

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
Santa Fe, New Mexico

8 April 1987

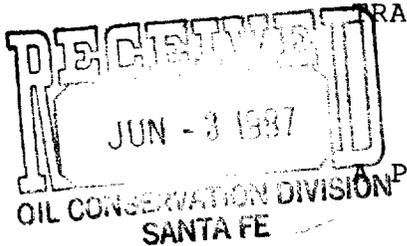
EXAMINER HEARING

IN THE MATTER OF:

Application of Conoco Inc. for pool creation, special pool rules, discovery allowable and an unorthodox oil well location, Lea County, New Mexico. CASE 9117

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING



A P P E A R A N C E S

For the Division:

Jeff Taylor
Legal Counsel to the Division
Oil Conservation Division
State Land Office Bldg.
Santa Fe, New Mexico

For the Applicant:

W. Thomas Kellahin
Attorney at Law
KELLAHIN, KELLAHIN & AUBREY
P. O. Box 2265
Santa Fe, New Mexico 87501

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

I N D E X

HUGH INGRAM

Direct Examination by Mr. Kellahin	4
Cross Examination by Mr. Stogner	14
Cross Examination by Mr. Taylor	16

BILL SAVAGE

Direct Examination by Mr. Kellahin	17
Cross Examination by Mr. Stogner	30

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

E X H I B I T S

Conoco Exhibit One, Form C-109	6
Conoco Exhibit Two, Form C-102	9
Conoco Exhibit Three, Map	10
Conoco Exhibit Four, Map	12
Conoco Exhibit Four-A, Return Receipts	12
Conoco Exhibit Five, Wellbore Diagram	18
Conoco Exhibit Six, Wellbore Diagram	19
Conoco Exhibit Seven, Table	20
Conoco Exhibit Eight, Log	22
Conoco Exhibit Nine, Graph	23
Conoco Exhibit Ten, Graph	24
Conoco Exhibit Eleven, Graph	25
Conoco Exhibit Twelve, Tabulation	26
Conoco Exhibit Thirteen, Tabulation	27
Conoco Exhibit Fourteen, Calculations	27

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

MR. STOGNER: Call next Case
Number 9117.

MR. TAYLOR: The application of
Conoco, Incorporated, for pool creation, special pool rules,
discovery allowable, and an unorthodox oil well location,
Lea County, New Mexico.

MR. STOGNER: Call for appear-
ances.

MR. KELLAHIN: If the Examiner
please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing
on behalf of the applicant, and I have two witnesses to be
sworn.

MR. STOGNER: Are there any
other appearances in this matter?

Will both witnesses please
stand and be sworn at this time?

(Witnesses sworn.)

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

DIRECT EXAMINATION

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

BY MR. KELLAHIN:

Q Mr. Ingram, for the record would you please state your name and occupation?

A My name is Hugh Ingram. I'm Conservation Coordinator for Conoco for the Hobbs Division, covering all of New Mexico.

Q Have you previously testified before the Oil Conservation Division of New Mexico, Mr. Ingram?

A Yes, I have.

Q Would you describe for us, Mr. Ingram, what it is that Conoco seeks to accomplish with this application?

A In Case Number 9117 Conoco seeks discovery allowable, new pool designation, and approval of an unorthodox location for its Bell Lake Unit Well No. 11. Also we seek temporary pool rules designating 80-acre spacing, special well location requirement for the new pool providing that wells be located within 150 feet of center of the quarter quarter section.

Q You're proposing a creation of a new oil pool?

A That's right.

Q And the discovery well is identified as the Bell Lake Unit Well No. 11?

1 A That's correct.

2 Q And what is the proposed spacing that
3 you're requesting?

4 A 80 acres.

5 Q And for what period of time do you want
6 the Division to establish temporary pool rules for the pool?

7 A We would like one year temporary pool
8 rules.

9 Q With regards to well locations for the
10 new pool, Mr. Ingram, do you have a recommendation to the
11 Examiner as to a proposed well location requirement?

12 A Yes. We would suggest that wells be lo-
13 cated within 150 feet of the quarter quarter section, which
14 they're located.

