

CASE 7104: CONOCO INC. FOR THE AMEND-
MENT OF ORDERS NOS. R-4633 and WFX-462,
LEA COUNTY, NEW MEXICO

Case No.

7104

Application

Transcripts

Small Exhibits

ETC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 7104
Order No. R-4633-A

APPLICATION OF CONOCO INC. FOR THE
AMENDMENT OF ORDERS NOS. R-4633
AND WFX-462, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on December 10, 1980, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 14th day of January, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Conoco Inc., seeks the amendment of Division Orders Nos. R-4633 and WFX-462, which authorized the injection of water into applicant's Maljamar Mitchell Waterflood Project, Lea County, New Mexico.

(3) That said orders authorized the injection of water into the Grayburg-San Andres formation in the following described wells in Section 5, Township 17 South, Range 32 East, NMPM, Maljamar Pool, Lea County, New Mexico:

Grace Mitchell "B" Well No. 2	Unit P
Grace Mitchell "B" Well No. 5	Unit H
Grace Mitchell "B" Well No. 6	Unit J

(4) That the applicant now seeks authorization to inject a carbon dioxide "slug" into said wells for purposes of enhancing recovery from said project.

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(5) That the injection of carbon dioxide is expected to result in the recovery of an additional 70,000 barrels of oil production from the project.

(6) That the operator should take all steps necessary to ensure that the injected water and carbon dioxide enter only the proposed injection interval and are not permitted to escape to other formations or to the surface from injection, production, or plugged and abandoned wells.

(7) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 1800 psi, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

(8) That the subject application should be approved and the project should continue to be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Conoco Inc., is hereby authorized to inject carbon dioxide into the Grayburg-San Andres formation in its Maljamar Mitchell Waterflood Project in the following described wells in Section 5, Township 17 South, Range 32 East, NMPH, Maljamar Pool, Lea County, New Mexico:

Grace Mitchell "B" Well No. 2	Unit P
Grace Mitchell "B" Well No. 5	Unit H
Grace Mitchell "B" Well No. 6	Unit J

(2) That injection into each of said wells shall be through internally coated tubing, set in a packer which shall be located as near as practicable to the casing shoe; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(3) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing or packer in any of said injection wells, the leakage of water, carbon dioxide, or oil from or around any producing well, or the leakage of water, carbon dioxide, or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

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Order No. R-4633-A

(4) That the injection wells herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 1800 psi, provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(5) That the applicant shall notify the supervisor of the Division's Hobbs district office of the date and time of the commencement and termination of carbon dioxide injection in order that the Division, at its option, may witness such activities.

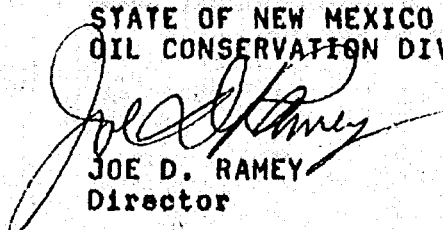
(6) That the project shall continue to be governed by provisions of Division Orders Nos. R-4633 and WFX-462 not inconsistent with this order.

(7) That monthly progress reports of the project shall continue to be submitted to the Division in accordance with Rules 704 and 1115 of the Division Rules and Regulations and the operator shall specifically identify carbon dioxide volumes injected on Division Form C-115, Operator's Monthly Report.

(8) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


JOE D. RAMEY
Director

S E A L

rd/



BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

January 16, 1981

POST OFFICE BOX 2098
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

Mr. Thomas Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: CASE NO. 7104
ORDER NO. R-4633-A

Applicant:

~~Conoco Inc.~~

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD _____ x
Artesia OCD _____ x
Aztec OCD _____ x

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
10 December 1980

EXAMINER HEARING

IN THE MATTER OF:

Application of Conoco, Inc., for the
amendment of Orders Nos. R-4633 and
WFX-462, Lea County, New Mexico.

CASE
7104

BEFORE: Richard I. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

Ernest L. Padilla, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

W. Thomas Kellahin, Esq.
KELLAHIN & KELLAHIN
500 Don Gspar
Santa Fe, New Mexico 87501

I N D E X

LOWELL DECKERT

Direct Examination by Mr. Kellahin 3

Cross Examination by Mr. Stamets 11

E X H I B I T S

Applicant Exhibit One, Map 4

Applicant Exhibit Two, Graph 5

Applicant Exhibit Three, Schematic 9

Applicant Exhibit Four, Schematic 9

Applicant Exhibit Five, Schematic 10

Applicant Exhibit Six, Letter 10

1
2 MR. STAMETS: We'll call at this time
3 Case 7104.

4 MR. PADILLA: Application of Conoco, Inc.,
5 for amendment of Orders Nos. R-4633 and WFX-462, Lea County,
6 New Mexico.

7 MR. KELLAHIN: Tom Kellahin of Santa Fe,
8 New Mexico, appearing on behalf of the applicant, and I have
9 one witness.

10
11 (Witness sworn.)

12
13 LOWELL DECKERT
14 being called as a witness and being duly sworn upon his oath,
15 testified as follows, to-wit:

16
17 DIRECT EXAMINATION

18 BY MR. KELLAHIN:

19 Q Mr. Deckert, would you please state your
20 name and occupation?

21 A Lowell Deckert. I'm a Senior Staff En-
22 gineer with Conoco, Incorporated.

23 Q Mr. Deckert, have you previously testi-
24 fied before the Division and had your qualifications as a
25 petroleum engineer accepted and made a matter of record?

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A. Yes, I have.

Q. And pursuant to this application have you made a study of the facts surrounding this application?

A. Yes.

MR. KELLAHIN: We tender Mr. Deckert as an expert petroleum engineer.

MR. STAMFITS: He is considered qualified.

Q. Mr. Deckert, would you turn to what we've marked as Exhibit Number One and identify that exhibit for us and explain what Conoco is seeking to accomplish?

A. Exhibit One is a map showing Conoco's Grace-Mitchell "B" waterflood. The portion of the lease that's now being waterflooded is outlined in red. This waterflood is being conducted by authority of Order No. R-4633, that's dated September 26, 1973, and WFX Order No. 462, dated June 13th, 1978.

You will note that the injection wells, Nos. 2, 5, and 6, are designated by red triangles on this map, and the producing wells, Nos. 3, 4, and 7, are designated by green circles on this map.

Q. When the Division originally approved the waterflood project back in September of '73, what were the original two injection wells?

A. The original two injection wells were

Nos. 2 and 6.

Q And subsequently injection well No. 5 was added by administrative order?

A. Yes.

Q All right. What are you seeking to accomplish by this application, Mr. Deckert?

A. Conoco wishes to amend Order No. R-4633 covering this Grace-Mitchell "B" waterflood to allow us to inject a CO₂ slug.

MR. KELLAHIN: If the Examiner please, I'll give you a copy of Order 4633 for your information.

Q Is the proposed substitution of CO₂ for the injection water the only change that you anticipate making for this waterflood project?

A. Yes, it is.

Q And that change is the only one you request in Order 4633?

A. Yes.

Q All right, sir, would you turn to Exhibit Number Two and identify that?

A. Exhibit Two is a graph showing the results of recent pressure parting tests that we have conducted on the three waterflood injectors. This testing showed that the surface parting pressure ranged from 1650 to 2200 pounds

1 and this is, I might say, equivalent to a surface gradient of
2 .46 to .55 psi per foot of depth.

3 Q. This is a step rate test used, or com-
4 piled as a result of the injection of water?

5 A. Yes, yes, it is.

6 Q. All right. The maximum injection pres-
7 sure at the surface that would preclude you from fracturing
8 the confining strata would be what pressure, Mr. Deckert?

9 A. Okay, I would refer to the Caprock test
10 that we recently conducted in the MCA Unit 2-1/2 miles south,
11 and this testing showed that the surface pressure would have
12 to exceed 2300 psi to initiate fractures in the confining
13 strata.

14 Q. What was that number again?

15 A. 2300 pounds.

16 Q. And that's a surface pressure?

17 A. Surface pressure, right.

18 Q. All right. You're making reference to
19 the carbon dioxide injection project by Conoco?

20 A. Yes.

21 Q. That was the subject of a hearing in
22 Case 6580 and resulted in Order R-6157?

23 A. Yes, I am.

24 MR. KELLAHIN: If the Examiner please,
25

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2 we'd like you to take administrative notice of the injection
3 pressures and the fracture information contained in that case,
4 and I have the Commission file here for you.

5 MR. STAMETS: Okay, we will make note of
6 that.

7 Q. Now tell me something about the use of
8 CO₂ as an injection medium for this flood project, Mr. Deckert.
9 First of all, is -- I assume the CO₂ is injected in a liquid
10 state?

11 A. Yes, it will be. For our present esti-
12 mates, we expect to recover about 90,000 barrels of oil from
13 the three producing wells during the remaining five-year
14 waterflood life. By using a CO₂ miscible process we estimate
15 that we would be able to recover an additional 70,000 barrels
16 of oil due to the action of the CO₂. Our plans call for
17 ceasing water injection and following immediately with the
18 injection of a 35,000 ton CO₂ slug, and this would represent
19 a 15 percent pore volume slug. We would -- we estimate it
20 would require some nine to ten months to inject this CO₂
21 volume, after which time we would return to the injection of
22 water.

23 MR. STAMETS: Did you say 15 percent?

24 A. Yes.

25 MR. STAMETS: Thank you.

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Q. What injection pressures do you intend to use, Mr. Deckert?

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A. We expect to inject CO₂ at a maximum of 1850 pounds surface pressure.

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Q. Would you equate for us the pressure calculations between those used for CO₂ and those used for the injection of water? In other words, the volumes of CO₂ to be injected are given to us in terms of tons.

10

11

12

A. Okay.

Q. Can you translate that into barrels of liquid and whatnot?

13

14

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A. Okay. The -- we estimate that we would be able to inject 125 tons a day, and this would equate to a volume of about 700 barrels of liquid per day.

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Q. Of CO₂?

A. Yes.

Q. All right. Now on a daily basis how -- what's your water volume?

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A. Current water injection volume is 900 barrels a day in the three injectors.

Q. Total for all three wells?

A. Yes.

Q. Okay. At the rate of 700 barrels of liquid CO₂ a day, what would be the surface pressure range

1
2 for the injection of that quantity of CO₂?

