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STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION  
CASE 10,014

EXAMINER HEARING

IN THE MATTER OF:

Application of Yates Petroleum Corporation for  
Directional Drilling and an Unorthodox Gas Well  
Location, Eddy County, New Mexico

TRANSCRIPT OF PROCEEDINGS

BEFORE: DAVID R. CATANACH, EXAMINER

STATE LAND OFFICE BUILDING

SANTA FE, NEW MEXICO

July 25, 1990

**ORIGINAL**

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

1  
2  
3 FOR THE DIVISION:

4 RAND L. CARROLL  
5 Attorney at Law  
6 Natural Gas Programs  
7 P.O. Box 2088  
8 Room 206, State Land Office Building  
9 Santa Fe, New Mexico 87504

10  
11 FOR THE APPLICANT:

12 FISK & VANDIVER  
13 Attorneys at Law  
14 By: DAVID R. VANDIVER  
15 Seventh & Mahone, Suite E  
16 Artesia, New Mexico 88210

17  
18 ALSO PRESENT:

19 JAMES MORROW  
20 Chief Engineer  
21 Oil Conservation Division  
22 State Land Office Building  
23 Santa Fe, New Mexico 87504

24 \* \* \*  
25

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APPLICANT'S EXHIBITS:

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1                   WHEREUPON, the following proceedings were had  
2                   at 9:24 a.m.:

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7                   EXAMINER CATANACH: Call the hearing back to  
8                   order, and at this time call Case 10,014.

9                   MR. CARROLL: Application of Yates Petroleum  
10                  Corporation for directional drilling and an unorthodox  
11                  gas well location, Eddy County, New Mexico.

12                  EXAMINER CATANACH: Are there appearances in  
13                  this case?

14                  MR. VANDIVER: Mr. Examiner, my name is David  
15                  Vandiver of the law firm of Fisk and Vandiver in  
16                  Artesia, appearing on behalf of the Applicant, Yates  
17                  Petroleum Corporation, and I have two witnesses to be  
18                  sworn.

19                  EXAMINER CATANACH: Any other appearances?  
20                  Will the witnesses please stand to be sworn  
21                  in?

22                  (Thereupon, the witnesses were sworn.)

23                  MR. VANDIVER: Call Ms. Richardson.  
24                  May I proceed?

25                  EXAMINER CATANACH: Yes, sir.

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JANET RICHARDSON,

the witness herein, after having been first duly sworn upon her oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. VANDIVER:

Q. Please state your name and place of residence, Ms. Richardson.

A. I'm Janet Richardson. I live in Artesia, New Mexico.

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

A. I'm a landman for Yates Petroleum Corporation.

Q. Have you previously testified before the New Mexico Oil Conservation Division, had your qualifications as a landman accepted and made a matter of record?

A. Yes, I have.

Q. Are you familiar with the title to the land in the area of Yates's proposed Gazelle "AHG" Federal Number 2 well?

A. Yes, I am.

Q. And are you familiar with Yates's Application for directional drilling and unorthodox location in Case Number 10,014?

1           A.    Yes.

2                   MR. VANDIVER:  Mr. Examiner, I tender Ms.  
3   Richardson as an expert witness in petroleum land  
4   matters.

5                   EXAMINER CATANACH:  She is so qualified.

6           Q.    (By Mr. Vandiver)  Ms. Richardson, briefly  
7   state what Yates seeks with its Application in this  
8   case.

9           A.    Yates seeks approval to directionally drill  
10   and approval of potential unorthodox locations in the  
11   Strawn and Morrow formations for our Gazelle "AHG"  
12   Federal Well Number 2.

13          Q.    What is the surface location of the proposed  
14   well?

15          A.    The surface location is in Township 20 South,  
16   Range 29 East, Section 16, and it's 1000 feet from the  
17   south line and 5 feet from the east line.