15 Q Let me direct your attention to Exhibit
16 Number One and have you identify this exhibit and describe
17 what it is.

18 A Exhibit Number One is the Oil
19 Conservation Division Form C-109 and I included this form
20 merely to summarize some of the information pertaining to
21 this well and some offsetting wells to the Bell Lake Unit
22 Well No. 11.

23 It's just a summary sheet and all of the
24 information shown on this form will be talked about in more
25 detail later on in the testimony.

1 Q Let's pick out some of the information on
2 Exhibit Number One, for example, what is the proposed pool
3 name for the new pool?

4 A We propose calling the new pool Bell Lake
5 Cherry Canyon because other wells in that area carry the
6 Bell Lake designation in their pool names and so we propose
7 to carry that same name in the Cherry Canyon formation.

8 Q When was this well completed and ready to
9 produce, Mr. Ingram?

10 A The well was completed and ready to pro-
11 duce on February 12th, 1987.

12 Q And what was the initial test on the well
13 in terms of its ability to produce?

14 A The IP was 263 barrels of oil, 182 bar-
15 rels of water, and 230 MCF gas.

16 Q The exhibit indicates the top and the
17 bottom of the pay. Have you verified whether or not by us-
18 ing that interval we are including all of the Cherry Canyon
19 production zone within the discovery well?

20 A Yes. That also will be covered in a
21 later testimony by another exhibit, a log that will show the
22 top and bottom of the Cherry Canyon formation.

23 Q All right, sir. Now let's go to the bot-
24 tom of that exhibit and have you identify for me, sir, the
25 offset operators or interest owners that may be affected by

1 the formation of a new pool.

2 A Conoco is designated operator of the Bell
3 Lake Unit. The unit agreement provides that wells will be
4 drilled on an individual acreage basis with Conoco drilling
5 the wells if they so desire, and if the well becomes -- if
6 it's found to be economic, then -- and normally a participa-
7 ting area is established for that well, and then there might
8 be in that case as the participating area expands, there
9 could be other working interest owners come into part owner-
10 ship of that well.

11 However, on this acreage Conoco owns 100
12 percent of the working interest in the acreage on which this
13 well is located.

14 Q Would you identify for the Examiner the
15 other operators or working interest owners to whom you sent
16 notification of this case?

17 A Yes. In Section 36 to the east of this
18 well Exxon is the operator, the owner of that section, and
19 to the north in Section 30 Yates Petroleum is the owner of
20 that section.

21 To the southeast in the north half of the
22 northwest quarter of Section 5, we initially thought that
23 Tripor Oil was the owner of that 80-acre tract. I was un-
24 able to establish a mailing address for Tripor. I checked
25 with the New Mexico Oil Conservation Division in Hobbs. I

1 checked with the Bureau of Land Management in Hobbs, and
2 then just a couple of days ago I found out that it has
3 changed hands a couple of times and at this time MCO Resour-
4 ces in Houston own the rights in that 80-acre tract.

5 I have mailed by certified mail copies of
6 this notice of this hearing to Exxon and to Yates Petroleum.

7 I called MCO Resources on the phone Mon-
8 day and I found out that they own that interest and I told
9 them what we intended to do and asked them to notify the
10 Commission or us if they had any opposition to this case.

11 Q Finally among the requests that you're
12 making of the Examiner is the inclusion of approval of the
13 discovery well as an unorthodox location.

14 A That's correct.

15 Q Would you give the Examiner the exact
16 footage location for the discovery well?

17 A The Bell Lake Unit Well No. 11 is located
18 790 feet from the south line, 2265 feet from the west line
19 of Section 31, Township 23 South, Range 34 East, Lea County,
20 New Mexico.

21 Q Let's turn now, Mr. Ingram, to Exhibit
22 Number Two and have you identify and describe that exhibit.

23 A Exhibit Number Two is the Oil Conserva-
24 tion Division Form C-102. The purpose of this form is to --
25 is normally to obtain approval to drill. We're using the

1 form in this case to show the exact location of the Bell
2 Lake Unit Well No. 11 at the location just stated.

3 Also we have designated on Exhibit Two
4 the 80-acre tract that we propose to designate as the
5 proration unit for this well.

