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I N D E X

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DANIEL S. NUTTER

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Direct Examination by Mr. Carr

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Cross Examination by Mr. Stogner

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E X H I B I T S

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Marbob Exhibit Three, Schematic

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Marbob Exhibit Four, Schematic

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1 MR. STOGNER: We'll call next
2 Case 8841, which is the application of Marbob Energy Corpor-
3 ation for salt water disposal, Eddy County, New Mexico.

4 We will now call for appear-
5 ances.

6 MR. CARR: May it please the
7 Examiner, my name is William F. Carr, with the law firm
8 Campbell and Black, P. A., of Santa Fe. We represent Marbob
9 Energy Corporation and have one witness.

10 MR. STOGNER: Are there any
11 other appearances in this matter?

12 There being none, will the wit-
13 nesses please stand to be sworn at this time?

14

15 (Witness sworn.)

16

17 MR. STOGNER: Mr. Carr?

18

19 DANIEL S. NUTTER,
20 being called as a witness and being duly sworn upon his
21 oath, testified as follows, to-wit:

22

23

24

25

DIRECT EXAMINATION

1
2 BY MR. CARR:

3 Q Will you state your full name and place
4 of residence?

5 A My name is Dan Nutter. I live in Santa
6 Fe, New Mexico.

7 Q Mr. Nutter, by whom are you employed and
8 in what capacity?

9 A I'm a consulting petroleum engineer em-
10 ployed by Marbob Energy Corporation in this particular case.

11 Q Have you previously testified before the
12 Division and had your credentials as a petroleum engineer
13 accepted and made a matter of record?

14 A I have.

15 Q Are you familiar with the application
16 filed in this case on behalf of Marbob Energy Corporation?

17 A I have.

18 Q And are you familiar with the proposed
19 salt water disposal well?

20 A Yes, sir.

21 MR. CARR: We tender Mr. Nutter
22 as an expert witness in petroleum engineering.

23 MR. STOGNER: And Mr. Nutter is
24 so qualified.

25 Q Mr. Nutter, would be briefly state what

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2. The first part 2

3. The second part 3

4. The third part 4

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1 Marbob seeks with this application?

2 A Marbob is seeking approval for the disposal
3 of produced water in its F. M. Robinson Well No. 1,
4 which is located 1850 feet from the north line and 660 feet
5 from the west line of Section 27, Township 17 South, Range
6 29 East, Grayburg-Upper Pennsylvanian Pool, Eddy County, New
7 Mexico.

8 Injection would be into the Cisco forma-
9 tion through the perforated interval from 9279 feet to 9290
10 feet in that well.

11 Q Mr. Nutter, has Marbob filed Division
12 Form C-108 as required by Division rules?

13 A Yes, they have.

14 Q What is the present status of the subject
15 well?

16 A The present status of the subject well is
17 a temporarily abandoned Canyon producer.

18 Q Now you indicated that Marbob proposed to
19 dispose in the Cisco formation.

20 A That is correct.

21 Q Are there any other Cisco wells within a
22 half mile radius of the proposed disposal well?

23 A There are no Cisco wells within two miles
24 of the proposed well.

25 Q Would you refer to what has been marked

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1 for identification as Marbob Exhibit Number One, identify
2 this, and review it for the examiner?

3 A Exhibit Number One is a plat of the gen-
4 eral area. In the southwest quarter of the northwest quar-
5 ter of Section 27, in the center of the half mile circle, is
6 the well that we propose to dispose of water in. That well
7 is indicated by a gas well symbol. There's a half mile rad-
8 ius circle drawn around the well, as well as a two-mile cir-
9 cle drawn around the well.

10 Q Does this plat also show the lease owner-
11 ship in the area?

12 A Yes, it does. It indicates that the
13 lease ownership is Jack Plemons. It's his Continental State
14 Well -- State Lease.

15 Q Mr. Nutter, would you now like to go to
16 Exhibit Number Two and identify this, please?

17 A Exhibit Number Two is the injection well
18 data sheet. I won't go into a lot of detail on the comple-
19 tion of the well but it does indicate -- because I'll cover
20 that later on another exhibit -- however, it does indicate
21 that injection would be through perforations from 9270 feet
22 to 9290 feet and through 2-3/8ths inch plastic coated tubing
23 set in a 5-1/2 inch Guiberson Uni-6 packer at approximately
24 9215 feet.

