

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

19 June 1985

EXAMINER HEARING

IN THE MATTER OF:

Application of ARCO Oil and Gas Com- CASE
pany for pool extension, Rio Arriba 8634
County, New Mexico.

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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MR. STOGNER: Call next Case
8634.

MR. TAYLOR: Application of
ARCO Oil and Gas Company for pool extension, Rio Arriba
County, New Mexico.

MR. STOGNER: Call for
appearances.

MR. CARR: At this time, Mr.
Examiner, my name is William F. Carr. I'm with the law firm
Campbell and Black. I represent ARCO Oil and Gas Company
and we would ask that this case be taken at the end of the
docket.

We have been advised that there
will be other parties appearing in this case so it may not
be unopposed.

MR. STOGNER: Mr. Carr, we will
recall this at the end of the docket today.

(Hearing recessed until end of the docket.)

1
2 MR. STOGNER: The hearing will
3 come to order.

4 We will recall Case Number
5 8634.

6 MR. TAYLOR: The application of
7 ARCO Oil and Gas Company for pool extension, Rio Arriba
8 County, New Mexico.

9 MR. CARR: May it please the
10 Examiner, my name is William F. Carr, with the law firm
11 Campbell and Black, P. A. of Santa Fe, appearing on behalf
12 of ARCO Oil and Gas Company.

13 I have three witnesses.

14 MR. STOGNER: Call for any more
15 appearances.

16 MS. AUBREY: Karen Aubrey, Kel-
17 lahin and Kellahin. I'm appearing for Jerome P. McHugh.

18 Mr. Examiner, we have no wit-
19 nesses and we would simply concur in the statement of Dugan
20 Oil and in the testimony of Dugan's witness.

21 MR. STOVALL: And just for the
22 record to make that more understandable, I'm Robert G. Sto-
23 vall appearing on behalf of Dugan Production, and we have
24 one witness.

25 MR. STOGNER: Will all wites-

1 ses please stand and be sworn at this time?

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(Witnesses sworn.)

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MR. CARR: May it please the Examiner, initially I would like to advise that the application as filed provided for an extension of the West Lindrith Gallup-Dakota Pool. The extension would take the pool in a northeasterly direction and would cause it to adjoin on the north the Ojito Gallup-Dakota Pool and on the east the Gavilan Mancos Pool.

Jerome P. McHugh, and others, have expressed concern about having a 160-acre spacing pattern in the proposed extension about the Gavilan Mancos Pool which is developed on 320.

We therefore have agreed to delete from the application and ask that you dismiss the application as it relates to Sections 24, 25, and the north half of Section 36.

This will result in the extension not adjoining the Gavilan Mancos Pool except corner to corner between Sections -- Section 13 and Section 19 in Range 2 West, 25 North.

We'd ask that that acreage be deleted and be dismissed from the case.

1 MR. STOGNER: Okay, go aver the
2 deleted acreage one more time.

3 MR. CARR: The deleted acreage
4 is all of Section 24, 25, and the north half of 36, Township
5 25 North, Range 3 West.

6 MR. STOGNER: Thank you, Mr.
7 Carr.

8 MR. CARR: And we'd move that
9 that acreage be deleted from the application.

10 MR. STOGNER: Inasmuch as the
11 advertisement will not be affected by this deletion, the re-
12 cord will so show.

13 MR. CARR: Thank you, Mr. Stog-
14 ner.

15 At this time I would call Mary
16 Armstrong.

17
18 MARY ARMSTRONG,
19 being called as a witness and being duly sworn upon her
20 oath, testified as follows, to-wit:

21
22 DIRECT EXAMINATION

23 BY MR. CARR:

24 Q Would you state your full name and place
25 of residence?

1 A Mary Lee Armstrong, Denver, Colorado.

2 Q By whom are you employed?

3 A Atlantic Richfield Company.

4 Q And in what capacity are you employed?

5 A I'm a landman.

6 Q Have you previously testified before the
7 New Mexico Oil Conservation Division?

8 A I have not.

9 Q Would you review your educational back-
10 ground for Mr. Stogner and summarize your work experience?

11 A I received an undergraduate degree from
12 the University of Oklahoma in petroleum land management in
13 May of 1981 and since that time I have been employed with
14 Atlantic Richfield as a landman for the past four years.

15 Q Have you been in Denver during that four
16 year period of time?

17 A I've been in Denver and Dallas and now
18 back in Denver.

19 Q And how long have you been in Denver this
20 last time?

21 A Two months.

22 Q During your employment with ARCO have you
23 on various occasions had responsibility for the San Juan
24 Basin?

25 A Yes, I have. That's my prime area.

1 Q Are you familiar with the application
2 filed in this case on behalf of ARCO Oil and Gas?

3 A I am.

4 Q Are you familiar with the subject areage?

5 A Yes, I am.

6 MR. CARR: At this time, Mr.
7 Stogner, we would tender Ms. Armstrong as an expert witness
8 in petroleum land matters.

9 MR. STOGNER: Any objections?

10 MR. STOVALL: No.

11 MR. STOGNER: Ms. Armstrong is
12 so qualified.

13 Q Would you state what ARCO is seeking with
14 this application?

15 A Yes. ARCO is seeking to propose the West
16 Lindrith Gallup-Dakota Pool to include several acres in 25
17 North, 3 West.

18 ARCO has an interest in several sections
19 in that area through a working interest ownership and a
20 farmout agreement and we feel that the prudent development
21 of this area would be based on 160 acres, as subsequent wit-
22 nesses will testify.

23 Q Would you refer to what has been marked
24 for identification as ARCO Exhibit Number One, identify
25 this, and review what is shown thereon?

