



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

September 4, 1986

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

Mr. Scott Hall
Campbell & Black
Attorneys at Law
Post Office Box 2208
Santa Fe, New Mexico

Re: CASE NO. 3973
ORDER NO. R-8294

Applicant:

Mobil Producing Texas And New Mexico, Inc

Dear Sir:

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

Sincerely,

R. L. STAMETS
Director

RLS/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other Daniel Nutter



TONEY ANAYA
GOVERNOR

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

July 23, 1986



1935 - 1985

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Mobil Producing Texas &
New Mexico Inc.
P. O. Box 633
Midland, Texas 79702

Case 8973

Attention: G.E. Tate

Re: Injectivity Test
Government "D" No. 4 Well
Eddy County, New Mexico

Dear Sir:

Reference is made to your request of July 22, 1986, for authorization to conduct a 60 day Delaware formation injectivity test on your Government "D" No. 4 Well, a proposed salt water disposal well. This request is based on information presented by Mobil to the Division at a meeting held on July 22, 1986. As per Division Rules and Regulations, this application for water disposal will be set for the Examiner Hearing on August 20, 1986. Pending approval of the application at the hearing, Mobil will be granted a temporary test period for this well.

You are therefore authorized to conduct a 60 day Delaware formation injectivity test on the Government "D" No. 4 Well located in Section 1, Township 21 South, Range 27 East, NMPM, Eddy County, New Mexico, subject to the following conditions:

- (1) At no time during this test period will the injection pressure exceed .2 psi. per foot of depth to the uppermost perforation unless approval has been given by the Division's Artesia district office.
- (2) Should the application for disposal well be denied by the Division at the hearing on August 20, 1986, Mobil will cease all injection operations into the well after receipt of the Division order.

- (3) Prior to commencing injection test operations into the well, the proposed disposal zone shall be swab tested for a period of time to be determined after consultation with the Division.
- (4) All such testing operations shall comply with all Division Rules and Regulations regarding injection operations.

Sincerely

A handwritten signature in cursive script, appearing to read "R. L. Stamets", written in black ink. The signature is fluid and extends across the width of the page.

R. L. Stamets
Director

RLS/DRC/et

xc: Case File
D. Catanach

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I N D E X

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GEORGE ANDERSON

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Direct Examination by Mr. Hall

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JACK HAMNER

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Direct Examination by Mr. Hall

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Cross Examination by Mr. Catanach

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STATEMENT BY MR. DAN NUTTER

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E X H I B I T S

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Mobil Exhibit One, Form C-108

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Mobil Exhibit Two, Plat

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Mobil Exhibit Three, Cross Section A-A'

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Mobil Exhibit Four, Cross Section B-B'

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Mobil Exhibit Five, Data

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Mobil Exhibit Six, Correspondence

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MR. CATANACH: Call next Case
8973.

MR. TAYLOR: The application of
Mobil Producing Texas and New Mexico, Incorporated, for salt
water disposal, Eddy County, New Mexico.

MR. CATANACH: Are there
appearances in this case?

MR. HALL: Mr. Examiner, my
name is Scott Hall from the Campbell & Black law firm at
Santa Fe, on behalf of the applicant.

MR. CATANACH: Are there other
appearances in this case?

MR. NUTTER: Dan Nutter, Bass
Enterprises.

MR. HALL: I have two witnesses
to be sworn this morning.

MR. CATANACH: Any witnesses,
Mr. Nutter?

MR. NUTTER: No, sir.

MR. CATANACH: Will the two
witnesses please stand and be sworn in at this time?

(Witnesses sworn.)

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GEORGE ANDERSON,

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

DIRECT EXAMINATION

BY MR. HALL:

Q For the record state your name, please.

A My name is George Anderson.

Q And by whom are you employed and in what
capacity?

A I'm employed by Mobil Producing Texas and
New Mexico, Incorporated.

I'm employed as a geologist in the Pro-
duction Geology Department.

Q All right. What is the area of your
responsibility?

A Eddy County, New Mexico.

Q Okay. Have you previously testified be-
fore the examiner?

A No, I haven't.

Q All right. Why don't you give a brief
summary of your educational and work background?

A I graduated with a Bachelor's degree in
geology in 1969 from Juniata College in Pennsylvania.

