

CASE 6704: ARCO OIL AND GAS COMPANY FOR  
THE AMENDMENT OF ORDER NO. R-6044, EDDY  
COUNTY, NEW MEXICO

CASE NO.

6704

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APPLICATION,  
TRANSCRIPTS,  
SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
State Land Office Building  
Santa Fe, New Mexico  
17 October, 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of ARCO Oil and Gas Company  
for the amendment of Order No. R-6044,  
Eddy County, New Mexico.

CASE  
6704

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Applicant:

Conrad Coffield Esq.  
HINKIE LAW FIRM  
Midland, Texas

For the Oil Conservation  
Division:

Ernest L. Padilla, Esq.  
Legal Counsel for the  
Division  
State Land Office Building  
Santa Fe, New Mexico 87503

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I N D E X

RYAN L. STRAMP

Direct Examination by Mr. Coffield 3

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1 MR. NUTTER: Call next Case Number 6704.

2 MR. PADILLA: Application of ARCO Oil and  
3 Gas Company for the amendment of Order No. R-6044, Eddy  
4 County, New Mexico.

5 MR. COFFIELD: Conrad Coffield, with the  
6 Hinkle Law Firm, of Midland, Texas, appearing on behalf of  
7 the applicant, and I have one witness to be sworn.

8  
9 (Witness sworn.)

10  
11 RYAN L. STRAMP

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

14  
15 DIRECT EXAMINATION

16 BY MR. COFFIELD:

17 Q Mr. Stramp, would you please state your  
18 name, address, occupation, and employer?

19 A My name is Ryan L. Stramp. I live at 706  
20 West Pine in Midland, Texas.

21 I'm employed as an Operations Analytical  
22 Petroleum Engineer by ARCO Oil and Gas in Midland.

23 Q Have you previously testified before the  
24 Division as a petroleum engineer?

25 A No, sir, I have not.

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1 Q Then for the Examiner would you please  
2 state your educational background and experience as a petro-  
3 leum eingeer?

4 A I graduated in May, 1977 with a Bachelor  
5 of Science degree in petroleum engineering from the University  
6 of Oklahoma.

7 Upon graduation I went to work for Atlantic  
8 Richfield Company in Midland, Texas. The first year of my  
9 employment consisted of varied petroleum engineering as-  
10 signments.

11 Since May, 1978, I have worked in ARCO's  
12 Empire-Abo Engineering Group in various capacities.

13 Q Are you familiar with the property and  
14 well location involved in this case?

15 A Yes, sir, I am.

16 Q Are you familiar with the application that  
17 ARCO has filed?

18 A Yes, sir, I am familiar with the applica-  
19 tion.

20 MR. COFFIELD: Mr. Examiner, will the  
21 witness' qualifications be acceptable?

22 MR. NUTTER: Yeah, he'd be acceptable if  
23 I knew how to spell his name.

24 A S-T-R-A-M-P.

25 MR. NUTTER: Okay, he's qualified.

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1 Q Mr. Stramp, what does ARCO seek by this  
2 application?

3 A We seek to amend Division Order No. R-6044  
4 as to the target area, bottom location, and depths, and to  
5 request permission to produce Empire-Abo Unit Well K-142  
6 from it's present completion configuration.  
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8 Division Order R-6044 authorized ARCO Oil  
9 and Gas Company to complete the K-142 with a single hori-  
10 zontal drain hole approximately 200 feet in length. The  
11 drain hole was to extend to the southeast from the surface  
12 location.

13 The drain hole drilling instead resulted  
14 in two separate drain holes, one 106 feet in length, and the  
15 other, 43 feet in length. Both of these drain holes are  
16 located northwest from the surface location.

17 Q Mr. Stramp, refer to what we've marked  
18 as Exhibit Number One and explain that to the Examiner.

19 A Exhibit Number One is a map of the Empire-  
20 Abo Unit. The surface location of the K-142 is shaded in  
21 red. The heavy dashed line indicates the location of the  
22 unit boundary.

23 As the map indicates, all of the 40-acre  
24 proration units offsetting the K-142 are committed to the  
25 Empire-Abo Unit.

Q All right, go to Exhibit Two, please, and

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1 explain that exhibit to the Examiner.

2 A. Exhibit Number Two is a plat showing K-142  
3 surface location as a larger closed circle and the terminating  
4 points of the two drain holes as a smaller closed circle  
5 just a little bit to the left of center of the page.

6 The wells in all the offset proration units  
7 are indicated by the open circles. The dashed line again  
8 represents the unit boundary.

9 Drain hole number one terminates 616 feet  
10 from the nearest producing well.

11 Drain hole number two terminates 655 feet  
12 from the nearest Abo producing well.

13 Also, drain holes number one and number  
14 two terminate 2107 feet and 2075 feet, respectively, from  
15 the nearest unit boundary.

16 Q. All right, go on to Exhibit Three, please,  
17 Mr. Stramp, and explain this exhibit.

18 A. Okay. Exhibit Number Three is a more  
19 detailed map, showing the K-142 surface location in the  
20 lower righthand corner. The surface trace of the path of  
21 the vertical hole extends northwest from the surface location.  
22 The location of the whipstock and surface traces of the drain  
23 holes are also shown along with the north and west displace-  
24 ments from the surface location of these points.

25 As I mentioned previously, Order R-6044

1 authorized the drilling of one 200-foot drain hole extending  
2 southeast from the surface location. The travel to the  
3 northwest during the drilling of the vertical part of the  
4 well made it impossible to locate the drain hole southeast  
5 from the surface location. This northwest travel was caused  
6 by the dip of the strata overlying the reef.

7 During the drilling we inadvertently  
8 drilled two drain holes. After setting 7-inch casing at  
9 6027 feet and the whipstock at 6037 feet, we began drilling  
10 drain hole number one. After drilling 7 feet a drill pipe  
11 connection was made. At this time the whipstock rotated  
12 and we could not re-enter drain hole number one.

13 Drilling was resumed and drain hole number  
14 two, during a pipe trip, after 43 feet of drain hole number  
15 two had been drilled, the whipstock again rotated, returning  
16 to the original orientation of drain hole number one.

17 Drilling then continued in drain hole  
18 number one until a total of 106 feet of this drain hole had  
19 been drilled. At this time the drain hole drilling was ter-  
20 minated due to excessive torque.

21 MR. NUTTER: Did you know you were in  
22 drain hole number one at that time?

23 A Yeah, we had run some intermediate  
24 directional surveys and also the depths corresponded with  
25 where we had -- or should have been if we got back in drain

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1 hole number one. We were sure that's where we were.

2 MR. NUTTER: Okay.

3 A. Okay.

4 Q. Will you go on -- excuse me, are you  
5 through with Exhibit Three?

6 A. Okay, I just might mention that the, as  
7 you know, we planned to drill 200 feet of drain hole, that's  
8 what we were shooting for in drain hole number one; however,  
9 due to the torque building up, we had to terminate our  
10 drilling after only 106 feet had been drilled, and the torque  
11 was building up as a result of the corkscrew to the left,  
12 which is apparent in this exhibit and the following exhibits  
13 I'll present.

14 Q. Okay, go on to Exhibit Four, please, and  
15 explain that exhibit.

16 A. Okay. Exhibit Number Four is a three  
17 dimensional isometric drawing of the two drain holes. The  
18 area shaded yellow with the bottom plane are the imaginary  
19 boxes enclosing the drain holes. The vertical height of  
20 the green and brown shaded areas represent the vertical  
21 distance from the drain holes to the bottom planes. This  
22 illustrates the relative depths along the drain holes.

23 The corkscrewing effect that I mentioned  
24 previously, is apparent in this drawing.

25 Q. Okay, we're ready now for Exhibit Five.

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1 Would you please describe that exhibit?

2 A. Exhibit Number Five is a graph showing the  
3 vertical displacement of the drain holes along their drilled  
4 paths. In other words, this is what a cross section of the  
5 drain holes would look like if it were straightened out into  
6 a single vertical plane.

7 Drain hole number one reached 90 degrees  
8 after approximately 30 feet of horizontal distance had been  
9 drilled. The non-horizontal travel of the drain hole after  
10 this point was a result of an improperly stabilized bottom  
11 hole drilling assembly. Modification to the drain hole  
12 tools will make -- excuse me, modifications to the drain  
13 hole tools will be made to eliminate this problem in future  
14 drain hole drilling.

15 As the exhibit indicates, drain hole two  
16 never reached 90 degrees. This was due to the influence  
17 that the drain hole number one had on the drilling of drain  
18 hole number two during the first few feet that we drilled  
19 in drain hole number two.

20 Q Let's go on now to Exhibit Six, and please  
21 explain that exhibit.

22 A Exhibit Six is another graph of the verti-  
23 cal displacement of the drain holes along their drill paths.  
24 The graph overlays a section of the K-142 compensated neutron,  
25 compensated density, porosity log. The shaded area in the

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1 righthand track of the log indicates our target zone for the  
2 drain holes. The reef base is indicated at approximately  
3 6077 feet.

4 Both drain holes remained within the tar-  
5 get zone and neither penetrated the base of the reef.

6 Q Okay, Mr. Stramp, would you now please go  
7 to both Exhibits Seven and Eight and explain those together?

8 A Yes.

9 Exhibits Seven and Eight are tabulations  
10 of the directional survey data obtained during the drilling  
11 of drain holes one and two, respectively.

12 They also list the calculated displacements  
13 of the survey points from the surface location. The K-142  
14 surface location is 1700 feet from the south line and 1400  
15 feet from the west line of Section 2 of Township 18 South.  
16 Range 27 East. The terminus of drain hole number one is  
17 located 1853 feet from the south line and 1376 feet from the  
18 west line in the same section.

19 Drain hole number two terminates 1885 feet  
20 from the south line and 1315 from the west line in the same  
21 section.

22 MR. NUTTER: Give me those a little slower  
23 so I can write them down.

24 A Okay, they're on Exhibits Seven and Eight.

25 MR. NUTTER: Number two is not.

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1 A. It's on NumberEight, I believe, terminus  
2 of drain hole.

3 MR. NUTTER: Oh, okay, yeah. Yeah.

4 A. I would be happy to repeat them, if you  
5 like.

6 MR. NUTTER: No. No, that's fine.

7 A. Okay.

8 Q. Okay, Mr. Stramp, has this well been com-  
9 pleted and potentialled?

10 A. Yes, sir, earlier in the week we got a  
11 test on the well and it's going to be submitted as the po-  
12 tential test. The well pumped 200 barrels of oil per day,  
13 zero barrels of water per day, and had a GOR of approxi-  
14 mately 637 cubic feet per barrel of oil.

15 Q. Is it your opinion that horizontal drain  
16 holes can successfully be drilled and that Empire and the  
17 additional reserves will be recovered by the drain holes?

18 A. Yes. Even though we failed to drill the  
19 200 feet of the drain hole originally planned for the K-142,  
20 we did prove that we could turn 90 degrees in a 30-foot  
21 radius. Problems encountered with whipstock rotation and  
22 corkscrewing can be eliminated with minor changes in the  
23 drain hole drilling equipment.

24 We also feel, based on numeric simulations,  
25 that increased reserves will be recovered from the drilling

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1 of the K-142 drain holes and also from any future drain holes.

2 Q Do you have anything further to add in  
3 this case that we haven't touched on?

4 A I don't believe so.

5 Q Okay. Were these Exhibits One through  
6 Eight prepared by you or under your supervision?

7 A Yes, sir, they were.

8 Q And, Mr. Stramp, in your opinion will the  
9 approval of this application by ARCO prevent the drilling  
10 of unnecessary wells and otherwise prevent waste and protect  
11 correlative rights?

12 A Yes.

13 MR. COFFIELD: Mr. Examiner, I move the  
14 admission of Exhibits One through Eight.

15 MR. NUTTER: ARCO Exhibits One through  
16 Eight will be admitted in evidence.

17 MR. COFFIELD: And I have no further  
18 questions of Mr. Stramp.

19 MR. NUTTER: Does anyone have any questions  
20 or Mr. Stramp? He may be excused.

21 Do you have anything further, Mr. Coffield?

22 MR. COFFIELD: No, sir, I do not.

23 MR. NUTTER: Does anyone have anything they  
24 wish to offer in Case Number 6704?

25 We'll take the case under advisement.

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## REPORTER'S CERTIFICATE

I, SALLY W. BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of the Hearing before the Oil Conservation Division was reported by me; that said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, from my notes taken at the time of the hearing.