3 A. Okay, we would inject at a maximum of
4 1850 pounds and I might say that the density or specific gravity
5 of liquid CO₂ is very close to that of water. It's 1.05, as
6 a matter of fact.

7 Q Do you have a minimum injection pressure
8 that you're going to need in order to effectively inject the
9 CO₂ into the formation?

10 A. Yes, I would say that we would need a
11 minimum of 16-to-1700 pounds surface pressure.

12 Q And in your opinion so long as the sur-
13 face pressure remains below 2300 psi we would not fracture
14 the confining strata?

15 A. Yes.

16 Q All right. The injected formation is
17 the San Andres formation?

18 A. Yes.

19 Q Would you turn to Exhibit Number Three
20 and identify that for us?

21 A. Exhibit Three is a downhole schematic of
22 the No. 2 injection well, showing the casing and tubing and
23 packer configuration for this well.

24 Q And Exhibit Number Four?

25 A. Okay, similarly, Exhibit Four is a down-

1
2 hole schematic for the injection well No. 5.

3 Q Okay, and Exhibit Number Five.

4 A Exhibit Five is a downhole schematic for
5 injection well No. 6.

6 Q Now the three schematics, Exhibits Three,
7 Four, and Five represent how the injection wells are currently
8 completed for the injection of water?

9 A That's right.

10 Q Are there any changes needed or required
11 to inject the CO₂?

12 A We anticipate none.

13 Q Okay. Would you refer to Exhibit Number
14 Six and identify that?

15 A Okay. Exhibit Six is a letter of approval
16 from the USGS to inject CO₂ on the Grace-Mitchell lease, sub-
17 ject to approval by the NMOCD.

18 Q When do you anticipate, Mr. Deckert, that
19 you'll be ready to inject CO₂ into this project?

20 A As soon after the first of the year as
21 we can; the first of the year '81.

22 Q Were Exhibits One through Six prepared by
23 you or compiled under your direction and supervision?

24 A Yes, they were.

25 Q And in your opinion, Mr. Deckert, will

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2 approval of this application be in the best interests of
3 conservation, prevention of waste, and the protection of cor-
4 relative rights?

5 A. Yes, it would.

6 MR. KELLAHIN: That concludes our examin-
7 ation. We move the introduction of Exhibits One through Six.

8 MR. STAMETS: These exhibits will be
9 admitted.

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11 CROSS EXAMINATION

12 BY MR. STAMETS:

13 Q. Mr. Deckert, now you indicated you would
14 need at least 1600 to 1700 surface pressure during the in-
15 jection of the CO₂?

16 A. Yes.

17 Q. Okay, and then I believe one of the ex-
18 hibits showed the lowest frac pressure that you experienced
19 was 1850 pounds.

20 A. That's right.

21 Q. And under those -- under those conditions
22 would an 1800 pound pressure limitation be adequate for your
23 operation of the CO₂ project?

24 A. I believe so, yes.

25 Q. Okay. What sort of a recovery efficiency

1
2 have you experience on this project as a waterflood?

3 A. The indicated ultimate waterflood recovery
4 looks like it will be equal to primary recovery, which amounted
5 to 260,000 barrels.

6 Q. What is that as a percentage of oil in
7 place?

8 A. The original oil in place? Primary and
9 secondary will probably be 40 to 50 percent of the original
10 oil in place.

11 Q. Has Continental given any consideration
12 to infill drilling in the project?

13 A. Only in a -- we really haven't run out
14 any economics but we have looked at them in a sort of cur-
15 sory fashion.

16 Q. Have you -- what's the status of the
17 pilot project in Maljamar area?

18 A. Okay, we're currently drilling the four
19 producing wells in that pilot. You remember there was a
20 central injector, which we drilled and we tested, and so the
21 phase that we're on right now is drilling the four producing
22 wells.

23 Q. CO₂ injection has not begun in that area.

24 A. No. We probably won't be ready to in-
25 ject CO₂ down there for another 6 to 9 months.

Q Okay, so in effect this will be your pilot project.

A We'd precede -- yes, we'd actually precede the pilot.

Q The applications for injection wells since 1977 have required a submittal of the records of nearby wells, plugging reports, and whatnot; the idea of that being to prevent leakage of the injected fluid through those wells into zones that we don't want to get fluids into. This is an older project, obviously, and we probably don't have this information available to us. Are you aware of any problems on your own wells or other wells in the area indicating that there is any movement of fluid out of this zone?

A No, there's -- I'm not aware of any problems at all, either in the form of surface flows or down-hole flows.

Q The Division has been conducting extensive surveys in the last 3 - 4 years. I would presume this area has been surveyed by Division personnel.

A The -- that would be the Bradenhead surveys?

Q Right.

A I believe that's correct on this lease.

Q So if there had been any problem, we

1
2 probably would have known about it and it would be a part of
3 the records of the Division.

4 A. Yes.

5 Q. Okay. We'll examine those subsequent
6 to the hearing and see if our records indicate there are any
7 problems in the area.

8 Okay, you've asked for a minimum of two
9 orders and it's basically to change the injected fluid from
10 water to CO₂, followed by a waterflood.

11 A. That's right.

12 Q. Okay. One thing that will need to be
13 done in the way of reporting the current reports on Form
14 C-115, would be in barrels of water, and we would need to note
15 on Form C-115 when the CO₂ slug was injected and that should
16 be clearly marked maybe with a red pen or something during
17 the CO₂ injection phase.

18 A. CO₂ injection phase. Okay.

19 Q. So that we can properly account for that
20 in the record.

21 A. Okay.

22 MR. STAMETS: Any other questions of
23 this witness?

24 Mr. Sexton, I see you back there and
25 you're our District Supervisor in Hobbs. Are you aware of

1
2 any problems which have been experienced with water flows or
3 any other problems related to injection in this area?

4 MR. SEXTON: No, not offhand. I'm sure
5 we have reviewed (inaudible.)

6 MR. STAMETS: Any other questions of
7 this witness? He may be excused.

8 Anything further in this case?

9 The case will be taken under advisement.

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11 (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 Conserva-
tion Division 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 C.S.R.

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 7104,
heard by me on 12-10 1980.
Richard L. Stum, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
10 December 1980

EXAMINER HEARING

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TRANSCRIPT OF HEARING

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State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

W. Thomas Kellahin, Esq.
KELLAHIN & KELLAHIN
500 Don Gaspar
Santa Fe, New Mexico 87501

I N D E X

LOWELL DECKERT

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E X H I B I T S

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17 DIRECT EXAMINATION

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20 name and occupation?

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23 Q Mr. Deckert, have you previously testi-
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25 petroleum engineer accepted and made a matter of record?

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2 A. Yes, I have.

3 Q. And pursuant to this application have
4 you made a study of the facts surrounding this application?

5 A. Yes.

6 MR. KELLAHIN: We tender Mr. Deckert as
7 an expert petroleum engineer.

8 MR. STAMETS: He is considered qualified.

9 Q. Mr. Deckert, would you turn to what we've
10 marked as Exhibit Number One and identify that exhibit for us
11 and explain what Conoco is seeking to accomplish?

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16 that's dated September 26, 1973, and WFX Order No. 462, dated
17 June 13th, 1973.

18 You will note that the injection wells,
19 Nos. 2, 5, and 6, are designated by red triangles on this
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Q And subsequently injection well No. 5 was added by administrative order?

A Yes.

Q All right. What are you seeking to accomplish by this application, Mr. Deckert?

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MR. KELLAMIN: If the Examiner please, I'll give you a copy of Order 4633 for your information.

Q Is the proposed substitution of CO₂ for the injection water the only change that you anticipate making for this waterflood project?

A Yes, it is.

Q And that change is the only one you request in Order 4633?

A Yes.

Q All right, sir, would you turn to Exhibit Number Two and identify that?

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11 that we recently conducted in the MCA Unit 2-1/2 miles south,
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13 to exceed 2300 psi to initiate fractures in the confining
14 strata.

15 Q What was that number again?

16 A 2300 pounds.

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18 A Surface pressure, right.

19 Q All right. You're making reference to
20 the carbon dioxide injection project by Conoco?

21 A Yes.

22 Q That was the subject of a hearing in
23 Case 6580 and resulted in Order R-6157?

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25 MR. KELIAHIN: If the Examiner please,

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3 pressures and the fracture information contained in that case,
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6 that.

7 Q Now tell me something about the use of
8 CO₂ as an injection medium for this flood project, Mr. Deckert.
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17 ceasing water injection and following immediately with the
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19 a 15 percent pore volume slug. We would -- we estimate it
20 would require some nine to ten months to inject this CO₂
21 volume, after which time we would return to the injection of
22 water.

23 MR. STAMETS: Did you say 15 percent?

24 A Yes.

25 MR. STAMETS: Thank you.

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A We expect to inject CO₂ at a maximum of 1850 pounds surface pressure.

Q Would you equate for us the pressure calculations between those used for CO₂ and those used for the injection of water? In other words, the volumes of CO₂ to be injected are given to us in terms of tons.

A Okay.

Q Can you translate that into barrels of liquid and whatnot?

A Okay. The -- we estimate that we would be able to inject 125 tons a day, and this would equate to a volume of about 700 barrels of liquid per day.

Q Of CO₂?

A Yes.

Q All right. Now on a daily basis how -- what's your water volume?

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11 minimum of 16-to-1700 pounds surface pressure.

12 Q. And in your opinion so long as the sur-
13 face pressure remains below 2300 psi we would not fracture
14 the confining strata?

15 A. Yes.

16 Q. All right. The injected formation is
17 the San Andres formation?

18 A. Yes.

19 Q. Would you turn to Exhibit Number Three
20 and identify that for us?

21 A. Exhibit Three is a downhole schematic of
22 the No. 2 injection well, showing the casing and tubing and
23 packer configuration for this well.

24 Q. And Exhibit Number Four?

25 A. Okay, similarly, Exhibit Four is a down-

1 hole schematic for the injection well No. 5.

2 Q Okay, and Exhibit Number Five.

3 A Exhibit Five is a downhole schematic for
4 injection well No. 6.

5 Q Now the three schematics, Exhibits Three,
6 Four, and Five represent how the injection wells are currently
7 completed for the injection of water?

