

1 STATE OF NEW MEXICO
2 ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
3 OIL CONSERVATION DIVISION
4 STATE LAND OFFICE BLDG.
5 SANTA FE, NEW MEXICO

6 23 September 1987

7 EXAMINER HEARING

8 IN THE MATTER OF:

9 Application of Harvey E. Yates CASE
10 Company for a horizontal drainhole 9216
11 pilot project, Lea County, New
12 Mexico.

13 BEFORE: David R. Catanach, Examiner

14 TRANSCRIPT OF HEARING

15 A P P E A R A N C E S

16 For the Division: Jeff Taylor
17 Attorney at Law
18 Legal Counsel to the Division
19 State Land Office Bldg.
20 Santa Fe, New Mexico 87501

21 For the Applicant: Robert H. Strand
22 Attorney at Law
23 ATWOOD, MALONE, MANN & TURNER
24 P. O. Drawer 700
25 Roswell, New Mexico 88201

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MR. CATANACH: At this time we'll call Case Number 9216, which is the application of Harvey E. Yates Company for a horizontal drainhole pilot project, Lea County, New Mexico.

Are there appearances in this case?

MR. STRAND: Mr. Examiner, Robert H. Strand of the law firm of Atwood, Malone, Mann & Turner in Roswell, appearing for the applicant and I have two witnesses who need to be sworn.

MR. CATANACH: Are there any other appearances in this case?

Will the witnesses please stand and be sworn in?

(Witnesses sworn.)

ROSEMARY AVERY,
being called as a witness and being duly sworn upon her oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. STRAND:

Q Please state your name, residence, and by

1 whom you're employed.

2 A My name is Rosemary Avery. I live in
3 Roswell, New Mexico, and I am employed by Harvey E. Yates
4 Company as a landman.

5 Q Ms. Avery, have you previously testified
6 before the Division in your capacity as a landman?

7 A Yes, I have.

8 Q And have your qualifications as a landman
9 been made a matter of record?

10 A Yes.

11 MR. STRAND: Are Ms. Avery's
12 qualifications acceptable as a landman?

13 MR. CATANACH: They are.

14 Q Would you please state the purpose of the
15 application in Case Number 9216?

16 A Harvey E. Yates Company seeks authority
17 to deepen its Young Deep Unit Well No. 8, located 660 feet
18 from the north line and 860 feet from the east line, being
19 Unit letter A, of Section 9, Township 18 South, Range 32
20 East, through the North Young Bone Spring Pool to a depth of
21 approximately 9000 feet and to then drill multiple, short
22 radius, horizontal drainholes therefrom bottoming each of
23 said holes in the Bone Spring formation, and extending lat-
24 erally a maximum of 400 feet.

25 This well is located approximately six

1 miles south of Maljamar, New Mexico.

2 Q Ms. Avery, is the Young Deep Unit No. 8
3 Well a well that was drilled on lands within the Young Deep
4 Unit?

5 A Yes.

6 Q And was the well drilled pursuant to the
7 Young Deep unit Agreement and operating agreement?

8 A Yes.

9 Q And is the Young Deep Unit a Federally ap-
10 proved unit?

11 A Yes, it is.

12 Q And it's an exploratory unit, is that
13 correct?

14 A That's true.

15 Q And when you stated the purpose of the
16 application you indicated the well would be deepened approx-
17 imately 300 feet, I believe?

18 A Yes.

19 Q And would that still be within the uni-
20 tized formations covered by the Young deep unit agreement?

21 A Yes, it would.

22 Q What was the effective date of that unit
23 agreement?

24 A January the 31st, 1980.

25 Q Have you prepared certain exhibits

1 relating to this application?

2 A Yes, I have.

3 Q I refer you to Exhibit Number One. Would
4 you please describe that?

5 A Exhibit Number One is a plat showing the
6 leases, the outline, the boundary of the unit, the outline
7 of the various participating areas, and the location of the
8 well.

9 Q Ms. Avery, the wells are located by -- or
10 indicated by black dots. Are all of those wells, with the
11 exception of of the wells designated as gas wells, completed
12 in the Bone Springs formation?

13 A Yes, they are. We --

14 Q And I --

15 A Go ahead.

16 Q Was the Young Deep Unit No. 1 Well origi-
17 nally completed as a gas well and then recompleted in the
18 Bone Springs formation?

19 A That's true, it was.

20 Q What about the 4-1 Well?

21 A Let's see.

22 Q Located on the Anadarko Lease?

23 A Right. That was originally completed as
24 a gas well, also.

25 Q Has it been recompleted as an oil well in

1 the Bone Springs?

2 A Yes, it has.

3 Q Ms. Avery, your unit outline designated
4 in the dark, black, dashed line is -- was that the original
5 unit boundary?

6 A No, the original unit boundary included
7 the lands that are enclosed by this line but it also in-
8 cluded the north half of Section 3.

9 The unit contracted on the fifth anniver-
10 sary of the day of the -- anniversary of the original, the
11 first Bone Spring participating area, which was April the
12 18th, 1980, and on the fifth anniversary of that approval
13 the unit shrank to the boundary of the then current partici-
14 pating area, and that's what we see here.

15 Q And that contraction was a result of the
16 terms of the unit agreement and Federal regulations?

17 A That's true.

18 Q Okay. Ms. Avery, is there also a unit
19 operating agreement in effect covring the Young Deep Unit?

20 A Yes, there is.

21 Q And did that have the same effective day
22 as the unit agreement?

23 A I believe so, yes.

24 Q Does the unit consist entirely of Federal
25 leases?

1 A Yes, it does.

2 Q And were all of these leases originally
3 committed to the unit agreement, those that are within the
4 current boundaries of the unit?

