

Case NO.

6572

Application

Transcripts

Small Exhibits

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
Oil Conservation Division
State Land Office Building
Santa Fe, New Mexico
13 June 1979

EXAMINER HEARING

IN THE MATTER OF:

Application of ARCO Oil and Gas
Company to drill a horizontal drain-
hole, Eddy County, New Mexico.

CASE
6572

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

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

For the Applicant:

Conrad Coffield, Esq.
HINKLE, COX, EATON, COFFIELD &
HENSLEY
Midland, Texas

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I N D E X

ABE NATOUR

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1 MR. NUTTER: Call next Case 6572.

2 MR. PADILLA: Application of ARCO Oil and
3 Gas Company to drill a horizontal drain hole, Eddy County,
4 New Mexico.

5 MR. COFFIELD: Conrad Coffield of Midland,
6 Texas, appearing on behalf of the applicant, and I have
7 one witness.

8
9 (Witness sworn.)

10
11 ABE NATOUR
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. Natour, would you please state your
18 full name, address, occupation, and employer?

19 A My name is I. J. Natour. I'm employed
20 with Atlantic Richfield in Midland, Texas. I'm a reservoir
21 engineer working on Empire Abo Unit.

22 Q Mr. Natour, have you previously testified
23 before the Division as an engineer?

24 A Yes, sir, I have.

25 Q And were your qualifications made a matter

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1 of record and accepted by the Division?

2 A. Yes, sir, that's correct.

3 Q Are you familiar with the application
4 of ARCO in this case?

5 A. Yes, sir.

6 Q And are you familiar with the property and
7 the proposed location, well location, and so forth?

8 A. Yes, sir.

9 MR. COFFIELD: Is the witness considered
10 qualified, Mr. Examiner?

11 MR. NUTTER: Yes, he is.

12 Q (Mr. Coffield continuing.) Mr. Natour,
13 what does Atlantic Richfield seek by it's application in
14 this case?

15 A. Atlantic Richfield seeks an order from the
16 Commission for ARCO Oil and Gas to drill a single 200-foot
17 horizontal drainhole in the K-142 location.

18 The K-142 is in the Empire Abo Unit, Eddy
19 County, New Mexico.

20 Q Okay, Mr. Natour, refer to what we have
21 marked as Exhibit One and explain what this represents.

22 A. Exhibit One is a land map showing the
23 outline of the Empire Abo Field and also the outline of
24 the Empire Abo Unit.

25 The hashed areas are properties where we

1 would -- Abo production that is not committed to the Empire
2 Abo Unit.

3 Also shown on Exhibit One is the K-142
4 location colored in red and about the west part of the
5 Empire Abo Unit. I might add that the K-142 location is
6 away from any of the producing properties that are not
7 committed to the Empire Abo Unit.

8 Q Okay, go on to what's been marked as Ex-
9 hibit Two and explain this exhibit to the Examiner.

10 A Exhibit Two is a schematic of the Empire
11 Abo Unit Well K-142. It is not to scale but it shows what
12 we are trying to do with this well.

13 We have already received an approval to
14 drill a vertical hole on this location. This vertical
15 hole will be drilled to about 1000 feet where we're going
16 to set surface pipe and then we'll drill the well to a
17 TD of 6150. At that time we will log it and DST to locate
18 our gas/oil contact, and then we would -- from the logs we
19 would pick the kickoff point for our drainhole, and then
20 we would set 7-inch casing as indicated on the schematic,
21 using a packer shoe right above the kickoff point, and
22 of course cement the 7-inch casing to surface and then
23 commence the drilling of the drainhole.

24 The drainhole will be about 200 feet in
25 length. A whipstock will be set opposite this point of

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1 departure from vertical. This whipstock is specially made
2 for this purpose so we can accomplish the 90 degree angle
3 within a twelve to fifteen feet radius.

4 Mr. Don Holbert, who is a consulting petro-
5 leum engineer from Denver, Colorado, would be the one that
6 would do the actual work. He owns the tools and he would
7 be supervising the jobs.

8 MR. NUTTER: How do you spell his name,
9 please?

10 A. H-O-L-B-E-R-T.

11 MR. NUTTER: What's his first name?

12 A. Don, D-O-N.

13 MR. NUTTER: Is he an Atlantic Richfield
14 employee or a --

15 A. No, sir, he is --

16 MR. NUTTER: consultant for another firm?

17 A. He is a consultant. He is a self-employed
18 consultant.

19 MR. NUTTER: Specializing in drainholes?

20 A. Yes, sir.

21 MR. NUTTER: Okay. And he's from Denver?

22 A. That's part of his job.

23 I might add on this -- when we drill
24 the vertical hole we are going to run a multi-shot survey
25 to determine our bottom hole location. We also will survey

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1 the drainhole starting at approximately after we drill 10
2 feet; then we would take a single shot that would give us
3 the drift and the direction of where we're going.

4 MR. NUTTER: That's after you have
5 achieved your 90-degree turn.

6 A. That's right, right in the 90-degree
7 turn. We go in and start to drill and after we drill about
8 10 feet we will survey.

9 MR. NUTTER: You'd still be on the curve,
10 then.

11 A. Yes, sir, we'll still be on the curve.

12 MR. NUTTER: Well, now, will he orient
13 this whipstock in a particular direction?

14 A. Yes, sir. We are -- we are going to use
15 a gyroscopic survey to orient the whipstock to the southeast.

16 MR. NUTTER: The southeast.

17 A. Yes, sir. I do have an exhibit that would
18 show that. I believe it's Exhibit Number Four.

19 MR. NUTTER: Okay.

20 A. We are going to survey through that 12 to
21 15 foot radius so we can be certain that we achieve 90
22 degrees within that radius.

23 We are also hoping to survey all along
24 the drilling of the drainhole. I have some approximate
25 depths, or approximate footage drilled, let's put it this

1 way. We would survey at at least six points: After 10
2 feet are drilled, 18 feet, 48 feet, 108 feet, 168 feet,
3 and then would be at the tip of the drainhole, about 190
4 feet, 95 feet.

5 So we will get the drift and the direction
6 within 2 feet of the tip of the drainhole.

7 This instrument is a single shot instrument, East-
8 man, with a cage downhole, but it's got to go through his
9 tools.

10 The drainhole would be 4-3/4 inches and
11 it would be completed as open hole.

12 Q Go on to what we've marked as Exhibit
13 Three, Mr. Natour, and explain this to the Examiner.

14 A Exhibit Number Three is a plot of cumu-
15 lative oil in millions of barrels versus time in days.
16 This is a result of computer simulation that we have done
17 on this area of the Empire Abo Unit, using a single well
18 simulator.

19 It shows that drainholes of about 200
20 feet in length would recover approximately an additional
21 30,000 barrels of oil. This is due to the Empire Abo Field
22 being a gravity drainage reservoir and the gas coning is
23 a problem with a gravity drainage reservoir.

24 So the drainhole will maximize the sur-
25 face area for your oil to flow, and thus reducing your

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1 pressure drop that we would encounter if we have a vertical
2 completion.

3 And another added advantage to the drain-
4 hole would be an increase in rate, as we drill the drain-
5 hole we would intersect more of the fracture system in the
6 Empire Abo Unit, and our simulation assumed that we would
7 get an increase of 50 barrels of oil a day in the drainhole
8 over and above the vertical completion of 150 barrels of
9 oil per day.

10 VC on Exhibit Number Three is vertical
11 completion and DH is drainhole.

12 Q Okay, go on to Exhibit Number Four, please,
13 Mr. Natour, and explain this to the Examiner.

14 A Exhibit Number Four is a plat of Unit
15 Letter K of Section 2, Township 18 South, Range 27 East,
16 where the Empire Abo Well K-142 would be located, and I
17 indicated that with a green arrow.

18 What I'm trying to show in this exhibit
19 is the wells, the closest wells to the K-142, and also
20 we would like to ask the Division that -- to include in
21 the order that the tip of the drainhole would be located
22 somewhere in that 200-foot square that I have indicated
23 in that -- on that plat. The reason for that, we don't
24 know, first of all, if we're going to be able to drill a
25 drainhole, and second, since this is the first time, we

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1 don't know if we can meet a close target. So we would like
2 that order to -- to state that the tip of the drainhole
3 would be within that 200-foot radius, I mean square.

4 Q Mr. Natour, has ARCO or anybody else ever
5 done this type of drainhole?

6 A This type of drainhole drilling has been
7 done by Gulf in 1964 in Sicily, Italy, where they drilled
8 to about the same depth. They were trying to prevent
9 water coning.

10 It's also been done in coal and oil shale
11 at shallower depth.

12 To my knowledge, this depth in the United
13 States, this is the first test.

14 Q Do you have anything else to add?

15 A No, sir.

16 Q Were these exhibits, One, Two, Three, and
17 Four prepared by you or under your supervision?

18 A Yes, sir, they were prepared by me.

19 Q In your opinion will the approval of ARCO's
20 application prevent the drilling of unnecessary wells and
21 otherwise prevent waste and protect correlative rights?

22 A Yes, sir.

23 MR. COFFIELD: Mr. Examiner, I move the
24 admission of Exhibits One through Four.

25 MR. NUTTER: Applicant's Exhibits One

1 through Four will be admitted in evidence.

2 MR. COFFIELD: And I have no further
3 questions of Mr. Natour at this time.

4
5 CROSS EXAMINATION

6 BY MR. NUTTER:

7 Q Mr. Natour, could you give us a brief
8 description of the actual mechanics of the drainhole
9 drilling process?

10 A Let me tell you what I know about doing
11 our job, which is essentially the same type of mechanics
12 that would go into drilling. This is a harder job to do
13 because we are trying to limit our drainhole to 12 to 15
14 foot radius.

15 The equipment consists of a bit to start
16 with, then a knuckle joint and then flexible drill collars
17 of about a foot in length and these things are machined
18 such that they give leeway in flexibility.