*Sally W. Boyd C.S.R.*  
Sally W. Boyd, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 6704, heard by me on 10/17/79.  
*[Signature]*, Examiner  
Oil Conservation Division

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I N D E X

RYAN L. STRAMP

Direct Examination by Mr. Cofffield

3

E X H I B I T S

Applicant Exhibit One, Map

5

Applicant Exhibit Two, Plat

5

Applicant Exhibit Three, Map

6

Applicant Exhibit Four, Drawing

8

Applicant Exhibit Five, Graph

8

Applicant Exhibit Six, Graph

9

Applicant Exhibit Seven, Tabulation

10

Applicant Exhibit Eight, Tabulation

10

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9 (Witness sworn.)  
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21 West Pine in Midland, Texas.

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23 Petroleum Engineer by ARCO Oil and Gas in Midland.

24 Q Have you previously testified before the  
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A No, sir, I have not.

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2020 Plaza Blanca (505) 411-2452  
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Q Then for the Examiner would you please state your educational background and experience as a petroleum engineer?

A I graduated in May, 1977 with a Bachelor of Science degree in petroleum engineering from the University of Oklahoma.

Upon graduation I went to work for Atlantic Richfield Company in Midland, Texas. The first year of my employment consisted of varied petroleum engineering assignments.

Since May, 1978, I have worked in ARCO's Empire-Abo Engineering Group in various capacities.

Q Are you familiar with the property and well location involved in this case?

A Yes, sir, I am.

Q Are you familiar with the application that ARCO has filed?

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MR. COFFIELD: Mr. Examiner, will the witness' qualifications be acceptable?

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25 where we had -- or should have been if we got back in drain

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3 A. Okay.

4 Q Will you go on --- excuse me, are you  
5 through with Exhibit Three?

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10 drilling after only 106 feet had been drilled, and the torque  
11 was building up as a result of the corkscrew to the left,  
12 which is apparent in this exhibit and the following exhibits  
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18 area shaded yellow with the bottom plane are the imaginary  
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3 vertical displacement of the drain holes along their drilled  
4 paths. In other words, this is what a cross section of the  
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6 a single vertical plane.

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10 this point was a result of an improperly stabilized bottom  
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21 explain that exhibit.

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23 cal displacement of the drain holes along their drill paths.  
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25 compensated density, porosity log. The shaded area in the

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10 of the directional survey data obtained during the drilling  
11 of drain holes one and two, respectively.

12 They also list the calculated displacements  
13 of the survey points from the surface location. The K-142  
14 surface location is 1700 feet from the south line and 1400  
15 feet from the west line of Section 2 of Township 18 South.  
16 Range 27 East. The terminus of drain hole number one is  
17 located 1853 feet from the south line and 1376 feet from the  
18 west line in the same section.

19 Drain hole number two terminates 1885 feet  
20 from the south line and 1315 from the west line in the same  
21 section.

22 MR. NUTTER: Give me those a little slower  
23 so I can write them down.

24 A Okay, they're on Exhibits Seven and Eight.

25 MR. NUTTER: Number two is not.

SALLY WALTON BOYD  
CERTIFIED SHORTHAND REPORTER  
3020 Plaza Blanca (SOS) 471-2462  
Santa Fe, New Mexico 87501

Page 11

1 A. It's on Number Eight, I believe, terminus  
2 of drain hole.  
3

4 MR. NUTTER: Oh, okay, yeah. Yeah.  
5 A. I would be happy to repeat them, if you  
6 like.  
7

8 MR. NUTTER: No. No, that's fine.  
9 A. Okay.  
10

11 Q. Okay, Mr. Stramp, has this well been com-  
12 pleted and potentialized?  
13

14 A. Yes, sir, earlier in the week we got a  
15 test on the well and it's going to be submitted as the po-  
16 tential test. The well pumped 200 barrels of oil per day,  
17 zero barrels of water per day, and had a GOR of approxi-  
18 mately 637 cubic feet per barrel of oil.  
19

20 Q. Is it your opinion that horizontal drain  
21 holes can successfully be drilled and that Empire and the  
22 additional reserves will be recovered by the drain holes?  
23

24 A. Yes. Even though we failed to drill the  
25 200 feet of the drain hole originally planned for the K-142,  
we did prove that we could turn 90 degrees in a 30-foot  
radius. Problems encountered with whipstock rotation and  
corkscrewing can be eliminated with minor changes in the  
drain hole drilling equipment.

We also feel, based on numeric simulations,  
that increased reserves will be recovered from the drilling

SALLY WALTON BOYD  
CERTIFIED SHORTHAND REPORTER  
3929 Plaza Blanca (605) 471-2462  
Santa Fe, New Mexico 87501

1 of the K-142 drain holes and also from any future drain holes.

2 Q Do you have anything further to add in  
3 this case that we haven't touched on?

4 A I don't believe so.

5 Q Okay. Were these Exhibits One through  
6 Eight prepared by you or under your supervision?

7 A Yes, sir, they were.

8 Q And, Mr. Stramp, in your opinion will the  
9 approval of this application by ARCO prevent the drilling  
10 of unnecessary wells and otherwise prevent waste and protect  
11 correlative rights?

12 A Yes.

13 MR. COFFIELD: Mr. Examiner, I move the  
14 admission of Exhibits One through Eight.

15 MR. NUTTER: ARCO Exhibits One through  
16 Eight will be admitted in evidence.

17 MR. COFFIELD: And I have no further  
18 questions of Mr. Stramp.

19 MR. NUTTER: Does anyone have any questions  
20 or Mr. Stramp? He may be excused.

21 Do you have anything further, Mr. Coffield?

22 MR. COFFIELD: No, sir, I do not.

23 MR. NUTTER: Does anyone have anything they  
24 wish to offer in Case Number 6704?

25 We'll take the case under advisement.

REPORTER'S CERTIFICATE

I, SALLY W. BOYD, a Court Reporter, DO HEREBY CERTIFY  
 that the foregoing and attached Transcript of the Hearing  
 before the Oil Conservation Division was reported by me;  
 that said transcript is a full, true, and correct record  
 of the hearing, prepared by me to the best of my ability,  
 from my notes taken at the time of the hearing.

Sally W. Boyd, C.S.R.

SALLY WALTON BOYD  
 CERTIFIED SHORTHAND REPORTER  
 3010 Plaza Blanca (SOS) 471-2462  
 Santa Fe, New Mexico 87501

I do hereby certify that the foregoing is  
 a complete record of the proceedings in  
 the Examiner's hearing on 10/17 1979  
[Signature] Examiner  
 Oil Conservation Division



## STATE OF NEW MEXICO

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
(505) 827-2434

ARCO Oil and Gas Company

JOE D. RAMEY  
Director

**Other**

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 6704  
Order No. R-6044-A

APPLICATION OF ARCO OIL AND GAS  
COMPANY FOR THE AMENDMENT OF ORDER  
NO. R-6044, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 17, 1979, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 2nd day of November, 1979, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That by Division Order No. R-6044, dated June 26, 1979, ARCO Oil and Gas Company was authorized to complete its Empire Abo Unit Well No. K-142, the surface location of which is 1700 feet from the South line and 1400 feet from the West line of Section 2, Township 18 South, Range 27 East, NMPM, Empire-Abo Pool, Eddy County, New Mexico, in such a manner as to provide a 200-foot horizontal drainhole beneath the gas-oil contact in the Abo Reef, extending in a southeasterly direction from the surface location.

(3) That due to certain technical problems the subject well was not bottomed as specified above, and the applicant seeks the amendment of Order No. R-6044 to reflect the actual bottom hole location of the drainhole.

(4) That said drainhole is located well within the boundaries of the Empire Abo Unit and will in no way impair the correlative rights of other owners in the pool nor will it cause waste.

-2-

Case No. 6704

Order No. R-6044-A

(5) That Order No. R-6044 should be amended to reflect the actual bottom hole location of the drainhole and this may best be accomplished by amending Order (1) on Page 2 of said Order No. R-6044 to read in its entirety as follows:

"(1) That the applicant, ARCO Oil and Gas Company, is hereby authorized to complete its Empire Abo Unit Well No. K-142, the surface location of which is 1700 feet from the South line and 1400 feet from the West line of Section 2, Township 18 South, Range 27 East, NMPM, Empire-Abo Pool, Eddy County, New Mexico, in such a manner as to provide two drainholes, the first of which terminates 153 feet North and 24 feet West of the surface location, and the second of which terminates 185 feet North and 84 feet West of the surface location."

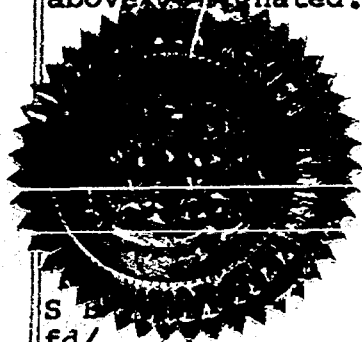
IT IS THEREFORE ORDERED:

(1) That Order (1) on Page 2 of Division Order No. R-6044 is hereby amended to read in its entirety as follows:

"(1) That the applicant, ARCO Oil and Gas Company, is hereby authorized to complete its Empire Abo Unit Well No. K-142, the surface location of which is 1700 feet from the South line and 1400 feet from the West line of Section 2, Township 18 South, Range 27 East, NMPM, Empire-Abo Pool, Eddy County, New Mexico, in such a manner as to provide two drainholes, the first of which terminates 153 feet North and 24 feet West of the surface location, and the second of which terminates 185 feet North and 84 feet West of the surface location."

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



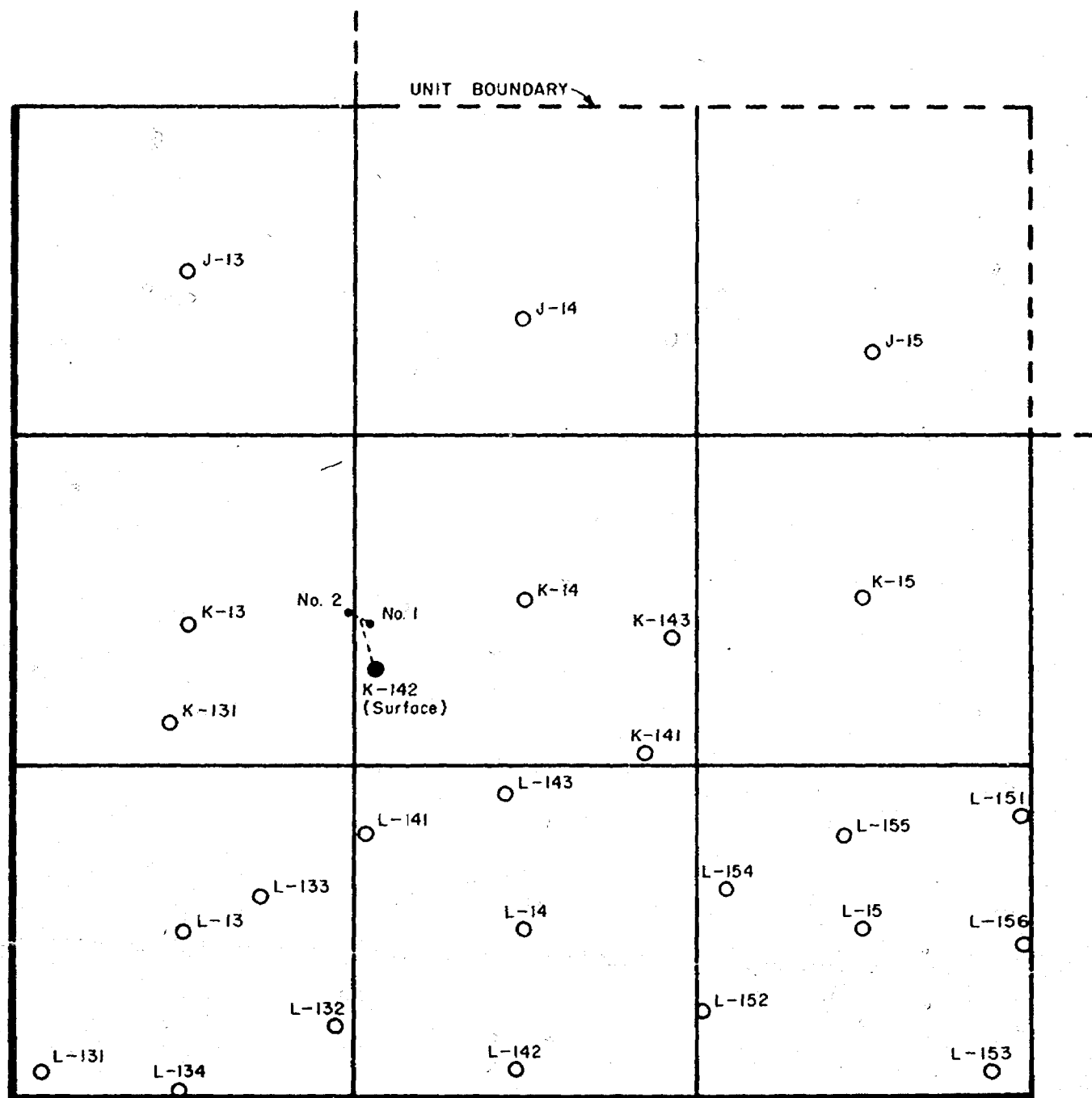
STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