1 A Okay. This is the Exhibit One. This ex-
2 hibit outlines the pools in the area, which is the Ojito
3 Gallup Pool in green; the West Lindrith Gallup-Dakota Pool
4 in pink; and the Gavilan Mancos Pool in yellow.

5 The proposed extension that ARCO is seek-
6 ing is dashed in pink.

7 Q With the exception of Section --

8 A Section 24, 25, and the north half of 36.

9 Q Would you identify the tracts in which
10 ARCO holds an interest in this proposed extension?

11 A We have an interest in Section 13, the
12 shaded area.

13 We have an interest in 23, 27, this area,
14 this area, and then we also have a contractual agreement
15 with (not understood) Hill on a farmout and it contains ac-
16 reage in Section 22, 23, and additional acreage in 13.

17 Q So in Section 27 you have interests in
18 all but the northeast quarter.

19 A Exactly.

20 Q Was Exhibit Number One prepared by you?

21 A Under my supervision.

22 Q And can you testify as to its accuracy?

23 A Yes, I can.

24 MR. CARR: At this time, Mr.
25 Stogner, we would offer into evidence ARCO Exhibit Number

1 One.

2 MR. STOGNER: Are there any ob-
3 jections?

4 Exhibit Number One will be ad-
5 mitted into evidence.

6 Q Do you have anything further to add to
7 your testimony?

8 A I do not.

9 MR. CARR: That concludes my
10 direct examination of Ms. Armstrong.

11 MR. STOVALL: We would like to
12 ask --

13 MR. STOGNER: Mr. Stovall, your
14 witness.

15 MR. STOVALL -- just to clarify
16 something for -- for later purposes.

17

18 CROSS EXAMINATION

19 BY MR. STOVALL:

20 Q In Section 13 you've indicated you have
21 an acreage. Would you describe accurately the area which
22 you have a lease on?

23 A Okay.

24 Q Rather than referring to the gray area on
25 the map.

1 A Okay. We have a lease in the east half
2 east half of Section 13.

3 We have a farmout agreement on the south
4 half of the southwest quarter of Section 13.

5 In addition, we also have a farmout on
6 the west half southeast quarter of Section 13.

7 MR. STOVALL: That's all I
8 wanted to ask.

9 MR. STOGNER: Any further ques-
10 tions of this witness?

11 MR. CARR: No further ques-
12 tions.

13 MR. STOGNER: If not, she may
14 be excused.

15 MR. CARR: At this time I would
16 call Willie Mattison.

17
18 WILLIE MATTISON,
19 being called as a witness and being duly sworn upon his
20 oath, testified as follows, to-wit:

21
22 DIRECT EXAMINATION

23 BY MR. CARR:

24 Q Please state your name and where you
25 reside.

 A Willie, Wilifred Mattison, Denver, Colo-
rado.

1 Q By whom are you employed?

2 A ARCO Oil and Gas Company.

3 Q And in what capacity?

4 A A senior geologist.

5 Q Mr. Mattison, have you previously testi-
6 fied before the Division and had your credentials accepted
7 and made a matter of record?

8 A No, I have not.

9 Q Would you review your educational back-
10 ground for Mr. Stogner and then summarize your work exper-
11 ience?

12 A I have a BS degree in science from South
13 Carolina State College, an MS degree in earth science,
14 McGinley State College, Petersburg, Virginia.

15 Q When did you receive these degrees?

16 A In 1970, the MS degree.

17 Q And since that time for whom have you
18 worked?

19 A ARCO Oil and Gas Company, subsidiary of
20 Atlantic Richfield.

21 Q And during this period of time have you
22 -- how long have you been stationed in the Denver office?

23 A For the last several years I've worked in
24 the Rocky Mountains, particular emphasis on the San Juan
25 Basin.

1 Q Is the area which is the subject of to-
2 day's hearing within your area of responsibility?

3 A Yes, it is.

4 Q Are you familiar with the application
5 filed in this case on behalf of ARCO Oil and Gas?

6 A Yes, I am.

7 MR. CARR: We tender Mr. Matti-
8 son as an expert witness in petroleum geology.

9 MR. STOGNER: Are there any ob-
10 jections?

11 MR. STOVALL: No.

12 MR. STOGNER: Mr. Mattison is
13 so qualified.

14 Q Would you please refer to what has been
15 marked for identification as ARCO Exhibit Number Two, iden-
16 tify this, and explain what it shows?

17 A Exhibit Two is a structure map contoured
18 on the base of the Greenhorn formation. The contour inter-
19 val is 50 feet. The regional dip is off to the northeast.

20 The purpose of this map is to show that
21 entrapment of oil and gas within the West Lindrith, the Oji-
22 to, and Gavilan Field area is mainly stratigraphic.

23 Q Is there anything on this map which indi-
24 cates any fracturing?

25 A Yes. In the West Lindrith area there is

1 a change in your contours, which they become closely spaced
2 and also there's an indication, a field study, which show
3 that there are fracturing within the rocks within the West
4 Lindrith area. Also there's variations between the oil and
5 gas ratios.

6 A combination of these factors indicates
7 some type of fracture or some minor faulting within the
8 area.

9 Q Does this exhibit also contain traces
10 for subsequent cross sections?

11 A Yes, it does.

12 Q Would you now refer to what has been mar-
13 ked as ARCO Exhibit Number Three, which is the north/south
14 Dakota cross section, and review this for the Examiner?

15 A Exhibit Three is a north/south cross sec-
16 tion which runs along the dotted line on the left side of
17 the map.

18 The purpose of this cross section is to
19 show the similarities in the lithologies between the Ojito
20 and the West Lindrith Fields; however, within the area of
21 the West Lindrith Field overall the producing Dakota zone
22 appears to be a little better developed.

