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2 STATE OF NEW MEXICO
3 ENERGY AND MINERALS DEPARTMENT
4 OIL CONSERVATION DIVISION
5 STATE LAND OFFICE BUILDING
6 SANTA FE, NEW MEXICO

7
8 27 February 1985

9 EXAMINER HEARING

10 IN THE MATTER OF:

11 Application of Pennzoil Company for
12 an unorthodox gas well location, Lea
13 County, New Mexico.

CASE
8498 &
8499

14 BEFORE: Michael E. Stogner, Examiner

15
16 TRANSCRIPT OF HEARING

17
18 A P P E A R A N C E S

19 For the Oil Conservation
20 Division:

Jeff Taylor
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

21
22
23 For the Applicant:

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

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A P P E A R A N C E S

For Exxon Corp.:	James Bruce
	Attorney at Law
	HINKLE LAW FIRM
	P. O. Box 2068
	Santa Fe, New Mexico 87501

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MR. STOGNER: The hearing will come to order.

We will call now Case Number 8498, which is the application of Pennzoil Company for an unorthodox gas well location, Lea County, New Mexico.

We will now call for appearances.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant.

MR. BRUCE: Mr. Examiner, my name is Jim Bruce from the Hinkle Firm in Santa Fe, appearing on behalf of Exxon.

MR. KELLAHIN: Mr. Examiner, in order to expedite the hearing process, we would request that you, for purposes of testimony, also call Division Case 8499.

MR. STOGNER: Are there any objections?

At this time we will now call Case Number 8499, which is also the application of Pennzoil Company for an unorthodox gas well location in Lea County, New Mexico.

Mr. Bruce, do you also wish to file an appearance in this matter?

MR. BRUCE: Yes, I do.

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2 MR. STOGNER: Are there any
3 other appearances in either case?

4 Mr. Kellahin?

5 MR. KELLAHIN: Mr. Examiner, I
6 have one witness to be sworn.

7 MR. BRUCE: Mr. Examiner, I
8 have two witnesses to be sworn.

9 MR. STOGNER: Will all witness-
10 ses please stand at this time? Raise your right hand.

11 (Witnesses sworn.)

12 MR. KELLAHIN: Mr. Examiner, we
13 have previously furnished Mr. Bruce a set of our exhibits
14 and I'll now give you an exhibit set.

15 MR. STOGNER: Thank you, sir.

16
17 GREGORY L. HAIR,
18 being called as a witness and being duly sworn upon his
19 oath, testified as follows, to-wit:

20 DIRECT EXAMINATION

21 BY MR. KELLAHIN:

22 Q Mr. Hair, will you please state your name
23 and occupation?

24 A Gregory L. Hair, District Geologist,
25 Pennzoil Company, Midland, Texas.

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Q Mr. Hair, would you describe for the Examiner when and where you got your degree in geology?

A I got a Bachelor of Science degree in geology from Illinois State University in 1974; Master of Science in geology and geophysics, University of Texas, El Paso, 1976.

Q Subsequent to obtaining your various degrees, Mr. Hair, would you summarize for us what has been your experience in the field of petroleum geology?

A I have worked with Pennzoil Company for approximately 8-1/2 years, both in their Marine Division in Houston and for the past 5-1/2 years, almost 6 years, in their Midland District, working primarily in southeast New Mexico.

Q With regards to the two applications for unorthodox well locations in Lea County, New Mexico, would you describe for us, Mr. Hair, what is your responsibility to Pennzoil Company?

A Yes. I prepared this particular drilling prospect, did the geology on the prospect, and coordinated the geophysical work on the prospect, which will be shown in a short while.

MR. KELLAHIN: If the Examiner please, we tender Mr. Hair as an expert geologist.

MR. STOGNER: If there are no objections, he is so qualified.

Q So that we might orient the Examiner to

1
2 the specifics of the ownership arrangement in the area and
3 to what Pennzoil seeks to accomplish, Mr. Hair, I show you
4 what I have marked for introduction as Pennzoil's Exhibit
5 One-A, which is simply a landman's plat.

6 For Case 8498, it's an application by
7 Pennzoil for an unorthodox location in the east half of 35,
8 would you direct our attention to that plat in the east half
9 of 35 and identify for us what the footage location will be
10 for that well?

11 A Yes, we propose to drill 990 feet from
12 the south line, 660 feet from the east line of Section 35.

13 Q With regards to that location, what is to
14 be the spacing and proration unit assigned to that well?

15 A We propose a 320-acre proration unit,
16 that unit being the east half of Section 35.

17 Q Within the east half of Section 35, Mr.
18 Hair, would you describe what working interest owners are
19 involved in this well?

20 A Under the east half there are numerous
21 interests down to, I believe, 9000 feet, which we are not --
22 we have no interest in that.

23 Below 9000 feet, which is all we are in-
24 terested in in this case, the acreage is 100 percent Penn-
25 zoil.

26 Q Let's look at the proposed location now
27 for Case 8499, which is an application for an unorthodox gas
28 well location in the west half of 36.

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Within that spacing and proration unit, Mr. Hair, would you identify for us what the footage location will be for the well?

A Yes. 990 feet from the south line and 660 feet from the west line of Section 36.

Q Within that spacing and proration unit for Pennsylvanian age formation gas, would you describe for us what are the principal working interest owners?

A Yes, the proration unit would be the west half of 36. Pennzoil has a 75 percent interest under the west half of 36 and I believe Atlantic Richfield Company has a 25 percent working interest.

Q As best you know, Mr. Hair, are -- is all the working interest ownership committed to this well?

A We have not had an okay from ARCO. No, we have not.

Q The interests in the west half of 36 do not include any interest owned by Exxon?

A No.

Q Let me take you to the Section 1 to the south of Section 36, now, and have you describe for us whether or not within Section 1 there are any existing spacing or proration units for wells in the deep gas formation?

A Yes. The east half of Section 1 is allocated to a well that I believe is 990 feet from the south and 990 feet from the east of Section 1. It's the Shell 1-VI State.

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2 Q Would you give the Examiner some of the
3 historical background, as you know it, Mr. Hair, with re-
4 gards to Pennzoil's efforts to locate, drill, and form a
5 spacing and proration unit for the testing of either the
6 Morrow or the Atoka sands in the area?

7 A Yes. Approximately a year and a half ago
8 we approached Exxon Company and proposed a well in the
9 southwest quarter of Section 36. We asked them to join us
10 by forming a south half of Section 36 proration unit, using
11 their acreage which lies in the southeast quarter.

12 We were told that Exxon was not inter-
13 ested in drilling that well; however, they would be inter-
14 ested in drilling in Section 1 to the south, forming a west
15 half proration unit.

16 We put forth the effort to put together
17 that unit. It was pooled, I believe, last October, and un-
18 der the terms of the pooling, Shell Oil Company, who was an-
19 other working interest partner in there, decided that they
20 did not want to participate and elected to go nonconsent on
21 that well.

22 Q We have discussed a pooling. What type
23 of pooling order are you talking about?

24 A Compulsory pooling.

25 Q Before the Oil Conservation Division?

A Yes.

Q All right.

A At the point that Shell made their elec-

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tion to go nonconsent, it was no longer economically feasible for Pennzoil to drill that well, in our opinion. We did not feel that we could make a go of the well with picking up Shell's interest under the penalty.

What we did at that point was re-evaluate our prospect, went back in and said, "We would like to back and drill a well in Section 36, which we had wanted to drill in the first place," meaning we wanted to go back to our preferred location, which is the nonstandard location we are proposing.

Since Exxon had already turned us down in Section 1, we decided we will stand up the proration unit in the west half and contact ARCO, and we have contacted ARCO but we have not heard back from them.

Q With regards to the forced pooling order entered by the Commission that you referred to in October of '84, I show you a copy of Division Order R-7719 and ask you if that is the order to which you refer?