5 A No, the two leases that are cross hachur-
6 ed in brown belong -- one belongs to Marathon and one be-
7 longs to Anadarko, and those two leases were not committed
8 to the unit agreement; however, they are subject to the unit
9 operating agreement.

10 Q Why were they not committed to the unit
11 agreement?

12 A Those two Federal leases are the old re-
13 newal type leases that can be renewed every ten years by ap-
14 plication. If they are committed to a Federal unit they
15 lose that renewal status and those two companies not knowing
16 in advance what was going to happen with the unit, decided
17 not to commit those leases to the unit agreement.

18 Q And that noncommitment was done with the
19 concurrence of the U. S. Geological Survey at that point in
20 time.

21 A That's true.

22 Q Now you stated that the two leases cross
23 hatched in brown, the Anadarko lease and the Marathon lease,
24 were committed to the unit operating agreement.

25 A Right.

1 Q And under the terms of that unit oper-
2 ating agreement, is all production attributable to the work-
3 ing interest under the unit and under the -- the effective
4 participating area spread uniformly?

5 A So even though those two leases were not
6 committed, Marathon's interest and the people holding under
7 it and likewise with Anadarko, they have an interest in -- a
8 working interest in the unit that is the same irrespective
9 of where any particular well is located.

10 A That is true.

11 Q Okay. Now do all fo the Federal leases
12 comprising the current unit area have the same royalty rate?

13 A All of them do except one 40-acre tract,
14 which is the northwest quarter of the southwest quarter of
15 Section 4, shown as a Gulf lease. It's, of course, Chevron
16 now, and that lease is a KGS lease and is subject to the
17 step scale royalty.

18 Q Okay, and all of the other leases, then,
19 have a -- have a flat rate 12-1/2 percent royalty?

20 A That is correct.

21 Q And at this time, Gulf having committed
22 that lease to the unit agreement, the Federal government re-
23 ceives royalty based on 12-1/2 percent at this point since
24 there are no wells there?

25 A Correct.

1 Q Do you anticipate that you will drill any
2 wells in the northwest quarter of the northwest quarter?

3 A Not at this time. We have -- we don't
4 believe we ever will.

5 Q Okay. Am I correct, however, if there
6 was a well drilled there and it produced more than, if I'm
7 right, 50 barrels a day, that that royalty rate would be
8 higher than 12-1/2 percent?

9 A I believe that it would have to affect
10 the -- I think, I believe the royalty, or the production
11 under the entire unit would have to average more than 50
12 barrels per day per well.

13 Q Okay, if that happened, then there is a
14 possibility that the total royalty spread under the unit
15 might increase slightly, is that correct?

16 A Slightly, yes.

17 Q Okay. Now, as to the two leases again
18 that were not committed to the unit agreement, what's the
19 status of the overriding royalty interests held under those
20 leases?

21 A Those overriding royalty owners executed
22 an instrument called -- well, anyway, they agreed to have
23 their interest unitized, like -- just as the working interest
24 is unitized.

25 Q And as the Federal royalty is unitized?

1 A And as the Federal royalty is unitized.

2 Q Ms. Avery, would you just give a very
3 brief history based on -- on Exhibit Number One of the
4 development of the Bone Springs participating area from
5 drilling of the initial well to the current status of the
6 participating area?

7 A The first well, of course, was the Young
8 Deep Unit No. 1, which is shown in kind of a greenish yellow
9 40-acre tract in Section 10, the northwest northwest, I be-
10 lieve, of Section 10. That was the original Bone Spring
11 participating area.

12 Then when the Bone Spring No. 2 was dril-
13 led, the participating area, we -- we applied for the second
14 participating area, the second revision, and that included
15 the 80 acres shown in dark green.

16 The third revision is shown in blue, or
17 in orange, I should say. That's, well, the third partici-
18 pating area, which was the second revision.

19 The third revision is shown in blue and
20 the fourth, and final, is the pink, which includes the pres-
21 ent Young Deep Unit, and that will remain the participating
22 area and the Young Deep Unit for at least until the tenth
23 anniversary.

24 Q Okay. So your final, fourth revision of
25 the participating area, then, is co-extensive with the unit

1 boundary?

2 A That is true.

3 Q Now from a practical standpoint, Ms.
4 Avery, then based on the uniform ownership of the Federal
5 royalty, except for the far northeast -- northwest quarter
6 of the -- northwest quarter of the northwest quarter in
7 the unit, there, it's uniform under the entire unit, is that
8 correct?

9 A Yes.

10 Q And no matter where a well was drilled on
11 the unit, assuming you didn't have the royalty change that
12 you indicated might occur if a well was drilled on that 40-
13 acre tract, then the interests would be the same, royalty,
14 overriding royalty, and working interest.

15 A That's true.

16 Q Okay. The proposed directional drilling
17 project involves the No. 8 Well, and based on the fact that
18 these interests are uniform throughout this entire area,
19 would it be your opinion that the contemplated operations
20 would not impair any other owners' correlative rights?

21 A Yes, that's my opinion.

22 Q Now have all of the working interests un-
23 der the unit agreement and the unit operating agreement
24 agreed to participate in the proposed project?