25 As mentioned before, injection would be

1 into the Cisco formation.

2 Now with respect to Item 4 at the bottom
3 of this page, has the well ever been perforated in any other
4 zones? List all such perforated intervals and give plugging
5 detail. We have an attachment to the injection well data
6 sheet which describes the previous perforations, but we'll
7 also go into those later on in the testimony.

8 Q Will you now refer to Marbob Exhibit Num-
9 ber Three, identify this and review it, please?

10 A Exhibit Number Three is a sketch of the
11 well in its present condition.

12 You'll note that a 26-inch hole was drill-
13 led and 20-inch conductor pipe set at 190 feet cemented with
14 350 sacks of cement and 12 yards of cement. Cement was cir-
15 culated.

16 Then a 17-1/2 inch hole was drilled to
17 750 feet and 13-5/8ths inch surface casing set with 650
18 sacks, which was circulated.

19 Following this an 11-inch hole was drill-
20 led and 8-5/8ths inch intermediate pipe was set at 3470
21 feet, with 1225 sacks of cement in three stages. Cement
22 circulated on that string of pipe.

23 Following the setting of the intermediate
24 pipe a 7-7/8ths inch hole was drilled to a total depth of
25 11,060 feet. It was plugged back to 10999 feet and 5-/12

1. The first part of the document discusses the importance of maintaining accurate records.

2. This section covers the various methods used to collect data.

3. The following table shows the results of the experiments.

4. The data indicates a significant correlation between the variables studied.

5. It is concluded that the findings have important implications for the field.

6. Further research is needed to explore the underlying mechanisms.

7. The authors thank the funding agencies for their support.

8. The study was conducted over a period of six months.

9. The results are consistent with previous research in this area.

10. The authors are confident in the validity of their findings.

11. The data was analyzed using statistical software.

12. The study was approved by the ethics committee.

13. The authors have no conflicts of interest to declare.

14. The research was supported by a grant from the National Science Foundation.

15. The authors would like to thank the participants for their contribution.

16. The study was published in the Journal of Applied Psychology.

17. The findings suggest that there is a need for further investigation.

18. The authors hope that their work will contribute to the field.

19. The study was conducted in a laboratory setting.

20. The authors are grateful to the reviewers for their comments.

21. The research was part of a larger project on organizational behavior.

22. The authors are currently working on a related study.

23. The study was presented at the annual conference.

24. The authors are available for further inquiries.

25. The study was funded by a grant from the Department of Education.

1 inch pipe -- after which 5-1/2 -- before 5-1/2 inch pipe was
2 run at 11062.

3 These depths are confusing because at
4 various times in the well file the depth of the well is
5 given as 11060, 11062, and 11063. However, upon initial
6 completion it was plugged back to 10999. That's pretty well
7 established.

8 The 5-1/2 inch pipe is indicated to have
9 been set at 11062 with 1220 sacks of cement in two stages.
10 The top of that cement is at 5850 feet.

11 Upon setting the 5-1/2 inch pipe the Mor-
12 row formation was perforated from 10911 to 29. It was aci-
13 dized and tested. The calculated absolute open flow upon
14 initial completion was 7,198 MCF per day plus 42 barrels of
15 condensate per day.

16 This went on producing the well until --
17 from the Morrow, until 5-29-79, about two years later, when
18 the perforations in the Morrow formation were squeezed with
19 150 sacks and an attempt was made in the Atoka formation.

20 This formation was perforated from 10363
21 to 65. It was acidized and tested. It was shut in on 6-26-
22 79 after it was determined that the recompletion was unsuc-
23 cessful in the Atoka.

24 In November of 1979 they squeezed these
25 perforations in the Atoka with 75 sacks and plugged back to

1 10200 feet and perforated in the Canyon formation. Perfora-
2 tions in the Canyon are from 9835 feet to 50 feet. This
3 formation was acidized and tested and on 5-22-80 the well
4 flowed 73 barrels of oil, 14 barrels of water, and 431 MCF
5 of gas per day.