6 Q That's outlined in red and will be the
7 south half of the southwest quarter of that section.

8 A That's correct.

9 Q All right, sir, let's turn to Exhibit
10 Number Three and have you identify and describe that
11 exhibit.

12 A The Exhibit Number Three was included to
13 show the nearest Cherry Canyon production to our Bell Lake
14 Unit Well No. 11, as being Estoril's well in Section 8 --
15 I'm sorry, in Section 7 of Township 22 South, Range 34 East,
16 or it's more than five miles away from our Bell Lake Unit
17 Well No. 11.

18 Q All right, sir, what's identified by the
19 red arrow?

20 A It is identified by the green arrow.

21 Q Yes, sir, and now what is identified by
22 the red arrow?

23 A The red arrow identifies the Bell Lake
24 Unit Well No. 11, the well of this application.

25 Q Would you describe for the Examiner how

1 we ended up with an unorthodox well location for the subject
2 well?

3 A As you'll note on the Exhibit Three,
4 there are three wells within that quarter quarter section in
5 Section 31.

6 The first well, No. 1, designated by the
7 number one, was drilled back in the mid-fifties. It was in-
8 tended to be a Devonian gas well. The well was lost in the
9 Atoka. It was subsequently plugged and abandoned. A re-
10 placement well was drilled designated by the number one and
11 the letter A just to the southeast. That well was drilled
12 and completed in the Devonian, depleted. Subsequently com-
13 pleted in the Morrow and depleted, and it is now shut-in.

14 The Well No. 11 was drilled at the loca-
15 tion 790 from the south, 2265 from the west lines of Section
16 31, being the nearest location that we could drill to the
17 center of that quarter quarter section.

18 Q What has been the history of the attempts
19 to produce the subject well in various locations?

20 A The subject well was originally drilled
21 and completed in the Bone Spring formation. It produced
22 from that formation until such time as it became uneconomic
23 and was shut-in and has subsequently been recompleted in the
24 Cherry Canyon.

25 Q Let's turn now to Exhibit Number Four,

1 Mr. Ingram, and have you identify and describe that exhibit.

2 A Exhibit Number Four is a map showing the
3 location of the Bell Lake Unit Well No. 11, designated by
4 the red arrow. The circle around that section designates a
5 2-mile radius around the well, as required by OCD regula-
6 tions. All wells within a 2-mile radius have been identi-
7 fied.

8 The legend is shown in the lower lefthand
9 corner of the exhibit and by looking closely you can identi-
10 fy every well within a 2-mile radius and the formation in
11 which it was completed.

12 Q And the nearest well that produces from
13 the Cherry Canyon formation is located where, sir?

14 A We'd have to refer to -- back to Exhibit
15 Number Three and the nearest Cherry Canyon well to the well
16 of this application is more than five miles to the north-
17 east.

18 Q On Exhibit Four the area identified with-
19 in the circle other than the discovery well does not contain
20 any producing Cherry Canyon formation wells.

21 A No, it does not.

22 Q Let me have you identify Exhibit Four-A
23 for us, if you please, Mr. Ingram.

24 A Exhibit Number Four-A was included to
25 show that we have notified the offset operators and not only

1 offset operators but any operator within a one mile radius
2 of the well that has been recompleted because the proposed
3 pool boundary for our well will includes -- is within one
4 mile of acreage that is owned by other operators and so they
5 could be affecteds by the special pool rules.

6 Q Do you have a recommendation to the Exam-
7 iner as to the boundaries to be initially established for
8 the new pool?

9 A Yes. Referring again to Exhibit Number
10 Three, we have designated our proposed pool boundary by a
11 broken line covering the south half of Section 31 and the
12 north half -- that is in Township 23 South, Range 33 East --
13 I'm sorry, Range 34 East, and also the north half of the
14 north half of Section 6 in Township 24 South, Range 34 East.

15 Q What's the basis upon which you're
16 recommending the establishment of that area as the initial
17 pool boundary for the pool?

