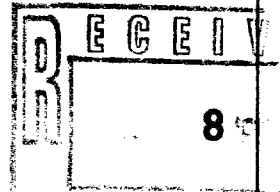


STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY)
THE OIL CONSERVATION DIVISION FOR THE)
PURPOSE OF CONSIDERING:)
APPLICATION OF POGO PRODUCING COMPANY)
FOR A PRESSURE MAINTENANCE PROJECT,)
LEA COUNTY, NEW MEXICO)

CASE NO. 11,579

ORIGINAL



REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

July 25th, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, July 25th, 1996, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

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July 25th, 1996
Examiner Hearing
CASE NO. 11,579

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* * *

A P P E A R A N C E S

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 By: JAMES G. BRUCE

* * *

1 WHEREUPON, the following proceedings were had at
2 11:04 a.m.:

3 EXAMINER CATANACH: At this time we'll call Case
4 Number 11,579.

5 MR. CARROLL: Application of Pogo Producing
6 Company for a pressure maintenance project, Lea County, New
7 Mexico.

8 EXAMINER CATANACH: Are there appearances in this
9 case?

10 MR. BRUCE: Mr. Examiner, Jim Bruce from the
11 Hinkle law firm in Santa Fe, representing the Applicant. I
12 have three witnesses to be sworn.

13 EXAMINER CATANACH: Additional appearances in
14 this case?

15 Will the witnesses please stand to be sworn in?

16 (Thereupon, the witnesses were sworn.)

17 TERRY GANT,
18 the witness herein, after having been first duly sworn upon
19 his oath, was examined and testified as follows:

20 DIRECT EXAMINATION

21 BY MR. BRUCE:

22 Q. Would you please state your name and city of
23 residence for the record?

24 A. Terry Gant, Midland, Texas.

25 Q. Who do you work for and in what capacity?

1 A. Pogo Producing Company as a senior landman.

2 Q. Have you previously testified before the Division
3 as a landman?

4 A. Yes, I have.

5 Q. And were your credentials as an expert accepted
6 as a matter of record?

7 A. Yes, they were.

8 Q. And are you familiar with the land matters
9 involved in this Application?

10 A. Yes, I am.

11 MR. BRUCE: Mr. Examiner, I would tender Mr. Gant
12 as an expert petroleum landman.

13 EXAMINER CATANACH: Mr. Gant is so qualified.

14 Q. (By Mr. Bruce) Mr. Gant, briefly what is it Pogo
15 seeks in this case?

16 A. Pogo seeks approval of a pressure maintenance
17 project for a portion of its Red Tank 26 Federal lease.

18 Q. And what formation does the project involve?

19 A. The lower Brushy Canyon portion of the Delaware
20 Mountain Group.

21 Q. Okay. Let's move on to your Exhibit 1 and have
22 you identify that for the Examiner.

23 A. Exhibit 1 is a land plat of a portion of Township
24 22 South, Range 32 East. All Delaware wells in the area
25 are identified.

1 Q. What lease is involved in this particular
2 project?

3 A. That will be Federal Lease NM-86,149, which
4 covers the west half of Section 26. Pogo owns 100 percent
5 of the working interest in this lease.

6 Q. And the red dot identifies the proposed injection
7 well?

8 A. That is correct.

9 Q. Who is the mineral interest owner in all of this
10 area we're looking at?

11 A. The US owns the mineral interest under all of
12 Sections 26, 27 and 35 in the north half of Section 34.
13 The United States also owns the surface at the proposed
14 injection well site.

15 Q. So really the project in any offsetting leasehold
16 -- or any offsetting acreage, the mineral interest is owned
17 by the BLM?

18 A. That's correct.

19 Q. Now, turning to working interests, who owns the
20 leases within a half mile of the proposed injection well
21 from the surface to the base of the Bone Spring?

22 A. Pogo is the sole working interest owner in the
23 west half of Section 26, east half of Section 27, north
24 half of Section 34 and all of Section 35.

25 Q. And what about the east half of Section 26?

1 A. Pogo is the operator and owns approximately 88.5
2 percent. Meridian, which I believe is now known as
3 Burlington Resources, is the owner of approximately 10.5
4 percent. And then Yates Petroleum is the owner of a little
5 under one percent.

