

NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10486

IN THE MATTER OF:

The Application of Meridian Oil, Inc.,
for a high angle/horizontal directional
drilling pilot project, special
operating rules therefor, a nonstandard
oil proration unit, a special project
oil allowable, and special GOR
assignment, San Juan County,
New Mexico.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

July 23, 1992

REPORTED BY:

DEBBIE VESTAL
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

FOR THE APPLICANT:

KELLAHIN, KELLAHIN & AUBREY
Post Office Box 2265
Santa Fe, New Mexico 87504-2265
BY: W. THOMAS KELLAHIN, ESQ.

1 EXAMINER CATANACH: Call the hearing to
2 order this morning for Docket No. 22-92. I'll go
3 ahead and call the continuances first. Case
4 10329 will be continued to August 6. Case 10512
5 will be continued to August 6.

6 [A discussion was held off the record.]

7 Case 10513 will be continued for 60
8 days, and I don't exactly know the date when that
9 will be. And Case 10507 will be continued to
10 August 6.

11 And I understand there's nobody here
12 from Barber Oil? Okay. We'll go ahead and skip
13 that one for now. And we'll call Case 10486,
14 application of Meridian Oil, Incorporated, for a
15 high angle/horizontal directional drilling pilot
16 project, special operating rules therefor, a
17 nonstandard oil proration unit, a special project
18 oil allowable, and special GOR assignments, San
19 Juan County, New Mexico.

20 This case was originally heard on June
21 25 and continued to this date, I believe, for
22 purposes of notice. Mr. Kellahin?

23 MR. KELLAHIN: Mr. Examiner, I'm Tom
24 Kellahin of the Santa Fe law firm of Kellahin,
25 Kellahin & Aubrey, appearing on behalf of the

1 applicant. Your understanding is correct. This
2 is a presentation we made back in June on the
3 Black Diamond 20-1 well.

4 The offsetting operator to one of the
5 40-acre tracts we believe to be Amoco. And in
6 discussions with Amoco discovered that they only
7 have 50 percent of that 40-acre tract. So we
8 have continued -- or left open the case and
9 continued with supplemental notifications, which
10 I have completed and propose to submit as Exhibit
11 No. 8 to this case.

12 EXAMINER CATANACH: Exhibit No. 8 will
13 be admitted as evidence.

14 Are there any additional appearances or
15 testimony in this case at this time?

16 There being none, Case 10486 will be
17 taken under advisement.

18 [And the proceedings were concluded.]
19

20 I do hereby certify that the foregoing is
21 a complete record of the proceedings in
22 the Examiner hearing of Case No. 10486,
heard by me on July 23 1990.

23 David R. Catanach, Examiner
24 Oil Conservation Division
25

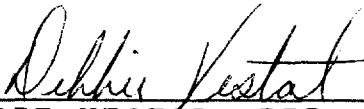
CERTIFICATE OF REPORTER

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

I, Debbie Vestal, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; and that the foregoing is a true and accurate record of the proceedings.

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

WITNESS MY HAND AND SEAL JULY 24, 1992.



DEBBIE VESTAL, RPR
NEW MEXICO CSR NO. 3

NEW MEXICO OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

CASE NOS. 10486 AND 10487

IN THE MATTER OF:

The Application of Meridian Oil, Inc.,
for a high angle/horizontal directional
drilling pilot project, special
operating rules therefor, a nonstandard
oil proration unit, a special project
oil allowable, and special GOR
assignment, San Juan County,
New Mexico.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

June 25, 1992

REPORTED BY:

DEBBIE VESTAL
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:

ROBERT G. STOVALL, ESQ.

General Counsel

State Land Office Building

Santa Fe, New Mexico 87504

FOR THE APPLICANT:

KELLAHIN, KELLAHIN & AUBREY

Post Office Box 2265

Santa Fe, New Mexico 87504-2265

BY: W. THOMAS KELLAHIN, ESQ.

I N D E X

Page Number

Appearances

2

WITNESSES FOR THE APPLICANT:

1. JAMES HORNBECK

Examination by Mr. Kellahin 7

Examination by Examiner Catanach 24

2. ERIC BAUER

Examination by Mr. Kellahin 28

Examination by Examiner Catanach 36

3. ALAN ALEXANDER

Examination by Mr. Kellahin 39

Examination by Examiner Catanach 44

Certificate of Reporter

47

E X H I B I T S

Page Identified

1		
2		
3		
4	Exhibit No. 1	46
5	Exhibit No. 2	12
6	Exhibit No. 3	29
7	Exhibit No. 4	20
8	Exhibit No. 5	8
9	Exhibit No. 6	13
10	Exhibit No. 7	45

11

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1 EXAMINER CATANACH: Call the hearing
2 back to order and call Case 10486.

3 MR. STOVALL: Application of Meridian
4 Oil, Inc., for a high angle/horizontal
5 directional drilling pilot project, special
6 operating rules therefor, a nonstandard oil
7 proration unit, a special project oil allowable,
8 and a special GOR assignment, San Juan County,
9 New Mexico.

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

12 MR. KELLAHIN: Yes, sir. I'm Tom
13 Kellahin on behalf of Kellahin, Kellahin &
14 Aubrey, appearing for Meridian Oil, Inc.

15 Mr. Examiner, we would request that you
16 consolidate for hearing purposes the following
17 case, which is 10487.

18 EXAMINER CATANACH: And we will do just
19 that. Can you call 10487?

20 MR. STOVALL: Is there any significance
21 to the fact that neither of these are in bold on
22 the docket this time?

23 This is also the application of
24 Meridian Oil, Inc., for a high angle/horizontal
25 directional drilling pilot project, special

1 operating rules therefor, a nonstandard oil
2 proration unit, special project oil allowable,
3 and special GOR assignment, San Juan County, New
4 Mexico.