*Joe D. Ramey*  
JOE D. RAMEY  
Director

S E  
fd/

EMPIRE ABO UNIT  
K-142 OFFSET WELLS  
Exhibit 2

DEFORE WALKER BUTTER  
OIL CONSERVATION DIVISION  
Arco EXHIBIT NO. 2  
CASE NO. 6704



0' 500' 1000'

EMPIRE ABO UNIT K-142

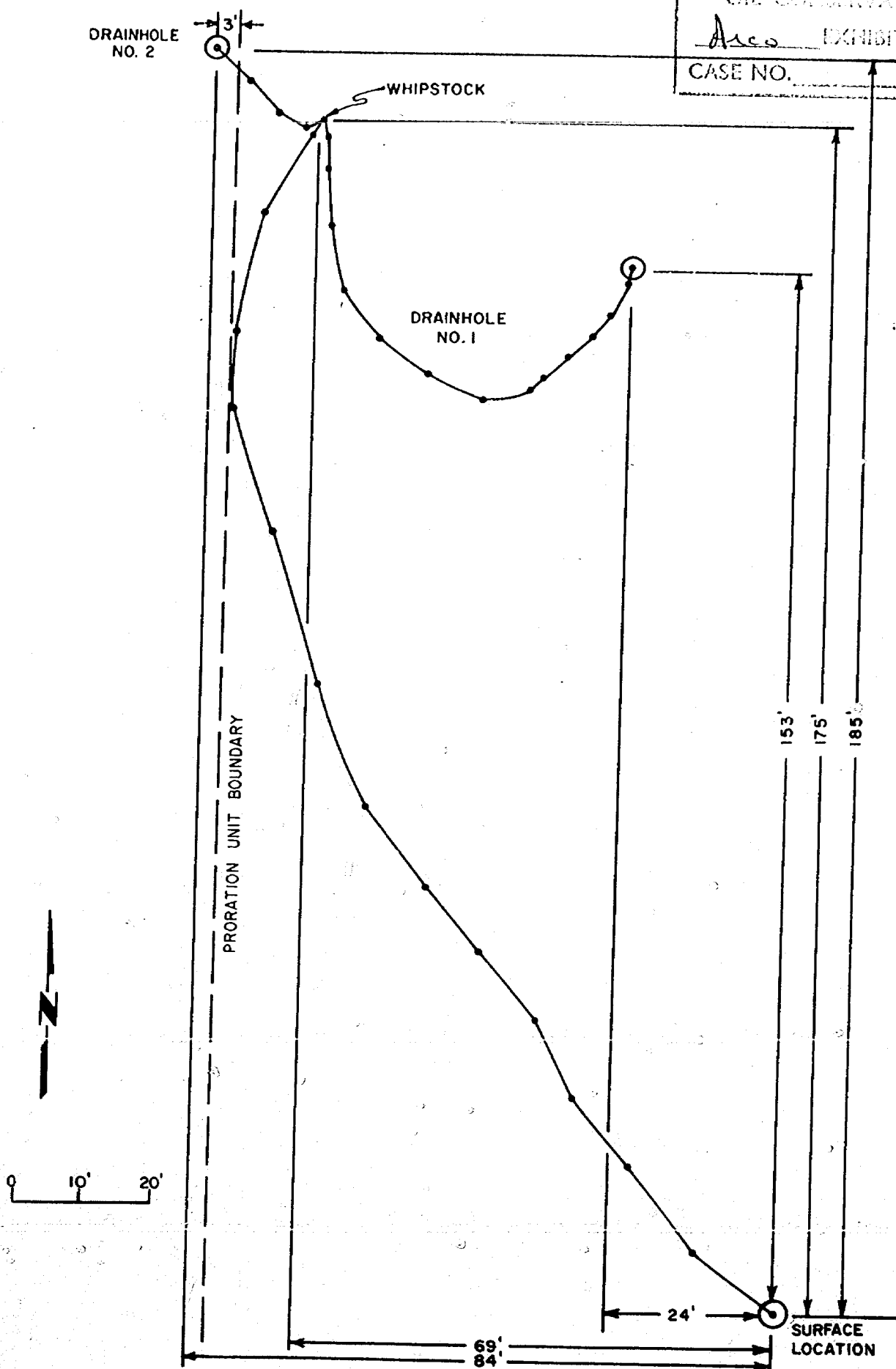
MAP VIEW  
EXHIBIT 3

BEFORE EXAMINER MUTTER

OIL CONSERVATION DIVISION

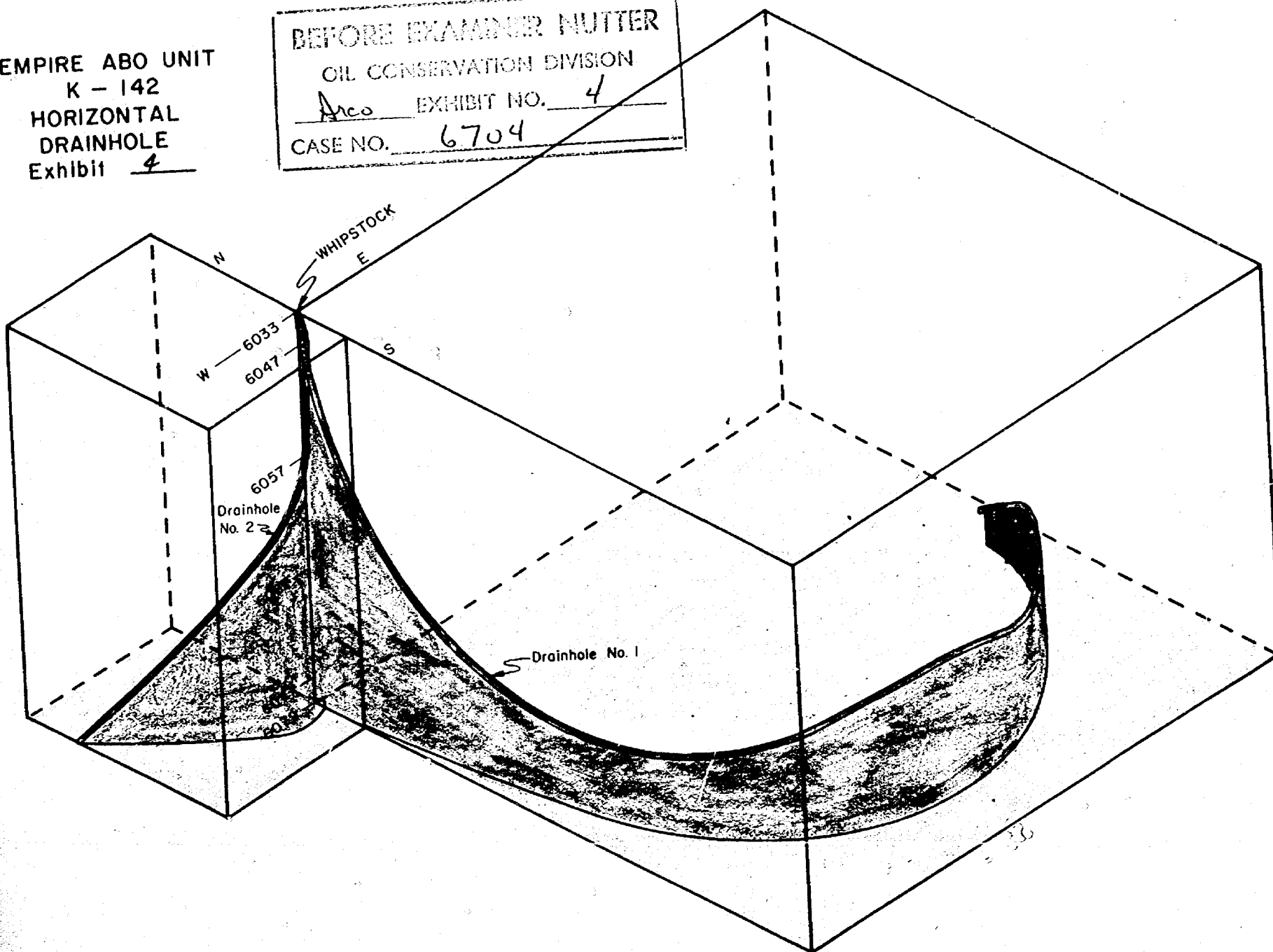
Aleo EXHIBIT NO. 3

CASE NO. 6704



EMPIRE ABO UNIT  
K - 142  
HORIZONTAL  
DRAINHOLE  
Exhibit 4

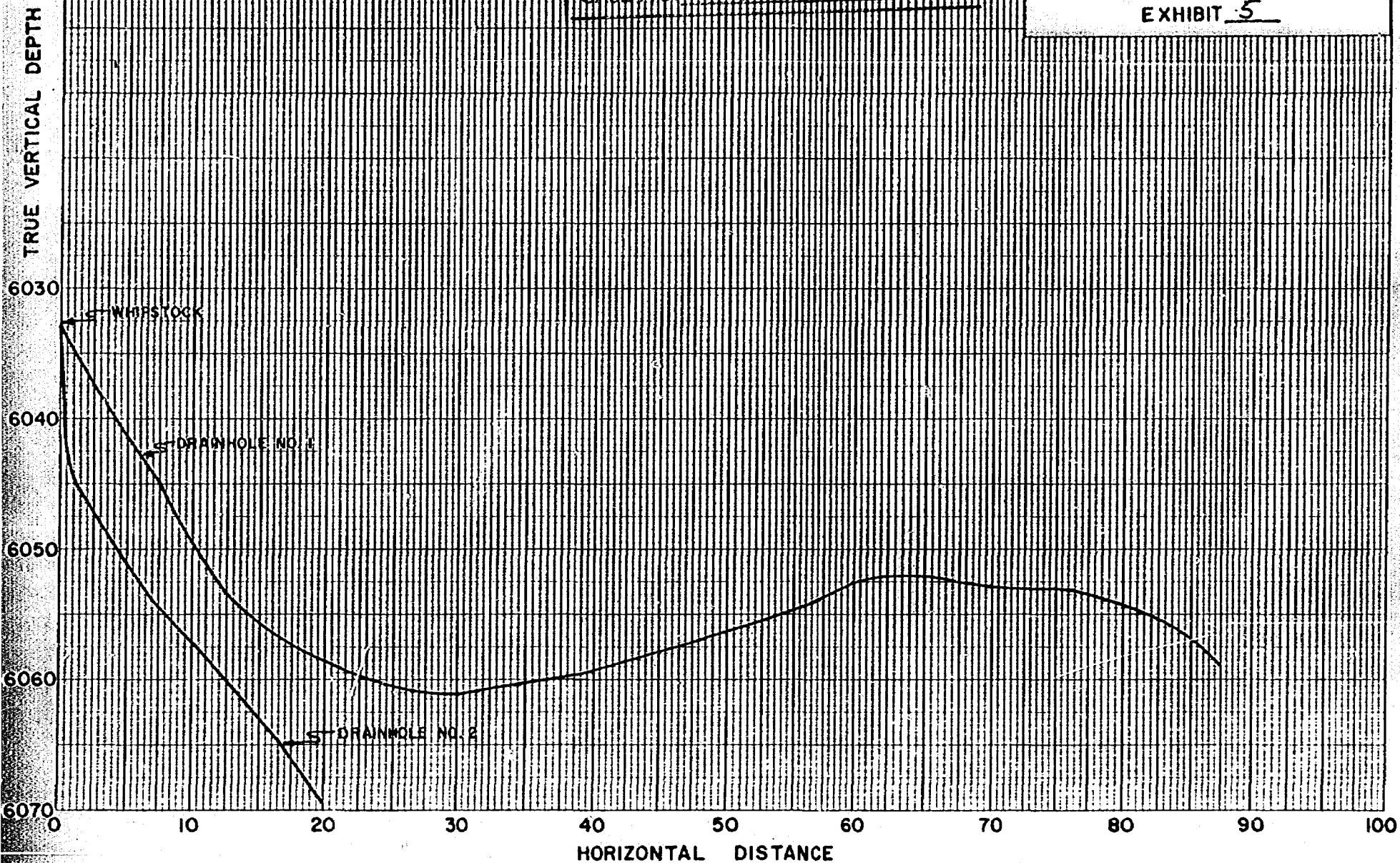
BEFORE EXAMINER NUTTER  
OIL CONSERVATION DIVISION  
Arco EXHIBIT NO. 4  
CASE NO. 6704