1 I earned my Master's degree in geology in
2 1972 from Rensselaer Polytechnic Institute in Troy, New
3 York.

4 I've been employed as a geologist by
5 Mobil since 1974 to the current date.

6 Q Are you familiar with this application
7 and the subject well?

8 A Yes, I am.

9 MR. HALL: At this point, Mr.
10 Examiner, we would ender the witness as a qualified
11 geologist.

12 MR. CATANACH: Mr. Anderson is
13 considered qualified.

14 Q Mr. Anderson, if you would, please,
15 briefly state what Mobil is seeking by this application?

16 A Mobil seeks the authority to inject -- to
17 inject salt water disposal, to inject salt water into a --
18 into a zone in the Delaware formation that's currently being
19 produced in the Northwest Fenton Delaware Field.

20 Q All right, and what is the identification
21 of the well proposed to be used for injection?

22 A It's the Government "D" No. 4, Superios
23 Government "D" No. 4.

24 Q All right, at this time I'd like you to
25 refer to what's been marked as Exhibit Number One and

1 identify that and explain what it is intended to show.

2 A Exhibit Number One is the New Mexico Oil
3 Conservation Division Form C-108. It is the Application for
4 Authorization to Inject for the subject well, dated 6-26-86,
5 with supporting documents.

6 It includes 32 pages in all.

7 Q All right, again what formation do you
8 propose to inject with water?

9 A We propose to inject into the lower part
10 of the Cherry Canyon formation in the Delaware Mountain
11 Group.

12 Q Will the injection be limited to that
13 specific interval?

14 A The injection zone is limited to that
15 particular interval noted in the Form C-108.

16 Q All right. What is the present status of
17 the Government "D" No. 4 Well?

18 A The Government "D" No. 4 was drilled to
19 the Bone Springs in 1984. It was an unsuccessful completion
20 in that interval.

21 The well is currently temporarily aban-
22 doned and with a cast iron bridge plug at approximately 5590
23 feet with 35 feet of cement cap on top of the bridge plug.

24 Q All right, and if you'd refer to page six
25 of Exhibit One, the C-108, are those matters reflected on

1 that schematic?

2 A Yes, they are.

3 Q All right.

4 At this time I'd like for you to refer to
5 Exhibit Number Two and explain what that's intended to show.

6 A All right.

7 Q And if you want to get up there next to
8 the exhibit, you're free to do so.

9 A Okay. Let me review that initially from
10 right here, if I may, please.

11 The Exhibit Number Two is a plat. It
12 contains two maps. The map on the left is a scale of one
13 inch to 2000 feet. It's a base map used by Mobil for map-
14 ping purposes. It's had extraneous information removed to
15 remove an uncluttered base map.

16 It shows the subject well, the Government
17 -- the Superior Government "D" No. 4, located at the center
18 of two circles, a circle of 2-mile radius and a half mile
19 radius circle.

20 Within the 2-mile radius all the wells --
21 all the wells within the 2-mile radius are color coded by
22 completion zone or in the dry holes they're color coded by
23 the intended objective interval, and the legend at the bot-
24 tom provides the key to -- to the code.

25 The half mile radius circle, of course,

1 shows the area of review, and the yellow colored area in the
2 2-mile radius shows those properties operated by Mobil with-
3 in that 2-mile radius area.

4 On the right is an index map. It's a
5 portion of a Midland Map Company land map, which provides
6 information on lease ownership within two miles of the sub-
7 ject well. The scale of this map is one inch to 4000 feet.

8 And that basically shows what that --
9 what that exhibit includes.

10 Q All right. Now, within the 2-mile radius
11 are you aware of any other completions through those wells
12 in the injection interval?

13 A No, there are none.

14 Q Okay. All right, at this time I'd like
15 you to refer back to the C-108, Exhibit One, again, and us-
16 ing that in conjunction with Exhibit Number Two, I'd like
17 you to summarize the tabular data on the wells.

18 A Okay.

19 Q I believe that's page nine of Exhibit
20 One.

21 A Right. If you'll note on the -- on Exhi-
22 bit Two, you can see that in addition to the proposed dispo-
23 sal well there are four wells in the area of review and
24 these four wells are included in the tabular data.