18 A Primarily the one -- the main reason that
19 I selected that pool boundary is because we do intend to
20 move to Well No. 12 just to the northeast of No. 11, as
21 shown on Exhibit Number Three and attempt to recomplete that
22 well in the Cherry Canyon formation and we also consider
23 Well No. 3 in the north half of the north half of Section 6
24 just to the south of No. 11 as a candidate for Cherry Canyon
25 completion.

1 Q Do you have a recommendation to the
2 Examiner as an effective date for establishment of the pool
3 rules?

4 A We would suggest that the date effective
5 for the new pool rule be the date of completion of the well,
6 date of first production, which is February 12, 1987.

7 Q February 12th, '87 is the first produc-
8 tion on the discovery well?

9 A That's correct.

10 Q All right.

11 MR. KELLAHIN: Mr. Examiner,
12 that completes my direct examination of Mr. Ingram.

13 My second witness is a petro-
14 leum engineer and he will discuss in detail for us the en-
15 gineering aspects of the case.

16

17 CROSS EXAMINATION

18 BY MR. STOGNER:

19 Q Mr. Ingram, when I received the applica-
20 tion for this proposal today, the boundaries were not men-
21 tioned in the application, so it was advertised that it was
22 cover that 80-acre proration unit, which we found out
23 through some telephone calls, and subsequently this applica-
24 tion was advertised as the boundary just being the south
25 half of the southwest quarter.

1 Now you've talked about several wells,
2 the No. 12 and the No. 3 subsequently being brought in to
3 the pool rules. Will these wells be covered under your pro-
4 posed pool rules? What I'm getting at is the one mile
5 boundary within the pool rules? Will that be sufficient or
6 do you think we should readvertise this for the pool rules
7 which you're proposing today?

8 A Mr. Examiner, I wouldn't suggest a read-
9 vertisement. We would have no problem with establishing the
10 pool boundary as covering only that 80-acre tract. Of
11 course, according to statewide rules, any well drilled with-
12 in one mile would automatically be drilled under those pool
13 rules, and so the pool would then be automatically adjusted
14 by any subsequent wells drilled and so I would have no prob-
15 lem with that at all.

16 Q Thank you, Mr. Ingram.

17 Let's see, to make sure I got this date
18 correct, the first production was February 12th, 1987?

19 A That's correct.

20 Q And that was oil production or gas, is
21 the gas hooked up at this time, or --

22 A No, that was oil production.

23 Q How about the casinghead gas, does it
24 make any?

25 A It does. It has a gas/oil ratio of about

1 875 and we're working on a gas connection right now.

2 Q And right now is it being flared or being
3 used for lease purposes.

4 A It's being vented. No, it's being ven-
5 ted, Mr. Examiner.

6 Q When was this well originally drilled?

7 A The well was originally drilled in 1976
8 -- '72 as a Bone Spring producer.

9 MR. STOGNER: I have no further
10 questions of this witness.

11 Are there any other questions
12 of Mr. Ingram?

13 MR. KELLAHIN: No, sir.

14

15 CROSS EXAMINATION

16 BY MR. TAYLOR:

17 Q Hugh.

18 A Uh-huh.

19 Q Would it be your testimony that dating
20 the order prior to the date of application here would help
21 to prevent waste and protect correlative rights?

22 A Yes, it would, Mr. Taylor, because during
23 the initial potential testing of that well we did produce
24 during the month of February, during the potential test, and
25 we would like for that allowable to be made -- that discov-

1 ery allowable to be made retroactive because of the initial
2 test.

3 Q Okay, thank you. I just wanted to get
4 that on the record.

5 MR. KELLAHIN: It doesn't
6 change anyone's interest or participation in the well by
7 making that the effective date. It had to do with the ac-
8 crued production during the test period.

9

10 BILL SAVAGE,
11 being called as a witness and being duly sworn upon his
12 oath, testified as follows, to-wit:

13

14 DIRECT EXAMINATION

15 BY MR. KELLAHIN:

16 Q Mr. Savage, for the record would you
17 please state your name and occupation?

18 A My name is Bill Savage and I'm an
19 associate engineer with Conoco, Incorporated.

20 Q Mr. Savage, have you previously testified
21 before the Division as an engineer?

22 A No, I haven't.

23 Q Would you summarize for the Examiner what
24 has been your educational background and work experience as
25 an engineer?

