CASE 7225: KNOX INDUSTRIES, INC. FOR AN UNORTHODOX GAS WELL LOCATION, LEA COUNTY, NEW MEXICO

of Section of Section

# CASE NO.

7225

APPlication, Transcripts, Small Exhibits,

ETC.

## BRUCE KING GOVERNOR LARRY KEHOE SECRETARY

# STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

July 20, 1981

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

Mr. Thomas Kellahin	Re:	ORDER NO	7225 R-6722-A	1
Kellahin and Kellahin Attorneys at Law Post Office Box 1769 Santa Fe, New Mexico		Applicant:	-	
		Knox Ind	ustries, 1	Inc.
Dear Sir:	•			
Enclosed herewith are two control order recently ent				ced
Pours very truly,  JOE D. RAMEY  Director			7	
		Service Service		
JDR/fd				
Copy of order also sent to:				
Hobbs OCD X Artesia OCD X Aztec OCD				
Other Clyde Mote				

# STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

CASE NO. 7225 Order No. R-6722-A

APPLICATION OF KNOX INDUSTRIES, INC. FOR AN UNDRITHODOX GAS WELL LOCATION, LEA COUNTY, NEW MEXICO.

### NUNC PRO TUNC ORDER

### BY THE DIVISION:

It appearing to the Division that Order No. R-6722, dated July 1, 1981, does not correctly state the intended order of

### IT IS THEREFORE ORDERED:

- (1) That Order No. (1) on page 3 of Order No. R-6722 be and the same is hereby corrected to read in its entirety as
  - formation is hereby approved for the Knox Industries, Inc. Maddox Well No. 1, to be located at a point 1980 feet from the South line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, NMPM, Northeast Antelope Ridge Field, Lea County, New Mexico."
- (2) That Rule 1 of the Special Rules and Regulations on to read in its entirety as follows:
  - "RULE 1. These rules shall apply to the Knox Industries, Inc. Maddox Well No. 1, to be located 1980 feet from the South line and 660 feet from the West line of Section 12, Iownship 23 South, Range 34 East, NMPM, Lea County, New shall be applied to the well's deliverability (as determined by the hereinefter set forth procedure) to determine its
- (3) That the corrections set forth in this order be entered

2-Caae No. 7225 Order No. R-6722-A

DONE at Santa Fe, New Mexico, on this 16th day of July,

STATE OF NEW HEXICO OIL CONSERVATION DIVISION

JOE D. RAMEY Director

fd/



# STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

POST OFFICE BOX 2088 SFATE LAND OFFICE BUILDING SANTA PE, NEVS MEXICO 87501 (505) 627-2434

July 2, 1981

Mr. Thomas Kellahin	Re:	CASE NO.	7225 R=6722
Kellahin & Kellahin Attorneys at Law Post Office Box 1769 Santa Fe, New Mexico		Applicant:	
		Knox Indu	etries, Inc.
Dear Sir:			
Enclosed herewith are two Division order recently e			
Pours very truly,	. •		
/JOE D. RAMEY			
Director			to the transfer of the second
JDR/fd			
Copy of order also sent to	0:		
Hobbs OCD x Artesia OCD x			
Aztec OCD	in the second		
Other Clyde Mote			
		·	

#### 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. 7225 Order No. R-6722

APPLICATION OF KNOX INDUSTRIES, INC. FOR AN UNORTHODOX GAS WELL LOCATION, LEA COUNTY, NEW MEXICO.

#### ORDER OF THE DIVISION

#### BY THE DIVISION:

This cause came on for hearing at 9 a.m. on May 20, 1981, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this lst day of July, 1981, 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, Knox Industries, Inc., seeks approval of an unorthodox gas well location for its Maddox Well No. 1 to be drilled 1980 feet from the South line and 660 feet from the West line of Section 12, Township 25 South, Range 34 East, NMPM, to test the Morrow formation, Northeast Antelope Ridge Field, Lea County, New Mexico.
- (3) That the S/2 of said Section 12 is to be dedicated to the well.
- (4) That a well at said unorthodox location will better enable applicant to produce the gas underlying the proration unit.
- (5) That the offset operator to the west, Amoco Production Company, objected to the proposed unorthodox location.

-2-Case No. 7225 Order No. R-6722

- (6) That from the evidence presented at the hearing by both the applicant and the opposition it appears that there is little likelihood of commercial gas reserves being found in the SE/4 of the subject Section 12.
- (7) That any productive sands which might be encountered by a well drilled at the proposed unorthodox location would most likely extend from the SW/4 of Section 12 westward into the SE/4 of Section 11, which lands are owned by Amoco.
- (8) That although applicant foresees the possibility of also obtaining production in the Upper and Lower Atoka zones of the Pennsylvanian, and presented evidence concerning said zones, the application was filed for the Morrow zone only, and the legal notice for this case is for the Morrow only.
- (9) That should applicant encounter production in the Upper or Lower Atoka, the case should be reopened and the evidence pertaining to said Atoka zones considered at that time.
- (10) That to produce a well at full allowable at the proposed location would give the owner of such well an unfair advantage over the owner to the west, unless such owner drilled a well at an unorthodox location equidistant from its lease line as applicant's proposed location is from its lease line.
- (11) That to offset the aforesaid advantage and eliminate the need for an offsetting unorthodox location, some method of restricting production from the proposed well at the proposed unorthodox location should be imposed.
- (12) That the proposed unorthodox well location would be a standard location for a well in a 160-acre spaced gas reservoir.
- (13) That the well should be assigned an allowance limitation factor based upon a 160-acre spaced location, or 50 percent (160 acres divided by 320 acres x 100), in the Morrow zone of the Pennsylvanian formation.
- (14) That in the absence of any special rules and regulations for the prorationing of production from the Morrow formation, the aforesaid production limitation factor should be applied against said well's ability to produce into the pipeline as determined by periodic well tests.
- (15) That the minimum calculated allowable for the subject well should be reasonable, and 1,000,000 cubic feet of gas per day is a reasonable figure for such minimum allowable.

|-3-| Case No. 7225 | Order No. R-6722

(16) That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject reservoir or other productive zones found, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

#### IT IS THEREFURE ORDERED:

- (1) That an unorthodox well location for the Morrow formation is hereby approved for the Knox Industries, Inc., Maddox Well No. 1, to be located at a point 1980 feet from the North line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, NMPM, Northeast Antelope Ridge Field, Les County, New Mexico.
- (2) That the S/2 of said Section 12 shall be dedicated to the above-described well.
- (3) That said well is hereby assigned a Production Limitation Factor of 0.50 in the Morrow Cormation.
- (4) That in the absence of any Special Rules and Regulations prorating gas production in said Morrow formation, the special rules hereinafter promulgated shall apply.
- (5) That the following Special Rules and Regulations for a non-prorated gas well at an unorthodox location shell apply to the subject well:

SPECIAL RULES AND REGULATIONS
FOR THE
APPLICATION OF A "PRODUCTION LIMITATION FACTOR"
TO A NON-PROPATED GAS WELL

#### APPLICATION OF RULES

RULE 1. These rules shall apply to the Knox Industries, Inc. Maddox Wall No. 1, to be located 1980 feet from the North line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico, which well's Production Limitation Factor of 0.50 shall be applied to the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production.

-4-Case No. 7225 Order No. R-6722

#### ALLOWABLE PERIOD

- RULE 2. The allowable period for the subject well shall be six months.
- RULE 3. The year shall be divided into two allowable periods commencing at 7:00 o'clock a.m. on January 1 and July 1.

#### DETERMINATION OF DELIVERY CAPACITY

- RULE 4. Immediately upon connection of the well the operator shall determine the open flow capacity of the well in accordance with the Division "Manual for Back-Pressure Testing of Natural Gas Wells" then current, and the well's initial deliverability shall be calculated against average pipeline pressure.
- RULE 5. The well's "subsequent deliverability" shall be determined twice a year, and shall be equal to its highest single day's production during the months of April and May or October and November, whichever is applicable. Said subsequent deliverability, certified by the pipeline, shall be submitted to the appropriate District Office of the Division not later than June 15 and December 15 of each year.
- RULE 6. The Division Director may authorize special deliverability tasts to be conducted upon a showing that the well has been worked over or that the subsequent deliverability determined under Rule 5 above is erroneous. Any such special test shall be conducted in accordance with Rule 4 above.
- RULE 7. The operator shall notify the appropriate district office of the Division and all offset operators of the date and time of initial or special deliverability tests in order that the Division or any such operator may at their option witness such tests.

#### CALCULATION AND ASSIGNMENT OF ALLOWABLES

RULE 8. The well's allowable shall commence upon the date of connection to a pipeline and when the operator has complied with all appropriate filing requirements of the Rules and Regulations and any special rules and regulations.

- RULE 9. The well's allowable during its first allowable period shall be determined by multiplying its initial deliverability by its production limitation factor.
- RULE 10. The well's allowable during all ensuing allowable periods shall be determined by multiplying its letest subsequent deliverability, as determined under provisions of Rule 5, by its production limitation factor. If the well shall not have been producing for at least 60 days prior to the end of its first allowable period, the sllowable for the second allowable period shall be determined in accordance with Rule 9.
- RULE 11. Revision of allowable based upon special well tests shall become effective upon the date of such test provided the results of such test are filed with the Division's district office within 30 days after the date of the test; otherwise the date shall be the date the test report is received in said office.
- RULE 12. Revised allowables based on special well tests shall remain effective until the beginning of the next allowable period.
- RULE 13. In no event shall the well receive an allowable of less than one million cubic feet of gas per day.

#### BALANCING OF PRODUCTION

- RULE 14. January 1 and July 1 of each year shall be known as the balancing dates.
- RULE 15. If the well has an underproduced status at the end of a six-month allowable period, it shall be allowed to carry such underproduction forward into the next period and may produce such underproduction in addition to its regularly assigned allowable. Any underproduction carried forward into any allowable period which remains unproduced at the end of the period shall be cancelled.
- RULE 16. Production during any one month of an allowable period in excess of the monthly allowable assigned to the well shall be applied against the underproduction carried into the period in determining the amount of allowable, if any, to be cancelled.
- RULE 17. If the well has an overproduced status at the end of a six-month allowable period, it shall be shut in until such overproduction is made up.

