

NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10403

IN THE MATTER OF:

The Application of American Hunter  
Exploration, Ltd., for a  
High-Angle/Horizontal Directional  
Drilling Pilot Project, Special  
Operating Rules Therefor, a Nonstandard  
Oil Proration Unit, an Unorthodox Oil  
Well Location, and to Rescind Division  
Order No. R-9536, Rio Arriba County,  
New Mexico.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

October 17, 1991

REPORTED BY:

CARLA DIANE RODRIGUEZ  
Certified Shorthand Reporter  
for the State of New Mexico

**ORIGINAL**

## A P P E A R A N C E S

FOR THE NEW MEXICO OIL CONSERVATION DIVISION:

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BY: WILLIAM F. CARR, ESQ.

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1 EXAMINER CATANACH: We'll call Case  
2 10403.

3 MR. STOVALL: Application of American  
4 Hunter Exploration, Ltd., for a  
5 high-angle/horizontal directional drilling pilot  
6 project, special operating rules therefore, a  
7 nonstandard oil proration unit, and an unorthodox  
8 oil well location, and to rescind Division Order  
9 No. R-9536, Rio Arriba County, New Mexico.

10 EXAMINER CATANACH: Are there  
11 appearances in this case?

12 MR. CARR: May it please the Examiner,  
13 my name is William F. Carr with the law firm  
14 Campbell, Carr, Berge & Sheridan of Santa Fe. I  
15 represent American Hunter Exploration, Ltd., and  
16 I have two witnesses.

17 EXAMINER CATANACH: Are there any  
18 other appearances? Will the two witnesses please  
19 stand to be sworn in.

20 JAMES C. LISTER

21 Having been first duly sworn upon his oath, was  
22 examined and testified as follows:

23 EXAMINATION

24 BY MR. CARR:

25 Q. Will you state your name for the

1 record, please.

2 A. James C. Lister.

3 Q. Mr. Lister, where do you reside?

4 A. Evergreen, Colorado.

5 Q. By whom are you employed and in what  
6 capacity?

7 A. American Hunter Exploration, as senior  
8 exploration geologist.

9 Q. Have you previously testified before  
10 the New Mexico Oil Conservation Division?

11 A. Yes, I have.

12 Q. At the time of that testimony, were  
13 your credentials as an expert witness in  
14 petroleum geology accepted and made a matter of  
15 record?

16 A. Yes, they were.

17 Q. Are you familiar with the application  
18 filed in this case on behalf of American Hunter  
19 Exploration, Ltd.?

20 A. Yes, I am.

21 Q. Are you familiar with the proposed  
22 horizontal well and generally the horizontal  
23 drilling project of American Hunter in the San  
24 Juan basin?

25 A. Yes, I am.

1 MR. CARR: Are the witness's  
2 qualifications acceptable?

3 EXAMINER CATANACH: They are.

4 Q. Mr. Lister, I think what we should do  
5 first is review for Mr. Catanach the facts which  
6 have resulted in this case. This case is part of  
7 a horizontal drilling pilot project which  
8 actually includes four wells, is that correct?

9 A. That's correct.

10 Q. When was the drilling of these four  
11 wells actually approved by the Division?

12 A. May 30th the four applications were  
13 approved, or we appeared here May 30th, and they  
14 were approved in June of 1991.

15 Q. Each of the four wells were approved?

16 A. Yes, that's correct.

17 Q. Could you just briefly review the  
18 status of American Hunter's efforts to proceed  
19 with this drilling program? How many wells have  
20 been drilled?

21 A. We've drilled one well so far. That  
22 was the the 8-I well and we're currently drilling  
23 the 2-A well.

24 Q. The third well in the project, will you  
25 go forward with that pursuant to the original

1 Order?

2 A. Yes, we will. That will probably be  
3 the 6-A well, and we will drill that as we  
4 previously requested.

5 Q. Could you just review for the Examiner  
6 the problem that you have incurred with your  
7 proposed fourth well?

8 A. American Hunter shot seismic across the  
9 four wells that they had planned, but they shot  
10 the seismic after the hearing that we attended in  
11 May. The results of the seismic have indicated  
12 that there's a structural anomaly in the area of  
13 this fourth well. In order to horizontally drill  
14 through the area of the anomaly, we're proposing  
15 to change the surface location and bottom hole  
16 location for the horizontal test.

17 Q. In fact, if you were to intersect the  
18 anomaly, you would have to drill a straight hole,  
19 would you not? It's just not possible to hit  
20 this with a horizontal wellbore from the location  
21 currently approved?

22 A. That's correct.

23 Q. What time constraints are you faced  
24 with?

25 A. We're in a joint venture with the

1 Jicarilla Apache Indians, and we have until  
2 mid-December to spud all four of our wells. We  
3 want to proceed as soon as possible to get the  
4 approval for this fourth well so that we can meet  
5 that deadline. Also there are weather concerns  
6 that would encourage us to drill as soon as  
7 possible.

8 Q. You have taken this new proposal back  
9 to the Jicarillas, have you not?

10 A. Yes, we have.

11 Q. What is the status of their approval as  
12 it relates to this application?

13 A. Well, the process that is normally  
14 followed with the Jicarillas is that first the  
15 proposal is reviewed by the Minerals Committee,  
16 and then the Minerals Committee recommends their  
17 findings to the Council for the Council's  
18 approval.

19 To date we have the approval of the  
20 Minerals Committee, and we're awaiting the next  
21 Council meeting which should be around November  
22 4th. We hope to receive final approval from the  
23 Council at that time.

24 Q. Although you're waiting for additional  
25 approvals from the Jicarillas, are they holding



1 you to the mid-December date for having all four  
2 wells actually spudded?