25 A No. All of them have -- none of them

1 have any objection but two of the owners have decided to
2 stand out under the terms of the operating agreement and go
3 nonconsent for financial reasons, not because of the pro-
4 posed operation.

5 Q Okay, I refer you to Exhibit Number Two.
6 Would you describe that?

7 A Exhibit Number Two is a package of
8 correspondence and other material that was furnished to each
9 of the working interest owners and the top letter is our
10 notice to the working interest owners of this hearing and
11 giving them notice of the hearing and advising them that
12 they had the right to protest if they so desired.

13 Also included are copies of our proposal
14 and an AFE and certain calculation furnished by Nr. Nokes
15 here, and it was -- and also there is a copy of the
16 application for hearing to the OCD.

17 Q And, Ms. Averay, were these notices given
18 in accordance with the rules and regulations of the
19 Division?

20 A Yes, sir. They were sent by certified
21 mail and the back, on the back of the exhibit furnished to
22 the Division, there are copies of all of the certified mail
23 receipts that were furnished to the working interest owners.

24 Q Okay, I refer you to Exhibit Number
25 Three. Would you please describe that?

1 A Exhibit Number Three is a copy of Form
2 3160-3, which is an application for permit to drill, deepen,
3 or plug back, and this was furnished to the -- to each one
4 of the working interest owners.

5 Q On that notice, Ms. Avery, which was
6 filed with the Bureau of Land Management, did it give that
7 agency notice of this hearing?

8 A Yes, it did. It states on here that
9 HEYCO proposed to deepen the Young Deep Unit No. 8 and has
10 made application for a hearing and will present data at the
11 hearing on September the 23rd, 1987, before the OCD.

12 Q Ms. Avery, were Exhibits Number One
13 through Three prepared by you or under your supervision or
14 compiled from the applicant's files?

15 A Yes, they were.

16 MR. STRAND: Mr. Examiner, I
17 move admission of Exhibits Number One through Three.

18 MR. CATANACH: Exhibits One
19 through Three will be admitted as evidence.

20 MR. STRAND: I have no further
21 questions of Ms. Avery.

22

23 CROSS EXAMINATION

24 BY MR. CATANACH:

25 Q Ms. Avery, you said the unitized interval

1 contains the Bone Springs, is that correct?

2 A Yes.

3 Q Do you -- do the terms of the unit agree-
4 ment or the unit operating agreement have provisions for
5 projects such as this?

6 A It doesn't address this specifically, but
7 it does make -- allow us to do whatever is necessary to
8 increase production, and it does not have -- it does not
9 have any provisions that would keep us from it.

10 Q And you said you had almost total
11 participation?

12 A Yes. We have nobody who is opposed to
13 it. There were -- there are two companies who are in
14 financial difficulty who have -- or who are going nonconsent
15 under the operating agreement.

16 Q Have you talked to the BLM about this
17 proposed project?

18 MR. STRAND: Mr. Examiner, I
19 believe Mr. Nokes will address that when he testifies.

20 MR. CATANACH: I think that's
21 all I have for now. You may be excused.

22 A Thank you.

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RAY NOKES,

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

DIRECT EXAMINATION

BY MR. STRAND:

Q Please state your name, residence, and by
whom you're employed.

A My name is Ray Nokes. I live in Roswell,
New Mexico, and I work for Harvey E. Yates Company.

Q What's your position with Harvey E. Yates
Company?

A Production Manager, Reservir Engineer.

Q Mr. Nokes, have you previously testified
before the Division in your capacity as a petroleum en-
gineer?

A Yes, sir, I have.

Q And at that time were your qualifications
made a matter of record?

A Yes, sir, they were.

MR. STRAND: Mr. Examiner, is
Mr. Nokes considered qualified?

MR. CATANACH: He is.

Q Mr. Nokes, are you familiar with the ap-

1 plication in Case Number 9216?

2 A Yes, sir, I am.

3 Q To start out on this, would you -- would
4 you briefly summarize what you propose to do to the Young
5 Deep Unit No. 8 Well?

6 A The Young Deep Unit 8 Well is a well that
7 was completed, cased to 8710 foot. The top of the Bone
8 Spring second sand was cut approximately 40-to-50 foot. We
9 intend to, with approval of the OCD and the BLM, to deepen
10 this hole approximately 300 foot to approximately 9000 foot
11 total depth, log the well with open hole log, gamma ray
12 neutron, and density, and dual latero logs.

13 At that time, after evaluating the logs,
14 we intend on employing Eastman Whipstock to cut a lateral
15 hole in the direction of the most porosity related interval
16 to the offset wells. We have approximately 110 degree sweep
17 from the east back to the northwest to choose from and we're
18 waiting until we get through logging the well to determine
19 which kickoff direction we're going to go.

20 Prior to Eastman getting into the picture
21 we will run a directional survey to determine our present
22 bottom hole position after open hole extension vertically,
23 and at that time Eastman will be employed to cut a 3-to-400
24 foot drain extension in the Bone Spring second sand in one
25 of two primary lenses in the second sand, the one most

1 probably occurring from about 8850 to about 9000 foot.

2 Q Mr. Nokes, have you discussed this pro-
3 ject with the Bureau of Land Management since this is a 100
4 percent Federal unit?

5 A Yes, sir, I talked to the Roswell office.
6 The Carlsbad office, they were out of the office, so I
7 talked to David Glass, told him of our intentions, asked him
8 if he had received a copy from Carlsbad, and he was aware of
9 the situation. I asked him to -- appreciate it if he would
10 convey this to Armando Lopez, which he, I believe, has done
11 by now.