A Yes, it is.

MR. KELLAHIN: Mr. Examiner, I show you a copy of Division Order R-7719.

MR. STOGNER: Thank you, sir. We'll take administrative notice of this order.

Q Mr. Hair, lead me through that process again, now. Subsequent to the entry of the forced pooling order with regards to the west half of Section 1, Shell went

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nonconsent?

A Yes.

Q And then what happened?

A We made a decision at that time not to drill the well, based on economics.

Q What was your understanding of Exxon's position with regards to its interests in the west half of 1 for that well?

A I believe that we had a verbal commitment but we never did receive a signed AFE or operating agreement back from Exxon.

Q Can you identify for us what was the proposed location for the well to be drilled pursuant to that pooling order?

A I believe it was 1320 feet from the north line and 1980 feet from the west line.

Q Once Pennzoil determined that the carried working interest share with Shell going nonconsent was too large to justify Pennzoil drilling that well, what then did Pennzoil do?

A Re-evaluated our prospect; went back in and said, we now feel we should drill our best location, which we feel is in the southwest quarter of Secion 36 at 990 feet from the south line and 660 feet from the west line.

Q Mr. Hair, let me direct your attention to Exhibit Number One, which I believe is identified as a

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structure map prepared by you?

A Prepared with my assistance.

Q All right.

A It was prepared by someone else.

Q Would you identify Exhibit Number One and tell us what it is?

A Yes. It is a seismic structure map done on the top of the Pennsylvanian Morrow. It covers four sections, Sections 1 and 2 in 17 South, 34 East, and Sections 35 and 36 in 16 south, 34 East.

Q When we look at the are defined in part by the red lines, we are looking at quarter section lines, are we not?

A No, those are actually seismic lines. I --

Q I'm sorry, the red lines running across the map.

A That is by coincidence. That does not define quarter sections.

Q All right, those are seismic lines.

A Yes, they are seismic lines.

Q Was this exhibit prepared under your supervision and direction?

A Yes.

Q Have you independently examined the data upon which this exhibit was prepared and satisfied yourself that it is true and accurate based upon that data?

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A Yes.

Q Is this an exhibit that is similar to the exhibit that you used and testified from at the forced pooling hearing back in October?

A Yes, it is.

Q Would you describe generally what information is contained on the exhibit and what conclusions you draw from that information?

A All right. First of all, just to go through the various colors, the red lines are seismic lines by which this map was made.

Yellow on here is Pennzoil acreage. Solid yellow is 100 percent Pennzoil acreage and the outlined yellow is something less than 100 percent.

The purple on here are faults which are mapped according to the seismic and we have our proposed location marked on here.

What this is intended to show is what the surface looked like, what the topography looked like, and looks like now, what the Atoka sands, which is our primary target, were deposited on, and basically it shows that you go down dip to the north. The south end of the map is generally up dip and the north end of the map is generally down dip.

Q All right, sir. With regards to locating the optimum location within each of the proposed spacing and proration units, what, if any, significance does structure

1 have in determining that location?

2 A Yes. As you climb structurally, if you
3 look at the south half of this map, we feel that the sands
4 that we are looking for are not present there because the
5 strain was too high structurally. It was an area that was
6 possibly exposed; there was no deposition went on there.

7 We feel that the faults that are shown
8 here, while they do not cut the sands we're looking for,
9 they do not displace them, they do have some bearing upon
10 their deposition and we feel that proximity to those faults
11 helps locate the sand package that we are looking for.

12 Q Is it fair to conclude from your testi-
13 mony, Mr. Hair, that the structural -- that structure con-
14 trols the deposition that we are about to see as mapped in
15 the Atoka sand?

16 A Yes, it does.

17 Q Let's go, then, to the next exhibit,
18 which is Exhibit Number Two, and have you identify the sand
19 deposition in the Morrow.

20 A Okay. The Morrow is the secondary tar-
21 get. It lies directly below the Atoka in this area, and
22 this is a Morrow porosity Isopach. It is part of a larger
23 map and I have taken out the area of interest only, and what
24 it shows, basically, is that there are Morrow sands over
25 practically the whole area, and we feel that, you know, we
have a good chance of hitting the Morrow sands at either lo-
cation.

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2 Q We've talked about the primary target
3 being the Atoka sand.

4 Would you now turn to Exhibit Number
5 Three and show us, in your opinion, what you believe to be
6 the deposition and extent of the Atoka sand?

7 A Yes. The Atoka sands in this area lie
8 directly above the Morrow and we're primarily talking about
9 one sand, which is mapped on Exhibit Number Three, and we
10 feel that the faults shown in Exhibit Number One help con-
11 trol the deposition of this sand. It lies pretty much adja-
12 cent to the northern fault on that map.

13 We feel it cuts across the area, basical-
14 ly, from southeast to northwest. Again, because we're
15 trying to locate what we consider a channel sand, what we're
16 trying to do is get as close to the axis of that sand body
17 as we can because as you move away from the axis, the risk
18 is much, much higher.

19 Q If we isolated the Atoka sand map, the
20 Isopach, without consider of the structure for a moment,
21 would you compare the advantage or disadvantage between the
22 standard and the unorthodox location in each well?

23 A Yes. In Section 36 the unorthodox loca-
24 tion, I have approximately -- I have approximated that there
25 may be 50 feet of sand at the unorthodox location.

At the standard location that drops down
to between 25 and 30 feet of sand, cutting that thickness in
half, which is a considerable risk.

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In Section 35 it really at this point, and the way we have this map drawn, there's little difference.

Q When we talk about the closest standard location we are referring to what footage location?

A I refer to 1980 feet from the south line and 660 feet from the east in 35, and 660 feet from the west in 36.

Q Now when we take into consideration the Atoka as you've mapped it on the Isopach and integrate it with the information you have derived from an analysis of the structure, what conclusions do you reach in terms of the standard versus the unorthodox location for each well?

A Yes. We, when we look at the total picture, we -- what we feel, especially on seismic data, is that this channel hugs very close to this fault that is shown on Exhibit Number One, the northern fault closest to our location.

It's a fairly thin channel. We can document that thickness by other production in the area. One standard location away is a dry hole with no sand at all, and that is well documented in this area.

And we feel that because that sand was deposited very close to that fault, that you have to be very close to it, also, in order to minimize your risk in finding that sand.

Q Could you approximate for us the differ-

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ence in elevation in the structure between the Pennzoil locations as we would find them in those two sections and what might be encountered should Exxon drill a well in the west half of Section 1?

A I estimate that we would be somewhere in -- around 250 feet to 350 feet down dip from Section 1.

Q What is the significance to you as an expert geologist, Mr. Hair, of that vertical difference in structure between the two properties?

A It mainly shows that if sand is present in Section 1 a well drilled in Section 1 can drain Section 35, Section 36, whereas, the down dip wells would not be able to drain a well in Section 1.

Q Do you have an understanding of what Exxon's proposed plan of operation is for a well in the west half of Section 1?

A I have been in telephone contact with Exxon. They have told me that they are interested in drilling a well in Section 1 at this time, and they now tell me they would like to operate such well and that they are willing to take all of Shell's nonconsent interest, should that come about again, as we feel it will, since it has already.

Q In the event Exxon drills a well in the west half of section 1, will the Pennzoil properties in Section 35 and 36 be subject to drainage in the absence of the approval of your two wells at the proposed unorthodox locations?

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A Yes, a certain amount of that acreage will, yes.

Q Mr. Hair, does -- in your opinion does Pennzoil gain any advantage over Exxon as a result of having wells located at the proposed unorthodox location?

A I do not think so.

Q Upon what reasons do you base that opinion?

A Primarily on Exxon's structural advantage to Pennzoil when you move into Section 1; moving that far up dip there is not advantage we could gain in the small amount that we move south.