5 EXAMINER CATANACH: Are there any
6 additional appearances in either of these cases?

7 You may proceed Mr. Kellahin.

8 MR. KELLAHIN: Mr. Examiner, if you'll
9 delete from our shopping list the request for a
10 gas-oil ratio assignment, that is no longer
11 sought by the applicant in either of these
12 cases.

13 I'd like to call Mr. Jim Hornbeck, Mr.
14 Examiner.

15 EXAMINER CATANACH: Will the witnesses,
16 please, stand and be sworn in.

17 [The witnesses were duly sworn.]

18 MR. KELLAHIN: Mr. Examiner, I'd like
19 to present three witnesses. Jim Hornbeck is the
20 first witness; he's the geologist; Eric Bauer is
21 the drilling engineer for the horizontal aspects
22 of the drilling; and Alan Alexander is the
23 landman.

24 JAMES HORNBECK

25 Having been duly sworn upon his oath, was

1 examined and testified as follows:

2 EXAMINATION

3 BY MR. KELLAHIN:

4 Q. Mr. Hornbeck, would you, please state
5 your name and occupation.

6 A. My name is Jim Hornbeck, James
7 Hornbeck. And I'm a senior staff petroleum
8 geologist with Meridian Oil.

9 Q. Mr. Hornbeck, on prior occasions have
10 you testified as a petroleum geologist before the
11 Division?

12 A. Yes, I have.

13 Q. Describe for us in a general way what
14 was your involvement in the geology for the Black
15 Diamond Com. 20-1 well and the Black Diamond 17-1
16 well?

17 A. I've been the project geologist with
18 both of these wells from inception.

19 Q. What was the purpose of your project?

20 A. It was to delineate horizontal oil
21 targets in the San Juan Basin.

22 Q. When we look at these two requests,
23 what particular formation is the geologic target?

24 A. It is the Niobrara-Gallup interval.

25 Q. Have you as a geologist made a geologic

1 evaluation of the Niobrara for both of these
2 wells?

3 A. Yes, I have.

4 Q. And based upon that study, have you
5 reached a certain conclusion?

6 A. Yes, I have.

7 MR. KELLAHIN: We tender Mr. Hornbeck
8 as an expert petroleum geologist.

9 EXAMINER CATANACH: Mr. Hornbeck is so
10 qualified.

11 Q. (BY MR. KELLAHIN) I'm going to refer
12 to these as the 20-1 and the 17-1 just to
13 shorthand so we can keep them straight. The 20
14 refers to a section number, does it not?

15 A. That is correct.

16 Q. And the 17 is a corresponding section
17 number all within the same township and range?

18 A. That is correct.

19 Q. Let's turn to the first exhibit book
20 for the 17-1. And perhaps the place to start is
21 with the structure map that's behind the tab for
22 Exhibit 5. This has got a lot of information on
23 it, but what I want you to help me do is to take
24 this display and before we talk about the
25 structure map, let's use it as an area map to

1 help the Examiner orient himself as to what
2 you're proposing to do in each of the sections.

3 A. Okay.

4 Q. Help us find Section 17 that's in the
5 right township for the 17-1.

6 A. Both the locations for the horizontal
7 -- proposed horizontal pilot projects are
8 designated by a star.

9 MR. KELLAHIN: Just a minute, Jim. I
10 can't hear over the confusion in the hall.

11 Q. 17.

12 A. The star in Section 17 in the northwest
13 corner of Township 30 North, 15 West in San Juan
14 County is the proposed location of the 17-1
15 well. And on the corresponding structure map for
16 the 20-1, we see a starred location for the
17 proposed location of the 20-1 well.

18 Q. We can move two sections to the south
19 and find --

20 A. One section to the south.

21 Q. I'm sorry. One section to the south.

22 A. And find the starred location. This
23 township is located adjacent to the very
24 northwestern edge of the San Juan Basin. This
25 structure map is contoured on the top of the

1 Gallup interval in the basin. The contour
2 interval is 100 feet.

3 The closely spaced structure contours
4 running approximately northeast-southwest through
5 the very northeastern edge of this township
6 identify the Hogback monoclinal flexure and both
7 of our wells that we're proposing are down in the
8 basin proper where dips are on the range of about
9 2 degrees to the due east.

10 Q. What are you trying to test with the
11 pilot program for each of these two wells with a
12 horizontal well in the Niobrara in this portion
13 of the basin?

14 A. We would like to attempt to try and
15 establish oil production out of a tight and fine
16 grained sandstone equivalent of a better quality
17 conventional sandstone reservoir that is
18 productive to the due northwest in the
19 Horseshoe-Gallup field.

20 MR. STOVALL: Mr. Kellahin, can I
21 interrupt you just to get myself oriented? I see
22 water flow down there. Is that the PNM
23 powerplant?

24 THE WITNESS: That is correct, yes.

25 MR. STOVALL: Where is it in relation

1 to your proposed well?

2 THE WITNESS: The actual generating
3 station is in the northeast corner of Section
4 20. And the surface mining operations for the
5 Fruitland Coal which powers that generating
6 station are located on the outcrop about due
7 north-south from Section 9 down through about
8 Section 28. And they are mining in an easterly
9 direction down-dip into the basin.

10 MR. STOVALL: In 30-15?

11 THE WITNESS: That's correct, yes, the
12 same township. So we are on the west of that
13 entire operation.

14 MR. STOVALL: Right between them and
15 the outcrop of the Hogback; is that correct?

16 THE WITNESS: That's correct. Right in
17 there.

18 Q. (BY MR. KELLAHIN) Why is Meridian
19 seeking horizontal wells in this particular
20 portion of the basin to test the Niobrara?