12 In turn I left word with the Carlsbad of-
13 fice if they had any problems to call me. I would try to
14 get in touch with Shannon in the Carlsbad office and he was
15 out but I did talk to Cecilia. She had received the appli-
16 cation. She said that she did not see anything on the sur-
17 face that there was any problems on the application itself.

18 Q Okay. Mr. Nokes, have you prepared cer-
19 tain exhibits for presentation at this hearing?

20 A Yes, sir, I have.

21 Q I refer you to Exhibit Number Four.
22 Would you please describe that?

23 A Exhibit Number Four is an inclination
24 survey supplied to us after the well -- after the Young Deep
25 Unit No. 8 was drilled. This was supplied to us by the

1 drilling contractor, Moranco.

2 Q Do you draw any particular conclusions
3 from this deviation survey as to the bottom hole location?

4 A Yes, sir. If we may look at Exhibit Num-
5 ber Five, I utilized the information from the contractor's
6 inclination survey to calculate the maximum deviation that
7 could have occurred if deviation was in a sraight line and
8 one direction away from the wellbore on the surface loca-
9 tion, and that calculated out at 218 foot, point 504.

10 Q What was your methodology in making that
11 calculation?

12 A I utilized the depth point at which the
13 survey was run to calculate the different -- the difference
14 between shot points when they take a survey, and then calcu-
15 late the angle that is given to give you a degree of deflec-
16 tion from the true vertical wellbore.

17 Q Has this enabled you to determine speci-
18 fically where the well is bottomed out at this point or just
19 a range of distance from the surface location?

20 A It has not been able to give us the ac-
21 tual position of our wellbore at this point in time but it
22 has been able to give us a calculated maximum deviation from
23 true vertical that the well could be if it was in a straight
24 line.

25 Q So the actual bottom hole location could

1 be anywhere within a radius of 218.5 feet from the surface
2 location.

3 A Yes, sir, that is right.

4 Q I refer you to Exhibit Number Six. Will
5 you please describe that?

6 A Exhibit Number Six is a wellbore
7 schematic and well history sheet on the subject well, the
8 Young Deep Unit No. 8, indicating the top of surface cas-
9 ing, intermediate casing, and production casing. The produ-
10 cing interval right now is indicated on here as 83 -- or
11 8430 foot to a bottom perforation of 8496 foot. It's in a
12 carbonate zone.

13 Q Is the well in a producing status at this
14 point in time.

15 A Yes, sir, it is, right now.

16 Q Approximately what is it producing? Do
17 you know?

18 A Currently it's averaging approximately 15
19 barrels of oil, I believe 19 MCF, and one barrel of water --
20 or 6 barrels of water.

21 Q And at what depth to you intend to
22 commence your horizontal directional drilling?

23 A We plan on drilling out from our plugged
24 back TD of 8648, through our shoe at 8710 foot, and from
25 there we will drill approximately 300 foot deeper with a 4-

1 3/4 inch bit and then at that point in time log the well,
2 find out our porosity intervals in the second sand and at
3 that point in time pick a kickoff point.

4 Q I refer you to Exhibit Number Seven.
5 Would you please describe that exhibit?

6 A Yes, sir. This is a Young Deep Unit map,
7 indicating the productive horizons of the wells within the
8 unit boundary right now and Section 9 of 18, 32, the
9 triangular figure around No. 8, indicates or highlights the
10 subject well. The colors indicate the producing zones, blue
11 being the B Zone, or carbonate interval; the orange being
12 the second sand interval; and those that are completed in
13 both are indicated with both colors.

14 Q Now this shows wells both inside and out-
15 side the unit area boundary.

16 A Yes, sir, it does.

17 Q I refer you to Exhibit Number Eight.
18 Would you please describe that exhibit?

19 A Exhibit Number Eight is a result of the
20 previous exhibit on calculation of maximum deviation.

21 The first circle around the Young Deep
22 Unit No. 8, which indicates 218.5 foot, is a line drawn to
23 show the area in which the bottom hole is possibly located
24 at this present time.

25 The additional line that is drawn, indi-

1 cating at 618.5 foot, is an addition of that 218 foot plus
2 our 400 foot that we have subjected to Eastman as our pro-
3 ject, our pilot hole extension, drainhole extension, to come
4 up with a maximum wellbore deviation of 618.5 foot from our
5 surface calculated location.

6 Q Mr. Nokes, is 400 feet the maximum hori-
7 zontal distance you will drill under any set of circumstan-
8 ces?

9 A Yes, sir, as far as we know, it may not
10 be that much. We have talked with Eastman. It will range
11 somewhere between 300 and 400 foot but this is maximum cal-
12 culated footage.

13 Q I think you stated earlier that at this
14 point in time you could not determine what the actual azi-
15 muth of the horizontal drilling would be. Could you explain
16 in a little more detail why you can't make that determina-
17 tion now?

18 A Yes, sir. Due to the fact this well was
19 not initially drilled through the second sand formation we
20 do not know at this time the quality of the zone below but
21 from our open hole logs that we have, and utilizing what we
22 have seen of the top 40 foot of this pay interval, it looks
23 the most promising of any of the wells that we have logged
24 through at this present time or producing out of.

25 At which time we can log the well and de-

1 termine the extent of porosity and degree of porosity, we
2 plan on trying -- also the depth at which this porosity oc-
3 curs, then we will utilize all of this information to deter-
4 mine in which azimuth of the wellbore we will direct your
5 extension.