Q Are you familiar with the methods and how the Division calculates penalty factors for unorthodox well locations?

A Yes, I am.

Q In your opinion is the imposition of the Division's unorthodox penalty provisions appropriate in either one of these cases?

A I don't believe it is.

Q Were Exhibits One, Two and Three prepared by you or compiled under your direction and supervision?

A Yes, they were.

Q All right, sir.

MR. KELLAHIN: We move the introduction of Exhibits One-A, One, Two, and Three.

MR. STOGNER: Is there any ob-

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jection?

Exhibits One-A, One, Two, Three
will be admitted into evidence.

MR. KELLAHIN: That concludes
my examination of Mr. Hair.

MR. STOGNER: Mr. Bruce, your
witness.

CROSS EXAMINATION

BY MR. BRUCE:

Q Mr. Hair, you said the Atoka is the pri-
mary zone, I believe, is correct --

A Yes, that's correct.

Q -- and the Morrow is the secondary.

A Yes, it is.

Q Just looking strictly now at Exhibit Num-
ber Two, if you move to the nearest standard location, that
would -- just looking at the Isopach, that would be favor-
able, is that correct?

A On the Morrow, yes.

Q On the Morrow.

And looking at Exhibit Three, which is
the Atoka, moving -- with respect to Section 35, moving to
the nearest standard location would really have little or no
effect?

A As we have it mapped, yes, that is cor-
rect.

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Q And in Section 36 there might be some.

A We estimate approximately half the amount of sand.

Q Is the 50-foot line, that's just an estimate, right?

A Absolutely.

Q Was strictly seismic used to construct these two maps or was it well control?

A Okay. These maps are part of a larger regional map and the regional map was done strictly off subsurface control.

Our estimates as to sand thickness and sand character were made from seismic.

Q Okay. Was the same data which you used to construct Exhibit Numbers Two and Three also used to construct your Exhibits for Case 8394, which was heard last fall?

A Yes.

MR. BRUCE: I have no further questions of the witness.

MR. STOGNER: Thank you, Mr. Bruce.

I have no questions of this witness at this time.

MR. KELLAHIN: I have a couple of questions based upon what Mr. Bruce has asked.

MR. STOGNER: Mr. Kellahin.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q Subsequent to the last hearing in Case 8394, Mr. Hair, are you aware of any geologic information, well control data, or other factors that would cause you to change the -- either the data base or the conclusions that you've reached today?

A No.

Q Have there, in fact, been wells drilled upon which you could make a re-evaluation of this prospect?

A No.

Q As an expert geologist, Mr. Hair, would you recommend to your management that you disregard structure in this situation and drill a well based only upon seismic -- based only upon Isopach information?

A Yes, that is what it's been done on. We have to look at seismic, though, because there is no well control in this immediate area.

Original data was Isopach and it is enhanced by the seismic.

Q I didn't make myself clear. My question was whether or not you would recommend to your management that you can and should disregard structure and rely upon solely the Isopach of the Atoka upon which to locate and risk your money for drilling this well.

A No.

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Q Why can you not do that?

A Because structure in this case controls the deposition of the sand. It controls the drainage of the reservoir, and I think as much structure as there is here, it always comes into play.

MR. KELLAHIN: Nothing further.

MR. STOGNER: Are there any further questions of Mr. Hair?

If not, he may be excused at this time.

Mr. Kellahin, you only had one witness, is that right?

MR. KELLAHIN: Yes, sir, that completes our presentation, Mr. Examiner.

MR. STOGNER: Mr. Bruce?

MR. BRUCE: Okay.

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q Would you please state your name, city of residence, occupation, and employer?

A My name is Mark Riggle. I live at 309 Southwest 8th Street in Andrews, Texas. I am a production

1
2 geologist for Exxon Company, U.S.A., located in Andrews,
3 Texas.

4 Q And have you previously testified before
5 the New Mexico OCD and had your credentials as a geologist
6 made a matter of record?

7 A Yes, sir.

8 Q And are you familiar with Cases 8498 and
9 8499 and the geological matters involved in those cases?

10 A Yes.

11 MR. BRUCE: At this time I ten-
12 der Mr. Riggle as an expert witness.

13 MR. STOGNER: If there is no
14 objection, he is so qualified.

15 Q Mr. Riggle, would you please first refer
16 to Exxon's Exhibit Number One and briefly describe that for
17 Mr. Stogner?

18 A Yes, sir. Exhibit Number One is a land
19 plat showing the ownership of leases in the area in ques-
20 tion; also the two red dots on the map show the proposed
unorthodox location Pennzoil seeks for a well in Section 35
and a well in Section 36.

21 The maps have been color coded. Penn-
22 zoil's acreage. or acreage that they have their farmouts or
controlling interest in are colored green.

23 Exxon acreage is colored yellow and Shell
24 acreage is colored blue.

25 The, as I stated, for the two unorthodox

1
2 locations are -- are placed on this map at 990 feet from the
3 south line and 660 from the west line of Section 36, and 990
4 from the south and 660 from the east for the Section 35
5 well.

6 As was stated, no well has been drilled
7 presently in the west half of Section 1 and also as was
8 stated, Exxon is in negotiations and talking to Pennzoil and
9 Shell trying to work something out that would be acceptable
10 to all parties to be able to drill this well.

11 Q What is the basic reason that Exxon op-
12 poses these two applications, Mr. Riggle?

13 A We believe the two proposed unorthodox
14 locations would drain Exxon acreage if an Atoka sand comple-
15 tion was attempted for the sand in the Atoka that was testi-
16 fied to in -- by the Pennzoil geologist.

17 Q And the Atoka sand is the primary forma-
18 tion of interest in this area, is that correct?

19 A Yes, sir. That would be the pay sand, or
20 main pay, of a well in the west half of Section 1 that we're
21 negotiating now.

22 Q Would you please now move on to Exhibit
23 Number Two and describe that?

24 A Exhibit Number Two is an Atoka sand pay
25 gross Isopach, showing thickness of the Atoka sand in this
area. It was made from well control data and the two pro-
posed unorthodox locations are marked on this map in red,
and the two, two of the several orthodox, possible orthodox

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2 locations are marked in green.

3 In Section 35, for instance, the Pennzoil
4 unorthodox proposed location would have, as we have it map-
5 ped, approximately 30+ feet of sand and conversely, the or-
6 thodox location, being 900 and -- 1980, excuse, me, 1980
7 from the south line, 660 from the east line, would also have
8 approximately 30+ feet of sand for the Section 35 well.

9 The Section 36 well at Pennzoil's pro-
10 posed unorthodox location would have approximately 25 feet
11 of sand thickness and at an orthodox location, 1980 from the
12 south and 660 from the west, would have approximately 21
13 feet of sand thickness.

14 Q Would you please now move on to Exhibit
15 Number Three and briefly describe that?

16 A Exhibit Number Three is the Atoka pay
17 sand Isopach map of porosity greater than 6 percent that
18 Pennzoil used in a previous case, being Case Number 8394.

19 Again, on this map I have the orange dots
20 being the unorthodox locations proposed and the green dots
21 being an orthodox, or regular location.

22 Again for the Section 35 well we have ap-
23 proximately 10 foot of sand at the orthodox -- or at the un-
24 orthodox, excuse me, location in Section 35, and at the or-
25 thodox location, 1980 from the south, 660 from the east, we
have approximately 15 feet of sand.

For the Section 36 well at an unorthodox
location, being the red dot, we have approximately 38 feet

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2 of sand and an orthodox location, being 1980 from the south
3 and 660 from the west, would be approximately 40+, 42 feet
4 of sand, approximately.

