

ARMED PRODUCTION COMPANY
FOR DETERMINATION, EDDY COUNTY,
NEW MEXICO

CASE NO.

6835

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
12 March 1980

EXAMINER HEARING

IN THE MATTER OF:

Application of Anadarko Production Com-
pany for an NGPA determination, Eddy
County, New Mexico.

CASE
6835

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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1 MR. NUTTER: We'll call next Case Number
2 6835.

3 MR. PADILLA: Application of Anadarko
4 Production Company for an NGPA determination, Eddy County,
5 New Mexico.

6 MR. KELLAHIN: I'm Tom Kellahin of Santa
7 Fe, appearing on behalf of Anadarko Production Company, and
8 in association with Mr. Russell Bishop, Counsel for Anadarko
9 Production Company.

10 I have two witnesses to be sworn.

11 (Witnesses sworn.)
12

13 RICHARD A. ERICKSON
14

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

17 DIRECT EXAMINATION
18

19 BY MR. KELLAHIN:

20 Q Would you please state your name, by
21 whom you're employed, and in what capacity?

22 A. My name is Richard Erickson. I'm em-
23 ployed by Anadarko Production Company as a geological en-
24 gineer in Midland.

25 MR. NUTTER: How do you spell your last

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1 name?

2 A E-R-I-C-K-S-O-N.

3 MR. NUTTER: Thank you.

4 Q Mr. Erickson, have you previously testi-
5 fied as a geologist before this Division?

6 A No.

7 Q Would you explain to the Examiner when
8 and where you obtained your degree in geology?

9 A I have a BS in geological engineering
10 from Colorado School of Mines in 1974 and a Masters of
11 Science in geology from the same school in 1977.

12 Q Subsequent to graduation, Mr. Erickson,
13 where have you been employed as a geologist?

14 A I worked for Gulf Oil and then Anadarko.

15 Q Your duties for Gulf Oil, that included
16 what?

17 A Production geologist, working in west
18 Texas and in New Mexico.

19 Q And what are your current duties with
20 Anadarko Production Company?

21 A I'm a geological engineer, basically
22 the same type of position, of production geology.

23 Q Pursuant to those duties, Mr. Erickson,
24 have you made a study of and are you familiar with the
25 facts surrounding this particular application?

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1 A Yes.

2 MR. KELLAHIN: We tender Mr. Erickson
3 as an expert geologist.

4 MR. NUTTER: Mr. Erickson is qualified.

5 Q Mr. Erickson, let me direct your attention
6 to what we've marked as Anadarko's Exhibit Number One, and
7 first of all, if you'll take that exhibit and locate for us
8 the Anadarko well that's the subject of this hearing.

9 A The subject of this hearing is the well
10 located in the east half of Section 36.

11 MR. NUTTER: Do you have another set,
12 Mr. Kellahin?

13 MR. KELLAHIN: Yes, sir.

14 Q All right, we're looking at the Anadarko
15 well that is spotted in the orange in Section 36, is that
16 correct?

17 A Yes, in the east half of 36.

18 Q What is the current status of that well?

19 A That well is producing from the Lower
20 Morrow.

21 Q Do you have either a spud date or a
22 completion date for that well? Well, my point is, Mr.
23 Erickson, was this well drilled to completion after April
24 20th, 1977?

25 A Yes.

1 Q All right. You prepared this exhibit,
2 did you?

3 A Yes.

4 Q With regards to this well in Section 36,
5 would you describe for the Examiner what you're seeking to
6 accomplish by this application?

7 A We're seeking to accomplish -- or get a
8 Section 102 designation, a new onshore reservoir, according
9 to the NGPA qualifications.

10 Q All right. So that we're all thinking
11 about the same thing, Mr. Erickson, with regards to the
12 NGPA new onshore reservoir determination, would you describe
13 for us how the Natural Gas Policy Act defines a new reser-
14 voir for purposes of this application?

15 A Okay. The reservoir is defined as any
16 producable natural accumulation of natural gas, crude oil,
17 or both, confined by impermeable rock or water barriers and
18 characterized by a single natural pressure system or by
19 lithologic or structural barriers which prevent pressure
20 communication.

21 Q Based upon your study, Mr. Erickson,
22 have you reached an opinion with regards to whether the
23 Lower Morrow production currently available in the subject
24 well constitutes a new reservoir under the definition of
25 the Natural Gas Policy Act?

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1 A Yes.

2 Q All right. Let me ask you some questions
3 upon which you base that conclusion.

4 First of all, if you'll take this exhibit
5 and identify for me generally what is meant by the different
6 well symbols on the plat.

7 A Okay. Different well symbols represent
8 various completions in the area. The green dots are Wolfcamp
9 completions. The blue ones are Cisco; purple are Atoka; the
10 yellow is what we term the Middle Morrow; and the bright
11 orange are the Lower Morrow.

12 Q In terms of determining whether a new
13 reservoir existed for this Lower Morrow production, can you
14 identify for me the general area of your investigation to
15 determine the status of any previously drilled well?

16 A This area in yellow is the area that we
17 looked at.

18 Q I've marked what I've called Anadarko
19 Exhibit One-A, Mr. Erickson, and I'll show it to you and ask
20 you to identify what is indicated by the yellow boundary?

21 A The yellow boundary indicates the area
22 which we investigated in detail, as far as production, to
23 determine if the -- the key wells for this investigation.