19 And the whipstock is so manufactured that
20 would give us the desired degrees per foot. In our case
21 the whipstock is being manufactured at the present time
22 to give us 5 degrees per foot, which would put us within
23 that 12 to 15 foot radius to get 90 degrees.

24 We will start with a small number of
25 flexible drill collars and then we'll drill, say, 10 feet

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1 for that survey point, we'll have to come out of the hole
2 and add some more joints to it and go back in.

3 And every time we survey we have to come
4 out of the hole and go back in with added flexible drill
5 collars.

6 These drill collars have a high pressure
7 hose underneath them to transport the mud, and the mud will
8 have to be such that it would give you the lubricity that
9 you need and the critical thing on the drilling of the
10 drainhole is a torque that you would exert, especially on
11 your knuckle joint. A knuckle joint -- this, so much
12 torque exerted on that point because, when you are drilling
13 your curve, that joint is sitting right on the formation.
14 The formation is hard, it's not going to give up anything.

15 So we would be limited with our weight
16 that we'd put on a drill part to control our torque, and
17 also the mud, like I mentioned before, would have to be
18 a special -- special ---- that would give us the right
19 lubricity and would give us the right carrying property
20 so we can carry the cuttings out.

21 Q. Now, this, in other words, this will be
22 drilled with a conventional type drill string but rotates
23 in the hole.

24 A. Yes. Yes. The only thing different is
25 your flexible drill collars that you would have to have to

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1 go through that 12 degrees.

2 Q Now, you mentioned the --

3 A I mean --

4 Q -- points at which you would survey it.

5 I think you said 10 feet.

6 A 18 feet.

7 Q 18 feet, 48, --

8 A Yes, sir.

9 Q -- 108.

10 A Yes.

11 Q 168.

12 A 168 and about 195, or something like that,

13 you know.

14 Q So that means a trip for each one of

15 those points, then.

16 A At least.

17 Q And adding on more knuckle joints, I

18 presume.

19 A More knuckle joints while you're drilling.

20 At least six points of surveys.

21 It would depend on how much trouble we

22 would have drilling. If we have any trouble, we just come

23 out of the hole and go on with that survey, you know, but

24 these, I feel, would be the least survey points that we

25 would take to determine our direction and bottom hole loca-

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tion, the tip of the drainhole location.

Q. Now, you're in the pay.

A. Yes, sir.

Q. Right here when you set the whipstock, aren't you?

A. Yes, sir.

Q. You drill a conventional hole, this rathole down here is a conventional, vertical type of hole.

A. Yes, sir.

Q. And you're in the pay, so you don't intend to deviate up or down.

A. No.

Q. Once the drainhole is started. It is to be horizontal.

A. Hopefully it will be horizontal. This is part of why we will probably take more surveys than these six points we -- than the six points that I indicated, is to try to ascertain if we are going straight.

Q. Now, I realize that Atlantic Richfield has done considerable infill drilling in the Empire Abo Unit, but I think in the previous case Mr. Tweed mentioned that there may be 17 additional infill wells to be drilled.

A. Yes, sir.

Q. In here. If this is successful, would additional drainholes be attempted on those remaining in-

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1 fill wells?

2 A. I don't think so, Mr. Examiner.

3 Q. This is strictly an experimental thing,

4 then.

5 A. Yes, sir. This well, we anticipate a

6 spud date on this well about the first week of July and

7 this is the last infill well of this phase that we're

8 drilling at the present time.

9 So if there is any drainholes to be drilled

10 it would have to be proposed at a later date.

11 Q. Well, in other words, the 17 holes that

12 Mr. Tweed mentioned that remained as infill wells --

13 A. Yes.

14 Q. -- will be drilled by July the 1st, is

15 that it?

16 A. Yes.

17 Q. And your infill program essentially would

18 be complete then.

19 A. Essentially the 10-acre spacing would be

20 completed then.

21 Q. Okay.

22 MR. NUTTER: Are there any further ques-

23 tions of Mr. Natour? He may be excused.

24 Do you have anything further, Mr. Coffield?

25 MR. COFFIELD: No, sir.

1 MR. NUTTER: Does anyone have anything they
2 wish to offer in Case Number 6572?

3 We'll take the case under advisement.

4
5 (Hearing concluded.)
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REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached Transcript of 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, knowledge, and skill, from my notes taken at the time of the hearing.

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

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I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case no. 6572
heard by me on 6/13 1979.
[Signature], Examiner
Oil Conservation Division

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I N D E X

ABSTRACT

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21 30,000 barrels of oil. This is due to the Empire Abo Field
22 being a gravity drainage reservoir and the gas coning is
23 a problem with a gravity drainage reservoir.

24 So the drainhole will maximize the sur-
25 face area for your oil to flow, and thus reducing your

1 pressure drop that we would encounter if we have a vertical
2 completion.

3 And another added advantage to the drain-
4 hole would be an increase in rate, as we drill the drain-
5 hole we would intersect more of the fracture system in the
6 Empire Abo Unit, and our simulation assumed that we would
7 get an increase of 50 barrels of oil a day in the drainhole
8 over and above the vertical completion of 150 barrels of
9 oil per day.

10 VC on Exhibit Number Three is vertical
11 completion and DH is drainhole.

12 Q Okay, go on to Exhibit Number Four, please,
13 Mr. Natour, and explain this to the Examiner.

14 A Exhibit Number Four is a plat of Unit
15 Letter K of Section 2, Township 18 South, Range 27 East,
16 where the Empire Abo Well K-142 would be located, and I
17 indicated that with a green arrow.

18 What I'm trying to show in this exhibit
19 is the wells, the closest wells to the K-142, and also
20 we would like to ask the Division that -- to include in
21 the order that the tip of the drainhole would be located
22 somewhere in that 200-foot square that I have indicated
23 in that -- on that plat. The reason for that, we don't
24 know, first of all, if we're going to be able to drill a
25 drainhole, and second, since this is the first time, we

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1 don't know if we can meet a close target. So we would like
2 that order to -- to state that the tip of the drainhole
3 would be within that 200-foot radius, I mean square.

4 Q Mr. Natour, has ARCO or anybody else ever
5 done this type of drainhole?

6 A This type of drainhole drilling has been
7 done by Gulf in 1964 in Sicily, Italy, where they drilled
8 to about the same depth. They were trying to prevent
9 water coning.

10 It's also been done in coal and oil shale
11 at shallower depth.

12 To my knowledge, this depth in the United
13 States, this is the first test.

14 Q Do you have anything else to add?

15 A No, sir.

16 Q Were these exhibits, One, Two, Three, and
17 Four prepared by you or under your supervision?

18 A Yes, sir, they were prepared by me.

19 Q In your opinion will the approval of ARCO's
20 application prevent the drilling of unnecessary wells and
21 otherwise prevent waste and protect correlative rights?

22 A Yes, sir.

23 MR. COFFIELD: Mr. Examiner, I move the
24 admission of Exhibits One through Four.

25 MR. NUTTER: Applicant's Exhibits One

1 through Four will be admitted in evidence.

2 MR. COFFIELD: And I have no further
3 questions of Mr. Natour at this time.

4
5 CROSS EXAMINATION

6 BY MR. NUTTER:

7 Q Mr. Natour, could you give us a brief
8 description of the actual mechanics of the drainhole
9 drilling process?

10 A Let me tell you what I know about doing
11 our job, which is essentially the same type of mechanics
12 that would go into drilling. This is a harder job to do
13 because we are trying to limit our drainhole to 12 to 15
14 foot radius.

15 The equipment consists of a bit to start
16 with, then a knuckle joint and then flexible drill collars
17 of about a foot in length and these things are machined
18 such that they give leeway in flexibility.

19 And the whipstock is so manufactured that
20 would give us the desired degrees per foot. In our case
21 the whipstock is being manufactured at the present time
22 to give us 5 degrees per foot, which would put us within
23 that 12 to 15 foot radius to get 90 degrees.

24 We will start with a small number of
25 flexible drill collars and then we'll drill, say, 10 feet

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1 for that survey point, we'll have to come out of the hole
2 and add some more joints to it and go back in.

3 And every time we survey we have to come
4 out of the hole and go back in with added flexible drill
5 collars.

6 These drill collars have a high pressure
7 hose underneath them to transport the mud, and the mud will
8 have to be such that it would give you the lubricity that
9 you need and the critical thing on the drilling of the
10 drainhole is a torque that you would exert, especially on
11 your knuckle joint. A knuckle joint -- this, so much
12 torque exerted on that point because, when you are drilling
13 your curve, that joint is sitting right on the formation.
14 The formation is hard, it's not going to give up anything.

15 So we would be limited with our weight
16 that we'd put on a drill part to control our torque, and
17 also the mud, like I mentioned before, would have to be
18 a special -- special ---- that would give us the right
19 lubricity and would give us the right carrying property
20 so we can carry the cuttings out.

21 Q Now, this, in other words, this will be
22 drilled with a conventional type drill string but rotates
23 in the hole.

24 A Yes. Yes. The only thing different is
25 your flexible drill collars that you would have to have to

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1 go through that 12 degrees.

2 Q Now, you mentioned the ---

3 A I mean ---

4 Q -- points at which you would survey it.

5 I think you said 10 feet.

6 A 18 feet.

7 Q 18 feet, 43, ---

8 A Yes, sir.

9 Q -- 108.

10 A Yes.

11 Q 168.

12 A 168 and about 195, or something like that,

13 you know.

14 Q So that means a trip for each one of

15 those points, then.

16 A At least.

17 Q And adding on more knuckle joints, I

18 presume.

19 A More knuckle joints while you're drilling.

20 At least six points of surveys.

21 It would depend on how much trouble we
22 would have drilling. If we have any trouble, we just come
23 out of the hole and go on with that survey, you know, but
24 these, I feel, would be the least survey points that we
25 would take to determine our direction and bottom hole loca-

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1 tion, the tip of the drainhole location.

