q. Briefly, Mr. Hardy, do you support the 200-
20 percent penalty requested against nonconsenting
21 working-interest owners?

22 A. Yes, sir, I do.

23 Q. And what is your basis for that?

24 A. Well, I think that this unit has been in
25 progress here for some time, and it will be a

1 profitable unit, and we're sort of amazed that some
2 people haven't seen fit to join, and so I think they
3 should pay the penalty.

4 Q. And what is the approximate cost of the --
5 instituting the waterflood?

6 A. \$6.5 million.

7 Q. In your opinion, will the granting of these
8 Applications be in the interests of conservation and
9 the prevention of waste?

10 A. Yes, it will.

11 Q. And were Exhibits N and O prepared by you or
12 under your direction?

13 A. Yes, they were.

14 MR. BRUCE: Mr. Examiner, I move the
15 admissions of Exhibits N and O.

16 EXAMINER STOGNER: Exhibits N and O will be
17 admitted into evidence.

18 Are there any questions of this witness?

19 EXAMINATION

20 BY MR. MORROW:

21 Q. Mr. Hardy, would you expect that produced
22 water would ever be reinjected at a later time?

23 A. Yes, sir, it is possible that we will do
24 that.

25 Q. And what is the frequency of your program for

1 monitoring the back side of the casing -- tubing-casing
2 annulus pressure? How would you do that?

3 A. Well, we'd take --

4 Q. Daily or weekly or monthly or annually, or
5 how?

6 A. Well, I think we could do it, certainly, you
7 know, monthly. We can leave the valve open. I'm not
8 sure how you want to do that, exactly. We can leave
9 the valve open, and if it starts running out, we'll
10 know something or we can put a pressure gauge on it,
11 put 500 pounds on it and monitor that monthly. We
12 could go either way. We would lean towards that, doing
13 it that way.

14 Q. Leaving it open?

15 A. Yes.

16 MR. MORROW: Mr. Bruce, is anyone else going
17 to testify?

18 MR. BRUCE: No, sir.

19 Q. (By Mr. Morrow) You probably gave us this
20 information on October 3rd, but what would be the
21 effective recovery, if you could repeat that?

22 A. Yes, sir, we're estimating 2 million barrels
23 of incremental, secondary oil.

24 Q. And what was that based on? How did you
25 calculate that?

1 A. Well, that's just the difference between our
2 response and our remaining primary, and the method of
3 calculation was based on the East Abo unit of Mobil's,
4 and we used the response time and the way it behaved as
5 our model.

6 Q. Did you include that in your --

7 A. Yes, sir.

8 Q. -- October 3rd --

9 A. Yes.

10 Q. -- Exhibit?

11 A. It's also in this Exhibit D.

12 EXAMINER STOGNER: Are there any other
13 questions of Mr. Hardy?

14 EXAMINATION

15 BY MR. STOVALL:

16 Q. Yes, just one. I think Mr. Morrow touched on
17 it. You talked about injecting produced water at some
18 point. What's your feeling about using the unlined
19 tubing at that point?

20 A. Well, I think that -- We've run a
21 compatibility test and, you know, mixing the waters at
22 various percentages. At a point there, I think we'll
23 always be injecting more fresh water than we will
24 produced water, so --

25 Q. So your request -- Am I correct in inferring

1 that your request is to be allowed to inject some
2 produced water with the fresh water --

3 A. Yes.

4 Q. -- through unlined tubing?

5 A. Yes.

6 MR. STOVALL: That's all I have.

7 EXAMINER STOGNER: Any other questions of Mr.
8 Hardy? If not, he may be excused.

9 Mr. Bruce, do you have anything further?

10 MR. BRUCE: Nothing further, Mr. Examiner.

11 EXAMINER STOGNER: Does anybody else have
12 anything further in Cases Numbers 10,102 and 10,103?

13 If not, these cases will be taken under
14 advisement.

15 (Thereupon, these proceedings were concluded
16 at 1:55 p.m.)

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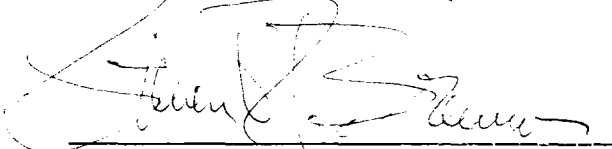
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 COUNTY OF SANTA FE)

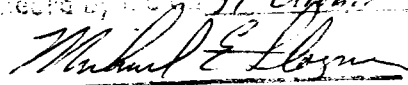
I, Steven T. Brenner, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

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 November 3, 1990.


 STEVEN T. BRENNER
 CSR No. 106

My commission expires: October 14, 1994

I have read the foregoing report and certify that it is a true and accurate record of the proceedings before the Oil Conservation Division.
 The above report was filed for record on 11/3/90 and 10/10/90.
 recorded by 31. C. [unclear] 11/3/90.

 Examiner
 Oil Conservation Division