24 Q All right. What is indicated by the
25 acreage colored in yellow? Does that have any significance?

1 A Those are wells that -- they are wells
2 that have no significance .

3 Q And what is indicated by the orange
4 circles around those wells?

5 A The orange circles indicate Morrow com-
6 letions, or wells that were drilled and penetrated the
7 Morrow.

8 Q Let's return to what we were talking
9 about in terms of this Exhibit A, Mr. Erickson. Have you
10 made an effort on this exhibit to plot those wells that have
11 been drilled to or penetrated the Lower Morrow formation
12 prior to April 20th of 1977?

13 A Yeah, they're shown on here, too. They
14 are not necessarily distinct from the others, but they are
15 on here. All wells have been indicated.

16 Q What is indicated by the line of cross
17 section on this exhibit?

18 A The line of cross section shows -- shows
19 a cross section that is also included as an exhibit.

20 Q Why have you chosen those particular
21 wells to be placed upon your cross section?

22 A Two of the wells are key wells to this
23 determination, and the other ones are on there to show the
24 discontinuity of the Lower Morrow sands.

25 Q Let me direct your attention to those

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1 wellspots, then, that indicate wells that have penetrated
2 the Lower Morrow formation and ask you to indicate for me
3 which of those wells were capable of production prior to
4 April 20th, 1977?

5 A The wells capable of production were the
6 Hondo Alscott No. 1 in the north half of Section 31 of 18,
7 29, and the Hondo Wright Federal No. 1 in the south half of
8 Section 29, 19, 29 -- or 18, 29, excuse me.

9 Q Are there any other wells that would fall
10 into that category that are plotted on this map here?

11 A Yes. The Hanagan Millman Deep in Section
12 4 of 19, 28, would fall in that category.

13 Q All right.

14 A The well in Section 11 of 19, 28, would
15 also fall in that category.

16 Q That's the Depco well?

17 A Yes, the Depco DHY.

18 Q Okay.

19 A And the Yates Travis Deep in Section 18
20 of 18, 29.

21 Q That's the one with the yellow dot?

22 A Yes, the one with the yellow dot.

23 Q All right. That gives me a total of
24 five wells.

25 A Yes.

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Q Apart from the -- I'm sorry, that gives me five wells on your map that were capable of potential production from the Lower Morrow prior to April 20, 1977.

A Yes.

Q All right. Now do you have an opinion as to whether or not the subject well is producing from a Lower Morrow reservoir that is separate and distinct from the Lower Morrow reservoir that was capable of production of any of those five wells?

A We -- yes, we believe it is separate and distinct from any of the others.

Q All right. Let's start now with each one of those wells and let me have you explain why you believe each of those wells are -- the subject well is in a separate Morrow reservoir from each of those wells.

And let's start, if you don't mind, with the Depco Well in Section 11.

A The Depco Well in Section 11 penetrated the Lower Morrow but was never productive from the Lower Morrow. It was recompleted -- or completed initially in the Atoka, and is now producing in the Wolfcamp.

Q Let's continue clockwise around to the Hanagan Well in Section 4.

A The Hanagan Well was spudded in November 14th, 1971, and is now abandoned. It did produce from the

1 Morrow. It's date of first production was February 22nd,
2 1972.

3 Q Okay.

4 MR. NUTTER: Until when?

5 A It's --

6 Q Until when?

7 MR. BISHOP: We'll have to get the com-
8 pletion data on that out.

9 MR. NUTTER: Go ahead and we'll come
10 back to that later.

11 MR. KELLAHIN: We have a petroleum en-
12 gineer who's going to cover these wells, too, Mr. Nutter.

13 Q Mr. Erickson, let me direct your atten-
14 tion now to the Yates Well in Section 18.

15 A Yes.

16 Q Upon what do you base your opinion that
17 that well does not produce from the same Lower Morrow reser-
18 voir as the subject well?

19 A Having looked at the logs, that well
20 produces from what we determined to be the Middle Morrow.
21 It was not productive at all in the Lower Morrow section.

22 Q There is a dry hole symbol in the north-
23 west corner of Section 19.

24 A Oh, that is a --

25 Q What significance, if any, does that

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1 have?

2 A -- shallow gas well.

3 Q All right.

4 A It's a very shallow gas well.

5 Q Would you look at the well in Section 29
6 now, which is the Wright Federal Well.

7 A Yes.

8 Q Upon what do you base your opinion that
9 that well produced from a separate Lower Morrow reservoir
10 than the subject well?

11 A We believe that it's in a separate Lower
12 Morrow reservoir due to the lack of a Lower Morrow section
13 in the well in the south half of Section 30, and then the
14 rapid depletion of the well in Section 31, the north half.

15 Q All right, and let's look now then at
16 the well in Section 31, that's the Hondo Federal No. 1 Well?

17 A Yes, Hondo Alscott.

18 Q And why do you believe that that well
19 does not produce from the same Lower Morrow reservoir as the
20 subject well?

21 A That well is believed to not produce
22 from the same Morrow section because it was completed and
23 then depleted in the Lower Morrow in less than a year.

24 Q For purposes of the record, Mr. Erickson,
25

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1 would you describe for us the general geological character-
2 istics of Morrow production here in Eddy County, New Mexico?

3 A The Morrow, we divide the Morrow into
4 three general intervals of sand deposition, and the production
5 occurs in all three zones, but not necessarily in the same
6 place.

7 Offsetting Morrow wells can be drilled
8 and be completed in totally different sands. The sands are
9 very lenticular in nature and do not necessarily extend from
10 one well to another. It's very unpredictable; the sand trends
11 are hard to distinguish from one another.

12 Q Can you describe for us the general type
13 of production characteristics found in the Morrow formation
14 to distinguish the Morrow formation from a homogeneous re-
15 servoir?