3 A. Yes. We will have to comply with that  
4 commitment.

5 Q. You have come forward today with an  
6 amended plan for this fourth well. In your  
7 opinion, is this the best possible option for  
8 development of the reserves in this structural  
9 anomaly?

10 A. Yes, it is.

11 Q. Could you just briefly summarize for  
12 Mr. Catanach what it is that you're seeking for  
13 this well?

14 A. Yes. We're seeking authority to drill  
15 the 3-F well from surface location of 1,650 feet  
16 from the north line, 2,000 feet from the west  
17 line, in Section 3 of Township 27 North, Range 1  
18 West, and to drill this well at a high-angle,  
19 westerly direction, to test the Niobrara A and B  
20 zones of the Mancos shale.

21 We're also asking for approval for the  
22 formation of a 640-acre proration unit, comprised  
23 of the west half of Section 3 and the east half  
24 of Section 4.

25 Q. Mr. Lister, there's no guarantee that

1 the Indian tribe will approve this application at  
2 the November 4th meeting, is that right?

3 A. That's correct.

4 Q. If in fact that approval is delayed  
5 until December or later, what alternative plans  
6 do you have?

7 A. Well, if we're unable to receive the  
8 approval from the tribe to drill this 3-F well,  
9 we will have no option as far as drilling a  
10 horizontal well. Except to go back to Section 4,  
11 where the previous Order was issued, and attempt  
12 to reverse the drilling direction and move the  
13 surface location farther to the west so that we  
14 can deviate updip to the east and accomplish a  
15 high-angle/horizontal test of the anomaly on the  
16 eastern side of that section.

17 Q. By just reversing your drilling within  
18 the currently approved drilling window, that  
19 would not require Tribal Council approval, is  
20 that correct?

21 A. No. That's correct. We have the  
22 rights to drill on the even sections, Section 4  
23 being an even section, and we need no further  
24 approval from the Indians to do that.

25 Q. That has not been covered by the

1 application that is before the Division today, is  
2 that correct?

3 A. That's correct.

4 MR. CARR: Mr. Catanach, we would  
5 request authority simply to present information  
6 on that alternative. It will require that the  
7 case would have to be readvertised.

8 What we're trying to do is drill a well  
9 and comply with time constraints and other  
10 requirements imposed by the Jicarillas, and since  
11 the witnesses are here and we can go forward  
12 today, we request your permission to put that  
13 part of the case on along with the portion of the  
14 case that is covered by the application and  
15 advertisement.

16 EXAMINER CATANACH: That's fine, Mr.  
17 Carr.

18 Q. What, Mr. Lister, would be the surface  
19 location if you were required to simply reverse  
20 the well?

21 A. If we were to reverse the direction of  
22 the drilling of the well in Section 4, the  
23 surface location we've identified would be 500  
24 feet from the north line and 2,100 feet from the  
25 west line.

1           Q.     Now, if you have to reverse the well,  
2     that would enable you to drill a horizontal well  
3     and extend the wellbore into the anomaly, is that  
4     correct?

5           A.     That's correct.

6           Q.     If no approvals are obtained, if the  
7     OCD says no and nothing happens at the Jicarilla  
8     level, what would you have to do?

9           A.     We would, more than likely, have to  
10    drill a straight hole.

11          Q.     And that would require further OCD  
12    approval?

13          A.     Yes, that's my understanding.

14          Q.     Is it possible that you could find  
15    yourself in a position where to comply with the  
16    requirements of the Jicarilla Apache Tribe, you  
17    would have to go forward and drill the well as  
18    originally requested and approved by the Division  
19    in Order No. R-9536?

20          A.     That's a possibility, but that would be  
21    our last choice.

22          Q.     For that reason, do you request that  
23    the Division not rescind that order yet?

24          A.     Yes. We would like to preserve that  
25    option just so that we're able to accomplish the

1 four-well drilling program.

2 Q. Is it fair to say that you're in the  
3 mess because of some time constraints?

4 A. That would be a fair statement.

5 Q. Have you prepared certain exhibits for  
6 presentation in this case?

7 A. Yes, I have.

8 Q. Could you refer to what has been marked  
9 as American Hunter Exhibit No. 1 and review that  
10 for Mr. Catanach?

11 MR. STOVALL: Mr. Carr, I'm going to  
12 interrupt you for a second. The approval that  
13 you need from the Jicarillas, that is because  
14 you're moving on to Section 3, the odd-numbered  
15 section, that you don't have the authority, is  
16 that correct?

17 MR. CARR: That's correct.

18 MR. STOVALL: It's not a concept or an  
19 engineering resource conservation approval, but  
20 rather a joint-venture type approval?

21 THE WITNESS: With regard to the  
22 Indians, yes, that's correct.

23 MR. STOVALL: Okay. That's all I  
24 wanted to know. Continue, Mr. Carr.

25 Q. Let's go to Exhibit No. 1. Could you

1 review that for Mr. Catanach?

2 A. Exhibit No. 1 is the land map of the  
3 Mancos project area. The key features to note on  
4 the land map are the four--actually the five  
5 proposed locations. The 8-I well has been  
6 drilled. The surface location is shown by a  
7 circle. The bottom hole location by the X on the  
8 map.

9 The 6-A well, which would be the third  
10 well in our program, the 2-A well which we're  
11 currently drilling, and then, to the west, the  
12 proposed 3-F surface location and bottom hole  
13 location. The 640-acre proration unit comprises  
14 the west half of 3 and the east half of 4, and  
15 then the well in Section 4, reversal of the  
16 drilling direction from what was previously  
17 approved.

18 It is mislabeled on this land map. The  
19 previously approved Order in 4 was the drilling  
20 of the 4-A well. If we reverse the drilling  
21 direction, that well should now be labeled 4-C on  
22 this land map plat.