Case No. 7225 Order No. R-6722

- RULE 18. If, during any month, it is discovered that the well is overproduced in an amount exceeding three times its everage monthly allowable, it shall be shut in during that ponth and during each succeeding month until it is overproduced in an amount three times or less its monthly allowable, as determined hereinabove.
- 19. The Director of the Division shall have authority to permit the well, if it is subject to shut-in pursuant to Rules 17 and 18 above, to produce up to 500 MCF of gas per month upon proper showing to the Director that complete shut-in would bause undue hardship, provided however, such permission shall be rescinded for the well if it has produced in excess of the monthly rate authorized by the Director.
- RULE 20. The Division may allow overproduction to be made up at a lesser rate than permitted under Rules 17, 18, or 19 above upon a showing at public hearing that the same is necessary to avoid material damage to the well.

#### GENERAL

- RULE 21. Failure to comply with the provisions of this order or the rules contained herein or the Rules and Regulations of the Division shall result in the cancellation of allowable assigned to the well. No further allowable shall be assigned to the well until all rules and regulations are complied with. The Division shall notify the operator of the well and the purchaser, in writing, of the date of allowable cancellation and the reason therefor.
- (6) 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 hereingesignated.

> STATE OF NEW MEXICO dil conservation division

JOE D. RAMEY

Director

Page

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
20 May 1981

#### EXAMINER HEARING

IN THE MATTER OF:

Application of Knox Industries, Inc.,) for an unorthodox gas well location, )
Lea County, New Mexico.

CASE 7225

BEFORE: DAniel S. Nutter

TRANSCRIPT OF HEARING

#### APPEARANCES

For the Oil Conservation Division:

Ernest L. Padilla, Esq. Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501

For the Applicant:

W. Thomas Kellahin, Esq. KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501

For Amoco Production:

Clyde L. Mote, Esq.
AMOCO PRODUCTION COMPANY
P. O. Box 3092
Houston, Texas 77001

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MR. NUTTER: We'll call next Case Number 7225. MR. PADILLA: Appliation of Knox Industries, Inc., for an unorthodox gas well location, Lea County, New Mexico. MR, KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness. 10 MR. MOTE: Mr. Examiner, I'm Clyde Mote, 11 attorney from Houston, Texas, appearing on behalf of Amoco, 12 in association with Atwood and Malone. 13 MR. NUTTER: We have a letter of appear-14 ance on your behalf from them, Mr. Mote. 15 MR. MOTE: Thank you, sir, And we'll 16 have one witness. 17 18 (Witnesses sworn.) 19 20 RICHARD NEFF 21 being called as a witness and being duly sworn upon his oath, 22 testified as follows, to-wit: 23 24 DIRECT EXAMINATION

BY MR. KELLAHIN:

```
1
 2
                          Mr. Neff, would you please state your
                 Q.
 3
    name and occupation?
                           Richard Neff. I'm a consulting geologist.
                           Mr. Neff, have you previously testified
 6
    before the Oil Conservation Division as a geologist?
 7
                           No, sir.
 8
                           Would you tell the Examiner when and
9
    where you obtained your geological degree?
10
                           Yes. I received a Bachelor's and
11
    Masters degree of science in geology at the University of
12
     Oklahoma in 1961.
13
                           Subsequent to graduation, Mr. Neff,
                 Q.
14
    where have you been employed as a geologist?
15
                          First out of school I was hired with
16
    Mobil Oil Corporation and worked in Roswell and Hobbs with
17
     Mobil for eight years.
18
                           During your employment with Mobil in
     Roswell and Hobbs, what was your area of responsibility?
19
20
                           Virtually all of southeast New Mexico
21
     in an exploration effort.
22
                           And did that exploration effort include
23
     preparing geology for the drilling of Morrow wells?
24
                           Yes, sir.
25
                           And other Pennsylvanian tests?
```

\*

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1
                                                           6
                            Yes, sir.
 3
                            Subsequent to your employment with Mobil
     where was your next employment as a geologist?
                            I was Exploration Manager for Occidental
     Petroleum in Midland, responsible for west Texas and southeast
     New Mexico.
                            Did that --
                            For five years.
                            Did that employment with Occidental
10
                 Q.
11
     also include exploration in the Pennsylvanian formations?
12
                            Yes, sir.
                 A.
                            In southeastern New Mexico?
13
                            Yes, sir, it did.
14
15
                            All right, sub equent to that, what was
16
     your next employment?
17
                            I became independent and have been
     working as an independent operator and consultant for the
18
19
     last seven years.
                            And where is your residence, Mr. Neff?
20
21
                            Midland, Texas.
                            As an independent consultant in geology
22
                 Q.
     do you operate on a continuing basis to provide exploration
23
     geology in Pennsylvanian tests in southeastern New Mexico?
                            Yes, sir, I do.
                 A.
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. .

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1
 2
                           And pursuant to that consultation have
 3
    you been employed by the applicant in this case?
                           Yes, sir.
                           And what have you done for the applicant?
 5
                           I've prepared several exhibits, maps
 6
 7
    and cross sections, in this matter.
                           Are you generally familiar with the
                Q.
    facts and circumstances surrounding the application of Knox
 9
10
    Industries?
                           Yes, sir.
11
12
                           MR. KELLAHIN: We tender Mr. Neff as an
13
    expert petroleum geologist.
                           MR. NUTTER: Mr. Neff is qualified.
14
                           Mr. Neff, I'd like to direct your atten-
15
16
    tion first of all to what we've marked as the Applicant's
17
    Exhibit Number One, and have you identify that for me.
18
                           This is a lease ownership map in the
19
    subject area, surrounding about two miles.
                           All right. What is the field involved
20
                 Q.
21
    in this proposed location?
                           Antelope Ridge Field, Morrow and Atoka
22
23
    zones.
                           All right. Now in my discussions with
24
    you, you've indicated that this is a potential test for Atoka
25
```

as well as Morrow --Yes, sir. -- gas? All right. What is your understanding of the spacing and proration rules with regards to a well located in Section 12? The orthodox -- this is an unorthodox location that we are asking for. Would that be unorthodox for both an Q. Atoka and a Morrow test? 10 11 Yes, sir. 12 All right. What would a standard location for an Atoka-Morrow test require with regards to well 13 14 location? It would be in one of the center four 15 40-acre tracts within the south half of Section 12. 16 17 With regards to footage it requires that you be no closer than 660 from the side line or 1980 from 18 19 an end line of a proration unit, is that right? 20 Yes, sir. All right. Now if the proration unit 21 was a west half proration unit for Section 12, would the 22 23 location be unorthodox? No, sir, it would be orthodox. 24 25 All right.

2 MR. KELLAHIN: If the Examiner please, 3 I know that the advertisement in this case, and perhaps even the application, is focused on the Morrow location. 5 It's the intent of the operator, also, 6 to drill and test the Atoka, both the Upper and Lower Atoka, 7 for gas production, and it may be necessary to readvertise this case. Tell me a little bit about your under-10 standing of Section 12, Mr. Neff. My question is why have 11 you selected a south half proration unit as opposed to some 12 other proration unit for Section 12? 13 There are basically two reasons, and I suppose the primary one is the fact that Knox Industries was 14 15 able to acquire leases in the south half, whereas in the north half of the section they were unable to do so. They 16 17 were already leased. The geologic risk, we feel, is much --18 much better, also, in the south half. It's closer to estab-19 20 lished production. Does Knox Industries have any interest 21 22 in the north half of Section 12?

Yes, sir, but it's minimal.

They were able to acquire a few small

Okay.

Q.

23

24

25

10

leases.

All right, With regards to the ownership in the south half of Section 12, has that acreage been committed to Knox Industries for the drilling of the well to test the Atoka and the Morrow?

Yes, sir.

All right, sir, let's turn to Exhibit Number Two.

All right, Mr. Neff, would you tell me what Exhibit Number Two is?

This is a structural contour map on top of the lowermost objective reservoir in this prospect area, the top of the Lower Morrow zone.

The Lower Morrow zone is unmappable and absent in a well, the well in Section 2 to the north.

All right, just a minute.

All right.

Before you explain in detail, you prepared this structure map?

Yes, sir.

All right. Based upon your knowledge of the Pennsylvanian geology in this area, Mr. Neff, does structure play any importance in determining well locations?

We feel like it is a 50 percent contri-

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9 10

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12 13

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22 23

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1 2 butor; the other being reservoir failure due to one or another 3 thing. Structure is important, yes. All right, sir. Now in preparing your contour lines on the structure map, would you identify for us the wells, or well logs, you examined to determine the location of the structure? The nearest control are the wells in Section 14. Natomas, in the west half, the Natomas-Supron Federal, and in the east half, BTA 8006 Ridge. 12 All right, just a minute, before you get 13 too far ahead. 14 The Natomas well is located in the southwest of the section 14? 16 Yes, sir. 17 And that well produces from what forma-18 tions? 19 It produces from all three pay zones in the area, Upper Atoka, Lower Atoka, and Lower Morrow. And I believe it's completed as a dual and I believe the two Atokas were commingled. 23 All right. In terms of the productivity Q. 24 of the Atoka-Morrow wells in this area, Mr. Neff, how does

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15

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22

25

this well compare to the others?

12 The last time I checked the production data on the well it was an extremely strong well. Could you give us some indication of what it produces now? I don't have the current data. It -in the initial months of production, in which it paid out very rapidly, it was delivering 10-million cubic feet of gas per day with about 500 barrels of condensate. 10 Do you recall approximately when the 11 Natomas well was completed? This has been about a year ago. 12 13 All right, sir. What other wells did 14 you use as control wells for drawing the structure map? 15 Well, the BTA well in the southeast quarter of Section 14, and essentially a 40-acre offset to 16 17 the Natomas well. Did that well encounter, or does it 18 19 produce from the Morrow formation? 20 It produces from the Lower Atoka zone 21 only. It found the Lower Morrow zone to be gas and water 22 bearing but uneconomical and the Upper Atoka zone is absent by non-deposition. 24 All right. What's the approximate dis-25 tance between those two wells?

1		12
		13
2	A.	Oh, 1320 feet.
3	Q.	All right, and despite the close proximi
4	of those two wells on	ne produces from the Morrow and the other
5	does not.	
6	A.	That's correct.
7	Q.	All right, sir. In terms of chronologi-
8	cal order, was the Bi	TA well drilled before or after the Natoma
9	well?	• .
10	A.	They were both drilling at about the
11	same time but the BTA	well encountered problems and was com-
12	pleted at a later	several months later.
13	Q.	All right, sir. The application indi-
14	cates that this is th	e Northeast Antelope Ridge Field, Gener-
15	ally what acreage doe	s that include, do you know, Mr. Neff?
16	<b>A.</b>	I'm not certain because this is just
17	part of a trend that!	s continuous. It must be broken into
8	more than one pool.	
9	Q.	All right.
20	<b>A.</b>	Is there an Antelope Ridge Pool? I pre-
21	sume there is.	
22	Q	All right. In terms of development
23	identifying the Morro	w trend in this area, where is the known
4	Morrow production?	
5	<b>A.</b>	The known prolific Morrow production

14 1 extends -- this is the northernmost extent of it in the pool 2 in Section -- in the southwest of 14. 3 The well in the northwest of Section 23, immediately south there, produces from the zone also. It is 5 a very, very strong. 6 The next producers are on a -- on a trend 7 to the southwest and off of this map. There are about four 8 other wells in this reservoir. 9 All right. 10 This prolific Lower Morrow reservoir. 11 MR. NUTTER: In other words, those two 12 are the only Morrow wells on this exhibit? 13 There is a little question of terminology. 14 This Lower Atoka zone has been called Morrow by some and --15 but that is, in my opinion, correct, sir. 16 All right. Is it fair to characterize, 17 Mr. Neff, the proposed Knox location to be at the far north-18 eastern extent of the known Morrow production? 19 From known well control, this is correct A. 20 All right, and -- and what is the pur-Q. 21 pose so far as structure is concerned of a well location as 22 you've suggested? 23 On the Knox acreage to achieve the 24 highest structural point.

25