21 A. Well, vertical wells drilled in and
22 amongst this area have determined that the very
23 porous and permeable sandstone reservoir that
24 produces at Horseshoe-Gallup is not present. And
25 in its place there is a very fine grained, very

1 low permeability reservoir that has had shows of
2 oil when encountered by the drill bit, but does
3 not recover suitable amounts of oil to make it a
4 viable vertical target.

5 Q. Why then the possibility of a
6 horizontal well?

7 A. We'd like to see if we can use the
8 horizontal wellbore technology to effectively
9 produce enough oil on a 320-acre spacing to open
10 this area up to directional drilling and produce
11 reserves at the present time that are
12 uneconomical.

13 Q. For the 17-1 let's turn to the first
14 display following Exhibit 2. When the well was
15 still in the planning stage, the initial plan
16 contained the possibility of four different
17 possible azimuths or directions to the well and
18 potentially encompassing four different possible
19 orientations for the 320-spacing unit; right?

20 A. That's correct.

21 Q. As of today's hearing, have you
22 narrowed the choices on which to propose the well
23 in terms of its direction of lateral and the
24 dedication of the spacing unit to that well?

25 A. Yes, we have. We have continued to

1 work the evaluation of the mechanics in the
2 reservoir, and we have pretty much determined
3 that our most likely azimuth direction would be
4 due southeast within Section 17 as is portrayed
5 on both of the montages on the wall, the exhibits
6 there.

7 We feel that based on additional work
8 our best chance of encountering the best
9 interpretation of fracturing to help us produce
10 oil out of those drill blocks would be in a
11 southeast direction in Section 17 and also in
12 Section 20 drilling to the northwest.

13 Q. May we now limit our application then
14 for approval of a spacing unit for the west half
15 of 17 for the 17-1 well?

16 A. Yes.

17 Q. Let's pursue that now with the
18 horizontal display that you've put on the wall.
19 That is a larger copy of the exhibit that's
20 contained in the exhibit book following Exhibit
21 6.

22 A. Yes, that's correct.

23 Q. If you'll take my pointer and go to the
24 17-1, let's talk about that exhibit. What I'm
25 asking you to help us find is, first of all,

1 let's look at the type log and have you help us
2 locate this Niobrara that's the target.

3 A. All right. Our projected target within
4 the 17-1 well is what I have called, maybe not
5 very clearly, the water flow zone. Obviously we
6 don't expect it to flow water, but geographically
7 it's close to water flow in the San Juan Basin.

8 So the Niobrara section is right here.
9 The gross interval is here. And the particular
10 pay that we're going to target the most of our
11 wellbore in is a basal sand within this water
12 flow zone, which is colored in and stippled in
13 yellow right here.

14 This well is the Harrington No. 1 in
15 the northwest of Section 17. And it is located
16 right here in the section.

17 Q. What's the status of the Harrington 1?

18 A. It was plugged and abandoned probably
19 15 years ago after producing a small amount of
20 oil.

21 Q. And that was production out of the
22 Gallup?

23 A. Out of the Niobrara zone, yes.

24 Q. Okay. Let's go to the center portion
25 of the display and the upper square there where

1 you have an azimuth and you've got some cross
2 lines. Describe for us your analysis by which
3 you have made a determination of the azimuth for
4 the well.

5 A. Well, I really think it would be to
6 better first show this circular compass direction
7 plot. And the only existing fracture orientation
8 data that we have at the present time is some
9 coal cleat direction at the Fruitland Coal mines
10 that we were talking about earlier in the
11 discussion.

12 And the face cleat direction of the
13 Fruitland Coal in that particular mining
14 operation has a face cleat direction of north, 43
15 degrees east, essentially in a northeast
16 direction.

17 In the San Juan Basin face cleat
18 directions have been used to determine the
19 underlying deeper sections, primary open fracture
20 direction. So we are assuming that at depth we
21 will see a fracture orientation that will be
22 fairly parallel to this dashed orientation right
23 there.

24 Q. So then what do you achieve if your
25 direction for your horizontal well is as you've

1 described it?

2 A. We gain the maximum advantage of
3 intercepting natural fractures.

4 Q. All right. Let me have you return to
5 your seat.

6 A. [Complied.]

7 Q. Let's turn now to the 20-1 display and
8 look at the information following Exhibit No. 2.
9 That application originally included an optional
10 spacing unit and direction for that well. Has
11 Meridian determined a direction for this well so
12 that you can select one of these two options, or
13 do you still need the options?

14 A. Our most probable direction of drilling
15 the 20-1 well would be to the northwest in the
16 west half allocation of Section 20.

17 Q. Is that a commitment you desire to make
18 today, or do you want to retain the flexibility
19 of making that choice in the field when you get
20 ready to kick your well off?

21 A. We will be running in the well drilled
22 in the south of Section 20 some additional
23 fracture identification logs, which would give us
24 an advantage in determining the preferred
25 orientation of that wellbore. We would like to

1 keep open the two directions in the well in
2 Section 20.

3 Q. Okay. Let's now have you go back to
4 the board of the large display, which is
5 contained as Exhibit 6 in this exhibit book for
6 20-1, and give us your explanation now as to,
7 first of all, the location of the Niobrara in the
8 type log and then follow with your discussion
9 about the orientation of the azimuth.

10 A. The closest offset control that
11 penetrates the pay for the well in Section 20 is
12 the New Mexico Federal L-1, which is in the
13 northwest of Section 29 and is posted -- the
14 posted location is right here with respect to
15 Section 20, this being Section 29 directly to the
16 south. There is no wellbore in Section 20. This
17 is the type log.

18 Q. You're looking at the center portion of
19 the display for the 20-1. And within the area
20 just to the southwest of the starting point for
21 the horizontal well, you've located the gas well
22 symbol?