23 Q. And the well in the north half of  
24 Section 4, as it is indicated with a surface  
25 location in the west half, drilling to the east,

1 is the 4-C well?

2 A. That's correct.

3 Q. If it was the other way around and the  
4 surface location was in the east half, drilling  
5 toward the west, that would be the 4-A?

6 A. That would be the 4-A well, as  
7 previously approved.

8 Q. Does this exhibit show the offsetting  
9 ownership?

10 A. Yes, it does. It shows that in the  
11 even sections we have the joint venture with  
12 American Hunter as the 100-percent working  
13 interest party there, and then the odd section,  
14 showing the Jicarillas with their 100-percent  
15 interest.

16 Q. Is all offsetting ownership either the  
17 Jicarilla Tribe or Benson-Montin-Greer?

18 A. That's correct.

19 Q. Those are the only other owners that  
20 would be affected?

21 A. That's correct. Those are the only two  
22 owners in the area.

23 Q. Have you reviewed your program with  
24 Benson-Montin-Greer?

25 A. Yes, we have.

1 Q. Is there other Mancos development in  
2 the general area?

3 A. Yes. You'll note from the well symbols  
4 that to the north is the very southern end of the  
5 Boulder field, and to the east is the East Puerto  
6 Chiquito field, and then the four wheels labeled  
7 Florance Unit are a part of the West Puerto  
8 Chiquito field.

9 Q. In what pool is the proposed well to be  
10 located?

11 A. In the West Puerto Chiquito-Mancos  
12 pool.

13 Q. Are there special pool rules in effect  
14 for this pool?

15 A. Yes, 640-acre spacing and 1,650 foot  
16 setbacks.

17 Q. What exceptions to these rules does  
18 American Hunter need for this application?

19 A. Well, we're asking for approval of the  
20 640-acre proration unit to be comprised of  
21 portions of two sections, the west half of 3 and  
22 the east half of 4, and then although the surface  
23 location complies with the 1,650-foot setback,  
24 the actual drilling of high-angle well would  
25 require an exemption from the well location



1 requirements.

2 Q. In this 640-acre proposed spacing unit,  
3 is this interest in American Hunter in both  
4 sections?

5 A. Yes, American Hunter would have  
6 100-percent working interest.

7 Q. And the royalty interest in the two  
8 320-acre tracts is with the Jicarilla tribe?

9 A. The royalty interest would be with the  
10 Jicarilla tribe.

11 Q. By forming this 640-acre unit, two  
12 sections, the ownership remains common in both of  
13 the sections involved?

14 A. That's correct.

15 Q. Has notice of this hearing been  
16 provided as required by Oil Conservation Division  
17 rules?

18 A. Yes, it has.

19 Q. Is Exhibit 2 a copy of an affidavit  
20 confirming that notice of today's hearing has  
21 been provided by certified mail?

22 A. Yes, it is.

23 Q. Mr. Lister, would you refer to what has  
24 been marked as American Hunter Exhibit No. 3, and  
25 first identify this for Mr. Catanach and then

1 review the information on the exhibit?

2 A. Okay. This is a stratigraphic chart  
3 and formation type log of the area. It shows the  
4 Mancos formation, which is about 2,000 feet in  
5 thickness, and is divided into five members from  
6 the base up, being the Graneros, Greenhorn,  
7 Carlisle, Niobrara and then the upper member of  
8 the Mancos.

9 The Niobrara member is the principal  
10 target of the drilling and it can be further  
11 subdivided into an upper and a lower member. The  
12 lower member contains gray, brittle calcareous  
13 shales, and thin, hard gray calcareous  
14 sandstones. Locally these sandstones are  
15 referred to as the A, B and C zones, and they're  
16 so indicated on the chart.

17 They are regarded as the principal  
18 producing reservoirs at Boulder-East and West  
19 Puerto Chiquito fields.

20 Q. In this exhibit you shaded the A and B  
21 zones and not the C. Does that indicate  
22 anything?

23 A. We've shaded the A and B zones because  
24 those two zones would be the target of the  
25 horizontal drilling and the wellbore would be

1 contained within those two zones in the lateral  
2 portion.

3 Q. Let's go now to American Hunter Exhibit  
4 No. 4, your structure map, and I would ask you to  
5 review that for the Examiner.

6 A. Okay. This is a structure map drawn on  
7 the top of the A zone of the Niobrara. The  
8 contour intervals are 100 feet in the western  
9 half of the map and 500 feet on the eastern side  
10 of the map.

11 The pool boundaries of the various  
12 fields are indicated in color. The West Puerto  
13 Chiquito-Mancos pool boundary is shown in  
14 orange. The East Puerto Chiquito-Mancos pool  
15 boundary is shown in pink. The Boulder-Mancos  
16 pool boundary is shown in blue.

17 Also shown again are the proposed  
18 horizontal Mancos wells. Again, the designation  
19 is the same. The circles are the surface  
20 location and the X's are the bottom hole  
21 location, either proposed or actuality.

22 Also shown on this map is a  
23 cross-section A-A' which I'll refer to later in  
24 discussing the stratigraphy. It's a  
25 stratigraphic cross-section through the Niobrara

1 A and B zones.

2 And then finally shown on this map is  
3 the proposed 640-acre proration unit.

4 Q. Again, this map has the proposed well,  
5 if it is reversed as shown here in the north half  
6 of 4, indicated as the 4-A, and that should be  
7 the 4-C?

8 A. That's correct.

9 Q. What does this tell you generally about  
10 the structure in this area?

11 A. As I mentioned with the change in the  
12 contour intervals, one can see that the structure  
13 flattens to the west and then becomes very steep  
14 updip to the east. And the area in which we're  
15 proposing to drill our 3-F well is at about that  
16 transition zone from steep to flat dips, hence  
17 the flexure zone in the Niobrara.