8 A That's right.

9 Q Are there any changes needed or required
10 to inject the CO₂?

11 A We anticipate none.

12 Q Okay. Would you refer to Exhibit Number
13 Six and identify that?

14 A Okay. Exhibit Six is a letter of approval
15 from the USGS to inject CO₂ on the Grace-Mitchell lease, sub-
16 ject to approval by the NMOCD.

17 Q When do you anticipate, Mr. Deckert, that
18 you'll be ready to inject CO₂ into this project?

19 A As soon after the first of the year as
20 we can; the first of the year '81.

21 Q Were Exhibits One through Six prepared by
22 you or compiled under your direction and supervision?

23 A Yes, they were.

24 Q And in your opinion, Mr. Deckert, will
25

1
2 approval of this application be in the best interests of
3 conservation, prevention of waste, and the protection of cor-
4 relative rights?

5 A. Yes, it would.

6 MR. KELLAHIN: That concludes our examin-
7 ation. We move the introduction of Exhibits One through Six.

8 MR. STAMETS: These exhibits will be
9 admitted.

10
11 CROSS EXAMINATION

12 BY MR. STAMETS:

13 Q Mr. Deckert, now you indicated you would
14 need at least 1600 to 1700 surface pressure during the in-
15 jection of the CO₂?

16 A. Yes.

17 Q Okay, and then I believe one of the ex-
18 hibits showed the lowest frac pressure that you experienced
19 was 1850 pounds.

20 A. That's right.

21 Q And under those -- under those conditions
22 would an 1800 pound pressure limitation be adequate for your
23 operation of the CO₂ project?

24 A. I believe so, yes.

25 Q Okay. What sort of a recovery efficiency

1

2

have you experience on this project as a waterflood?

3

A. The indicated ultimate waterflood recovery

4

looks like it will be equal to primary recovery, which amounted to 260,000 barrels.

5

6

Q. What is that as a percentage of oil in

7

place?

8

A. The original oil in place? Primary and

9

secondary will probably be 40 to 50 percent of the original

10

oil in place.

11

Q. Has Continental given any consideration

12

to infill drilling in the project?

13

A. Only in a -- we really haven't run out

14

any economics but we have looked at them in a sort of cur-

15

sory fashion.

16

Q. Have you -- what's the status of the

17

pilot project in Maljamar area?

18

A. Okay, we're currently drilling the four

19

producing wells in that pilot. You remember there was a

20

central injector, which we drilled and we tested, and so the

21

phase that we're on right now is drilling the four producing

22

wells.

23

Q. CO₂ injection has not begun in that area.

24

A. No. We probably won't be ready to in-

25

ject CO₂ down there for another 6 to 9 months.

Q Okay, so in effect this will be your pilot project.

A We'd precede -- yes, we'd actually precede the pilot.

Q The applications for injection wells since 1977 have required a submittal of the records of nearby wells, plugging reports, and whatnot; the idea of that being to prevent leakage of the injected fluid through those wells into zones that we don't want to get fluids into. This is an older project, obviously, and we probably don't have this information available to us. Are you aware of any problems on your own wells or other wells in the area indicating that there is any movement of fluid out of this zone?

A No, there's -- I'm not aware of any problems at all, either in the form of surface flows or down-hole flows.

Q The Division has been conducting extensive surveys in the last 3 - 4 years. I would presume this area has been surveyed by Division personnel.

A The -- that would be the Bradenhead surveys?

Q Right.

A I believe that's correct on this lease.

Q So if there had been any problem, we

1
2 probably would have known about it and it would be a part of
3 the records of the Division.

4 A. Yes.

5 Q. Okay. We'll examine those subsequent
6 to the hearing and see if our records indicate there are any
7 problems in the area.

8 Okay, you've asked for a minimum of two
9 orders and it's basically to change the injected fluid from
10 water to CO₂, followed by a waterflood.

11 A. That's right.

12 Q. Okay. One thing that will need to be
13 done in the way of reporting the current reports on Form
14 C-115, would be in barrels of water, and we would need to note
15 on Form C-115 when the CO₂ slug was injected and that should
16 be clearly marked maybe with a red pen or something during
17 the CO₂ injection phase.

18 A. CO₂ injection phase. Okay.

19 Q. So that we can properly account for that
20 in the record.

21 A. Okay.

22 MR. STAMETS: Any other questions of
23 this witness?

24 Mr. Sexton, I see you back there and
25 you're our District Supervisor in Hobbs. Are you aware of

1
2 any problems which have been experienced with water flows or
3 any other problems related to injection in this area?

4 MR. SEXTON: No, not offhand. I'm sure
5 we have reviewed (inaudible.)

6 MR. STAMETS: Any other questions of
7 this witness? He may be excused.

8 Anything further in this case?

9 The case will be taken under advisement.

10
11 (Hearing concluded.)
12
13
14
15
16
17
18
19
20
21
22
23
24
25

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 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 C.S.R.

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

_____, Examiner
Oil Conservation Division

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5062
Order No. R-4633

APPLICATION OF CONTINENTAL OIL
COMPANY FOR A WATERFLOOD PROJECT,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 5, 1973, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 26th day of September, 1973, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Continental Oil Company, seeks authority to institute a waterflood project on its Mitchell Lease, Maljamar Pool, by the injection of water into the Grayburg-San Andres formation through two injection wells in Section 5, Township 17 South, Range 32 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

-2-

Case No. 5062
Order No. R-4633

(6) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to institute a waterflood project on its Mitchell Lease, Maljamar Pool, by the injection of water into the Grayburg-San Andres formation in the open-hole interval in the following-described wells in Township 17 South, Range 32 East, NMPM, Lea County, New Mexico:

Mitchell Well No. 2	Unit P	Section 5
Mitchell Well No. 6	Unit J	Section 5

(2) That the subject waterflood project is hereby designated the Continental Maljamar Mitchell Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That injection into each of the aforesaid two wells shall be through internally cement-lined tubing set in a packer as close as is practicable to the casing shoe, and the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or other leak-sensing device in order to detect any leakage in the tubing, casing, or packer.

(4) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the casing, tubing, or packer in any of said injection wells, the leakage of water or oil from around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(5) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(6) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

-3-
Case No. 5062
Order No. R-4633

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


I. R. Trujillo
I. R. TRUJILLO, Chairman

Alex J. Armiijo
ALEX J. ARMIJO, Member

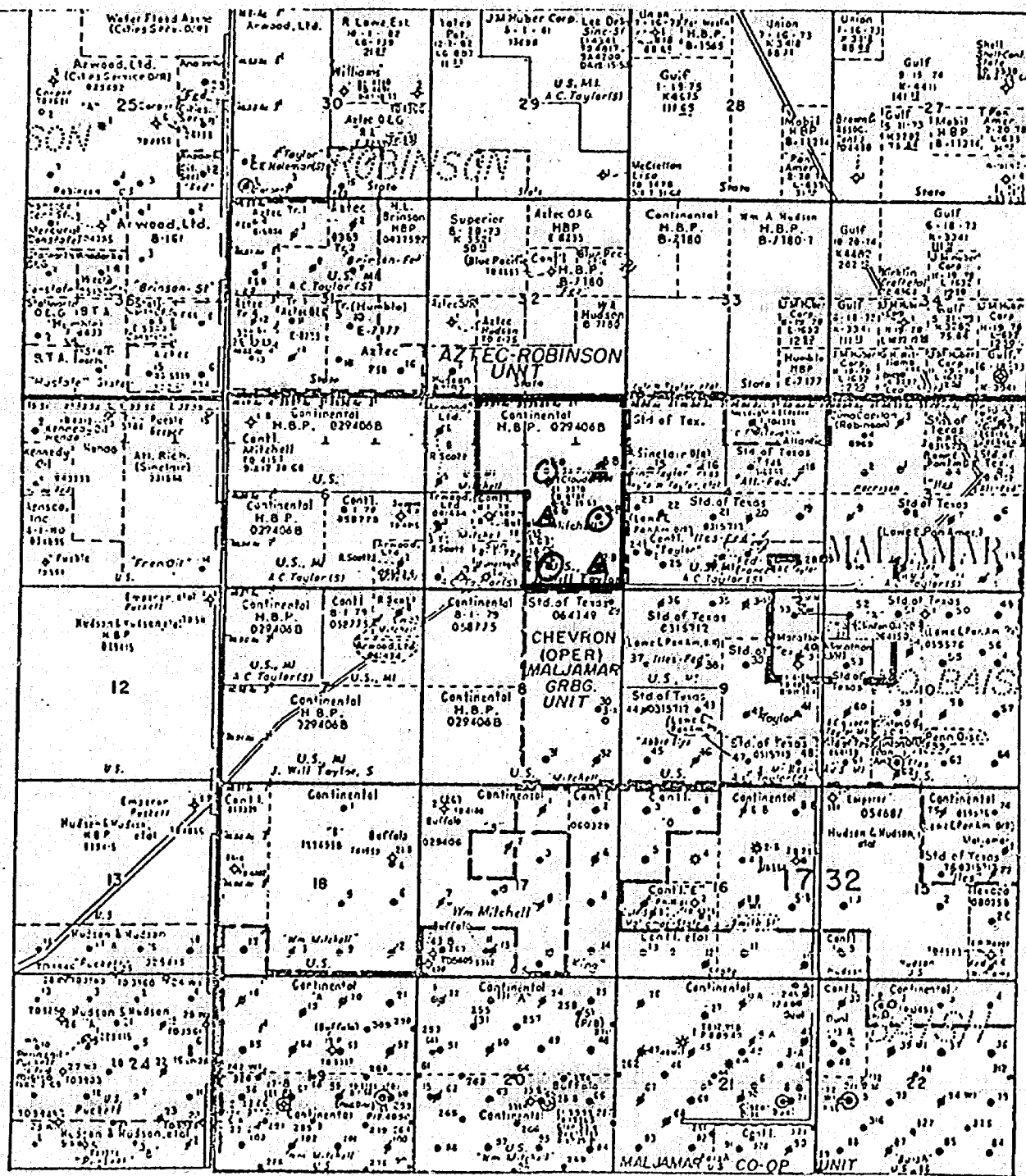
A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

EXHIBIT #1

GRACE MITCHELL "B" LEASE



BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 7

CASE NO. 7104

Submitted by Canoco Inc.