23 Q Do these better zones extend into the
24 proposed area we seek to extend the pool into?

25 A Yes. It's our prediction that these

1 zones will extend into that area.

2 Q Are you ready now to go to your
3 north/south Gallup cross Section?

4 A Yes, I am.

5 Q That is ARCO Exhibit Number Four?

6 A Yes, it is.

7 Q Would you please review that for Mr.
8 Stogner?

9 A Exhibit Number Four is a stratigraphic
10 cross section of the Gallup formation which runs along the
11 the same line of section as the previously discussed Dakota
12 section.

13 Basically this cross section shows that
14 the producing intervals in Ojito extend into the West Lin-
15 drith area and are expected to be productive -- expected to
16 be present in the area of the proposed well location.

17 Q Mr. Mattison, would you now go to Exhibit
18 Number Five, which is your east/west Dakota cross section
19 and review this for the Examiner?

20 A Exhibit Number Five is a Dakota strati-
21 graphic cross section when extends along the dotted line
22 which is from west to east, from the Ojito into the Gavilan
23 Pool area, and again this, the purpose of this cross section
24 and what it shows is that there are similarities in the
25 lithology between the Ojito and the Gavilan Field area.

1 Q And the Dakota area would be present
2 throughout the proposed extension?

3 A Yes, it would.

4 Q Okay. Would you now go to your Exhibit
5 Number Six, which is the east/west Gallup cross section, and
6 review this?

7 A Exhibit Six is also a stratigraphic cross
8 section of the Gallup formation which extends along the same
9 section as the previously discussed Dakota formation and it
10 also shows that the Gallup producing interval in the Ojito
11 area is also present in the West Lindrith -- I mean the Gav-
12 ilan area.

13 Q Now, Mr. Mattison, based on your struc-
14 ture map and the cross sections, what conclusions can you
15 reach? What do these show?

16 A These show that in the proposed area, the
17 West Lindrith Field area, we anticipate similar structural,
18 stratigraphic conditions within our proposed well location.

19 Q They would be similar to those in the
20 West Lindrith?

21 A In the West Lindrith.

22 Q Do you have anything further to add to
23 your testimony?

24 A No, I do not.

25 Q Were Exhibits Two through Six prepared by

1 you?

2 A Yes, they were.

3 MR. CARR: At this time, Mr.
4 Stogner, we would offer into evidence ARCO Exhibits Two
5 through Six.

6 MR. STOGNER: Are there any ob-
7 jections?

8 MR. STOVALL: No, sir.

9 MR. STOGNER: Exhibits Two
10 through Six will be admitted at this time.

11 Mr. Stovall, your witness.

12 MR. STOVALL: No questions.

13 MR. STOGNER: Okay.

14 MR. STOVALL: Sorry, I'll think
15 of one real quick.

16 MR. STOGNER: I have no
17 questions of this witness at this time.

18 Is there anything further of
19 Mr. Mattison?

20 A No, there isn't.

21 MR. STOGNER: He may be
22 excused.

23 Mr. Carr?

24 MR. CARR: At this time we
25 would call Roger Trimble.

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ROGER TRIMBLE,

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

DIRECT EXAMINATION

BY MR. CARR:

Q Would you state your full name for the record, please?

A Roger Derek Trimble.

Q Where do you reside?

A I reside in Denver, Colorado.

Q By whom are you employed?

A ARCO Oil and Gas Company?

Q And in what capacity?

A As a reservoir engineer.

Q Have you previously testified before this Division?

A No, I haven't.

Q Would you review your educational background for Mr. Stogner?

A ~~Received a Bachelor of Science degree in~~ Received a Bachelor of Science degree in petroleum engineering from Stanford University in May, 1983.

Q Since that time by whom have you been employed?

1 A ARCO Oil and Gas.

2 Q At all times?

3 A Yes.

4 Q And have you been in the Denver Region
5 during this entire time?

6 A The entire time, yes.

7 Q Does your area of responsibility include
8 the acreage which is the subject of today's hearing?

9 A Yes, it does.

10 Q Are you familiar with the application
11 filed in this case?

12 A Yes, I am.

13 MR. CARR: At this time, Mr.
14 Stogner, we would tender Mr. Trimble as an expert witness in
15 petroleum engineering.

16 MR. STOGNER: Are there any ob-
17 jections?

18 MR. STOVALL: No.

19 MR. STOGNER: Mr. Trimble is so
20 qualified.

21 Q Have you prepared certain exhibits for in-
22 troduction in this case?

23 A Yes, I have.

24 Q Would you refer to what has been marked
25 for identification as ARCO Exhibit Number Seven, identify

1 this, and review the information contained thereon?

2 A All right. Exhibit Number Seven is a
3 summary of various wells found in the Ojito, West Lindrith,
4 and Gavilan areas. In each of these wells, I've identified
5 them by name and location, then listed information such as
6 completion date, the net perforated interval in each well,
7 and from there I go into a listing of the initial potential
8 of each of these wells, the current hydrocarbon producing
9 rates of these wells, and finally the cumulative recovery as
10 of the end of 1984.

11 The second to last column is my estimate
12 of the ultimate recovery in thousands of barrels of oil for
13 each of these wells, and then with this number I've come up
14 with the final column numbers, which is a calculation of the
15 estimated ultimate drainage area.

16 Q Now, Mr. Trimble, would you review for
17 the Examiner how you take this information and calculate the
18 drainage area?

19 A Okay. The ultimate recovery of oil for
20 each well is estimated using generally accepted exponential
21 decline curve analysis methods and then this number is plug-
22 ged into the standard drainage area calculation equation
23 whereby the ultimate recovery is plugged in along with such
24 information as oil formation volume factor, the estimated re-
25 covery factor, and then various interpretive parameters,

1 which are determined from log calculations, such as poro-
2 sity, net pay, and water saturation.