23 A. That's correct.

24 Q. That's the location for the type log?

25 A. For the type log, yes. And this well

1 was drilled down through the entire Niobrara
2 section, and an attempt was completed in this
3 basal Tocito sand before the well was "P&A'd" as
4 noncommercial.

5 And we are proposing to drill down and
6 test and evaluate in our federal -- I'm sorry, in
7 220-1 well to examine the potential of an
8 existing Tocito sand, as is drawn here on the
9 right side of the wall display, plug back and
10 then go ahead and drill our lateral again in the
11 water flow zone, which is the upper Tocito
12 equivalent at Horeshoe-Gallup.

13 Q. All right. The drilling program is
14 slightly different between the two wells, and
15 we'll get into that in a minute.

16 A. Okay.

17 Q. When we look at the geology, what you
18 want to retain for the 20-1 is the flexibility of
19 the alternative spacing unit --

20 A. That is correct.

21 Q. -- depending upon subsequent data to be
22 derived when you drill the well?

23 A. That is correct. We will have the
24 opportunity to run in the vertical pilot hole a
25 fracture identification log, which will orient

1 the fracturing and give us a much clearer handle,
2 another data set to understand the optimum
3 direction to drill the wellbore.

4 And so we would most likely expect to
5 drill the well in the northwest direction, but
6 possibly based on the data we determined from the
7 fracture identification log, FMS data, we
8 possibly might want to reorient somewhere into
9 Section 20 to the northeast.

10 Q. Why is Meridian proposing both of these
11 wells at this time as pilot projects in this
12 area?

13 A. Well, we just would like to evaluate
14 the pay to see its potential and just don't think
15 that one well will possibly prove or disprove the
16 technology in the area.

17 Q. And with two wells then you have a
18 greater opportunity to test the reliability of
19 the information derived from the drilling of the
20 wells?

21 A. Oh, yeah, absolutely.

22 Q. When we look at the geologic
23 information in both of the packages, are we
24 looking at the same structure maps with simply
25 having you identify each well?

1 A. That is correct.

2 Q. Let's take for a moment the issue of
3 the spacing unit. And if you'll turn with me,
4 I'm in the exhibit book for 20-1. It's behind
5 Exhibit No. 4.

6 A. Okay.

7 Q. There's a schematic. Describe for me
8 from your perspective whether or not a 320 -- I'm
9 sorry. These are 160. What did we do here? I'm
10 confused.

11 A. Which ones?

12 MR. STOVALL: Do you want to go off the
13 record for a second, Tom?

14 MR. KELLAHIN: Let me just take a
15 second here.

16 Q. Okay. The Niobrara dedication of
17 spacing unit is proposed for an oil well to which
18 you dedicate 320 acres?

19 A. We are asking for that, yes.

20 Q. Without special approval for this
21 nonstandard oil proration unit or spacing unit,
22 for a vertical well you would have 40-acre
23 spacing?

24 A. That's correct.

25 Q. Describe for us what it is that causes

1 you to believe that a 320-acre spacing unit is an
2 appropriate spacing unit to dedicate to the
3 horizontal well in order to test your concepts of
4 this pilot project?

5 A. Well, historically in this trend
6 40-acre spacing units with vertical wells have
7 been noncommercial. And we are striving to try
8 and apply the horizontal wellbore technology to
9 intersect as many natural fractures as we
10 possibly can, which will allow us to produce
11 ultimately enough reserves to make a viable
12 project.

13 Q. All right. When you look at the half
14 section for either 17 or 20, do you find as a
15 geologist that there is sufficient reservoir
16 continuity within the Niobrara so that each of
17 the tracts within the 320, if not actually
18 intersected by the horizontal lateral, are going
19 to be in a position to contribute production to
20 that wellbore?

21 A. Yes, we believe that's true. I've
22 mapped that particular water flow pay through
23 both of these drill blocks, and there's a net pay
24 map included here in the exhibits that shows
25 continuity through there.

1 Q. Let's start with the cartoon --

2 A. Okay.

3 Q. -- behind Exhibit No. 4 and at least
4 schematically demonstrate to us what you're
5 trying to achieve with this horizontal well that
6 you don't get with a vertical well?

7 A. Well, referring to the illustration,
8 the cartoon depiction is just trying to show
9 probably a representation of the geologic factors
10 affecting production within this area that we're
11 trying to prove up horizontal technology in.

12 And a vertical well has a very slight
13 chance of encountering enough natural fracturing
14 in this tight reservoir to make it a commercial
15 completion. It just will not be a successful
16 venture.

17 The horizontal well with the proper
18 orientation gives us a chance to connect up
19 enough fracturing to drain a 320-acre drill
20 block.

21 Q. When you factor in the economics or the
22 cost of these type of wells, what is that
23 component?

24 A. It's a very straight relationship. A
25 vertical wellbore will average when tied in and

1 completed probably close to half a million
2 dollars. We're looking right at a million
3 dollars to drill a horizontal wellbore and have
4 it hooked up and completed and ready to produce.

5 So for about twice the cost we're
6 hopefully going to be able to produce
7 substantially more hydrocarbons.

8 Q. And at this point for the status of
9 development of the Niobrara in this area, the
10 vertical well is not going to be an economic
11 success?

12 A. There will not be any vertical wells
13 drilled out there for the Niobrara.

14 Q. In order to exercise the opportunity to
15 recover additional hydrocarbons out of the
16 Niobrara, then application of the horizontal
17 technology in your opinion is necessary?

18 A. It's essential.

19 Q. Let's go now to the isopach that you've
20 just referred to. I think that's found behind
21 exhibit tab 5. It's the second display. What
22 are you showing us here?

23 A. This is a net isopach based on SP
24 deflection, which shows the thickness through
25 both Section 20 and Section 17. SP is a wire

1 line open-hole log that indicates permeability in
2 a reservoir. And we see continuity of the
3 reservoirs of about between 15 and 20 feet in
4 both sections.