2 Q Now, you're in the pay.

3 A Yes, sir.

4 Q Right here when you set the whipstock,
5 aren't you?

6 A Yes, sir.

7 Q You drill a conventional hole, this rathole
8 down here is a conventional, vertical type of hole.

9 A Yes, sir.

10 Q And you're in the pay, so you don't in-
11 tend to deviate up or down.

12 A No.

13 Q Once the drainhole is started. It is to
14 be horizontal.

15 A Hopefully it will be horizontal. This is
16 part of why we will probably take more surveys than these
17 six points we -- than the six points that I indicated, is
18 to try to ascertain if we are going straight.

19 Q Now, I realize that Atlantic Richfield has
20 done considerable infill drilling in the Empire Abo Unit,
21 but I think in the previous case Mr. Tweed mentioned that
22 there may be 17 additional infill wells to be drilled.

23 A Yes, sir.

24 Q In here. If this is successful, would
25 additional drainholes be attempted on those remaining in-

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1 infill wells?

2 A. I don't think so, Mr. Examiner.

3 Q. This is strictly an experimental thing,
4 then.

5 A. Yes, sir. This well, we anticipate a
6 spud date on this well about the first week of July and
7 this is the last infill well of this phase that we're
8 drilling at the present time.

9 So if there is any drainholes to be drilled
10 it would have to be proposed at a later date.

11 Q. Well, in other words, the 17 holes that
12 Mr. Tweed mentioned that remained as infill wells ---

13 A. Yes.

14 Q. --- will be drilled by July the 1st, is
15 that it?

16 A. Yes.

17 Q. And your infill program essentially would
18 be complete then.

19 A. Essentially the 10-acre spacing would be
20 completed then.

21 Q. Okay.

22 MR. NUTTER: Are there any further ques-
23 tions of Mr. Natour? He may be excused.

24 Do you have anything further, Mr. Coffield?

25 MR. COFFIELD: No, sir.

1 MR. NUTTER: Does anyone have anything they
2 wish to offer in Case Number 657??

3 We'll take the case under advisement.
4

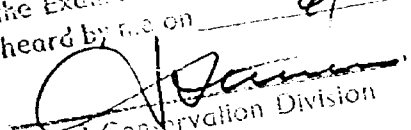
5 (Hearing concluded.)
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I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY
 CERTIFY that the foregoing and attached transcript of
 Hearing before the Oil Conservation Division was reported
 by me; that said transcript is a full, true, and correct
 record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

Sally W. Boyd, C.S.R.

I do hereby certify that the foregoing is
 a complete and true transcript of the proceedings in
 the Examiner hearing of Case No. 6572
 heard by me on 6/13 1979.

 Oil Conservation Division Examiner



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

JERRY APODACA
GOVERNOR

NICK FRANKLIN
SECRETARY

June 29, 1979

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 07501
(505) 827-2434

Re:
Mr. Conrad E. Coffield
Hinkle, Cox, Eaton, Coffield
& Hensley
Attorneys at Law
P. O. Box 3580
Midland, Texas 79702

Applicant:

ARCO Oil and Gas Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Yours very truly,

JOE D. RAMEY
Director

JDR/ed

Copy of order also sent to:

Hobbs OCC	<u>X</u>
Artesia OCC	<u>X</u>
Aztec OCC	

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. 6572
Order No. R-6044

APPLICATION OF ARCO OIL AND GAS
COMPANY TO DRILL A HORIZONTAL
DRAINHOLE, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on June 13, 1979,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 26th day of June, 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 the applicant, ARCO Oil and Gas Company, seeks
approval to drill and complete its Empire Abo Unit Well No.
K-142, the surface location of which, previously approved by
Administrative Order NSL-999, is 1700 feet from the South line
and 1400 feet from the West line of Section 2, Township 18 South,
Range 27 East, Empire-Abo Pool, with a single horizontal drain-
hole of about 200 feet in length in the Abo formation.

(3) That the applicant proposes to vertically drill said
well through the Abo Reef in a conventional manner, set casing
below the gas-oil contact, and by means of a specially constructed
whipstock and knuckle-joint drill collars, turn said well in a
southeasterly direction at the rate of approximately 5 degrees
per foot, continuing such drilling until horizontal, and then
drill in a southeasterly direction to complete the drainhole
some 200 feet South and East of the kick-off point.

(4) That the applicant should constantly monitor the pitch
and direction of the drainhole as it is being drilled, and

-2-

Case No. 6572
Order No. R-6044

should file with the Division a final report of drilling upon completion thereof, specifying in said report the depth and location of the terminus of the drainhole.

(5) That the proposed drainhole, if successfully completed as proposed, should make possible the production of an increased volume of oil from the subject well without coning of gas into the wellbore, thereby preventing waste, will not impair but will protect correlative rights, and should be approved.

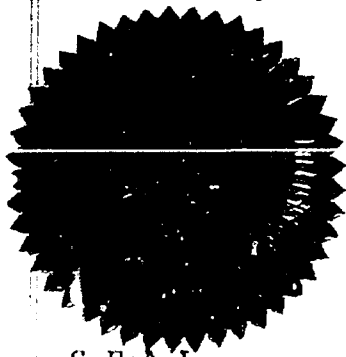
IT IS THEREFORE ORDERED:

(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 a 200-foot horizontal drainhole beneath the gas-oil contact in the Abo Reef, extending in a southeasterly direction from the surface location.

(2) That the applicant shall constantly monitor the pitch and direction of the drainhole as it is being drilled, and shall file a report of drilling upon completion thereof, specifying in said report the depth and location of the terminus of the drainhole.

(3) 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.



S E A L

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Joe D. Ramey
JOE D. RAMEY
Director

fd/

Dockets Nos. 24-79 and 25-79 are tentatively set for hearing on June 27 and July 11, 1979. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - WEDNESDAY - JUNE 6, 1979

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 6495: (DE NOVO)

Application of Amax Chemical Corporation for the amendment of Order No. R-111-A, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-111-A to extend the boundaries of the Potash-Oil Area by the inclusion of certain lands in Sections 23 and 24, Township 19 South, Range 29 East, Sections 1, 4, 5, 6, 7, 11, 12, 13, 14, 19, 20, 23, 24, and 29, Township 19 South, Range 30 East, and Sections 7, 8, 17, 18, and 19, Township 19 South, Range 31 East, all in Eddy County, New Mexico.

Upon application of Amax Chemical Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

Docket No. 23-79

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 13, 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 July, 1979, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for July, 1979, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6560: Application of Exxon Corporation for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (combination) of its "AB" State Well No. 4 located in Unit A of Section 16, Township 24 South, Range 37 East, to produce gas from the Langlie Mattix Pool and oil from the Fowler-Upper Yesso Pool, through parallel strings of casing cemented in a common well bore.

CASE 6561: Application of Amoco Production Company for directional drilling, Lea County, New Mexico. Applicant, in the above-styled cause, proposes to directionally drill its State "HC" Well No. 1 located 1980 feet from the South and West lines of Section 21, Township 16 South, Range 35 East, Townsend Field, to a bottom hole location within 100 feet of a point 990 feet from the South line and 2310 feet from the East line of said Section 21, the S/2 of said Section 21 to be dedicated to the well.

CASE 6562: Application of Orla Fetco, Inc. for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Ramsey Sand of the Bell Canyon formation through the open hole interval from 2498 feet to 2508 feet in its Courley-Federal Well No. 4 located in Unit J of Section 31, Township 22 South, Range 28 East, Herradura Bend-Delaware Pool.

CASE 6563: Application of Roy L. McKay for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for his North Woolworth Ranch Unit Area, comprising 1,280 acres, more or less, of State lands in Township 23 South, Range 35 East.

CASE 6564: Application of Herndon Oil & Gas Co. for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its O. A. Woody Well No. 1 in the center of Unit E, Section 35, Township 16 South, Range 38 East, Knowles-Devonian Pool.

CASE 6565: Application of Lewis B. Burleson, Inc. for compulsory pooling, a non-standard gas proration unit, and an unorthodox well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Jalmat Gas Pool underlying the W/2 SE/4 of Section 20, Township 25 South, Range 37 East, to form an 80-acre non-standard gas proration unit to be dedicated to a well to be drilled at an unorthodox location 1650 feet from the South and East lines of said Section 20. 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.

Dockets Nos. 24-79 and 25-79 are tentatively set for hearing on June 27 and July 11, 1979. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - WEDNESDAY - JUNE 6, 1979

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

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Application of Amax Chemical Corporation for the amendment of Order No. R-111-A, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-111-A to extend the boundaries of the Potash-Oil Area by the inclusion of certain lands in Sections 23 and 24, Township 19 South, Range 29 East, Sections 1, 4, 5, 6, 7, 11, 12, 13, 14, 19, 20, 23, 24, and 29, Township 19 South, Range 30 East, and Sections 7, 8, 17, 18, and 19, Township 19 South, Range 31 East, all in Eddy County, New Mexico.

Upon application of Amax Chemical Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 13, 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 July, 1979, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.
- (2) Consideration of the allowable production of gas for July, 1979, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6560: Application of Exxon Corporation for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (combination) of its "AB" State Well No. 4 located in Unit A of Section 16, Township 24 South, Range 37 East, to produce gas from the Langlie Mattix Pool and oil from the Fowler-Upper Yeso Pool, through parallel strings of casing cemented in a common well bore.

CASE 6561: Application of Amoco Production Company for directional drilling, Lea County, New Mexico. Applicant, in the above-styled cause, proposes to directionally drill its State "HC" Well No. 1 located 1980 feet from the South and West lines of Section 21, Township 16 South, Range 35 East, Towensend Field, to a bottom hole location within 100 feet of a point 990 feet from the South line and 2310 feet from the East line of said Section 21, the S/2 of said Section 21 to be dedicated to the well.

CASE 6562: Application of Orla Petco, Inc. for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Ramsey Sand of the Bell Canyon formation through the open hole interval from 2498 feet to 2508 feet in its Courley-Federal Well No. 4 located in Unit J of Section 31, Township 22 South, Range 28 East, Herradura Bend-Delaware Pool.