18          Q.    Who is the owner of the surface of Section  
19   16?

20          A.    It's a federal lease, so it -- I believe it's  
21   federal surface.

22          Q.    What are the objective formations that Yates  
23   seeks to test in this well?

24          A.    The Strawn and the Morrow are the main  
25   formations.

1 Q. And what are the projected bottomhole  
2 locations for the Strawn and Morrow formations?

3 A. The Strawn will be at 825 feet from the north  
4 line and 2145 feet from the east line of Section 22, 20  
5 South, 29 East. And the Morrow will be 1181 feet from  
6 the north and 1533 feet from the east line of Section  
7 22.

8 Q. Will the bottomhole location for the Strawn  
9 formation -- You anticipate it will be at a standard  
10 location?

11 A. If the well is gas in the Strawn, it will be  
12 standard for the undesignated East Burton Flat Strawn  
13 gas pool.

14 However, if it's an oil well, it will be  
15 unorthodox in the south Parkway Strawn.

16 Q. And will the bottomhole location for the  
17 Morrow formation be at an unorthodox location?

18 A. Yes, it will.

19 Q. Is it possible that the well will be at a  
20 standard location in the Morrow formation?

21 A. An orthodox location?

22 Q. Yes.

23 A. I think that's unlikely.

24 Q. Are you familiar with the rules governing the  
25 spacing and proration units in this area for the Strawn

1 and Morrow formations?

2 A. Yes.

3 Q. What are the spacing requirements for both  
4 the Strawn and Morrow formations in this area?

5 A. For a standard spacing, for 320 acres, it  
6 needs to be 1980 feet from the end line and 660 feet  
7 from the side boundaries.

8 Q. Those are the well-location requirements, and  
9 then the spacing for the Morrow would be how many  
10 acres?

11 A. 320 acres.

12 Q. And for the Strawn?

13 A. 320 acres.

14 Q. All right. What acreage do you propose to  
15 dedicate to the Gazelle well?

16 A. The north half of Section 22, 20 South, 29  
17 East.

18 Q. Have you prepared certain exhibits for  
19 presentation at this hearing?

20 A. Yes, we have.

21 Q. Ms. Richardson, if you would please identify  
22 what's been marked for identification as Yates  
23 Petroleum Corporation Exhibit Number 1 and identify it  
24 and review what's on that exhibit.

25 A. Exhibit Number 1 is a land plat showing

1 Yates's acreage in the nine sections around our  
2 proposed location. The solid yellow is Yates  
3 Petroleum, 100 percent, and we only have a partial  
4 interest in the yellow-outlined areas.

5 We show -- The directional well, we show the  
6 surface location, and then it has a line down to it to  
7 show the location -- bottomhole location in the Strawn.

8 Q. And the acreage to be dedicated to the well  
9 is outlined in red?

10 A. Yes, it is.

11 Q. Is this well located in close proximity to  
12 the potash area?

13 A. Yes, it is in the potash area, as outlined on  
14 the map, but I believe that's an old outline, and it's  
15 been updated more recently.

16 MR. VANDIVER: Mr. Examiner, I'd request that  
17 you take notice of Order Number R-111-P, promulgated by  
18 the Oil Conservation Commission in 1988, pertaining to  
19 the Potash area of Eddy and Lea Counties, which  
20 encompasses, among other lands, the east half and the  
21 east half, northwest quarter of Section 22, and the  
22 southeast quarter of the southwest quarter of Section  
23 15, and other lands in the east half of Section 15.

24 EXAMINER CATANACH: Administrative notice  
25 will be taken of R-111-P.

1 Q. (By Mr. Vandiver) Ms. Richardson, is your  
2 primary objective the Strawn or the Morrow formation?

3 A. Our primary objective is the Strawn  
4 formation.

5 Q. Where's the nearest Strawn producer shown on  
6 Exhibit 1?

7 A. I believe TXO's Williamson Federal Number 4  
8 well in the southeast northwest of Section 15 is a  
9 Strawn producer out of the South Parkway Strawn. It's  
10 an oil well.

11 And we recently drilled the Gazelle "AHG"  
12 Number 1 well with the bottomhole location in the  
13 northwest southeast of 15, and I believe it's producing  
14 out of the Strawn also, or capable of producing.