18 Q. Let's move now to your cross-section,  
19 and I would ask you to review that. That's  
20 Exhibit 5.

21 A. I'm sorry it's so big. This is A-A'  
22 stratigraphic cross-section. It's hung on the  
23 top of the A zone of the Niobrara as the datum.  
24 It's oriented in an east/west fashion, with west  
25 on the left. It's constructed to tie or cross

1 through each of the nearest offset wells to  
2 American Hunter's drilling program. You can  
3 refer to that on the structure map.

4 The vertical scale here is two and a  
5 half inches to a hundred feet, and the purpose of  
6 this cross-section is simply to show, number one,  
7 the high resistivity beds, sandstone beds, which  
8 are the principal targets, to show that they're  
9 laterally continuous and to show that they're  
10 generally uniform in thickness.

11 You can please note the individual bed  
12 thicknesses and zone thicknesses on both the left  
13 and the right side of the cross-section, and you  
14 can see that there's only a few feet of  
15 difference between them over a 10- to 12-mile  
16 traverse.

17 I'll also point out that the well log  
18 from American Hunter's 8-I pilot hole is shown as  
19 part of this cross-section. It's the 8-I well.  
20 I put this in here simply to show that in the  
21 drilling of that well we did encounter a normal  
22 section of the Mancos.

23 Q. Let's move now to Exhibit No. 6, which  
24 is a schematic that shows the anomaly--it's  
25 placement, anyway. Would you identify this for

1 the Examiner and explain to him what this is  
2 designed to show?

3 A. This is the flexure interpretation  
4 exhibit. It's a schematic interpretation of the  
5 structural position of the rock units involved in  
6 the drilling of the proposed 3-F well.

7 The orientation of the schematic  
8 cross-section is east/west, parallel to the  
9 direction of the horizontal portion of the  
10 proposed test. Again, west is on the left and  
11 east is on the right.

12 Shown on here are the Point Lookout  
13 Sandstone, Mancos, Niobrara A and Dakota  
14 horizons. The trajectory of the wellbore from  
15 surface to TD is also shown, as well as the  
16 approximate kickoff point as well as the  
17 approximate TD in the lateral.

18 The principal feature to notice on this  
19 structural cross-section is the interpreted axis  
20 of the maximum zone of flexure. That axis is  
21 shown by the dashed line from the upper left to  
22 the lower right portion of the diagram.

23 The feature is important because it is  
24 the basis of American Hunter's request at this  
25 hearing. We believe that this zone of maximum

1 flexure affords the best mechanism for fracturing  
2 the target Niobrara horizon, and therefore that  
3 is the reason American Hunter would like to place  
4 a high-angle wellbore through this portion of the  
5 horizon.

6 Q. Let's go to Exhibit 7. I would ask you  
7 to identify and review that for the Examiner.

8 A. This next exhibit, I believe, would be  
9 the 3-F proposed drilling window. This exhibit  
10 shows the proposed 640-acre proration unit  
11 boundaries, the proposed drilling window, and the  
12 surface and bottom hole location for the well.

13 The proposed proration unit is the  
14 outermost boundary, and it's comprised of the  
15 east half of Section 4 and the west half of  
16 Section 3. The surface location of the well is  
17 proposed as 2,000 feet from the west line and  
18 1,650 feet from the north line of Section 3, and  
19 then the drilling window for the Niobrara horizon  
20 is proposed as a rectangle, whose northern  
21 boundary is 330 feet from the north line of  
22 Sections 3 and 4. The eastern boundary is 2,000  
23 feet from the west line of Section 3, and the  
24 western boundary is 2,000 feet from the east line  
25 of Section 4. Finally the southern boundary of

1 the rectangle is 2,330 feet from the north line  
2 of Sections 3 and 4.

3 Q. Mr. Lister, when the well is drilled,  
4 the actual placement of the wellbore within this  
5 drilling window will be determined based on  
6 information acquired during drilling, is that  
7 right?

8 A. Yes. We typically--like for the 2-A  
9 well, we have drilled an intermediate TD and have  
10 run logs, and from the information obtained from  
11 the log run, we revise our estimate of where the  
12 beds are and at what dip they're dipping.

13 Q. Are questions concerning picking the  
14 azimuth for the well, things of that nature, more  
15 properly directed to the drilling engineer that  
16 will be the next witness?

17 A. Yes. At our previous hearing, I had  
18 stated that we thought that the fractures run  
19 generally in a north/south direction, and that's  
20 why we choose a generally westerly azimuth, but  
21 Alex Bondarchuk can comment more on that.

22 Q. Let's go to Exhibit No. 8. Could you  
23 identify that, please?

24 A. I believe this would be the 4-C  
25 drilling window plat. This would be the



1 alternative method of drilling the anomaly if we  
2 don't receive approval from the Indians and the  
3 OCD to approve the drilling of the 3-F well.

4 This exhibit shows the proposed surface  
5 and bottom hole location of American Hunter's 4-C  
6 well, and the proposed drilling window for it.  
7 The surface location of the well again is 2,100  
8 feet from the west line and 500 feet from the  
9 north line. The drilling window is a rectangle  
10 whose northern and eastern boundaries are 330  
11 feet from the north and east lines,  
12 respectively. The western boundary would be  
13 2,100 feet from the west line and the southern  
14 boundary is 1,830 from the north line of  
15 Section 4.

16 Q. Mr. Lister, have these Niobrara zones  
17 in the Mancos shale proved to be a good candidate  
18 for horizontal drilling in this area?

19 A. Yes, they have.

20 Q. In your opinion, will approval of your  
21 application and the approval, in particular, of  
22 the amended drilling program for the well in  
23 Sections 3 and 4, be in the best interest of  
24 conservation, the prevention of waste and the  
25 protection of correlative rights?