BEFORE EXAMINER HUTTER

OIL COMPANY DIVISION  
Wells Exhibit No. 5  
CASE NO. 6704

VERTICAL DISPLACEMENT OVER  
DRILLED PATH OF DRAINHOLE  
WELL NO. K-142  
EXHIBIT 5



46 1323

K-3 10 X 10 TO 1/2 INCH 2 X 10 INCHES  
KEUFFEL & ESSER CO. MADE IN U.S.A.

EMPIRE ABO UNIT  
K-142 HORIZONTAL DRAINHOLE  
CNL-FDC LOG W/ VERTICAL  
DISPLACEMENT OVER THE DRILLED PATH

#6

EXHIBIT NO. 6  
CASE NO. 6704

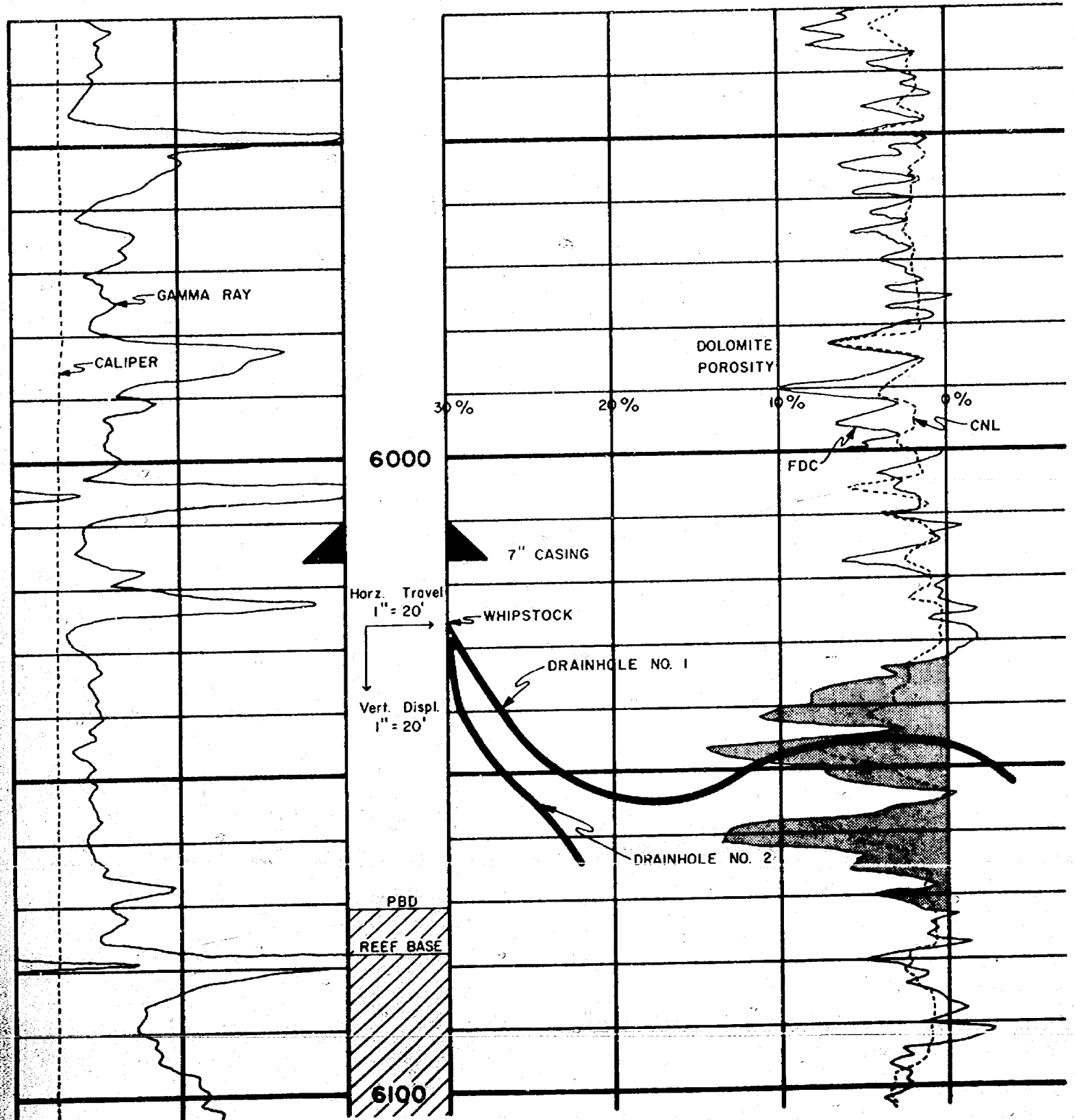


EXHIBIT 7  
EMPIRE ABO UNIT K-142  
DRAINHOLE NO. 1  
DIRECTIONAL SURVEY DATA

BEFORE EXAMINER NUTTER  
OIL CONSERVATION DIVISION  
EXHIBIT NO. 7  
CASE NO. 6704

Drilled Depth(FT)	Subsea TVD (FT)	Drift Angle (Deg )	Drift Direction (Deg)	Distance From Sur. Loc.	
				North (FT)	West (Ft)
6037	2499	4	N33°E	175	69
6041	2503	10	S1°W	175	69
6044	2506	15	S1°W	175	69
6059	2519	42	S5°E	168	68
6069	2524	63	S8°E	160	67
6082	2527	92	S16°E	148	65
6084	2527	96	S17°E	146	64
6107	2519	116	S87°E	133	48
6117	2516	98	N65°E	135	39
6132	2518	71	N33°E	145	28
6141	2523	54	N14°E	152	24
6143	2524	50	N9°E	153	24

Locations

Surface Location 1700' FSL & 1400' FWL, Sect. 2, T-18S, R-27E  
Whipstock 1875' FSL & 1331' FWL, Sect. 2, T-18S, R-27E  
Terminus of Drainhole No. 1 1853' FSL & 1376' FWL, Sect. 2, T-18S, R-27E

Note: Radius of curvature method used in all calculations.

**EXHIBIT 8**  
**EMPIRE ABO UNIT K-142**  
**DRAINHOLE NO. 2**  
**DIRECTIONAL SURVEY DATA**

BEFORE EXAMINER MUTTER  
OIL CONSERVATION DIVISION  
Area EXHIBIT NO. 8  
CASE NO. 6704

<u>Drilled Depth (Ft)</u>	<u>Subsea TVD (Ft)</u>	<u>Drift Angle (Deg)</u>	<u>Drift Direction (Deg)</u>	<u>Dist. From Surf. Loc.</u>	
				<u>North (Ft)</u>	<u>West (Ft)</u>
6037	2499	4	N33E	175	69
6041	2502	10	S30W	175	69
6051	2512	22	N84W	174	71
6056	2517	31	N69W	174	74
6080	2534	53	N20W	185	85

**Locations**

Surface Location	1700' FSL & 1400' FWL, Sect. 2, T-18S, R-27E
Whipstock	1875' FSL & 1331' FWL, Sect. 2, T-18S, R-27E
Terminus of Drainhole No. 2	1885' FSL & 1315' FWL, Sect. 2, T-18S, R-27E

**Note:** Radius of curvature method used in all calculations

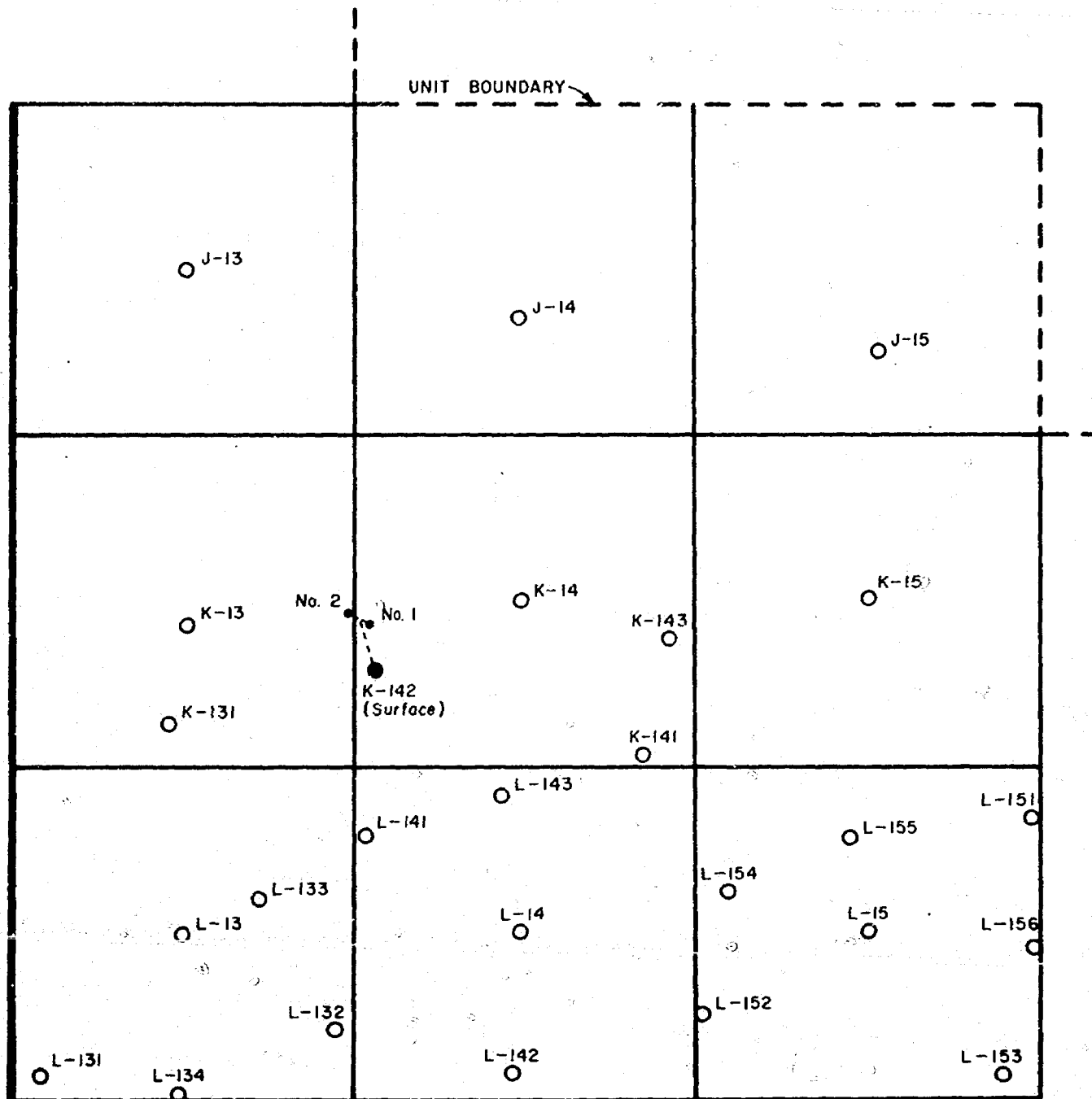
DEPARTMENT OF MINES AND GEOLGY

OIL CONSERVATION DIVISION

ARCO EXHIBIT NO. 2

CASE NO. 6704

EMPIRE ABO UNIT  
K-142 OFFSET WELLS  
Exhibit 2



0' 500' 1000'