25 The tabular data includes information on

1 the operator of each well, the lease, the well number, loca-
2 tion of the well, the well type, date the well was drilled,
3 to total depth of each well, and the completion interval of
4 each well.

5 I will -- I will read the information on
6 the tabular data sheet.

7 Mobil Oil Producing Texas and New Mexico
8 in the Burton Flat Lease, Well No. 1, located 2950 feet from
9 the north line, 1700 feet from the east line of Section 1,
10 Township 21 South, Range 27 East.

11 It's a producing well. It was drilled
12 the 24th of June -- July, rather, 1985, to a depth of 5722
13 feet and was completed in the Bone Springs formation from
14 5604 to 5622 feet.

15 Mobil Producing Texas and New Mexico
16 Burton Flat No. 2, 3300 feet from the south line, 1980 feet
17 from the east line, in Section 1, Township 21 South, Range
18 27 East.

19 It's a producing well. It was drilled
20 29th of November, 1984, to a depth of 5745 feet. It's
21 completed in the Bone Springs from 5552 feet to 5574 feet.

22 Two wells in the area of review are
23 operated by Exxon, the Stott Federal No. 2, located 1980
24 feet from the west line, 1392 feet from the north line of
25 Section 1, Township 21 South, Range 27 East.

1 It's a producing well; was drilled 17th
2 of June, 1984, to a depth of 5670 feet. It was completed in
3 the Bone Springs formation from 5537 feet to 5560 feet.

4 The Exxon operated Stott Federal No. 3 is
5 also in the area of review. It's located 1980 feet from the
6 west line, 2912 feet from the north line of Section 1, Town-
7 ship 21 South, Range 27 East.

8 It's a producing well. It was drilled
9 July 13th, 1984, to a depth of 5630 feet. It's completed in
10 the Bone Springs formation from 5488 feet to 5516 feet.

11 Q Mr. Anderson, does Exhibit One have
12 appended to it C-105 forms showing the mechanical construc-
13 tion for the four wells within the area of review?

14 A Yes, it does.

15 Q All right. Are there any plugged and
16 abandoned wells in the area of review?

17 A No.

18 Q Okay, at this time I'd like you to refer
19 to Exhibits Three and Four, which we've placed on the wall,
20 and simply explain to the examiner what those reflect.

21 A Okay. Exhibits Number Three and Four are
22 cross sections, which carry across the area included in the
23 2-mile radius around the Government "D" No. 4 Well.

24 The cross sections show the intervals in
25 this area included in the 2-mile radius that are currently

1 completed above and below the proposed disposal zone, and it
2 shows that zone of porosity which has been selected for the
3 proposed disposal well.

4 I'm going to refer to the plat. The pro-
5 ducing zone above -- I should have been more clear but pro-
6 ducing intervals are color coded yellow and the proposed
7 disposal interval is color coded in blue.

8 The producing interval in yellow is the
9 Northwest Fenton Delaware pay which is the pay zone for the
10 Northwest Fenton Delaware Field, which falls in this area,
11 of the area of review. It's in the southern part of the 2-
12 mile area included in the 2-mile radius around the Govern-
13 ment No. 4 Well.

14 All the wells color coded in green are
15 the wells that belong to the Northwest Fenton Delaware Field
16 and are in fact completed in the zone color coded in yellow
17 on both cross sections.

18 The producing zone, colored in yellow be-
19 low the first disposal zone is the East Avalon Bone Springs
20 pay and is the pay zone for the wells coded in red, which
21 essentially fall just to the north of the Northwest Fenton
22 in this area of the area around -- the 2-mile radius around
23 the Government "D" No. 4 Well.

24 Let me begin by -- by talking about cross
25 section B-B'. The cross section is a -- includes a series

1 of density neutron gamma ray logs. The neutron log is re-
2 corded in porosity units based on limestone matrix. The
3 density, and it's the dashed curve on all these logs.

4 The density curve is recorded as bulk
5 density and it is the solid curve. The scales for the neut-
6 ron porosity are -10 to 30 percent porosity and the bulk
7 density goes from 2 to 3 grams per cc across the -- across
8 the track.