6 The well has since quit producing from
7 the Canyon. The tubing has been pulled and it sits there
8 with the perforations still open in the Canyon but no tubing
9 in the well.

10 Q Will you now go to Exhibit Number Four
11 and review the proposed completion for the well?

12 A Exhibit Number Four is an adaptation of
13 the previous exhibit. The first thing we will note is that
14 the -- at the bottom the old Atoka perforations have been
15 squeezed. Those are the perforations from 10363 to 65.

16 The old Morrow perforations from 10911 to
17 29 have also been squeezed.

18 The present Canyon perforations from 9835
19 to 50 feet will be squeezed upon approval by this Division
20 of this application.

21 We'll then set cast iron bridge plug top-
22 ped with two or three sacks of cement at approximately 9500
23 feet and perforate in the Cisco formation from 9270 to 9290
24 feet.

25 We'll then run 2-3/8ths inch plastic

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1 lined tubing, set it in the Guiberson Uni-6 packer at approx-
2 imately 92 feet -- 9215 feet, and load the annulus with an
3 inert fluid.

4 After this a pressure gauge will be at-
5 tached at the annulus between the tubing and the long string
6 of 5-1/2 inch pipe.

7 And injection will commence.

8 Q And with this gauge on the surface it
9 will be possible to pressure test the well in accordance
10 with the Federal Underground Injection Control Program --

11 A Yes, it will be possible to determine if
12 there's any leakage in the tubing, casing, or packer.

13 Q Will you now go to Exhibit Number Five?

14 A Exhibit Number Five is the data sheet.
15 This indicates that the average daily rate of injection
16 would be 2000 barrels per day. The maximum would be 5000
17 barrels per day.

18 I might point out at this time that this
19 will not be a commercial disposal well. It will be primar-
20 ily for the disposal of an excess amount of waterflood in-
21 jection -- waterflood production from the Grayburg formation
22 in the event that the injection system for the Grayburg
23 waterfloods in this area are shut down because of failures
24 of injection pumps and so forth.

25 Also, some San Andres water that's

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1 produced by the Applicant on other leases in the general
2 area would be disposed of into the Cisco formation.

3 The system will be open. It's antici-
4 pated that the injection may go into the Cisco on a vacuum;
5 however, if it doesn't go in on a vacuum, the injection rate
6 would not exceed 0.2 of a pound per foot down to the upper-
7 most perforation in the well, which is at 9270 feet, or a
8 maximum pressure of 1854 psi.

9 Source of the disposal water, as I men-
10 tioned, is the San Andres, and also some of this Grayburg
11 waterflood water.

12 Disposal is to be into a zone that is not
13 productive of oil or gas within two miles of the disposal
14 well. A review of the records revealed that there are not
15 any analyses of water from this zone on file. Water analy-
16 sis reports were checked with Halliburton and the Western
17 Company and they could not find any record of any water
18 analysis.

19 A review was made with the Artesia Oil
20 Conservation Division Office for material on this zone in
21 this area and we anticipate that the formation water will
22 contain lower chlorides than our disposal water but that it
23 will be compatible with the formation.

24 I might point out that exactly one town-
25 ship to the west in Section 27 of Township 17 South, Range

1 28 East, there is a disposal well in which San Andres Water
2 is going into the Cisco formation and there have been no
3 compatibility problems with that water.

4 Q Mr. Nutter, what is currently being done
5 with the water that Marbob proposes to dispose in this -- in
6 the subject well?

7 A Well, it's being injected into the water-
8 flood at this time.

9 Q Would you refer to Exhibit Number Six and
10 identify that, please?

11 A Exhibit Number Six is an analysis of the
12 San Andres water that's being produced in the area. You'll
13 note that the chloride content is 102,908 parts per million
14 of chlorides. It's expected that this water is nastier than
15 the actual formation water insofar as chlorides are con-
16 cerned.