6 Q. So only Meridian and Yates, or Burlington
7 Resources and Yates, are the potentially affected
8 offsetting working interest owners?

9 A. Yes, they are.

10 Q. And you do operate their acreage, though; is that
11 correct?

12 A. Yes, that's correct.

13 Q. What is the location of the proposed injection
14 well?

15 A. The injection well is the Red Tank 26 Federal
16 Number 1 well, located in the northeast quarter of the
17 southwest quarter of Section 26, and it's marked as a red
18 dot on Exhibit 1.

19 Q. What is the injection interval?

20 A. 8399 feet to 8471 feet subsurface, which is in
21 the Brushy Canyon.

22 Q. What is the current status of this well?

23 A. That well is shut in.

24 Q. What project area does Pogo propose?

25 A. The south half of the northwest quarter and

1 southwest quarter of Section 26, covering 240 acres.

2 Q. And could you identify the producing wells which
3 will be within the project area?

4 A. That would be the Red Tank 26 Federal Numbers 3,
5 4, 5 and 7, which again are marked on Exhibit 1. We
6 believe that gas injection will provide pressure support
7 for these wells.

8 Q. And what is the current status of those
9 particular four wells?

10 A. They all produce out of the Brushy Canyon at
11 rates of 37 barrels of oil a day, 35 barrels of oil a day,
12 67 barrels of oil a day, and 25 barrels of oil per day,
13 respectively.

14 Q. Where will the gas for the project come from?

15 A. That will come from the Red Tank 26 Federal
16 Number 8 well, which is located in the southeast quarter of
17 the southwest quarter of Section 26.

18 Q. And that is in the project area, the proposed
19 project area?

20 A. That's correct.

21 Q. And what zone does that well produce from?

22 A. The Ramsey sand of the Bell Canyon.

23 Q. In this particular area, are the Bell Canyon and
24 the Brushy Canyon in the same pool?

25 A. Yes, the West Red Tank-Delaware.

1 Q. Now, who was notified of this hearing?

2 A. We notified Meridian again, or Burlington
3 Resources, and Yates as the only other working interest
4 owners in the area. We also notified the BLM as surface
5 and royalty owner and the Hobbs Division Office.

6 Submitted as Exhibit 2 is an affidavit of notice,
7 along with a copy of the notice letter, with receipts
8 attached.

9 MR. BRUCE: Mr. Examiner, if you look at the
10 notice letter, although it was mailed certified mail, for
11 some reason every single green card has disappeared from
12 the face of the earth. They are somewhere in the post
13 office, and we've made request for duplicate green cards.
14 If we can't get those, we will renotify the parties.

15 We think they've all received notice of this. If
16 necessary, I'd like to keep the record open until we make
17 that determination, and we will submit the substitute cards
18 or, if necessary, renotify all the parties of a subsequent
19 hearing date.

20 EXAMINER CATANACH: Okay.

21 Q. (By Mr. Bruce) Mr. Gant, were Exhibits 1 and 2
22 prepared by you or compiled from company records?

23 A. Yes, they were.

24 Q. And in your opinion, is the granting of this
25 Application in the interests of conservation and the

1 prevention of waste?

2 A. Yes.

3 MR. BRUCE: At this time, Mr. Examiner, I would
4 move the admission of Pogo's Exhibits 1 and 2.

5 EXAMINER CATANACH: Exhibits 1 and 2 will be
6 admitted as evidence.

7 EXAMINATION

8 BY EXAMINER CATANACH:

9 Q. Okay, Mr. Gant, you want to have the whole west
10 half as the -- you're proposing to have the whole west half
11 as the project -- as the pressure maintenance project?

12 A. No, sir, just the southwest quarter and the south
13 half of the northwest quarter of Section 26.

14 Q. South half of the northwest quarter and the what?

15 A. The southwest quarter and the south half of the
16 northwest quarter.

17 Q. South half of the northwest quarter. Again,
18 the -- Pogo operates east half of Section 27?

19 A. Yes.

20 Q. The --

21 A. Yes.

22 Q. Okay, north half of 34?

23 A. Yes.

24 Q. All of 35?

25 A. Yes.

1 Q. And obviously the west half of 26?

2 A. Yes.

3 Q. And in Section 23, is that Meridian -- Does
4 Meridian operate that?

5 A. Meridian operates the -- all of the Section 23 --
6 I say that -- I have to backtrack. I know that the
7 southern portion except for the east half of the southeast
8 quarter, they operate.