9 The proposed disposal well on this cross
10 section is located right here, Government "D" No. 4. It
11 shows the proposed disposal zone; it's a zone approximately
12 200 feet thick and includes -- the porosity interval ranges
13 from, log calculated porosity, ranges from 18 to 21 percent.
14 The zone calculates wet and to the best of our knowledge,
15 we've investigated completion reports in Artesia and there
16 are no wells, based on that information there are no wells
17 currently completed in this zone within the 2-mile -- within
18 the 2-mile area around the -- around the Government "D" No.
19 4 Well.

20 This porosity zone carries porosity --
21 I'm sorry, let me show you where the location of this cross
22 section is.

23 This cross section runs from north to
24 south and essentially crosses the Northwest Fenton Field and
25 the East Avalon Bone Springs Field, and as I was saying, the

1 zone of porosity that we propose as a disposal zone does
2 carry across this particular area from north to south.

3 The interval separating the proposed dis-
4 posal zone and the Northwest Fenton Delaware pay, is about
5 600 to 700 feet thick. It includes several tight streaks
6 and it includes shaley zones that would be effective bar-
7 riers to communication between the -- between the disposal
8 zone and the overlying Northwest Fenton Delaware Field pay.

9 I want to point out, as well, that as we
10 move -- on this cross section, as we move to the north, to
11 the far north, the Government "D" No. 4 Well, located here
12 on the cross section and here on the map, carried the cross
13 section to the north, to the Liberty No. 5-Y Well. There's
14 a scale break on the map because it's such a long distance
15 compared to the other -- other wells, but I want to indicate
16 that that well is also completed and has a Delaware comple-
17 tion, the Scanlon Delaware Field, located approximately 12-
18 1400 feet below the proposed disposal zone and it occurs in
19 -- in these three wells colored green on the -- on the plat.

20 So it's located approximately a mile and
21 a half north of the proposed disposal well and interval, the
22 pay interval is approximately 1200 the proposed disposal
23 zone.

24 Cross Section A-A' shows essentially the
25 same thing as B-B', the only difference is that it is a

1 northwest/southeast cross section running across the --
2 across the field. I can show you better on here. It runs
3 across the field to the disposal well, goes south, and then
4 comes out to the extreme southeastern end of the Northwest
5 Fenton Field.

6 And it shows essentially the same thing.
7 The Northwest Fenton Delaware Field pay lies approximately
8 6-to-700 feet above the proposed disposal zone. There are
9 several tight streaks and shaly intervals that -- that --
10 such as these, that do carry across the zone of interest, or
11 the area of interest, and would serve as effective vertical
12 barriers to communication.

13 I guess that's really what I wanted to
14 show, and likewise, to the Bone Springs East Avalon Field.
15 There's about 1500 feet separating the disposal zone from
16 the pay zone, and we do not expect any communication between
17 -- between the zone of porosity we propose to dispose in
18 and the porosity currently produced in this East Avalon Bone
19 Springs Field.

20 Q Let me ask you with respect to Exhibit
21 Four and the Government "D" No. 4 again, are the perfora-
22 tions reflected for that well on that exhibit?

23 A I haven't drawn the perforations on the
24 -- the actual perforated intervals -- sorry, here's the
25 well. The actual perforated intervals fall within this zone,

1 which is approximately 200 feet thick. The perforated in-
2 tervals are 3,849 to 3856; 3869 to 3880; 3884 to 3888; 3898
3 to 3918; 3922 to 3934; and 3964 to 4010.

4 The actual zone is -- this is the zone we
5 propose to dispose in. The actual perforations are modified
6 slightly from those listed in the -- in the C-108. The zone
7 has been reduced by about -- the perforated has been reduced
8 by about 10 feet. The zone remains unchanged.

9 Q And those would be the perforations shown
10 on page seven of Exhibit One?

11 A Yes.

12 Q And these perforations are indeed, the
13 actual perforations are indeed within the advertised inter-
14 val, is that correct?

15 A Yes, they are.

16 Q Okay. Have you examined the general geo-
17 logic data in this area?

18 A Yes.

19 Q And what conclusions did you draw from
20 that?

21 A That we've selected a zone of porosity
22 for disposal that is isolated from the current production
23 zones in the area; that the zone carries across the area
24 that we -- that would be included in the 2-mile radius; that
25 there are no wells, according to the records filed with the

1 NMOCD that indicate there are any completions in this zone;
2 and that we are effectively isolated from the Northwest Fen-
3 ton Field pay and East Avalon Bone Springs Field pay.