16 A It's not uncommon to drill one -- wells
17 next to each other that -- you may drill a new well next to
18 an old, depleted well, and get virgin pressure, which shows
19 the disconnected porosity characteristics. The sands are
20 very lenticular, deposited in stringers.

21 Q Would it be a fair statement, Mr. Erick-
22 son, to say that each of these three Morrow zones, being the
23 Upper Morrow, the Middle Morrow, and the Lower Morrow, can
24 each constitute a separate reservoir under the Natural Gas
25 Policy Act definition of a reservoir?

1 A Yes, those are definitely not in com-
2 munication.

3 Q And that Natural Gas Policy Act defini-
4 tion of a reservoir is not necessarily the same definition
5 used by the Oil Conservation Division in determining a pool?

6 A Yes.

7 Q All right. Let's turn to what we've
8 marked as Exhibit Number Two and have you identify that ex-
9 hibit for me. That's your structure map.

10 A Yes.

11 Q Would you identify that exhibit for us,
12 please?

13 A Yes. This is the structure - contour
14 map of the top of the Morrow Clastics in the immediate area
15 of concern. Generally --

16 Q Excuse me, let me ask you if the struc-
17 ture plays any significance in the Morrow production in this
18 particular area?

19 A No, it doesn't.

20 Q Is structural position of the wells any
21 aid to you in this particular area in order to define a new
22 reservoir under the Natural Gas Policy Act definition?

23 A No.

24 Q All right, sir, if you'll go to the wall
25 where we've placed Exhibit Number Three, which is your cross

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1 section, and I'd like you to take us through that cross
2 section.

3 A The Lower Morrow is shown in orange.
4 The Middle Morrow is shown in yellow. The subject well is
5 this one right here.

6 MR. NUTTER: The third from the left?

7 A Yes, the third from the left, and as you
8 can see, it is perforated only in the Lower Morrow.

9 The Hondo Alscott No. 1 is the second
10 well from the right and is perforated right there.

11 MR. NUTTER: Now would you indicate the
12 well you're talking about because the transcript doesn't
13 show where right there is.

14 A Oh, I'm sorry. It's perforated approxi-
15 mately 11,100 feet.

16 Q The Hondo Alscott Well represents one
17 of those wells that was capable of production prior to April
18 20th, '77?

19 A Yes.

20 MR. NUTTER: Is that the well that you
21 had stated had depleted in less than a year?

22 A Yes.

23 MR. NUTTER: From those perforations
24 that you mentioned are at 11,100.

25 A Yes.

1 MR. NUTTER: Is that the only perforations

2 in that well?

3 A That's the only perforations in the Mor-
4 row. It has since been recompleted in the Cisco.

5 Q Now, what of -- which if any of the other
6 wells on the cross section are wells that were capable of
7 production from the Lower Morrow prior to April 20th, of '77?

8 A The Hondo No. 1 Wright Federal, which is
9 the first cross section on the right. It is perforated at
10 approximately 11,100 in the Lower Morrow.

11 Q Would you demonstrate to us again, now,
12 Mr. Erickson, why you believe that those two wells produce
13 from a separate reservoir than the subject well?

14 A We believe they're producing from the --
15 a separate reservoir due to the fact this No. 2 Alscott Fed-
16 eral, which is north of the other Alscott Federal has no
17 Lower Morrow production whatsoever and no sand. We don't
18 believe that these sands seen in the two key wells are
19 exactly correlative with the sands in the AB.

20 Q By the key wells you mean the Hondo Wells?

21 A Hondo Alscott Federal 1 and the Hondo
22 Wright Federal.

23 Q The rest of the wells on the cross sec-
24 tion were drilled after April of '77?

25 A Yes.

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1 Q Okay. Does that conclude your comments
2 on this exhibit?

3 A Yes.

4 Q All right. Were Exhibits One, Two, and
5 Three prepared by you, Mr. Erickson?

6 A Yes.

7 MR. KELLAHIN: That concludes my examin-
8 ation of Mr. Erickson.

9
10 CROSS EXAMINATION

11 BY MR. NUTTER:

12 Q Mr. Erickson, you testified that you be-
13 lieve that the Alscott Federal is producing from a different
14 reservoir than your AB State because of the fact that you
15 have no Lower Morrow in the well in the south half of Section
16 30, which is the Hondo Alscott 2, and also because of the
17 rapid depletion of the Hondo Alscott Federal 1. Now, can you
18 testify that the Alscott Federal 1 and the Wright Federal No.
19 1 are producting from separate reservoirs?

20 That would be the first well on the right
21 and the second well on the right. It looks like from here
22 that the pay is in identically the same spot, and even the
23 wiggles on the logs look very similar from here.

24 A Yes, they look similar, but the pressure
25 data seems to indicate that they are not at all in pressure

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1 communication.

2 Q Okay, one well has been depleted and the
3 other well is still producing, I presume.

4 A Yes.

5 Q But is there any evidence, other than
6 that, that they're in a separate reservoir?

7 A Not that we have, no. They do appear to
8 be in the same zone.

9 Q How much is the Wright Federal making?

10 A We can look that up. I don't know right
11 offhand.

12 MR. KELLAHIN: Mr. Kernaghan has that
13 information.

14 Q What I'm driving at is if -- if those two
15 wells are in the same reservoir and have a different producing
16 characteristic, slightly different producing characteristic,
17 that may not be -- that may be evidence to show that the AB
18 State and the Alscott 1 are not in a separate reservoir from
19 each other.

20 A We believe they are not in the same re-
21 servoir.

22 Q I can understand your AB State 1 is cap-
23 able of producing and the Alscott Federal is not capable of
24 producing from Lower Morrow any more.