5 Q Thank you. Would you please now refer to
6 Exxon Exhibit Number Four and describe that?

7 A Exxon Exhibit Four is a structure map,
8 structure contour map, made on the top of the Morrow forma-
9 tion. It's 100-foot contour interval and it generally shows
10 the Morrow dipping to the north or the top of the map; in
11 other words, the north end of the map is generally lower
12 than a southern location.

13 The two unorthodox locations are again
14 spotted on this -- on this map.

15 Q And would you please refer to Exhibit
16 Number Five?

17 A Exhibit Number Five is also a Pennzoil
18 map used in a previous case, being Case Number 8394. It is
19 also a structure map on top of the Pennsylvanian Morrow. It
20 is, however, contour interval in time and as was testified,
21 I believe this is a seismic map, whereas Exxon Exhibit Num-
22 ber Four is a structure map made with well control data, or
23 tops of formations from well logs.

24 Both maps, Exhibit Four and Exhibit Five,
25 are in general agreement. Exhibit Five shows a little dif-
ferent placement of the fault and a bifurcation in the
fault, which may be due to the different source of data,
there being seismic versus well control.

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Q But would you agree, Mr. Riggle, that geology of both companies essentially agrees?

A Yes.

Q What is the drive mechanism in the Atoka formation?

A I don't have sufficient data to really evaluate the drive mechanism for a gas reservoir in the Atoka at present.

Q If it was a gas drive, would an up dip well drain a down dip location?

A If it's a gas drive? I don't believe it would.

Q Therefore, in your opinion, the drilling of the Atoka well at a standard location would yield an equal or better result than drilling at a nonstandard location.

A According to the way we have mapped the sand thickness, it would.

Q And in your opinion would the Exxon acreage in Section 1 be drained by both wells?

A Yes.

Q Is it your opinion, then, that these two applications should be denied?

A Yes.

Q If the applications are granted, should a penalty be assessed against Pennzoil for both wells, or on both wells?

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A Yes, sir.

Q A couple more questions. Now, in connection with these unorthodox locations, would the drill bit, while the well was being drilled, have a tendency to wander in any certain direction while the well was being drilled?

A From my experience and general knowledge, deviations of a drill well are always possible and from, again from my experience and general knowledge, usually those deviations occur in an up dip direction; in other words, the drill bit walks up dip, and as shown on these structure maps previously, up dip direction would be towards Exxon, the Exxon lease, or lease lines, and would be to the south of -- in a southerly direction, and therefore the bottom hole location could be possibly closer to the line than the surface location.

Q In other words, closer to the Exxon acreage.

A Yes.

Q In your opinion would the granting of these applications be in the interest of conservation, the protection of correlative rights?

A No, sir.

Q Were Exhibits One, Two, and Four prepared by you or under your direction?

A Yes, sir.

MR. BRUCE: At this time, Mr. Examiner, I'd move the exhibits of -- move the admission of

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2 Exhibits One through Five, and I would like to state that
3 Exhibits Three and Five were presented in Case 8394 and ac-
4 cepted as evidence, so I would ask you take administrative
5 notice of those exhibits.

6 MR. KELLAHIN: No objection.

7 MR. STOGNER: How about Exhibit
8 Number Six?

9 MR. BRUCE: My next witness
10 will testify to that.

11 MR. STOGNER: Exhibits One
12 through Five will be admitted into evidence.

13 MR. BRUCE: I have no further
14 questions of this witness at this time, Mr. Examiner.

15 MR. STOGNER: Mr. Kellahin,
16 your witness.

17 MR. KELLAHIN: Thank you, Mr.
18 Examiner.

19 CROSS EXAMINATION

20 BY MR. KELLAHIN:

21 Q Mr. Riggle, you identified yourself as a
22 production geologist for Exxon?

23 A That's correct.

24 Q Would you describe for me what that
25 means?

A Basically, I do proposed well -- drill
well proposals on gas and oil wells in and around existing

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2 production, I'll say within a mile and a half to two miles
3 of existing production normally, would be called a produc-
4 tion well, and I'm responsible for mapping thickness maps,
5 Isopach maps, structure maps, and production, monitoring
6 production.

6 Q Does Exxon draw a distinction between a
7 production geologist and any other kind of geologist in your
8 organization?

9 A Yes.

10 Q Do you have an exploration geologist?

11 A Yes, sir, we do. We have -- employ ex-
12 ploration geologists and they work areas where there is less
13 well control and would -- would use more, probably, geophy-
14 sical techniques than we do in production.

14 Q Where is the closest established Atoka
15 production in this area?

16 A I believe it's the Shell well in Section
17 1, Shell "BI" -- or 1-BI State, located, I believe it's in
18 southeast quarter of Section 1.

19 Q Are there any other Atoka producing wells
20 that are shown on any of your exhibits?

21 A I believe there are a couple in Section
22 7, being the Mobil 1-UU and Marathon State No. 1, I believe
23 are also completed in the Atoka sand in question.

24 I believe that's all that's shown on this
25 -- this map here.

25 Q You indicated you'd previously testified

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2 before the Division, Mr. Riggle. What -- when and where did
3 you obtain your degree in geology?

4 A I obtained my Bachelor of Science in geo-
5 logy from Wright State University, located in Dayton, Ohio,
6 in 1976, and subsequently returned to school at Wright State
7 University and received a Master of Science in geology in
8 1980.

9 Q How long have you been employed as a pro-
10 duction geologist for Exxon?

11 A Since September of 1980, approximately 4-
12 1/2 years.

13 Q You said that Exxon does in fact have
14 plans and is pursuing discussions about drilling a well for
15 Atoka in the west half of Section 1.

16 A That's right.

17 Q How long have you been involved as a geo-
18 logist for your company in this project?

19 A In the west half of Section 1?

20 Q Yes, sir.

21 A Or in this area?

22 Q In the west half of Section 1?

23 A Several months now. It -- the original
24 proposal, because of the acreage situation, was -- was sent
25 to a group at Exxon, our Joint Interest Group, that handles
a lot of work that will not Exxon-operated, will be operated
by others, wherein Exxon has a percent but will not operate
a well, will not drill it or operate it, but will be a part-

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2 ner, and that's not --

3 Q Do you participate in that group?

4 A No, sir.

5 Q Were you the geologist involved in eval-
6 uating Shell's -- Exxon's participation in the well in the
7 west half of 1 that was the subject of Pennzoil's forced
pooling case back in October?

8 A Yes, sir.

9 Q That would -- you were involved in that?

10 A Yes, sir.

11 Q To what extent, sir, were you involved?

12 A I had mapped the Atoka sand and was in-
13 terested in -- thought it was good prospect, and we were ap-
14 proached and, as Mr. Hair stated, we were in verbal agree-
15 ment to drill a well there, and I believe he is right about
16 the AFE was not signed or returned, but to the best of my
17 knowledge we did verbally agree with a well in the west half
of Section 1.

18 Q Did you have a proposed location in the
19 west half of Section 1 for a well to be drilled in that pro-
20 ration unit?

21 A Our, according to our maps, or my maps, a
22 standard location, that being 1980 from the north and 1980
23 from the west, with the west half, again, being the prora-
24 tion unit, would be an acceptable location to Exxon; how-
25 ever, in conversations between Exxon and Pennzoil, we have
tentatively agreed to review the additional information that

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2 Pennzoil has that says the unorthodox location would be pre-
3 ferable; in other words, 1320 feet from the north and 1980
4 from the west, which I believe was the original proposal for
5 the well in the west half.

6 Q If we look at your Exhibit Number Two,
7 which is the gross Isopach on the Atoka, and if you were to
8 prepare a net pay Isopach map from that gross Isopach, would
9 it be materially different than the Isopach shown as Exxon's
10 Exhibit Three?

11 A It could be slightly different. It would
12 probably be a little more pessimistic, and that being what I
13 have mapped on Exhibit Two is the total thickness of a sand
14 that is there, if there is a sand there.