3 Combining all these together you come up
4 with ultimate drainage area estimate.

5 Q Would you refer to Exhibit Number Eight,
6 and identify that, please?

7 A Okay. Exhibit Number Eight is a drainage
8 area map which depicts the wells which have been listed pre-
9 viously on Exhibit Number Seven.

10 The blue shading of wells found in the
11 Ojito Gallup-Dakota Pool and the West Lindrith Gallup-Dakota
12 Pool is indicative of what I have estimated to be the ulti-
13 mate radial drainage for each of these wells in the Dakota
14 formation alone.

15 I chose the Dakota formation as the one
16 to evaluate since information we have available in the case
17 of the Dakota is much more prolific than the Gallup forma-
18 tion in this area.

19 Q What are the red circles over in the Gav-
20 ilan Mancos Pool?

21 A The Rucker Lake No. 2 and Rucker Lake No.
22 3 wells were completed in the Gallup alone and the Gallup
23 formation is much more prolific on the east; therefore the
24 red shading is indicative of ultimate drainage area in the
25 Gallup formation.

1 Q So that's your radius of drainage or your
2 drainage area for each of those wells in the Gallup.

3 A That's right.

4 Q What is the current spacing in the Ojito
5 Gallup?

6 A 40 acres.

7 Q And in the West Lindrith?

8 A 160 acres.

9 Q So the effect of this extension will be
10 to extend the 160-acre spacing into the proposed extension
11 area.

12 A That's correct.

13 Q If I look at Exhibit Number Eight,
14 there's wide variation in the drainage area well by well.
15 Do you have any explanation for this?

16 A The variation in a regional sense as far
17 as the well's productivity in terms of the ultimate drainage
18 is a reflection of the variability and the presence of
19 natural fracturing in both the Gallup and Dakota formations.

20 The presence of natural fracturing was
21 referred to previously by Willie Mattison and down in the
22 West Lindrith area we find that the several Phillips wells
23 seem to be benefiting from the presence of this natural
24 fracturing, which enhances the permeability of the forma-
25 tions, thereby the ultimate productivity and drainage of

1 these wells.

2 Q If I look at the Ora Wells 1 and 2 in --
3 No. 1 and No. 2, located in Section 21, they seem to drain a
4 relatively small area.

5 Wouldn't this actually support 40-acre
6 spacing?

7 A Those two particular wells seem to not
8 have encountered the natural fracturing which several other
9 wells in the area have, but if we go immediately to the west
10 we see that the Rentz No. 7 is by my estimates at ultimate
11 recovery should drain in excess of 110 acres. Therefore
12 what ARCO, we are hoping in our particular area, is that our
13 two proposed locations will encounter similar natural frac-
14 turing and if in fact we do, the ultimate productivity and
15 drainage of these wells would be enhanced such that 40-acre
16 spacing would be committing us to drilling additional wells
17 which would not be economically necessary in our minds.

18 160-acre spacing, on the other hand, al-
19 lows us the flexibility that if we do in fact encounter
20 wells with similar ultimate drainage as the Rentz No. 7, we
21 are then all right.

22 If in fact we do not, then we have the
23 flexibility by virtue of the proration within the West Lin-
24 drith Gallup-Dakota Pool of drilling additional wells.

25 Q So if you encountered a well like one of

1 the Ora Wells, you would be able to drill an additional well
2 on that spacing and simultaneously dedicate them.

3 A That's correct.

4 Q If you were compelled to go on 40-acre
5 development, is it your testimony that you'd be in certain
6 circumstances be required to drill unnecessary wells?

7 A Yes, and in so doing we would be -- we
8 would have economic waste inflicted upon us.

9 Q Do you believe that being required to
10 drill upon a smaller spacing pattern would also impair your
11 correlative rights?

12 A That is correct.

13 Q When does ARCO need to go forward and
14 drill wells on the farmouts and acreage which are depicted
15 on Exhibit Number One?

16 A The location depicted as ARCO Hill No. 1
17 in the northeast quarter of Section 22, we have a
18 contractual deadline of August 1st in terms of the farmout
19 that we have with Hill in that area, as far as spudding the
20 well on the August 1st date.

21 As far as the ARCO Leeson No. 1 in the
22 southwest quarter of Section 27, we have a lease deadline on
23 the 6th as far as spudding in that well.

24 Q You therefore request that the order en-
25 tered in this case be expedited?

1 A We do or (not understood).

2 Q Were Exhibits Seven and Eight prepared by
3 you?

4 A Yes, they were.

5 MR. CARR: At this time, Mr.
6 Stogner, we would offer ARCO Exhibits Seven and Eight.

7 MR. STOGNER: Any objections?

8 MR. STOVALL: No objections.

9 MR. STOGNER: Exhibits Seven
10 and Eight will be admitted in evidence.

11 Mr. Stovall, your witness.

12

13 CROSS EXAMINATION

14 BY MR. STOVALL:

15 Q I just have a couple of questions,
16 particularly with regard to the wells you've listed on your
17 Exhibit Seven in the Gavilan Pool.

18 A Uh-huh.

19 Q Is it not correct that between that net
20 pay porosity and water saturations in the Gavilan Mancos are
21 difficult to determine, if not impossible in a fractured
22 pool of this nature?

23 A There are some difficulties in terms of
24 calculations of those parameters which you've just listed,
25 but within the Engineering Department at ARCO we believe we

1 have adequate methods as far as determination of such values
2 in fractured reservoirs.