5 Q. Turn now to the same display, which is
6 in the 17-1 exhibit package. It's the second
7 document contained after exhibit tab 5. And
8 describe that one for us.

9 A. It's the same parameters and same
10 responses, and it's just the mapping of the pay
11 through the northern section, Section 17.

12 Q. Have you located any geologic
13 limitations that need to be taken into
14 consideration by the drilling engineer when he
15 designs the drilling and completion program for
16 your well? Is there anything that makes the
17 geology unusual?

18 A. No.

19 Q. Okay.

20 A. No.

21 MR. KELLAHIN: All right. That
22 concludes my examination of Mr. Hornbeck, Mr.
23 Examiner.

24 EXAMINATION

25 BY EXAMINER CATANACH:

1 Q. Mr. Hornbeck, both of these locations
2 are just south of the Horseshoe-Gallup field?

3 A. No. They're actually southeast and
4 into the San Juan Basin.

5 Q. How far away in terms of miles?

6 A. Let me -- where is that -- okay. I
7 found it here. You can see the extent of
8 Horseshoe-Gallup pool by the concentration of
9 wells right up to and slightly onto the Hogback
10 in Township 30 North and Range 16 West. That is
11 all part of the Horseshoe-Gallup field.

12 Now, that field is up on a geologically
13 different terrain called the Four Corners
14 Platform. And what I have done is mapped and
15 correlated that pay down into the deeper part
16 into the actual San Juan Basin proper. And that
17 is our target.

18 And in answer to your question, I'm
19 sorry, we're probably three to four miles to the
20 southeast of the production in Horseshoe-Gallup.

21 Q. And you said it was a different
22 producing interval from the Horseshoe-Gallup that
23 you're targeting here?

24 A. It is one of the two producing
25 intervals at Horseshoe-Gallup field. But the

1 equivalent zone at the Horseshoe-Gallup field is
2 much more porous and permeable and is better
3 developed. So they are stratigraphically
4 equivalent in age, but the rocks we're looking at
5 are considerably tighter and less permeable.

6 Q. Your target is the Upper Tocito?

7 A. That is correct.

8 Q. You said that was the basal sand in the
9 Niobrara?

10 A. It's one of the Tocito sands in the
11 Niobrara. It is not the basal Tocito.

12 Q. As I understand it, the reason that
13 Meridian wants to do a horizontal well is because
14 of the nature of the formation, the low
15 permeability and porosity in this area?

16 A. Yes.

17 Q. But you do have information that this
18 interval is fractured naturally?

19 A. In cores that have been cut in wells
20 drilled down in the basin where we have studied
21 the rock section, there have been intervals of
22 natural fracturing noted in the core
23 descriptions.

24 Q. Is it my understanding that in Section
25 17 that the project will be confined to Section

1 17? Is that my understanding?

2 A. Yes, that's correct.

3 Q. So you no longer are asking for
4 anything in Section 18?

5 A. That's correct.

6 Q. And that would be the west half of
7 Section 17 -- would be all you would be asking
8 for?

9 A. That's correct.

10 Q. Okay. Has Meridian attempted a
11 horizontal well in this, not necessarily in this
12 area, in this formation in the basin?

13 A. Yes, we have. There have been numerous
14 wells drilled in the Niobrara section both in
15 Huerfano and our Piedre Lumbre, which was a dry
16 hole. This is our first attempt at horizontal
17 technology application on this side of the
18 basin.

19 All the interest has been to this date,
20 except for one horizontal wellbore, they've all
21 been drilled on the east side of the basin along
22 that fairway. And we are looking at trying to
23 open up this side of the basin to application of
24 this technology now.

25 Q. How successful has Meridian been with

1 these type of wells?

2 A. We have one success in the Niobrara,
3 which would be -- I don't have the exact number
4 that have been drilled in the Niobrara. I'm
5 going to guess we've drilled either three or
6 four. Three? I believe three.

7 EXAMINER CATANACH: Okay. I believe
8 that's all I have, Mr. Kellahin.

9 If you'll excuse me for a minute.

10 [A recess was taken.]

11 ERIC BAUER

12 Having been duly sworn upon his oath, was
13 examined and testified as follows:

14 EXAMINATION

15 BY MR. KELLAHIN:

16 Q. Would you, please, state your name and
17 occupation?

18 A. My name is Eric Bauer. I'm a Drilling
19 Engineer II for Meridian Oil.

20 Q. Mr. Bauer, on prior occasions have you
21 testified as a petroleum engineer before the
22 Division?

23 A. Yes, I have.

24 Q. With regards to the 20-1 and the 17-1,
25 what engineering functions did you provide?

1 A. I was the drilling engineer over both
2 projects from the beginning.

3 MR. KELLAHIN: We tender Mr. Bauer as
4 an expert drilling engineer.

5 EXAMINER CATANACH: Mr. Bauer is so
6 qualified.

7 Q. (BY MR. KELLAHIN) Let me have you turn
8 to the 17-1 exhibit package, and let's look at
9 the information behind Exhibit 3. If you'll take
10 a look at the second display, the drilling plan?

11 A. Right.

12 Q. Let's start with that well and have you
13 describe for the Examiner what Meridian proposes
14 to do to drill and complete the well.

15 A. Well, Mr. Examiner, our general well
16 plan is to drill a 14-3/4 inch hole to 350 foot,
17 at which time we will set 10-3/4 inch casing and
18 be sure that our cement is back to surface.

19 From there we'll continue drilling with
20 mud 9-7/8 hole to a measured depth of 4250 foot.
21 And then we'll run some fracture identification
22 logs, basically the FMS and another logging
23 sweet, to help determine the azimuth and
24 fine-tune it.