```
Let me ask you some questions about any
1
    other wells that you've looked at as possible control wells
2
    for your structure map, and direct your attention to the south
3
 4
                            Are there any Morrow tests in that
     half of Section 13.
 5
 6
                            Yes, sir, Amoco's well in the northeast
     acreage?
  7
      of the southwest of Section 13 tested this Lower Morrow zone
  8
      and found it uneconomical, found it to be gas and water bearing.
  9
                             Approximately when was that done, Mr.
  10
  11
                              This has been dragging on for some time.
       Neff?
   12
        If my -- approximately nine months ago.
   13
                               All right. Moving then counter-clockwise
   14
        around the structure contours, I see a well located in the
    15
         north half of 12. Did that well penetrate and test the
    16
    17
         Morrow formation?
                                North half of Section 2?
     18
     19
                                 I'm sorry, 2.
                                 The well did not encounter the Lower
                       Q.
      20
                         It was not present at that location.
                       A.
      21
                                  All right. Looking at the north half
           Morrow zone.
      22
           of Section 11, are there any wells in the north half of 11
      23
            that would have penetrated the Morrow formation?
       24
       25
```

1 16 2 There is currently a well drilling at 3 shallow depth in the northeast quarter of the northwest of Section 11. 5 All right. MR. NUTTER: Is it projected as a deep 7 well? Yes, sir. MR. NUTTER: How deep is it now? 10 I don't have a current report. I -- I 11 might guess, approximately, running their 5000 foot string. 12 MR. NUTTER: Maybe halfway down. 13 Oh, probably a fourth, sir. 14 All right, with regards, then, to your 15 structure map, generally to the north and east there is an 16 absence of existing Morrow tests from which you can base any 17 structural control, is that not true? 18 That's correct, the zone is absent. 19 All right. Based upon the currently Q. 20 available information to you, Mr. Neff, is the proposed loca-21 tion, based upon structural information, the optimum location 22 from which to drill an Atoka and Morrow test in the south 23 half of Section 12? 24 Yes, sir, that's correct. 25 All right, sir, let's go to Exhibit Q.

1 17 2 Number Three. MR. NUTTER: While you're on Exhibit 3 Number Two, Mr. Neff, this Amoco well down in Section 13, you said that it's been going on for some nine months, or something. Are they still working on the well? 7 The last report I've had, they've eval-8 uated all the -- the three pay zones that produce in the field, and they're attempting completion in a shallower zone. 10 MR. NUTTER: The Morrow, you said was **211** gas and water bearing. 12 Yes, sir. 13 MR, NUTTER: Too much water for the 14 amount of gas, though. Right, and apparently the Atoka zones 15 16 were -- were tight. 17 Mr. Neff, I hand you what I have marked 18 as Exhibit Number Three, which is a structure map on the top 19 Upper Atoka zone marker. Is that what you have as Exhibit 20 Three? 21 That's correct. All right, sir, would you generally 22 Q. identify for us the information contained on this exhibit? 23 24 Yes, sir. It's a structural contour

map with 100 foot contour intervals, taking into account all

25

*y* \

of the available well control. This map is ways a little more useful than the Lower Morrow structure map in that the mapping horizon is present in all the wells. It's a shale marker in the midst of the Upper Atoka pay.

Again you've used the same wells in Exhibit Three that you had for Exhibit Number Two?

A. That's correct.

And what conclusions, if any, do you reach with regards to an Atoka test in the south half of Section 12?

A. As in the Morrow, we feel fairly certain that the best possible location is that that's shown on the plat in the northwest of the southwest of Section 12.

Again with regards to the Atoka, what if any significance does structure play with regards to drilling productive Atoka wells?

It has probably less than 50 percent influence. The reservoir is some sort of a reef complex and it is very, very erratic, very patchy, comes and goes in a 40-acre location again, and this can be demonstrated to the louth in comparing the Natomas and the BTA wells in Section 14. The Natomas well is completed in the zone and has considerable net pay. The zone is absolutely shaled out and absent in the BTA well.

.

....

1		and the state of t
2	<b>A.</b> (1)	That is correct.
3	Q.	All right. In 12 we have your proposed
4	location in the south	half and then there is no well in the
5	north half of 12.	
6	А.	That is correct.
7	Q.	All right, sir, would you identify for
8	us, then, going south	vard, any wells that would be unorthodox
9	A.	Only the wells in Section 22 appear to
10	be unorthodox. The we	ell, Estoril Curry Federal, in the
11	northeast of the south	neast, which has been completed as a gas
12	well, and the well at	tempting completion in the northeast of
13	the northeast of Sect	ion 22, Estoril Curry State.
14	·	MR. NUTTER: Those have the south half
15	and the north half, re	espectively, dedicated to them?
16	А.	Yes, sir, I believe that's correct.
17	ρ	All right. In Section 13 the Amoco
18	test in the south hal	f, is that a south half proration unit?
19	<b>A.</b>	Yes, it is, as is the well in 24, the
20	abandoned producer in	the south half of 24, with a south half
21	unit.	
22	Q.	All right. Is it fair to characterize
23	from Exhibits Two and	Three that as you generally move to the
24	eastern side of your	proration unit, that you thereby increas
25	the risk of an unecon	omic well because you're moving down

.

```
21
     structure?
                           This is my interpretation.
                           All right.
                 Q.
 5
                           Yes, sir.
 Ø.
                           Let's go to Exhibit Number Four. Mr.
7
     Neff, I've given you what I've marked as Exhibit Number Four,
8
     which is identified as a net pay Isopach map of the Lower Morrow
9
     zone. Did you prepare this map?
10
                           Yes, sir, I did.
                 A. :
11
                           Would you describe generally how you
                 Q.
12
    prepared the map?
13
                           The data was taken from well logs avail-
14
     able in the area, utilizing a gamma ray cutoff of 75 percent
15
     and a porosity cutoff of 8 percent and water saturation of
16
     about 40 percent.
17
                           Give me your parameters again.
18
                           Gamma ray cutoff of 75 percent.
19
                           Okay,
20
                           And a net porosity cutoff of 8 percent.
21
                           Okay.
22
                           What else?
23
                           Water saturation.
24
                           Water saturation was about 40 percent;
25
     very difficult to determine a cutoff in here as many of the
```

1	22
2	wells made gas and water while seeming to look like they shoul
3	have produced gas alone.
4	Q. How did you develop those parameters as
5	a basis to determine the net pay Isopach map?
6	A. These are obtained from experience in
7	mapping throughout Lea and Eddy Counties, New Mexico, Morrow -
8	Morrow wells.
9	ρ Are those percentages consistently used
10	by other geologists in mapping the Morrow zone?
11	A. I think many of them do, yes.
12	Q All right, proceed and tell me specifi-
13	cally what the Isopach tells you.
14	A. All right, This this is just the
15	northward projection of what I believe to be a Lower Morrow
16	channel trend, which moves to the south and even crosses over
17	into the Bell Lake Field, but it's it's a very narrow
18	channel and is strictly determined by generally to the north-
19	west it becomes shale, where you have a fairly thick sand in
20	the channel, and generally to the south and east the channel
21	is still present but it is it becomes water-bearing.
22	Now there is not a strict structural
23	datum at which it does become water-bearing, however. It
24	tends to cross structural lines; no water level, as such.

, a.

How does the productivity of the Natomas

1 well in the south half of 14, which you show as having 22 feet of net pay, compare to the well in Section 23, that's identi-3 fied, I believe, as having 40 feet of net pay? Yes, sir. They are comparable wells. They're very comparable, and the reservoir has -- apparently 7 has tremendous deliverability, and the increase in net pay, well, they're producing near capacity, I believe, anyway. But from production statistics I think you can only determine that they're fairly comparable, all right. 10 Is there any correlation between the two 11 insofar as one has almost twice the net feet of pay as the 12 13 other? Correlate, it appears to be exactly the 14 A. 15 same zone, No, I meant with regards to the pro-16 Is the well in 23 twice as productive as the well 17 18 in 22? 19 I can't --20 or 14? I can't say that for sure, no. 21 All right. All right, let me go to the 22 40-foot Isopach contour line that is identified in the south 23 half of Section 12. How did you determine that there was 24 approximately that number of feet of the Morrow present there? 25

-

A. This is simply a geological projection.

Again, I hate to draw on wells to the south, but there the trend does move up this way and 40 is essentially a maximum number in the zone and I've projected geologically along what I believe to be the strike of the channel the 40-foot contour.

Q. All right. What's the purpose of the map, Mr. Neff?

A. Basically it is to show that the optimum net pay thickness encountered in Section 12 will be at the proposed drillsite.

On This mapping technique is done for the purposes of the well location?

A. Yes, sir.

All right, may we use this map for any other purpose with regard to determining the actual number of productive acres that may or may not be present in any of the proration units?

A. I don't see how we can until we have -- actually have a well down and can do some reservoir tests.

Is it fair to conclude that the ultimate conclusion from the map is that it simply indicates that a well located in the northwest corner of the proration unit is the optimum location in which to drill a test of the Morrow zone?

1 25 2 That is correct. 3 All right. Is it fair to conclude from the exhibit that if we moved into the east half of the proration unit for Section 12 that we would not encounter more production? Dealing with this reservoir it's very, very possible that the channel may not be as I have it predicted here, and that it may lie -- in fact it could lie totally on the east part. 10 This is not then a map showing us abso-11 lutes? 12 No, sir. 13 It's a question of identifying risk with 14 regards to well location, as I understand it. 15 That is correct. All right. All right, sir, I'd like to 16 17 direct your attention to what I've marked as Exhibit Number 18 Five, which is identified as a net pay Isopach map of the 19 Upper Atoka zone. 20 Have you mapped the Lower Atoka zone? 21 I have not. I have looked at it in the A. wells and deemed our -- the risk on our -- on the Knox acreage 22 23 to be too high to even map it. It's a very, very thin zone and I don't feel like it's potentially productive. 24 The primary objectives, then, of a well