EMPIRE ABO UNIT K-142

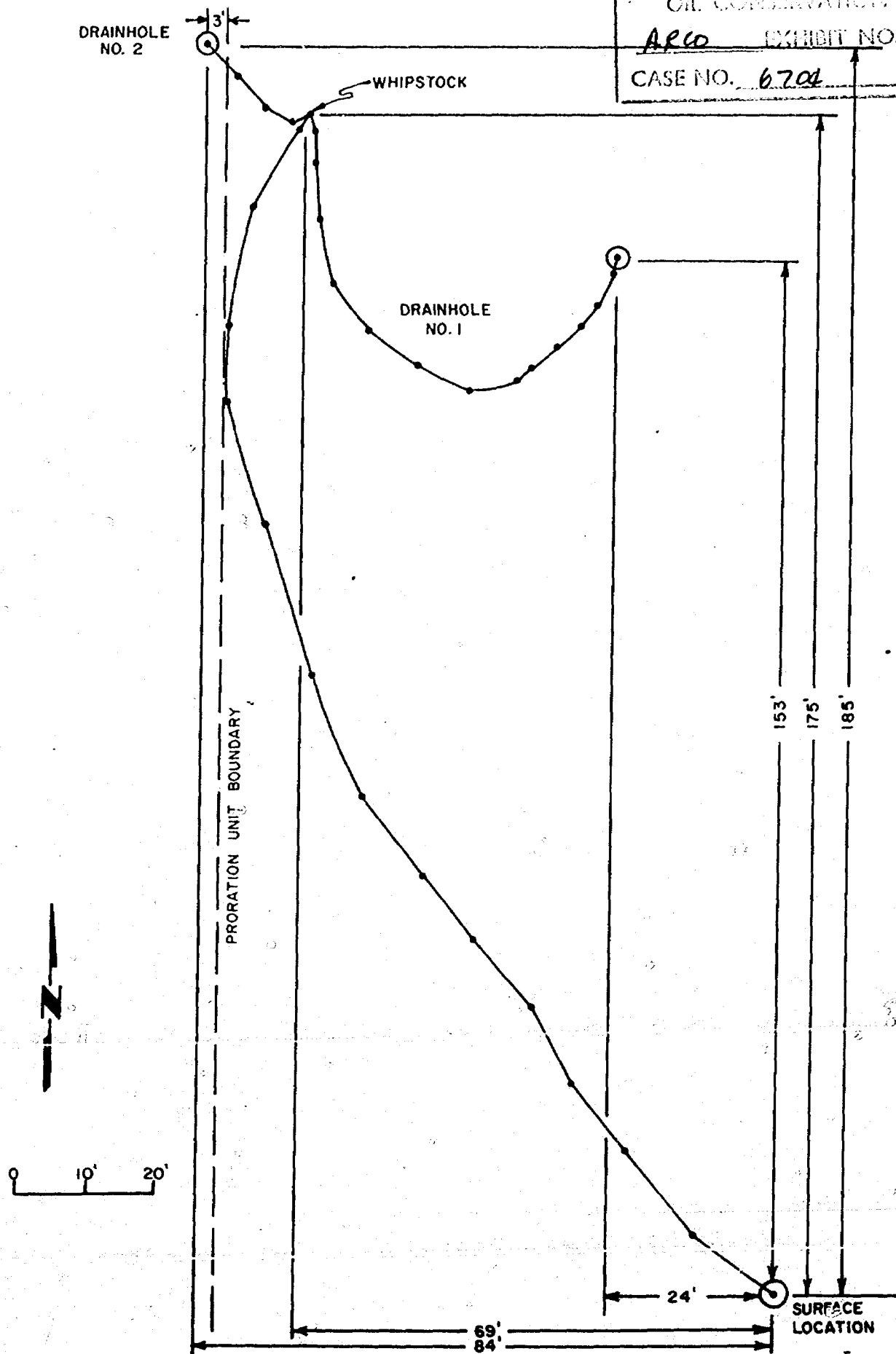
MAP VIEW  
EXHIBIT 3

DEPOSED WATER NUTTER

OIL CONSERVATION DIVISION

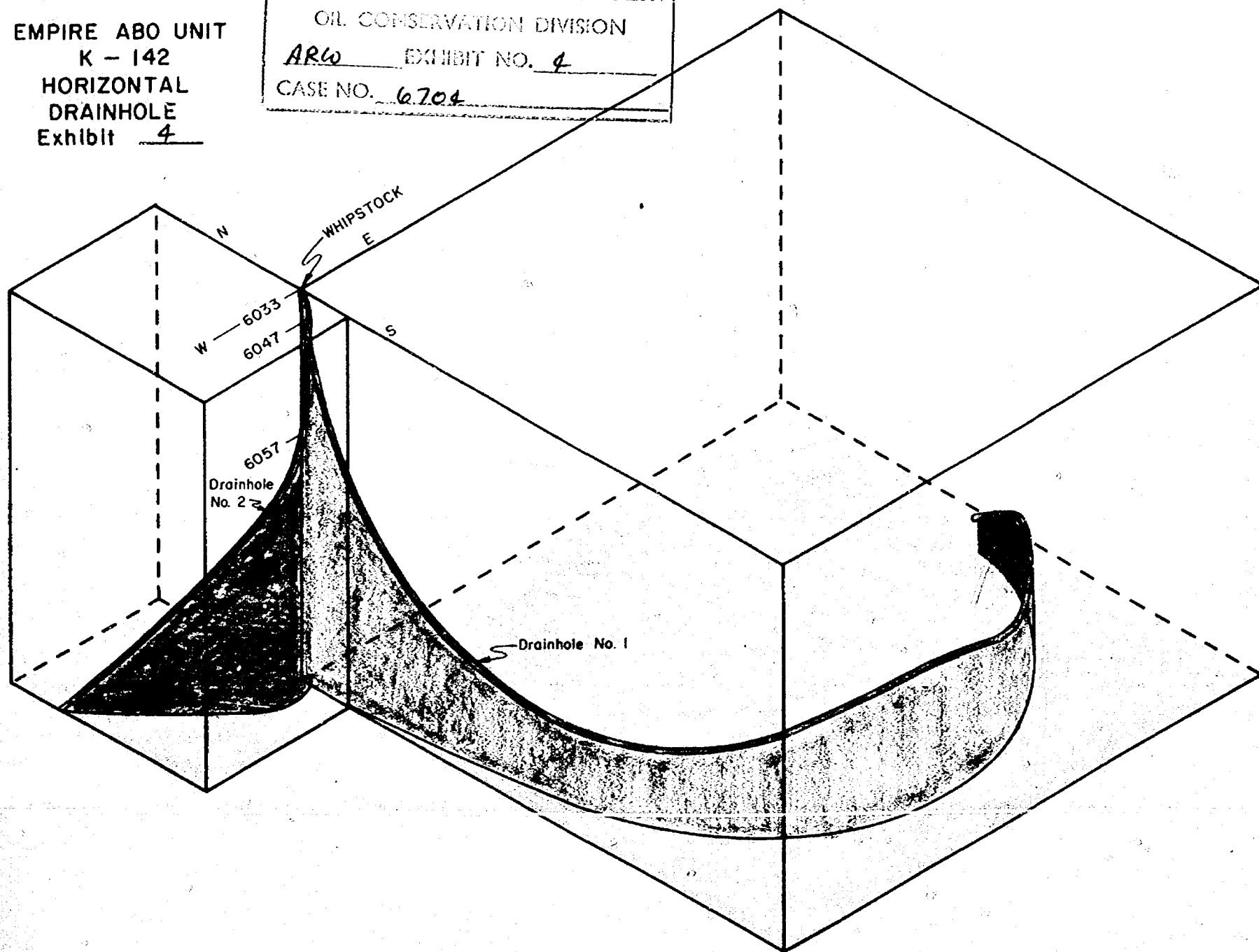
ARCO EXHIBIT NO. 3

CASE NO. 6704



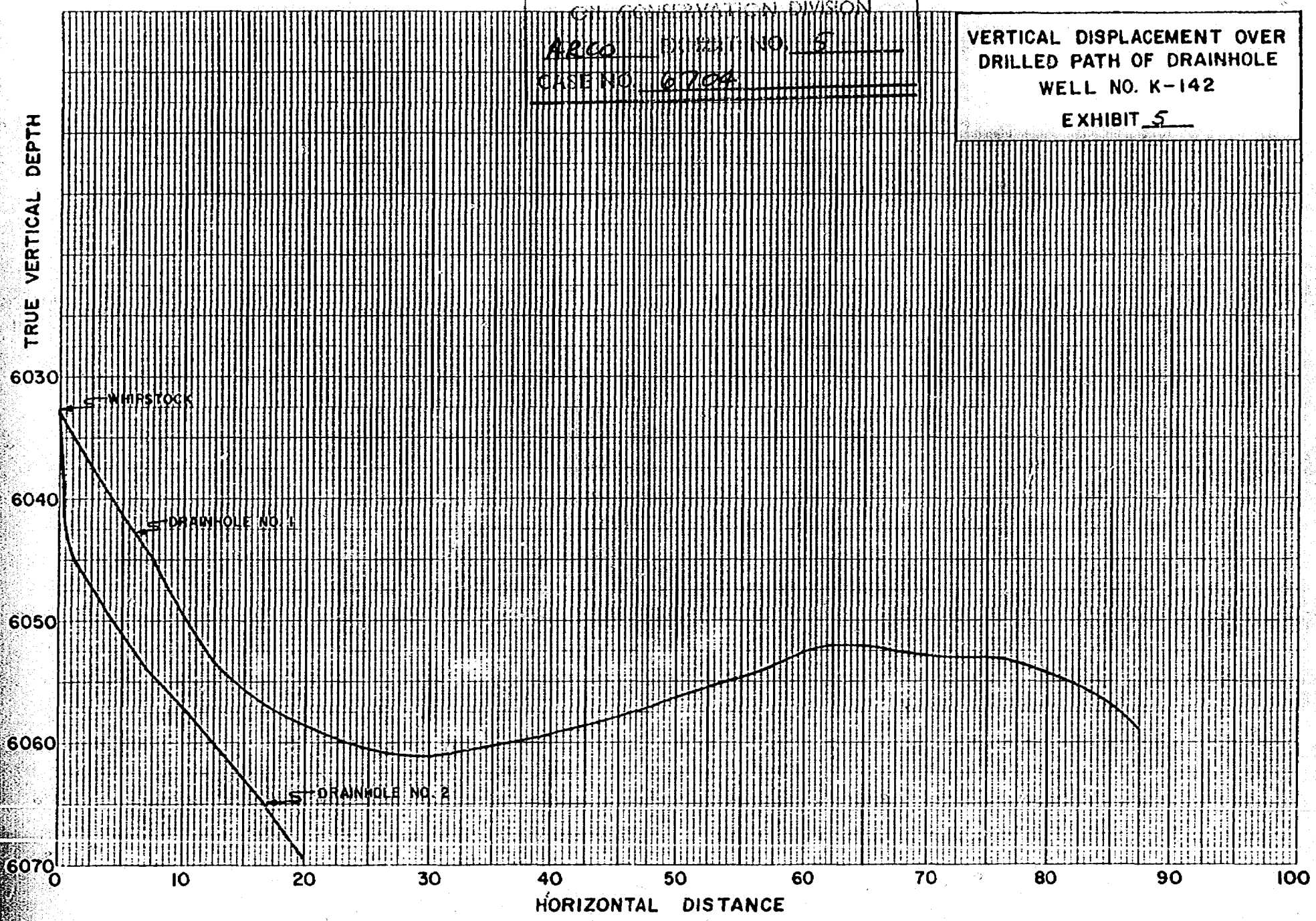
EMPIRE ABO UNIT  
K - 142  
HORIZONTAL  
DRAINHOLE  
Exhibit 4

BEFORE EXAMINER NUTTER,  
OIL CONSERVATION DIVISION  
ARW EXHIBIT NO. 4  
CASE NO. 6704



WATER  
CONSERVATION DIVISION  
ARCO DISTRICT NO. 6  
CASE NO. 6704

VERTICAL DISPLACEMENT OVER  
DRILLED PATH OF DRAINHOLE  
WELL NO. K-142  
EXHIBIT 5



46 1323

K-142 10 X 10 TO 1 INCH 7 X 10 INCHES  
KEUFFEL & ESSER CO. MADE IN U.S.A.