1 A. Yes.

2 Q. In your opinion, will it enable  
3 American Hunter to most effectively produce the  
4 reserves that underlie these properties?

5 A. Yes.

6 Q. Were Exhibits 1 through 8 either  
7 prepared by you, or can you testify as to their  
8 accuracy?

9 A. Yes, that's correct.

10 MR. CARR: At this time, Mr. Catanach,  
11 we move the admission of American Hunter Exhibits  
12 1 through 8.

13 EXAMINER CATANACH: Exhibits 1 through  
14 8 will be admitted as evidence.

15 MR. CARR: That concludes my direct  
16 examination of Mr. Lister.

17 EXAMINATION

18 BY MR. CATANACH:

19 Q. Mr. Lister, why would the Jicarilla  
20 Council not approve your newly proposed location?

21 A. I have no--I think it would be in the  
22 best interest of both parties to have the  
23 complete anomaly drilled by one wellbore, so I  
24 would hope that they agree with us.

25 Q. The anomaly you've described here, what

1 benefit would it be to drill the anomaly as  
2 opposed to not drilling it?

3 A. Well, the interpretation here is one  
4 that was drawn from the actual seismic line. We  
5 have a theory, I guess you would say, that where  
6 the seismic reflectors are continuous, there's  
7 very little indication of fracturing. Where the  
8 reflectors are broken up, that is a probable  
9 location for fractures.

10 So it's from the interpretation of the  
11 seismic that we believe that this would be the  
12 most highly fractured area and therefore the most  
13 productive areas to be drilled.

14 Q. Now, the anomaly can be drilled by  
15 reversing the original location. What is the  
16 advantage of drilling this new location as  
17 opposed to reversing the old location?

18 A. Well, the actual detailed answer to  
19 that is probably best answered by Mr. Bondarchuk,  
20 but I would just point out that if we do reverse  
21 the drilling direction, we will be drilling the  
22 portion of the anomaly which lies underneath  
23 Section 4 only; in other words, the complete  
24 anomaly will not be drilled. There are also  
25 engineering considerations which would encourage

1 us to drill in the Section 3 location, and Mr.  
2 Bondarchuk can address those.

3 Q. You won't know until after November 4th  
4 what location you're going to drill?

5 A. That's correct. And that is the  
6 earliest. That is the next Council meeting.  
7 Should they fail to reach a resolution, it would  
8 be deferred until the following Council meeting.  
9 I believe they meet the first Thursday of each  
10 month, so it would be the beginning of December.

11 We would not like to wait until the  
12 very end to get drilling, but we would also like  
13 to drill the entire anomaly and so we might defer  
14 our drilling until that point, if we have to.  
15 It's not our first choice.

16 EXAMINATION

17 BY MR. STOVALL:

18 Q. If I understand correctly, what you  
19 really want out of this is an order that adds to  
20 the previous order and then offers these three  
21 different drilling possibilities in the  
22 alternative?

23 A. Yes, that's correct. Unfortunately  
24 we're forced to come before the OCD before we  
25 know what the tribe will allow us to do. What

1 we're simply trying to do is preserve our  
2 options; the first choice being drill in Section  
3 3 and drill the entire anomaly. The second would  
4 be to drill horizontally from 4, and then lastly  
5 to preserve the existing order so that we're able  
6 somehow to drill and meet our four-well  
7 commitment.

8 Q. Once the decision is made, once the  
9 actual well is spudded, then the other two  
10 authorizations can terminate?

11 A. That's correct. We only intend to  
12 drill one well here, and the other two  
13 alternatives would not be relevant anymore.

14 MR. STOVALL: Nothing further.

15 [Discussion off the record.]

16 MR. STOVALL: Back to the advertising.  
17 The only thing that needs to be advertised is the  
18 4-C option?

19 MR. CARR: Yes, the reversal. We do  
20 believe, Mr. Stovall, we could provide waivers  
21 from everyone involved. Procedurally, we're  
22 wanting to make sure we don't get ourselves into  
23 a position where we're tripped up, because the  
24 one definite thing we have is that we're being  
25 held to a commitment to have all four wells

1       spudded by mid-December.

2           Q.       (BY MR. STOVALL)   Mr. Lister, with  
3       respect to the drilling window for the 4-C option  
4       as compared to the 4-A option, what is the  
5       difference between them? other than the starting  
6       and ending point is reversed.

7           A.       Yes.   I don't believe that the actual  
8       footages of the lateral portions are the same,  
9       but in essence the program is exactly the same.  
10      The reason the footages are different would be  
11      based on backing up from a desired landing point  
12      for the wellbore back up to the surface location,  
13      and that would determine where our surface  
14      location should be and what length the lateral  
15      should be.   But, in essence, it's identical to  
16      what was previously approved, just the reverse  
17      direction.

18          Q.       What I'm particularly concerned with is  
19      from the notice standpoint.   I'm not so worried  
20      about the horizontal drilling because I think  
21      that everybody involved is aware of it and has  
22      notice from the previous case; but the  
23      unorthodoxness of the drilling window, does it  
24      change in any way that you're aware of?

25          A.       No.   It's still 1,500 feet

1 top-to-bottom. I don't have the previous  
2 approved Order here, but the length of it is  
3 almost the same. Is that answering your  
4 question?

5 Q. Probably. If I look at Exhibit 8  
6 correctly, this proposal is unorthodox because of  
7 the closeness of the drilling window to the  
8 northern and eastern boundaries of Section 4, is  
9 that correct?

10 A. Oh. Oh. Okay. I see. The previous  
11 drilling window was also that close to the  
12 northern and eastern boundaries.