25 A That's right. We believe that's the --

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1 that is indicating a separate reservoir, the fact that the AB
2 will -- we encountered nearly virgin reservoir pressure in
3 the AB, with the Alscott having been a depleted well at the
4 time that the AB was drilled.

5 Q How much did the Alscott produce before
6 it was recompleted in the Cisco?

7 MR. NUTTER: Dan, are you going to get
8 into this?

9 MR. KERNAGHAN: Yeah, I'm going to testify
10 to these facts, Dan.

11 MR. NUTTER: Okay.

12 MR. KERNAGHAN: In fact, we can give you
13 exhibits to all these.

14 MR. NUTTER: Okay.

15 MR. KERNAGHAN: If you want them.

16 MR. NUTTER: Are there any further ques-
17 tions of Mr. Erickson? He may be excused. We may have some
18 more questions of him later on.

19
20 DANIEL G. KERNAGHAN
21 being called as a witness and having been duly sworn upon
22 his oath, testified as follows, to-wit:

23
24 DIRECT EXAMINATION

25
26 BY MR. KELLAHIN:

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Q Mr. Kernaghan, would you please state your name and occupation?

A My name is Dan Kernaghan. I'm the Division Production Manager for Anadarko Production Company in Midland.

Q Have you previously testified before the Oil Conservation Division?

A Yes, I have.

Q And have your qualifications been accepted and made a matter of record?

A Yes, they have.

Q And what professional degree do you hold, Mr. Kernaghan?

A I hold a degree in petroleum engineering from Colorado School of Mines, 1957.

Q In accordance with your duties at Anadarko Production Company, have you made a study of and are you familiar with the facts surrounding this particular application?

A Yes, I have.

MR. KELLAHIN: We tender Mr. Kernaghan as an expert petroleum engineer.

MR. NUTTER: Mr. Kernaghan is qualified.

Q Mr. Kernaghan, would you tell me whether or not you've familiarized yourself with the Natural Gas

1 Policy Act definition of a new reservoir?

2 A Yes, I have.

3 Q And you were here during the testimony of
4 Mr. Erickson?

5 A Yes, I was.

6 Q And you've made a study of this geology
7 with regards to your presentation of testimony?

8 A Yes, I have.

9 Q I show you what we've marked as Anadarko
10 Exhibit Number Four and ask you to identify Exhibit Number
11 Four for us?

12 A Exhibit Number Four is a shot out of the
13 New Mexico Oil and Gas Association's annual report, showing
14 the last reported bottom hole -- or last reported surface
15 shut-in pressure on the Hanagan Millman Deep Unit No. 1,
16 which is the well in the north half of Section 4, 19, 28.

17 This well had a last reported shut-in
18 surface pressure of 877 psig.

19 Q Let me back up for just a minute, Mr.
20 Kernaghan, and show you what we've marked as Anadarko Exhibit
21 One-A.

22 A Okay.

23 Q And ask you to identify that for us.

24 A Exhibit One-A is the area -- the orange --
25 the yellow outline is the area which we searched the Commis-

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1 sion records for Morrow completions.

2 Q The purpose of that search was to deter-
3 mine whether or not there existed any Lower Morrow reservoir
4 that was capable of production prior to April 20th, 1977.

5 A That's right. That's right.

6 Q Why did you seek to limit your area of
7 investigation to that area within the yellow boundary?

8 A It seemed unreasonable for us to -- to us
9 to go beyond that point, due to the nature of the Morrow de-
10 posits, plus the fact that the fields outside this boundary
11 are generally in other pools, classified as other pools by
12 the Commission. It takes in some, you know, other wells even
13 in some other pools, but basically outside of this we felt
14 that there was no question. Everybody recognizes them as
15 being separate.

16 Q Mr. Erickson has testified that within
17 that area there have been identified at least five Lower
18 Morrow completions that potentially were capable of production
19 prior to April 20th, 1977.

20 A That's correct.

21 Q Do you agree with that number?

22 A Let me say, there are five completions
23 which penetrated the Morrow prior to that time. Some of
24 those I don't feel because of the sand conditions that they
25 were capable of production. There was no sand, no Morrow --

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1 no Lower Morrow sands present in them, but they penetrated
2 the -- the stratigraphic interval which is of interest here
3 during the time frame specified in the Natural Gas Policy Act.

4 Q All right. Mr. Erickson has identified
5 five wells. Do you agree with those five wells --

6 A Yes.

7 Q -- as being the only ones that could at
8 all possibly fit within that category?

9 A That's right.

10 Q All right. Let's -- let's commence your
11 testimony, then, with the Hanagan Well for which you've in-
12 troduced the information in Exhibit Four --

13 A Exhibit Four showing --

14 Q -- and ask you to identify that for us.

15 A Right. That showed the last reported
16 shut-in surface pressure on that well. The well was aban-
17 doned in about April of 1974.

18 Q We don't see that on Exhibit Number Five?

19 A That's correct. Let me check it here.

20 MR. NUTTER: Well, wait a minute, not
21 April of '74 because the shut-in pressure was taken 9-7-74.

22 A Well, the last -- the last production
23 reported in the book was in April. Now at least that shows
24 up on our graph. They may possibly have had some production
25 there, it looks like -- well, I don't see any. They may have

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1 had some scattered, very minor production after that point,
2 but --

3 MR. NUTTER: You don't know the date the
4 well was actually plugged?

5 A No, sir, I don't, not without -- the
6 plugging was approved in 1976, according to the records,
7 according to the New Mexico Oil and Gas Association records.
8 I can't tell you the exact -- we didn't pull the plugging
9 record for that well.

