

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

CASE 10,813

EXAMINER HEARING

IN THE MATTER OF:

Application of Arco Oil & Gas Company for approval
of the conversion of sixteen wells in the Empire
Abo Unit to injection, Eddy County, New Mexico

ORIGINAL

TRANSCRIPT OF PROCEEDINGS

BEFORE: DAVID R. CATANACH, EXAMINER

5/18/93

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

September 9, 1993

A P P E A R A N C E S

FOR THE DIVISION:

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

FOR THE APPLICANT:

CAMPBELL, CARR, BERGE & SHERIDAN, P.A.
Attorneys at Law
By: WILLIAM F. CARR
Suite 1 - 110 N. Guadalupe
P.O. Box 2208
Santa Fe, New Mexico 87504-2208

* * *

I N D E X

Page Number

Appearances

2

GARY SMALLWOOD

Direct Examination by Mr. Carr

5

Examination by Examiner Catanach

12

Certificate of Reporter

15

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E X H I B I T S

APPLICANT'S EXHIBITS:

Exhibit 1

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Exhibit 2

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* * *

1 WHEREUPON, the following proceedings were had
2 at 8:23 a.m.:

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8 EXAMINER CATANACH: Call the hearing to order
9 this morning for Docket Number 26-93.

10 (Off the record)

11 EXAMINER CATANACH: At this time we'll call
12 first case, 10,813.

13 MR. STOVALL: Application of Arco Oil & Gas
14 Company for approval of the conversion of sixteen wells
15 in the Empire Abo Unit to injection, Eddy County, New
16 Mexico.

17 EXAMINER CATANACH: Are there appearances in
18 this case?

19 MR. CARR: May it please the Examiner, my
20 name is William F. Carr with the Santa Fe law firm
21 Campbell, Carr, Berge and Sheridan.

22 I represent Arco Oil and Gas in this case,
23 and I have one witness.

24 EXAMINER CATANACH: Additional appearances?

25 Will the witness please stand to be sworn in?

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

4 DIRECT EXAMINATION

5 BY MR. CARR:

6 Q. Will you state your name for the record,
7 please?

8 A. My name is Gary Smallwood.

9 Q. Mr. Smallwood, by whom are you employed and
10 in what capacity?

11 A. I'm employed by Arco Oil and Gas as a
12 petroleum engineer.

13 Q. Have you previously testified before this
14 Division?

15 A. Yes, I have.

16 Q. At the time of that testimony, were your
17 credentials as a petroleum engineer accepted and made a
18 matter of record?

19 A. Yes, they were.

20 Q. Are you familiar with the Application filed
21 in this case on behalf of Arco and the wells that are
22 the subject of the Application?

23 A. Yes.

24 MR. CARR: Are the witness's qualifications
25 acceptable?

1 EXAMINER CATANACH: They are.

2 Q. (By Mr. Carr) Mr. Smallwood, would you
3 briefly state what Arco seeks with this hearing?

4 A. Arco operates a project called the Empire Abo
5 unit. It is a gas injection project that was approved
6 by Order Number 4549 back in June of 1973.

7 We are now seeking approval to convert 16
8 existing wells in the unit to gas injection. We
9 believe it's necessary to convert these 16 wells to gas
10 injection to maximize remaining recovery from the unit.

11 Q. Why did Arco seek approval of these
12 conversions by administrative procedures?

13 A. We were concerned about receiving the
14 necessary waivers to receive an administrative
15 approval.

16 We had an experience about two years ago, we
17 requested approval to convert two existing wells to gas
18 injection through the administrative process, and
19 during that process we ended up in a hearing, being
20 opposed unexpectedly by an offset operator, and we were
21 receiving some delay in receiving these waivers, and so
22 we were under some rather severe time constraints.

23 So we requested a hearing for approval.

24 Q. When in fact does Arco hope to complete these
25 conversions?

1 A. We're under a schedule to complete them this
2 year.

3 Q. Could you refer to what has been marked for
4 identification as Arco Exhibit Number 1 and explain
5 what this is to Mr. Catanach?

6 A. Exhibit Number 1 is a three-ring notebook
7 that contains on the first page, behind the tab
8 identified as tab 1 and 2, the OCD Form C-108.

9 The rest of the notebook contains all the
10 attachments necessary to properly complete the Form
11 C-108.

12 Q. Let's go to the material behind tab Roman
13 numeral III in this exhibit. Could you identify what
14 material is contained behind that tab?