EMPIRE ABO UNIT  
K-142 HORIZONTAL DRAINHOLE  
CNL-FDC LOG W/ VERTICAL  
DISPLACEMENT OVER THE DRILLED PATH

#6

OIL CONSERVATION DIVISION

ARCO EXHIBIT NO. 6

CASE NO. 6704

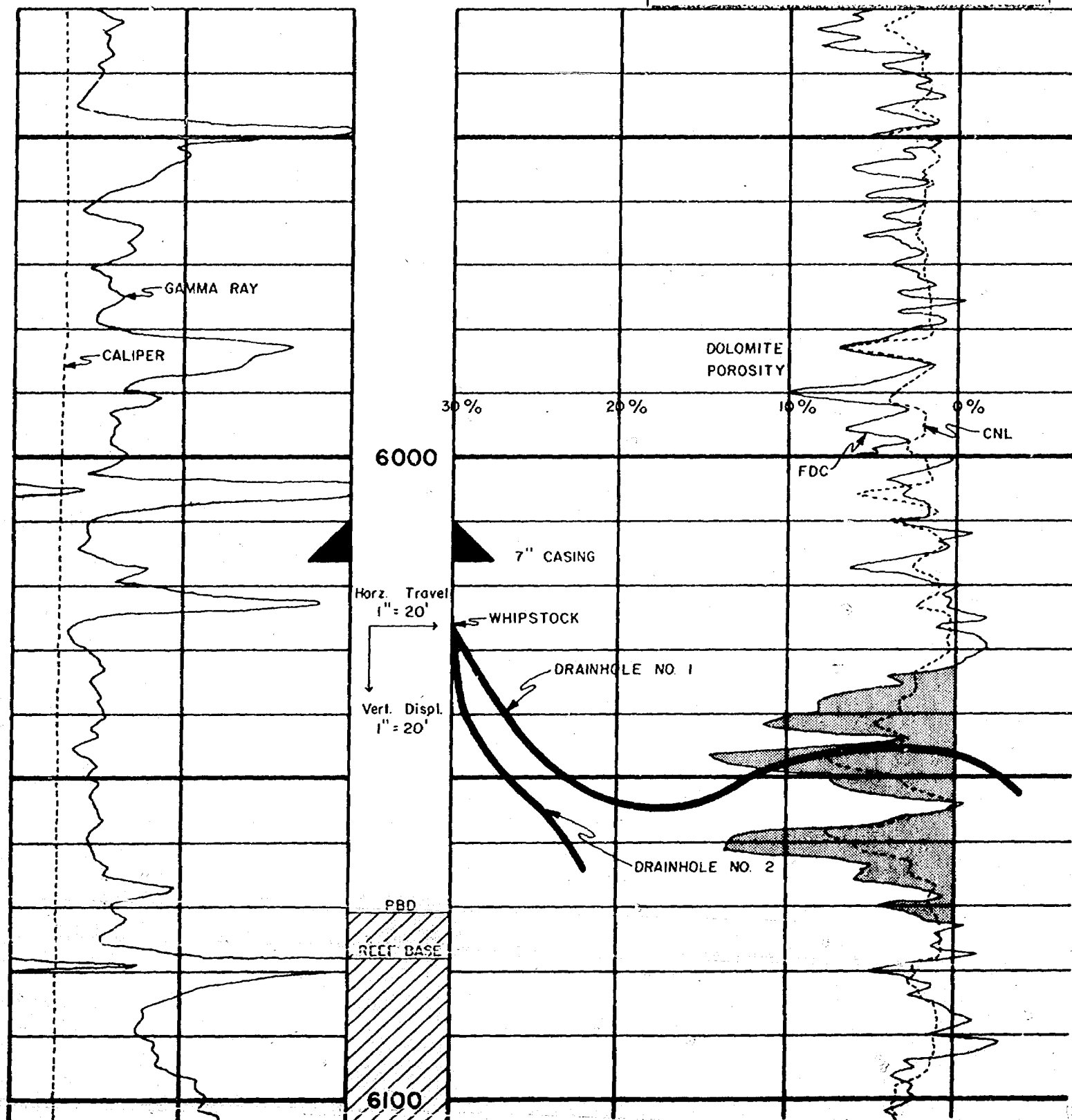


EXHIBIT # 7  
EMPIRE ABO UNIT K-142  
DRAINHOLE NO. 1  
DIRECTIONAL SURVEY DATA

BEFORE EXAMINER MUTTER  
OIL CONSERVATION DIVISION  
ARCO EXHIBIT NO. 7  
CASE NO. 6204

Drilled Depth(FT)	Subsea VD (FT)	Drift Angle (Deg )	Drift Direction (Deg)	Distance From Sur. Loc.	
				North (FT)	West (Ft)
6037	2499	4	N33°E	175	69
6041	2503	10	S1°W	175	69
6044	2506	15	S1°W	175	69
6059	2519	42	S5°E	168	68
6069	2524	63	S8°E	160	67
6082	2527	92	S16°E	148	65
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6117	2516	98	N65°E	135	39
6132	2518	71	N33°E	145	28
6141	2523	54	N14°E	152	24
6143	2524	50	N9°E	153	24

Locations

Surface Location 1700' FSL & 1400' FWL, Sect. 2, T-18S, R-27E  
Whipstock 1875' FSL & 1331' FWL, Sect. 2, T-18S, R-27E  
Terminus of Drainhole No. 1 1853' FSL & 1376' FWL, Sect. 2, T-18S, R-27E

Note: Radius of curvature method used in all calculations.

Potential:  
200 BOPD  
0 BWPD  
GOR 637

EXHIBIT #8  
EMPIRE ABO UNIT K-142  
DRAINHOLE NO. 2  
DIRECTIONAL SURVEY DATA

BEFORE EXAMINER NUTTER	
OIL CONSERVATION DIVISION	
ARCO	EXHIBIT NO. 8
CASE NO. 6704	

Drilled Depth (Ft)	Subsea TVD (Ft)	Drift Angle (Deg)	Drift Direction (Deg)	Dist. From Surf. Loc.	
				North (Ft)	West (Ft)
6037	2499	4	N33E	175	69
6041	2502	10	S30W	175	69
6051	2512	22	N84W	174	71
6056	2517	31	N69W	174	74
6080	2534	53	N20W	185	85

Locations

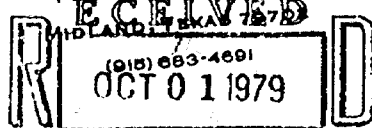
Surface Location	1700' FSL & 1400' FWL, Sect. 2, T-18S, R-27E
Whipstock	1875' FSL & 1331' FWL, Sect. 2, T-18S, R-27E
Terminus of Drainhole No. 2	1885' FSL & 1315' FWL, Sect. 2, T-18S, R-27E

Note: Radius of curvature method used in all calculations

LAW OFFICES  
HINKLE, COX, EATON, COFFIELD & HENSLEY

1000 FIRST NATIONAL BANK TOWER

POST OFFICE BOX 3580



OIL CONSERVATION DIVISION  
SANTA FE

OF COUNSEL  
CLARENCE E. HINKLE

W. E. BONDURANT, JR. (1914-1972)

ROSWELL, NEW MEXICO OFFICE  
600 HINKLE BUILDING  
(505) 622-6510

ONLY ATTYS. COFFIELD, MARTIN, BOZARTH,  
BOHANNON, FOSTER, ALLEN, ALLEN & BURFORD  
LICENSED IN TEXAS

LEWIS C. COX, JR.  
PAUL W. EATON, JR.  
CONRAD E. COFFIELD  
HAROLD L. HENSLEY, JR.  
STUART D. SHANOR  
C. D. MARTIN  
PAUL J. KELLY, JR.  
JAMES H. BOZARTH

DOUGLAS L. LUNSFORD  
PAUL M. BOHANNON  
J. DOUGLAS FOSTER  
K. DOUGLAS PERRIN  
C. RAY ALLEN  
JACQUELINE W. ALLEN  
T. CALDER EZZELL, JR.  
WILLIAM B. BURFORD  
JOHN B. NELSON  
RICHARD E. OLSON

September 28, 1979

Mr. Dan Nutter  
Chief Engineer  
Oil Conservation Division  
Post Office Box 2088  
Santa Fe, New Mexico 87501

Re: Arco Oil & Gas Company  
Application for Amendment  
to Division Order R-6044

Dear Dan:

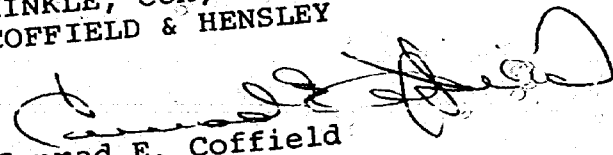
Transmitted herewith you will find triplicate executed copies of an Application for Arco Oil & Gas Company for the amendment of Oil Conservation Division Order R-6044 as to target area, bottom hole depths and locations, and to permit production from Well K-142 using two drainholes.

It is my understanding that the docket setting for October 17, 1979 is still available for this matter, and accordingly, we request that it be heard on that date.

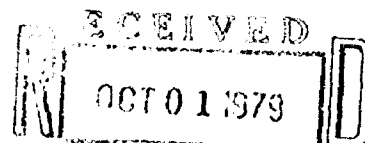
I trust that the enclosed copies of the Application are all that is needed in order for this to be set for the October 17 hearing. However, if anything is needed in addition, please let me know.

Very truly yours,

HINKLE, COX, EATON,  
COFFIELD & HENSLEY

  
Conrad E. Coffield

CEC:rh  
Enclosures



BEFORE THE OIL CONSERVATION DIVISION  
OF  
THE DEPARTMENT OF ENERGY AND MINERALS  
STATE OF NEW MEXICO

Case 6704

APPLICATION OF ARCO OIL AND GAS COMPANY, )  
DIVISION OF ATLANTIC RICHFIELD COMPANY, )  
UNIT OPERATOR OF THE EMPIRE ABO UNIT, )  
TO AMEND DIVISION ORDER NO. R-6044 AS TO )  
TARGET AREA, BOTTOM HOLE DEPTHS AND )  
LOCATIONS, AND TO PERMIT PRODUCTION FROM )  
WELL K-142 USING TWO DRAINHOLES )

APPLICATION

Comes ARCO Oil & Gas Company, a Division of Atlantic Richfield Company, Unit Operator of the Empire Abo Unit, Eddy County, New Mexico, acting by and through the undersigned attorneys, and hereby makes application to amend Division Order No. R-6044, Case No. 6572, as to target area, bottom hole depths and locations, and to permit production from Unit Well K-142 using two drainholes in the Abo formation, Empire Abo Pressure Maintenance Project as approved by Orders R-4549, R-4549A, R-4549B, R-4549C, R-4549D, and in support thereof respectfully shows:

1. The Oil Conservation Division, Department of Energy and Minerals, of the State of New Mexico, granted approval of the Empire Abo Unit Agreement by Order R-4548, dated June 15, 1973, and granted approval of the ARCO - Empire Abo Unit Pressure Maintenance Project by Order R-4549 also dated June 15, 1973, as subsequently amended by Order R-4549A, dated January 15, 1974, Order R-4549B, dated April 30, 1974, Order R-4549C, dated July 1, 1975, and Order R-4549D, dated November 17, 1975.

2. The Oil Conservation Division previously issued approval for a standard conventional completion of the subject Unit Well K-142, under Administrative Order NSL-999, dated December 12, 1978. Well location is 1700' FSL and 1400' FWL, Section 2, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico.

3. The Oil Conservation Division, by Order R-6044, Case No. 6572, dated June 26, 1979, previously approved the completion of the K-142 Well as a horizontal drainhole extending in a southeasterly direction from the surface location.