```
1
                                                            26
 2
    located here are the Morrow and then this Upper Atoka zone?
 3
                        Yes, sir.
                           All right, sir, would you tell us gener-
 5
    ally how you prepared Exhibit Number Five?
                           This net pay Isopach was prepared -- this
     is a different type of reservoir. This is a carbonate reser-
    voir and it apparently is a fairly erratic reef. So I used
     a 5 percent porosity cutoff in mapping -- in counting my net
10
     pay for this particular map.
                           The well control are the same wells
11
                 Q.
     we've been talking about generally with regards to these
12
13
     exhibits?
                           Yes, sir, the same wells were used.
14
                 A,
                           We find the Upper Atoka zone is identi-
15
     fied by the center well symbol here on the legend?
16
                           That is correct, upper left -- well --
17
                 A.
                           Shows a clock shaded from 12:00 o'clock
18
19
     to 4:00 o'clock --
20
                            Right.
                            -- in dark? All right. In the south
21
     half of 14 there appears to be the same well we've talked
22
23
     about that had the Lower Atoka production.
                            That is the Lower Atoka.
24
25
                            Yes, sir.
                  Q.
```

.e.s

1	<b>1</b>		27	
2	A. The	Upper Atoka zone was absent	, shaled	
3	out in that well.			
4	Q. Okay	. With regards to the Amoc	o test	
5		id that well test either the	e Upper	
6.			4.	
7		to my knowledge.	·	
6	# -	g north, then, to Section 2	, there's	
9	the BTA well. That well a	opears to be productive in	the Upper	
10	Atoka.			
11	A. That	's correct. The Upper Atok	a is	
12	present there and it appear	rs to be a quite good well,	recently	
13	completed.			
14	Q. Okay	. With regards to the well	in the	
15	north half of 11, this was	the drilling well?		
16	A. That	is correct.		
17	Q Is -	- do you have any knowledge	or	
18	information with regards to whether or not that well is going		is going	
19	to be productive from the	to be productive from the Atoka?		
20	A. Appar	rently it is right on trend	and it	
21	should be productive in the	e Upper Atoka reef complex.		
22	Q A11 :	right. Again we're in an a	rea where	
23	there is very few wells from	om which you can establish	control	
24	for your Isopach is that no	ot true?		
25		's correct, and the geologi	c risk	
- 1			•	

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1
                                                            28
 2
    in the south half of Section 12 is -- is rather high, needless
    to say.
                           What has caused you to draw the Isopach
    contour, specifically with regards to how it crosses through
    the south half of 12?
7
                           I followed, generally followed the
 8
    structural contour as a guide, because I had no other --
9
    nothing else I could use, and hopefully, that structural pull
10
    out there would conform to the stratigraphy and the carbonate
11
    gas-bearing unit would be there.
12
                           Is that a fair geological judgment on
13
    your part, based upon the comparison of the structure and the
14
    Isopach in the other wells?
15
                           Yes, sir, it is.
16
                           Is there anything else you'd like to
17
    tell us about Exhibit Number Five, Mr. Neff?
18
                           No, sir.
19
                           All right, sir, let's go to Exhibit
20
    Number Six.
21
                           All right, sir, would you identify
22
    Exhibit Number Six for us?
23
                           Yes, sir, this is a structural cross
    section utilizing almost the only two wells that I could
24
25
    legally obtain copies of the logs on, and I'm showing the
```

**~**~

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5

7

8

10

13

14 15

16

17 18

19 20

21

22 23

24

25

projection between those two wells in 14 to the Knox proposed drillsite.

It has been a little difficult to obtain data in this area and Amoco has not released their log in 13, nor BTA in Section 2, nor Estoril in their wells in 22 and 15, and I have been able to look at those in the offices of part owners in some of these wells, and so I do have the data, but have not been able to acquire copies of those logs.

The purpose of the exhibit is simply to demonstrate to the Examiner the available copies of portions of the logs --

That is correct, and this is representing the three area and that are prospective at the knox a illsite.

for the Atoka and the Morrow?

Actually, it pretty well demonstrates the erratic nature of these reservoirs because we're dealing with the two wells 1320 feet apart, and showing a total absence of the gas productive Atoka, Upper Atoka; showing an erratic development of the Lower Atoka, both wells of which do produce out of the Lower Atoka; and also the rapid change in the channel of the Lower Morrow.

Could you give us an approximation of

25

1 30 what the proposed well will cost as a dry hole? Approximately \$2,000,000. Would you recommend drilling in the south half of Section 12 at a standard location? No, sir, I cannot recommend that, A bad experience in the area, dealing with these kind of reservoirs, I think is shown just immediately south there in Section 13 in the Amoco well, which to my knowledge, will probably be plugged. Now that was drilled at a standard location. The Natomas well at the same standard location in the south half of 24, also had no economical reservoirs to produce there, and those are on a straight line with the standard location in Section 12, and that's pretty scarey to start with, plus with the geologic evidence that I've presented, I believe the proposed drillsite is -- has the least risk in a high risk area. Do you have an opinion, Mr. Neff, as to whether or not the proposed location ought to be penalized because it is unorthodox? 21 I would think certainly not penalized. 22 What reasons do you have for reaching 23 that opinion? 24 Well, although my geology shows a trend,

several trends, that appear to show the Amoco acreage nearby

to say at this point. Geologically located wells really don't

23

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32
    dictate what reservoir conditions are going to be encountered,
    And the Amoco acreage very well may not be productive. We
     don't have a well on the Amoco acreage.
                           No, sir, I don't think it's going to
6
    violate their rights.
7
                           In your opinion, Mr. Neff, is there any
8
    way to establish what, if any, drainage will occur from the
9
    Amoco acreage by a Knox well located as you propose?
10
                           Not at this time, no, sir.
11
                           Were Exhibits One through Six prepared
                 Q.
12
    by you?
13
                           Yes, sir, they were.
14
                           And in your opinion will approval of
15
    this application be in the best interests of conservation,
16
     the prevention of waste, and the protection of correlative
17
    rights?
18
                           Yes, sir.
19
                           MR. KELLAHIN: I move the introduction
20
    of Exhibits One through Six.
21
                           MR. NUTTER: Exhibits One through Six
    will be admitted in evidence.
23
                           Mr. Mote, I presume you're going to
24
    have some questions of Mr. Neff.
25
                           MR. MOTE: Yes, sir.
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1
                                                            33
                           MR. NUTTER: It's seven minutes or six
    minutes until twelve. Would you rather defer those questions
    until after lunch?
                           MR. MOTE: Yes, sir.
                           MR. NUTTER: Okay, we'll recess the
    hearing, then, until 1:30.
                           (Thereupon the noon recess was
10
                           taken.)
11
12
                           MR. NUTTER: The hearing will come to
13
    order, please.
14
                           Mr. Mote, did you have any questions
    of this witness?
                           MR. MOTE: Yes, sir.
                           CROSS EXAMINATION
19
    BY MR. MOTE:
20
                           Mr. Neff, I believe you testified you're
21
    a consulting geologist?
22
                           Yes, sir.
23
                           And where is your business operated?
24
    Where is your office?
25
                           Midland, Texas, in the Blanks Building.
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-	" =	. J4	
2	Q	All right. When were you hired by Knox	
3	for the work that you've done in this case?		
4	А.	I've done consulting off and on. It's	
5	just been sporadic.	I'm not on a permanent retainer with	
6	them; just one job	or another.	
7	<u>a</u> <u>a</u>	When_did_you_prepare these exhibits?	
8	<b>A.</b>	These are modifications of my earlier	
9	prospecting maps.	The other maps were done a year or so ago	
10	and these, it was a	bout three or four days ago these were	
11	finalized.		
12	Q.	I see. These are not the maps that you	
13	had prepared when this hearing was set for		
14	А.	These were	
15	<b>Q</b> .	hearing on April 22nd? Are these	
16	the same maps or		
17	<b>A.</b>	These are essentially the same maps.	
18	I just cut off the	rest of the pool, which I didn't think was	
19	germane to this, ar	nd got it down to this area that we are	
20	interested in here		
21	Q.	Did you change any of your interpreta-	
22	tions in the area		
<b>2</b> 3	<b>A.</b>	No, sir, I didn't. The basic interpre-	
24	tation is identica		
25	Q	All right, sir, let's go to your Exhibi	

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2	
3	
4	
5	
6	
· 7	
8	
9	4
10	
10	
10 11	
10 11 12	
10 11 12 13	

17

20

21

22

23

24

Number One. Do you have that in front of you?