4 Q All right. So there there is no commer-
5 cial production within the Delaware injection interval?

6 A Not within the -- not within the 2-mile
7 radius.

8 Q All right. Do you know what the water
9 saturation is in the area?

10 A The water saturation that -- calculated
11 water saturation in this -- in the disposal well, is on the
12 order of 65 to 67 percent.

13 Q All right. Let me ask, as a result of
14 your examination have you discovered any evidence of open
15 faults or other hydrologic connection between the disposal
16 interval and any other intervals?

17 A No, I have not.

18 Q Okay. Are there any fresh water zones in
19 the area at all?

20 A Yes, there are. There are two fresh
21 water zones, the Rustler formation, which has fresh water
22 down to a depth of about plus or minus 400 feet in the over-
23 all area, and the Capitan Reef, which contains low salinity
24 water down to a depth of about 2400 feet.

25 Q Are those intervals referenced on page 20

1 of Exhibit One?

2 A They're referenced in Exhibit One, page
3 20, yes.

4 Q Okay. Are there any fresh water wells
5 within a mile of the injection well?

6 A Yes. There is one fresh water well and
7 it's located in Section 1, Township 21 South, Range 27 East,
8 Unit P.

9 Q Okay. In your opinion will the granting
10 of this application be in the best interest of conservation,
11 the prevention of waste, and the protection of correlative
12 rights?

13 A Yes.

14 Q Is Exhibit One a copy of the application
15 that Mobil Producing Texas and New Mexico, Inc. has submit-
16 ted for authority to dispose of produced water in the sub-
17 ject well?

18 A Yes, it is.

19 Q Were Exhibits Two through Four compiled
20 by you or at your direction?

21 A Yes.

22 MR. HALL: At this time we'd
23 offer Exhibits One through Five and state to the examiner we
24 intend to call a geologic -- I'm sorry, an engineering wit-
25 ness following Mr. Anderson.

1 MR. CATANACH: Exhibits One
2 through Five will be admitted into evidence.

3 MR. HALL: I'm sorry that was
4 Exhibits One through Four. Five is not in yet.

5 MR. CATANACH: Exhibits One
6 through Four, then.

7 I have no questions for the
8 witness. He may be excused.

9 MR. HALL: At this time we call
10 Mr. Jack Hamner.

11
12 JACK HAMNER,
13 being called as a witness and being duly sworn upon his
14 oath, testified as follows, to-wit:

15
16 DIRECT EXAMINATION

17 BY MR. HALL:

18 Q For the record state your name and place
19 of residence.

20 A My name is Jack Hamner. I live in Mid-
21 land, Texas.

22 Q By who are you employed and in what capa-
23 city?

24 A I'm employed by Mobil Producing Texas and
25 New Mexico, Incorporated. I work as a reservoir engineer.

1 Q Does your area of responsibility include
2 the Permian Basin in New Mexico?

3 A That is correct.

4 Q Have you previously testified before the
5 Division?

6 A No.

7 Q Why don't you give a brief summary of
8 your education and work backgrounds for the examiner?

9 A Okay. I graduated from the University of
10 Texas at Austin in May of 1980; BS degree in petroleum en-
11 gineering.

12 I've worked as an engineer for Mobil ever
13 since.

14 Q Okay. At this point let me ask you, are
15 you familiar with the application in this case and the sub-
16 ject well?

17 A Yes, I am.

18 MR. HALL: At this point, Mr.
19 Examiner, we tender Mr. Hamner as a qualified petroleum en-
20 gineer.

21 MR. CATANACH: Mr. Hamner is
22 considered qualified.

23 Q Mr. Hamner, what is the source of the
24 water you propose to inject into the Government "D" No. 4?

25 A It is the produced water from the Mobil

1 operated Northwest Fenton Delaware Field and the East Avalon
2 Bone Spring Field.