Hearing Date 12-10-80

102 KEUFFEL & ESSER CO. VINNY

46 14/3

EXHIBIT # 2

STEP RATE TEST

~~STEP RATE TESTERS OF NEW MEXICO~~

COMPANY: CONOCO INC.
WELL: G. MITCHELL B #2, 5, & 6
FIELD: HAL JAMAR
DATE: 12-5-80

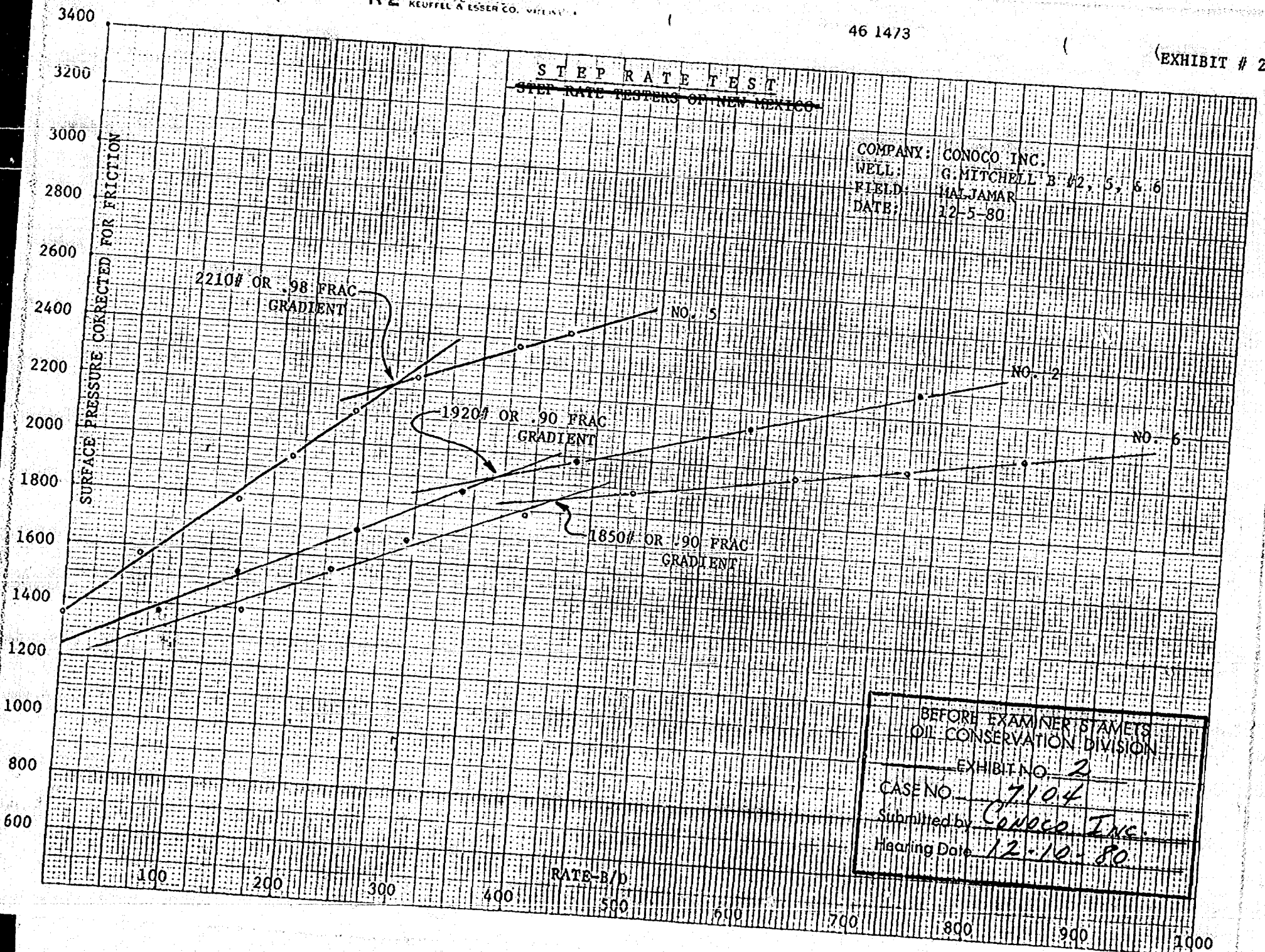
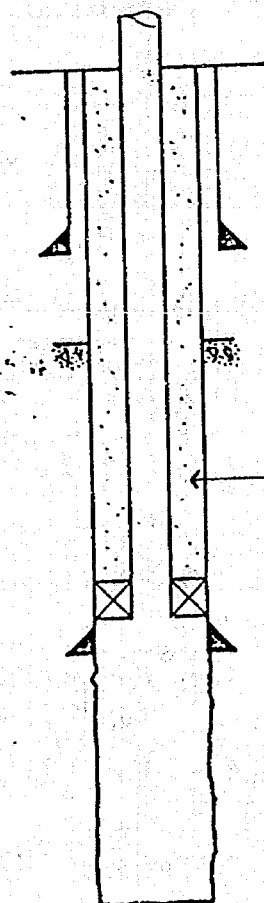


EXHIBIT #3

GRACE MITCHELL "B" LEASE
WELL NO. 2
660' FSL & 660' FEL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV: 4098' DF



8 5/8" @ 883 W/325 SX

TOC @ 2100'

CORROSION INHIBITED FLUID

CEMENT LINED TUBING W/PACKER SET AT 3975'
4 1/2" @ 4025 W/250 SX

PBD 4110'

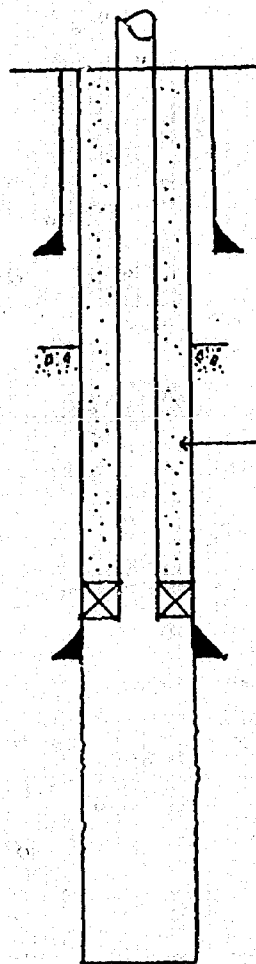
T. D. 5650'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 3
CASE NO. 7104
Submitted by CONOCO INC.
Hearing Date 12-10-80

EXHIBIT #4

GRACE MITCHELL "B" LEASE
WELL NO. 5
1980' FNL & 660' FEL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV. 4131' DF



7 5/8" @ 1007' W/475 SX

TOC @ 2400'

CORROSION INHIBITED FLUID

PLASTIC COATED TUBING W/PACKER SET AT 3761'
4 1/2" @ 3880' W/225 SX

T. D. 4132'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 4

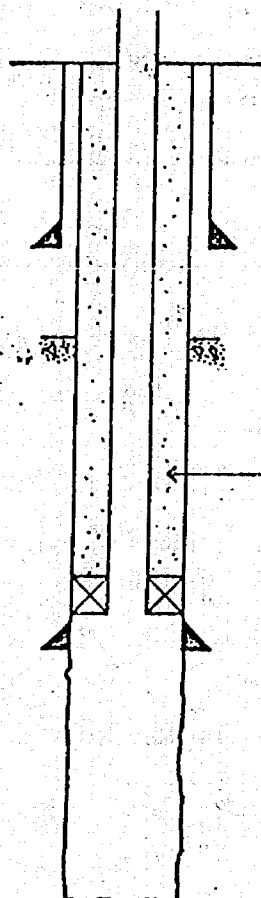
CASE NO. 7104

Submitted by Canoco Inc.

Hearing Date 12-10-80

EXHIBIT #5

GRACE MITCHELL "B" LEASE
WELL NO. 6
1980' FSL & EL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV. 4103' DF



7 5/8" @ 950 W/475 SX

TOC BY TEMP. SURVEY @ 1900'

CORROSION INHIBITED FLUID

CEMENT LINED TUBING WITH PACKER SET AT 3868'

4 1/2" @ 3927' WITH 225 SX CEMENT.

T. D. 4085'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 5

CASE NO. 7104

Submitted by CONOCO INC.

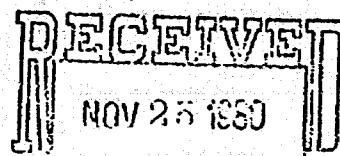
Hearing Date 12-10-80



EXHIBIT #6

OperatorL. P. Thompson
Division ManagerJohn R. Kemp
Assistant Division ManagerProduction Department
Hobbs Division
North American ProductionConoco Inc.
P.O. Box 460
1001 North Turner
Hobbs, NM 88240
(505) 393-4141

November 21, 1980

United States Department of the Interior
Geological Survey
Drawer 1857
Roswell, New Mexico 88201U.S. GEOLOGICAL SURVEY
ROSWELL, NEW MEXICO

Attention: Mr. Jerry Long

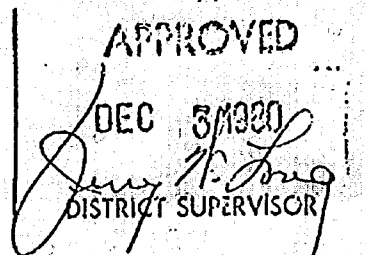
Gentlemen:

Re: CO₂ Injection - Grace Mitchell "B" Lease - Section 5, T-17S, R-32E,
Lea County, New Mexico

Your approval is respectfully requested for Conoco Inc. to convert our Grace Mitchell "B" Lease from water injection to carbon dioxide injection. We wish to place this matter on the NMOC D Examiner Docket of December 10, 1980. No changes other than the type of agent to be injected are planned. It is expected that CO₂ will be injected for a period of about 10 months beginning in January 1981, after which time water injection will be resumed. We feel that recovery of oil which would not otherwise be recovered can be accomplished by this conversion.

If you have no objection to this proposal, please sign below and return one copy of this letter to us at your earliest convenience. A self-addressed envelope is enclosed for your convenience. Should you have any questions, we would appreciate your calling Hugh Ingram in this office.