4. That due to the qualities of the subsurface rock formations and the experimental nature of the techniques of horizontal drilling, two drainholes were actually drilled, both situated to the northwest of the surface location of the K-142 Well. Applicant has drilled a conventional hole through the Abo Reef, logged, tested, and set casing to a point below the gas-oil contact. Whipstock was set and the two drainholes were drilled, one 43 feet, the other 106 feet long.

5. That Applicant will report to the Division as to the depth and location of the terminus of each drainhole, as well as other pertinent information.

6. That, if successfully completed and produced, these drainholes should result in recovery of additional oil over and above what is expected from current operations.

7. Applicant requests permission to complete and produce the Unit K-142 through these drainholes.

8. In the opinion of applicant, said drainholes as outlined in this application, are in the interest of conservation, prevention of waste, the protection of correlative rights and will tend to promote the greatest recovery of oil and gas from the unitized area.

9. Applicant requests that this matter be set for hearing at the Examiner's hearing to be held on October 17, 1979.

Respectfully submitted,

HINKLE, COX, EATON,  
COFFIELD & HENSLEY

By:



Conrad E. Coffield  
Post Office Box 3580  
Midland, Texas 79702  
Attorneys for ARCO Oil & Gas Company

RECEIVED  
OCT 01 1979  
OIL CONSERVATION DIVISION

BEFORE THE OIL CONSERVATION DIVISION OF  
THE DEPARTMENT OF ENERGY AND MINERALS  
STATE OF NEW MEXICO

APPLICATION OF ARCO OIL AND GAS COMPANY, )  
DIVISION OF ATLANTIC RICHFIELD COMPANY, )  
UNIT OPERATOR OF THE EMPIRE ABO UNIT, )  
TO AMEND DIVISION ORDER NO. R-6044 AS TO )  
TARGET AREA, BOTTOM HOLE DEPTHS AND )  
LOCATIONS, AND TO PERMIT PRODUCTION FROM )  
WELL K-142 USING TWO DRAINHOLES )

Case 6704

APPLICATION

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1. The Oil Conservation Division, Department of Energy and Minerals, of the State of New Mexico, granted approval of the Empire Abo Unit Agreement by Order R-4548, dated June 15, 1973, and granted approval of the ARCO - Empire Abo Unit Pressure Maintenance Project by Order R-4549 also dated June 15, 1973, as subsequently amended by Order R-4549A, dated January 15, 1974, Order R-4549B, dated April 30, 1974, Order R-4549C, dated July 1, 1975, and Order R-4549D, dated November 17, 1975.

2. The Oil Conservation Division previously issued approval for a standard conventional completion of the subject Unit Well K-142, under Administrative Order NSL-999, dated December 12, 1978. Well location is 1700' FSL and 1400' FWL, Section 2, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico.

3. The Oil Conservation Division, by Order R-6044, Case No. 6572, dated June 26, 1979, previously approved the completion of the K-142 Well as a horizontal drainhole extending in a southeasterly direction from the surface location.

4. That due to the qualities of the subsurface rock formations and the experimental nature of the techniques of horizontal drilling, two drainholes were actually drilled, both situated to the northwest of the surface location of the K-142 Well. Applicant has drilled a conventional hole through the Abo Reef, logged, tested, and set casing to a point below the gas-oil contact. Whipstock was set and the two drainholes were drilled, one 43 feet, the other 106 feet long.

5. That Applicant will report to the Division as to the depth and location of the terminus of each drainhole, as well as other pertinent information.

6. That, if successfully completed and produced, these drainholes should result in recovery of additional oil over and above what is expected from current operations.

7. Applicant requests permission to complete and produce the Unit K-142 through these drainholes.

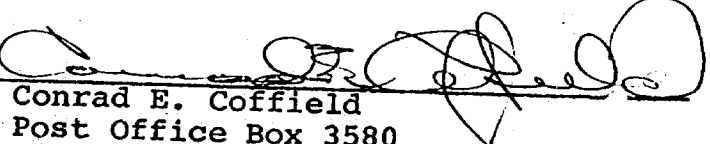
8. In the opinion of applicant, said drainholes as outlined in this application, are in the interest of conservation, prevention of waste, the protection of correlative rights and will tend to promote the greatest recovery of oil and gas from the unitized area.

9. Applicant requests that this matter be set for hearing at the Examiner's hearing to be held on October 17, 1979.

Respectfully submitted,

HINKLE, COX, EATON,  
COFFIELD & HENSLEY

By:

  
Conrad E. Coffield  
Post Office Box 3580  
Midland, Texas 79702  
Attorneys for ARCO Oil & Gas Company

RECEIVED  
OCT 01 1979  
OIL CONSERVATION DIVISION  
SANTA FE

BEFORE THE OIL CONSERVATION DIVISION OF  
THE DEPARTMENT OF ENERGY AND MINERALS  
STATE OF NEW MEXICO

APPLICATION OF ARCO OIL AND GAS COMPANY, )  
DIVISION OF ATLANTIC RICHFIELD COMPANY, )  
UNIT OPERATOR OF THE EMPIRE ABO UNIT, )  
TO AMEND DIVISION ORDER NO. R-6044 AS TO )  
TARGET AREA, BOTTOM HOLE DEPTHS AND )  
LOCATIONS, AND TO PERMIT PRODUCTION FROM )  
WELL K-142 USING TWO DRAINHOLES )

Case 6704

APPLICATION

Comes ARCO Oil & Gas Company, a Division of Atlantic Richfield Company, Unit Operator of the Empire Abo Unit, Eddy County, New Mexico, acting by and through the undersigned attorneys, and hereby makes application to amend Division Order No. R-6044, Case No. 6572, as to target area, bottom hole depths and locations, and to permit production from Unit Well K-142 using two drainholes in the Abo formation, Empire Abo Pressure Maintenance Project as approved by Orders R-4549, R-4549A, R-4549B, R-4549C, R-4549D, and in support thereof respectfully shows:

1. The Oil Conservation Division, Department of Energy and Minerals, of the State of New Mexico, granted approval of the Empire Abo Unit Agreement by Order R-4548, dated June 15, 1973, and granted approval of the ARCO - Empire Abo Unit Pressure Maintenance Project by Order R-4549 also dated June 15, 1973, as subsequently amended by Order R-4549A, dated January 15, 1974, Order R-4549B, dated April 30, 1974, Order R-4549C, dated July 1, 1975, and Order R-4549D, dated November 17, 1975.
2. The Oil Conservation Division previously issued approval for a standard conventional completion of the subject Unit Well K-142, under Administrative Order NSL-999, dated December 12, 1978. Well location is 1700' FSL and 1400' FWL, Section 2, Township 18 South, Range 27 East, N.M.P.M., Eddy County, New Mexico.
3. The Oil Conservation Division, by Order R-6044, Case No. 6572, dated June 26, 1979, previously approved the completion of the K-142 Well as a horizontal drainhole extending in a southeasterly direction from the surface location.
4. That due to the qualities of the subsurface rock formations and the experimental nature of the techniques of horizontal drilling, two drainholes were actually drilled, both situated to the northwest of the surface location of the K-142 Well. Applicant has drilled a conventional hole through the Abo Reef, logged, tested, and set casing to a point below the gas-oil contact. Whipstock was set and the two drainholes were drilled, one 43 feet, the other 106 feet long.
5. That Applicant will report to the Division as to the depth and location of the terminus of each drainhole, as well as other pertinent information.
6. That, if successfully completed and produced, these drainholes should result in recovery of additional oil over and above what is expected from current operations.

7. Applicant requests permission to complete and produce the Unit K-142 through these drainholes.

8. In the opinion of applicant, said drainholes as outlined in this application, are in the interest of conservation, prevention of waste, the protection of correlative rights and will tend to promote the greatest recovery of oil and gas from the unitized area.

9. Applicant requests that this matter be set for hearing at the Examiner's hearing to be held on October 17, 1979.

Respectfully submitted,

HINKLE, COX, EATON,  
COFFIELD & HENSLEY

By: 

Conrad E. Coffield  
Post Office Box 3580  
Midland, Texas 79702  
Attorneys for ARCO Oil & Gas Company

Dockets Nos. 41-79 and 42-79 are tentatively set for October 31 and November 14, 1979. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - OCTOBER 17, 1979

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM,  
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

- ALLOWABLE: (1) Consideration of the allowable production of gas for November, 1979, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.
- (2) Consideration of the allowable production of gas for November, 1979, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6693: Application of Yates Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Pennsylvanian test well to be located 1130 feet from the South line and 1300 feet from the East line of Section 30, Township 17 South, Range 26 East, the S/2 of said Section 30 to be dedicated to the well.

CASE 6694: Application of Yates Petroleum Corporation for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp-Pennsylvanian formations underlying the S/2 of Section 35, Township 18 South, Range 25 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6695: Application of Millard Deck Oil Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an 80-acre non-standard gas proration unit comprising the NE/4 NW/4 and NW/4 NE/4 of Section 36, Township 24 South, Range 36 East, Jalmat Gas Pool, to be dedicated to a well to be drilled at a standard location thereon.

CASE 6696: Application of R. Q. Silverthorne for an unorthodox oil well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Yates test well to be drilled 1310 feet from the South and West lines of Section 30, Township 18 South, Range 31 East, Shugart Pool.

CASE 6697: Application of Conoco Inc. for an unorthodox location and dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Wells B-1 Well No. 5 at an unorthodox Devonian location 1650 feet from the North line and 660 feet from the East line of Section 1, Township 25 South, Range 36 East, to produce gas from the Devonian and Ellenburger formations, Custer Field, thru parallel strings of tubing, the E/2 of said Section 1 to be dedicated to the well.

CASE 6671: (Continued from October 2, 1979, Examiner Hearing)

Application of Chapman and Schneider for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the Seven Rivers Reef formation in the open-hole interval from 3422 feet to 3504 feet in its I. B. Ogg "A" Well No. 3 located in Unit E of Section 35, Township 24 South, Range 36 East, Jalmat Pool.

CASE 6698: Application of Stevens Oil Company for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the San Andres formation underlying the NE/4 SW/4 of Section 30, Township 8 South, Range 29 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 6699: Application of Robert C. Anderson for two unorthodox gas well locations, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of his Ute Mountain Ute Well No. 1 located in the center of Unit L, and Well No. 3, located 2310 feet from the North and West lines, both in Section 14, Township 31 North, Range 16 West, the SW/4 of said Section 14 to be dedicated to Well No. 1 and the NW/4 to be dedicated to Well No. 3.

CASE 6680: (Continued from October 2, 1979, Examiner Hearing)

Application of Robert C. Anderson for surface commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the surface commingling of all production from his Ute Mountain Ute Lease, Wells Nos. 1, 3 and 4, located in Section 14, Township 31 North, Range 16 West.

CASE 6631: (Continued from August 22, 1979, Examiner Hearing)

Application of Reserve Oil, Inc. for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Jalmat gas and Langlie Mattix oil production in the wellbore of its Cooper Jal Unit Well No. 149-306 located in Unit J of Section 18, Township 24 South, Range 37 East.

CASE 6700: Application of Doyle Hartman for an unorthodox well location, a non-standard proration unit, and approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 120-acre non-standard proration unit comprising the NW/4 NW/4 and S/2 NW/4 of Section 29, Township 25 South, Range 37 East, Jalmat Gas Pool, to be dedicated to a well to be drilled at an unorthodox location 2310 feet from the North line and 330 feet from the West line of said Section 29; applicant further seeks a waiver of existing well spacing requirements and a finding that the drilling of said well is necessary to effectively and efficiently drain that portion of the existing proration unit which cannot be so drained by the existing well.

CASE 6701: Application of Doyle Hartman for compulsory pooling, non-standard gas proration unit, unorthodox well location, and approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Seven Rivers-Queen formations underlying the SE/4 of Section 30, Township 21 South, Range 36 East, Eumont Gas Pool, to form a 160-acre non-standard gas proration unit to be dedicated to his J. K. Rector Well No. 1 at an unorthodox location 2310 feet from the South line and 330 feet from the East line of said Section 30. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the well and a charge for risk involved in drilling said well. Applicant further seeks a waiver of existing well spacing requirements and a finding that the drilling of said well is necessary to effectively and efficiently drain that portion of the existing proration unit which cannot be so drained by the existing well.