3 Q But your estimates of the ultimate
4 drainage area based on those are just estimates --

5 A That is correct.

6 Q -- in the Rucker Lake 2 and 3 Wells.

7 A They are estimates from--

8 Q And --

9 A -- ARCO Oil and Gas.

10 Q -- is there, do you know of any fluid
11 data available in the Gavilan or is there a question, really
12 a question of the drainage area in that?

13 A As far as the Gavilan Mancos Pool is con-
14 cerned, there are written papers in the literature which do
15 make reference to literate (sic) data. Such information is
16 available.

17 MR. STOVALL: I have no further
18 questions.

19

20 CROSS EXAMINATION

21 BY MR. STOGNER:

22 Q Mr. Trimble.

23 A Yes.

24 Q On Exhibit Number Eight, scanning the ex-
25 tension area with the exceptions of Sections 24 and 25 and

1 the north half of 36, has most of this area had -- that has
2 had Gallup-Dakota wells on it, are they basically developed
3 on 160-acre spacing?

4 A In the West Lindrith Gallup-Dakota Pool
5 wells for the most part have been drilled initially on 160-
6 acre spacing.

7 Q Okay, how about the extension area?

8 A Within the extension area we are aware of
9 no Gallup-Dakota Pools that have been drilled and completed.

10 MR. CARR: Wells, Gallup-Dakota
11 wells.

12 A Gallup-Dakota wells that have been dril-
13 led and completed in the area, we're aware of none.

14 The wells which you see depicted there
15 for the most part, I believe are all Pictured Cliffs gas
16 wells within the extension area.

17 Q Engineeringwise your well control is very
18 sketchy out here in this extension area, is it not?

19 A That is correct, and given the lack of
20 control, there exists the possibility or the lack thereof
21 that ARCO will encounter the same kind of natural fracture
22 which has been exhibited in the Gavilan Mancos Pool and the
23 West Lindrith Gallup-Dakota Pool.

24 Upon the assumption that the possibility
25 exists that we will encounter such fracturing, we therefore

1 are requesting the extension since the 160-acre spacing is
2 possible at first, such that we can evaluate the reservoir
3 on that spacing and see whether the natural fracturing is
4 present and if it is, in fact, then we can go ahead on
5 the assumption that 160-acre spacing will adequately drain
6 the reservoir.

7 MR. STOGNER: I have no further
8 questions of Mr. Trimble.

9 Any further questions of this
10 witness?

11 MR. CARR: No further
12 questions, Mr. Stogner.

13 MR. CARR: If not, he may be
14 excused.

15 MR. CARR: That concludes our
16 direct case.

17 MR. STOGNER: Mr. Stovall?

18 MR. STOVALL: I'd like to call
19 Mr. Roe.

20
21 JOHN ROE,
22 being called as a witness and being duly sworn upon his
23 oath, testified as follows, to-wit:
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DIRECT EXAMINATION

BY MR. STOVALL:

Q Would you state your name, please, and
your residence?

A Okay. My name is John Roe. I live in
Farmington, New Mexico.

Q And how are you currently employed?

A I'm employed by Dugan Production as a
petroleum engineer.

Q Have you testified before this Commission
previously and had your qualifications made of record?

A Yes, I have.

MR. STOVALL: I tender Mr. Roe
as an expert in petroleum engineering.

MR. STOGNER: Any objections?

MR. CARR: We stipulate he's a
qualified petroleum engineer.

MR. STOGNER: Thank you, Mr.
Carr, he is so qualified.

Q Mr. Roe, first Ms. Aubrey has testified,
or stated, that she is representing Jerome P. McHugh and
they concur in our statements.

Are you familiar with McHugh's interest?

A Yes, I am.

1 Q Then I'll ask you first, what is -- what
2 is Dugan Production's interest in this matter?

3 A Dugan Production and McHugh's interest
4 jointly in this is both as a leasehold interest within the
5 area that ARCO proposes as an extension to the West Lindrith
6 Gallup-Dakota and this area is an area that there are low
7 existing wells within the boundaries of their extension.

8 So we, like I say, we are leasehold
9 interest in the area affected, both singly as Dugan Produc-
10 tion and jointly with McHugh.

11 We also jointly and individually have in-
12 terest in the adjacent Gavilan Mancos and Gavilan Dakota
13 Pools, which is immediately to the east of the proposed ex-
14 tension.

15 Q All right, Mr. Roe, I'll refer you to,
16 perhaps somewhat sheepishly after this exhibit here, refer
17 you to Dugan Production's Exhibit Number One.

18 First, for clarification, on ARCO's Exhi-
19 bit Number One they've identified the Gavilan Mancos Pool.
20 Does that pool also include the Dakota formation or is there
21 a pool within that same area that includes the Dakota?

22 A There is a different pool, an additional
23 pool. It is called the Gavilan Dakota Pool, and it basical-
24 ly has the same boundary as the Gavilan Mancos with the ex-
25 ception that it also includes Section 18 and Section 17 of

1 25 North, 2 West.

2 That would be in the Gavilan Dakota and
3 not in the Gavilan Mancos.

4 I might point out that there is a well in
5 the southwest quarter of Section 17 that is in the process
6 of being completed and that will be an automatic extension
7 of the Gavilan Mancos, which would extend the Gavilan Mancos
8 developed on 320 and the Gavilan Dakota up into the west
9 half of Section 17.

10 Q Would you, referring now to Dugan's Exhi-
11 bit Number One, would you identify the acreage by reference
12 to markings on the map as to what acres Dugan has in the
13 proposed extension area and in adjacent areas?