Yours very truly,

HAI:d11

BEFORE EXAMINER STAMETS OIL CONSERVATION DIVISION	
EXHIBIT NO.	6
CASE NO.	7104
Submitted by	Conoco Inc.
Hearing Date	12-10-80

Approved: _____

United States Geological Survey

SUBJECT TO APPROVAL BY NMOC D
JAL

EXHIBIT #1

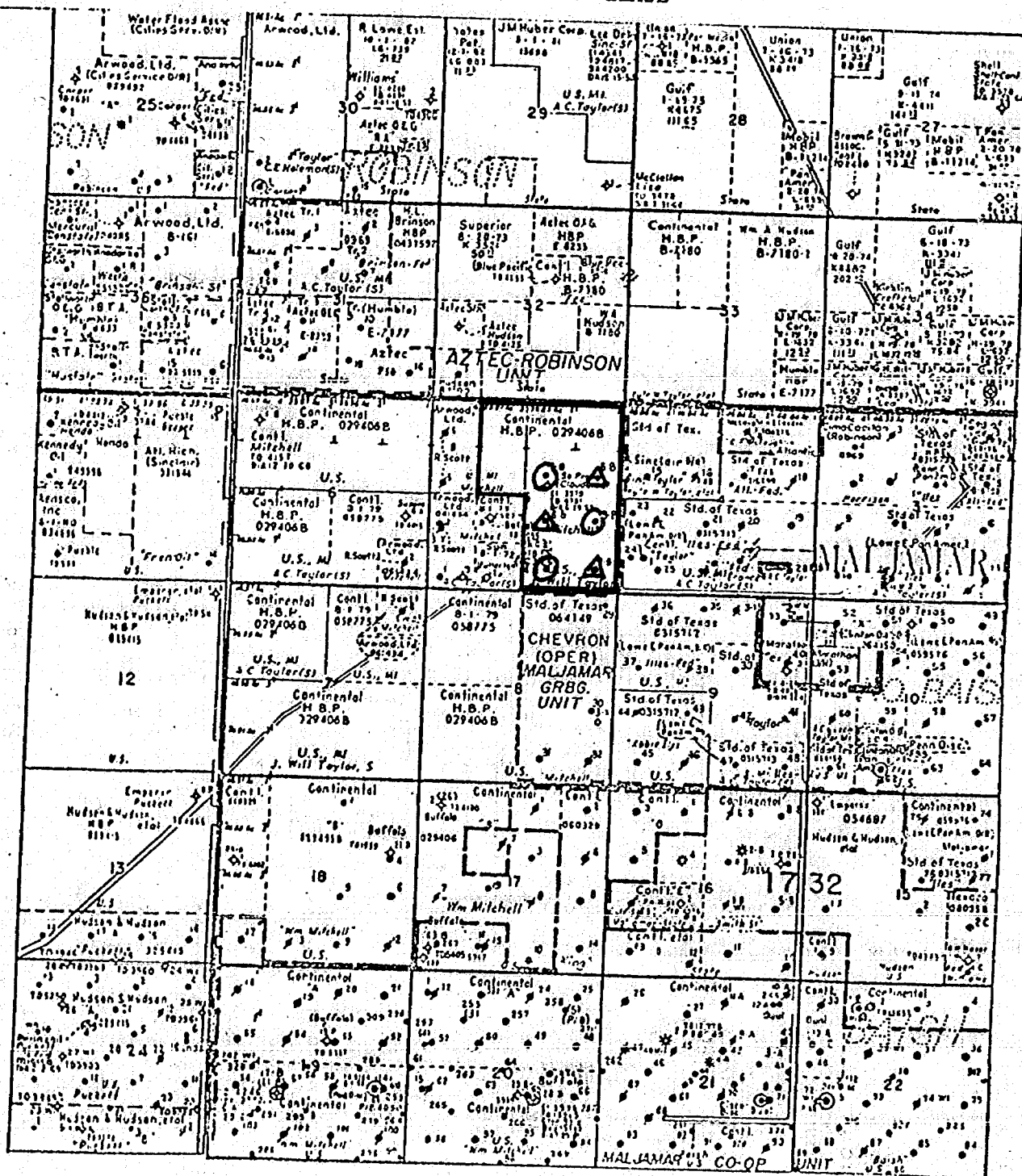


EXHIBIT NO. 1

CASE NO. 7104

Submitted by CONACO INC.

Hearing Date 12-10-80

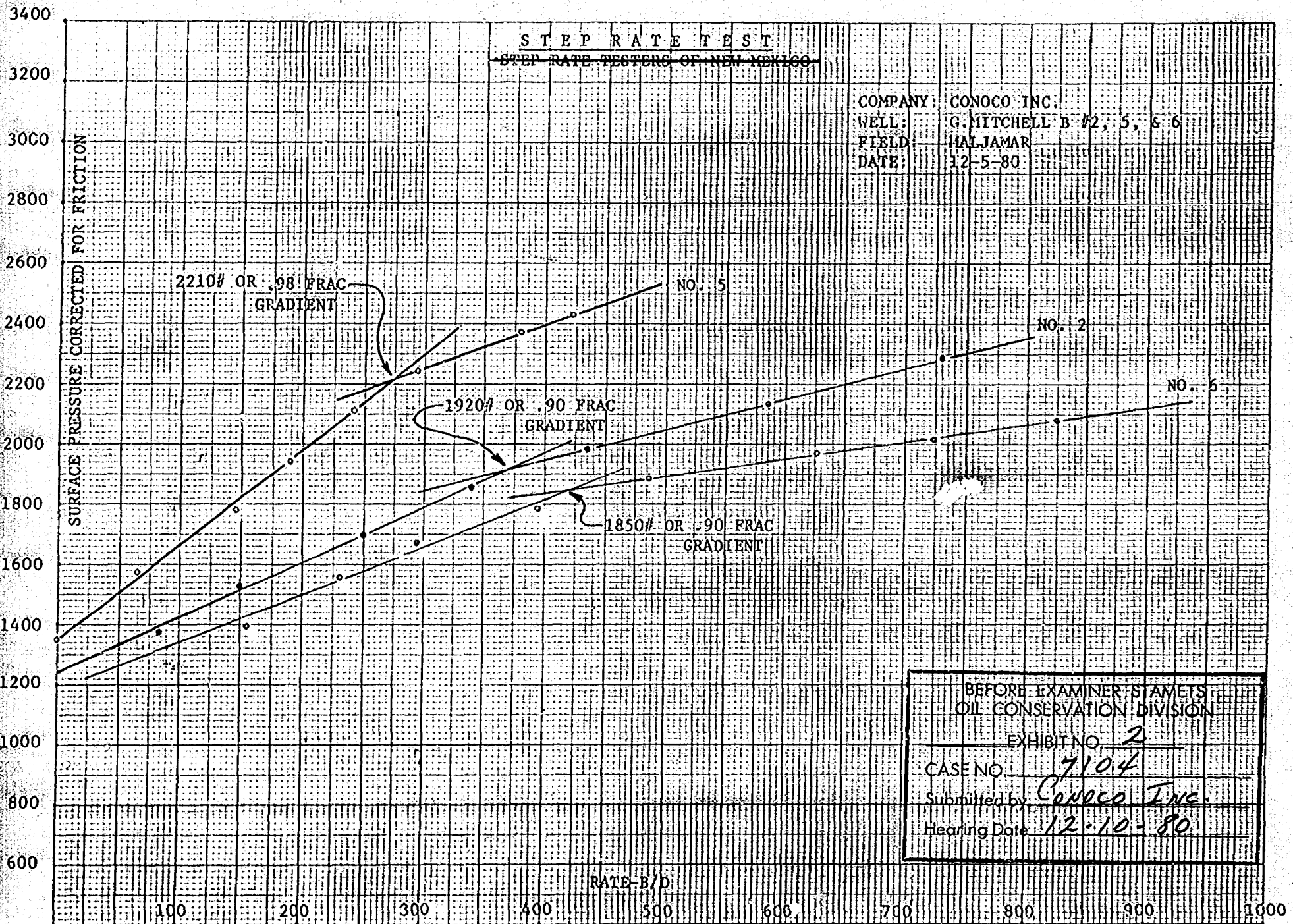
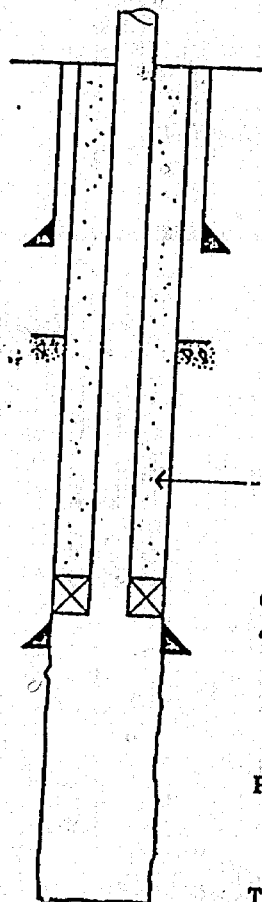


EXHIBIT #3

GRACE MITCHELL "B" LEASE
WELL NO. 2
660' FSL & 660' FEL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV. 4098' DF



8 5/8" @ 883 W/325 SX

TOG @ 2100'

CORROSION INHIBITED FLUID

CEMENT LINED TUBING W/PACKER SET AT 3975'
4 1/2" @ 4025 W/250 SX

PBD 4110'