15 Q. Was the Gazelle "AHG" Federal Number 1 well  
16 directionally drilled?

17 A. Yes, it was.

18 Q. And did you receive approval to directionally  
19 drill that well in Case Number 9903?

20 A. Yes, we did.

21 Q. What's the nearest Morrow producer in the  
22 area?

23 A. The nearest Morrow that I'm aware of is the  
24 Zia "ZS" Number 1 well, and it also is a directional  
25 well, and the bottomhole location is in the southwest

1 northeast of section 14, and I believe it's actually  
2 dually completed in the Strawn and the Morrow.

3 Q. Anything else with regard to Exhibit 1?

4 A. No.

5 Q. All right, Ms. Richardson, if you would refer  
6 to Applicant's Exhibit 2, which is the Application for  
7 a Permit to Drill, identify that exhibit and briefly  
8 review what is shown.

9 A. The -- Exhibit 2 is the Application for  
10 Permit to Drill the Gazelle "AHG" Federal Number 2. We  
11 anticipate drilling to 12,200 feet to test the Morrow  
12 formation.

13 Q. Is this a complete copy of the Application?

14 A. No, this is just the first few pages of it.

15 Q. And the bottomhole location indicated on this  
16 application is different from what you've projected in  
17 your testimony today?

18 A. Yes, it is.

19 Q. And that will be corrected with a sundry  
20 notice?

21 A. Yes, it will.

22 Q. Do you know the status of this application?

23 A. As far as I know, it's still pending approval  
24 of the OCD.

25 Q. So it's necessary for you to obtain an Order

1 allowing the directional drilling from the Oil  
2 Conservation Division before the Bureau of Land  
3 Management will approve this application?

4 A. Yes.

5 Q. Ms. Richardson, could you explain why Yates  
6 seeks to directionally drill this well?

7 A. Yes, there are two reasons. First, the land  
8 is in the potash area, and second, the oil and gas  
9 lease has no surface occupancy stipulations.

10 Q. And that is your Exhibit Number 3 --

11 A. Yes.

12 Q. -- if you could refer to that exhibit.

13 A. Yes, Exhibit 3 is the copy of the Oil and Gas  
14 Lease, and I believe on the fifth page -- the last page  
15 of the exhibit, it has the potash stipulation. And on  
16 the fourth page of the exhibit is the no surface  
17 occupancy, which states that all of Section 22 is not  
18 -- or is prohibited from being drilled on.

19 Q. Are there any exceptions to the no-surface-  
20 occupancy stipulation?

21 A. No.

22 Q. And what's the stated purpose of the no-  
23 surface-occupancy stipulation?

24 A. To prevent hazards to oil and gas drilling  
25 operations due to drilling through open potash mine

1 workings, to prevent the mine workings from becoming  
2 gassy and creating a hazard to human health, and  
3 protecting critical, economically important potash  
4 resources within the Secretary's Potash Area as  
5 discussed in the Carlsbad RMP.

6 Q. What is the -- This is United States Oil and  
7 Gas Lease NM 81929, is it not?

8 A. Yes, it is.

9 Q. It covers all of Section 22?

10 A. Yes.

11 Q. What's the effective date of the lease?

12 A. August 1st, 1989.

13 Q. And what's the primary term of the lease?

14 A. Five years.

15 Q. And so you don't have any -- You're not  
16 bumping up against a lease expiration?

17 A. No, we're not.

18 Q. Now, Ms. Richardson, if you could refer to  
19 the Applicant's Exhibits Numbers 4, 5 and 6, and if I  
20 could ask if those are affidavits with attached letters  
21 and return receipts reflecting that notice of this  
22 hearing was provided to the offset operators, according  
23 to OCD Rule 1207.

24 A. Yes, it is.

25 Q. And do those exhibits reflect that all

1 offsetting operators entitled to notice have received  
2 notice of this hearing?