3 Q All right. What are you presently doing
4 with the water produced from those fields?

5 A We're presently trucking the water off
6 the lease at this time.

7 Q Okay. Do you know what your cost is for
8 that trucking?

9 A Yes. It's approximately 82 cents a bar-
10 rel.

11 Q All right. What are the volumes that
12 Mobil proposes to injection into the well?

13 A We are proposing an average injection
14 rate of 1000 barrels a day.

15 Q All right, what will be the maximum daily
16 rate you propose to inject?

17 A 3,300 barrels.

18 Q Will the system be an open system or
19 closed?

20 A It will be a closed system.

21 Q All right. Will the injection be under
22 pressure or by gravity?

23 A It will be under pressure.

24 Q I'd like you to refer to Exhibit One, the
25 C-108 and the schematic of the injection well; I believe

1 that's page seven, and if you would simply explain the
2 mechanical make-up of the well shown on that page.

3 A Okay. We have production string and 5-
4 1/2 inch casing set down to a TD of 5,712 feet. As was men-
5 tioned, presently the well is TA'ed. We have a cast iron
6 bridge plug set in the well cap with 35 feet, approximately,
7 of cement; approximately at 5590 feet.

8 We have currently perforated the Delaware
9 pay, as mentioned, 3849 through 4022 feet.

10 We have a packer in the well at this
11 point in time set at approximately 3,754 feet, with 2-7/8ths
12 inch tubing and the back side, or the annulus space is
13 loaded with water, and that's basically the condition that
14 the well is at at this point in time.

15 Q Will there be a leak detection system set
16 up in the well?

17 A Correct. We will definitely put a pres-
18 sure gauge on the well to monitor the back side at all
19 times.

20 Q Okay. What is the maximum injection
21 pressure you propose to utilize?

22 A The maximum injection pressure at this
23 time is unknown. We need to run a step rate test of some
24 sort to determine this.

25 Q Okay. Is the pressure, the standard

1 pressure limitation of 0.2 of a pound per foot of depth to
2 the top of the injection interval satisfactory for the vol-
3 umes you seek to inject?

4 A Probably not. Based on information from
5 our recent acid stimulation additional pressure will be re-
6 quired to inject at the proposed rates; however, a step rate
7 test can be -- can be run to determine the fracture pressure
8 of the formation.

9 Q Okay, and you will run that test, if ne-
10 cessary?

11 A Yes.

12 Q All right. At this time I'd like you to
13 refer to pages 14 and 15 of Exhibit One, and explain what
14 those pages reflect.

15 A Okay. Page fourteen of Exhibit One,
16 first off, goes through and mentions the fact of the maximum
17 amount of water that we intend to inject. It also goes into
18 detail of the relative amounts of water that we're talking
19 about injecting via which zone. In this particular exhibit
20 we're talking about roughly 20 barrels of water per day that
21 we would inject into this well as Bone Spring water. The
22 remainder amount would be Delaware produced water.

23 It goes on to say that -- that basically
24 in calculating that we're looking at approximately one
25 percent of Bone Spring water will be injected into the

1 proposed Delaware zone.

2 In addition it goes on to say that the
3 waters are incompatible; that we feel that at the ratios
4 that the waters are mixed that this compatibility problem is
5 not a problem.

6 Q Okay, and that carries on over to page
7 15. Is that also a water analysis?

8 A Yes. Page fifteen is a water analysis
9 performed by Core Laboratories and it supports what was said
10 on page fourteen, and it -- the mixtures that were run for
11 the compatibility test for this particular water analysis
12 was done on a mixture of 75 percent Delaware water and 25
13 percent Bone Spring water.

14 Again I'd like to point out that we're
15 looking at a volume of Bone Spring water, one percent as op-
16 posed to 25 percent.

17 Q And it is not a significant amount in
18 your view?

19 A No.

20 Q All right. Why don't you refer to page
21 twenty-one of Exhibit One? Is that also a water analysis
22 for fresh water?

23 A Yes, it is. The analysis on page twenty-
24 one is an analysis of the Spears (sic) fresh water well
25 that's located in Section 1, and basically showing that the

1 chlorides in the well are about 500. It is a slightly --
2 slightly brackish fresh water well.

3 Q All right, at this point I'd like you to
4 refer to pages four and five of Exhibit One and let me ask
5 you, do those pages reflect any sort of stimulation program
6 that was implemented on this well?