9 Q. Okay. The project area producing wells will be
10 the 3, 4, 5 and 7, which produce at rates of 37, 35, 67 and
11 25?

12 A. That's correct, respectively.

13 Q. Okay. Injection would occur into the lower
14 Brushy Canyon member, which is being produced in the 3, 4,
15 5 and 7?

16 A. That's correct.

17 Q. And the Number 8 well, that is producing from the
18 Ramsey sand only?

19 A. Correct.

20 Q. Not producing from the interval that you're going
21 to inject into?

22 A. I'd have to -- I was looking back at my
23 geologist, and he's shaking his head, so that's correct.

24 Q. Okay. As far as the vertical limits of the
25 project, they would not just be the lower Brushy Canyon

1 member; they would be the entire Delaware formation?

2 A. Actually, I'm going to have to -- I'll probably
3 defer that to our engineer or to our geologist.

4 EXAMINER CATANACH: Okay. That's all I have of
5 the witness.

6 MR. BRUCE: Call Mr. Dillman to the stand.

7 GEORGE J. DILLMAN,

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

10 DIRECT EXAMINATION

11 BY MR. BRUCE:

12 Q. Will you please state your name and city of
13 residence?

14 A. George Dillman, Midland, Texas.

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

17 A. I am senior geologist with Pogo Producing
18 Company.

19 Q. Have you previously testified before the Division
20 as a geologist?

21 A. Yes, I have.

22 Q. And were your credentials as an expert petroleum
23 geologist accepted as a matter of record?

24 A. They were.

25 Q. Are you familiar with the geology pertaining to

1 this Application?

2 A. Yes, I am.

3 MR. BRUCE: Mr. Examiner, I would tender Mr.
4 Dillman as an expert petroleum geologist.

5 EXAMINER CATANACH: He is so qualified.

6 Q. (By Mr. Bruce) Mr. Dillman, would you identify
7 your Exhibits 3 and 4 and describe the Delaware geology in
8 this area?

9 A. Exhibit 3 is a structure map of the proposed
10 Brushy Canyon injection interval, and Exhibit 4 is a net
11 porosity isopach of the same injection interval.

12 The injection well identified by a green circle
13 is located on the east flank and structurally downdip of
14 the primary Brushy Canyon BC4 reservoir, which we are
15 requesting to inject gas into.

16 Q. Would you refer, then, to your Exhibit 5,
17 identify that for the Examiner, and discuss the precise
18 injection interval?

19 A. Exhibit 5 is a cross-section of all the wells
20 associated with this project. It shows all the potential
21 producing wells, the injection well, and the gas-source
22 well is also included on the edge of the cross-section.

23 At the base of each log is the initial potential,
24 the cumulative production as of 5-1-96, and the current
25 rate of production in each of these wells.

1 The location of this cross-section is identified
2 on Exhibits 3 and 4 as the highlighted outline.

3 The primary injection interval is denoted by Pogo
4 as the BC4 in the lower part of the Brushy Canyon section.
5 A datum marker is on the cross-section that aligns this
6 injection interval in the wells affected by this project
7 area. Perforations are also indicated on each of the wells
8 that demonstrate where the wells were initially perforated
9 and the initial potential rates were recorded from.

10 The injection well is the Red Tank 26 Number 1,
11 and to the left of it is the gas-source well, the Red Tank
12 26 Number 8. The perforations of the Ramsey sand in the
13 Bell Canyon where the gas is being sourced from are
14 indicated on that log.

15 Q. Mr. Dillman, the Examiner asked Mr. Gant a
16 question as far as what zone would be within this pressure
17 maintenance project. You don't need the entire Delaware
18 interval, Bell Canyon to Brushy Canyon, for the project
19 area, do you?

20 A. No, sir, the affected injection area will be
21 confined to the basal Brushy Canyon section. The
22 perforations as indicated on each of the wells are
23 demonstrating production from this unique injection
24 interval.