10 It certainly fit within the time frame
11 specified in the Natural Gas Policy Act, in that we know it
12 produced subsequent to January 1st, 1970, and before April
13 19th, 1977, so we didn't investigate it any further.

14 MR. NUTTER: Well, your second page of
15 Exhibit Four says plugging was approved in '76.

16 A Yes.

17 MR. NUTTER: So it wasn't producing in
18 April of '77.

19 A No, it wasn't, no. The last reported
20 pressure is, you know, it falls somewhere within that -- with-
21 in a few months of the last production shown on the graph.

22 Q In your opinion, then, is the subject
23 well's Lower Morrow production from a separate reservoir
24 from that encountered in the Hanagan Well in Section 4?

25 A I think so, yes. The Hanagan Well shows

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1 typical performance of a pressure depletion limited -- or a
2 limited reservoir with pressure depletion. The reported pres-
3 sure indicates a much lower shut-in surface pressure than we
4 encountered when our State AB No. 1 Well was drilled. Inci-
5 dentally, the pressure in that well initially was 3207 psig,
6 the shut-in tubing pressure. The bottom hole pressure was a
7 little over 4100 pounds.

8 Q Would you give us a little more informa-
9 tion on the subject well in Section 36, the date it was
10 spudded, the date it was completed, and what initial pressure
11 you encountered?

12 A Okay. That information is contained in
13 the filing we made under the Natural Gas Policy Act, and it
14 will be introduced as an additional exhibit later on, the
15 initial reports on that well, the 101, C-101, 103, 104's,
16 105's, as well as the bottom hole pressure survey taken by
17 an outside party.

18 But the well was --

19 Q Well, let's go to that exhibit and have
20 you identify it, Mr. Kernaghan. I show you what we've marked
21 as Anadarko Exhibit Number Seven and ask you if that is the
22 filing for the FERC application?

23 A This, to the best of my knowledge, is
24 the filing for the FERC application. This exhibit was not
25 entirely prepared by me, but it represents the effort of a

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1 number of different departments in our company, but it has
2 been presented as the filing that was made with the Commission.

3 Q All right.

4 A Which you already have two copies on
5 file.

6 Okay, now the well was -- okay, the well
7 was spudded on 8-31-79.

8 Q That's the subject well?

9 A That's right, that's our New Mexico AB
10 State No. 1 Well in Section 36.

11 Q I assume it's your testimony that the
12 subject well produces from a separate Lower Morrow reservoir
13 that is not capable of being produced by any well completed
14 and producing prior to April 20th of 1977?

15 A That is correct. We have another exhibit
16 that indicates the performance of the Hondo Alscott Federal
17 No. 1.

18 Q Well, let's go to that exhibit and have
19 you identify that for us. Exhibit Number Six?

20 MR. NUTTER: Before you get off Seven,
21 Dan, this completion report, Form C-105, in there.

22 A Okay, Dan, yes.

23 MR. NUTTER: Those dates down there at
24 the bottom, when the well was completed and tested, on this
25 copy here the month is not legible.

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1 A What line are you talking about, Dan?

2 MR. NUTTER: About the third or fourth
3 or fifth from the bottom, over on the left.

4 A Okay, the month is 11-2-79.

5 MR. NUTTER: 11-2 for both cases there,
6 is that correct?

7 A Yes, the entry immediately under it was
8 11-2, also.

9 MR. NUTTER: Okay, those months don't
10 show on this copy at all.

11 A These things have been through a lot.

12 Q All right, would you look at Exhibit
13 Number Six for us and identify that?

14 A Okay, Exhibit Number Six is the production
15 performance of the Hondo Alscott Federal No. 1 Well, which
16 is in the north half of Section 31, 18, 29.

17 We don't have the reported -- pressures
18 were never reported to the Oil and Gas Association, or at
19 least never published by them on this well. All we have is
20 the -- is the performance of the well, which indicates essen-
21 tially the same performance we saw on the Hanagan Millman
22 Deep Unit No. 1. The well was extremely prolific to start
23 with, tested over 6-million cubic feet of gas a day. At
24 the end they indicated, oh, along about September, '77, I
25 believe it was, that this well, on the permit for recompletion

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1 that they filed, that this well was capable of producing 150
2 Mcf a day at that point. This, to me, indicates that the
3 well depleted and certainly pressure depleted, since there's
4 no other known drive mechanism in this area in this zone,
5 and that by the fact that our AB State Com No. 1 found es-
6 sentially virgin pressure at a position a little over a half
7 mile away, that we are in a separate reservoir from this well.

8 I would also say that the Hondo Wright
9 Federal No. 1 would be in a separate reservoir, by the same --
10 by virtue of the same information. We don't have pressures
11 on it, either, but it -- it certainly came in with the -- it
12 was initially completed at such a rate that indicated it was
13 a virgin reservoir. It is still producing and has not shown
14 the same production characteristics at all that the Alscott
15 Federal No. 1 had. We have performance curve for that well
16 is you all would like for me to introduce it as an exhibit.
17 It has no real bearing on our well except for the fact to
18 show that maybe the reservoir in the -- in the Alscott 1 was
19 very limited in all directions.

20 MR. NUTTER: I don't think we need that.

21 A. Okay.

22 MR. NUTTER: Do you have -- you have your
23 initial shut-in pressure on your AB State 1?

24 A. 3207 psig.

25 MR. NUTTER: And have you calculated a

1 bottom hole pressure if you didn't have one measured?

2 A We measured one and it was -- it's con-
3 tained in Exhibit Seven, but it is measured at 4119 psig at
4 a subsea datum of minus 7374.