T. D. 5650'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 3

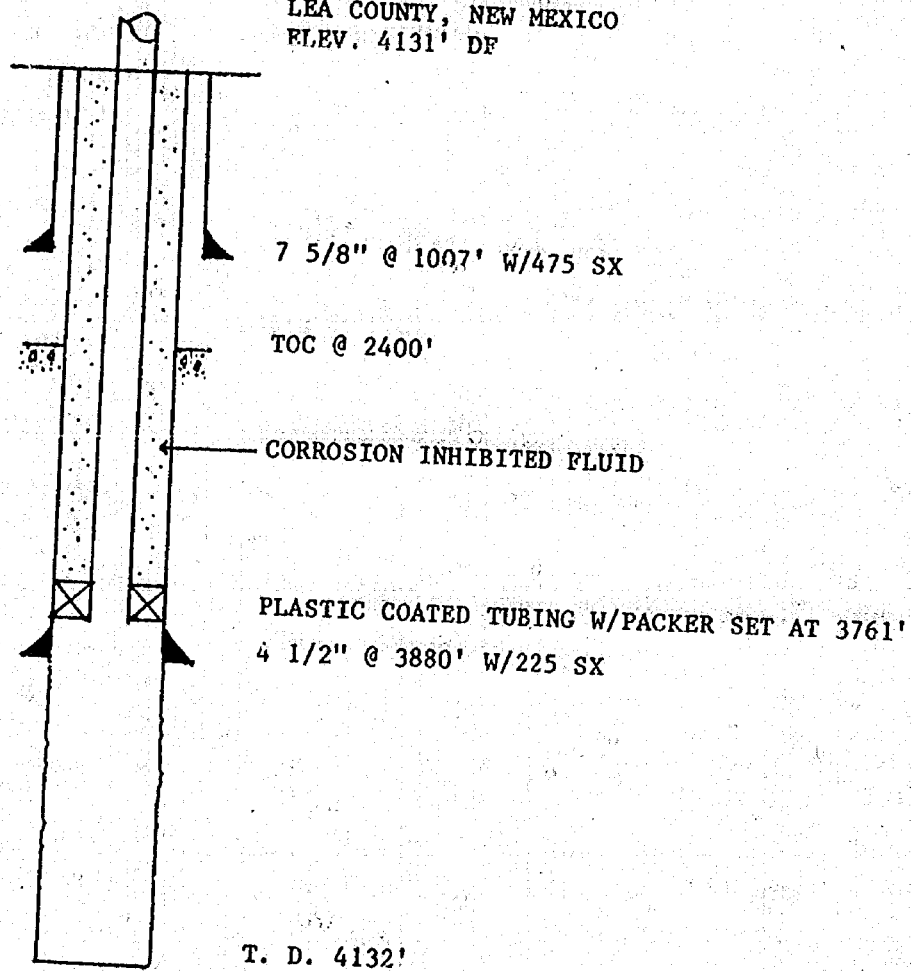
CASE NO. 7104

Submitted by CONOCO INC.

Hearing Date 12-10-80

GRACE MITCHELL "B" LEASE
WELL NO. 5
1980' FNL & 660' FEL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV. 4131' DF

EXHIBIT #4

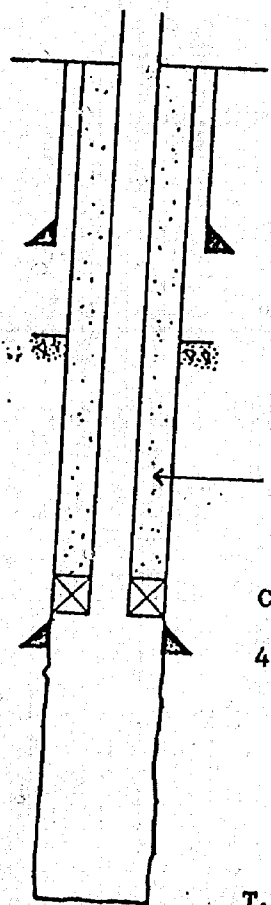


T. D. 4132'

BEFORE EXAMINER STAMETS OIL CONSERVATION DIVISION	
EXHIBIT NO.	4
CASE NO.	7104
Submitted by	CONOCO INC.
Hearing Date	12-10-80

EXHIBIT #5

GRACE MITCHELL "B" LEASE
WELL NO. 6
1980' FSL & EL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV. 4103' DF



7 5/8" @ 950 W/475 SX

TOC BY TEMP. SURVEY @ 1900'

CORROSION INHIBITED FLUID

CEMENT LINED TUBING WITH PACKER SET AT 3868'
4 1/2" @ 3927' WITH 225 SX CEMENT.

T. D. 4085'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 5

CASE NO. 7104

Submitted by. CONOCO INC.

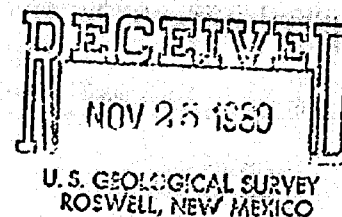
Hearing Date 12-10-80



EXHIBIT #6

OperatorL. P. Thompson
Division ManagerJohn R. Kemp
Assistant Division ManagerProduction Department
Hobbs Division
North American ProductionConoco Inc.
P.O. Box 460
1001 North Turner
Hobbs, NM 88240
(505) 393-4141

November 21, 1980

United States Department of the Interior
Geological Survey
Drawer 1857
Roswell, New Mexico 88201

Attention: Mr. Jerry Long

Gentlemen:

Re: Co₂ Injection - Grace Mitchell "B" Lease - Section 5, T-17S, R-32E,
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If you have no objection to this proposal, please sign below and return one copy of this letter to us at your earliest convenience. A self-addressed envelope is enclosed for your convenience. Should you have any questions, we would appreciate your calling Hugh Ingram in this office.

Yours very truly,

HAI:d11

APPROVED

DEC 3 1980

DISTRICT SUPERVISOR

BEFORE EXAMINER STAMETS OIL CONSERVATION DIVISION	
EXHIBIT NO.	6
CASE NO.	7104
Submitted by	CONOCO INC.
Hearing Date	12-10-80

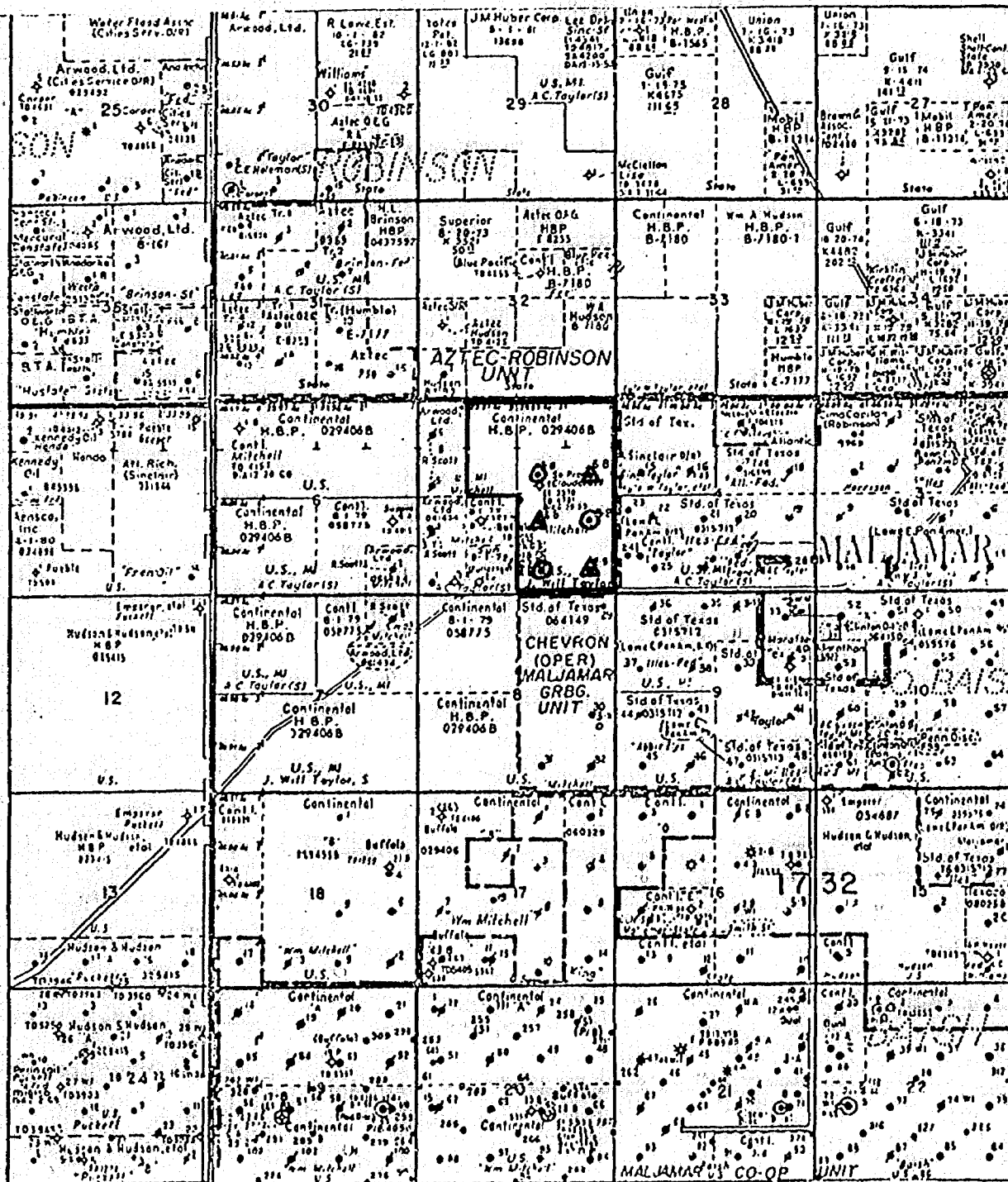
Approved:

United States Geological Survey

SUBJECT TO APPROVAL BY NMOC D
JAL

CONOCO INC.
GRACE MITCHELL, "B" LEASE

EXHIBIT #1



BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 1

CASE NO. 7104

Submitted by Conoco Inc.