25 We expect that the gas will be confined and

1 injected entirely into the BC4 reservoir and any adjacent
2 rocks affected by the initial fracture stimulation, which
3 should be limited from 50 to 200 feet vertical growth in
4 either direction of the existing perforations in each of
5 the wellbores. This would essentially retain all the
6 injected gas in the very basal Brushy Canyon and
7 essentially below what is indicated on the cross-section as
8 the A marker.

9 Q. So geologically, the injected gas will remain in
10 that lower Brushy Canyon?

11 A. That is correct.

12 Q. Do you expect the injection of gas into this zone
13 will provide pressure support for the four producing wells
14 on this lease -- or project area, excuse me?

15 A. That is correct. Each of those wells are
16 slightly higher on structure than the proposed injection
17 well. We expect that the gas will move upstructure and
18 enhance recovery from those four wells.

19 Q. Now, the gas-source well, the Number 8, what is
20 that capable of producing?

21 A. Approximately 500 MCF of gas per day.

22 Q. Let's move on to a slightly different topic. Are
23 there any sources of fresh water within one mile of the
24 proposed injection well?

25 A. No, the nearest water well is more than two miles

1 to the north, in the northeast quarter of the southeast
2 quarter. I'm sorry, the northeast quarter of the southwest
3 quarter of Section 14. Pogo attempted to find fresh water
4 in this immediate area, but drilled two dry holes.

5 Q. Are there any open faults or other connections
6 between the injection zone and any drinking water sources
7 in this area?

8 A. None that we are aware of.

9 Q. Were Exhibits 3 through 5 prepared by you or
10 under your direction and control?

11 A. They were.

12 Q. And in your opinion, will the granting of this
13 Application be in the interests of conservation and the
14 prevention of waste?

15 A. It will.

16 MR. BRUCE: Mr. Examiner, I would move the
17 admission of Pogo's Exhibits 3 through 5.

18 EXAMINER CATANACH: Exhibits 3 through 5 will be
19 admitted as evidence.

20 EXAMINATION

21 BY EXAMINER CATANACH:

22 Q. Mr. Dillman, what is the extent of the whole
23 Delaware Pool in this area? At approximately what depths
24 do you find the Delaware?

25 A. The Delaware produces, as indicated on this

1 cross-section, from the extremes, from the very upper
2 Delaware Bell Canyon Ramsey sand, down to the lowermost
3 Brushy Canyon section.

4 Q. Right, at approximately what depths do you find
5 the top and bottom of the Delaware in this area?

6 A. The top of the Delaware is essentially at 4900
7 feet, measured depth drilling, and the bottom of the
8 Delaware is approximately 8650 feet measured depth.

9 Q. Okay.

10 A. The cross-section has indicated a Bone Springs
11 marker at the bottom of each log. That would correspond to
12 the base of the Delaware formation.

13 Q. Okay. Now, in the -- Within the west half of
14 Section 26 or the project area, is the -- that -- the lower
15 Brushy Canyon is the predominant producing interval?

16 A. That's correct.

17 Q. But you do have some production from the Ramsey
18 Bell Canyon?

19 A. The gas-source well is Ramsey producer in the
20 project area.

21 Q. Okay. Are any of the other producing wells
22 producing from any other zone except the basal Brushy
23 Canyon?

24 A. In the project area or in the immediate area?

25 Q. In the project area?

1 A. The proposed injection well was stimulated at one
2 point in the Cherry Canyon, and production has been
3 recovered from the Cherry Canyon in that well, but it will
4 be isolated by a packer and will not be affected by the
5 injection process.

6 None of the other wells in the project area have
7 had any additional completion attempts made outside of this
8 basal Brushy Canyon section.

9 Q. Is there some potential in those wells?

10 A. Yes, there is. There is uphole potential in most
11 of these wells.

12 Q. Will that be deferred -- Any recompletion of
13 those, will that be deferred until these wells are depleted
14 in the Brushy Canyon?

15 A. It would probably be deferred until the injection
16 of the gas is completed.

17 We anticipate depletion of the gas-source well
18 before moving up and performing any additional workovers in
19 the wells in the project area.