15 On Exhibit Number Three, the Atoka pay
16 sand with porosity greater than 6 percent, this map excludes
17 sand that has porosity less than 6 percent, as noted on the
18 map, and therefore high grades it a little bit, that being
19 the difference.

20 Q What, in preparing a net pay Isopach map
21 as an expert, would you use a porosity cutoff of 6 percent?
22 Or in that range?

23 A 6 percent, or around there, would be
24 reasonable, yes.

25 Q In looking at Exxon Exhibit Three, then,
do you have any material difference in how you would map the
net pay Isopach for the Atoka?

A You mean would I map it differently --

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Q Yes.

A -- than it is now mapped here?

The basic mapping would be similar; the interpretation of the subtleties of exactly where the contours are placed could be different. The only control point for my mapping is the -- or the closest control point, not the only control point, the closest control point is the Shell well in the southeast of Section 1.

Q If we drill a well in the west half of Section 1 using the net pay Isopach in the Atoka as a guide, where would your standard location 1980 from the north and 1980 from the west place you on that Isopach?

A You've talking about Exhibit Three, now?

Q Yes, sir.

A That would place the well at approximately a position where it would penetrate about five foot of sand according to the Pennzoil Atoka pay map.

Q And if you move to a location that is 1320 from the north line and 1980 from the west line, which is the unorthodox location that Pennzoil obtained approval from the Division last year, where would that place you on the Isopach?

A I believe it's the location of 1320 from the north and 1980 from the west is marked on the map and it looks like it would be approximately 20 foot contour, 25 feet of sand penetration greater than 6 percent porosity.

Q Okay. Are not the thicknesses comparable

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on this map?

A Excuse me, yes. I might have made a mistake when I said 25 feet on that. They could be quite similar, although the location in Section 1 at 1320 from the north looked like it may have 2 or 3 feet less sand than the unorthodox requested in Section 36.

I'm sorry.

Q When we look at the requested location in the east half of 35, is not the possible unorthodox location for Exxon in the west half of 1 a location on the Isopach that gives it greater Atoka thickness than Pennzoil can expect as mapped?

A And the 35, Section 35 well?

Q 35 comparison.

A Yes, sir, according to the map.

Q When we look at the structure map that you have prepared using the well control data, which is your Exhibit Number Four, if we look at the west half of 1 at an unorthodox location 1320 from the north and 1980 from the west, where will that place you, approximately, on that structure?

A Approximately at a structure of a -8050 feet.

Q And if we look at Exxon -- Pennzoil's location in the west half of 36, that approximate location is -8250.

A Yes, sir.

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2 Q All right. What would be the vertical
3 displacement, then, in structure between the Pennzoil loca-
4 tion in 36 and an unorthodox location for Exxon as we've
5 discussed in the west half of 1?

6 A Approximately 200 feet. The 36 -- Sec-
7 tion 36 well would be approximately 200 feet low to the un-
8 orthodox location in Section 31.

9 Q Based upon the exhibits and presentations
10 that you've made here, Mr. Riggle, can we conclude that Ex-
11 xon can protect itself from drainage by placing itself at an
12 unorthodox well location 1320 from the north line, as we've
13 discussed?

14 A I'm not sure I can make that distinction
15 because I don't have, first of all, any reservoir data as to
16 porosity, permeability, or water saturation, gas/water con-
17 tact, et cetera, to say for sure whether that's true or not.

18 Q Does Exxon propose to wait until Pennzoil
19 drills either one or both of the wells in 35 or 36 before it
20 commences a well in Section 1?

21 A I believe in talking to my supervisor
22 that he is in favor of drilling the west half of 31 before
23 the other two locations, and using them, using the addition-
24 al information gained by the west half, by drilling the well
25 in the west half of 1 to aid in determining whether unortho-
dox locations are called for in Sections 35 and 36.

Q Would it not give Exxon an advantage to
allow Pennzoil to undertake the risk of both of its unortho-

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2 dox locations, derive the reservoir data and information
3 that results from that operation, and then locate its well
4 in the west half of Section 1 at a point that minimizes or
5 balances any possible drainage?

6 A I'm not sure how to answer that question.
7 I don't know for sure.

8 Q You said that you thought the Pennzoil
9 locations ought to be penalized. Are you familiar with the
10 penalty formulas used by the Oil Conservation Division in
11 assessing a penalty against an unorthodox location?

12 A Well, I've read them but Mr. William Dun-
13 can is more familiar and will testify to a penalty.

14 Q All right, sir.

15 MR. KELLAHIN: Nothing further,
16 thank you.

17 MR. STOGNER: Any redirect?

18 MR. BRUCE: A couple of ques-
19 tions, Mr. Examiner.

20 REDIRECT EXAMINATION

21 BY MR. BRUCE:

22 Q First of all, Mr. Riggle, any well that
23 may be drilled in the west half of Section 1 by Exxon or
24 Pennzoil, or whoever, that location has not yet been deter-
25 mined, is that correct?

A That is correct.

Q And if the -- in your previous testimony

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2 you said that in your opinion unorthodox location wells in
3 Sections 35 and 36 would drain the Exxon acreage in the west
4 half of Section 1, is that correct?

5 A Yes, sir.

6 Q Therefore, if Exxon waited for the two
7 Pennzoil Wells to be drilled, if they are approved in this
8 application, they would suffer even more drainage while
9 waiting to see what that information is and then proceeding
10 to drill their well, is that correct?

11 A I believe so, sir, yes.

12 MR. BRUCE: No further ques-
13 tions.

14 MR. STOGNER: I have no ques-
15 tions of this witness at this time.

16 Are there any other questions
17 of Mr. Riggle?

18 If not, he may be excused.

19 WILLIAM T. DUNCAN, JR.,
20 being called as a witness and being duly sworn upon his
21 oath, testified as follows, to-wit:

22 DIRECT EXAMINATION

23 BY MR. BRUCE:

24 Q Would you please state your name, city of
25 residence, occupation, and employer?

A My name is William T. Duncan, Junior. I

1
2 live in Midland, Texas, and I'm employed by Exxon Corpora-
3 tion.

4 Q Have you previously testified before the
5 New Mexico OCD?

6 A No, I have not.

7 Q Would you please give a brief summary of
8 your educational background?

9 A I graduated from Texas A & M University
10 in 1980 with a BS degree in mechanical engineering.

11 I then went to work in May for Exxon Cor-
12 poration as a reservoir engineer in the Midland Production
13 District.

14 After two years I was re-assigned to the
15 MidContinent Division Joint Interest Group, where I con-
16 tinued reservoir work and economic evaluations for another
17 two years.

18 I went to my present engineering assign-
19 ment in our MidContinent Division Regulatory Affairs Group,
20 where I have worked for about one year, primarily involved
21 with Exxon's hearings before State oil and gas regulatory
22 agencies in Oklahoma, Texas, Arkansas, and New Mexico, Mon-
23 tana and Wyoming.

24 Q And are you familiar with the two cases
25 being heard today, namely 8498 and 8499?

A Yes, I am.

MR. BRUCE: At this time, Mr.
Examiner, I would present the witness as a reservoir --

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qualified reservoir engineer.

MR. STOGNER: Are there any objections?

MR. KELLAHIN: No, sir.

MR. STOGNER: Mr. Duncan is so qualified.

Q Mr. Duncan, as far as you have been able to determine, is this a prorated field?

A No, it is not, or no, it will not be when the well is completed.

Q In either the Atoka or the Morrow formations?

A That's correct.

Q In your opinion should a penalty be assessed against Pennzoil if these two applications, unorthodox well applications, are granted?

A Yes, I believe there should be a penalty assessed to Pennzoil in order to protect the correlative rights of the proration unit in Section 1, which Exxon will be a party to.

Q And if Pennzoil's applications are granted, do you have any opinion as to the penalty which should be assessed against each well?