13 Q. You're not going to get any closer to  
14 those boundaries of a Section 4 proration unit  
15 than you were before, is that correct?

16 A. That's correct. No. Those are the  
17 same. The reason it's so far to the north was  
18 because our seismic line was shot virtually along  
19 the northern section boundary of 4. Obviously we  
20 would like to drill as close to the seismic line  
21 as possible.

22 We knew that ahead of time when we came  
23 to the OCD in May, and that's why we sought for  
24 and got approval to have the drilling window up  
25 to the north of that direction. I might add that

1 the reason it was 330 feet from the east line was  
2 that at the time we had chosen this horizontal  
3 well based on my geologic mapping. After seeing  
4 the seismic, my geologic mapping was slightly  
5 off. Instead of the axis falling in the  
6 northeast quarter of 4, it falls more along the  
7 boundary between Sections 3 and 4.

8 Q. As far as the timing of it, there's no  
9 way you'll start any of these wells before  
10 November 4th? You know that for a fact, right?

11 A. Yes, because I believe the third well  
12 in our program we'll still be drilling at that  
13 time.

14 Q. The point is, you're not going to be  
15 making a decision until the tribe makes a  
16 decision, and there's not any possibility of them  
17 making a decision before the 4th of November?

18 A. Correct.

19 Q. So your earliest possible date, what  
20 I'm thinking, if we readvertise it, we would have  
21 to do it for the 21st of November which would  
22 mean that the Order wouldn't technically come out  
23 until the 22nd of November. Where does that put  
24 you between the 4th and the 22nd, assuming the  
25 tribe--



1           A.       Right, assuming the tribe approves it  
2       on November 4th, the situation we could find  
3       ourselves in is that there may be some down time  
4       in between the drilling of the third well and the  
5       initiation of the fourth well.

6                   MR. CARR:   Mr. Carr, a suggestion to  
7       you is if we, and I'm not sure that it's  
8       necessary, but I think that it cleans things up.

9                   MR. CARR:   When American Hunter  
10      contacted me about this, my advice to them was  
11      that I didn't think it was probably necessary  
12      because there was nothing specific as to the  
13      location of the well within the window.   The  
14      window didn't change; it was a reversal.   But to  
15      be sure we were not going to wind up toward the  
16      end of this time frame that's been imposed by the  
17      Jicarilla Tribe with some approval missing, we  
18      thought it was better to bring it back to you.

19                   Something has come up here, though, I  
20      think in your examination that's important, and  
21      that is that if there's approval of the tribe on  
22      the 4th for the proposal that we have properly  
23      before you here today, we would not want to be  
24      waiting with a rig down so notice could be  
25      provided for the alternative; that is, going from

1 west to east instead of east to west within the  
2 previously approved drilling block.

3 So perhaps what we should do is ask you  
4 to take this case under advisement, and I will  
5 docket a new case that would be set for the 21st  
6 of November requesting authority to reverse the  
7 drilling of the well and by that time we'll know  
8 if it's needed or not, and then we could simply  
9 dismiss it if approval comes forward on the 4th.  
10 That would be just as a fallback. It would also  
11 greatly simplify writing the Order.

12 MR. STOVALL: It does now, yes.

13 MR. CARR: We could go forward with the  
14 evidence here today, and we could incorporate it  
15 by reference, because I could come before you on  
16 the 24th, I'm certain, with waivers from everyone  
17 and incorporate the record today and advise you  
18 that the tribe has not approved what we're here  
19 before you today on, and that therefore we would  
20 request that based on the record and these  
21 waivers, that you enter an Order permitting us,  
22 within the previously approved drilling window,  
23 to just turn the well around.

24 MR. STOVALL: That makes more sense to  
25 me to do it that way and that gives you the--

1           MR. CARR: That protects us from being  
2 in a position of getting Indian approval and  
3 having the rig sitting idle.

4           MR. STOVALL: I think that makes  
5 sense. I also think we can also look at the  
6 Order that was entered in that case and see--I  
7 don't remember the specificity of that Order.  
8 Let me look at the Order that was entered in that  
9 case. It does approve a specific surface  
10 location.

11           I think that makes the most sense, to  
12 do it that way, and have that other case there  
13 ready to go to hearing on the 21st of November.

14           MR. CARR: And hopefully we will be  
15 able to dismiss it.

16           MR. STOVALL: Yes, rather than hold up  
17 the entire package.

18           Q.       (BY MR. STOVALL) Do you follow what  
19 we're saying, Mr. Lister?

20           A.       Not exactly. Maybe you could clarify  
21 this.

22           Q.       What we're proposing is that we will  
23 enter an Order on your original application here  
24 for the 3-F well, either approving or  
25 disapproving that. Within the next couple of

1 days Mr. Carr will file an application for the  
2 4-C well--

3 EXAMINER CATANACH: Or reopen Case No.  
4 10286.

5 Q. Or open 10286. He'll do something to  
6 seek the approval for the 4-C. If the tribe  
7 approves your 3-F proposal on November 4th,  
8 you'll already have an Order from us addressing  
9 that well, whether you can do it or not, and if  
10 they approve it and they approve it, you can  
11 dismiss the 4-C and not worry about the 4-C,  
12 rather than hold up the 3-F well waiting to see  
13 whether you're going to do the 3-F or 4-C.

14 A. I'm fully in favor of that. The only  
15 thing I need to have clarified, if the 4-C  
16 procedure is affected as you indicated, does that  
17 mean that the case is heard on November 21st and  
18 then it's two, three weeks after that before it  
19 would be acted on? Is that the timing of an  
20 order?

21 Q. I think we could expedite an Order off  
22 that November 21st hearing since that record has  
23 already been made in this case. There wouldn't  
24 actually be much substantive hearing, if any. We  
25 would rely on the record you've made in this case

1 for that hearing.