25 The planned azimuth in the No. 17 is

1 153 degrees. That's what the exhibits on the
2 wall are based on, 153 degrees. But with this
3 FMS data we'd like some flexibility to adjust
4 that if need be.

5 Q. You propose to stay then within what
6 footage setback from the outer boundaries of the
7 west half of 17 for the lateral?

8 A. This would be 330-foot setbacks from
9 both the south and the west. As illustrated in
10 the final page in Exhibit 3, there's a plat.

11 Q. Once you have penetrated the Niobrara,
12 the producing interval, if you will, in the
13 Niobrara will comply with the drilling windows
14 shown on this display so that the production
15 interval will be set back from the boundary at
16 least 330 feet?

17 A. Correct.

18 Q. And with that flexibility then you can
19 take advantage of the additional data that helps
20 you fine-tune the azimuth as you drill?

21 A. Yes.

22 Q. Complete your description of the well
23 plan.

24 A. After we have determined our azimuth,
25 fine-tuned it, if you will, we plan to run in the

1 hole with a building assembly and build at 12
2 degrees per 100 foot to 80 degrees, which is with
3 mud.

4 We're also going to be running it with
5 this building assembly an MWD and a gamma ray
6 tool so we'll know our azimuth and our
7 inclination at all times while drilling
8 operations are being done.

9 At this point we're going to run in the
10 hole with 7-5/8 inch casing and set that casing
11 at 4318 measured depth. And we'll run after that
12 time with a steerable motor assembly, not the
13 fixed angle like before, and drill out with gas
14 in our target zone approximately 4,000 foot.
15 That will be drilled to approximately 90
16 degrees.

17 We're using this air/mist system.
18 And that steerable assembly is at 4-3/4 inch
19 AKO. That's designated on this general well
20 plan. We'll also be running the gamma ray and
21 the MWD system so we'll know exactly where we are
22 where -- or the wellbore is at all times. And
23 we'll also be utilizing a PDC bit.

24 Q. After you've drilled the well how do
25 you propose to complete it for production?

1 A. We propose to run a 4-1/2 inch plugged
2 and perf'd liner, and we will not
3 fracture-stimulate this well. What we plan to do
4 is run in with a mill and take off the plugs and
5 then flow the well back.

6 Q. Do you want to discuss the proposed
7 directional plan that's shown just ahead of the
8 display you've just discussed?

9 A. Yes, I'd like to. This page on the
10 Exhibit 3 is my proposed directional well plan.
11 Some important points on it is the 3651, which is
12 our kickoff point. And you'll notice that we'll
13 be building at a rate of 12 degrees per 100
14 foot.

15 You'll also notice that the hard line,
16 the 330 setback, if you will, is included in
17 that. And we will set pipe to 80 degrees, which
18 is our plan, to make sure that we are legal
19 inside our producing formation.

20 Then we will continue that after that
21 80 degrees at 4318 measure depth and drill out
22 with air at a build rate of approximately 2
23 degrees per 100 foot to 90 degrees for our target
24 zone. And our target pay is 16 foot thick, which
25 is noted on the right-hand side of the exhibit.

1 And we will continue drilling approximately 4,000
2 foot.

3 Q. If the well is successful and capable
4 of oil production, are you requesting an oil
5 allowable as being consistent with what the
6 Division has previously granted other operators
7 for horizontal wells whereby you total up, if you
8 will, the standard oil proration units, multiply
9 that by the number of spacing units, and that
10 becomes your oil allowable?

11 A. Yes, we are.

12 Q. Anything else?

13 A. No, sir.

14 Q. All right. Let's turn now to the 20-1
15 and look at Exhibit 3 and have you describe the
16 general well plan for the 20-1 wells.

17 A. Okay. The well in Section 20, the 20-1
18 is very similar to the 17-1. It has one major
19 difference, and that would be that we plan to
20 drill a vertical hole to a TD of 4250 foot. And
21 that's where we will be analyzing our basal
22 Tocito.

23 And after we've drilled our vertical
24 hole and analyzed our basal Tocito, we'll be
25 determining our azimuth and bedding direction

1 with again that same logging sweet. We'll plug
2 back to our kickoff point and then kick off with
3 our building assembly as we did in the 17-1.

4 Q. The essential difference then is the
5 drilling of the pilot hole?

6 A. Correct.

7 Q. Why is that being proposed for the 20-1
8 well and was not utilized for the proposal in the
9 17 well?

10 A. It is my understanding from talking
11 with our team geologist, Mr. Hornbeck, that there
12 is a much greater chance of encountering the
13 basal Tocito zone in Section 20 than there is in
14 Section 17. And we'd like the opportunity to
15 evaluate it and see if it does exist and is
16 reservoir quality.

17 Q. Is your proposal for an allowable in
18 the 20-1 case the same allowable that you would
19 request being set for the 17 well?

20 A. Yes, that's true.

21 Q. All right. Anything else?

22 A. No, sir.

23 MR. KELLAHIN: That concludes our
24 examination of Mr. Bauer.

25 EXAMINER CATANACH: Mr. Kellahin, is it

1 my understanding that the special oil allowable
2 you're requesting would be eight times the normal
3 allowable?

4 MR. KELLAHIN: Yes, sir. Uh-huh. The
5 depth-to-bracket oil allowable on a 40-acre tract
6 would be eight times that number.

7 EXAMINER CATANACH: In previous orders
8 I believe the Division has also said that the
9 number of spacing units that were penetrated by
10 the wellbore would constitute the allowable.

11 MR. KELLAHIN: I need to look at the
12 order you just did for the 218, Huerfano 218.
13 And I'm not sure of the exact language that
14 you've used.