Yes. Okay.

I believe you stated on direct examination that the proposed well is unorthodox where you're asking for it to be located as to the south half dedicated area, but as to the west half it would be an orthodox location.

That's correct.

All right, would it also be an orthodox location for a 160-acre dedicated area?

> A. I'm not certain.

Well, would you take my word for it, subject to check, that it is an orthodox location for 160acre spacing unit?

Yes, it is. That's right.

All right. I believe you stated that the only leases that you had were in the south half of Section 12 and you had none in the north half and that's why you used the south half as the dedicated area rather than the west half, is that correct?

That's almost correct. Actually, Knox Industries has -- they don't have 1/8th of the north half. They have a portion of the north half that's less than 1/8th in leasehold.

How about in the west half?

```
36
                           In the west half it is -- I feel -- I'm
     not positive. I think it's less than 1/16th,
                           In the north half of the west half?
                           Yes, sir.
                           It would be the northwest quarter, in
 7
     other words?
                           Yes, sir.
9
                           But do they have nearly all in the
10
     south half of Section 12?
11
                           Yes, sir, they have leasehold for their
12
     own account or trades made with the professional mineral owners
13
     in there.
                           Did you attempt to obtain a farmout from
14
15
     the owners of leases in the west half of Section 12?
16
                           Yes, sir.
17
                           And how long did you try to get those
18
     leases, to get farmout in that area?
19
                           Since -- since last April. It's been
20
     a year.
21
                           And you were unsuccessful?
22
                          Yes, sir.
23
                           I believe you stated in your direct
24
     examination that also the reason why you wanted the south
     half instead of in the west half of Section 12 is because it
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2
     was closer to existing production. Did you, did you make
 3
     that statement?
                           Yes, sir, I did.
                           Did you consider the BTA Antelope Ridge
     8006 JVP Well?
                           That -- yes, that well is newly com-
     pleted, as you're aware, and this prospect has been working
     for a year. The well was really not -- had nothing to do with
10
     setting this project up with this particular location in mind.
11
                           But I agree it appears to be almost the
12
     same distance,
13
                           And it's completed in the Pennsylvanian,
14
     too, just like --
15
                           Yes.
16
                           -- the other wells you mentioned down
17
     to the southwest, is it not?
18
                           That's correct.
19
                           All right, go to your second exhibit,
20
     please.
21
                           Do you have any control at all north
22
     of the south half of Sections 13, 14, and 15 for your inter-
23
     pretation?
24
                           No, sir, other than the BTA well where
```

the zone was absent.

```
1
                                                           38
 2
                           So you could have gone due north and
    south with those lines or even leaned them to the west and
 3
    been just as accurate, if you had no control, couldn't you?
 5
                           Right. These contours are just projected
 6
    on my best geology trend application.
 7
                           It is a projection; no well control for
    several miles to the north and east.
 9
                           North of this south half of Section 13,
10
    14, and 15?
11
                           That's right.
12
                           Why didn't you use that BTA Antelope
13
    Well in your structural interpretation?
14
                           The zone is not present in that well.
15
                           Well, the Pennsylvanian is present,
16
    though, isn't it?
17
                           Yes, sir.
18
                           Isn't there a very good marker right on
19
    the top of the Pennsylvanian you could have used in order to
20
    be able to more clearly and more accurately draw your structure
21
    map?
22
                           I could have projected it. I did submit
23
    in Exhibit Three structure on top of the Atoka zone, which I
24
    think fairly well mirrors this.
                           Is the top of the Atoka in the exhibit
                Q.
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39
   you just referred to, is that the same as the top of the
1
2
                          It's near the top of the Pennsylvanian.
   Pennsylvanian?
3
                           About 30 feet off, or something like
                 Q.
 5
                           No, it's probably a couple of hundred
 6
     that?
 7
     feet off, but it's representative.
                            At what subsea depth, if you drilled at
  8
      the proposed location, would you encounter the Morrow?
  9
                             I would expect to encounter this Lower
 10
      Morrow sand channel at approximately -9800 feet.
  11
                             All right. And if the Morrow were wet
  12
       at 9800 feet and below, then you would get a duster, wouldn't
  13
   14
   15
        you?
                               Yes, sir.
                               At least it would be a wet duster.
   1ó
    17
                               A wet duster.
                               Don't you think that on structure maps
                     A.
    18
         such as this that the Strawn or the upper part of the Pennsyl-
    19
          vanian would have been a better indicator than the Morrow as
    20
          to how these lines should go north of the south half of
     21
          Sections 13, 14, and 15, where you have no control?
     22
                                 This is probably true. I mapped for
      23
           this Lower Morrow strictly on a channel deposit and where it
      24
      25
```

40 is absent the contours I really can't project. So I was just trying to represent the configuration of the channel itself rather than structure of the entire Pennsylvanian section, because this has no bearing, since it's absent over here, on -- on the trap over here in the south half of Section 12. 8 When you said "this over here", you're 9 talking about the BTA Antelope Ridge 8006 JVP Well, or whatever 10 it is? 11 Yes, sir, that's correct. 12 But isn't it true that the Morrow and 13 the Atoka and the Strawn all of them are more or less even 14 throughout this area? They have a more or less uniform depo-15 sition? 16 The --17 Thickness, uniform thickness deposition? 18 That's -- that's correct. 19 Okay. All right, turn to your Exhibit 20 Number Four, please, sir. 21 Now is this the one that you were talking 22 about that you have on the top of the Upper Atoka zone marker? 23 This is a little bit below the top of the Pennsylvanian? 24 Yes, sir. 25 And I believe you've already agreed with

.

1û

me that it might have been better to go all the way to the top of the Pennsylvanian because there's a real good marker up at the top of the Pennsylvanian, didn't you agree to that?

A. Yes, sir.

Q. What control do you have, if any, for that high just west of the proposed well? 8700 high you've got there, 8700 foot contour line that's a high just west of the proposed well?

A. This -- this, as in the others, because as you're aware there's very little well control to the north-east, this is projected from the south off of this map, coming up through, as the contours show, other separate closures, and it's simply a geologic projection.

Well, if you have no control north of
the south of 13, 14, and 15, it's just pure speculation,
isn't it?

A. Well, it's not -- it's speculation.

I don't know if you could call it pure. There's --

Q. Impure speculation.

A. Yes, sir, that's -- that's what it is.

Q All right.

In fact, if you drew a line between the Amoco State "GA" No. 1 in Section 13 and the BTA No. 1 Antelope Well up there in Section 2, you wouldn't have a bit of

In other words, you said that the further

\$ × \$

west you go that the more chances are that you're going to get a well that you could produce, is that correct? 3 I feel this is true, yes. wern that the Arrest And the farther east you go the more 5 probability of the fact that you might obtain commercial pro-6 And A (madericae)d sign to 847 7 duction. amount of haid account that scorrect account in product of the is that some All right, go to your Exhibit Number THE SECTION STREET 10 Four. has statement. Now, isn't it true with this net pay 11 Isopach map, as well as the others we've asked you about, that 12 there's no control for your interpretation north of the south 13. half of Sections 13, 14, and 152, well inside the large time. 14 winds the product of That is correct. Generals, who conside the 15: you go the to see the So the 40-foot sand doughnut that you've 16 got running right through your proposed well is just pure 177 or impure speculation, is that correct?v thin the same but 18 Right, geologic projection, I would call **19**. it constitution of the contraction of the contracti 20. 1 believe in discussing this exhibit 21; with your examiner you stated that the well in 23 and the **22**% well in 24 were somewhat different in sand, in net sands 23 that were evident in those wells, is that correct? 24 I think you were talking about, let's 25

see, the producer in 14 and 23, is that correct?

Yes, sir, I believe that's the two you were talking about.

Right. One has about half of the net pay, according to the way I interpret it.

And I understood you to say that the amount of sand actually makes no difference in productivity, is that correct?

I think that's -- I think I could prove that statement, yes, sir.

Okay, then if -- if your zero line on this Isopach map is where you say it is, then it would be just as easy to get a completion over inside your zero line, since the net pay of sand makes no difference, why couldn't you go ahead and put your well somewhere inside that zero line and expect to get a good productive well anywhere?

Well, I certainly think we could but I don't believe it would be a prudent risk. It's very likely that could produce over there and it could have 40 feet, as I'm sure you know, but we're trying to risk adjust this thing as close as we can, with the proposed drillsite.

Another thing about this exhibit, you wouldn't be expected, according to this exhibit then, to -anything east of your zero line, you wouldn't be expected to

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production you would have put your zero line farther on out

so that there would be some production to the west,

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                           If you had -- if you had no Morrow sand
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    then you would not be able to get production, I guess is the
    question I want to ask.
                          Yes, sir.
                          You would be able to get production?
 7
                          Oh, I'm sorry.
                          If there were no Morrow sand would you
    be able to get production?
                          That would be very difficult.
10
                          Okay.
11
                          Right. Could I clarify something? I
12
    think I led you astray a little bit.
13
                          All right, go ahead.
14
                          The Amoco "GA" Well down here has con-
15
    siderable sand.
16
                          But it's wet, isn't it?
17
                          Yes, sir. Okay.
18
                          All right, go to your Exhibit Number
19
20
    Five,
21
                          Now, this net pay Isopach on the Upper
    Atoka also shows your zero line to be west of the east half
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    of your proposed drilling unit, does it not?
23
                          Yes, sir.
                          So you wouldn't expect there to be any
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A.

sylvanian is about 300 foot above there?

Yes, sir, 200 to 300.

All right. In discussing this exhibit, as I remember, you mentioned the fact that the Amoco State "GA" No. 1 in Section 13, that the Natomas North American State 24 Com in Section 24, and the Superior State "R" No. 1 in Section 25 were all at orthodox locations, and that would probably be the same location that you'd have to have an orthodox location in Section 12, did you not?

I did not mention the Superior well, I don't believe, but was it drilled on an orthodox location? I'm sorry, I don't have it on my map.

Well, I understood you to say that, is Q. what I'm asking.

If I did, I don't remember saying that. I did mention the well in 13 and the well in 24, for sure.