5 MR. NUTTER: And you don't have any ini-
6 tial bottom hole pressures on the Wright or the Alscott Fed-
7 eral 1, is that it?

8 A I don't have any initial bottom hole
9 pressures on the Alscott.

10 MR. NUTTER: Do you have any bottom hole
11 pressures on any of these other Morrow wells in here?

12 A No, sir, I don't.

13 MR. NUTTER: So how can you say you en-
14 countered virgin pressure if you don't know what the other
15 pressures would have been?

16 A Let me put it this way. I don't have
17 any that I am prepared to present to you all. We have looked
18 at drill stem tests in the area. We've looked at the C-105's
19 the 4-point tests, and 4100 to -- 4000 to 4200 pounds is
20 essentially the reservoir pressure around there. This is
21 also the fourth well that Anadarko has either operated or
22 had an interest in in the area and those were the same pres-
23 sures encountered in our prior drilling.

24 MR. NUTTER: On all these other wells?

25 A Yes.

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1 MR. NUTTER: So you're accepting from
2 4100 to 4200 pounds as being original virgin bottom hole
3 pressure in the Morrow formation, in the Lower Morrow?

4 A That is correct.

5 MR. NUTTER: And your No. AB 1, AB State
6 1, had 4119 measured bottom hole pressure.

7 A That is correct.

8 MR. NUTTER: At a -7374?

9 A Yes, sir.

10 MR. NUTTER: Where is -7374? Is that in
11 the producing interval there?

12 A It is at 10,978 feet, which would put it
13 within the perforations.

14 MR. NUTTER: Right in the middle of the
15 perforations?

16 A Yes, sir.

17 MR. NUTTER: Okay.

18 Q Mr. Kernaghan, you heard the testimony of
19 Mr. Erickson, who testified in this case as a geologist, con-
20 cerning the general Morrow formation characteristics in Eddy
21 County, New Mexico. Do you agree or disagree as a petroleum
22 engineer with those general conclusions?

23 A No, sir, I agree very definitely. I
24 would add one point that the heterogeneity is also indicated
25 by the vast variation in performance and ultimate recovery

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1 of wells. I have -- it is the common occurrence to find
2 wells with high ultimate recoveries offsetting or very near
3 wells with very, very low ultimate recoveries.

4 MR. KELLAHIN: That concludes my examina-
5 tion of Mr. Kernaghan. We move the introduction of Anadarko
6 Exhibits One through Seven.

7 MR. NUTTER: Exhibits One through Seven
8 will be admitted.

9
10 CROSS EXAMINATION

11 BY MR. NUTTER:

12 Q Mr. Kernaghan, the questions I asked Mr.
13 Erickson when he was on the stand a minute ago related to
14 production from the Wright Federal and also the Alscott Fed-
15 eral. Do you know what the cumulative production was from
16 the Lower Morrow in the Alscott Federal before it was aban-
17 doned?

18 A It was between 400 and 500 MMCF. I don't
19 have the exact number here in front of me, but it was -- it
20 was within that range. It was a little less than half a
21 million -- half a billion cubic feet.

22 Q And what's the cum on the Wright Federal
23 and what's its current rate of production, do you know?

24 A No, sir, I don't. I can submit those to
25 you at a later date, if you like.

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Q We've got that in our records. If we take administrative notice, Mr. Kellahin, --

MR. KELLAHIN: Yes, sir.

MR. NUTTER: Do you have objections?

MR. KELLAHIN: No, sir. In addition, we'd be happy to provide you with a tabulation of the calculated bottom hole pressure or the actual measured bottom hole pressure of any of those offsetting wells.

MR. NUTTER: Any of those offsetting wells to establish we do have virgin pressure in this No. AB State 1.

Are there any further questions of Mr. Kernaghan?

MR. KELLAHIN: No, sir.

MR. NUTTER: He may be excused. Do you have anything further in Case Number 6835, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything to offer in Case Number 6835?

We'll take the case under advisement.

(Hearing concluded.)

REPORTER'S CERTIFICATE

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability, 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 correct and true transcript of the hearing held by me on Mar 12 1980 at 6835

[Signature] Examiner
Oil Conservation Division

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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. 6835
Order No. R-6322

APPLICATION OF ANADARKO PRODUCTION
COMPANY FOR AN NGPA DETERMINATION,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on March 12, 1980,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 24th day of April, 1980, 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, Anadarko Production Company, seeks
a determination by the Division, in accordance with Sections
2 (6) and 102 of the Natural Gas Policy Act of 1978, and the
applicable rules of the Federal Energy Regulatory Commission,
that its New Mexico State "AD" Com Well No. 1, located in Unit
H of Section 36, Township 18 South, Range 28 East, NMPM, Eddy
County, New Mexico, has discovered a new onshore reservoir from
which natural gas was not produced in commercial quantities
before April 20, 1977.

(3) That said well was completed in the Lower Morrow forma-
tion with perforations from 10,962 feet to 10,982 feet and from
10,988 feet to 10,994 feet, and a plugged-back depth of 11,219
feet after having been drilled to a total depth of 11,276 feet.

(4) That although there are several wells in the general
vicinity of the subject well which have penetrated and are or
were completed in the Lower Morrow formation, pressures and

-2-

Case No. 6835

Order No. R-6322

and productive capacity encountered in said New Mexico State "AB" Com Well No. 1 as compared to said wells are completely distinctive and are indicative of an undrained reservoir.

(3) That the combined geological and engineering data presented establishes that said New Mexico State "AB" Com Well No. 1 has been completed in a new onshore reservoir as defined by the provisions of Section 102 of the Natural Gas Policy Act of 1978 and the applicable rules of the Federal Energy Regulatory Commission.