CASE 6676: (Continued from October 2, 1979, Examiner Hearing)

Application of Doyle Hartman for an unorthodox well location and a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an 80-acre non-standard gas proration unit comprising the SW/4 NE/4 and SE/4 NW/4 of Section 36, Township 24 South, Range 36 East, Jalmat Gas Pool, to be dedicated to a well to be drilled at an unorthodox location 2310 feet from the North line and 1650 feet from the East line of said Section 36.

CASE 6664: (Continued from September 19, 1979, Examiner Hearing)

Application of Doyle Hartman for an unorthodox well location, two non-standard proration units and approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 40-acre non-standard proration unit comprising the NW/4 SW/4 of Section 27, Township 25 South, Range 37 East, Jalmat Pool, to be dedicated to El Paso Natural Gas Company's Harrison Well No. 1, and also a 120-acre unit comprising the E/2 SW/4 and SW/4 SW/4 of said Section 27 to be dedicated to a well to be drilled at an unorthodox location 330 feet from the South and West lines of the section; applicant further seeks a waiver of existing well spacing requirements and a finding that the drilling of said well is necessary to effectively and efficiently drain that portion of an existing proration unit which cannot be so drained by the existing well.

CASE 6662: (Continued from September 19, 1979, Examiner Hearing)

Application of Supron Energy Corporation for a dual completion and downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Jicarilla "A" Well No. 22Y located in Unit K of Section 24, Township 26 North, Range 4 West, to produce gas from the Blanco Mesaverde Pool through tubing and to commingle and produce the Wildhorse Gallup and Basin-Dakota zones through a parallel tubing string.

CASE 6702: Application of El Paso Natural Gas Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of South Blanco-Pictured Cliffs and Blanco Mesaverde production in the wellbore of its San Juan 27-5 Unit Well No. 67 located in Unit B of Section 31, Township 27 North, Range 5 West.

CASE 6487: (Continued from July 25, 1979, Examiner Hearing)

Application of El Paso Natural Gas Company for approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a waiver of existing well-spacing requirements and a finding that the drilling of its Shell E State Com Well No. 2 located in Unit N of Section 6, Township 21 South, Range 36 East, Eumont Gas Pool, Lea County, New Mexico, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well.

CASE 6679: (Continued from October 2, 1979, Examiner Hearing)

Application of El Paso Natural Gas Company for a gas storage unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Washington Ranch Morrow Unit Area comprising the Morrow formation and the first 100 feet immediately above and below said formation underlying all or parts of Sections 21 thru 23, 26 thru 29, and 32 thru 36, Township 25 South, Range 24 East; Sections 1 thru 5 and 9 thru 14, Township 26 South, Range 24 East; and Sections 6, 7, and 18, Township 26 South, Range 25 East, Washington Ranch-Morrow Gas Pool, Eddy County, New Mexico. Said unit area would be for the purpose of conducting a gas storage project and would comprise 12,150 acres, more or less, of State, federal and fee lands.

CASE 6703: Application of El Paso Natural Gas Company for underground gas storage, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a gas storage project in the Morrow formation underlying its Washington Ranch Morrow Unit Area in Townships 25 and 26 South, Ranges 24 and 25 East, Washington Ranch-Morrow Gas Pool. Applicant further seeks the promulgation of rules governing the drilling and completion of wells going thru the Morrow formation and the first 100 feet immediately above and below said formation underlying the unit area into deeper formations, and the establishment of an administrative procedure for the consideration of exceptions to the Division's well spacing and casing and tubing requirements for its injection and withdrawal wells.

CASE 6704: Application of ARCO Oil and Gas Company for the amendment of Order No. R-6044, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Division Order No. R-6044 which authorized the drilling of a horizontal drainhole in the Empire-Abo Pool. Applicant proposes to amend the target area prescribed by said order for the drainhole.

CASE 6705: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating and extending certain pools in Chaves, Eddy, Lea, and Roosevelt Counties, New Mexico:

(a) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Southwest Indian Flats-Morrow Gas Pool. The discovery well is Perry R. Bass Big Eddy Unit Well No. 68 located in Unit K of Section 10, Township 22 South, Range 28 East, NMPM. Said pool would comprise:

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM  
Section 10: W/2

(b) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Atoka-Morrow production and designated as the South Kemnitz Atoka-Morrow Gas Pool. The discovery well is Tenneco Oil Company Kemnitz Deep Well No. 1 located in Unit C of Section 29, Township 16 South, Range 34 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 34 EAST, NMPM  
Section 29: E/2

(c) EXTEND the Anderson Ranch-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 32 EAST, NMPM  
Section 3: S/2

(d) EXTEND the Angell Ranch-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM  
Section 30: S/2

(e) EXTEND the Antelope Ridge-Atoka Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM  
Section 23: S/2

- (f) EXTEND the East Atoka-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM  
Section 22: S/2  
Section 23: S/2  
Section 28: E/2

- (g) EXTEND the Box Canyon-Permo Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 22 EAST, NMPM  
Section 7: S/2  
Section 18: N/2

- (h) EXTEND the Bluit-San Andres Associated Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 37 EAST, NMPM  
Section 22: NE/4

- (i) EXTEND the Boyd-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 24 EAST, NMPM  
Section 12: W/2

- (j) EXTEND the South Brunson-Abso Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 38 EAST, NMPM  
Section 30: NE/4

- (k) EXTEND the Cato-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 30 EAST, NMPM  
Section 4: NW/4

- (l) EXTEND the North Cemetery-Wolfcamp Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 25 EAST, NMPM  
Section 18: All

- (m) EXTEND the Chaveroo-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 32 EAST, NMPM  
Section 3: NW/4

- (n) EXTEND the South Culebra Bluff-Atoka Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM  
Section 34: E/2

- (o) EXTEND the Diamond Mound-Atoka Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 27 EAST, NMPM  
Section 11: All

- (p) EXTEND the Drinkard Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM  
Section 18: SW/4

- (q) EXTEND the Eagle Creek-Permo Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM  
Section 36: N/2

- (r) EXTEND the South Empire-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM  
Section 19: N/2

- (s) EXTEND the South Eunice-San Andres Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM  
Section 12: SW/4

- (t) EXTEND the East Grama Ridge-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM  
Section 35: N/2  
Section 36: N/2

TOWNSHIP 22 SOUTH, RANGE 34 EAST, NMPM  
Section 2: SW/4

- (u) EXTEND the Imperial Tubb-Drinkard Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM  
Section 22: SW/4

- (v) EXTEND the West Indian Basin-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 22 EAST, NMPM  
Section 14: W/2

- (w) EXTEND the Kemnitz-Cisco Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 34 EAST, NMPM  
Section 8: SE/4  
Section 9: SW/4

- (x) EXTEND the Langlie-Ellenburger Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 36 EAST, NMPM  
Section 20: E/2

- (y) EXTEND the Langlie Mattix Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM  
Section 32: SW/4

- (z) EXTEND the North Loving-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM  
Section 8: S/2  
Section 16: E/2

- (aa) EXTEND the Penasco Draw-Atoka Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 25 EAST, NMPM  
Section 21: W/2

- (bb) EXTEND the Penasco Draw-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 24 EAST, NMPM  
Section 25: S/2  
Section 36: All

- (cc) EXTEND the Penasco Draw San Andres-Yeso Associated Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 25 EAST, NMPM  
Section 31: SE/4

- (dd) EXTEND the South Peterson-Fusselman Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 5 SOUTH, RANGE 33 EAST, NMPM  
Section 30: SE/4

- (ee) EXTEND the South Peterson-Pennsylvanian Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 5 SOUTH, RANGE 33 EAST, NMPM  
Section 31: N/2 SE/4 and S/2 NE/4

(ff) EXTEND the Red Lake-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM  
Section 31: W/2

(gg) EXTEND the Shugart-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM  
Section 27: W/2  
Section 33: E/2  
Section 34: W/2 and SE/4  
Section 35: All

(hh) EXTEND the North Teague-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM  
Section 21: NE/4

(ii) EXTEND the Tomahawk-San Andres Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 7 SOUTH, RANGE 32 EAST, NMPM  
Section 31: SW/4

(jj) EXTEND the Travis-Upper Pennsylvanian Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM  
Section 13: N/2 S/2

K-182 Drilling here

100 BOPD Sub E 7k  
70 BOPD

vert portion drifted NW  
more than expected.  
(never more than 4°)

Whipstock, 188 NW of surf  
location

Drainable - drilled two  
Whipstock jumped

106' longest one to SE E  
curved around to SE

Bottom ended 50' to SE  
of Whipstock loc.

Other one started to SE

turned N @ NW

18.3 NW of Whipstock loc

tried for 21 rad

took 28° to turn vert to horiz

had to quit longest hole

11 to 12° L of S

was going down

tried to turn up

application of ARCO Oil  
and Gas Co for the  
amendment of Order No  
R-6044 Eddy County  
N.Mex.

Applicant, in the above-styled  
cause, seeks the amendment  
of Division Order No R-6044  
which authorized the  
drilling of a horizontal  
drainhole in the Empire Gas  
Pool. Applicant proposes  
to amend the target  
area prescribed by said  
order for the drainhole.

surf  
1700 FSL 1400 FWL TVD  
Whipstock 6040.5'  
1875 FSL 1331 FWL

Drainhole #1  
subpoint TVD  
1853 1376 6059'

Drainhole #2 (43) true vert depth  
1885 1315 6068'

32 N 11 E

McE. BLM

1/4 mile north of river

ROUGH

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 6704

Order No. R-6044-A

APPLICATION OF ARCO Oil and Gas  
Company for the amendment of  
Order No. R-6044, Eddy County,  
New Mexico.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 17,  
19 79, at Santa Fe, New Mexico, before Examiner DBN.

NOW, on this October day of 1979, the  
Division Director, having considered the testimony, the record,  
and the recommendations of the Examiner, and being fully advised  
in the premises,

FINDS:

(1) That due public notice having been given as required  
by law, the Division has jurisdiction of this cause and the  
subject matter thereof.

(2) That by Division Order No. R-6044, dated  
June 26, 1979, ARCO Oil and Gas Company was authorized  
to complete its Empire Abo Unit Well No.

K-142, the surface location of which is 1700 feet from the  
South line and 1400 feet from the West line of Section 2, Town-  
ship 18 South, Range 27 East, NMPM, Empire-Abo Pool, Eddy  
County, New Mexico, in such a manner as to provide a 200-foot  
horizontal drainhole beneath the gas-oil contact in the Abo  
Reef, extending in a southeasterly direction from the surface  
location.

(3) That due to certain technical problems the subject  
well was not bottomed as specified above, and the  
applicant seeks the amendment of Order No. R-6044  
to reflect the <sup>actual</sup> bottom line location of the drain hole.

(4) That said drainhole is located well within the  
boundaries of the Empire Abo Unit and will in no  
way impair the production rights of other owners in the  
pool nor will it cause waste.

(5) That Order No. R-6044 should be amended to  
reflect the actual bottom line location of the drainhole  
and this may best be accomplished by amending  
Order (1) on Page 2 of said Order No. R-6044 to read in entirety as follows:

"(1) That the applicant, ARCO Oil and Gas Company, is hereby authorized to complete its Empire Gas Unit Well No. K-142, the surface location of which is 1700 feet from the South line and 1400 feet from the West line of Section 2, Township 18 South, Range ~~26~~ 27 East, NMPM, Empire Gas Pool, Eddy County, New Mexico, in such a manner as to provide two drainholes, the first of which terminates 153 feet North and 24 feet West of the surface location, and the second of which terminates 185 feet North and 84 feet West of the surface location."

IT IS THEREFORE ORDERED:

(1) That Order ~~the~~ (1) on Page 2 of Division Order No. R-6044 is hereby amended to read in its entirety as follows:

"(1) That the applicant, ARCO Oil and Gas Company, is hereby authorized to complete its Empire Gas Unit Well No. K-142, the surface location of which is 1700 feet from the South line and 1400 feet from the West line of Section 2, Township 18 South, Range ~~26~~ 27 East, NMPM, Empire Gas Pool, Eddy County, New Mexico, in such a manner as to provide two drainholes, the first of which terminates 153 feet North and 24 feet West of the surface location, and the second of which terminates 185 feet North and 84 feet West of the surface location."

(2) Jurisdiction

DONE at