And I believe you further stated that you would fear that since both of those sells came in in the water, as I remember your testimony, that a well drilled -if you projected that on up north into Section 12, that a well drilled at the same location as those wells in Section 12 would probably be wet also.

Is that what you stated?

I'll have to beg off. I'm not positive

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2	that's what I said.
3	
4	Hould you like to hear what
5	We have it available here for you if you'd like to hear it.
6	A. Okay, we'd better hear it then.
7	MR. MOTE: I'd like to ask the reporter,
	if she would, to play this for the witness.
8	(Thereupon the reporter played
9	back the requested question and
10	answer, as follows:)
11	
12	QUESTION: (By Mr. Kellahin) Would you recommend
13	drilling in the south half of Section 12 at
14	a standard location?
15	ANSWER: (By Mr. Neff) No, sir, I cannot
16	recommend that. A bad experience in the
17	area, dealing with these kind of reser-
18	voirs, I think is a
19	voirs, I think is shown just immediately
20	south there in Section 13 in the Amoco
21	well, which to my knowledge, will probably
22	be plugged. Now that was drilled at a
23	standard location.
24	The Natomas well at the same
25	standard location in the south half of
	24, also had no economical reservoirs

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...

to produce there, and those are on a straight line with the standard location in Section 12, and that's pretty scarey to start with, plus with the geologic evidence that I've presented, I believe the proposed drillsite is -- has the least risk in a high risk area.

(End of requested playback.)

Now that you've heard the testimony that you gave this morning concerning this, am I more or less correct in my statement that you testified that a well drilled at a regular location would probably come in wet like the wells did in Sections 13 and 24?

A. I never mentioned anything about wet in that statement, and I don't believe that is going to be necessarily the case.

In testing these wells in 13 and 24, they have been found to be in some cases water-bearing in some of the zones, but several of the field pays have been absent by reservoir failure due to facies change from carbonate reservoir quality rock to a shale or to a tight limestone.

In fact, that's the case in, I think,

What will it cost for a producer at this

25

Q.

1 53 proposed location? A. I understand the number is 2-1/2 million dollars, Do you expect to encounter enough recoverable hydrocarbons to pay out the cost of drilling and operating and completing the well? Yes, sir. Ā. At this proposed location? Q. Yes, sir. <sup>9</sup> 11 How many acres will the proposed well Q. 12 drain? I'm not a reservoir engineer. 14 say. We don't, like you said, we don't have any control for boundaries on it, either. 16 You're more or less generally familiar with a drainage area occurs, are you not, around a well? 18 Isn't it usually in the form of a circle or somewhat like a circle, maybe elliptical, or whatever, but doesn't it radiate 20 out, radiate out from the wellbore, a drainage area? It does radiate out from a wellbore, 22 but in what manner, I think, varies considerably with these erratic reservoirs. Some very linear patterns, I'm sure, are 24 prevalent.

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It doesn't necessarily stop at the lease
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   line, does it?
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                          No, sir.
                          And it's not going to drain just 660
    feet and then stop at the Amoco lease line, is it?
6
                          I don't know the answer to that.
 7
                          But you pretty well know the answer to
 8
     it, don't you?
                           No. No, sir, I'm not sure.
 10
                           MR. MOTE: Pass the witness.
                           MR. NUTTER: Are there any further ques-
 11
 12
     tions of this witness? He may be excused.
 13
                            Mr. Mote, I think you said you had a
 14
      witness?
  15
                            MR. MOTE: Yes.
                            MR. NUTTER: Do you have any further
  16
  17
      witnesses, Mr. Kellahin?
  18
                             MR. KELLAHIN: No, sir.
   19
   20
                             WILLIAM CASEY SANFORD
       being called as a witness and being duly sworn upon his oath,
   21
   22
        testified as follows, to-wit:
   23
    24
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proposed in the southern half of Section 12.

Q All right. Now, for these contour lines that you show up and down, more or less from north and south on the map, do you have much control for these, for the contour lines?

A. Yes, sir, there are over twenty wells on this map that were used in constructing the map. We used the Strawn level because the Strawn is the best reflecter and does show the best structural representation of the structure as far as the Pennsylvanian goes in this area.

Q And how do you determine the eastern productive limits of this field?

A. Okay. There are three wells which have been drilled in this area that have proven the Atoka and Morrow to be nonproductive and also to be water-productive.

Now the first well which was drilled was the Superior State "R" No. 1, which is located in the south half of Section 25. That well was drilled in 1976. It did test the Morrow with slight gas shows; did recover quite a bit of water.

They also perforated the Atoka and made quite a bit of water, also.

The next well to be drilled was the Natomas State 24 Com No. 1 in the south half of Section 24.

They perforated the Morrow in 1980 and it flowed water at a rate of 235 barrels of water per day,

They perforated the Atoka and it flowed water at a rate of 337 barrels of water per day.

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formation?

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Late in 1980, and also this year, Amoco drilled their Amoco State "GA" No. 1, testing the Morrow this year. They got it to flow gas at a rate of 250 Mcf gas per day and it did recover considerable amounts of water. The Amoco State "GA" is structurally higher than the Natomas well, which is also structurally higher than the Superior State "R" Therefor, we believe that any well that is structurally lower in the Atoka and the Morrow than the Amoco State "GA" would probably encounter wet Pennsylvanian sand and other reservoirs.

MR. NUTTER: What was the result of the drilling of the Amoco well there, did you say?

Yes, sir. We finally got that well to flow at a rate of 250 Mcf gas per day, which proved to be uneconomic with the amount of water that we were recovering, also.

MR. NUTTER: Now that was from what

From the Morrow, yes, sir. The Atoka

was, as Mr. Neff mentioned, untested in that well.

1	58			
2	MR. KELLAHIN: This is the well in			
3	Section 13?			
4	A. Yes, sir.			
5	Now what we believe, based on the struc-			
6	ture map, based on the negative 8600 foot contour line, that			
7	any well which is drilled to the east of that location along			
8	the eastern flanks of this Antelope Ridge structure, would			
9	probably encounter water-productive reservoirs.			
10	MR. NUTTER; Now why wasn't the Atoka			
11	tested in that well?			
12	A. There was no porosity. There was no			
13	MR. NUTTER: It didn't look good enough			
14	to even test it?			
15	A. Right, did not look good enough to even			
16	tëst.			
17	Q What would that be when you encountered			
18	the Morrow, what subsea depth would that be?			
19	A. The subsea depth on that would be 90			
20	the top of the Morrow in the Amoco State "GA" would be negative			
21	9756 for the top of the Middle Morrow formation.			
22	Q. So anything below that could be expected			
23	to be water-producing, is that correct?			
24	A. Yes, sir, that is correct.			
25	O Have you, using this contour map that			

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you have in front of you, have you determined the amount, the maximum amount of productive acres in the south half of Section 12 that would be attributable to the proposed well?

A. Yes, sir. Based on this structural contour map, and using a planimeter, we have estimated the net acreage which could possibly be productive in the south half of Section 12, to be something less than 72 acres.

Q. All right. Do you have any recommendations concerning the proposed location should the Commission see fit to grant the relief requested?

A. Yes, sir. We recommend that if the proposed unorthodox location is granted, that the well should be assigned an allowable limitation factor based on a 160-acre spaced location, which limitation factor should be applied against the well's ability to produce into the pipeline, as determined by the periodic well tests.

Now this was the order of the Division in Case Number 6930, Order R-6415, concerning the Empire South Deep Unit, by order dated August 5th, 1980, which was a similar situation.

Q. What you're saying is that since less than -- it appears that less than 160 acres is productive, even under the best of circumstances, according to your inter pretation, that they shouldn't receive more than 160 acres

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allowable, is that correct?

A. That is correct, because their location would be a legal location for a 160-acre gas well, of which the Morrow is not, of course.

MR. MOTE: That concludes the testimony, I have prepared for introduction into evidence Exhibit Number Two, which is a copy of the order of the Division which was referred to in his recommendations, and at this time I'd like to offer both Amoco Exhibits Number One and Two into evidence.

MR. NUTTER: Amoco Exhibits One and Two will be admitted in evidence.

MR, KELLAHIN: For the record, Mr. Nutter, I'd like to note my objection to Exhibit Number Two, insofar as counsel has failed to establish essential facts that would determine that the factual situation involved today is the same or similar of that fact situation involved in the previous case.

We are unable to determine whether or not we're faced with offset acreage, it doesn't have a producing well, as opposed to whatever may have been entered in this order concerning drainage and what not. I think that's the kind of problem that needs to be looked at.

MR. NUTTER: Your exception is noted.

MR. MOTE: We tender for cross examina-

1 61 2 tion. 3 CROSS EXAMINATION 5 BY MR. KELLAHIN: It's S-A-N-F-O-R-D? 7 That's correct. 8 Mr. Sanford, your estimation of the 9 number of productive acres of 72 with regards to the south half 10 of Section 12, is that limited to the Morrow formation or did 11 I misunderstand you? 12 That is based on the structural contour 13 and limited to all formations because of the fact that every 14 formation that was tested in all three wells to the south, 15 the Atoka and the Morrow, did prove to be water-productive. 16 Therefor, we assume that in the wells in Section 12 below that 17 structural contour level would also be wet. 18 All right, let me see if I understand 19 your exhibit. 20 The structural contour you have presented 21 is your opinion with regards to the Pennsylvanian structure, which would include the Morrow and the Atoka. 23 That is correct. 24 All right. Mr. Sanford, you had available to you, I assume, the same limited well information that

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vantage that Mr. Neff had.