6 As such, for the record right ow, if you
7 will notice on your Exhibit Number Seven, the well to the
8 east, the Young Deep Unit No. 1, the present estimated dip
9 from the subject well that we have calculated to the Young
10 Deep Unit No. 1 would be approximately a due east offset and
11 it would be in a downward dip position. Our dip is running
12 from southeast to northwest.

13 The direct that we would head if we were
14 to go in that way would cause us to have an inclination of a
15 downward drainhole.

16 HEYCO's stand right at this point in
17 time, we would like to attempt to either drill a downward
18 position or at least horizontal to the plane of the dip in
19 the reservoir.

20 Q Could you please describe for the record
21 the technology and equipment you would utilize in carrying
22 out this project?

23 A Yes, sir. The initial drilling applica-
24 tion will be relatively the same as used in the normal prac-
25 tices of deepening or cleaning out a hole. We will have a

1 reverse unit, drill collars, bit, to drill our 300 foot in-
2 terval and at that time, at the point Eastman Whipstock
3 comes into the picture, they will utilize a kickoff plate,
4 packer, and an orientation guide to direct the initial cur-
5 vature and we will be using a short radius curvature on this
6 -- this well of approximately a 90 degree angle achieved
7 within about a 20 to 25 foot interval of drilling, but they
8 will initiate that with a kickoff plate, packer mechanism,
9 and a drill string that will allow them to achieve this,
10 this angle in a short radius.

11 At the time they have achieved the degree
12 of angle that they need for our requirements and specifica-
13 tions for the direction and dip that we want, they will pull
14 that assembly out and then go in with their extended assem-
15 bly that will cut the actual 3-to-400 foot drainhole.

16 Q Mr. Nokes, what do you anticipate the
17 radius of the turn to horizontal from vertical will be?

18 A The, if I am following you correctly, --

19 Q Or I should say the distance to turn from
20 vertical to horizontal?

21 A From vertical to horizontal, you would
22 approximately have -- the calculated would be about 87.89
23 degrees, inclinationwise, and as far as your vertical to
24 horizontal, it -- the kickoff itself is a 90 degree kickoff.

25 From that direction it is in at that

1 point in time that they can control the actual drilling di-
2 rection by use of stabilizers in their assembly to direct
3 it, the inclination, now, there's a 20 -- 20 degree of con-
4 trol as far as on the horizontal plane that they would be
5 drilling, but as far as a vertical plane, they have achieved
6 approximately a 2 degree control in their past drilling.

7 Q I guess what I'm getting at is how sharp
8 a bend are you going to make? How many feet will you have
9 to drill from the point of vertical coming around until you
10 get horizontal?

11 A Okay, I'm sorry. On their short -- they
12 have three different that they -- three different procedures
13 that they can utilize.

14 We are using the short radius curvature
15 on our kickoff and it normally occurs between about 19 and
16 29 foot, literaturewise. Talking with them they believe
17 with the formation that we'll be in they will be able to
18 achieve that in approximately 22 foot. By this I mean in a
19 22 foot of depth of drilling, they will achieve a 90 degree
20 curvature from vertical.

21 Q Mr. Nokes, when you're carrying out the
22 horizontal drilling portion of this operation, will you be
23 doing a deviation survey or other type of technique so you
24 can determine where your hole will bottom out as to surface
25 location?

1 A Yes, sir, we will do an initial deviation
2 survey after we have extended our vertical hole 300 foot,
3 plus or minus, and then during the process of the drilling
4 it's my understanding that they do have control on their po-
5 sition so that we know where we're at.

6 The final deviation survey that was ex-
7 plained to me by their personnel is once the hole is com-
8 pleted, they will run a continuous directional survey on the
9 well at our option or as they are drilling, they can drill
10 and have deviation surveys run as they're drilling.

11 The option is, I believe, continuous as
12 you're drilling and know where your shot point is and where
13 your position is, which they control, and then also at the
14 end they can run a multishotpoint strip. I believe they
15 have the capacity of running it up to 700 shotpoints.

16 Q And they have represented to you that
17 their equipment is such, and testing techniques are such,
18 that they can determine that location at any given point in
19 time?

20 A Yes, sir. My understanding from talking
21 with them, that they have proved to the Commission that I
22 believe they have rerun it three, two or three different
23 times on a well for the Commission in a situation that there
24 was some question, and it was also checked at least for
25 their initial hole before their kickoff, and both of these

1 gave the exact information within just a couple of feet.

2 Q Would you contemplate drilling more than
3 one horizontal drainhole on this particular well?

4 A The possibility does exist. We have two
5 porosity intervals in this well, the lower one being the
6 better porosity in the offset wells, which we anticipate
7 that it will also be the better porosity in this one,
8 ranging from 13 to 15 percent porosity, peaking up to 18
9 percent.

10 If that is the case, and this is a suc-
11 cessful operation, there is the possibility with the thick-
12 ness of the pay that we have, to cut additional drainholes
13 in this same interval, as well as cutting additional drain-
14 holes in the upper porosity interval.

15 Q What are your proposed completion techni-
16 ques if this is successful?

17 A The completion techniques as such will be
18 to drill the hole and if necessary, wash the extended hole
19 with an acid wash to clean the mudcake from the rock, but we
20 will not at this point in time case the hole with a slotted
21 liner.

22 Q Mr. Nokes, are there any special pool
23 rules relating to well spacing in effect for the Bone
24 Springs formation in this area?