20 Q. The project will last until the source well is
21 depleted?

22 A. That's correct.

23 Q. Now, the interval that you're going to be
24 injecting into, is that -- that's correlatable across all
25 these producing wells in this project area?

1 A. That's correct. As indicated on Exhibits 3 and
2 4, each well with a data point or value has this basal
3 Brushy Canyon sand associated with that wellbore.

4 Q. Mr. Dillman, what are the barriers to -- for the
5 gas to -- or what's going to keep the gas in the injection
6 interval? Are there some barriers in the top and bottom
7 that would keep it in the injection interval?

8 A. The natural boundaries of the Delaware rock that
9 have not been fracture-stimulated will retain the gas below
10 those rocks.

11 The Delaware rocks themselves have very poor
12 vertical permeability, which restricts the flow of any
13 fluid, water or gas, up the wellbore.

14 Q. What's the lithology of that?

15 A. The Delaware rocks in this area are primarily a
16 very fine-grain sublitharenite.

17 The sands are generally low porosity and a low
18 permeability, with the exception being a higher porosity,
19 higher permeability interval.

20 Q. Do you know what the drive mechanism is in this
21 reservoir?

22 A. The drive mechanism is interpreted to be solution
23 gas.

24 EXAMINER CATANACH: I believe that's all I have,
25 Mr. Bruce.

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VANCE USHER,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name?

A. Vance Usher.

Q. And where do you reside?

A. Houston, Texas.

Q. What is your occupation and who is your employer?

A. Petroleum engineer, Pogo Producing.

Q. Have you previously testified before the Division?

A. Yes.

Q. And were your credentials as an expert petroleum engineer accepted as a matter of record?

A. Yes.

Q. And are you familiar with the engineering matters applicable to this case?

A. Yes.

MR. BRUCE: Mr. Examiner, I tender Mr. Usher as an expert petroleum engineer.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Bruce) Mr. Usher, would you just identify Exhibit 6 for the Examiner?

1 A. Exhibit 6 is a copy of the Form C-108 filed with
2 the Division.

3 For ease of reference, the pages of the C-108 are
4 numbered in the bottom right-hand corner.

5 Q. What is the status of the proposed injection
6 well?

7 A. The Red Tank 26 Federal Well Number 1 was
8 completed in the Bone Springs from perforations 9551 to
9 9570 in May, 1993, recompleted to the Brushy Canyon in
10 perforations 8399 to 8471 in June, 1993, and recompleted to
11 the Cherry Canyon, perforations 6788 to 6796 and
12 perforations 6846 to 6860 in May, 1995.

13 The Cherry Canyon last tested in June 18, 1996,
14 at 10 barrels per day, 15 barrels of water per day, 27 MCF
15 of gas per day, and the well is on pump.

16 The wellbore has no additional zones behind pipe.
17 A schematic of the well is given on page 3. Is it properly
18 cased and cemented and no injected fluids can escape from
19 other formations -- or excuse me, to other formations, from
20 this well.

21 Q. Okay, let's discuss the proposed injection
22 operations. Could you first discuss the injection volumes?

23 A. Referring to page 7, I anticipate a maximum
24 injection rate of 600 MCF of gas per day. This is the
25 producing capacity of the well supplying the gas.

1 Q. And what will be the injection pressure?

2 A. The top perforation in the injection well is 8399
3 feet subsurface, so under Division rules the maximum
4 injection pressure will be 1680 p.s.i.

5 Q. Is there a stimulation program proposed for the
6 injection well?

7 A. The well was frac'd and acid-stimulated when it
8 was completed. I do not plan any additional stimulation.

9 Q. How many wells are there in the area of review?

10 A. There are seven wells, six in Section 26 and one
11 in the east half of Section 27. Data on those wells is
12 given on pages 5 and 6.

13 As you can see, the Culbertson and Irwin Well
14 Number 1, which did not penetrate the Brushy Canyon, is
15 plugged and abandoned. The other wells are Delaware
16 producers operated by Pogo.

17 Q. Was the Culbertson and Irwin Well Number 1
18 properly plugged?

19 A. The data on plugging, which is on page 10,
20 indicates that it was properly plugged.

21 Q. Are the other producing wells properly completed,
22 and will they prevent the movement of fluids to other
23 formations or zones?