IT IS THEREFORE ORDERED:

(1) That the Anadarko Production Company New Mexico State "AB" Com Well No. 1, located in Unit H of Section 36, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico, is completed in a new onshore reservoir as defined by Sections 2 (6) and 102 of the Natural Gas Policy Act of 1978, and the applicable rules of the Federal Energy Regulatory Commission.

(2) That jurisdiction of this cause is hereby 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
Director


S E A L

fd/

Docket No. 6-80

Dockets Nos. 8-80 and 9-80 are tentatively set for March 26 and April 9, 1980. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - MARCH 11, 1980

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

CASE 6609: (DE NOVO) (Continued and Readvertised)

Application of Napeco Inc. for pool creation and special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Strawn oil pool for its Benson Deep Unit Well No. 1 located in Unit O of Section 33, Township 18 South, Range 30 East, and special rules therefor, including 160-acre spacing and standard well locations.

Upon application of Yates Petroleum Corporation and Napeco Inc., this case will be heard De Novo pursuant to the provisions of Rule 1220. Applicants allege this is not an "oil" pool but is a "volatile" oil pool.

CASE 6823: Application of Amoco Production Company for 640-acre carbon dioxide gas well spacing, Harding, Quay, and Union Counties, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Rule 104 of the Division Rules and Regulations to require that wildcat and development carbon dioxide gas wells projected to the Tubb or older formations in Harding, Quay, and Union Counties must be located on 640-acre spacing and proration units, and must be located no nearer than 1650 feet to the outer boundary of the tract and not nearer than 330 feet to any interior quarter-quarter section line.

Docket No. 7-80

DOCKET: EXAMINER HEARING - WEDNESDAY - MARCH 12, 1980

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. Mutter, Examiner, or Richard L. Stamets, Alternate Examiner:

- ALLOWABLE: (1) Consideration of the allowable production of gas for April, 1980, from fifteen prorated pools in Lea, Eddy, and Chaves County, New Mexico.
- (2) Consideration of the allowable production of gas for April, 1980, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6813: (Continued from February 27, 1980, Examiner Hearing) (This case will be dismissed.)

Application of Petroleum Development Corporation to amend Order No. R-6196, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks to amend Order No. R-6196 which authorized re-entry of a well at an unorthodox location in the Lusk-Morrow Gas Pool to be dedicated to the N/2 of Section 13, Township 19 South, Range 31 East. Applicant now seeks approval for a new revised location 750 feet from the North line and 660 feet from the West line of said Section 13.

CASE 6834: Application of Conoco Inc. for a dual completion and unorthodox well location, Lea County, New Mexico. (This case will be continued to March 26 and readvertised.)

Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its SEMU Burger Well No. 107 at an unorthodox location 2615 feet from the South and East lines of Section 24, Township 20 South, Range 38 East, to produce oil from the Blinbry Oil and Gas and Drinkard Pools.

CASE 6824: Application of American Trading and Production Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Talco Unit Area, comprising 4,800 acres, more or less, of State and Federal lands in Township 26 South, Range 35 East.

CASE 6815: (Continued and Readvertised)

Application of Florida Exploration Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Ross Draw Unit Well No. 8, a Wolfcamp gas well 1650 feet from the North and East lines of Section 27, Township 26 South, Range 30 East, the E/2 of said Section 27 being dedicated to the well.

CASE 6825: Application of Husky Oil Company for approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks a finding that the drilling of its North Shore Woolworth Well No. 5 to be located in Unit E of Section 33, Township 24 South, Range 37 East, Jalmat Pool, is necessary to effectively and efficiently drain that portion of the proration unit which cannot be so drained by the existing well.

CASE 6826: Application of Tahoe Oil and Cattle Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Penrose Skelly Pool underlying the SE/4 SE/4 of Section 25, Township 21 South, Range 36 East, to be dedicated to its Bromlee Well No. 1 located thereon. Also to be considered will be the cost of recompleting 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 recompleting said well.

CASE 6827: Application of Consolidated Oil & Gas, Inc. for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Gallup formation underlying the SE/4 of Section 2, Township 30 North, Range 12 West, and in the Mesaverde formation underlying the S/2 of said Section 2, 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 6828: Application of Etheldred T. Ross for three non-standard gas proration units, Harding County, New Mexico. Applicant, in the above-styled cause, seeks approval of the three following non-standard gas proration units, all in Township 19 North, Range 30 East: a 40-acre unit comprising the SW/4 NE/4 of Section 12; and two 80-acre units in Section 14, the first comprising the N/2 NW/4 and the second comprising the N/2 SE/4; each of said units would be dedicated to a well to be drilled to the Tubb formation at a standard location thereon.

CASE 6829: Application of Alpha Twenty-One Production Company for approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks findings that the drilling of its El Paso Tom Federal Wells Nos. 1, 2, and 3, in Units D, E, and F, respectively, of Section 33, Township 25 South, Range 37 East, Langlie Mattix Pool, is necessary to effectively and efficiently drain that portion of the existing proration unit which cannot be drained by the existing well on each of said well's respective proration unit.

CASE 6830: Application of Enserch Exploration, Inc. for special pool rules or, in the alternative, a special gas-oil ratio, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks an order promulgating special pool rules for the South Peterson-Pennsylvanian field including a special gas-oil ratio of 4,000 to 1, or in the alternative, establishing a special gas-oil ratio of 4,000 to 1 for its Lambirth Well No. 3, located in Unit G of Section 31, Township 5 South, Range 33 East.