Hearing Date 12-10-80

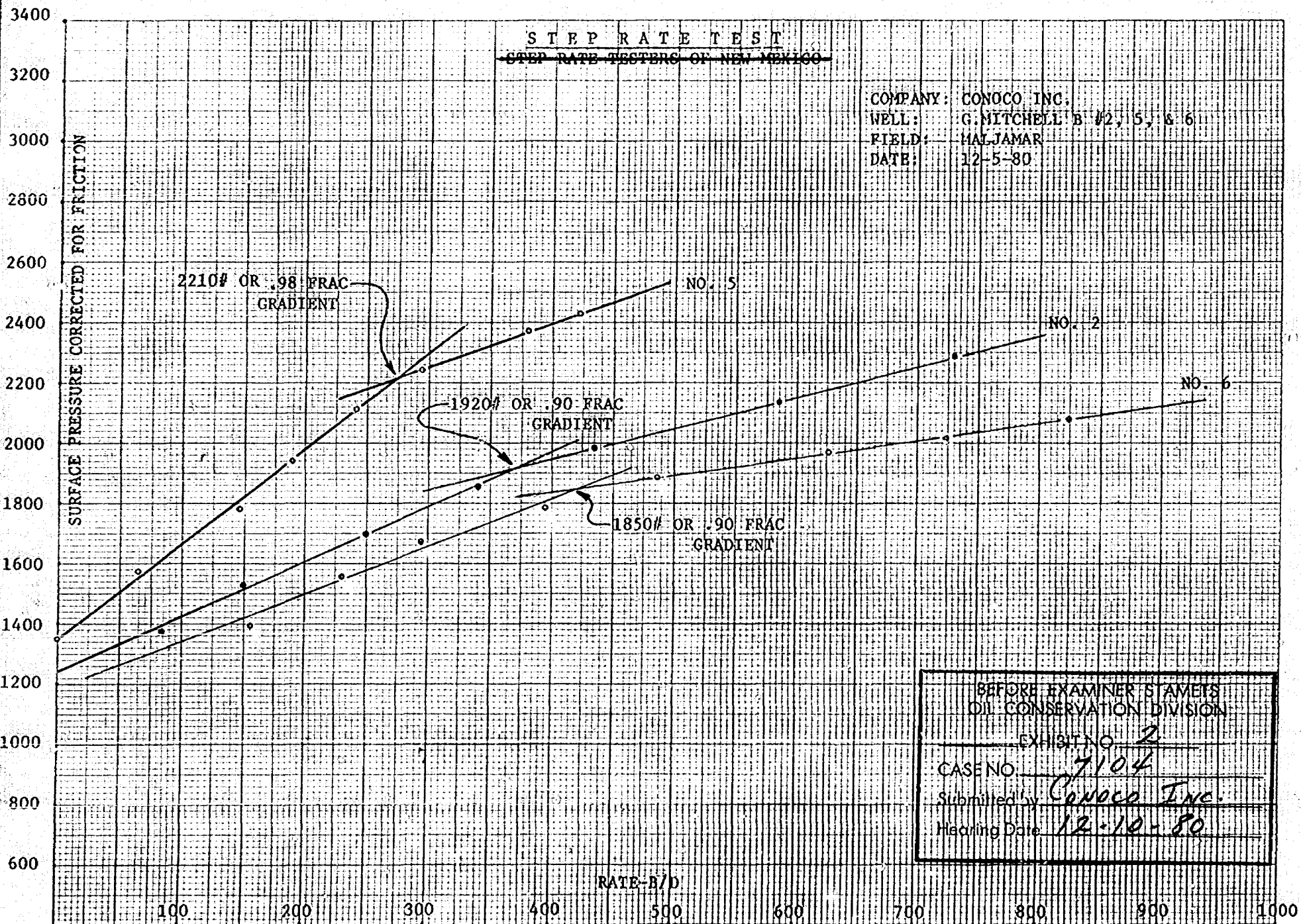
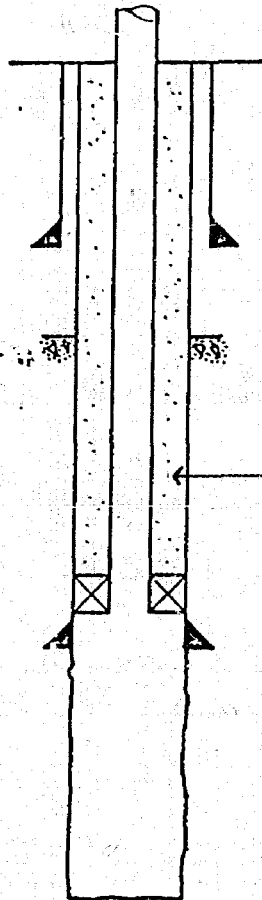


EXHIBIT #3

GRACE MITCHELL "B" LEASE
WELL NO. 2
660' FSL & 660' FEL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV. 4098' DF



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PBD 4110'

T. D. 5650'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 3

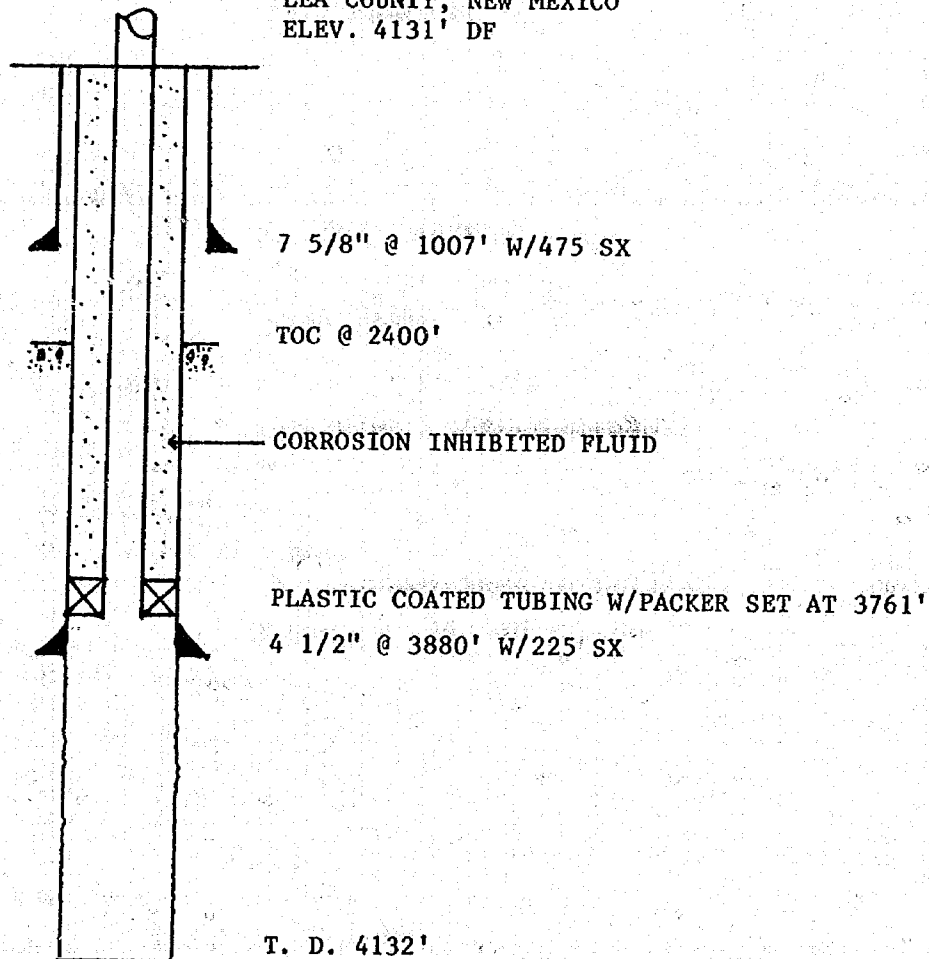
CASE NO. 7104

Submitted by CANOCO INC.

Hearing Date 12-10-80

EXHIBIT #4

GRACE MITCHELL "B" LEASE
WELL NO. 5
1980' FNL & 660' FEL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
ELEV. 4131' DF



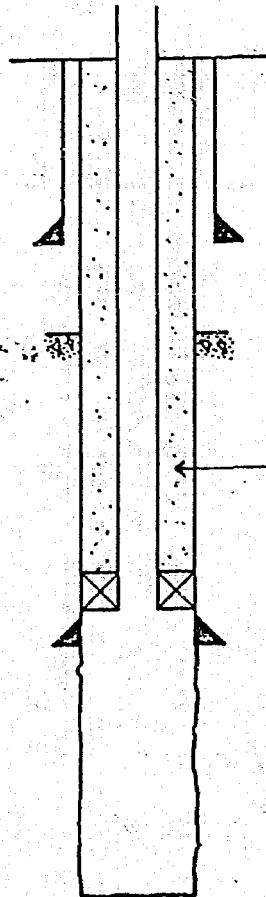
T. D. 4132'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 4
CASE NO. 7104
Submitted by CONOCO INC.
Hearing Date 12-10-80

EXHIBIT #5

GRACE MITCHELL "B" LEASE
WELL NO. 6
1980' FSL & EL
SEC. 5-17-32
LEA COUNTY, NEW MEXICO
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7 5/8" @ 950 W/475 SX

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4 1/2" @ 3927' WITH 225 SX CEMENT.

T. D. 4085'

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

EXHIBIT NO. 5

CASE NO. 7104

Submitted by Canoco Inc.

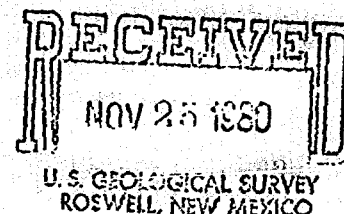
Hearing Date 12-10-80



EXHIBIT #6

OperatorL. P. Thompson
Division ManagerJohn R. Kemp
Assistant Division ManagerProduction Department
Hobbs Division
North American ProductionConoco Inc.
P.O. Box 460
1001 North Turner
Hobbs, NM 88240
(505) 393-4141

November 21, 1980

United States Department of the Interior
Geological Survey
Drawer 1857
Roswell, New Mexico 88201

Attention: Mr. Jerry Long

Gentlemen:

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Yours very truly,

RAI:d11

APPROVED

DEC 3/1980

DISTRICT SUPERVISOR

BEFORE EXAMINER STAMETS OIL CONSERVATION DIVISION	
EXHIBIT NO.	6
CASE NO.	7104
Submitted by	Conoco Inc.
Hearing Date	12-10-80

Approved:

United States Geological Survey

SUBJECT TO APPROVAL By NMOCD

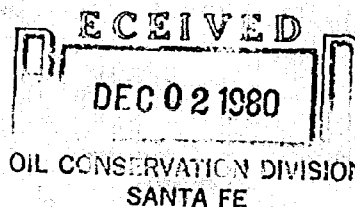


L. P. Thompson
Division Manager

John R. Kemp
Assistant Division Manager

Production Department
Hobbs Division
North American Production

Conoco Inc.
P.O. Box 460
1001 North Turner
Hobbs, NM 88240
(505) 393-4141



November 20, 1980

Oil Conservation Division
Department of Energy and Minerals
State of New Mexico
P.O. Box 2088
Santa Fe, New Mexico 87501

Case 7004

Attention: Mr. Dan Nutter

Gentlemen:

Application of Conoco Inc. for Authority to Convert from Water to Carbon Dioxide Injection - Grace Mitchell "B" Lease

Attached in triplicate is Conoco Inc.'s application as shown above. Please schedule this matter on the December 10, 1980 Examiner Docket.