15 A. This refers to part 3 of Form C-108, and it
16 contains the injection well data sheets and the
17 proposed schematics for completing the 16 injection
18 wells.

19 Q. What fluid medium are you injecting in this
20 reservoir?

21 A. We inject dry residue gas.

22 Q. And this what you've always been injecting in
23 Empire Abo?

24 A. Yes, that's correct.

25 Q. Are the wells that you are going to be

1 converting going to be equipped so that the pressure in
2 the annular space can continuously be monitored?

3 A. Yes, they will be.

4 Q. Let's go to the material behind tab Roman
5 numeral IV. Would you identify that and review that
6 for the Examiner?

7 A. That is the location maps that identify --

8 Q. That's Roman numeral V.

9 A. Roman numeral V, that's right.

10 There are two maps for each injection well in
11 this section of the notebook. One map shows a two-mile
12 radius around each proposed injection well and all the
13 leases that are within that two-mile radius, and the
14 other map is a one-half-mile-radius map that shows each
15 Abo penetration.

16 Q. Now, the second maps that show the area of
17 review, those are in the back of this particular
18 section in Exhibit 1?

19 A. Yes, they are.

20 Q. Okay. Behind that we have a tab, Roman
21 numeral VI. What information is contained behind that
22 portion of that tab, Exhibit 1?

23 A. Roman numeral number VI is a wellbore
24 schematic for each Abo penetration within a half mile
25 of the proposed injection well.

1 Q. Does this material contain all information
2 required by Form C-108 for each of the injection wells?

3 A. Yes, it does. It indicates well type,
4 construction, date drilled, location, depth and record
5 of completion.

6 Q. You have a separate schematic or information
7 sheet for each well in the project area, within a mile
8 of an injection well?

9 A. Yes, for each well that's within one half
10 mile of the proposed injection well.

11 Q. Do you also have schematics and wellbore
12 information sheets for each plugged and abandoned well
13 within any of these areas of review?

14 A. Yes, they are in the same tab. They're
15 located at the back of that tab.

16 Q. These schematics would show all plugging
17 detail on each of these wells?

18 A. Yes.

19 Q. And into what formation are you injecting?

20 A. The Abo.

21 Q. And generally, what is the thickness of this
22 formation in the area?

23 A. It's 350 feet in thickness.

24 Q. Now, the gas that you're going to be re-
25 injecting, what is the source of that gas?

1 A. It is the produced gas from the entire Abo
2 reservoir that is returned to the reservoir from two
3 gasoline plants.

4 Q. What are the volumes you're proposing to
5 inject in each of these injection wells?

6 A. 12 million cubic feet per day per well.

7 Q. And is that the maximum daily injection rate
8 you're proposing?

9 A. Yes, it is.

10 Q. Will the injection be accomplished through a
11 closed system?

12 A. Yes.

13 Q. And are you going to be injecting under
14 pressure or by gravity?

15 A. Under pressure.

16 Q. What is the maximum injection pressure you
17 propose to utilize?

18 A. 2000 pounds.

19 Q. Is a pressure limitation of .2 pounds per
20 foot of depth to the top of the injection interval
21 satisfactory for this gas injection project?

22 A. No, it is not. The .2 pound per foot is a
23 rule of thumb that applies to water injection projects.
24 The -- For gas we've been injecting at 2000 p.s.i.
25 since the beginning of this project, and that does not

1 exceed the fracture gradient in the area, and this
2 pressure has been previously approved by the Division.

3 Q. Does Exhibit Number 1 contain an analysis of
4 the gas Arco in fact will be injecting?

5 A. Yes, it does.

6 Q. And where is that located in this exhibit?

7 A. It's behind tab number Roman numeral VII.

8 Q. And that's the last tab in the book?

9 A. It's the last tab in the book, and it's on
10 the back of the first page and the last page.

11 Q. So basically what you're proposing, though,
12 is to re-inject gas back into the formation from which
13 it was produced?

14 A. That's correct.

15 Q. Are there freshwater zones in the area?

16 A. No, there are none.

17 Q. Are logs of each of the proposed injection
18 wells on file with the Division?

19 A. Yes.

20 Q. Is Exhibit Number 2 an affidavit confirming
21 that notice has been provided to offsetting operators
22 and the owners of the surface of the land on which each
23 of the injection wells are in fact located?

24 A. Yes, it is.

25 Q. And behind that affidavit is a copy of the

1 letter plus return receipts?