A Yes, I do.

Q Would you please now refer to what is marked as Exhibit Number Six and describe your opinion as to

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the penalty?

A If the Division chooses to grant Pennzoil's request, Exxon proposes a 50 percent penalty based on the well's actual distance from the proration unit boundary as compared to the permitted distance from that boundary.

 You can see in Exhibit Six that that's 990 feet compared to 1980 feet, which is the 50 percent penalty. This type of penalty is used most often in Arkansas and that's where I became familiar with it.

Q Would you please -- if a penalty is granted in these cases, how would such a penalty be assessed against Pennzoil on a continuing basis?

A To accomplish this penalty we'd recommend that the wells be limited to one-half of their demonstrated deliverability capability.

 One way this can be calculated would be for Pennzoil to be required to submit to the NMOCD a record of seven consecutive days production which occurred during the previous quarter.

 For simplicity, these quarters may be set to coincide with the three-month classification periods for prorated gas wells in the state.

 These seven consecutive days production, selected by Pennzoil, could then be used to calculate an average daily producing rate, or what I refer to as a demonstrated deliverability capability.

 Pennzoil's wells would then be limited

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2 during the next classification period to a total gas produc-
3 tion equal to the product of one-half of this daily rate or
4 capability times the number of days in the next classifica-
5 tion period.

6 Q Just to make it clear what you're seek-
7 ing, would you explain that last part again?

8 A The very last part?

9 Q Yeah.

10 A Pennzoil's wells would be limited during
11 the next three month classification period to a total gas
12 production equal to the product of one-half, or 50 percent,
13 of this daily rate or capability times the number of days in
14 the next classification period.

15 Q What are the advantages of this method of
16 penalty assessment, in your opinion?

17 A Well, the main advantage is simplicity.
18 It would allow Pennzoil to choose the time when they wanted
19 to test their well for seven consecutive days. They would
20 be free to pick a time when they could anticipate the high-
21 est demands from their purchaser, and it would also prevent
22 the anomalies which might be caused by shutting the well in
23 for, say, a week and then opening it up to produce it for
24 one or two days. This would allow any anomalous production
25 to be evened out over a seven consecutive day period.

Q Are you also familiar with other methods
the OCD uses to assess penalties on wells, specifically what
is commonly referred to as the double circle method?

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2 What is your reason for seeking the pen-
3 alty method you have suggested rather than seeking the
4 double circle method of a penalty?

5 A The reason for seeking this type of a
6 penalty that we propose, because in the double circle method
7 with these two locations being so close to the corner, so
8 close to the proration unit that Exxon would participate in,
9 the circles outside of Pennzoil's proration units would ac-
10 tually overlap, so in effect you would have or you would
11 need more of a penalty than the individual double circle
12 method would give each well.

13 Q And do you believe that some effective
14 penalty is needed to limit production in a nonprorated well
15 in order to make it a meaningful penalty?

16 A Yes, I do.

17 Q In your opinion, if Pennzoil's applica-
18 tions are granted with no penalty, would Exxon's correla-
19 tive rights be adversely affected?

20 A Yes, I believe that.

21 Q And was Exhibit Number Six prepared by
22 you?

23 A Yes, it was.

24 MR. BRUCE: At this time I move
25 the admission of Exhibit Number Six and I have no further
questions of the witness at this time.

 MR. STOGNER: Are there any ob-
jections?

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2 MR. KELLAHIN: Yes, Mr. Exam
3 iner.

4 CROSS EXAMINATION

5 BY MR. KELLAHIN:

6 Q Mr. Duncan, are you aware of either the
7 New Mexico Oil Conservation Division or Commission ever
8 having previously used the proposed penalty method that you
9 are proposing today?

10 A No, I'm not aware of that.

11 Q Are you familiar with the method that the
12 Division has used in establishing an allowable based upon
13 deliverability for an unorthodox gas well in a nonprorated
14 gas pool?

15 A No, I am not.

16 Q Have you attempted to use the Division
17 double circle penalty to come up with under that penalty
18 formula what would be the penalty in that situation?

19 A Yes, I have.

20 Q Have you used any other method or calcu-
21 lation to determine a possible penalty?

22 A No, I have not.

23 Q Did you have any involvement in the
24 selection of a well location in the west half of Section 1
25 for Exxon?

A No, I did not.

MR. KELLAHIN: I have nothing

1 further.

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3 MR. STOGNER: Okay. Mr. Kella-
4 hin, are there any objections to Exhibit Six?

5 MR. KELLAHIN: No, sir.

6 MR. STOGNER: Okay, I'll admit
7 those into evidence and you've cross examined. We will now
8 go back to Mr. Bruce for any redirect.

9 REDIRECT EXAMINATION

10 BY MR. BRUCE:

11 Q Mr. Duncan, do you feel that both the
12 proposed Pennzoil wells would drain Exxon acreage?

13 A Yes, I do believe that.

14 Q And that is one of the reasons that you
15 are seeking this stiff, if you will, penalty method?

16 A That's correct, and I believe that based
17 upon drawing two 320-acre circles or radial drainage areas
18 around the proposed wells and in the proposed unorthodox lo-
19 cations, both of those circles cut substantially into the
20 west half of Section 1.

21 Q Thank you.

22 MR. BRUCE: I have no further
23 questions of the witness.

24 MR. KELLAHIN: Mr. Examiner, I
25 have one further question.

MR. STOGNER: Mr. Kellahin.

REXCROSS EXAMINATION

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2 BY MR. KELLAHIN:

3 Q Mr. Duncan, cannot Exxon minimize or bal-
4 ance any possible advantage gained by Pennzoil by drilling a
5 well at a similar unorthodox location in the west half of
6 Section 1?

7 A It may be possible to minimize and/or
8 protect the lease line to a degree but only, for instance,
9 to half a degree.

10 One wellbore can only effectively drain
11 its one drainage radius. If there are two affected drainage
12 areas that contribute to two wellbores, one wellbore cannot
adequately protect it.

13 Q If both of these proration units in Sec-
14 tions 36 and 35 are laydown proration units, then each of
15 those locations would be standard locations as they affect
16 Exxon's acreage, would they not?

17 A As they affect Exxon's acreage, I -- I
18 have trouble with what you just said.

19 If you're talking about laydown proration
20 units in 35 and 36, then the standard, the orthodox location
21 in Section 35 would be 1980 feet back from the lease line
22 and since -- and because of that -- from the section line.
23 Because of that, its 320-acre drainage radius would barely,
if any, cut into the west half of Section 1.

24 Now, to address the laydown 320 in Sec-
25 tion 36, an orthodox location for that unit would in fact

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2 cut into the west half of Section 1, you're correct.

3 But then it would not conflict so much
4 with the orthodox location in Section 35.

5 MR. KELLAHIN: Nothing further.

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

8 Mr. Bruce?

9 MR. BRUCE: No further ques-
10 tions, Mr. Examiner.

11 CROSS EXAMINATION

12 BY MR. STOGNER:

13 Q Mr. Duncan, in Exhibit Number Six do you
14 propose that the 50 percent penalty be imposed on both
15 wells?

16 A That's correct.

17 Q Okay, and is this for all zones or just
18 the Atoka?

19 A It probably should be for any zone which
20 included a 320-acre proration unit, and that's what I would
21 propose.

22 Q Mr. Duncan, are you opposed more so for
23 the unorthodox location in Section 36, more so than the one
24 in Section 35?

25 A That's hard to answer in that if the lo-
cation in Section 36 became a laydown and the location in
Section -- Section 35, excuse me, the proration unit in Sec-

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2 tion 35 remained a stand-up, then you would still find me
3 opposed to the unorthodox location in Section 35 because it
4 would still cut significantly into the west half of Section
5 1.

6 Q Well, regardless if it's a laydown or a
7 stand-up, you're still going to get the same sort of a
8 drainage radius, are you not, regardless of what the prora-
9 tion unit is?