1 A Yes. I graduated from Colorado School of
2 Mines with a BS in petroleum engineering in May of 1986, and
3 since that time I began work with Conoco in Hobbs, New Mexi-
4 co as an associate petroleum engineer.

5 Q Pursuant to your employment, Mr. Savage,
6 have you made a study of the engineering facts surrounding
7 the discovery well and the application of Conoco today?

8 A Yes, I have.

9 Q And based upon that study, Mr. Savage,
10 have you reached certain conclusions and opinions about the
11 establishment of a new pool for the discovery well?

12 A Yes, I have.

13 MR. KELLAHIN: We tender Mr.
14 Savage as an expert engineer.

15 MR. STOGNER: Mr. Savage is so
16 qualified.

17 Q Mr. Savage, let me direct your attention
18 to what we have marked as Exhibit Number Five and I identify
19 for us that exhibit.

20 A Exhibit Number Five is a wellbore diagram
21 showing the previous completion in the Bone Springs forma-
22 tion.

23 Q When you talk about previous completion,
24 this is for the discovery well and it's as it existed prior
25 to being recompleted in the Cherry Canyon formation?

1 A Yes, sir.

2 Q Show us where it was previously completed
3 in the Bone Springs, Mr. Savage.

4 A It's previous completion interval was
5 from 8641 to 8781 in the Bone Springs formation.

6 Q Let's take that exhibit now and compare
7 it to Exhibit Number Six. Would you identify for us Exhibit
8 Number Six?

9 A Yes. Exhibit Number Six is a wellbore
10 diagram of the same well showing the current completion af-
11 ter the recompletion to the Cherry Canyon.

12 Q Have you satisfied yourself, Mr. Savage,
13 as an engineer that the recompletion in the Cherry Canyon
14 constitutes a new discovery?

15 A Yes, I have.

16 Q All right, let's talk about the separa-
17 tion between the Bone Springs and the Cherry Canyon. What
18 is the vertical distance between the two formations?

19 A The vertical distance is approximately
20 1800 feet. We have set a cast iron bridge plug at 8500 feet
21 and we have four sacks of cement on -- above it. It estab-
22 lishes isolation between the Bone Springs and our producing,
23 currently producing Cherry Canyon formation.

24 Q Have you made a search to determine
25 whether or not there are any other wells in a two or three

1 mile radius of the discovery well that produce from the
2 Cherry Canyon formation?

3 A Yes, I have, and --

4 Q And what have you found?

5 A -- there are none.

6 Q There are none?

7 A There are none.

8 Q Let's turn now, sir, to Exhibit Number
9 Seven and have you identify that exhibit for us.

10 A Exhibit Number Seven is the production
11 table showing daily tests for several consecutive days.

12 Q Do you have complete -- do you have
13 production tests on the Cherry Canyon completion in this
14 well? Your initial potential for the well was what, sir?

15 A Oh, the initial potential was 263 barrels
16 of oil per day, 182 barrels of water a day, 230 MCF per day
17 based on a 24-hour test.

18 Q What was your gas/oil ratio?

19 A 875-to-1.

20 Q Subsequent to the initial potential test,
21 have you conducted other tests to establish a stabilized
22 producing rate for the well, that well?

23 A Yes. Because of limited oil storage
24 space, we were not able to produce the well at the maximum
25 rate for an extended period of time, but during the first

1 month of production the well stabilized at a rate of about
2 220 barrels of oil a day, pumping 80 percent of the time.

3 We have since reduced our pumping rate to
4 as low as 5 percent of the time in order to maintain our
5 current allowable.

6 Q Does this well have the ability to pro-
7 duce volumes of oil in excess of a 40-acre allowable?

8 A Yes, it does.

9 Q What would be the discovery allowable for
10 the well if the application is approved, Mr. Savage?

11 A The total bonus allowable would be 34,025
12 barrels of oil to be produced over a two year period at a
13 rate not to exceed 268.53 barrels of oil per day.