2 A. Yes.

3 Q. In your opinion, will granting this
4 Application be in the best interests of conservation,
5 the prevention of waste and the protection of
6 correlative rights?

7 A. Yes.

8 Q. Were Exhibits 1 and 2 prepared by you or
9 compiled at your direction?

10 A. Yes.

11 MR. CARR: At this time, Mr. Catanach, we
12 move the admission of Arco Exhibits 1 and 2.

13 EXAMINER CATANACH: Exhibits 1 and 2 will be
14 admitted as evidence.

15 MR. CARR: And that concludes my direct
16 examination of Mr. Smallwood.

17 EXAMINATION

18 BY EXAMINER CATANACH:

19 Q. Mr. Smallwood, within the Empire Abo unit is
20 there a set injection pattern that's been utilized?

21 A. We have for the past 17 years, since
22 injection started, injected in a crestal line-drive
23 sort of pattern.

24 This is an elongated reef. It's about one
25 and a half miles wide and twelve miles long, and we've

1 injected near the crest of the reef, parallel with that
2 trend.

3 The proposed injection wells are in the same
4 line pattern, only about a mile south of the existing
5 injectors.

6 We're trying to redistribute gas injection
7 and improve our recovery of natural gas liquids because
8 of that.

9 Q. So this is an area of the reservoir that has
10 not been exposed to gas injection before?

11 A. It's been exposed but only partially, and
12 we're trying to improve our sweep efficiency, is what
13 we're trying to do.

14 We're trying to contact areas -- I guess the
15 answer to your question is, yes, we're trying to
16 contact areas that have not been exposed before.

17 Q. Is the annulus in the injection wells, is
18 that usually left with no kind of fluid in the annulus?

19 A. I think we have fluid in the annulus.

20 Q. You have fluid in the annulus?

21 A. Uh-huh.

22 Q. Okay. Mr. Smallwood, have you examined all
23 the area-of-review wells and satisfied yourself that
24 they're all cemented and cased properly to confine the
25 injected gas?

1 A. Yes, sir.

2 Q. That includes the plugged and abandoned
3 wells?

4 A. Yes, sir.

5 EXAMINER CATANACH: Okay. I have nothing
6 further of the witness.

7 MR. CARR: We have nothing further in this
8 case, Mr. Catanach.

9 EXAMINER CATANACH: There being nothing
10 further in this case, Case 10,813 will be taken under
11 advisement.

12 (Thereupon, these proceedings were concluded
13 at 8:35 a.m.)

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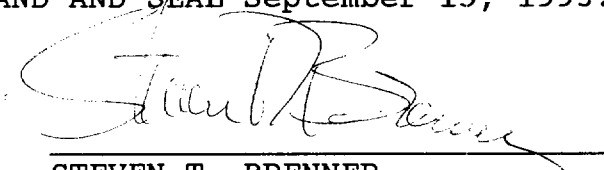
CERTIFICATE OF REPORTER

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

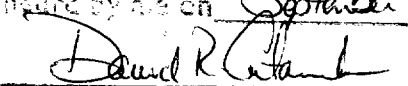
I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

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 September 15, 1993.


 STEVEN T. BRENNER
 CCR No. 7

My commission expires: October 14, 1994

I hereby certify that the foregoing is a true and accurate record of the proceedings in the Oil Conservation hearing of Case No. 10813, heard by me on September 8, 1993.

 David R. Cumbre, Examiner
 Oil Conservation Division

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICOHearing Date SEPTEMBER 9, 1993 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
Karen Curbishley	Law Office - Rachel Casner	Santa Fe
RANDALL K FORD	Collins + WARE	Midland TX.
GARY SMALLWOOD	ARCO OIL + GAS	Midland TX.
DAVE BONEAU	YATES PETROLEUM	ARTESIA, NM
Theresa Sloan	Yates Petroleum	Artesia, NM
William F. Fay	Campbell, Carr, Borge + Steinman	Santa Fe, N.M.
James R. Ramey	Hinkle Law Firm	Santa Fe
J.C. Johnson	Pet. Dev Corp	Albuquerque
Jim Johnson		
N. Kellhorn	Kellhorn + Kellhorn	Santa Fe
Rick Wyrall	BLM	SANTA FE / ROSWELL
Kary Markham	Cross Timber Operations Co.	Midland TX.
Ernie L. Carroll	Lore Canyon Water Fund	Artesia NM
W.R. Tegel	P. Hobson Development Co.	Artesia NM
Just D.		Artesia NM
Brent May		
X. D. ...	Bureau of Land Management	