14 A Yes. Exhibit One is a map that covers
15 the same general area as ARCO's map does.

16 It's a little bit smaller scale. I've
17 identified the same pool boundaries pretty much. The Ojito
18 Gallup Dakota Pool identified with the short vertical lines.
19 This pool is, or the boundary of this pool is, or a lot of
20 these pools, would be as of February 1st, 1985. That would
21 be my data source, anyway.

22 The West Lindrith Gallup Dakota Pool as
23 it exists, the boundary as it exists, is identified by the
24 long dashed line.

25 And then the proposed extension to this

1 pool, the West Lindrith Gallup Dakota Pool, would be identi-
2 fied by the slashed horizontal lines that delineates the
3 area that Atlantic Richfield originally had in their appli-
4 cation and then this where they've just deleted land within
5 three sections from their application, which is not reflec-
6 ted on my exhibit.

7 I have also indicated the boundary of the
8 Gavilan Mancos and Dakota Pools. I have not actually shown
9 the boundary, the northern boundary of the Gavilan Dakota,
10 which, as I've indicated does include Section 17 and 18.

11 In yellow I've indicated the leasehold
12 interest that Dugan Production has individually and in
13 orange I've indicated the leasehold interest Dugan Produc-
14 tion has jointly with McHugh.

15 I have also indicated our joint leasehold
16 interest within a mile radius of Atlantic Richfield's east-
17 ern boundary of the proposed extension.

18 I have not indicated all of our leasehold
19 interest on this map, only the leasehold interest that would
20 be affected by ARCO's application. I would like to point
21 out that within the pool area, as it's contracted, excluding
22 Section 24 and 25 and 36, there's approximately 8240 acres
23 and within that Dugan and McHugh jointly and individually
24 have approximately 28 percent of that leasehold interest
25 that will be affected by this application.

- 1 Q You are familiar with the application?
- 2 A Yes, I am.
- 3 Q Does Dugan Production Production Corpora-
4 tion oppose the application?
- 5 A We do not oppose Atlantic Richfield's ap-
6 plication, or --
- 7 Q I'll proceed with the next question, per
8 haps.
- 9 Do you see any -- any potential difficul-
10 ties with the application? Let me clarify on that.
- 11 The Gavilan Mancos and the Gavilan Dakota
12 Pools are spaced on what proration unit?
- 13 A This would be the primary difficulty.
14 The Gavilan Mancos and Gavilan Dakota are spaced on 320's.
- 15 Q And the West Lindrith would be spaced on?
- 16 A 160's.
- 17 Q Do you see a problem with a 320 pool ad-
18 joining a 160-acre pool?
- 19 A Yes, I see some potential problems with
20 leasehold interest.
- 21 Q It would probably be in the protection of
22 correlative rights where the drilling density would be dif-
23 ferent?
- 24 A Yes.
- 25 Q Do you see a -- in this particular case,

1 do you see a potential reasonable resolution to protect the
2 correlative rights of the parties in both pools?

3 A Well, as of any time you have wells
4 developed on 160-acre spacing adjacent to areas that are re-
5 stricted to one well for 320 acres, there will be a poten-
6 tial for some drainage problems, if in fact one well can
7 drain 320 acres, which it is our opinion that does happen in
8 the West Lindrith area. I mean in the Gavilan Mancos area.

9 We have visited with Atlantic Richfield
10 and I think mutually agreed that a possible solution would
11 be to restrict the development in the eastern half of the
12 sections that are contiguous with the western boundary of
13 the Gavilan Mancos and Gavilan Dakota Pool and the only re-
14 striction that we would ask is that the wells in the eastern
15 half of those sections that are adjacent to the Gavilan Man-
16 cos, wells be located in the western half of the eastern
17 half of those sections, still on the 160-acre spacing.

18 Q Now, as they have modified their applica-
19 tion, having deleted parts of 24, 25, and 36, are there ac-
20 tually any areas where the two pools would be abutting?

21 A Well, from the standpoint -- yes, from
22 the standpoint that the Gavilan Mancos Pool has been ex-
23 tended into Section 17 with the completion of Mesa Grande
24 Resources Brown 117 -- or Brown No. 1 in Section 17, and the
25 Dakota Pool was originally established to include Section 17

1 and 18. Section 13 and Section 18 are adjacent.

2 Q What is -- is Section 18 and 25, too, a
3 standard sized section?

4 A No, that -- that complicates the matter
5 even more.

6 The sections that are along the township
7 and range line there are all approximately 160 acres per
8 section.

9 Q All right, so that Section 18 that you
10 say is a 160-acre section, abuts Section 13, which would be
11 in the proposed new pool.

12 You heard Ms. Armstrong testify to the
13 acreage which ARCO has either under farmout agreement or out
14 and out lease in Section 13. What acreage, would you iden-
15 tify it specifically, does Dugan have in Section 13?

16 A Okay. Well, within Section 13 Dugan pro-
17 duction has leasehold acres that we own individually totally
18 approximately 320 acres. It would comprise the northwest
19 quarter, the west half of the northeast quarter, and the
20 north half of the southwest quarter.

21 Q That acreage then coupled with ARCO, with
22 the acreage ARCO has control of, would that include all of
23 Section 13?

24 A I quite honestly wasn't paying as much
25 attention to their total acreage description as I should

1 have been, but I think that that's a correct statement.

2 MR. STOVALL: Would you agree,
3 Mr. Carr?

4 MR. CARR: Yes, we'd agree.

5 Q Then in that one section, Section 13,
6 being the only section which is going to be affected by the
7 problem of 320 spacing butting up against a 160 spacing, if
8 -- would you suggest that the pool rules for the West Lin-
9 drith Pool be modified to include the restriction on drill-
10 ing in the west half of the east half of Section 13?