25 A Yes, sir. As a result of Case Number

1 7595, an order was issued on the 15th of July, 1982, Order
2 No. 7023, for Harvey E. Yates, and the case and order was in
3 respect to the North Young Bone Spring Pressure Maintenance
4 Project. The results of this project, if I may read it on
5 page 4 of this order, Rule 5, "The Division Director is
6 hereby authorized to approve additional producing wells to
7 be drilled no closer than 330 foot to the outer boundary of
8 said unit, nor closer than 10 foot to any quarter quarter
9 section or subdivision inner boundary."

10 Q Okay. You do not anticipate, then, that
11 you would be within that 10-foot limitation based on what
12 you've set out on Exhibit Number Eight as to your dis-
13 tances?

14 A No, sir. Calculations based on what we
15 see on this exhibit, we would be approximately 41-1/2 foot
16 from the lease line.

17 Q And in any event, since, as Ms. Avery
18 testified, the ownership in the unit is uniform throughout
19 the entire unit, you probably wouldn't have a correlative
20 rights problem anyhow, would you?

21 A No, sir, I do not believe so.

22 Q Okay. I refer you to Exhibit Number
23 Nine. Would you please describe that?

24 A Exhibit Number Nine is a cross section,
25 structural cross section.

1 This cross section indicates the three
2 subject wells in the area, the subject well being the middle
3 well.

4 It shows the extrapolation from offset
5 wells on the left, the Young Deep Federal 4 Unit No. 1, a
6 currently producing in the second sand well, and the Young
7 Deep Unit No. 1, currently an injection well for the pres-
8 sure maintenance project, but it's indicating the second
9 sand interval, the two porosity intervals, and if I may
10 direct the Examiner to the Young Deep Unit 4 Federal No. 1,
11 it does have in this lower porosity interval, the perfora-
12 tions that are currently producing from.

13 These productions, this production is to
14 this date, and I believe that well has produced
15 approximately 86,000 barrels, initially potentialed for 141.6
16 barrels per day, flowing out of this interval, and that will
17 be the interval that we will be keying off of to to try
18 drill or extend our horizontal drainhole in that related
19 interval.

20 Q Mr. Nokes, in your opinion will the
21 granting of this application promote conservation, prevent
22 waste, and protect rights?

23 A Yes, sir, it will and will also, as a
24 pilot program, give us the ability to evaluate this
25 procedure so that we might be able to utilize it additional

1 wells within the unit.

2 Q If it -- if the project is successful,
3 then, you would consider doing the same operation on other
4 wells within the unit?

5 A Yes, sir, there, at this point in time we
6 have evaluated the wellbores that are cased and additional
7 wells that were not deep enough within the unit.

8 Exhibit Seven is very, very small, but
9 if you'll notice on Exhibit Seven, the Young Deep 4-2 in the
10 southeast southeast of Section 4, has an NDE. That's an
11 indication of not deep enough.

12 Also the Young Deep No. 2 in the
13 northeast northwest quarter of Section 10 is an additional
14 well that the procedure that we are carrying -- attempting
15 to present to the Commission for approval, will be carried
16 out on these additional wells if successful. They are not
17 deep enough so they -- it will be an exact procedure of what
18 we're doing on this well.

19 Other wells in this area, there are
20 approximately ten total wells, counting the subject well,
21 but there are other wells in this area that will be
22 attempted as a window slot cut in the pipe and a kickoff
23 established in those, since they are cased.

24 Q Mr. Nokes, are any of those wells that
25 you would contemplate doing additional work on located

1 adjacent to the unit boundary?

2 A To the east side the only two -- or the
3 only one that -- that I can see that would be, would be the
4 Young Deep 3 Federal No. 5, and due to the relationship of
5 the sands that we have seen, that directional hole would
6 probably extend back to the interior of the unit, not to the
7 exterior boundary.

8 Q Mr. Nokes, if you do decide to go ahead
9 and do additional work, then you will make separate applica-
10 tion to the Division for those particular wells, is that
11 correct?

12 A Yes, sir, we'll make application, hope-
13 fully, for administrative approval.

14 Q Were Exhibits Four through Nine prepared
15 by you or under your supervision or compiled from the files
16 of the applicant?

17 A Yes, sir, they were.

18 MR. STRAND: Mr. Examiner, I
19 move admission of Exhibits Four through Nine.

20 MR. CATANACH: The Exhibits
21 Four through Nine will be admitted as evidence.

22 MR. STRAND: And I have nothing
23 further of Mr. Nokes at this time.

24

25

1

2 QUESTIONS BY MR. STOGNER:

3 Q Mr. Nokes, I'm Michael Stogner, petroleum
4 engineer for the Oil Conservation Division and I have a few
5 questions about your proposed drainhole.

6 A Yes, sir.

7 Q The 20 percent deviate -- control that
8 you were talking about, that is for the direction, is that
9 correct?

10 A Yes, sir.

11 Q Okay, and how is the direction achieved?

12 A The direction is achieved, is by the
13 orientation of the kickoff plat when it's placed in the open
14 hole wellbore.

15 Q Okay, as far as the makeup of that plate,
16 how -- how much depth, vertical depth, do you need to set
17 this tool?

18 A They have indicated to me that they need
19 approximately 35 foot of depth to set the tool as far as
20 rathole. The tool itself will be positioned so that the
21 kickoff will be 25 foot above the actual horizontal plane
22 that we'll be attempting to cut and by achieving this short
23 radius of curvature within a 20 to 25 foot radius, it will
24 not need any more rathole than that because they can -- it
25 allows them to reposition, if need be.