24 A. Yes, they were all drilled during the past few
25 years.

1 Q. What type of production response do you
2 anticipate from the injection program?

3 A. I expect the reservoir pressure decline will be
4 stabilized.

5 As a result, producing GORs will stop increasing
6 and the reservoir's solution gas drive energy will be
7 conserved. This will yield a higher recovery factor for
8 wells in the affected area and yield a higher gross
9 ultimate reserve.

10 I do not expect an increase in oil production
11 rates on wells in the production area, but rather a longer
12 sustained productive life through conservation of reservoir
13 energy.

14 Q. If this project performs favorably, is it your
15 opinion that it will recover additional oil which otherwise
16 would not be recovered?

17 A. Yes.

18 Q. Are the Numbers 3, 4, 5 and 7 wells in this
19 particular lease, the Brushy Canyon producers which are in
20 this project area, the only wells you anticipate will be
21 affected by the gas injection?

22 A. Yes.

23 Q. Could this project also beneficially affect
24 offsetting leases?

25 A. The injection well is on the eastern edge of the

1 project area, and there are offsetting producing wells in
2 adjoining acreage. If there is any effect, I think it will
3 be beneficial.

4 Q. If the project is approved and operations are
5 commenced in line with Pogo's expectations, will there be
6 any significant movement of oil across lease lines?

7 A. No, I don't think this single well pressure
8 maintenance gas injection program will cause significant
9 movement of oil.

10 Oil banking and significant movement of oil only
11 occurs in closely spaced multiple-injection well projects
12 where interference occurs to force banking and displacement
13 of oil. A single gas injection well will not create a gas
14 bank.

15 Q. What project allowable do you request?

16 A. The depth bracket allowable is 230 barrels of oil
17 per day in this pool, so I request an allowable of 230
18 barrels per day times six wells, or the equivalent if 1380
19 barrels of oil per day.

20 Q. And again, what is the source of the injection
21 gas?

22 A. The injection gas will be from Pogo's Red Tank 26
23 Federal Well Number 8, located in the southeast quarter of
24 the southwest quarter of Section 26. It's a producer in
25 the Ramsey sand of the Bell Canyon.

1 Q. What is the status of that well?

2 A. It has been shut in since May 7th, 1996, because
3 Pogo cannot sell the gas.

4 Q. Why is that?

5 A. If you'll refer to page 11, a gas sample from the
6 Number 8 well shows that it has a 47-percent nitrogen
7 content, with a BTU content of only about 700.

8 As a result, the pipeline company was unwilling
9 to take the gas.

10 Q. Is the injection gas compatible with gas in the
11 injection zone?

12 A. I anticipate no compatibility problems.
13 Referring to page 12, the Brushy Contains 19 -- sorry, 17
14 percent nitrogen, which is also a high percentage, but it
15 has a BTU content of 1100.

16 The only effect of injection will be to dilute
17 somewhat the BTU content of the Brushy Canyon gas.

18 However, it should also upgrade the injected gas,
19 eventually making it saleable. This is a side benefit to
20 the pressure-maintenance project. All potentially saleable
21 gas should potentially be recovered through production from
22 offset wells, or when the injector gets converted back to a
23 producing well.

24 Q. In your opinion, is the granting of this
25 Application in the interest of conservation and the

1 prevention of waste?

2 A. Yes.

3 Q. And was Exhibit 6 compiled from company business
4 records?

5 A. Yes.

6 MR. BRUCE: Mr. Examiner, I would move the
7 admission of Pogo's Exhibit 6.

8 EXAMINER CATANACH: Exhibit Number 6 will be
9 admitted as evidence.

10 EXAMINATION

11 BY EXAMINER CATANACH:

12 Q. Mr. Usher, have you made any calculations on what
13 kind of ultimate increase you might recover from these
14 wells?

15 A. No.

16 Q. You testified that you believed that you would
17 see an increase in ultimate recovery. What is that based
18 on?

19 A. Based on my experience in the area and
20 recognizing the pressure decline that these wells are
21 subjected to, unless unabated by some form of pressure
22 maintenance, which would then extend the life.