17 Q Are there any fresh water zones in the
18 area?

19 A No, there are no fresh water zones within
20 a mile of this well.

21 Q And so there are no fresh water wells
22 within that area, either.

23 A That's correct.

24 Q Have you examined available geologic and
25 engineering data on this area?

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1 A Yes, and we found no evidence of any open
2 faults or hydrological conditions between the disposal zone
3 and underground sources of drinking water.

4 Q Would you now go to what -- and exhibit
5 -- Marbob Exhibit Six-A is also an affirmative statement
6 confirming what you've just stated --

7 A That is correct.

8 Q -- concerning open faults.

9 A That is correct.

10 Q Would you now go to Exhibit Number Seven
11 and identify that, please?

12 A I won't go into a great deal of detail on
13 this. I didn't prepare it. It's a geological report pre-
14 pared by Jack Allen, a consulting geologist in Roswell, New
15 Mexico.

16 The formation tops are indicated on the
17 first page of his report. These are operators tops of for-
18 mations as reported by the driller of the well. I will men-
19 tion that Allen suggests that there should be no problem for
20 disposing the water because of high porosity, including a
21 fracture porosity, (not clearly understood) 20 percent in
22 the area -- in the -- in the well.

23 So it's not anticipated there will be any
24 problems at all and I'll get into why there won't be any
25 problems disposing into this zone in a minute.

1 Q Mr. Nutter, Exhibit Seven, Mr. Allen's
2 report, was prepared for Marbob Energy Corporation, was it
3 not?

4 A That is correct.

5 Q And this report is kept in the records
6 and was taken from the records of Marbob Energy?

7 A That is correct.

8 Q Would you now go to what has been marked
9 as Marbob Exhibit Number Eight, and review this for Mr.
10 Stogner?

11 A Within the area of review, which is the
12 area within a half mile radius of the disposal well, there
13 is only one well that has penetrated the disposal zone.
14 That would be Atlantic Richfield Company's F. M. Robinson
15 Federal Com No. 1. This well is located 1825 feet from the
16 south line and 2220 feet from the west line of Section 27,
17 Township 17 South, Range 28 East -- 29 East.

18 That well was plugged and abandoned
19 December the 11th, 1977, and if you'll look at your plat 1,
20 Mr. Examiner, you'll see that that well is indicated to be
21 located in Unit K of Section 27.

22 Q Will you now go to Exhibit Number Nine?

23 A No, I want to finish with this one first.

24 Q All right.

25 A This well was plugged -- as I mentioned,

1 was plugged and abandoned in December of 1977. You'll note
2 that the plugs have been set in the well. It looks like
3 it's very adequately plugged and should provide no avenue of
4 escape for the waters that are disposed of into the Cisco
5 formation in the subject well.

6 Q Are you now ready to go to Exhibit Number
7 Nine, Mr. Nutter?

8 A Yes, sir, I am.

9 Q Would you do that, please, and identify
10 that for the Examiner?

11 A Exhibit Number Nine is a log of the
12 Atlantic Richfield Robinson Gas Com No. 1. This is the sub-
13 ject well that we're asking for disposal, and indicated at
14 9270 feet to 9290 feet is the proposed disposal zone.
15 That's pretty far back in the log.

16 Q Would you now identify for Mr. Stogner
17 what is marked as Marbob Exhibit Number Ten?

18 A Marbob Exhibit Number Ten is a copy of
19 the well file for the subject well and I'm going to go into
20 some of the things that I alluded to previous to this.

21 It's a complete copy of all the documents
22 that are in the well file and on the sixth page into the
23 exhibit, which is a C-103, Mr. Stogner, dated 2-24-75 -- 77,
24 and approved 2 -- February 25, '77.

25 This is a report of spudding the well on

1 2-13-77; setting the 20-inch casing at 190 feet.

2 They resumed drilling to 750; ran the 13-
3 3/8ths to 750; cemented with 350 sacks of cement followed by
4 another 300 sacks of cement; circulated 10 sacks of cement.

5 The next page over shows they finished
6 drilling the hole to 3470; ran the 8-5/8ths inch casing; set
7 casing at 3470 and a lot of cement jobs and there was some
8 lost circulation problems in cementing that, but finally
9 they did get the complete cement job on the well.