14 Q All right, what's the total discovery
15 bonus allowable again?

16 A 34,025 barrels of oil over a two year
17 period.

18 Q And that is allocated on the basis of
19 268.55 barrels of oil. Okay.

20 In your opinion, Mr. Savage, is it likely
21 that the Cherry Canyon in your discovery well could be in
22 the same reservoir as the nearest Cherry Canyon well 5-1/2
23 miles to the northeast?

24 A Based on my knowledge and experience as a
25 petroleum engineer, I would say that it's impossible that

1 the Delaware production to the northeast is in the same re-
2 servoir as the Bell Lake Unit No. 11.

3 Q Have you made a study in order to reach
4 an opinion with regards to the appropriate temporary spacing
5 to establish for the discovery well?

6 A Yes, I have.

7 Q And what is your opinion?

8 A My recommendation is 80 acres.

9 Q All right, let's turn to Exhibit Number
10 Eight, Mr. Savage, and have you identify this exhibit.

11 A Exhibit Number Eight is a porosity gamma
12 ray log showing the strip log from this well with the top of
13 the Cherry Canyon marked, the producing interval within the
14 Cherry Canyon from 6805 to 6840, showing our perforated
15 interval from 6805 to 6810, and also showing the bottom of
16 the Cherry Canyon formation at 8,072 feet.

17 Q Would you identify for the Examiner the
18 net thickness of this zone plus the porosity value that
19 you've used in subsequent engineering calculation?

20 A The net thickness is 35 feet and the
21 average porosity is 14-1/2 percent.

22 Q Have you caused pressure tests to be run
23 or pressure information to be compiled on the discovery well
24 by which you could make certain engineering calculations to
25 determine an area of drainage for the well?

1 A Yes, we have.

2 Q Let's turn to Exhibit Number Nine, Mr.
3 Savage.

4 A The well was shut in on March 29th so
5 that we could measure the pressure response of the reser-
6 voir, indicating among other things the drainage area of
7 this well.

8 During the early life of a reservoir this
9 is the best method for obtaining this information.

10 Exhibit Number Nine shows the recorded
11 pressure data. The important part of this curve is the late
12 time region, which is shown on the X axis from a log time of
13 about .5 to .6. This is when all the wellbore and skin ef-
14 fects have died out and the pressure curve is stabilized,
15 allowing for the reservoir properties to be displayed.

16 Q When we look at the X axis on the exhibit
17 and find that log time interval from .4 to .6, could you
18 give the Examiner what that corresponds to in clock hours?

19 A That corresponds to clock hours approxi-
20 mately 85 to 106 hours.

21 Q And after the well has been shut-in for
22 that length of time you have seen the, from the pressure
23 build-up test, you have seen the pressure become more
24 stable?

25 A Yes, we have.

1 Q Okay, what then do you do with the infor-
2 mation on Exhibit Number Nine?

3 A Well, if I could refer you to Exhibit
4 Number Ten --

5 Q All right, sir, let's do that. Let's
6 turn to Exhibit Number Ten and have you identify that exhi-
7 bit.

8 A Exhibit Number Ten is a diagnostic method
9 used during a pressure test evaluation to show when the
10 pressure response of the reservoir has stabilized.

11 When stabilization occurs this graph will
12 show a leveling horizontal trend, similar to the line that I
13 have added; however, as you can see, the curve is not yet
14 displaying this character, indicating that we are still ap-
15 proaching radial flow.

16 Q Describe for us what the implications are
17 of having not yet reached a stabilized pressure value for
18 the discovery well.

19 A The implications are that we are not cur-
20 rently seeing only the reservoir characteristics. They are
21 still being masked by after flow or wellbore storage or skin
22 effects in the near wellbore vicinity.

23 Q By using the available pressure informa-
24 tion and your engineering calculations, will the use of the
25 current information without the stabilized flow cause you to

1 be more optimistic or more conservative in your drainage
2 calculation?

3 A It will cause a conservative estimate of
4 the drainage calculation.

5 Q With further build-up information or
6 pressure information that eventually leads to stabilized
7 data upon which you can make more accurate calculations,
8 with that information what do you anticipate to occur as a
9 result of making those calculations?