3 A. Yes, they were.

4 Q. Does Yates have an engineering witness  
5 available to explain how this well will be  
6 directionally drilled?

7 A. Yes, we do.

8 Q. Were Exhibits 1 through 6 prepared by you or  
9 compiled under your direction and supervision?

10 A. Yes.

11 MR. VANDIVER: Mr. Examiner, I would at this  
12 time move the admission of Applicant's Exhibits 1  
13 through 6.

14 EXAMINER CATANACH: Exhibits 1 through 6 will  
15 be admitted as evidence.

16 MR. VANDIVER: That concludes my direct  
17 examination of Ms. Richardson.

18 EXAMINER CATANACH: Okay.

19 EXAMINATION

20 BY EXAMINER CATANACH:

21 Q. Miss Richardson, the proposed bottomhole  
22 location in the Strawn -- I want to see if I have this  
23 correct -- 825 feet from the north, 2145 feet from the  
24 east?

25 A. Yes.

1 Q. In the Morrow, 1181 feet from the north?

2 A. Yes.

3 Q. And I missed the other one. What was the  
4 other one?

5 A. 1533 from the east.

6 Q. If I understand you right, a gas -- Strawn  
7 gas completion will be at an orthodox location?

8 A. Yes, it will.

9 Q. If it's oil, it will be unorthodox?

10 A. Right.

11 Q. And the Morrow will be unorthodox?

12 A. Yes.

13 Q. Okay. If the subject well is completed as a  
14 Strawn oil, what acreage do you propose to dedicate?

15 A. The northeast quarter of 22.

16 Q. That is a 160-acre oil spacing?

17 A. Yes.

18 Q. Has Yates come across this problem before as  
19 far as not being able to drill on its lease?

20 A. Yes, we had that same problem on the Gazelle  
21 "AHG" and on the Zia ZES.

22 Even further to the east is the Eland, which  
23 was our first directional well. It started in Section  
24 12 and ended in Section 13, up in the northwest  
25 northwest.

1 Q. Was that the subject matter of Case 9903?  
2 Was that one of the same type of cases?

3 A. I believe it was.

4 EXAMINER CATANACH: Okay.

5 MR. VANDIVER: Mr. Examiner, I think that was  
6 the Gazelle "AHG" Federal Number 1 that began in the  
7 northeast northwest of Section 15 and bottomhole in the  
8 -- it looks like northwest southeast of Section 15.  
9 That's Case Number 9903.

10 Q. (By Examiner Catanach) What is the status of  
11 the lease on which this surface location is going to be  
12 located? That is not Yates' lease?

13 A. No, it's not.

14 Q. Is there a problem with BLM approving the  
15 drilling of the well from that location?

16 A. No, there's not.

17 Q. Miss Richardson, is it an unorthodox location  
18 due to the directional drilling aspect of this thing,  
19 or is there other reasons?

20 A. No, it's due to the directional drilling.

21 Q. Okay. you've got a whole list of offset  
22 operators that you notified that I don't even see on  
23 this map. Can you go over that?

24 A. I think quite a few of the operators come  
25 from Section 16 and 21 and 28.



1 The dashed line, is that what outlines the old potash  
2 area on your map?

3 A. Yes, it is.

4 Q. And where did you say it had -- You recited  
5 some description to where it had been extended to  
6 cover. I assume that was -- I didn't pick up on it --

7 A. Yeah.

8 Q. -- but was that the area that --

9 A. That was the east half of Section 22, and the  
10 east half northwest of Section 22, and then the  
11 southeast southwest of Section 15.

12 FURTHER EXAMINATION

13 BY EXAMINER CATANACH:

14 Q. As a follow-up to that question, in Section  
15 15 in the southwest quarter, there are some existing  
16 wells, are there --

17 A. I believe that Williamson, J.C. Williamson  
18 drilled this Number 1 well in the northwest southwest,  
19 but he only got down to 2567 feet, and then I think he  
20 ran into problems and just plugged the well.