10 The next page is the C-103, dated 5-10-77
11 and approved May 16th, '77.

12 This shows that they ran the 5-1/2 inch
13 casing and it was set at 11062. They cemented the casing in
14 two stages and in the sixth line down you'll notice it says
15 the top of the cement is at 5850.

16 They perforated the Cisco. Now this is
17 our disposal zone. They perforated the Cisco from 9179 to
18 9184, and swabbed the Cisco 8-1/2 hours. They recovered 52
19 barrels of load water, 84 barrels of formation water, and a
20 small trace of oil.

21 They swabbed 10 hours, recovered 145 bar-
22 rels of formation water, with a trace of oil.

23 They swabbed a total of 431 barrels of
24 water from the Cisco in 3 days.

25 They reset the packer at 8069 and

1 squeezed those Cisco perforations from 9179 to 9184.

2 They perforated up in the Abo formation
3 form 6482 to 86; swabbed the Abo, 6482 to 96, for 11 hours;
4 recovered 88 barrels of load water, 76 barrels of formation
5 water, a trace of oil.

6 They squeezed the Abo formation perfora-
7 tions and went ahead to the next page.

8 Now we'll note here on the next page,
9 this is a report of lost circulation problems that they had
10 in drilling this well through the area of interest, the zone
11 of interest that we've got here.

12 It notes here that on 3-20-77 they lost
13 full returns at 9265. They mixed 400 barrels of lost circu-
14 lation material. They were unable to regain circulation.
15 They drilled dry from 9269 to 9404 feet. This was where
16 they completely lost circulation and this is the zone that
17 we will be disposing in. It's a lost circulation zone.

18 I mentioned that Allen, in his report,
19 had said that with all these fractures and high porosity is
20 why we anticipate this will be a good disposal zone.

21 That was the ninth page, so about --
22 about five pages over to the next sheet, Mr. Examiner, is a
23 C-103 dated 5-16-77, approved May 31, '77.

24 This is where they perforated the Morrow
25 at 10911 to 10929. They took a 4-point back pressure test

1 on May 18th, 1977, and the calculated absolute open flow was
2 7,198,000 cubic feet per day.

3 The well was shut in waiting on a pipe-
4 line connection.

5 The next sheet is the 105 file for the
6 well. It shows that the 4-point test was made with that
7 7998 calculated absolute open flow. 42 barrels of conden-
8 sate, zero barrels of water. The condensate had a gravity
9 of 53-3.

10 About six pages on over, then, you'll
11 find the notice of connection when Transwestern Pipeline
12 connected the well on September the 14th of 1977 in the
13 Grayburg-Morrow Pool.

14 The third sheet over from that is a C-103
15 filed February 16th, 1979, and approved February 22nd, 1979,
16 where they proposed to plug and abandon the Morrow.

17 And the next page is the C-101 that was
18 filed on the same date and approved February 22nd, 1979, a
19 proposal to complete in the Atoka formation.

20 Two sheets over from that is the final
21 report on plugging the Morrow formation and the next sheet
22 is the report on plugging -- on perforating the Atoka from
23 10363 to 365. I won't go into the details but the last line
24 there says "recompletion unsuccessful; pending approval to
25 P&A, final report."

1 The next page, we find that they have
2 plugged the Morrow formation, a notice of intention to plug
3 the Morrow formation. They erroneously marked this as a
4 subsequent report, but this should be a notice of intention
5 to plug and abandon the Atoka formation.

6 The following sheet is the C-101 where
7 they're proposing to plug and test the Canyon from 9835 to
8 50, and you'll notice on the next sheet they still filed a
9 320-acre plat for the Canyon. They anticipated getting a
10 gas well in the Canyon.

11 About three sheets over, then, is the re-
12 port on the Canyon where they had determined it was not a
13 successful -- where they reported having plugged from 10363
14 to 365 in the Atoka, and were going to set -- they -- they
15 set a 30-foot cement plug on top of the packer at 10326, but
16 it didn't hold, so they set a cast iron bridge plug at
17 10200, dumped two sacks of cement on top of that, and the
18 Atoka zone was plugged and abandoned.