With limitations, of course, because of 3 the other two wells. All right. Everyone admits, then, that we have an absence of well control to the north and the east 5 of the proposed location. May we not conclude, Mr. Sanford, that 7 8 what you have proposed is simply one geologist's opinion and 9 Mr. Neff, as a separate geologist, has a different opinion, using the same data? Using somewhat the same data, 12 All right, in what ways are the data used by you different from that of Mr. Neff? 13 I had more data than he did. 14 All right. What data do you have lying 16 north and east of this line between the two wells that Mr. Neff didn't have? 18 Well, I do have wells that are north of a line which lies in the southern portion of 24, 23, 22, and 20 21, and also he did have the wells in Sections 14 and 15, but in constructing his map -- I'm sorry, the wells in 13, 14, 15, are the wells that he had. I did have one more well than 23 he did. The only well I can identify on your Q. ŽŜ

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exhibit that lies north and east of this line between the two

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   Wells I've identified, is a well located in the southwest of
    the southwest of I guess that's Section 1, and that's a
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     shallow well, isn't it?
 3
                            That well is a shallow well.
                            That well didn't penetrate any Pennsyl-
  5
                  Q.
  6
                             That is correct.
                              Okay. Tell me the status of your well
      vanian.
  7
        in -- I'm sorry, it's not your well but you do -- Amoco does
                   A.
   8
        have an interest in the well in the north half of 11, does it
   9
   10
    11
                                That is correct.
                                Is the information available to you on
         not?
    12
     13
                      Q.
     14
          that well?
                                  All right, would you tell us something
                                  It is.
     15
      16
                                   That well is drilling somewhat below
      17
            about that well?
       18
                                    All right, it hasn't reached the Pennsyl
             5000 feet at this time.
        19
        20
              vanian formation, then?
         21
                                     The north half of Section 11 is dedi-
                                     No, sir.
         22
          23
               cated to that well, is it?
          24
          25
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The north half is the dedication and
     that is a legal location for that iwell, yes.
                            Amoco has not yet elected to drill a
1
       test in the south half of Section 11, has it?
                                          If Knox' application is
         approved at this location and they go ahead and drill and
   5
          test the pennyslvanian, then you'll have that information
    6
           available to you to determine where you would drill, if at
    7
     8
           all in the south half of 11, would you not?
                                  That information, I assume, will be
      9
      10
                                    And if they result in a well capable
       11
              of production in paying quantities, then you could also
        12
             available.
               offset the same lease line -- the same section, common
        13
                section line, by the same amount of footage in order to
         14
          15
                 adequately protect your correlative rights.
                                        With the only penalty being the delay
           16
            17
                                         But with the distinct advantage of
             18
                  in time, of course.
              19
                    having the well precede you in the area.
                                           Now, Mr. Sanford, did you participate
              20
                     as an expert witness in this hearing of Amoco's in Case 6930?
               21
                22
                 23
                  24
                   25
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       in ---
                             Exhibit Two.
                             No, no, I did not.
                             That was entered as a result of a hearing
      in June 25th of 1980?
                             Right, no, I did not.
                            Were you working as a geologist for
      Amoco at that time?
 10
                            Yes, sir, I was.
 11
                            Was this area one of your areas of
 12
     responsibility at that time?
13
                            Yes, it was.
14
                            How long have you been employed by
15
     Amoco as a geologist, Mr. Sanford?
16
                           A year and a half, roughly.
17
                           And what is the length of your experience
18
    in Morrow and Pennsylvanian production in southeastern New
    Mexico?
                           A Year and a half.
                           Would you concur in Mr. Neff's recom-
    mendation as with regards to a well location in the south half
    of 12?
                          In what way?
                          To test the Atoka and Morrow formations.
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                           At which location?
 3
                           At the proposed unorthodox location for
     the south half of 12. That's the subject --
                           Could you restate the --
                 A,
                           Yes, sir.
                           -- question?
                           Mr. Neff has reached the opinion that
     the proposed unorthodox location of Knox Industries is the
10
     optimum location in the south half of 12. Would you concur
11
     in that recommendation?
12
                           I would.
13
                           MR. KELLAHIN: I have nothing further.
14
                           MR. NUTTER: Are there any further
15
    questions of this witness?
                           MR. MOTE: I'd like to ask one further
16
17
    question.
18
19
                           CROSS EXAMINATION
    BY MR. MOTE:
21
                           You say you concur in the recommendation
    You were not agreeing that a well should be drilled at that
23
    location, were you?
24
                           That is correct. I believe that if
25
    they ever make a well in the south half of 12, it will be as
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 far west as they can put it and that -- I do believe that if they drain anything in there, as Mr. Neff has indicated on his map, the entire reservoir lies to the west of their location; therefor, our acreage would be under the main part of the reservoir, which would be drained by their well.

Q You would anticipate that a large portion of the reserves that would obtained or recovered by their proposed location would be out from underneath Amoco's lease to the west, would you not?

A. I would say that the State of New Mexico has set the Morrow up on a 320-acre spacing unit for the fact that they do feel that in average cases the draining — the drainage on an average Morrow well is 320 acres. Therefor, if you take a 320-acre radius around this well, it will entail a considerable amount of Amoco's acreage.

MR. MOTE: No further questions.

## CROSS EXAMINATION

BY MR. NUTTER:

Q. Well, Mr. Sanford, now I don't understand what you were recommending with respect to this penalty that you were talking about and also this Order Number R-6415.

That order found that there were 195

productive acres in the east half of Section 36 where Amoco

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1 69 proposed to drill a well, and it penalized the well to 50 per-2 cent of its productive capability because it was located at 3 a 160-acre location. Now you mentioned that this was 160-acre location and also that there were only 72 acres. Now would 6 7 you give this a penalty of 160/320 for the location and then 8 penalize it 72/160, because it has -- doesn't have 160 productive acres? Can I --10 11 Yeah, please. 12 Okay. What we had -- what we had done 13 is given Knox drilling company the benefit of the doubt, and 14 what we are asking for is because the well is a legal location 15 for 160-acre spacing unit, which is exactly half of what a 16 Morrow unit would be in this area, that we would go ahead and 17 ask for a 50 percent allowable, as was the case. 18 And 72 acres doesn't enter into it at 19 all, then. 20 We put that in to show that we felt that 21 there was much less than that and to give them the benefit of 22 the doubt. We could triple that and still have -- have 50 23 percent of the acreage needed for a proration unit.

24

25

Q.

Okay.

MR. NUTTER:

Are there any further ques-

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     tions of the witness?
 3
                            MR. KELLAHIN: Yes, sir, I want to see
     if I understand this.
                            RECROSS EXAMINATION
     BY MR. KELLAHIN:
                            The penalty is 50 percent of the 320-
                 Q.
9
     acre proration unit or 160 acres, is that you're talking
10
     about?
11
                            That is correct.
12
                           If my recollection is correct on the
13
     previous Amoco order, the one of the June 8 hearing, Mr.
14
     Sanford, that was tied into setting some type of allowable.
15
                           For this particular case the field in-
16
     volved is not a prorated gas pool?
17
                           I don't believe it is, in fact, I'm
     sure that it is not a prorated gas pool,
18
19
                 Q.
                           Okay.
20
                           MR. NUTTER: For the record's sake,
21
    the one in this order wasn't either. This is a production
22
     limitation even in a non-prorated pool.
23
                           Because of the absence of a production
24
    limitation as a result of prorationing, I understand from
    your Exhibit Number Two that a formula was developed by the
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1		1.7
2	Commission to set the	top allowable and thereby have a method
3	to apply the penalty.	Is that your understanding?
4	A.	I am not familiar with that.
5	<b>Q</b> 10 00	You testified on your direct examination
6	Mr. Sanford, about so	me mechanism for setting the allowable.
7 7	Now would you tell us	again what that was?
8	<b>a.</b>	Okay. What we would like to do is ask
9	for half allowable as	far as the proration unit goes, because
10	it is a 160-acre lega	al location.
11	Q.	That much I understand. Now how are
12	you going to determin	ne what the top allowable is by which to
13	apply the penalty?	
14	<b>A.</b>	Okay, new I'm not a I'm not sure
15	exactly what was done	e during that case.
16		May we call another witness?
17	Q	My point is, Mr. Sanford, is that you're
18	not a petroleum engi	neer and you don't know anything about
19	j	lty together, do you?
20	A.	I do not. That is correct.
21	Q.	And you wouldn't know whether this
22	penalty was fair or	otherwise, would you?
23	<b>A.</b>	That has been determined on other cases
24	by the Division and	also by other Amoco employees.
25	Q	Yes, sir, but in cases for which you di

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72 1 not appear or testify or participate. 2 That's correct. A. 3 So you don't know whether this particular Q. 4 formula used in a different Amoco case is at all relevant or 5 applicable to a penalty, if any, that is for this case. 6 That is correct. 7 MR. KELLAHIN: Nothing further. 8 MR. MOTE: That's still your recommenda-9 tion, is it not? 10 That's still the recommendation. 11 MR. NUTTER: Are there any further 12 questions of the witness? He may be excused. 13 Does anyone have anything further they 14 wish to offer in Case Number 7225? 15 Any closing statements? Mr. Kellahin, 16 you may go last. 17 MR. MOTE: Mr. Examiner, I think it's 18 very clear that what's attempting to be done here is to obtain 19 a location for a well immediately offsetting an Amoco lease 20 on which granted Amoco has not yet drilled but it will very 21 shortly, commence a well in that area, and thereby be able to 22 drain the reserves of Amoco under the lease to the west, 23 The only purpose for going as far west 24 as they have done is to drain reserves outside their lease

limits.

We think that the fact that there is no control for the -- any of the exhibits shown by Mr. Neff, north of the south half of 13, 14, and 15, is nothing more than as far as he even admitted, is nothing more than impure speculation.

The best control that we have in the area was shown by our witness, who testified that anything west, anything east of the \$600 foot contour line shown on his Exhibit Number One would probably prove up to be completed in the water and would not be a commercially productive well.

So there's only about a maximum, that's a maximum now, of 71 acres that could be considered to be productive in Section 12. Since the 660 requested from lease lines is an orthodox location for 160 acres, we feel like that the well should be penalized accordingly and should not be allowed to produce more than as if it were on a 160-acre spaced location, and that it should be tested regularly by some method to test its ability to produce into the pipeline, and be restricted to 50 percent of that production as a limitation factor.

We would have no objection whatsoever to some sort of a minimum allowable as is also stated in that order in item number sixteen. Whether or not a million a day

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penalty.

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is appropriate, I don't know, but I would say that that's just 74 about appropriate and would permit them to recover their operating costs as the well is produced.

So we would represent that we believe that a well permitted at the location which they have requested would be very detrimental to the correlative rights of Amoco Production Company and should not be granted at that location except it be granted on the penalty which we've suggested.

MR. NUTTER: Thank you, Mr. Mote.

Mr. Kellahin?