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CASE 6564: Application of Herndon Oil & Gas Co. for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its O. A. Woody Well No. 1 in the center of Unit E, Section 35, Township 16 South, Range 38 East, Knowles-Devonian Pool.

CASE 6565: Application of Lewis B. Burleson, Inc. for compulsory pooling, a non-standard gas proration unit, and an unorthodox well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Jalnat Gas Pool underlying the W/2 SE/4 of Section 20, Township 25 South, Range 37 East, to form an 80-acre non-standard gas proration unit to be dedicated to a well to be drilled at an unorthodox location 1650 feet from the South and East lines of said Section 20. 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 6566: Application of Lewis B. Burleson, Inc. for an unorthodox well location and a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 160-acre non-standard gas proration unit comprising the SW/4 of Section 10, Township 24 South, Range 36 East, Jalmat Gas Pool, to be dedicated to a well to be drilled 2310 feet from the South and West lines of said Section 10.
- CASE 6567: Application of Newbourne Oil Company for an unorthodox well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its State 25 Com Well No. 1 660 feet from the South line and 1650 feet from the West line of Section 25, Township 14 South, Range 27 East, Buffalo Valley-Pennsylvanian Gas Pool, the S/2 of said Section 25 to be dedicated to the well.
- CASE 6568: Application of Dallas McCasland 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 his Woolworth Well No. 5 located in Unit P of Section 28, Township 24 South, Range 37 East, Jalmat Gas Pool, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well.
- CASE 6569: Application of Continental Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Lockhart A-17 Well No. 2 located in Unit I of Section 17, Township 21 South, Range 37 East, to produce gas from the Eumont Gas Pool through the casing-tubing annulus and oil from the Blinbry Oil and Gas Pool through tubing.
- CASE 6570: Application of Continental Oil Company for a non-standard gas proration unit and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 228-acre non-standard gas proration unit comprising the SW/4 and S/2 SE/4 of Section 18, Township 21 South, Range 36 East, Eumont Gas Pool, to be simultaneously dedicated to applicant's Lockhart A-18 Wells Nos. 2, 3, and 4, located in Units O, K, and M, respectively, of said Section 18.
- CASE 6571: Application of Continental Oil Company for vertical pool limit redefinition, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order extending the vertical limits of the Langlie Mattix Pool to include the lowermost 165 feet of the Seven Rivers formation and the concomitant contraction of the vertical limits of the Jalmat Gas Pool underlying the following described lands: SW/4 W/2 SE/4 and SE/4 SE/4 of Section 35, Township 23 South, Range 36 East; and NW/4, W/2 NE/4, and SE/4 NE/4 of Section 1, Township 24 South, Range 36 East.
- CASE 6537: (Continued from May 9, 1979, Examiner Hearing)
- Application of Harper Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for its West Ranger Lake Unit Area, comprising 1,120 acres, more or less, of State lands in Township 12 South, Range 34 East, Lea County, New Mexico.
- CASE 6553: (Continued from May 23, 1979, Examiner Hearing)
- Application of The Atlantic Richfield Company for approval of infill drilling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks a finding that the Division waived existing well-spacing requirements and found that the drilling of additional wells was necessary to effectively and efficiently drain those portions of the proration units in the Empire Abo Unit located in Townships 17 and 18 South, Ranges 27, 28 and 29 East, which could not be so drained by the existing wells.
- CASE 6572: Application of ARCO Oil and Gas Company to drill a horizontal drainhole, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval to drill and complete its Empire Abo Unit Well No. K-142, located in Unit K of Section 2, Township 18 South, Range 27 East, Empire-Abo Pool, with a single horizontal drainhole of about 200 feet in length in the Abo formation.
- CASE 6573: Application of Mesa Petroleum Company for directional drilling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the directional drilling of its Well No. 7 in the Nash Unit, the surface location of which would be 685 feet from the North line and 1295 feet from the West line of Section 18, to be vertically drilled to approximately 7,000 feet, and then directionally drilled to a bottom hole location in the Morrow formation within 400 feet of a point 1315 feet from the South line and 1320 feet from the West line of Section 7, all in Township 23 South, Range 30 East.
- CASE 6574: Application of Texas Oil & Gas Corp. for an unorthodox gas well location and compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp through Morrow formations underlying the E/2 of Section 6, Township 17 South, Range 35 East, to be dedicated to a well to be drilled at an unorthodox location 660 feet from the South and East lines of said Section 6. 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 6535: (Continued from May 23, 1979, Examiner Hearing)

Application of Torreon Oil Company for a waterflood project, Sandoval County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the San Luis-Mesaverde Pool by the injection of water into the Menefee formation through two wells located in Section 21, Township 18 North, Range 3 West, Sandoval County, New Mexico.

CASE 6575: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, contracting the vertical limits, and extending the horizontal limits of certain pools in Eddy, Lea, and Roosevelt Counties, New Mexico:

(a) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Wolfcamp production and designated as the Cass Draw-Wolfcamp Gas Pool. The discovery well is Black River Corporation Miller Com Well No. 1 located in Unit C of Section 10, Township 23 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM
Section 10: N/2

(b) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Abo production and designated as the Runyan Ranch-Abo Gas Pool. The discovery well is Mesa Petroleum Company Runyan Federal Com Well No. 1 located in Unit E of Section 17, Township 19 South, Range 23 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 23 EAST, NMPM
Section 17: NW/4

(c) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Runyan Ranch-Morrow Gas Pool. The discovery well is Mesa Petroleum Company Gardner State Well No. 1 located in Unit K of Section 8, Township 19 South, Range 23 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 23 EAST, NMPM
Section 8: W/2

(d) EXTEND the Austin-Mississippian Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 36 EAST, NMPM
Section 16: SE/4
Section 17: NE/4

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

TOWNSHIP 21 SOUTH, RANGE 26 EAST, NMPM
Section 28: N/2

(f) EXTEND the Avalon-Wolfcamp Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 26 EAST, NMPM
Section 21: SW/4
Section 28: N/2

(g) EXTEND the Buffalo-Pennsylvanian Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 33 EAST, NMPM
Section 6: N/2

(h) EXTEND the Burton Flat-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM
Section 12: S/2
Section 13: N/2

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

TOWNSHIP 7 SOUTH, RANGE 32 EAST, NMPM
Section 34: SW/4

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

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM
Section 22: N/2
Section 35: N/2

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

TOWNSHIP 16 SOUTH, RANGE 27 EAST, NMPM
Section 12: N/2

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

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM
Section 21: E/2

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

TOWNSHIP 17 SOUTH, RANGE 25 EAST, NMPM
Section 13: S/2

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

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

- (o) EXTEND the Eumont Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM
Section 32: W/2

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

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
Section 2: E/2 SE/4 and SW/4 SE/4

- (q) EXTEND the Herradura Bend-Delaware Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM
Section 5: E/2 NW/4

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

TOWNSHIP 21 SOUTH, RANGE 28 EAST, NMPM
Section 25: S/2
Section 36: W/2

- (s) EXTEND the Kennedy Farms-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 26 EAST, NMPM
Section 10: S/2
Section 11: S/2
Section 16: E/2

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

TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM
Section 32: W/2

- (u) EXTEND the Logan Draw-Cisco Canyon Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM
Section 28: W/2

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

TOWNSHIP 24 SOUTH, RANGE 28 EAST, NMPM
Section 16: N/2

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

TOWNSHIP 18 SOUTH, RANGE 24 EAST, NMPM
Section 25: N/2

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

TOWNSHIP 5 SOUTH, RANGE 33 EAST, NMPM
Section 31: NW/4

(y) CONTRACT the vertical limits of the Shoe Bar-Pennsylvanian Gas Pool in Lea County, New Mexico, to the Atoka formation only and redesignate said pool as the Shoe Bar-Atoka Gas Pool, and extend the horizontal limits of said pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM
Section 34: SW/4

TOWNSHIP 17 SOUTH, RANGE 35 EAST, NMPM
Section 3: N/2

(z) EXTEND the Teague-Abo Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM
Section 22: S/2
Section 27: NE/4

(ua) EXTEND the Todd-Wolfcamp Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 7 SOUTH, RANGE 35 EAST, NMPM
Section 22: NE/4

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

TOWNSHIP 7 SOUTH, RANGE 32 EAST, NMPM
Section 30: W/2

(cc) EXTEND the West Tonto-Pennsylvanian Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 33 EAST, NMPM
Section 7: NW/4

(dd) EXTEND the Turkey Track-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 29 EAST, NMPM
Section 14: W/2
Section 15: E/2
Section 23: All
Section 24: W/2

(ee) EXTEND the Wantz-Granite Wash Pool in Lea County, New Mexico, to include therein:

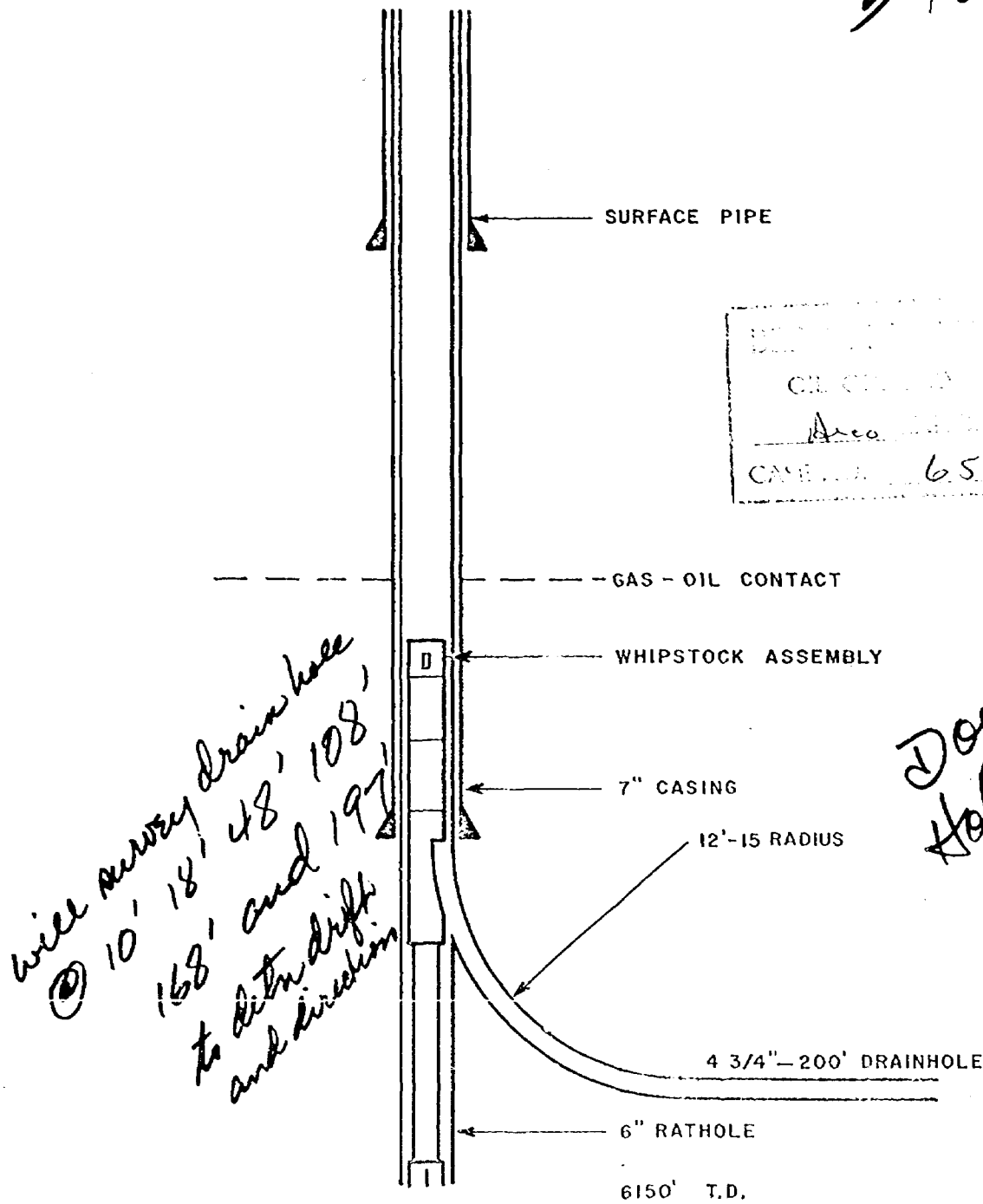
TOWNSHIP 22 SOUTH, RANGE 37 EAST, NMPM
Section 3: SE/4
Section 10: NE/4

EMPIRE ABO UNIT

EDDY COUNTY, NEW MEXICO

ABO REEF DRAINHOLE

Whipstock will
turn 5°/ft

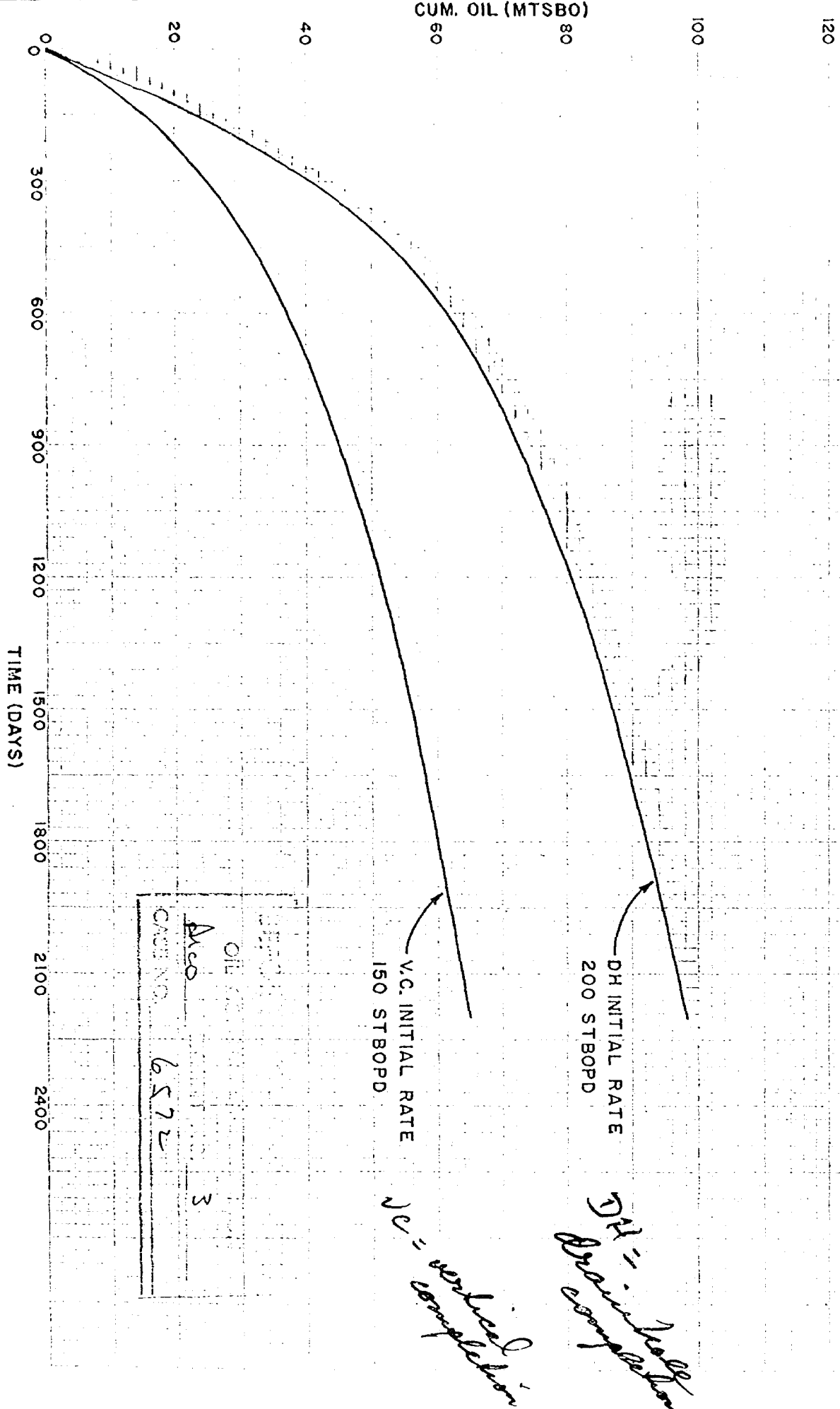


will survey drain hole
@ 10' 18' 48' 108'
168' and 197'
to determine drift
and direction

Don
Holbert - Denver
consultant
on
drain holes
will be
doing
actual
drilling.