19 So then they went on up into the Canyon
20 and the next sheet is the 105 on the Canyon, a 24-hour test
21 indicating there were 73 barrels of oil, 431 MCF of gas and
22 14 barrels of water produced on the test in the -- in the
23 Canyon.

24 About four sheets over you'll notice that
25 they filed a new plat. This was when the Canyon was reclas-

1 sified from a gas well to an oil well and there's only 40
2 acres dedicated as a wildcat Canyon well.

3 That's -- about three or four sheets
4 over, then, is a notice of gas connection in which Phillips
5 Petroleum Company reports that they connected the casinghead
6 gas on the wildcat Canyon Pool on April the 21st of 1981.

7 That's the final report on the well.
8 There was no temporary abandonment report filed by ARCO, but
9 the next form that is filed in this well file is the C-104,
10 which was filed by Marbob on January -- on January the 9th
11 of 1986, for a change of ownership from ARCO to Marbob Ener-
12 gy Corporation.

13 The 104 was approved by Les Clements on
14 January 26th, -- 22nd, 1986.

15 Then there are some copies of the scout
16 reports in the well file. That is the complete well file
17 that you've got on this well.

18 Q Would you now go to Exhibit Number Ele-
19 ven, production information, and review that for Mr. Stog-
20 ner?

21 A Yes, sir. We're attempting to show that
22 this was a productive well and we have copied the pages from
23 the annual reports by the New Mexico Oil and Gas Engineering
24 Committee from 1977 through 1984, and you'll see that the
25 well has been producing from the Morrow until such time as

1 it was recompleted in the Canyon, but it shows production
2 from the Morrow and the Canyon formations over a number of
3 years there.

4 Q Mr. Nutter, was a copy of the application
5 filed by Marbob provided to each operator within the area of
6 review and also to the surface owner?

7 A Yes, it was. The Exhibit Number Twelve
8 is a copy of the letters. These letters to the offset oper-
9 ators were to all operators in both the shallow zones that
10 own shallow rights, as well as operators that own deep
11 rights. The rights in this area are split, deep and shal-
12 low, but all operators of either deep or shallow rights were
13 notified.

14 Q Now, Mr. Plemons and Mr. Boyd only own
15 shallow rights, is that correct?

16 A That is correct.

17 Q And the owner of the deep rights was also
18 notified of the application.

19 A That is correct.

20 Q Was notice of the hearing provided in the
21 newspaper as required by Oil Conservation Division rules?

22 A Yes, sir. You'll notice that Exhibit
23 Number Thirteen has an ad for boats for sale and it also is
24 a legal notice that Marbob published in the Artesia Daily
25 Press for notifying the public that this well would be con

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1 verted to salt water disposal.

2 If you're interested you can buy a fish
3 and ski boat fully rigged for \$11,500.

4 Q Mr. Nutter, in your opinion will granting
5 this application be in the best interest of conservation,
6 the prevention of waste, and the protection of correlative
7 rights?

8 A It will not cause waste inasmuch as
9 there's no hydrocarbons in the disposal formation.

10 It will protect correlative rights in
11 that it will permit the operator to conduct an efficient
12 waterflood operation and also to dispose of water from the
13 other formations into the San Andres.

14 That San Andres, by the way, will be
15 flooded eventually.

16 Q Mr. Nutter, were Marbob Exhibits One
17 through Thirteen either prepared by you or compiled under
18 your direction and your supervision?

19 A Yes, they were.

20 Q And can you testify of your own knowledge
21 as to the accuracy of these exhibits?

22 A Yes, sir, except for the well file. I
23 don't know how accurate that is. I presume it's accurate.

24 Q And the well file is part of the public
25 records of the Oil Conservation Division?

1 A The well file is part of the public re-
2 cords of the Oil Conservation Division.

3 MR. CARR: At this time, Mr.
4 Stogner, we would offer into evidence Marbob Exhibits One
5 through Thirteen.

6 MR. STOGNER: Exhibits One
7 through Thirteen will be admitted into evidence at this
8 time.

9 Q Mr. Nutter, what are Marbob's immediate
10 plans for this well?

11 A We have a rig ready, ready to go in and
12 plug that well back to 9215 and perforate and -- or set the
13 packer at 92 -- to test the injection --