15 It's our desire, and based upon Mr.
16 Hornbeck's testimony, to have all eight of those
17 spacing units, if you will, allowable factored
18 into the project allowable because while they --
19 I guess there's two, the far northeast corner and
20 maybe the far southwest corner were potentially
21 not cut by the lateral. But they're in such
22 close proximity to the lateral that if it's
23 productive, they're going to contribute
24 reserves. And by contributing reserves to the
25 well, we ought to benefit by having an allowable

1 represented by that acreage. So that's our
2 plan.

3 EXAMINER CATANACH: And that's your
4 request?

5 MR. KELLAHIN: Yes, sir.

6 MR. KELLAHIN: The special gas-oil
7 ratio is deleted, as I think I mentioned, and it
8 would be the standard 2000 to 1 gas-oil ratio.
9 We're not now seeking the earlier request, which
10 was the 4500 to 1.

11 EXAMINATION

12 BY EXAMINER CATANACH:

13 Q. Mr. Bauer, in both of these wells in
14 Section 17 and 20, are you sure that they're
15 going to be drilled from the location that has
16 been proposed?

17 A. Yes.

18 Q. The surface location?

19 A. The surface location is staked, and we
20 are currently filing regulatory for those
21 locations. They have been "arche'd" and approved
22 by the BLM. We're just waiting on an APD.

23 MR. KELLAHIN: Archeological approval.

24 Q. (BY EXAMINER CATANACH) What is the
25 distance that you propose to drill both wells

1 laterally?

2 A. The lateral distance is approximately
3 4,000 foot, as I indicated in the general well
4 plan. At the bottom of the general well plans
5 for both wells, the measured depth of the No. 20
6 would be 8490 measured depth. That would be our
7 TD at measured depth.

8 And for the 17, that figure would be
9 8089 feet. This is going to vary. We will stay
10 legal at all times in our formation. It varies a
11 little bit with how far we could go due to our
12 azimuth if we change it with the FMS. Our
13 primary limit, of course, is the 330 setback.

14 Q. Is 4,000 feet the maximum you can go?

15 A. I believe the figure was 4064 feet.

16 Q. Okay. In both cases?

17 A. No. One is a little shorter than the
18 other. The No. 17 is 4,000 foot. And the No. 20
19 is about 3950 foot.

20 Q. That's assuming that they're drilled in
21 this direction that you've assumed?

22 A. Exactly. I want to stress our
23 primary -- after we pick our azimuth and we will
24 know the whole time during drilling operations
25 where we are, our azimuth and our inclination,

1 that we will remain legal as per the rules.

2 Q. Okay. Have you been involved in
3 drilling these types of wells in the past?

4 A. No, I have not. Well, I take that
5 back. I have sat on a couple wells, but I have
6 not designed them from the beginning and actually
7 gone out and drilled them.

8 Q. The proposed design, is that in
9 compliance with what Meridian has done in the
10 past?

11 A. It's very similar to Piedra Lumbre well
12 as well as the Huerfano Unit 300, the other two
13 Niobrara wells that we have done.

14 Q. Has the drilling operation been
15 successful in these other wells?

16 A. That rate -- I correct Mr. Hornbeck. I
17 think it's fifty-fifty. We have one producing
18 well, the Huerfano 300 and the Piedra Lumbre, as
19 he indicated, is a dry hole out near Cuba.

20 Q. But the drilling itself has been
21 successful --

22 A. Both cases the drilling was
23 successful. I'm sorry.

24 EXAMINER CATANACH: I believe that's
25 all I have of the witness.

1 MR. KELLAHIN: I call Mr. Alexander.

2 ALAN ALEXANDER

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

5 EXAMINATION

6 BY MR. KELLAHIN:

7 Q. Mr. Alexander, would you, please, state
8 your name and occupation?

9 A. My name is Alan Alexander. I'm
10 employed as a senior staff landman with Meridian
11 Oil, Inc., in our Farmington, New Mexico, office.

12 Q. Mr. Alexander, on behalf of your
13 company, have you made a review of the ownership
14 of the spacing unit and compiled the ownership of
15 the offsetting operators or working interest
16 owners to your two projects here?

17 A. Yes, I have.

18 MR. KELLAHIN: We tender Mr. Alexander
19 as an expert petroleum landman.

20 EXAMINER CATANACH: He is so qualified.

21 Q. (BY MR. KELLAHIN) Mr. Alexander, let
22 me have you turn to the 20-1 well first, if you
23 will. Let's look at the information behind
24 exhibit tab No. 2. In looking at Section 20,
25 what is the ownership arrangement in Section 20

1 for the working interest?

2 A. In Section 20 Meridian has -- the
3 federal lease consists of most all of the drill
4 block. And we're currently dealing with an owner
5 in the northeast quarter of the southwest quarter
6 to complete the arrangement of that drill block,
7 assuming we are going to drill the well on the
8 west half.

9 Q. Have you tabulated the ownership that
10 is required for notice purposes for the hearings?

11 A. Yes, I have.

12 Q. When we look at Section 20, have you
13 determined whether or not there is any
14 differences between what is displayed on this
15 exhibit and what is now known to you about
16 ownership?

17 A. Yes, there is one variance that we have
18 just noted. We were in contact with Amoco
19 Production Company who owns some interest more
20 particularly in the southeast quarter of the
21 southeast quarter of Section 20.

22 They had -- it was their belief through
23 their title examination that they had all of the
24 40 acres leased when we contacted them. However,
25 our more recent examination of that title in

1 working with Amoco to make arrangements for their
2 acreage, we've learned that one-half of the
3 minerals they did not lease through a title
4 error.

5 And we currently have available a list
6 of those 20 acres of mineral owners which we
7 propose to the Commission that we readvertised to
8 those parties to cure our notice problem with
9 those parties.

10 MR. KELLAHIN: At this point, Mr.
11 Examiner, I'd like to defer to Mr. Stovall on
12 whether or not that is necessary. It appears
13 that we have a glitch in our notice. Amoco
14 believed that they were owner. We notified
15 Amoco. Subsequent title work demonstrates that
16 they didn't have all of the interest.