10 A You would have a different location for
11 the orthodox well if it's a stand-up or a laydown.

12 Q Well, let me rephrase my question.

13 A Perhaps I didn't understand.

14 Q Okay. Obviously, you're opposed to both
15 unorthodox locations.

16 A That's correct.

17 Q Are you more so opposed to the unorthodox
18 lcoation in Section 36 more than the one in Section 35?

19 A Assuming that one did not affect the
20 other as far as we could be opposed to one and having no-
21 thing, no opposition at all to the other, the one in Section
22 36 would drain more of Section -- of the west half of Sec-
23 tion 1 than the proposed location in Section 35. In that
24 way, yes.

25 Q If Exxon -- if Pennzoil wasn't planning
on drilling a well in 36, would you still be here opposing
and asking for a 50 percent penalty factor in the well in
Section 35?

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2 A Since that's not the situation, I really
3 don't know if I could answer it. The reason that we are
4 here opposing it, is because they propose two location ex-
5 ceptions in that particular place.

6 Q Ah, that's what I'm saying. If they were
7 just having one, would you still be here opposing it?

8 A It really depends upon whether the An-
9 drews District has been as upset about one, and I can't an-
10 swer that.

11 They were the ones that, you know, they
12 decided whether we would be opposed to a location.

13 Q Okay. Since we have two unorthodox loca-
14 tions, though, Exxon is here opposing that, obviously.

15 A That's correct. I'm not trying to be am-
16 biguous or elusive. It's just that in my particular job, I
17 get the job of opposing once the decision's been made be-
18 cause of the situation.

19 Q Right, I --

20 A If the situation changes, I don't know
21 whether I'd be told to oppose it.

22 Q Thank you, Mr. Duncan. It's my job to
23 set here and listen to opposition.

24 A Thank you.

25 MR. STOGNER: I have no further
26 questions of this witness.

 Are there any other questions
of Mr. Duncan?

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MR. TAYLOR: Yeah, Mr. Examiner, I'd like to ask a question.

CROSS EXAMINATION

BY MR. TAYLOR:

Q You said you looked at the OCD's method of determining penalties and rejected that.

Under that method what would the penalty be? Did you figure that out?

A Excuse me, I did look under the double circle method. I'm not quite sure which one you're talking about when you say OCD.

Q Under the double circle method that you looked at --

A Yes, I did.

Q -- what did you determine the method -- or penalty to be?

A 78 percent.

Q 78 percent.

MR. KELLAHIN: For which well?

A For both wells.

MR. KELLAHIN: Is that the allowable or the penalty?

A That's the penalty. Excuse me, that is one minus the penalty.

MR. KELLAHIN: Yes, sir, so 78 percent is the allowable.

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A I guess I'm hesitant about allowables.

MR. BRUCE: I'll agree with Mr. Kellahin's statement.

A Not knowing --

Q Under your penalty method that you use, did you look at any penalties less than 50 percent to determine whether or not they would result in no effect on Exxon wells?

Do you understand that question or is that --

A I'm sorry.

Q Did you look at any penalties less than your 50 percent to determine whether that penalty applied to the well would result in no drainage to the Exxon property?

A I haven't done a reservoir study and without knowing a little more about the wells and, in fact, having them depleted, it's hard to determine whether they would in fact drain.

Assuming a 320-acre drainage radius, or a 320-acre radial drainage area, both of these locations would cut into the proration unit in the west half of Section 1; however, that in itself is not -- not bad. A radial drainage area will cut into the surrounding proration units.

So, no, I don't know whether -- whether Exxon will be protected.

Q (Not clearly understood.)

A That's correct.

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Q Okay. Thank you.

MR. STOGNER: Are there any other questions of Mr. Duncan?

MR. KELLAHIN: Yes, sir, Mr. Examiner.

RE CROSS EXAMINATION

BY MR. KELLAHIN:

Q Based upon Mr. Taylor's eliciting from you the penalty calculation, let's go through the calculations so that we understand how you do it.

Using the double circle method, you drew a circle around the closest standard location.

A That's correct.

Q And what radius did you use for that circle, approximately?

A 2106 feet.

Q All right, sir. You drew the first circle and then you take the same radius and you draw a second circle. The -- one point of the radius is at the proposed unorthodox location and you draw the second circle using the same radius, right?

A That's correct.

Q What was the area that you planimetered or otherwise calculated to be the area in which the second circle exceeded the first circle?

A In which the second circle exceeded the

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first circle?

Q Yes, sir.

A 47 acres.

Q All right. 47.

A Excuse me, the first circle exceeded the second. Oh, wait a minute, I --

Q The first circle we drew was at the standard location.

A Excuse me, I completely answered that wrong.

Q All right.

A In fact, let me -- let me try and help me out, if you don't mind.

Could I introduce this exhibit, or at least use it to explain what I'm trying to say?

Q I don't mind you referring to your notes to help you answer my question, and if that aids you, let's have you look at that.

A All right.

Q When we calculate the formula that is often used by the Division, it is a three part formula, is it not?

A That formula is.

Q Yes, sir, that's the one I want to discuss with you.

A That is not the one that I used.

Q All right. When Mr. Taylor and Mr. Bruce

1
2 talked to you, and I talked to you, about the double circle
3 method --

4 A That was a different method than I used.

5 Q All right. That's what I'm trying to un-
6 derstand, what you have used when you calculated a double
7 circle method.

8 A What I -- what I -- would you like for me
9 to --

10 Q Yes, sir, please explain it to me.

11 A If you take the circle around the nearest
12 orthodox location and determine the area within that 320-
13 acre area circle that also falls within the 320-acre stand-
14 up proration unit, it gives you an area, that area being 219
15 acres. That is the area that normally falls within the
16 stand-up proration unit at the unorthodox location.

17 Excuse me, at the orthodox location near-
18 est to the unorthodox proposed location.

19 If you draw another circle around the
20 proposed unorthodox location and determine the area within
21 that circle that is also within the 320-acre proration unit,
22 you come up with an area of 172 acres. That is the drainage
23 area within the proration unit for the requested location.

24 Therefore, a well in the requested unor-
25 thodox location would have a calculated area of drainage
which extends 47 acres outside the proration unit more than
a well located in a standard location.

Q All right.

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A And the determination of the 78 percent penalty is simply taking the 172 acres that would actually fall within the proration unit for the unorthodox location and dividing that by the 219 acres that would normally fall within the proration unit; therefore you would get 79 percent.

Q Did you attempt to delete from the difference in acreage that acreage that is not controlled by Exxon within the 47 acres? Is that 47 acres entirely contained within leasehold interests controlled by Exxon?

A No, it is not.

Q What would be the net acres out of the 47 that would equate to Exxon's acreage?

A I have not calculated that.

Q Does your calculation under the double circle method take into consideration the distance -- strike that.

The method of determining the double circle allowable took only into consideration what you've described for us you did in using the two circles.

A That's correct.

Q All right.

MR. KELLAHIN: Nothing further.

MR. STOGNER: Mr. Bruce?

REDIRECT EXAMINATION

BY MR. BRUCE:

Q Mr. Duncan, the 78 percent figure you used, the 78 percent figure is not penalty but 100 minus 78, or 22 percent would be the penalty, is that correct?

A That's correct.

Q Mr. Kellahin also referred to a three part OCD formula. If, indeed, you used that formula would the penalty be more severe than the 22 percent?

A I don't recall. I did work through it but at this point I don't remember whether it was 2 percent more or less. And it was very close, mainly because the unorthodox location is not -- is not substantially moved in any but one direction, and the OCD formula takes into account the movement of the location toward the boundary lines of the proration unit.

Q The penalty would come out about approximately the same.

A It's very close but it's not exact.

MR. BRUCE: No further questions.