7 A Yes, they do. On page five of Exhibit
8 One the proposed stimulation was just that; it was proposed
9 stimulation. We have actually done a stimulation which was
10 slightly differing from that.

11 Q Okay, well let me ask you if you'd refer
12 to Exhibit Five now, is Exhibit Five reflective of any chan-
13 ges to the stimulation program that was actually implemen-
14 ted?

15 A Yes, it is.

16 Q Okay, would you explain what those chan-
17 ges were, briefly?

18 A Okay. I will just read the exhibit since
19 it's -- will tell exactly what the changes were.

20 A packer was set at 3,754 feet. The well
21 was loaded and the annulus was loaded and pressure tested.
22 The Delaware perfs 3849 through 4,010 were acidized with
23 11,800 gallons of 10 percent NEFE hydrochloric acid; 180
24 ball sealers were used in the job; tubing treating pressure
25 ranged from 2800 pounds to 3,400 pounds; average injection

1 pressure was 2800 pounds. Our average injection rate was
2 9.5 barrels per minute. We had good ball action during
3 stimulation and we balled out the well at 4,200 pounds.

4 We had an instantaneous shut-in pressure
5 on the well of 1,100 pounds. We shut the well in for one
6 hour. We opened the well; at that time we flowed it back 36
7 barrels of load water in one and a half hours. The well
8 died. We started swabbing operations at that point and
9 swabbed 88 barrels total fluid from the well; no show of
10 oil; 100 percent water.

11 Q Okay, at this point I'd like you to refer
12 to Exhibit Six. Does Exhibit Six consist of copies of the
13 certified notices given to offsetting property owners of
14 this application?

15 A That is correct.

16 Q Have you examined the available engineer-
17 ing data on the subject area and well?

18 A Yes, I have.

19 Q As a result of this examination have you
20 found any evidence of any open faults or hydrologic connec-
21 tion between the disposal zone and any other source of
22 drinking water?

23 A No, I have not.

24 Q Okay. In your opinion will the granting
25 of this application prevent waste, protect correlative

1 rights, and be in the best interest of conservation?

2 A Yes, I do. The ability to dispose of
3 water in the Government "D" 4 Well will enable Mobil to
4 operate wells which are shut in and uneconomical to produce
5 at current disposal costs.

6 It will also significantly reduce oper-
7 ating costs, considering approximately 1000 barrels a day of
8 produced water being trucked off lease at 82 cents a barrel,
9 and it will also extend the productive life of wells which
10 make high volumes of water.

11 Q Okay. Were Exhibits Five and Six pre-
12 pared at your direction?

13 A Yes, they were.

14 MR. HALL: At this point we
15 would offer into evidence Exhibits Five and Six.

16 MR. CATANACH: Exhibits Five
17 and Six will be admitted into evidence.

18 MR. HALL: That concludes our
19 direct of this witness.

20

21 CROSS EXAMINATION

22 BY MR. CATANACH:

23 Q Mr. Hamner, at this time you're not pro-
24 posing to exceed the .2 psi per foot of injection limita-
25 tion?

1 order allow for the present time that the injection to be at
2 the .2 pound standard pressure with a provision that the
3 pressure may be increased upon submission of additional evi-
4 dence to the Examiner in order to avoid the necessity of
5 separate application and additional hearing.

6 MR. CATANACH: Very well.

7 MR. HALL: That's all we have.

8 MR. CATANACH: Mr. Nutter, you
9 may make your statement.

10 MR. NUTTER: Yes, sir. Bass
11 Enterprises has no objection to the disposal of water into
12 the zones as advertised, nor to the zones as amended at this
13 hearing this morning.

14 However, we would like to be
15 apprised of the step rate tests that are run and any appli-
16 cation that would be made for injection pressures in excess
17 of the standard .2 of a pound per foot of depth.

18 Other than that Bass has no ob-
19 jections.

20 MR. CATANACH: Mr. Hamner, I
21 would direct you to submit the step rate test to Bass Enter-
22 prises at the same time that you send it to the State.

23 MR. HAMNER: I will.

24 MR. CATANACH: Thank you.

25 Is there anything further in

1 Case 8973?

2 If not, it will be taken under
3 advisement.

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(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. 8973 heard by me on August 20, 1986.

David R. Catanzano, Examiner
Oil Conservation Division