17 And we're prepared to continue and
18 provide notice to those additional parties if the
19 Division believes that that's required.

20 MR. STOVALL: This is in the southeast
21 of 20?

22 THE WITNESS: The southeast quarter of
23 the southeast quarter is my understanding, yes,
24 sir.

25 MR. STOVALL: That's the one where you

1 still want to preserve the option to go either
2 direction?

3 THE WITNESS: Correct.

4 MR. STOVALL: I think it's a wiser
5 course of action to give individual notice to
6 those parties. I'm assuming that what you're
7 saying is that the failure to identify them was
8 due to the title work and not the lack of title
9 documentation on their part; is that correct?
10 Somebody goofed in examining the title?

11 MR. KELLAHIN: Well, it was based upon
12 our reliance from Amoco that they thought they
13 owned it all.

14 MR. STOVALL: Right. I understand
15 that.

16 MR. KELLAHIN: In checking behind that
17 we found out that they were mistaken.

18 MR. STOVALL: In other words, it wasn't
19 subsequently recorded documents or something? It
20 wasn't a later acquired property?

21 THE WITNESS: No, sir.

22 MR. STOVALL: I think you're better off
23 giving notice to them with that particular tract
24 to ensure that you get their interests in it and
25 not subject this to challenge after you've spent

1 a million dollars drilling a well.

2 MR. KELLAHIN: That's what we're
3 proposing to do, Mr. Examiner. So subsequent to
4 the hearing if we might continue it, it will be
5 for the purposes of providing additional notices
6 to those parties that are now known to us.

7 Q. (BY MR. KELLAHIN) Other than that are
8 you satisfied that you've contacted the
9 appropriate parties for notice purposes?

10 A. Yes, I am with regard to both wells
11 other than that instance.

12 Q. And have you received any objection
13 known to you from any of those parties notified?

14 A. We have not.

15 MR. STOVALL: Mr. Alexander, let me ask
16 you another question then. Those parties,
17 assuming you do an east half well, have not
18 elected to join at this point then either, have
19 they?

20 THE WITNESS: No, sir. We would
21 neither contractually arrange for their joinder
22 in the well, or we would come back before the
23 Commission and arrange for joinder in the well.

24 MR. STOVALL: I definitely think you
25 need to notify them then.

1 MR. KELLAHIN: Let's turn now to
2 identify the notice requirements on the 17-1,
3 Exhibit No. 2.

4 MR. STOVALL: Hold on just a second.

5 [A discussion was held off the record.]

6 Q. (BY MR. KELLAHIN) On 17-1 behind
7 Exhibit No. 2, have you identified the
8 appropriate parties to notify and cause
9 notifications to be issued?

10 A. Yes, sir, I have.

11 Q. And again no objection from anybody
12 that you're aware of?

13 A. We have not received any objections.

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

16 EXAMINATION

17 BY EXAMINER CATANACH:

18 Q. Mr. Alexander, with regards to Section
19 20, you said you were negotiating with another
20 person in another 40-acre unit?

21 A. Yes, sir. In the northeast quarter of
22 the southwest quarter, there is an entity known
23 as EP Operating, and we are currently negotiating
24 with those people for their interest.

25 Q. How do those negotiations look?

1 A. Very favorable.

2 Q. So you're pretty confident that you
3 will pick up that tract?

4 A. Yes, sir, either that or we will
5 arrange for their participation in the well one
6 way or the other.

7 Q. With regards to Section 17, does
8 Meridian control the west half entirely?

9 A. Yes, sir, we do. It's a single federal
10 lease.

11 EXAMINER CATANACH: I believe that's
12 all I have.

13 MR. KELLAHIN: Mr. Examiner, Exhibit 8
14 in each case is our Affidavit of Mailing.

15 MR. STOVALL: What's Exhibit 7?

16 THE WITNESS: It's 7.

17 MR. KELLAHIN: How come I have an
18 Exhibit 7 tab?

19 MR. STOVALL: At first I was thinking
20 it was just my book that you deleted then I
21 discovered it was all of them.

22 THE WITNESS: We didn't include
23 anything behind 7.

24 MR. KELLAHIN: I stand corrected.
25 We'll make those 7, if you please, with the

1 certificates. We move the introduction of
2 Exhibits 1 through 7 in each case.

3 EXAMINER CATANACH: Exhibits 1 through
4 7 will be admitted as evidence.

5 And we're continuing 10486 for what
6 period of time?

7 MR. STOVALL: Four weeks.

8 MR. KELLAHIN: It's going to have to be
9 the 23rd of July before we can fix the notice.

10 MR. KELLAHIN: That's only in Case
11 10486.

12 EXAMINER CATANACH: 87 is all right?

13 MR. KELLAHIN: Yes.

14 EXAMINER CATANACH: Just so we don't
15 make any mistakes in these orders, Mr. Kellahin,
16 could you give me some roughs?

17 MR. KELLAHIN: Yes, sir, I'd be happy
18 to.

19 EXAMINER CATANACH: There being nothing
20 further, Case 10486 will be continued to the July
21 23 hearing and Case 10487 will be taken under
22 advisement.

23 [And the proceedings were concluded.]

24
25 I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 10486, 10487
heard by me on June 25 1992.

David R. Catanch, Examiner
Oil Conservation Division

1 CERTIFICATE OF REPORTER

2
3 STATE OF NEW MEXICO)
4 COUNTY OF SANTA FE) ss.
5

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

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

18 WITNESS MY HAND AND SEAL JULY 7, 1992.
19
20

21 
22 _____
23 DEBBIE VESTAL, RPR
24 NEW MEXICO CSR NO. 3
25