14 Q Is the --

15 A -- plug it back to 9500.

16 Q Is Marbob ready to go forward with the
17 work on the well in the immediate future?

18 A As soon as possible.

19 Q Do you therefore request that any order
20 resulting from this hearing be expedited to the extent pos-
21 sible?

22 A Yes, sir, and we'd be happy to provide
23 the examiner with an order, if he'd so desire.

24 MR. CARR: Mr. Stogner, that
25 concludes my direct examination of Mr. Nutter.

1 MR. STOGNER: Thank you, Mr.
2 Carr.

3

4

CROSS EXAMINATION

5 BY MR. STOGNER:

6 Q Mr. Nutter, I have a question on Exhibit
7 Eight.

8 A Exhibit Eight?

9 Q That's the schematic of the F. M. Robin-
10 son Federal Com Well No. 1.

11 A That's the plugged and abandoned well?

12 Q Right, plugged and abandoned well that
13 went through this particular formation.

14 A Okay.

15 Q I show you have a 200-foot plug from 8920
16 feet to 9120 feet, and then you've got another plug, another
17 200-foot plug down at 10,000 and what?

18 A Something didn't show up there. I can
19 tell you what that is. I don't know why that didn't show up
20 on the Xerox there, but I've got the plugging report here.

21 That bottom plug was at 10790 to -- 590
22 to 790.

23 Q Thank you. Now between 9120 feet and
24 10590 feet, what is in that particular space?

25 A That would be the Atoka in there, I be

Age Group	Number of People
0-10	120
11-20	180
21-30	250
31-40	300
41-50	280
51-60	220
61-70	150
71-80	80
81-90	30
91-100	10

1 lieve. The plug at the bottom would -- okay, in this well
2 the Cisco is at 9020, so the Cisco straddles that area
3 that's -- the top of the -- that's in the top of the Cisco.

4 The plug from 10590 to 790 would straddle
5 the top of the Morrow because the top of the Morrow is re-
6 ported at -- now wait a minute. That straddles the -- yeah,
7 that straddles the top of the Morrow because the top -- I
8 think that's a plug just above the top of the Morrow, Mr.
9 Stogner.

10 Q Okay.

11 A They've got a -- they've got a misprint
12 on their -- on their C-1 -- well, it's the Federal Form
13 9333. They've got a misprint on this. They report the top
14 of the Morrow being at 11690. The top of the Morrow is at
15 10690.

16 So that plug right there straddles the
17 top of the Morrow formation.

18 The other plug above that straddles the
19 top of the Cisco formation.

20 The plug at 7135 to 7285 straddles the
21 top of the Wolfcamp formation.

22 And I believe the plug at 5250 to 5400
23 probably straddles the top of the San Andres or the top of
24 the Glorieta. I don't know for sure. I don't have a depth
25 on the San Andres and Glorieta given in this well file.

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1 Q All right, let's go back to that second
2 to last plug. What did you say in this particular well the
3 top of the Cisco was?

4 A The top of the Cisco in this particular
5 well was 9020, so this plug is from 8920 to 9120, so it goes
6 across the top of the Cisco.

7 Q What is the top of the Atoka in this
8 well?

9 A 10284, so it's in between those two lower
10 plugs.

11 Q Did this particular well produce from the
12 Atoka formation?

13 A No, it did not. This well didn't produce
14 at all from anything.

15 Q Now your injection well had production in
16 the Atoka, is that right?

17 A No.

18 Q No?

19 A It was wet in the Atoka. It only pro-
20 duced from the Morrow and the Canyon.

21 Q But this particular well, being the F. M.
22 Robinson Federal Com Well No. 1, could that act as a -- as a
23 pathway for water to seep from the Cisco into the Atoka?

24 A No, I don't see how it could, because
25 you've got plugs at 7135. You've got plugs at 5250. Into

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1 -- into the what, again?

2 Q I'm sorry, from the Cisco into the Atoka.

3 A Oh, well, yes, it could possibly, because
4 the 200-foot plug at 8920 to 9120 straddles the top of the
5 Cisco and the Atoka is below that, but there's no production
6 in the Atoka, so if there was formation water going from the
7 Cisco to the Atoka it wouldn't be on any consequence.