1 Q Now you keep referring to "they". I as-
2 sume you're referring to --

3 A Eastman, I'm sorry.

4 Q -- Eastman Whipstock?

5 A Yes, sir.

6 Q Have you seen the tool?

7 A I've --

8 Q Their rotation plate?

9 A I have seen their presentation and sche-
10 matics. No, sir, I have not seen the actual plat itself.

11 Q Okay, do you have a copy of the presenta-
12 tion that they give? Any brochures or anything?

13 A It was -- I have a small one, yes. It's
14 not their complete -- it was a slide presentation that they
15 gave for us.

16 Would you like that --

17 Q For the record it might be good to sup-
18 plement the --

19 A All righty.

20 Q -- the case file with that. Now as far
21 as your 2 percent control on your horizontal plane.

22 A Yes, sir.

23 Q Does that hold true even if you're going
24 to an 85 degree or a hundred degree angle?

25 A My understanding, talking with their en-

1 gineers just yesterday, is that that angle will be control-
2 led. If it is not the angle of inclination that we need to
3 achieve the plane that we are cutting through the pay
4 interval, that that assembly will be pulled from the hole
5 and additional or a change in downhole stabilizers, bit
6 stabilizers just above the bit will be changed as far as
7 configuration so that it will correct the inclination that
8 we desire.

9 Q How is that done?

10 A They have stabilizers that are changes as
11 far as in diameter. They have a short -- I'm not sure of
12 the length of the tool as such, but it's a short stabili-
13 zers, double stabilizer assembly above the bit, which allows
14 the bit to change in position of -- so far as pivot point,
15 to achieve the angle that is cut.

16 Q Okay, and that's the only stabilizing de-
17 vice?

18 A Yes, sir, from my understanding from
19 talking with them.

20 Q Okay, now is that stabilizing device hin-
21 ged?

22 A Yes, sir, I believe it is.

23 Q Okay. Now we're talking about the drive
24 mechanism. We're talking about from the surface, right?

25 A Yes, sir, this is a rotary application.

1 It is not their -- their downhole motor deal.

2 Q Okay. Will there be any kind of special
3 mud or special fluid that will be needed?

4 A We will use our normal drilling mud, what
5 we have drilled with, which is a fresh water, approximtely
6 12-to-18,000 chloride mud system.

7 Q But as far as an oil based mud --

8 A No, sir.

9 Q Okay. What is the diameter of the hori-
10 zontal hole?

11 A The diameter that we intend on cutting
12 through the radius of curvature for the 25 foot will be a 4-
13 3/4 inch hole. After that is achieved it will be a 4-1/2
14 inch on the horizontal drainhole.

15 Q And I believe you were going to use a 4-
16 3/4 as far as your vertical extent.

17 A Yes, sir.

18 Q Is that correct?

19 A Yes, sir.

20 Q Now, is that a 4-1/2 inch on the -- or 4-
21 3/4 inch on the curvature part?

22 A Yes, sir.

23 Q 4-3/4?

24 A Yes, sir.

25 Q And then it will go on to the 4-1/2 on

1 the --

2 A Yes, sir. They require 4-3/4 for their
3 -- their curvature assembly because that curvature assembly
4 just basically is a guide off of their kickoff plate that
5 allows the configuration of that assembly to drill and slide
6 further to get their -- their curvature.

7 Q Okay, now if you decide to drill another
8 kickoff, what would be the shortest distance above your ori-
9 ginal kickoff that you can be allowed to go?

10 A I believe in their presentation that you
11 can do this within approximately 12 or 15 foot.

12 Q What kind of expect results are you
13 planning to see with your first horizontal, as far as
14 production?

15 A At this time we really don't know, Mr.
16 Stogner. All I can say is that we will, it being a pilot
17 program, that's the purpose of drilling this, to see if it
18 is substantially beneficial. Their records are very few and
19 far between as far as released on information that they've
20 done. They are very protective of the people that they do
21 business for but the ones that they have indicated, there
22 has been some wells up to a hundredfold increase.

23 With the permeability that we have in
24 this well, .1 millidarcy, I do not anticipate that kind of
25 an increase, but we do not know at this time.

1 Q Okay. Now you were talking about survey-
2 ing of the drainhole itself. That could be done after the
3 drainhole is drilled but you mentioned it can be done as
4 it's drilling.

5 A My understanding from what they were
6 telling me, yes, sir, they can. I'm not sure how that's
7 done. I do know that after the hole is drilled they -- they
8 can run this, but in their -- in the drainhole itself I
9 think they -- my understanding is is to achieve this direc-
10 tional survey as we're doing it, they have to pull their
11 drilling assembly out and go back in with a survey to check
12 their hole position.

13 MR. STOGNER: If this is ap-
14 proved, as usual, I would recommend, Mr. Examiner, that we
15 have a representative from the OCD District Office to be
16 available to come out on location at any time this direc-
17 tional is going.

18 MR. CATANACH: Thank you, Mr.
19 Stogner.

20 MR. STOGNER: I have no further
21 questions.

22

23 CROSS EXAMINATION

24 BY MR. CATANACH:

25 Q As I understand it, your -- your target

1 zone is the Second Bone Spring Sand, is that correct?

2 A Yes, sir.

3 Q I also understood you to say that there
4 is a pressure maintenance project within the unit?

5 A Yes, sir, it's a carbonate lens in the
6 second sand in that interval. Normally those occur in a
7 depth of about 83 to about 8500 foot; a carbonate zone that
8 is isolated by a pipe and cement.