23 Q. Do these wells produce at high GORs now?

24 A. They produce at increasing GORs.

25 Q. And you believe that that will be stabilized by

1 gas injection?

2 A. That's correct.

3 Q. Without the gas injection, would you be unable to
4 sell this gas from the source well?

5 A. That is correct.

6 Q. So it would -- Would you plug and abandon the
7 well if the project wasn't approved or --

8 A. The gas source well has no future utility unless
9 it's utilized as a source of gas for this injection
10 project.

11 Q. What is the limit as far as nitrogen content is
12 concerned, for sale of this gas? Is that what it's based
13 on, or --

14 A. That is correct, that's correct. No, it's not
15 based on BTU content.

16 It's based on nitrogen, which then requires
17 extraction by the pipeline company, and that's at the
18 discretion of each individual pipeline company.

19 Q. What is the limit in this pipeline?

20 A. There is no limit, but the pipeline company has
21 elected not to take our gas because of high nitrogen
22 content.

23 Q. And the gas that you're producing out of the
24 producing wells has how much nitrogen?

25 A. 17 percent.

1 Q. 17 percent. They do accept that gas?

2 A. Yes.

3 Q. Okay. The -- Have the Cherry Canyon perforations
4 in the injection well been squeezed?

5 A. No, they have not. They'll be isolated behind
6 tubing with a packer.

7 Q. They will not be cement-squeezed?

8 A. That's correct.

9 Q. The -- One of the requirements for an injection
10 well is, it has to pass a mechanical-integrity test, which
11 means the casing -- pressuring up on the casing. How would
12 you propose to conduct that test?

13 A. Well, perhaps I've misspoken on that. I would
14 have to defer to our operations engineer on that aspect.

15 Q. The wells within a half mile, are they all
16 cemented across the injection interval?

17 A. Yes, they are.

18 Q. Do you believe that any of these wells will not
19 provide a conduit for the gas to escape to other
20 formations?

21 A. I believe the primary cement jobs are adequate to
22 isolate those zones from any others.

23 Q. Do you believe the P-and-A'd wells are
24 sufficiently plugged to isolate that injected gas to the
25 injection interval?

1 A. Based on the information we've researched, yes.

2 Q. Based on the current rates of production from the
3 source well, what do you anticipate the remaining life of
4 that well will be?

5 A. It's difficult to tell. It has not been on
6 production long enough to establish decline yet..

7 Q. Is it possible to run any kind of calculations
8 that might show what the effect of the gas injection into
9 that interval -- how much it would dilute the current gas?
10 I mean, is that something you can't estimate or calculate?

11 A. No, there's no rigorous technique of doing that.

12 Q. Are you fairly certain that the injected gas
13 won't dilute the gas in place such that that would render
14 that gas not sellable?

15 A. I do not believe it will.

16 EXAMINER CATANACH: I have nothing further of the
17 witness.

18 He may be excused.

19 MR. BRUCE: Mr. Examiner, the only thing I have
20 is, if you would like -- We do not have our operations
21 engineer here, but if you would like him to address the
22 question on isolating the zones and conducting the
23 integrity tests, we can have him submit a letter on his
24 proposed plan.

25 EXAMINER CATANACH: I would, and if you could do

1 that I would appreciate it.

2 Is there anything further, Mr. Bruce?

3 MR. BRUCE: Nothing.

4 EXAMINER CATANACH: There being nothing further,
5 Case Number 11,579 will be taken under advisement.

6 (Thereupon, these proceedings were concluded at
7 11:33 a.m.)

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21 I do hereby certify that the foregoing is
22 a complete record of the proceedings in
the Examiner's office of Case No. 11579,
23 heard by me on July 25 1996.
24 David R. Catnach, Examiner
Oil Conservation Division
25

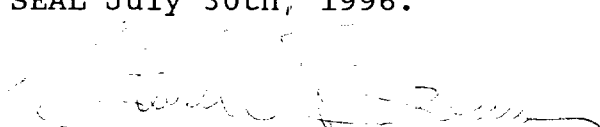
CERTIFICATE OF REPORTER

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

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

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL July 30th, 1996.



STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998