CASE 6831: 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 recompletion of its State "JM" Well No. 1 in the Wolfcamp thru Cisco formations at an unorthodox location 660 feet from the North and East lines of Section 25, Township 18 South, Range 24 East, the N/2 of said Section 25 to be dedicated to the well.

CASE 6832: 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 recompletion of its Cities "JC" Well No. 1 in the Wolfcamp thru Cisco formations at an unorthodox location 660 feet from the South and East lines of Section 13, Township 18 South, Range 24 East, the E/2 of said Section 13 to be dedicated to the well.

CASE 6833: Application of Harvey E. Yates Company for directional drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to directionally drill its Betenbough Well No. 1, the surface location of which is 660 feet from the North line and 1980 feet from the West line of Section 32, Township 13 South, Range 36 East, in such a manner as to bottom it within 100 feet of a point 660 feet from the North line and 1830 feet from the West line of said Section 32 in the Austin-Mississippian Pool.

CASE 6818: (Continued from February 27, 1980, Examiner Hearing)

Application of Tenneco Oil Company for an NGPA determination, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks a new onshore reservoir determination for its State HL 11 Well No. 1 located in Unit N of Section 11, Township 19 South, Range 29 East.

CASE 6835: Application of Anadarko Production Company for an NGPA determination, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks a new onshore reservoir determination for its New Mexico State "AB" Com. Well No. 1 located in Unit M of Section 36, Township 18 South, Range 28 East.

CASE 6836: Application of Anadarko Production Company for an NGPA determination, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks a new onshore reservoir determination for its New Mexico "AA" State Well No. 1 located in Unit F of Section 35, Township 19 South, Range 28 East.

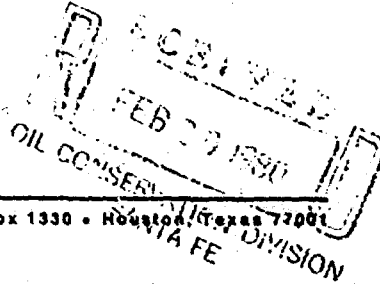
CASE 6837: Application of Curtis Little for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Dakota formation underlying the W/2 of Section 7, Township 25 North, Range 3 West, to be dedicated to a well to be drilled 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 6819: (Continued from February 27, 1980, Examiner Hearing)

Application of V-F Petroleum, Inc. for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the McKee or Devonian formations, or both, underlying four 40-acre units, being the SE/4 SE/4, NE/4 SE/4, NW/4 SE/4, and SW/4 SE/4 of Section 21, Township 23 South, Range 37 East, North Teague Field, each 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 wells 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 wells and a charge for risk involved in drilling said wells.

Anadarko
PRODUCTION COMPANY

2777 Allen Parkway • P. O. Box 1330 • Houston, Texas 77001



A
Penhandle
Eastern
Company

February 18, 1980

State of New Mexico
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Case 6835

Attention: Mr. Joe Ramey

RE: Applications for
Category Determination
Natural Gas Policy Act
of 1978 - Section 102

Gentlemen:

Pursuant to your notice dated January 25, 1980, this
is to request a hearing before the New Mexico Oil
Conservation Division for a new reservoir determination
on the following wells:

New Mexico "AA" State No. 1	✓ New Mexico State "AB" Com.
(Recompletion) Unit F	No. 1 Well Unit H
Section 35-18S-28E	Section 36-18S-28E
Eddy County, New Mexico	Eddy County, New Mexico

Please notify Anadarko at the address shown above of the time,
date and location of the hearing.

Respectfully submitted,

ANADARKO PRODUCTION COMPANY

By:

Robert G. Bush
Robert G. Bush

Manager of Hydrocarbon Sales

RGB/cmg

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. 6835

Order No. R-6322

APPLICATION OF ANADARKO PRODUCTION
COMPANY FOR AN NGPA DETERMINATION,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on March 12
19 80, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this April day of March, 19 80, 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, Anadarko Production Company, seeks
a determination by the Division, in accordance with Sections 2 (6)
and 102 of the Natural Gas Policy Act of 1978, and the applicable

rules of the Federal Energy Regulatory Commission, that its New Mexico State "AB" Com Well No. 1, located in Unit H of Section 36, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico, has discovered a new onshore reservoir from which natural gas was not produced in commercial quantities before April 20, 1977.

(3) That said well was completed in the Lower Maroon formation with perforations from 10,962 feet to 10,982 feet and 10,983 feet to 10,994 feet, and a plugged-back depth of 11,219 feet after having been drilled to a total depth of 10,276 feet.

(4) That although there are several wells in the ^{general} vicinity of the subject well which have penetrated and ^{or were} are completed in the Lower Maroon formation, pressures ^{and productive capacity} encountered in said New Mexico State "AB" Com Well No. 1 are indicative of an ^{as compared to said wells are completely distinctive and} ungrained reservoir.

(5) That the combined ^{geological and engineering} seismic and pressure data presented establishes that said New Mexico State "AB" Com Well No. 1 has been completed in a new onshore reservoir as defined by the provisions of Section 102 ~~of~~ of the Natural Gas Policy Act of 1978 and the applicable rules of the Federal Energy Regulatory Commission.

IT IS THEREFORE ORDERED:

(1) That the Anadarko Production Company New Mexico State "AB" Com Well No. 1, located in Unit H of Section 36, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico, is completed in a new onshore reservoir as defined by Sections 2 (6) and 102 ~~of~~ of the Natural Gas Policy Act of 1978, and the applicable rules of the Federal Energy Regulatory Commission.

(2) That jurisdiction of this cause is hereby 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.