11 A Yes. That would be our recommendation to
12 -- as an effort to protect correlative rights of the acreage
13 that would be within the Gavilan Mancos Pool that is
14 restricted to 320-acre development, and we feel that it
15 would also best serve to protect correlative rights within
16 the West Lindrith Gallup-Dakota Pool.

17 Q And how would you propose developing Sec-
18 tion 18 if you were to have the opportunity to make that de-
19 cision?

20 A Well, Section 18, or as any of the sec-
21 tions adjacent to the township line are going to have to be
22 developed on a nonstandard production unit within the Gavi-
23 lan Mancos Pool.

24 They would probably be developed in order
25 to effectively develop all of the acreage, we, just offhand,

1 provided topography would permit, be required to drill a
2 well in the center of a section or as close to the center of
3 a section as we could, and have a 160-acre production unit.

4 Q So in other words, what you have is a
5 pattern in which the Section 13 would be developed on 160-
6 acre spacing with wells in the west half of each quarter and
7 Section 18 would be developed on 160-acre spacing with a
8 well in the middle of the section, middle of that long sec-
9 tion.

10 A Be developed on 160-acre units with, yes,
11 that is a correct statement.

12 Q Is Dugan Production, to your knowledge,
13 in favor or opposed to the inclusion of Section 24, 25, and
14 26 in the West Lindrith Pool?

15 A Dugan Production would support the inclu-
16 sion of those in the West Lindrith; however our leasehold
17 position, we have acreage in Section 25 and 36 but none in
18 24 and really don't have any basis for -- for that at this
19 point.

20 Q Well, if it were to be included would you
21 want the same type of rules we're talking about drilling on
22 160's in 24 and 25 and the north half of 36 --

23 A It would be --

24 Q -- with drilling limited to the west half
25 of the quarter sections?

1 A Yes. Any acreage that would be adjacent
2 to the Gavilan Mancos at the current time, why, we'd like
3 that restriction.

4 Q But we would not be -- but Dugan would
5 not be opposed to the inclusion of those sections in the
6 pool now or at some later date.

7 A We would prefer that they be included
8 now. If not now, we would need to be addressing to include
9 them with restrictions at some later date from a standpoint
10 that we can foresee if we don't address this problem of
11 160's against 320's in an orderly manner, we see some real
12 problems.

13 Q Let me first, Mr. Roe, take care of
14 admitting Exhibit One. Did you stay up late last night with
15 your colored pencils and little cellophane strips and mark
16 the borders and color in Exhibit One so you know it's true
17 and accurate?

18 A Yes. If your copy is a little sloppy,
19 that's why.

20 MR. STOVALL: I would move the
21 admission of Exhibit Number One, Dugan Production Exhibit
22 Number One.

23 MR. STOGNER: Are there any ob-
24 jections?

25 MR. CARR: No objections.

1 MR. STOGNER: Dugan's Exhibit
2 Number One will be admitted into evidence.

3 Mr. Carr, your --

4 MR. STOVALL: I have -- excuse
5 me, Mr. Stogner, I have one question. I've got a couple of
6 quick questions on ARCO's Exhibit Number Seven I'd like to
7 ask Mr. Roe.

8 MR. STOGNER: I apologize Mr.
9 Carr and Mr. Stovall.

10 Q Mr. Roe, are you aware of any fluid data
11 with regard to the Gavilan and the question of a drainage
12 area? We're looking at particularly Exhibit Seven, ARCO's
13 Exhibit Seven, the Rucker Lake 2 and 3 Wells.

14 Do you feel the flow data supports the
15 conclusions that have been reached by --

16 A I do not. There is no fluid data
17 available from any well within the Gavilan Mancos Pool or
18 Gavilan Dakota Pool.

19 Any references that may exist to fluid
20 data would be from wells that are even further to the east
21 and that would be in the West Puerto Chiquito Pool.

22 Q Do you have any opinion as to his esti-
23 mates of the ultimate drainage area of the Rucker Lake 2 and
24 3 Wells in the Gavilan area?

25 A We've spent quite a bit, a great deal of

1
2 time studying that area and we feel that the acreage that is
3 being drained in the better portion of the Gavilan Mancos is
4 -- is greater than what's indicated on ARCO's exhibit.

5 MR. STOVALL: I have no further
6 questions.

7 MR. STOGNER: Thank you, Mr.
8 Stovall.

9 Mr. Carr, your witness.

10
11 CROSS EXAMINATION

12 BY MR. CARR:

13 Q Mr. Roe, just one question. You are con-
14 cerned about the West Lindrith on 160 adjoining actually ac-
15 reage that -- for which wider spacing might be appropriate.

16 A Yes, sir. We're kind of stuck in the
17 middle. We're involved in both. We realize that the West
18 Lindrith has been developed on 160's and we're not opposed
19 to that.

20 Our only concern is to in some manner
21 provide a method that there can be development of leases in
22 West Lindrith adjacent to leasehold interest in Gavilan Man-
23 cos, especially from the standpoint that we think 320-acre
24 drainage may be occurring in Gavilan Mancos.

25 MR. CARR: I have no further
questions.

1 MR. STOGNER: I have no ques-
2 tions of Mr. Roe.

3 Are there any questions of this
4 witness? If not, he may be excused.

5 Mr. Stovall, do you have any
6 more witnesses?

7 MR. STOVALL: I have no more
8 witnesses.

9 MR. STOGNER: Okay. Mr. Carr,
10 I have one question of ARCO.

11 MR. CARR: Yes, sir.

12 MR. STOGNER: And I guess we'll
13 recall Mr. Roger Trimble.

14 MR. CARR: Trimble? Roger.

15
16 ROGER TRIMBLE,
17 being recalled as a witness and being previously sworn upon
18 his oath, testified as follows, to-wit:

19
20 RECROSS EXAMINATION

21 BY MR. STOGNER:

22 Q Mr. Trimble, in regarding Exhibit Number
23 Eight.

24 A Yes.

25 Q When does ARCO propose to drill the ARCO

1 Hill No. 1 and then the ARCO Leeson No. 1?

2 A We propose to spud both of these wells
3 sometime within the month of July.

4 Q And those, of course, if this application
5 is approved would have 160-acre spacing, would that not be?

6 MR. CARR: That is correct.

7 Q What would be the total depth of both
8 these wells?

9 A I'd have to defer to our geological wit-
10 ness since this is an extension proposal that has been pro-
11 posed by engineering.