2 I can't commit the Examiner, but I  
3 suspect he might be willing to cooperate and  
4 expedite an Order if the 4-C is necessary.

5 A. Okay.

6 Q. What's your deadline for drilling a  
7 well? What's your December date?

8 A. December 17th.

9 Q. I think we could do it in a time that  
10 doesn't put you down to the 15th where you  
11 finally get an order and have to get a rig.

12 A. That's good. The only possible  
13 complication for us will be that we might have  
14 some idle time for the rig in between the third  
15 and the fourth well if we have to go with the  
16 4-C.

17 MR. CARR: In that event, we will  
18 approach you, and if we have waivers, see what  
19 can be done. I think at this point in time that  
20 would be outside the call of an Examiner hearing,  
21 and the best we can do is get this approval going  
22 as quickly as possible.

23 EXAMINER CATANACH: That's all we  
24 have.

25 MR. CARR: At this time we would like

1 to call Mr. Bondarchuk.

2 ALEX BONDARCHUK

3 Having been first duly sworn upon his oath, was  
4 examined and testified as follows:

5 EXAMINATION

6 BY MR. CARR:

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

9 A. Alex Bondarchuk.

10 Q. By whom are you employed and in what  
11 capacity?

12 A. I'm a senior drilling engineer with  
13 American Hunter Exploration, Ltd.

14 Q. Mr. Bondarchuk, have you previously  
15 testified before the New Mexico Oil Conservation  
16 Division?

17 A. Yes, I have, at a previous hearing on  
18 May 30, 1991.

19 Q. At that time were your qualifications  
20 as an expert witness, drilling engineer, accepted  
21 and made a matter of record?

22 A. Yes, they were.

23 Q. Are you a registered petroleum  
24 engineer?

25 A. Yes, I am, in the province of Alberta,

1 Canada.

2 Q. Are you familiar with the application  
3 and all the alternatives before the Division here  
4 today?

5 A. Yes, I am.

6 Q. You're familiar with American Hunter's  
7 horizontal drilling program in the Mancos shale?

8 A. Yes. I'm the project engineer for it.

9 MR. CARR: Are the witness's  
10 qualifications acceptable?

11 EXAMINER CATANACH: They are.

12 Q. I think, if I could ask you first to  
13 take a look at what have been marked as our  
14 Exhibits 7 and 8, each of these are the drilling  
15 windows in the surface locations of each of those  
16 proposals as indicated.

17 Could you explain to the Examiner why  
18 you need the flexibility of a window, and explain  
19 to him what kind of data you acquire when  
20 drilling a straight hole that helps you pick the  
21 azimuth for the well?

22 A. Okay. We drill down to a kickoff  
23 point--maybe I should start and go through our  
24 well design. We, for example with the 3-F-1  
25 location, we would drill a 14-3/4" surface hole

1 down to 300 feet and set 10-3/4" casing and  
2 cement that to surface. We would then drill a  
3 9-7/8" vertical hole down to a kickoff point. In  
4 the case of the 3-F-1 well, down to approximately  
5 6,084 feet.

6 At that point we would log the well and  
7 then determine the regional dip, confirm our  
8 formation tops or revise them. We pick that  
9 particular depth based on our desire to build a  
10 medium-radius curve at 10 degrees per hundred  
11 feet within the Mancos shale section which  
12 overlays the Niobrara.

13 We also review the deviation and the  
14 experience in this vertical hole down to the  
15 kickoff point. Typically these wells will  
16 deviate updip in a northeasterly direction.

17 Depending on the extent of deviation in  
18 the vertical hole, we then choose an azimuth in a  
19 westerly direction to drill downdip. For  
20 example, in the 3-F-1 well, if for some reason  
21 the well deviated southeast, then we would tend  
22 to direct the well in a northwesterly direction  
23 to make sure that we stay within the drilling  
24 window when we intersect the Niobrara formation.

25 The opposite would be for the 4-C-1



1 location. It would be northeast and we would  
2 have to turn the well and come in a more  
3 southwesterly direction. So there is a bit of a  
4 swing.

5 Typically, based on our experience in  
6 our first well that we've drilled and the one  
7 we're currently drilling, we have, in a slightly  
8 southwest direction, for example, an azimuth of  
9 about 260 degrees.

10 Q. Could we go now to Exhibit No. 9, and I  
11 would ask you simply to identify that and review  
12 for the Examiner how you would propose to drill  
13 this well.

14 A. Okay. As I had mentioned earlier, we  
15 would drill down to a kickoff point, build our  
16 curve in the 3-F-1 well, we would intersect the  
17 Niobrara A member at an angle of 76 degrees at an  
18 approximate measured depth of 6,844 feet.

19 At this point we set 7-5/8 intermediate  
20 casing and cement that to surface. Our plan is  
21 then to drill in this case approximately 3,400  
22 feet of 6-3/4" lateral hole within approximately  
23 a 120-foot thick section of the Niobrara. We  
24 would be drilling downdip through the Niobrara.

25 Since the reservoir is expected to be

1 under pressure, we propose to drill this whole  
2 section with a nitrified crude oil to minimize  
3 formation damage.

4 While we're drilling the curve in the  
5 lateral section of this well, we continuously  
6 monitor the bottom hole location of the well by  
7 logging and surveying it with an electromagnetic  
8 MWD gamma ray tool.

9 Q. When you complete the well, is it an  
10 open hole, a slotted casing, or--

11 A. Upon reaching a total measured depth of  
12 approximately 10,249 feet, we would run a 5-1/2"  
13 production liner that is preperforated, and set  
14 that across the lateral hole section. It's  
15 uncemented, but there is a packer set across the  
16 overlap between the intermediate casing and the  
17 liner to provide zonal isolation.