Yours very truly,

HAI:d11

RECEIVED
DEC 02 1980

BEFORE THE OIL CONSERVATION DIVISION
OF THE OIL CONSERVATION DIVISION
NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS SANTA FE

IN THE MATTER OF THE APPLICATION OF
CONOCO INC. FOR AUTHORITY TO CONVERT
FROM WATER INJECTION TO CARBON DIOXIDE
INJECTION IN ITS MITCHELL WATERFLOOD
PROJECT, LOCATED IN SECTION 5, T-17S,
R-32E, LEA COUNTY, NEW MEXICO

Case 7104

APPLICATION

Applicant, Conoco Inc., respectfully requests authority to convert its Grace Mitchell "B" Lease waterflood project located in Section 5, T-17S, R-32E, Lea County, New Mexico, Maljamar Grayburg-San Andres Pool, from water injection to carbon dioxide injection, and in support thereof will show:

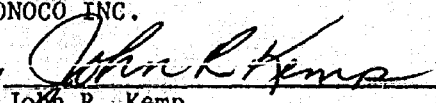
1. Applicant is owner and operator of the Grace Mitchell "B" Lease, which in addition to other lands includes the E/2, E/2 NW/4 of Section 5, T-17S, R-32E, Lea County, New Mexico.
2. Applicant was authorized by Order R-4633 to institute a waterflood project by injecting water into the Grayburg-San Andres Formation in Wells No. 2 and 6, located in units P and J, respectively, of said Section 5.
3. Applicant was authorized by Order WFX 462 to inject water into well No. 5, located in Unit H of Section 5.
4. That the injection of carbon dioxide will result in the recovery of oil that would not otherwise be recovered.
5. That the granting of this application will prevent waste and will not impair the correlative rights of any party.

WHEREFORE, applicant respectfully requests that this matter be set for hearing before the Division's duly appointed examiner and, upon hearing, an order be entered authorizing the conversion from water injection to carbon dioxide injection as described above.

Respectfully submitted,

CONOCO INC.

By


John R. Kemp

Assistant Division Manager of Production

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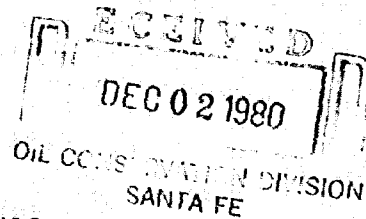
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Respectfully submitted,

CONOCO INC.

By


John R. Kemp

Assistant Division Manager of Production

CASE 7103: Application of E. L. Latham, Jr. for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp thru Pennsylvanian formations underlying the N/2 of Section 7, Township 22 South, Range 26 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7104: Application of Conoco Inc. for the amendment of Orders Nos. R-4633 and WFX-462, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Division Orders Nos. R-4633 and WFX-462, which authorized the injection of water into applicant's Maljamar Mitchell Waterflood Project in Section 5, Township 17 South, Range 32 East. The amendments sought would include carbon dioxide in the injection authorization for said project.

CASE 7105: Application of C and E Operators, Inc. for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mesaverde formation underlying the N/2 of Section 9, Township 30 North, Range 11 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7106: Application of C and E Operators, Inc. for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mesaverde formation underlying the S/2 of Section 8, Township 30 North, Range 11 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7107: Application of C and E Operators, Inc. for compulsory pooling and a non-standard proration unit, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mesaverde formation underlying a 158.54-acre non-standard gas proration unit comprising the SW/4 of Section 9, Township 30 North, Range 11 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7090: (Continued from November 25, 1980, Examiner Hearing)

Application of Dorchester Exploration, Inc. for directional drilling and an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to re-enter the old Union Hill Well No. 1, the surface location of which is 2310 feet from the North and West lines of Section 27, Township 12 South, Range 28 East, and to directionally drill in an indeterminate direction from a kick-off point at 7300 feet, bottoming said well at an approximate depth of 8100 feet in the Mississippian formation less than 330 feet away from the surface location. The W/2 of said Section 27 would be dedicated to the well.

CASE 6668: (Continued from November 25, 1980, Examiner Hearing)

In the matter of Case 6668 being reopened pursuant to the provisions of Order No. R-6139 which order promulgated temporary special rules and regulations for the South Culebra Bluff-Bone Spring Pool in Eddy County, New Mexico, including a provision for 80-acre spacing units. Operators in said pool may appear and show cause why the pool should not be developed on 40-acre spacing units.

CASE 7092: (Continued from November 25, 1980, Examiner Hearing)

Application of Delta Drilling Company for pool extension, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the extension of the South Culebra Bluff-Bone Spring Pool to include all of Sections 2, 11, 13, 14, 23, and 24, Township 23 South, Range 28 East.

CASE 7056: (Continued and Readvertised)

Application of Getty Oil Company for the extension of vertical limits of the Jalmat Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the contraction of the vertical limits of the Langlie-Mattix Pool and the downward extension of the vertical limits of the Jalmat Pool to a depth of 3740 feet, subsurface, under the NW/4 SW/4 of Section 3, Township 24 South, Range 36 East.

Conoco, Inc.

convert from wtr inj to CO₂ inj

Mitchell Wtr fld proj Meljamar G-SA

5-175 32E Lea Co.

3 inj wells: 2 by R-4633; 1 by WFX-462

called in by Hugh Ingram 10:30 am 11/20/80
written application to follow

Application of Conoco Inc for the
amendment of Orders Nos.

R-4633 and WFX-462

Lea County, New Mexico

Applicant, in the above-styled cause, seeks
the amendment of Division Orders Nos.
R-4633 and WFX-462, which authorized
the injection of water into applicant's
Mitchell Meljamar Mitchell Waterflood
Project in Section 5, Township 17 South
Range 32 East. ~~Applicant seeks~~ The
amendments ^{sought} ~~desired~~ would include
~~the~~ carbon dioxide ~~injection~~
~~in the~~ ^{injection} authorization for
said ~~project~~ project.

DRAFT

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 7104

Order No. R- 4633-P

APPLICATION OF CONOCO INC. FOR THE AMENDMENT OF ORDERS NOS.
R-4633 AND WFX-462,
~~NONXAXWATERFLOODPROJECT~~, LEA

COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on December 10,
1980, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this _____ day of December, 1980, the Division
Director, having considered the testimony, the record, and the
recommendations of the Examiner, and being fully advised in the
premises,

FINDS:

(1) That due public notice having been given as required
by law, the Division has jurisdiction of this cause and the
subject matter thereof.

(2) That the applicant, CONOCO INC., seeks the amendment of,
Division Orders Nos. R-4633 and WFX-462, which authorized the
~~seeks authority to institute a waterflood project on its~~
injection of water into applicant's Maljamar Mitchell Waterflood
Lease,

Project Q, Lea County, New Mexico,
~~Book xxx by the injection of water into the~~ xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

(3) That said order authorized the injection of water into the Grayburg - San Andres formation in the following described wells in ^{Section 5} Township 17 South, Range 32 East, NM PM ^{McGowan Pool} New County, New Mexico:

Grace Mitchell "B" Well No 2	Unit P
" " " " 5	" H
" " " " 6	" J

(4) That the applicant now seeks ~~to convert~~ said wells ~~to~~ authorization to inject a carbon dioxide "slug" into said wells for purposes of enhancing ~~the~~ recovery from said project.

(5) That the injection of carbon dioxide ~~gas~~ is expected to result in the recovery of an additional 70,000 barrels of oil production from the project.

that the operator should take all steps necessary to ensure that the injected ~~water~~ ^{carbon dioxide} enters only the proposed injection interval and ^{is} not permitted to escape to other formations or to the surface from injection, production, or plugged and abandoned wells.

(4) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 1800 psi, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

(5) That the subject application should be approved and the project should ^{continue to} be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Conoco Inc., is hereby authorized to inject ~~approved~~ carbon dioxide ~~gas~~ into ~~the~~ the Grayberg-San Andres formation in its Maljamar Mitchell Waterflood Project ~~Project~~ in the following described wells in Section 5, Township 17 South, Range 32 East, NMPM, Maljamar Pool, Lea County, New Mexico:

Grace Mitchell "3" Well	No 2	Unit P
	5	H
	6	J

(3) That injection into each of said wells shall be through internally coated tubing, set in a packer which shall be located as near as practicable to the ^{casing shoe} ~~uppermost perforation~~, that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(4) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing or packer in any of said injection wells,

(b) That the operator should take all steps necessary to ensure that the injected ~~water~~ ^{carbon dioxide and carbon dioxide gas} enters only the proposed injection interval and ^{and} ~~is~~ not permitted to escape to other formations or ~~to~~ to the surface from injection, production, or plugged and abandoned wells.

(c) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 1800 psi, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

(d) That the subject application should be approved and the project should ^{continue to} be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Conoco Inc., is hereby authorized to inject ~~approximate~~ carbon dioxide ~~gas~~ into ~~the~~ the Garryberg-San Andres formation in its Maljamar Mitchell Waterflood Project ~~located~~ in the following described wells in Section 5, Township 17 South, Range 32 East, NMPM, Maljamar Pool, Lea County, New Mexico:

Grace Mitchell 3" Well No 2 Unit P

5 H

6 J

(2) That injection into each of said wells shall be through internally coated tubing, set in a packer which shall be located as near as practicable to the ^{casing shoe} ~~uppermost perforation~~, that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(3) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing or packer in any of said injection wells,

the leakage of water^{carbon dioxide gas} or oil from around any producing well, or the leakage of water^{carbon dioxide gas} or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(4) That the injection wells herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 1800 psi, provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(5) That the applicant shall notify the Supervisor of the Division's Hobbs district office of the date and time of the commencement and ~~discontinuation~~^{termination} of carbon dioxide ~~injection~~^{injection} in order that the Division, at its option may witness such activities.

(6) That the project shall continue to be governed by provisions of Division Orders No R-4633 and WFX-462 not inconsistent with this order.

(7) That monthly progress reports of the ~~waterflood~~^{continue to} project ~~herein authorized~~ shall be submitted to the Division in accordance with Rules 704 and ~~1120~~¹¹¹⁵ of the Division Rules and Regulations, and the operator shall specifically ~~state~~

(8) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

identify carbon dioxide ~~gas~~ volumes injected on Division Form C-115, operator's Monthly Report.