10 A I anticipate that the radius of drainage
11 that we will calculate from that new data will be greater
12 than what we have shown here.

13 Q Using the available data and the more
14 conservative methodology for analyzing the radius of
15 drainage, can you next show us what you then did?

16 A Yes. Referring to Exhibit Number Eleven,
17 it is the same type of graph as Exhibit Nine except that it
18 displays only the late time data.

19 Since radial flow was not reached by the
20 end of the test, the straight line region shown on the graph
21 will yield a conservative estimate; therefore, with the
22 available information gained from this test, we believe that
23 the drainage radius of this well is at least 644 feet and
24 probably greater than 731 feet, representing 38 and 49 acres
25 of drainage, respectively.

1 after about a month's production from the well.

2 And the final pressure, 2926, was ob-
3 tained from the pressure build-up test that we just recently
4 discussed.

5 Q Based upon those assumptions and para-
6 meters, then, you have calculated original oil in place for
7 the reservoir of 751,294 barrels of oil?

8 A That's correct.

9 Q And you have identified then within that
10 area an areal extent for the reservoir of approximately 58
11 acres.

12 A That's right.

13 Q And it is these numbers that will in-
14 crease. You anticipate that areal extent to increase with
15 subsequent pressure information?

16 A Yes, I do.

17 Q Is there anything else you want to direct
18 our attention to on Exhibit Number Twelve?

19 A No, there is not.

20 Q All right, let's turn to Exhibit Number
21 Thirteen and have you identify and describe that exhibit.

22 A Exhibit Number Thirteen is a tabulation
23 of the fluid properties used in the material balance calcu-
24 lation. I've provided this for your information.

25 Q And then finally let's go to Exhibit Num-

1 ber Fourteen, Mr. Savage.

2 A Exhibit Number Fourteen shows sample cal-
3 culations used during the material balance procedure. It
4 again is provided for your information. I might direct your
5 attention to the final calculation, the calculation of re-
6 quired drainage area.

7 If I take the original oil in place cal-
8 culated from material balance, (not understood) for the area
9 58.6 acres of drainage is obtained, and then if I back cal-
10 culate a radius of drainage for that area, I come up with
11 799 feet. Again that is slightly more than what was indi-
12 cated by the pressure test, again indicating that the num-
13 bers obtained from the pressure test are reasonable.

14 Q In your opinion, Mr. Savage, using con-
15 servative engineering parameters and within the terms and
16 conditions of the material balance calculation, you believe
17 that the area affected by the subject well is approaching,
18 if not exceeding, 58.6 acres.

19 A Yes, that's right.

20 Q In your opinion, Mr. Savage, as an en-
21 gineer, what would you recommend to be the appropriate spac-
22 ing pattern to establish initially for the discovery well?

23 A Based on the information that we have
24 available to us at this time, we believe that our request
25 for 80 acres is justified.

1 Q In the absence of establishing an 80-acre
2 spacing for the discovery area, and having to continue on
3 statewide 40-acre spacing, what is your concern about the
4 drilling of additional wells?

5 A If the material balance calculations are
6 correct and if our pressure data is correct, we would not
7 find it economic to drill an additional well to develop 58.6
8 acres, or the remaining 58.6 acres.

9 Q Do you have an opinion as to whether or
10 not the second well, in other words, having two wells on a
11 40-acre tract, whether that second well would be an unneces-
12 sary well?

13 A It would be unnecessary.

14 Q In your opinion the original well would
15 be adequate by itself to develop and drain the reservoir.

16 A That's correct.

17 Q All right, sir. Let's go through now
18 that we've presented your testimony, Mr. Savage, and make
19 sure that we have covered the points upon which you're mak-
20 ing your request.

21 Identify for us the proposed name that
22 you want to utilize for the pool.

23 A Bell Lake Cherry Canyon.

24 Q And this would be on 80-acre spacing?

25 A That's right.

1 Q And then the discovery well will be the
2 Bell Lake No. 11.

3 A That's correct.

4 Q And then the effective discovery date for
5 the pool rules will be February 12th, 1987.

6 A Yes, that's correct.

7 Q In addition you need approval of the dis-
8 covery well as an unorthodox well location.

9 A That's correct.

10 Q All right, sir, were Exhibits Five
11 through Fourteen prepared by you or compiled under your
12 direction and supervision?