DEPT. OF MINES & GEOL.
CITY OF DENVER, CO.
Area 2
CASE 6572

EMPIRE ABO UNIT
200' DRAINHOLE (DH) COMPARED TO VERTICAL COMPLETION (V.C.)
CUMULATIVE OIL VS TIME

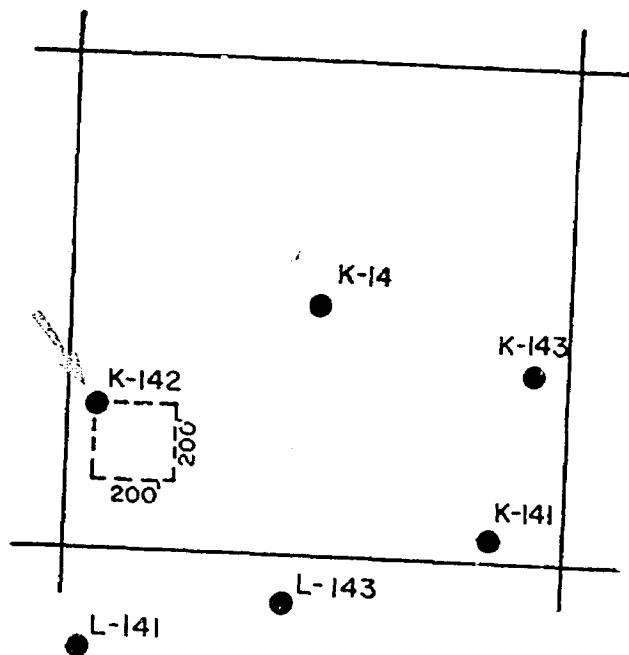


DH INITIAL RATE
200 STBOPD

V.C. INITIAL RATE
150 STBOPD

OIL NO.	3
CASE NO.	6572

EMPIRE ABO UNIT
WELL K-142
UNIT LETTER K 1700' FSL & 1400' FWL SECTION 2, T-18-S, R-27-E



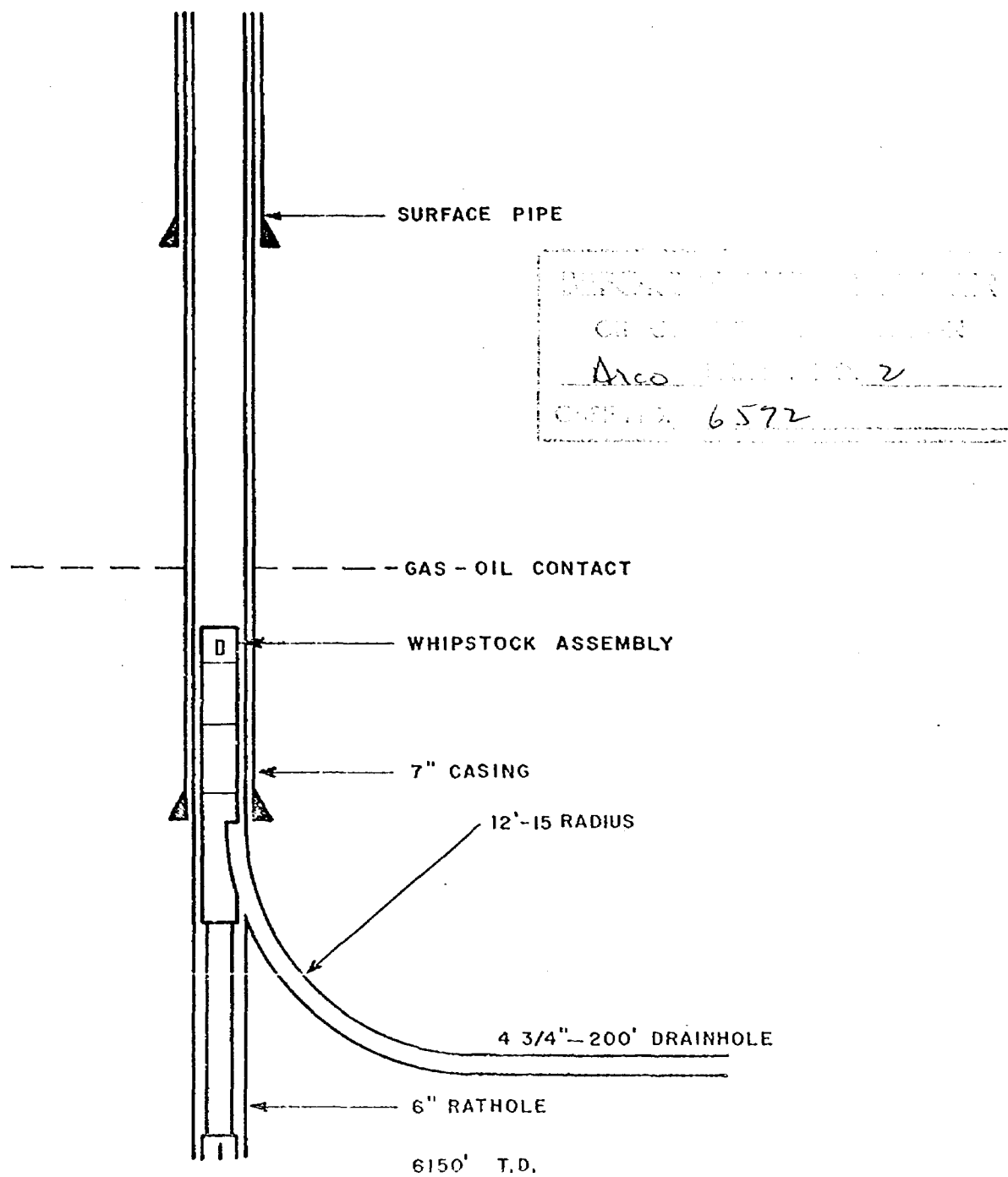
SCALE: 1" = 500'