21 Q. Okay. How about the one in the southwest  
22 southwest?

23 A. That one is older. It looks like they  
24 plugged that in January of 1958 at 1748 feet.

25 EXAMINER CATANACH: Okay, I believe that's

1 all I have of the witness.

2 You may be excused.

3 JAMES S. BROWN,

4 the witness herein, after having been first duly sworn  
5 upon his oath, was examined and testified as follows:

6 DIRECT EXAMINATION

7 BY MR. VANDIVER:

8 Q. Please state your full name and place of  
9 residence.

10 A. My name is James S. Brown. I live in  
11 Artesia, New Mexico.

12 Q. By whom are you employed and in what  
13 capacity, Mr. Brown?

14 A. I'm employed by Yates Petroleum Corporation  
15 as assistant engineering manager.

16 Q. Mr. Brown, have you previously testified  
17 before the New Mexico Oil Conservation Division?

18 A. Yes, I have.

19 Q. And at that time were your qualifications as  
20 a petroleum engineer accepted and made a matter of  
21 record?

22 A. Yes, they were.

23 Q. Are you familiar with the Application of  
24 Yates in this case for directional drilling and an  
25 unorthodox location?

1 A. Yes, I am.

2 Q. Are you familiar with the manner in which the  
3 proposed Gazelle "AHG" Federal Number 2 well will be  
4 directionally drilled in the unorthodox well location?

5 A. Yes.

6 MR. VANDIVER: Mr. Examiner, I tender Mr.  
7 Brown as an expert witness in petroleum engineering  
8 matters.

9 EXAMINER CATANACH: He is so qualified.

10 Q. (By Mr. Vandiver) Have you prepared certain  
11 exhibits for presentation at this hearing?

12 A. Yes.

13 Q. Mr. Brown, if you would move to the large  
14 map, or a copy of the two exhibits displayed on the  
15 wall and stand on the side so the Examiner can see  
16 them --

17 And I might point out, Mr. Examiner, that  
18 Exhibits 7 and 8, which we're submitting to the  
19 Examiner, are both contained in this large display on  
20 the wall.

21 Mr. Brown, if you could explain to the  
22 Examiner how you propose to directionally drill this  
23 well.

24 A. Okay. We will drill the well vertically to a  
25 depth of 3350 feet, at which point we'll go in the hole

1 with a bent sub and motor --

2 Q. Mr. Brown, excuse me, I'm sorry. Could you  
3 explain what the two separate displays reflect?

4 A. Okay. This section of the display is found  
5 in Exhibit Number -- What was that, 7 or 8?

6 Q. Eight.

7 A. -- in Exhibit Number 8. It shows the  
8 vertical cross-section of the well, showing the depth  
9 on one axis and the horizontal displacement on the  
10 other axis.

11 This section of the exhibit is shown in  
12 Exhibit 7, and it is a plan view showing the surface  
13 locations and the bottomhole locations for the Strawn,  
14 the Morrow, and total depth of the well.

15 Our plans for drilling the well are to drill  
16 vertically to 3350 feet and then kick off the well,  
17 beginning at that depth, to an angle of about 30  
18 degrees, which we will reach at about 5300 feet.

19 At that point, we'll pull out of the hole, go  
20 in with a packhole assembly so that we can drill  
21 straight down to TD, trying to keep the angle a little  
22 bit in excess of 30 degrees, clear on down to TD.

23 We are planning to intersect the Strawn  
24 formation at about 11,575 feet measured depth, which is  
25 approximately 10,700 feet true vertical depth.

1           At that point, referring to Exhibit 7, that  
2           is where we intend to intersect the Strawn pay at about  
3           825 feet from the north line, 2145 feet from the east  
4           line, and we intend to hit that target with a tolerance  
5           of about 150 feet to either side.

6           Then since the Strawn is the main target, the  
7           main horizon, we intend to continue maintaining the  
8           same angle of the hole, intersecting the Morrow at  
9           about 1181 feet from the north line and 1533 feet from  
10          the east line.

11          And then the TD, again, staying at the same  
12          angle, total depth of the well will be 1277 feet from  
13          the north line and 1363 feet from the east line.