13 A Yes, they were.

14 MR. KELLAHIN: That concludes
15 my examination of Mr. Savage.

16 We move the introduction of
17 Conoco Exhibits One through Fourteen.

18 MR. STOGNER: Exhibits One
19 through Fourteen will be admitted into evidence.

20

21 CROSS EXAMINATION

22 BY MR. STOGNER:

23 Q Mr. Savage, if, after a year's period you
24 come back in and you find that these parameters haven't
25 changed, do you think it would be in the best interest to

1 remain on 80 acres, or change it to 40-acre spacing?

2 A Remain on 80 acres.

3 Q Okay. Now if a well is only able to drain
4 56 acres, and you're on 80-acre spacing, would that not
5 cause waste by having approximately 30 acres not being pro-
6 duced, or 25?

7 A The terms of waste must be considered as
8 either economic or in terms of oil volume. Our calculations
9 that we've presented today show that there are only 58 acres
10 of oil volume present.

11 Q Now you mention that you anticipate with
12 more pressure data, you're anticipating that the radial flow
13 will probably increase? Did I understand you right in your
14 testimony?

15 A Yes. I believe that the time to radial
16 flow is longer than we left the bombs in the hole; however,
17 the period that we did leave them in the hole was long
18 enough for us to establish these minimal radius of drainage
19 distances.

20 In the future, when we obtain more pres-
21 sure points, we will know to leave the bombs in longer in
22 order to obtain this radial flow period so that we can make
23 more accurate calculations.

24 Q How do you propose to -- well, let me re-
25 phrase that.

1 Do you plan to run any more bomb tests in
2 this thing?

3 A Yes, I sure do.

4 Q Between now and the end of the year?

5 A Yes.

6 Q When the Bone Springs formation became
7 uneconomical and Conoco moved up the hole to test the Cherry
8 Canyon, was it -- as it been Conoco's intent all along to
9 test the Cherry Canyon in this area or was this one of the
10 last minute decision or --

11 A Well, I guess you would call it a last
12 minute decision.

13 Q One that paid out, it appears.

14 Let's refer now to the log, which is Ex-
15 hibit Number Eight, and with this, let's talk about your
16 discovery allowable. You mentioned you wanted 34,025 bar-
17 rels discovery allowable? Is that correct?

18 A Yes, I believe that's right.

19 Q Now that's obtained by taking the depth
20 of the well and multiplying it by five?

21 A Yes.

22 Q Okay. When I'm double checking your fig-
23 ures there, I come up with you used the -- let me rephrase
24 that.

25 Did you use the Kelly bushing depth or

1 the ground level depth to figure --

2 A I used the Kelly bushing depth.

3 Q Okay. And do you know what that Kelly
4 bushing, the difference between the Kelly bushing and ground
5 level is?

6 A 12 feet.

7 Q 12 feet.

8 A So that makes a difference of 60 barrels
9 over a two year period.

10 Q I believe the normal practice is to use
11 ground level.

12 A Okay.

13 Q So I'll take that into account.

14 What well next to you anticipate will be
15 completed in the Cherry Canyon in this particular pool?

16 A I've begun evaluation on the Bell Lake
17 Unit No. 12, located to the northeast of this well, and it,
18 completion in this well will help us to further evaluate
19 this reservoir.

20 Q Is that one presently producing from the
21 Bone Springs?

22 A Yes, it is.

23 Q Do you propose to abandon the Bone Spring
24 or dual complete it?

25 A To abandon it.

1 MR. STOGNER: I have no further
2 questions of Mr. Savage.

3 Are there any other questions
4 of Mr. Savage?

5 If not, he may be excused.

6 Is there anything further in
7 Case Number 9117?

8 This case will be taken under
9 advisement.

10

11 (Hearing concluded.)

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1
2
3
4
5
6
7
8
9
10
11
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 the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of this 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. 9117 heard by me on 8 April 1987.
Michael S. [Signature] Examiner
Oil Conservation Division