18 Q. If we look at Exhibit No. 9, does this  
19 exhibit depict that you're drilling a well in a  
20 westerly direction? Basically the formation at  
21 that time is sloping down to the west, is that  
22 right?

23 A. That is correct.

24 Q. Are you ready to go to Exhibit No. 10?

25 A. Yes, I am.

1           Q.       Could you explain what this is to the  
2 Examiner?

3           A.       This is a schematic of the 4-C-1 well  
4 showing a deviated well drilling in an easterly  
5 direction, updip in this case. We have a similar  
6 well plan as far as casing depth, surface hole,  
7 intermediate casing. Nothing changes there  
8 except the depths of these various points, based  
9 on the formation tops associated with this well.

10                   The major difference here is that we  
11 drill updip in order to intersect or once  
12 intersecting the Niobrara formation, and that is  
13 due to the formation sloping upwards to the  
14 east.

15                   The amount of lateral in this hole is  
16 less due to the surface location being closer to  
17 the eastern boundary of the section, and that's  
18 why this one would approximately be 2,250 feet of  
19 lateral hole that we would drill within the  
20 Niobrara formation.

21                   This option is more difficult than the  
22 previous 3-F-1 well since we would be drilling  
23 updip. The dips are expected to be in the  
24 neighborhood of five to eight degrees. We could  
25 become limited, or the probability of success is

1 lower when drilling updip due to the torque and  
2 drag associated with pushing the pipe updip as  
3 opposed to downdip, and that has been the basis  
4 of our program for the previous wells drilling  
5 downdip in order to maximize the amount of  
6 lateral hold that we could get within the  
7 section.

8 Q. With either of these proposals, do you  
9 believe you could, in fact, drill a horizontal  
10 well?

11 A. Yes. We feel that this is a feasible  
12 option.

13 Q. The 4-C is, however, from an  
14 engineering point of view, a more difficult  
15 project to undertake?

16 A. That is correct.

17 Q. You've indicated you'll have a logging  
18 tool in the hole and be able to know exactly  
19 where you're drilling at all times. Will a  
20 survey on each well or whatever well is drilled,  
21 be provided to the Oil Conservation Division?

22 A. Yes. That will be filed with the  
23 Commission upon the completion of the well.

24 Q. Were Exhibits 9 and 10 prepared under  
25 your supervision?

1           A.       Yes, they were.

2           Q.       You can testify as to their accuracy?

3           A.       Yes.

4                   MR. CARR:   At this time, Mr. Catanach,  
5 we would move the admission of American Hunter  
6 Exhibits 9 and 10.

7                   EXAMINER CATANACH:   Exhibits 9 and 10  
8 will be admitted as evidence.

9                   MR. CARR:   That concludes my direct  
10 examination of Mr. Bondarchuk.

11                               EXAMINATION

12           BY MR. CATANACH:

13           Q.       The proposed methods of drilling these  
14 wells have been presented before in the four  
15 previous cases, and it's virtually the same  
16 methods of drilling?

17           A.       Yes.

18           Q.       Did you have any drilling problems with  
19 the well that has already been drilled?

20           A.       No.   Actually, our system worked very  
21 well, such that we're continuing with the same  
22 approach on the second well that we're currently  
23 drilling now.   Our intention would be to continue  
24 with a similar well design and techniques on the  
25 final two wells.

1           Q.     The tool that you run to monitor the  
2     direction of the well, when is that installed, at  
3     the kickoff point?

4           A.     Yes. Prior to the kickoff point, or  
5     when we reach the kickoff point, what we've been  
6     doing is running a multi-shot survey down to the  
7     kickoff point to be able to establish our bottom  
8     hole location at that point.

9                     That survey would also be submitted to  
10    the Commission, tied into the survey of the curve  
11    and lateral section.

12          Q.     And the lateral portion of the #3 would  
13    be approximately how long, did you say?

14          A.     It would be approximately 3,400 feet.

15          Q.     And 2,250 on the--

16          A.     Yes, 2,250--

17          Q.     --on the 4-C?

18          A.     Yes, 4-C-1 well.

19                   EXAMINER CATANACH: I believe that's  
20    all I have.

21                   MR. CARR: I have nothing further.

22                   EXAMINER CATANACH: The witness may be  
23    excused. Is there anything further in this  
24    case?

25                   MR. CARR: Nothing further, Mr.

1     Catanach.

2                 EXAMINER CATANACH:   We decided we're  
3     going to take this case under advisement and  
4     you'll proceed with the docketing of a new case?

5                 MR. CARR:   Yes.

6                 EXAMINER CATANACH:   Okay.   There being  
7     nothing further in this case, Case 10403 will be  
8     taken under advisement.

9                 (And the proceedings concluded.)

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I do hereby certify that the foregoing is  
a complete record of the proceedings in  
the Examiner hearing of Case No. 10403,  
heard by me on October 17 1991.

David L. Catant, Examiner  
Oil Conservation Division


## 1 CERTIFICATE OF REPORTER

2  
3 STATE OF NEW MEXICO )  
4 COUNTY OF SANTA FE ) ss.

5  
6 I, Carla Diane Rodriguez, Certified  
7 Shorthand Reporter and Notary Public, HEREBY  
8 CERTIFY that the foregoing transcript of  
9 proceedings before the Oil Conservation Division  
10 was reported by me; that I caused my notes to be  
11 transcribed under my personal supervision; and  
12 that the foregoing is a true and accurate record  
13 of the proceedings.

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

19 WITNESS MY HAND AND SEAL October 17,  
20 1991.

21  
22  
23   
24 CARLA DIANE RODRIGUEZ, RFR  
25 Certified Shorthand Reporter No. 91