14          That's basically how we intend to drill the  
15          well.

16          Q.    On Exhibit 7, the plan view shown in the  
17          upper right-hand corner of that map, what does the  
18          square depict?

19          A.    It depicts the target for the Strawn  
20          formation, the center being the designated bottomhole  
21          location of the Strawn.

22          Q.    On the -- Exhibit Number 8, the vertical  
23          section, that display commences at 3350 feet?

24          A.    That's correct.

25          Q.    And you'll be drilling vertically until that

1 point?

2 A. Yes, that's correct.

3 Q. Will you be conducting directional surveys?

4 A. Yes, at 3350 feet, we'll conduct a gyroscopic  
5 survey from the surface.

6 And then from 3350 on down to the total depth  
7 of the well, we'll conduct directional surveys every  
8 100 feet so that at all times we'll have a good record  
9 of where the hole is going and be able to make  
10 adjustments to hit our target.

11 Q. You said every hundred feet?

12 A. Every 100 feet, yes.

13 Q. And you will commence at the surface location  
14 and be moving southeast from the surface location  
15 across the southwest quarter of Section 15, and then  
16 continue across the spacing unit to the bottomhole  
17 location?

18 A. Yes, that's correct.

19 Q. And that plot is shown on Exhibit 7?

20 A. Yes, that's correct.

21 Q. Do you anticipate the Strawn zone to be gas  
22 production or oil production?

23 A. Gas production.

24 Q. But it's possible it could be oil?

25 A. There is a possibility it would be an oil

1 reservoir, yes.

2 Q. Would it be satisfactory to Yates -- Why  
3 don't you take your seat?

4 A. All right.

5 Q. Mr. Brown, would it be satisfactory to Yates  
6 for the Order resulting from this hearing to authorize  
7 completion of this well within a target area of a 100-  
8 foot radius around the proposed bottomhole locations in  
9 the Strawn or the Morrow formations?

10 A. At 150 feet?

11 Q. Yes.

12 A. Yes, that's correct.

13 Q. Now, at the proposed bottomhole location in  
14 the Strawn formation, there's actually a larger window  
15 for an orthodox location, is there not?

16 A. Yes, that's correct.

17 Q. And that would range from 1980 feet from the  
18 east line to -- I guess it would be 2310 from the east  
19 line, and from 660 from the north line down to 990 from  
20 the north line?

21 A. Yes, that's correct.

22 Q. So with regard to an Order providing for  
23 completion of the well in the Strawn within a 150-foot  
24 radius of the target zone, you wouldn't want that Order  
25 to preclude you from completing the well anywhere at an

1 orthodox location or a standard location in the Strawn  
2 formation?

3 A. Yes, that's correct.

4 Q. But it's possible that you could complete the  
5 well outside the orthodox window, but within 150 feet  
6 of the target locations?

7 A. That's correct.

8 Q. Will your drilling operations be conducted in  
9 accordance with Order Number R-111-P?

10 A. Yes, they will.

11 Q. Is it possible to drill this well to the  
12 target location in the Strawn and still reach the  
13 Morrow at an orthodox location?

14 A. It is possible to do that, although it's  
15 extremely risky, and we prefer to keep the hole at that  
16 30-degree angle, rather than deviating again to a  
17 vertical direction to make a standard location in the  
18 Morrow.

19 Q. And if you should complete a producing  
20 well --

21 Or, are you requesting that the Order  
22 resulting from this hearing allow you to complete the  
23 well in the Morrow or the Strawn formations without any  
24 penalty on the allowable --

25 A. Yes, that's correct.

1 Q. -- production?

2 And what's -- what is the -- Why do you think  
3 that that is reasonable in this case?

4 A. Three reasons.

5 One is, we have notified the offset operators  
6 and do not have any opposition.

7 Second is that the only way that we can get  
8 to the Morrow is to directionally drill. And given  
9 that the Strawn is the target horizon, it would be  
10 cost-prohibitive to either drill another well to the  
11 Morrow or to -- It would be too risky and therefore  
12 cost-prohibitive to try to deviate again vertically  
13 from the Strawn to make a standard location in the  
14 Morrow.