12 MR. CARR: Would you like Mr.
13 Mattison to answer that?

14 MR. STOGNER: Yeah. Mr. Matti-
15 son, why don't you answer that question?

16 MR. MATTISON: Yes. The ARCO
17 Leeson proposed depth, as I recall, is about 8250.

18 The ARCO Hill is 8400 total
19 depth.

20 MR. STOGNER: Without me having
21 to go back to the larger exhibits here, that depth would, of
22 course, be sufficient enough to test the Gallup Dakota but
23 how much deeper would these wells be than the Gallup Dakota
24 formation?

25 MR. MATTISON: That depth is

1 projected to be 50 feet into the Morrison, which is 50 feet
2 below the Basal Dakota section.

3 MR. STOGNER: I have no -- I do
4 not have any questions of either one of these witnesses.

5 Is there anything further in
6 this case?

7 MR. CARR: Just a real brief
8 statement, Mr. Stogner.

9 MR. STOGNER: Okay. Well,
10 okay.

11 MR. CARR: And I don't --

12 MR. STOGNER: Is there any
13 questions of the end of the witnesses, other than final
14 statements?

15 There appear to be none.

16 Ms. Aubrey, do you have a final
17 statement?

18 MS. AUBREY: Yes. On behalf of
19 Jerome P. McHugh, we concur in the statements and comments
20 and testimony of Mr. Roe with regard to the extension of the
21 West Lindrith Gallup Pool.

22 MR. STOGNER: Thank you. Mr.
23 Stovall, any final comments?

24 MR. STOVALL: Yes, I'll make a
25 brief one.

1 Dugan Production, as was stated
2 does not oppose the application of ARCO to extend the pool.
3 We would even agree or concur to the extent that should the
4 pool include Section 24 and 25 and 36; however, as Mr. Roe
5 testified, we have some problem with 160-acre spacing abut-
6 ting a 320-acre spacing.

7 We believe we have a reasonable
8 solution to it; however, I think there's a publication prob-
9 lem with amending the rules with regard to those sections at
10 this hearing, and therefore we could concur in the deletion
11 of those -- those sections, absent a rule limiting produc-
12 tion to the west half of the east half of those sections.

13 At some future time, probably
14 in the near future, Dugan Production itself may file an ap-
15 plication to bring those sections into the West Lindrith
16 with special pool rules.

17 We think that the extension of
18 that West Lindrith to the original proposed boundary by ARCO
19 makes sense because due to the nature of the government sur-
20 vey in those oddball shaped sections, that the west edge of
21 25, 2, you can make a very logical transistion from 320-acre
22 spacing to 160-acre spacing.

23 Dugan and ARCO presently con-
24 trol all of the acreage in Section 13 and it's our conten-
25 tion and we would ask that it be included in the present ex-

1 tension of West Lindrith with the rule modification that
2 drilling be restricted to the west half of the east half of
3 Section 13 because we control all the acreage and I don't
4 think that will affect any other rights, other than Dugan's
5 and ARCO's, and then coming down at this hearing, or as a
6 result of this hearing.

7 Other than that we concur fully
8 in what ARCO seeks and support their application.

9 MR. STOGNER: Thank you, Mr.
10 Stovall.

11 Mr. Carr.

12 MR. CARR: Mr. Stogner, ARCO is
13 before you today seeking the extension of 160-acre spacing
14 into an area where there really had been no Dakota or Gallup
15 Dakota wells drilled.

16 We're doing this because we be-
17 lieve that the evidence we do have available to us from the
18 wells in the Ojito Gallup Pool to the north and also from
19 the West Lindrith, clearly indicate that 160 is probably the
20 correct spacing.

21 As we move off to the east we
22 see that we get into an area that's spaced on 320. If 160
23 is authorized and it is deemed later to be inappropriate, of
24 course, we can always go back and drill on a denser spacing
25 pattern.

1 If we are not authorized to do
2 that now, we submit that what we're looking at is the possi-
3 bility of unnecessary wells and the inherent result of eco-
4 nomic waste.

5 Today we've deleted certain ac-
6 reage, being Sections 24 and 25 and the north half of 36.
7 We did this because we're interested today and we will be in
8 the future in avoiding a problem when we have these two
9 spacing patterns butting up against each other of creating a
10 situation where one person gains a drainage advantage over
11 the other.

12 Mr. Stovall has mentioned the
13 advertising problems and it is -- I can represent to you on
14 behalf of ARCO that we are anxious to work with Mr. McHugh
15 and Mr. Dugan now and in the future to assure that the
16 drainage problem doesn't develop along the Mancos Pool.

17 We would ask that the applica-
18 tion be granted and request that the order be expedited so
19 that we can meet our drilling commitments.

20 MR. STOGNER: Thank you, Mr.
21 Carr.

22 Anything further in Case Number
23 8634?

24 There being none, this case
25 will be taken under advisement and that concludes today's
hearings in Docket No. 20-85.

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C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8634, heard by me on 19 June 1985.

Michael P. Stegner, Examiner
Oil Conservation Division