MR. STOGNER: Any more questions of Mr. Duncan?

MR. KELLAHIN: No, sir.

MR. STOGNER: If not, he may be excused.

I, at this time, would like to

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recall Mr. Hair to the stand. I have a couple of questions.

GREGORY L. HAIR,

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

DIRECT EXAMINATION

BY MR. STOGNER:

Q Mr. Hair, which well does Pennzoil propose to drill first?

A Section 36.

Q Will the drilling of the second well in Section 35 depend upon the resulting tests on the first well?

A Yes, it will.

Q May I assume that if all zones are dry in the first well that the second well not be drilled?

A In all probability, yes.

Q Does Pennzoil have some producing wells out here at present?

A Are you talking about on this plat, in this general area?

Q In this general area we do have some production, yes.

Q Who's the purchaser of gas?

A I do not know.

Q Okay.

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2 MR. STOGNER: I have no further
3 questions of this witness. He may be excused.

4 MR. BRUCE: I have one ques-
5 tion.

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

8 MR. KELLAHIN: No, sir.

9 MR. STOGNER: Mr. Bruce.

10 RE CROSS EXAMINATION

11 BY MR. BRUCE:

12 Q What is the drive mechanism in the Atoka
13 formation?

14 A I'm not positive that I know.

15 MR. BRUCE: No further ques-
16 tions.

17 MR. STOGNER: Mr. Kellahin.

18 REDIRECT EXAMINATION

19 BY MR. KELLAHIN:

20 Q Mr. Hair, are you familiar with the for-
21 mula used by the Division which consists of three parts?

22 A Yes, I am.

23 Q The formula that the Division uses on oc-
24 casion to come up with a penalty or an allowable as a result
25 of a well being at an unorthodox well location?

A Yes, I am.

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Q Will you describe generally what the three parts of the formula is?

A The first factor is based on the amount of acreage that is intruded into on your opposing person's proration unit, on -- under his lease. That is strictly an acreage factor.

Q And that is characterized as the F-1 factor?

A The F-1, yes.

Q All right, sir, and what are the other parts?

A The F-2 is the amount of deviation from a standard location in an east/west direction.

F-3 is the amount of deviation from a standard location in a north/south direction.

Q Does the Division have a method by which it establishes an allowable based upon deliverability in a nonprorated gas pool upon which a penalty is assessed?

A Yes. I believe it's based on a 72-hour production test, which is supervised by the Commission.

Q Mr. Hair, have you calculated for Section 36, using the three part method of the Division, what would be the allowable for the well in 36?

A Yes. As to the acreage controlled by Exxon which is effected, and as to the other two factors in the formula, it works out to be an allowable of 80-1/2 percent.

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2 Q Have you worked through that formula to
3 determine what the allowable would be if we used that method
4 for the well located in Section 35?

5 A Yes, I have.

6 Q And what is that percentage?

7 A As to the acreage being controlled by Ex-
8 xon in Section 1 it works out to 81-1/2 percent.

9 MR. KELLAHIN: I have nothing
10 further.

11 RE CROSS EXAMINATION

12 BY MR. STOGNER:

13 Q One more question, Mr. Hair.

14 If, for instance, your first well that
15 you're going to drill is in Section 36, if it had a penalty
16 of 50 percent would Pennzoil drill it?

17 A I can only give you my best judgment and
18 I would say no.

19 Q Thank you, Mr. Hair.

20 MR. STOGNER: Any other ques-
21 tions of this witness?

22 MR. KELLAHIN: No, sir.

23 MR. STOGNER: If not, he may be
24 excused.

25 We're now ready for closing
statements, if there are no more witnesses to be called.

MR. KELLAHIN: I have no fur

1 ther.

2 MR. STOGNER: Mr. --

3 MR. BRUCE: No further witnes-
4 ses.

5 MR. STOGNER: Mr. Bruce, you
6 may go first. Mr. Kellahin, you may finish up.

7 MR. BRUCE: Mr. Examiner, I be-
8 lieve that the geological evidence shows that drilling at
9 orthodox locations as to both applications is at least as
10 favorable, if not better, than drilling at the proposed
11 unorthodox locations.

12 Furthermore, both wells will
13 drain the Exxon acreage in Section 1. Therefore, we would
14 urge that both applications should be denied.

15 However, if the applications
16 are granted, we believe a penalty should be assessed against
17 Pennzoil on both wells because of their non-standard loca-
18 tions and because of their drainage of the Exxon acreage.

19 And although this is not a
20 prorated field, Exxon believes that the penalty method
21 suggested by it is a fair method to assess a meaningful
22 against Pennzoil so that its correlative rights will not be
23 affected.

24 MR. STOGNER: Thank you, Mr.
25 Bruce.

Mr. Kellahin?

MR. KELLAHIN: Mr. Examiner, I

1
2 disagree with the way in which Mr. Bruce has characterized
3 the geology.

4 I think the--both geologic ex-
5 perts were in agreement about the basic essential facts upon
6 which you would make a decision in this case.

7 Foremost and most importantly,
8 I think it's essential to know that Exxon's in the position,
9 the best possible position anyone could be. We are not
10 dealing with a situation where Exxon has committed its funds
11 and resources to a well at a standard location and thereby
12 is exposed to drainage by operators offsetting that property
13 for which it cannot compensate itself by counterdrainage.

14 They have the best possible
15 world because their geologic opinions have been reconfirmed
16 for them by our expert, who's demonstrated knowledge and
17 expertise that you seldom see in this hearing room.

18 They also have the advantage of
19 waiting for the Pennzoil to undertake and expose themselves
20 to the substantial risk of drilling these wells, and thereby
21 locate a well in the west half of Section 1 that will
22 minimize or obviate the necessity for any type of penalty.

23 What Mr. Bruce has done is he's
24 simply isolated the Isopachs and our expert witness says
25 that you cannot do that, that the structural control of the
deposition in the Atoka is critical and when you look at the
structural control you know that the advantage is to Exxon
by some 250 feet.

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2 We believe that there is sub-
3 stantial evidence in this case for you to approve these un-
4 orthodox locations without any penalty at all and leave it
5 up to Exxon to expend their resources and to locate their
6 well then at an unorthodox location which optimizes any po-
7 tential for drainage.

8 We have elicited from their ex-
9 pert the fact that the unorthodox location 1320 from the
10 north line is the location that puts them at an advantage
11 over us, notwithstanding our location.

12 Be that as it may, if you
13 decide that it's appropriate to assess a penalty, we suggest
14 that there's no evidence in this case to suggest that the
15 use of the method long established by the Division to assess
16 a penalty in this type of situation is unreasonable or
17 unwarranted.

18 You may use, if you desire, and
19 if you think the evidence supports that conclusion which I
20 disagree, but if use that penalty the calculations are as we
21 contend Mr. Hair has calculated them to be. We will provide
22 you with a proposed order that shows you how that calcula-
23 tion was made if you desire, but in each instance the allow-
24 able allowed for this well ought to be in the range of 80
25 percent.

MR. STOGNER: Thank you, Mr.
Kellahin.

I'm going to ask something un-

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usual of both Mr. Kellahin and Mr. Bruce.

If I asked you right now to provide me with a rough I would assume that you would provide me one with a 50 percent penalty on both wells and you would provide me one with no penalty on either well. So be it; that's fine.

However, I would like from both of you an order with some sort of penalty, whether it be done with the double circle method or an ingenious method. I would like that also from both of you within 13 days.

Anything further in Case No. 8498 or 8499?

If not, both of these cases will be held open pending the additional information and the rough drafts--I mean the rough drafts within 13 days.

Thank you.

(Hearing concluded.)

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C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the New Mexico 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 Nos. 8498 + 8499 heard by me on 27 February 1985.

Michael E. Higgins, Examiner
Oil Conservation Division