15 The third reason is that we won't be -- We  
16 will only be about 450 feet of encroachment from the  
17 standard location in the Morrow.

18 Q. Mr. Brown, if you're not permitted to  
19 directionally drill this well to the proposed  
20 bottomhole locations underlying the north half of  
21 Section 22, will Yates be able to produce the reserves  
22 from this acreage?

23 A. No, we will not.

24 Q. How soon would Yates be prepared to commence  
25 the drilling of this well?

1 A. Immediately.

2 Q. In your opinion, will the approval of Yates'  
3 Application and the drilling of this well be in the  
4 best interests of conservation, the prevention of waste  
5 and the protection of correlative rights?

6 A. Yes.

7 Q. Were Exhibits 7 and 8 prepared at the  
8 direction of the Yates Petroleum Corporation drilling  
9 department and relied upon you in expressing your  
10 opinions today?

11 A. Yes, they were.

12 Q. Is there anything further that you want to  
13 point out with regard to Exhibits 7 and 8?

14 A. No.

15 MR. VANDIVER: Mr. Examiner, I'll move the  
16 admission of Yates Exhibits 7 and 8 at this time.

17 EXAMINER CATANACH: Exhibits 7 and 8 will be  
18 admitted as evidence.

19 MR. VANDIVER: That concludes my direct  
20 examination of Mr. Brown.

21 EXAMINATION

22 BY EXAMINER CATANACH:

23 Q. Mr. Brown, if production is encountered in  
24 both the Strawn and the Morrow, how do you intend to  
25 produce the well? Do you intend to dually complete it?

1           A.    We would evaluate a dual completion at the  
2 time, and we would like to have all options available,  
3 dual completion or a single completion back to back.

4           Q.    Were you involved with the drilling of the  
5 well in Section 15?

6           A.    No, I was not.

7           Q.    Do you know if they encountered any problems  
8 with the drilling of that well?

9           A.    That is the Gazelle "AHG" Number 1; is that  
10 correct?

11          Q.    Yes, sir.

12          A.    They didn't encounter any problems on that  
13 well. It's my understanding they hit the target in the  
14 Strawn quite well.

15          Q.    Does 150 feet, in your opinion, give you  
16 enough flexibility in hitting that target?

17          A.    Yes.

18          Q.    It does. I'm not sure I quite followed you  
19 on the request. You wanted additional flexibility if  
20 the Strawn was oil-productive. I'm not sure I followed  
21 you on that request.

22          A.    The request is simply that we want -- We  
23 would like the bottomhole location, as described, in  
24 the Strawn, and we don't know for certain whether we'll  
25 encounter a gas pool or an oil pool. So we're

1 requesting approval for either outcome. It would be  
2 160 acres if it were an oil pool and 320 acres as a gas  
3 pool.

4 Q. Okay. But if it is an oil pool, by the  
5 Division Rules you're given a little bit more  
6 flexibility in your well location, in your location.  
7 That wouldn't really come into play, though, would it,  
8 because -- Well, would it?

9 A. Well, we're wanting -- We're wanting to be  
10 able to complete any standard location in the Strawn to  
11 the extent that we don't want the 150-foot radius  
12 target to limit an acceptable location.

13 Q. Approximately how thick are these formations  
14 in this area? Do you know?

15 A. The pay zones themselves, the Morrow has  
16 three prospective zones of about 10 to 15 feet each.  
17 The Strawn also has three zones of about also 10 to 15  
18 feet each.

19 Q. Those zones are contained with about what  
20 kind of vertical interval?

21 A. Between them?

22 Q. Or they're contained within a vertical  
23 interval of about how much?

24 A. I would have to guess, and that guess would  
25 be on the order of 100 feet.

1 Q. About 100 feet each?

2 A. Yes, Strawn and Morrow both.

3 Q. What is the difference between running a  
4 directional survey every 100 feet and running a  
5 continuous-survey-type instrument?