DATE	12/1/72
BY	Arco
CH. NO.	6572
	4

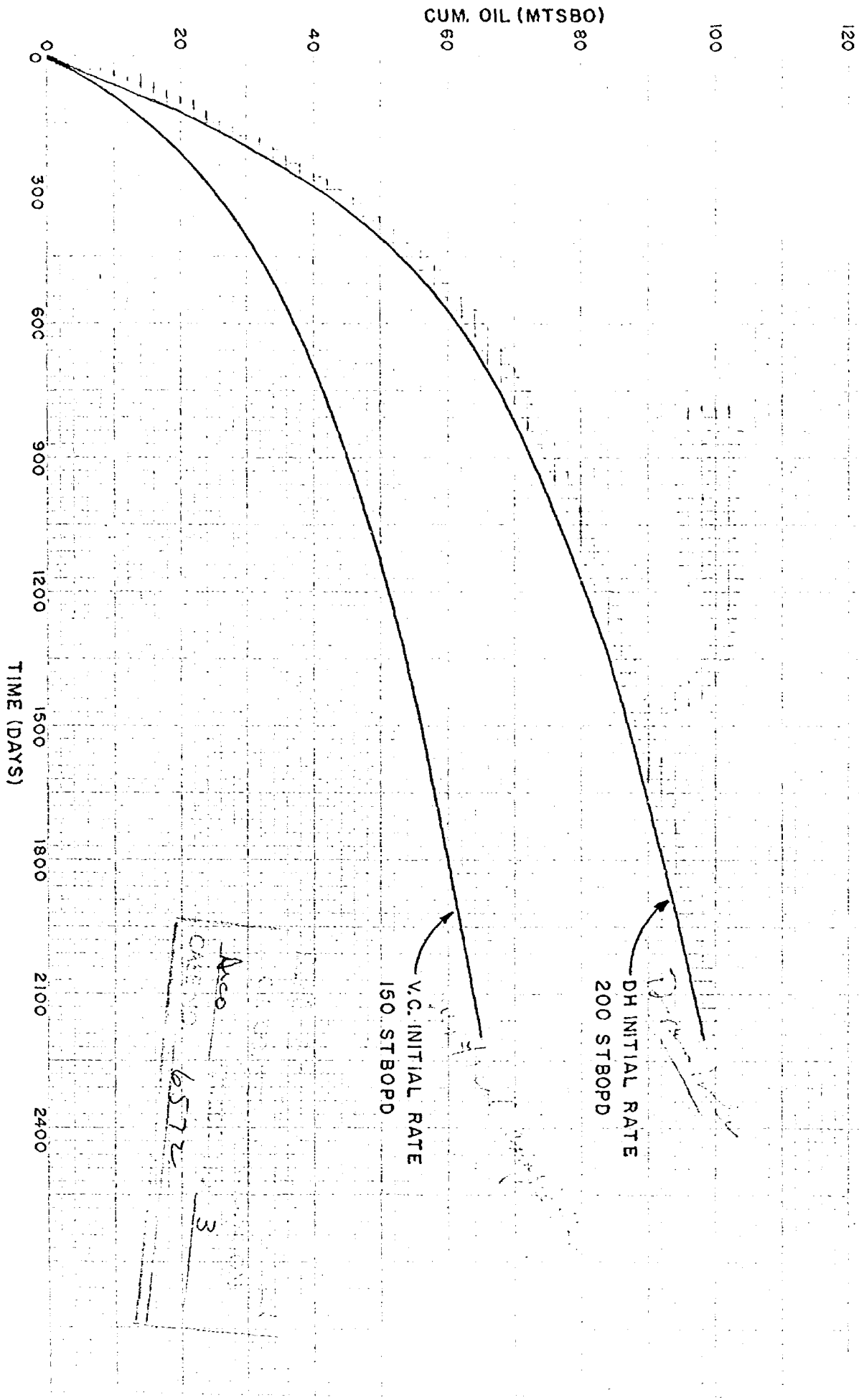
EMPIRE ABO UNIT

EDDY COUNTY, NEW MEXICO

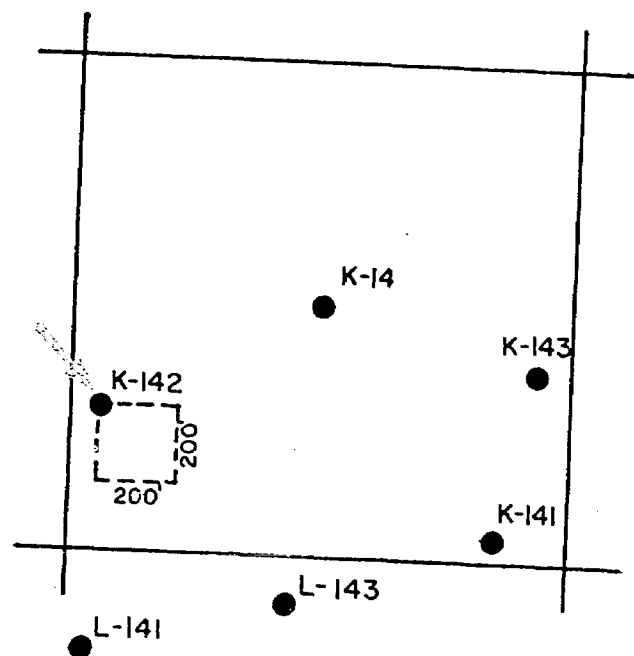
ABO REEF DRAINHOLE



EMPIRE ABO UNIT
200' DRAINHOLE (DH) COMPARED TO VERTICAL COMPLETION (V.C.)
CUMULATIVE OIL VS TIME



EMPIRE ABO UNIT
WELL K-142
UNIT LETTER K 1700' FSL & 1400' FWL SECTION 2, T-18-S, R-27-E



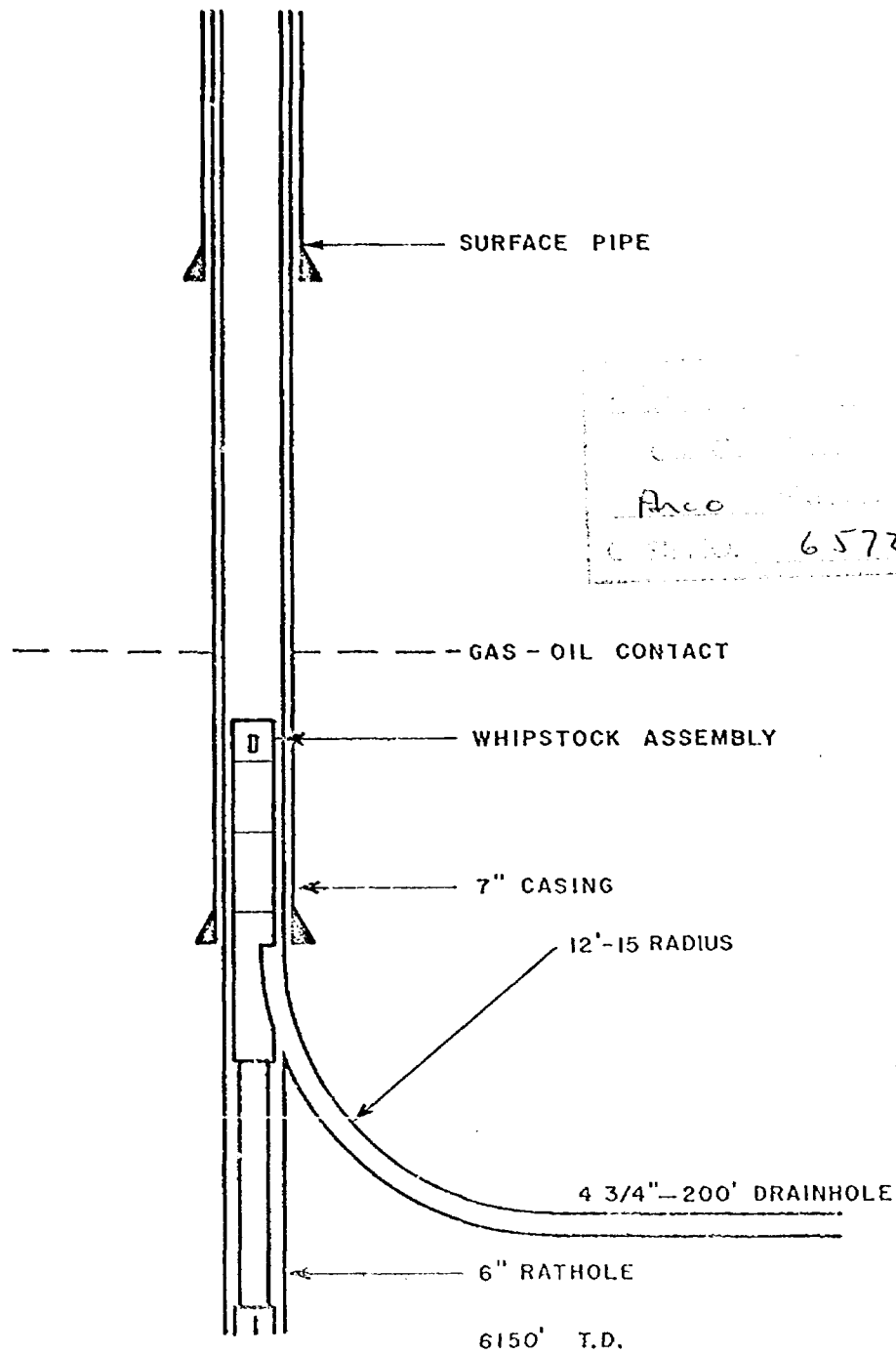
SCALE: 1" = 500'

Deco
6572

EMPIRE ABO UNIT

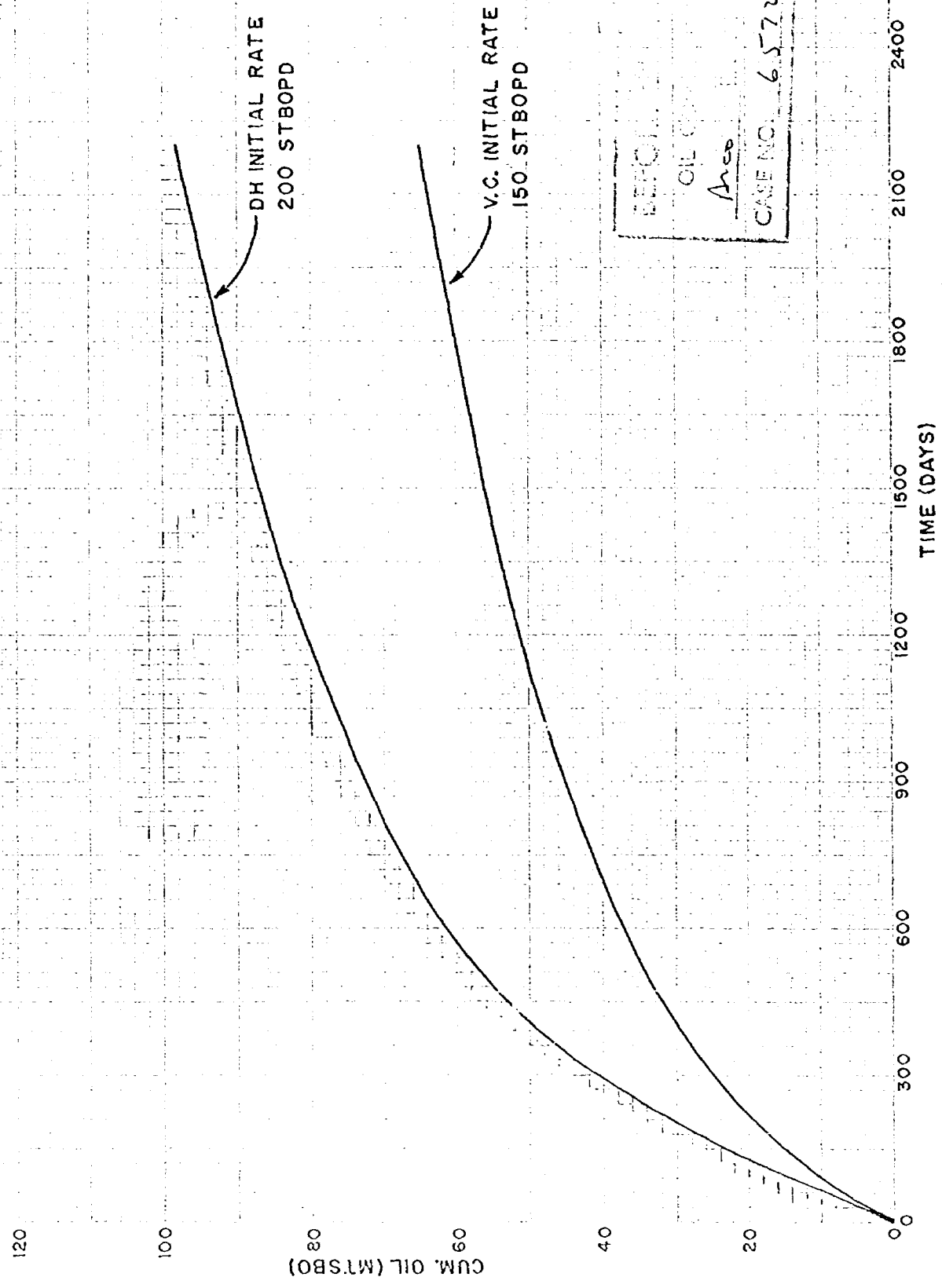
EDDY COUNTY, NEW MEXICO

ABO REEF DRAINHOLE



46 0363

EMPIRE ABO UNIT
200' DRAINHOLE (DH) COMPARED TO VERTICAL COMPLETION (V.C.)
CUMULATIVE OIL VS TIME

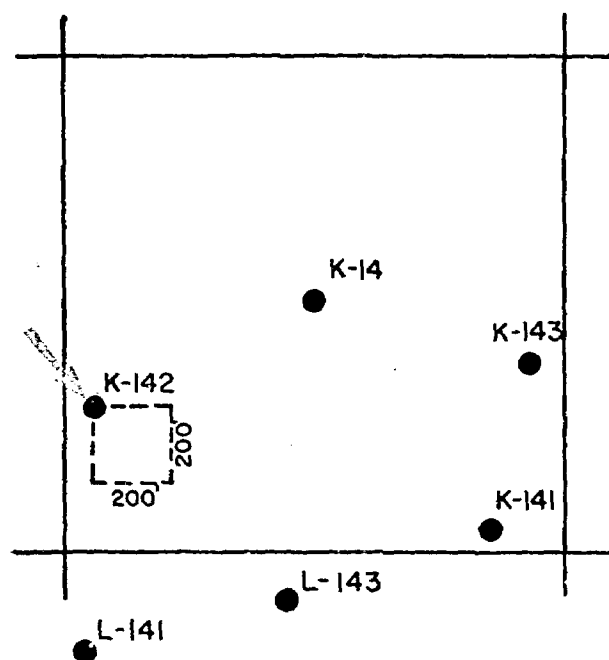


SEPCOIL
OIL CO.
Arco
CASE NO. 6572

EMPIRE ABO UNIT

WELL K-142

UNIT LETTER K 1700' FSL & 1400' FWL SECTION 2, T-18-S, R-27-E



SCALE: 1"=500'

DATE	1/1/78
BY	ALCO
NO.	4
6572	

LAW OFFICE

HINKLE, COX, EATON, COFFIELD & HENSLEY

1000 FIRST NATIONAL BANK TOWER

POST OFFICE BOX 3500

MIDLAND, TEXAS 79702

(915) 683-4691

OF COUNSEL

CLARENCE E. HINKLE

W. E. BONDURANT, JR. (914-1973)

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 S. NELSON
RICHARD E. OLSON

RECEIVED
MAY 21 1979
OIL CONSERVATION DIVISION
SANTA FE May 18, 1979

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

Dear Dan:

Transmitted herewith you will find triplicate executed copies of an Application for Atlantic Richfield Company, Unit Operator of the Empire Abo Unit, to Drill and Complete Well K-142 Using a Single Horizontal Drainhole.

It is my understanding that the docket setting for June 13 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 June 13 hearing. However, if anything is needed in addition, please let me know.

Very truly yours,

HINKLE, COX, EATON,
COFFIELD & HENSLEY

Conrad E. Coffield

CEC:rf

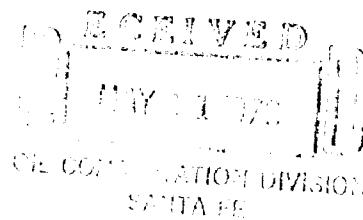
xc: Mr. J. L. Tweed
Atlantic Richfield Company
Post Office Box 1610
Midland, Texas 79702

ARCO Oil and Gas Company

Energy Division
Post Office Box 1010
Midland, Texas 79702
Telephone (817) 731-0100



May 18, 1979



Mr. Conrad E. Coffield
Hinkle, Cox, Eaton, Coffield & Hensley
1000 First National Bank Tower
P. O. Box 3580
Midland, Texas 79702

Case 6572

Dear Mr. Coffield:

Attached is a rough draft of an application by ARCO Oil and Gas Company to the New Mexico Energy and Minerals Department, Oil Conservation Division, for a hearing requesting permission to drill a horizontal drainhole at the K-142 location, Empire Abo Unit, Eddy County, New Mexico. The subject well has been previously approved for a standard vertical completion at the same location by Conservation Division Order NSL-999, signed December 12, 1978.