9 Q That's where you're injecting into?

10 A Yes, sir.

11 Q The carbonate?

12 A The three injection wells that we have
13 are the Young Deep Unit No. 2. It was the initial well.

14 The Young Deep Unit No. 1, and as of ap-
15 proximately a year ago, the Young Deep Unit No. 5.

16 Q What separates the -- the carbonate and
17 the sand? Is that in -- that's in the second -- that's all
18 in the same interval.

19 A It's in the Bone Springs, yes, sir. This
20 interval, the carbonate lays on top of the second sand from
21 a depth of what we would be looking at in this well alone,
22 would approximately be about 500 -- or about 400
23 foot separation as far as interval from the two -- two phase
24 zones.

25 Q So you don't expect any influence from

1 the -- from the injection --

2 A No. With all the wells that we have
3 treated that are second sands, that are below our producing
4 parbonates that we have open in these wells that are dual
5 zones as you see on Exhibit Number Seven, we have fractured
6 these second sand intervals and have not had any communica-
7 tion to the carbonate intervals.

8 Q What -- what is the depth of the produc-
9 ing interval, the Second Bone Springs Sand? What is the
10 depth range of that?

11 A Normally it occurs with a dip; in this
12 area you're looking at approximately 80 -- about 8700 foot
13 to about 8800 foot in this area.

14 Q So it's about 100 feet a day.

15 A Yes, sir. Well, the average pay zone,
16 now there's multiple pay zones in the wellbore. As I men-
17 tioned, on this well you have two. One is draining approx-
18 imately, I believe it's 80 -- okay, in the Young Deep Num-
19 ber 4-1 the top zone, it's approximately 8502 to 8640 and
20 the bottom one is 8766 to 8816.

21 In the subject well that we're talking
22 about right now, the Young Deep Unit No. 8, it is extrapo-
23 lated to 8652 to 8770 for the top porosity zone in the se-
24 cond sand and approximately 8850 to 8900 to be our porosity
25 interval in the second sand, the bottom lens.

1 Most of these run two porosity horizons
2 and there are some three, but most of them are at least two
3 with a major porosity interval at the depth we're requesting
4 the extension.

5 Q Okay, I guess you seek authority for mul-
6 tiple drainholes at this time, is that correct?

7 A Yes, sir.

8 Q But you don't know just exactly where
9 they will project or what direction they'll project.

10 A Not in what direction, no, sir, not at
11 this time.

12 Q Will any of them exceed that 41 foot dis-
13 tance from the -- from the section line?

14 A Not that we're aware of at this time, no,
15 sir. It's being a pilot program, this is to find out exac-
16 tly how far we can within our 400 foot request of Eastman,
17 how far we can get, because there are situations that we may
18 not be able to achieve this distance due to the hardness of
19 the rock and penetration.

20 Q Mr. Nokes, after you drill down to your
21 -- drill 3-or-400 feet down and determine what direction
22 you're going to go into, wouldn't you -- or can you notify
23 the Division of that -- at that time what direction you're
24 going to go into?

25 A Yes, sir, we could, and if they are on

1 location they're welcome to be on location at any time while
2 this operation is going on.

3 Q And if we could be notified if you plan
4 also to do another one, I mean another drainhole.

5 A Another drain. Yes, sir. Our intentions
6 on this, if advised to us by the Commission, was to present
7 this in a manner so that if additional drainholes were anti-
8 cipated that we would be able to seek it by administrative
9 approval, by sending in a request for an additional hole.

10 Q Okay, so all you want is a provision in
11 the order for administrative approval for additional drain-
12 holes, is that correct?

13 MR. STRAND: Within the same
14 well.

15 A Within the same well as well as addi-
16 tional wells within the unit boundary that would not extend
17 past the field rules that I explained from that order of 230
18 foot to the unit boundary line.

19 Q So you're seeking authority to do this on
20 any well within the (not clearly understood) area --

21 A No, no, not to do it; just on this well
22 but with the possibility of administrative approval upon ap-
23 plying for an additional well and documentation to supple-
24 ment it.

25 MR. STRAND: I might elaborate

1 on that just for a very brief moment.

2 This application relates only
3 to the No. 8 Well --

4 MR. CATANACH: Right.

5 MR. STRAND: -- which we may do
6 multiple drainholes in, but due to the kind of unique status
7 of this being within a unit where you have uniform interest
8 throughout the entire unit, we think it's an ideal place to
9 carry out a project like this. You don't have the normal
10 correlative rights problems that you would have in a stand-
11 ard proration unit type situation and I think what Mr. Nokes
12 is getting at is we would like the Division to consider,
13 based on the rather extensive land testimony we've presented
14 with this, to allow us to make administrative application
15 for other -- any other wells that are not at least adjacent
16 to the unit boundary.

17 But that's in the future. We
18 -- we can worry about that later.

19 MR. CATANACH: Okay. Is there
20 any other questions of the witness?

21 If not, he may be excused.

22 Is there anything further in
23 this case?

24 MR. STRAND: Nothing further.

25 MR. CATANACH: If not, it will
be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO
HEREBY CERTIFY the foregoing Transcript of Hearing before
the Oil Conservation Division (Commission) was reported by
me; that the said transcript is a full, true, and correct
record of the hearing, prepared by me to the best of my
ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 9216,
heard by me on Sept 23, 1987.

David R. Catamb, Examiner
Oil Conservation Division