6 A. Measurement while drilling tools is, I think,  
7 what you're referring to.

8 Q. Right.

9 A. And the cost is a lot more for running the  
10 measurement while drilling tools than running a survey  
11 every hundred feet.

12 Q. So it's just cost-prohibitive in your  
13 estimation --

14 A. Yes.

15 Q. -- to do that?

16 Did you do the same type of surveys -- Were  
17 the same type of surveys done on the Number 1 well?

18 A. Yes.

19 Q. And everything came out all right on that  
20 well?

21 A. Yes.

22 Q. Okay.

23 A. This is our fourth well drilled in this  
24 manner, in this same area.

25 EXAMINER CATANACH: Okay, I believe that's

1 all I have of the witness.

2 Any other questions?

3 EXAMINATION

4 BY MR. MORROW:

5 Q. I want to ask you a little bit about the  
6 mechanics of drilling. After you get your angle made,  
7 do you continue with that bent sub and motor in the  
8 hole, or do you just use conventional --

9 A. No, after we get the angle built to the angle  
10 we want, then we pull out of the hole, run in the hole  
11 with stabilizers with a packed assembly that will  
12 enable us to drill a straight hole at that point, but  
13 maintaining a 30-degree angle that we've built.

14 Q. So I guess if your hundred-foot survey showed  
15 that you were off, well then you might need to go back  
16 to that --

17 A. Yes, that's correct.

18 Q. -- to make a correction, then?

19 A. Or modify the stabilizer assembly to allow  
20 some drift in a vertical direction, if that's the way  
21 we needed to go.

22 Q. And would you go over again the difficulty  
23 you would expect to encounter if you -- after you've  
24 penetrated the Strawn, you went back to a vertical-type  
25 hole --

1 A. Okay.

2 Q. -- in order to come to a regular location in  
3 the Morrow sand, the Morrow formation?

4 A. Okay. This is the Strawn target here at 825  
5 north and 2145 east, the Morrow penetration is 1181  
6 north and 1533 east, the two penetrations corresponding  
7 to vertical depths of about 11- -- a little less than  
8 11,900. This is the TD here, so we would be at about,  
9 say, 12 -- 12 --

10 Q. Yes, sir, I followed that, but you --

11 A. -- about 11,800 --

12 Q. -- talked about some difficulty --

13 A. -- true vertical depth.

14 Q. -- after the vertical.

15 A. Right. So in order to intersect -- In order  
16 to intersect the Strawn target, we need this angle to  
17 get there. And then in this short interval, trying to  
18 decrease the angle to go vertical, we would have to  
19 have a lot tighter radius than we did in the upper part  
20 of the hole.

21 And just the risk of having two deviated  
22 sections of the hole could cause problems if we were to  
23 get stuck and having to pull. And having the friction  
24 of two deviated sections in the hole would just  
25 multiply the risk involved in conducting operations,

1 setting casing, drilling the well, et cetera.

2 MR. MORROW: Okay, thank you.

3 EXAMINER CATANACH: Anything else? I believe  
4 that's all we have. The witness may be excused.

5 Anything further in this case?

6 MR. VANDIVER: Mr. Examiner, I guess the  
7 point that we're trying to make with regard to the  
8 Strawn is that there is a large -- larger orthodox  
9 window there than the 150-foot radius, and we  
10 wouldn't -- We're asking that the Order, of course, not  
11 preclude completion of a Strawn well within the  
12 orthodox window.

13 But we still feel we need the Order allowing  
14 completion within a 150-foot radius, because we could  
15 get outside the orthodox window, for a Strawn gas well.  
16 I think it will be unorthodox if it's a Strawn oil  
17 well, regardless.

18 EXAMINER CATANACH: Okay, I understand.

19 Okay, anything further in this case?

20 MR. VANDIVER: No, sir.

21 EXAMINER CATANACH: Case 10,014 will be taken  
22 under advisement.

23 (Thereupon, these proceedings were concluded  
24 at 10:10 a.m.)

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