The Conservation Division has requested a formal hearing.

We have sufficient co-owner approval and spud date is set for July 1, 1979. To allow time for notice, hearing and order, we would like your letter and the application to go out as soon as possible. We would like to have the hearing on June 13, 1979.

ARCO's witness will be Mr. I. J. Natour. He will be contacting you at a later date to review testimony and exhibits.

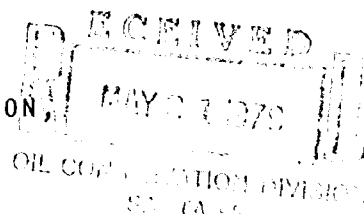
Very truly yours,

J. L. Tweed

SHC:ad

cc: Mr. Horace Burton - Legal Dept. - Dallas
Mr. K. V. Terrell - Midland
Mr. David Sipperly - Midland
Mr. D. B. Davidson - Midland
Mr. D. L. Young - Midland
Mr. Ken Hill - Midland

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



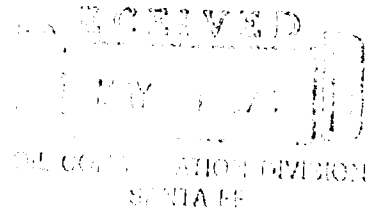
APPLICATION OF ARCO OIL AND GAS COMPANY, DIVISION OF
ATLANTIC RICHFIELD COMPANY, UNIT OPERATOR OF THE
EMPIRE ABO UNIT, TO DRILL AND COMPLETE WELL K-142
USING A SINGLE HORIZONTAL DRAINHOLE.

ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
P. O. Box 2088
Santa Fe, New Mexico 87501

Case 6472

Comes ARCO Oil and Gas Company, 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 drill Unit Well K-142 using a single horizontal drain hole of about 200 feet in length, completing the well 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, Dept. 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 Nov. 17, 1975.
2. The Oil Conservation Division previously issued approval for a standard, "vertical" 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, T-18S, R-27E, Eddy County, New Mexico.
3. That applicant proposes to drill a vertical hole through the Abo Reef, log and test, then set casing to a point below the gas-oil contact. Whipstock will then be set and attempt will be made to drill 4-3/4" drainhole using a 12' radius at point of departure from vertical, continuing to drill drainhole horizontally to total length of about 200 feet. Well will then be completed as a producer.



4. That, if successful, this "horizontal" drainhole should result in recovery of additional oil over and above what is expected from current operations.
5. Applicant requests permission to drill, complete and produce the Unit K-142 as a horizontal drainhole.
6. In the opinion of applicant, said horizontal drainhole as outlined in this application, is 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.
7. Applicant requests that this matter be set for hearing at the examiner's hearing to be held on June 13, 1979.

Respectfully submitted,

ARCO OIL & GAS COMPANY
DIVISION OF ATLANTIC RICHFIELD COMPANY

BY 
Hinkle, Cox, Eaton, Coffield and
Hensley
Attorneys for Applicant
1000 First National Bank Tower
P. O. Box 3580
Midland, Texas 79702

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

APPLICATION OF ARCO OIL AND GAS COMPANY, DIVISION OF
ATLANTIC RICHFIELD COMPANY, UNIT OPERATOR OF THE
EMPIRE ABO UNIT, TO DRILL AND COMPLETE WELL K-142
USING A SINGLE HORIZONTAL DRAINHOLE.

ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
P. O. Box 2088
Santa Fe, New Mexico 87501

Case 6472

Comes ARCO Oil and Gas Company, 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 drill Unit Well K-142 using a single horizontal drain hole of about 200 feet in length, completing the well 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, Dept. 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 Nov. 17, 1975.
2. The Oil Conservation Division previously issued approval for a standard, "vertical" 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, T-18S, R-27E, Eddy County, New Mexico.
3. That applicant proposes to drill a vertical hole through the Abo Reef, log and test, then set casing to a point below the gas-oil contact. Whipstock will then be set and attempt will be made to drill 4-3/4" drainhole using a 12' radius at point of departure from vertical, continuing to drill drainhole horizontally to total length of about 200 feet. Well will then be completed as a producer.

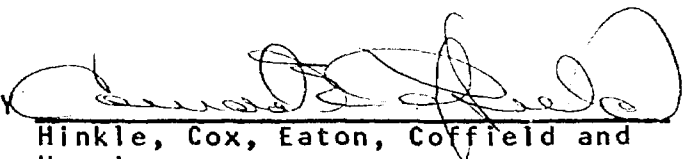
RECEIVED
OIL COMPANY
JUN 14 1979

4. That, if successful, this "horizontal" drainhole should result in recovery of additional oil over and above what is expected from current operations.
5. Applicant requests permission to drill, complete and produce the Unit K-142 as a horizontal drainhole.
6. In the opinion of applicant, said horizontal drainhole as outlined in this application, is 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.
7. Applicant requests that this matter be set for hearing at the examiner's hearing to be held on June 13, 1979.

Respectfully submitted,

ARCO OIL & GAS COMPANY
DIVISION OF ATLANTIC RICHFIELD COMPANY

BY


Hinkle, Cox, Eaton, Coffield and
Hensley
Attorneys for Applicant
1000 First National Bank Tower
P. O. Box 3580
Midland, Texas 79702

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

APPLICATION OF ARCO OIL AND GAS COMPANY, DIVISION OF
ATLANTIC RICHFIELD COMPANY, UNIT OPERATOR OF THE
EMPIRE ABO UNIT, TO DRILL AND COMPLETE WELL K-142
USING A SINGLE HORIZONTAL DRAINHOLE.

ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
P. O. Box 2088
Santa Fe, New Mexico 87501

Case 6972

Comes ARCO Oil and Gas Company, 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 drill Unit Well K-142 using a single horizontal drain hole of about 200 feet in length, completing the well 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:

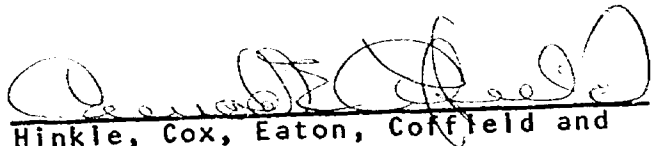
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2. The Oil Conservation Division previously issued approval for a standard, "vertical" completion of the subject Unit Well K-142, under Administrative Order NSL-999 dated December 12, 1978. Well location is 1700' FSL and 1400' FWL, Section 2, T-18S, R-27E, Eddy County, New Mexico.
3. That applicant proposes to drill a vertical hole through the Abo Reef, log and test, then set casing to a point below the gas-oil contact. Whipstock will then be set and attempt will be made to drill 4-3/4" drainhole using a 12' radius at point of departure from vertical, continuing to drill drainhole horizontally to total length of about 200 feet. Well will then be completed as a producer.

4. That, if successful, this "horizontal" drain hole should result in recovery of additional oil over and above what is expected from current operations.
5. Applicant requests permission to drill, complete and produce the Unit K-142 as a horizontal drainhole.
6. In the opinion of applicant, said horizontal drainhole as outlined in this application, is 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.
7. Applicant requests that this matter be set for hearing at the examiner's hearing to be held on June 13, 1979.

Respectfully submitted,

ARCO OIL & GAS COMPANY
DIVISION OF ATLANTIC RICHFIELD COMPANY

BY


Hinkle, Cox, Eaton, Coffield and
Hensley
Attorneys for Applicant
1000 First National Bank Tower
P. O. Box 3580
Midland, Texas 79702

ROUGH

dr/

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. 6572

Order No. R-6044

APPLICATION OF ARCO OIL AND GAS
COMPANY TO DRILL A HORIZONTAL
DRAINHOLE, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on June 13
19 79, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter

NOW, on this _____ day of June, 19 79, 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 the applicant, ARCO Oil and Gas Company, seeks
approval to drill and complete its Empire Abo Unit Well No. K-142,
the surface location of which, previously approved by Administrative Order NSL-999, is 1700
~~A located in Unit K~~ of Section 2, Township 18 South, Range 27 East,
Empire-Abo Pool, with a single horizontal drainhole of about 200
feet in length in the Abo formation.

1700 feet from the Santa Fe line and 1400 feet from the West line

(3) That the applicant proposes to ^{vertically} drill ^{said well} through the Abo Reef in a conventional manner, set casing below the gas-oil contact, and by means of a specially constructed whipstock and knuckle-joint drill collars, turn said well in a southeasterly direction at the rate of approximately 5 degrees per foot, continuing such drilling until horizontal, and then drill in a southeasterly direction to complete the drainhole some 200 feet South and East of the Kick-off Point.

(4) That the applicant should constantly monitor the pitch and direction of the drainhole as it is being drilled, and should file with the Division a final report of drilling upon completion thereof, specifying in said report the depth and location of the terminus of the drainhole.

(5) That the ^{proposed} drainhole, if successfully completed as proposed, should make possible the production of ^{an} increased volume of oil from the subject well without ^{CONING} coming of gas into the wellbore, thereby preventing waste, will not impair but will protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, ARCO Oil and Gas Company, is hereby authorized to complete its Empire Loo 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-Loo Pool, Eddy County, New Mexico, in such a manner as to provide a

200-foot horizontal drainhole beneath the gas-oil contact in the Aliso Reef, extending in a southeasterly direction from the surface location.

(2) That the applicant shall constantly maintain the pitch and direction of the drainhole as it is being drilled, and shall file a report of drilling upon completion thereof, specifying in said report the depth and location of the terminus of the drainhole.

(3) Jurisdiction

DONE at