8 And it would have to get from the dispo-
9 sal well over to this well, anyway, first, before it could
10 do that, and, of course, our disposal well has several plugs
11 in it below that -- it will have the cast iron bridge plug
12 with cement and adequate protection between the disposal
13 zone and the Atoka formation in the disposal well.

14 Q Now let's go back to Exhibit Number One
15 here. Although that plug and abandoned well is within a
16 half mile of this particular well, what's your feelings of
17 the disposal water seeping or extending over to that plugged
18 and abandoned well?

19 A I would doubt that it would ever do that
20 with the volumes that they're proposing because of the tre-
21 mendous porosity that's present in this zone, and I think it
22 would take an ocean of water before you could even make the
23 water migrate from the disposal well the half mile to the
24 other well. It's got tremendous volume; we're only propos-
25 ing to dispose of a maximum of 5000 barrels per day and it

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1 will probably be much less than that, closer to the 2000,
2 even it's even 2000.

3 So I doubt if it would ever migrate to
4 the F. M. Robinson Federal Com No. 1, and even if it did, it
5 wouldn't -- wouldn't harm the Federal Com No. 1.

6 Q Because there was no production there.

7 A Because there was no production in the
8 well.

9 Q Also, staying with Exhibit Number One,
10 you show a well, looks like it's about 100 foot to the south
11 of your proposed disposal well. Could you explain that
12 well?

13 A Which one?

14 Q Well, looks like it's -- they're almost
15 touching.

16 A Okay, you mean the little oil well that's
17 immediately --

18 Q Yeah.

19 A -- south of the proposed disposal well?

20 Q Yeah, what depth is that?

21 A Okay, I can give you all the information
22 you need on that well, Mr. -- okay, that well is Jack Plem-
23 ons Continental State No. 1. It has -- it's got a total
24 depth of 2927 feet, which is 500 -- its total depth is 500
25 feet above the shoe on our 8-5/8ths inch casing, because our

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1 shoe on our 8-5/8ths inch casing is 3470, so this would be
2 543 feet above -- our shoe is 543 feet below that well's to-
3 tal depth. That well has casing set at 2717. It has per-
4 forations from 2365 to 85, 2640 to 60, and 2665 to 85.

5 So the disposal in this well -- the dis-
6 posal in our subject well is at 9270 to 9290.

7 The disposal zone is 6,343 feet below the
8 TD on that well that's located 150 feet south of the subject
9 well, 130 feet south of the disposal well.

10 So you'd have to have a -- if that well
11 were to be affected, you'd have to have migration of water
12 vertically 6,343 feet and horizontally 130 feet, which, I
13 think, is extremely unlikely with -- considering that the
14 top of the cement on the disposal well is at 5850. This
15 gives us 3,420 feet of cement from the top of our injection
16 zone to the top of the cement in the subject well.

17 Then it would have to go up to the 8-
18 5/8ths inch shoe and it would have to migrate another 3930
19 feet from the top of the shoe up to the TD of the Plemons
20 Continental State No. 1.

21 So I think it's extremely unlikely that
22 any water would get into that well from the disposal zone at
23 9270 to 90.

24 Q Thank you, Mr. Nutter.

25 MR. STOGNER: I have no further

1 questions of this witness.

2 Is there anything further of
3 Mr. Nutter?

4 MR. CARR: I have no further
5 questions of Mr. Nutter.

6 MR. STOGNER: If not, he may be
7 excused.

8 Anything further in Case Number
9 8841?

10 MR. CARR: Nothing further.

11 MR. STOGNER: Mr. Nutter, Mr.
12 Carr, I don't believe that a rough draft order for this par-
13 ticular case will be necessary for me at this time.

14 Thank you. Case Number 8841
15 will be taken under advisement.

16

17 (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 that the foregoing Transcript of Hearing before the
Oil Conservation Division (Commission) was reported by me;
that the said transcript is a full, true, and correct record
of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 8341
heard by me on 5 March 1986.
Michael E. Slapner, Examiner
Oil Conservation Division

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