MR. KELLAHIN: Mr. Examiner, we believe that the application ought to be granted as requested without

As you've heard from Mr. Neff's testimony, the operator is unable to form a west half unit which would place this well at a standard location, and that he does have a substantial controlling interest in the south half of Section 12.

Amoco would have you believe that this case is something other than it is. This is a far different case from the kind of case where you have an operator crowding up against a producing well and attempting to get into the same producing formation.

In this case Amoco has acreage in the

•

 south half of 11, which it has not drilled or developed. We can only speculate as to whether it's productive or not.

Any penalty developed or based upon speculation that Amoco's acreage may or may not be productive, I believe, will not support any kind of test upon review. We believe it is appropriate in those cases to apply a penalty where it's clear that the operator is moving to his advantage against a producing lease. That is not the case here.

We believe by granting this application for Knox Industries, Amoco, if left alone, has the best of all possible worlds. Their acreage they believe is being drained by the Knox well after it is completed, there is nothing to preclude them from offsetting at the same location. They are not blocked into a situation where an operator has already drilled a well at a standard location and is forced into a problem by an offset operator crowding the location. In that situation the operator, having committed himself to a producing well, can do nothing else.

Here we do not have that problem.

Amoco is going to have the ability to sit back and watch

Knox Industries expend something in excess of two million

dollars to determine whether this particular pool extends

far enough north and east to show that any of this acreage

is productive. They can thereby take that information and use

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## CERTIFICATE

I, SALLY W. BOYD, C.S.R., DO HEREPY 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.

Sally W. Boyd CSE

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7225, heard by me on 5/20 1981.

\_\_\_, Examiner OII Conservation Division

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STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
20 May 1981

## EXAMINER HEARING

IN THE MATTER OF:

Application of Knox Industries, Inc.,) for an unorthodox gas well location, )
Lea Country, New Mexico.

CASE **7225** 

BEFORE: DAniel S. Nutter

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TRANSCRIPT OF HEARING

APPEARANCES

For the Oil Conservation Division:

Ernest L. Padilla, Esq. Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 37501

For the Applicant:

W. Thomas Kellahin, Esq. KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501

For Amoco Production:

Clyde L. Mote, Esq.
AMOCO PRODUCTION COMPANY
P. O. Box 3092
Houston, Texas 77001

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2
                                  MR. NUTTER: We'll call next Case Number
        3
            7225.
                                 MR. PADILLA: Appliation of Knox In-
           dustries, Inc., for an unorthodox gas well location, Lea
           County, New Mexico.
                                MR. KELLAHIN: If the Examiner please.
      8
          I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf
         of the applicant, and I have one witness.
     10
                               MR. MOTE: Mr. Examiner, I'm Clyde Mote,
    11
         attorney from Houston, Texas, appearing on behalf of Amoco,
    12
        in association with Atwood and Malone.
    13
                              MR. NUTTER: We have a letter of appear-
   14
       ance on your behalf from them, Mr. Mote.
   15
                             MR. MOTE: Thank you, sir. And we'll
   ĬÓ
       have one witness.
  17
  18
                             (Witnesses sworn.)
  19
 20
                              RICHARD NEFF
 21
     being called as a witness and being duly sworn upon his oath,
22
     testified as follows, to-wit:
23
24
                          DIRECT EXAMINATION
25
   BY MR. KELLAHIN:
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4 .	
1	5
2	0 Mr. Neff, would you please state your
3	name and occupation?
4	A. Richard Neff. I'm a consulting geologist
5	Q Mr. Neff, have you previously testified
6	before the Oil Conservation Division as a geologist?
7	λ No, sir.
8	Q Would you tell the Examiner when and
9	where you obtained your geological degree?
10	A. Yes. I received a Bachelor's and
11	Masters degree of science in geology at the University of
12	Oklahoma in 1961.
13	Q Subsequent to graduation, Mr. Neff,
14	where have you been employed as a geologist?
15	A First out of school I was hired with
16	Mobil Oil Corporation and worked in Roswell and Hobbs with
17	Mobil for eight years.
18	Q During your employment with Mobil in
19	Roswell and Hobbs, what was your area of responsibility?
20	A. Virtually all of southeast New Mexico
21	in an exploration effort.
22	Q. And did that exploration effort include
23	preparing geology for the drilling of Morrow wells?
24	A. Yes, sir.
25	And other Pennsylvanian tests?
1	

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	1		6
	2	A.	Yes, sir.
	3	Q	Subsequent to your employment with Mobil
	4	where was your next en	mployment as a geologist?
	5	λ.	I was Exploration Manager for Occidental
	6	Petroleum in Midland,	responsible for west Texas and southeast
	7	New Mexico.	
. 1	8	Q	Did that
	9	Α.	For five years.
	10	Q	Did that employment with Occidental
	11	also include explorat:	ion in the Pennsylvanian formations?
	12	Α.	Yes, sir.
	13	Q	In southeastern New Mexico?
	14	A.	Yes, sir, it did.
	15	<b>Q</b> 100 000	All right, subsequent to that, what was
	16	your next employment?	
	17	<b>A.</b>	I became independent and have been
•	18	working as an independent	dent operator and consultant for the
t de la traca	10	last soven years.	
÷.	20	<b>Q</b> .	And where is your residence, Mr. Neff?
	21	A.	Midland Texas.
	22	Q.	As an independent consultant in geology
	23	do you operate on a c	ontinuing basis to provide exploration
	24	geology in Pennsylvan	ian tests in southeastern New Mexico?
	25	À.	Yes, sir, I do.
	Į.		

	<del></del>	
1		7
2	Q	And pursuant to that consultation have
3	you been employed by	the applicant in this case?
4	A.	Yes, sir.
5	Q	And what have you done for the applicant?
6	A.	I've prepared several exhibits, maps
7.	and cross sections, i	n this matter.
8	Q.	Are you generally familiar with the
9	facts and circumstance	es surrounding the application of Knox
10	Industries?	
11	λ.	Yes, sir.
12		MR. KELLAHIN: We tender Mr. Neff as an
13	expert petroleum geol	ogist.
14		MR. NUTTER: Mr. Neff is qualified.
15	Q.	Mr. Neff, I'd like to direct your atten-
16	tion first of all to	what we've marked as the Applicant's
17	Exhibit Number One, a	nd have you identify that for me.
18	Α.	This is a lease ownership map in the
19	subject area, surroun	ding about two miles.
20	Q	All right. What is the field involved
21	in this proposed loca	tion?
22	A.	Antelope Ridge Field, Morrow and Atoka
23	zones.	
24	<b>Q.</b> -	All right. Now in my discussions with
25	you, you've indicated	that this is a potential test for Atoka

 $\frac{1}{4}(\log p) = \frac{1}{4}(\log p) = \log p - \log p$ 

1 ß as well as Morrow --Yes, sir. -- gas? All right. What is your understanding of the spacing and proration rules with regards to a well located in Section 12? The orthodox -- this is an unorthodox location that we are asking for. Would that be unorthodox for both an 10 Atoka and a Morrow test? 11 Yes, sir. 12 All right. What would a standard loca-13 tion for an Atoka-Morrow test require with regards to well 14 location? 15 It would be in one of the center four 16 40-acre tracts within the south half of Section 12. 17 With regards to footage it requires 18 that you be no closer than 660 from the side line or 1980 from 19 an end line of a proration unit, is that right? Yes, sir. 21 All right. Now if the proration unit was a west half proration unit for Section 12, would the location be unorthodox? No, sir, it would be orthodox. Q. All right.

æ,

MR. KELLATTN: If the Examiner please, I know that the advertisement in this case, and perhaps even the application, is focused on the Morrow location.

It's the intent of the operator, also, to drill and test the Atoka, both the Upper and Lower Atoka, for gas production, and it may be necessary to readvertise this case.

Q Tell me a little bit about your understanding of Section 12, Mr. Neff. My question is why have you selected a south half proration unit as opposed to some other proration unit for Section 12?

A. There are basically two reasons, and I suppose the primary one is the fact that Knox Industries was able to acquire leases in the south half, whereas in the north half of the section they were unable to do so. They were already leased.

The geologic risk, we feel, is much -much better, also, in the south half. It's closer to established production.

Q Does Knox Industries have any interest in the north half of Section 12?

- A Yes, sir, but it's minimal.
- Q Okay.
- A They were able to acquire a few small

			C = C	
	1	2/32		
	1			
	2	leases.		10
	3			:
	1	Q.	All right war	
	4	ship in the	All right. With regards t	o the owner-
	_	t the south	nair of Section 12, has the	
	5	committed to Knox	Industrian	creage been
	6	tont in	Industries for the drilling of	the well to
_		test the Atoka and	the Morrow?	
	7	<b>7.</b>		
	· ·		Yes, sir.	<u> </u>
		Q.	All right	
9		Number Two.	All right, sir, let's turn	to Exhibit
40	,	.mmer TMO.		
10				
11			All right, Mr. Neff, would y	7011 toll
	W	hat Exhibit Number	Two is?	ar cett vie
12	1			
13	1	A.	This is a structural contour	
13	01	f the lowermost ob-	legitue manage	map on top
14	1 +2	00 ton 00 m	jective reservoir in this prospe	ect area.
4.0	"	e top of the Lower	Morrow zone.	
15				
16			The Lower Morrow zone is unma	ppable and
	a.b.	sent in a well, th	e well in Section 2 to the nort	Phonte and
17		•	In Dection 2 to the nort	h.
18		Q	All right, just a minute.	
		A.		
19			All right.	
20		Q	Before you explain in detail,	
20	par	ed this structure	The Late the detail,	You bro
21	day in	decuie	map?	10 To
		<b>.</b>	Yes, sir.	
22		^		Paddoctiv E
23		Q.	All right. Based upon your known	
~   <	of t	he Pennsylvanian o	eology in this area, Mr. Neff,	swreade
24	2 <b>4</b> 0 mar -	~*************************************	this area, Mr. Neff,	does
_   "	- LE U	ccure play any imp	ortance in determining well loc	
25		A. 1	and a second sec	ations?
<u> </u>		476	We feel like it is a 50 percent	Contain
	$\{X_i(t)\} \in \mathbb{R}_{+}^{n}$		L-or celle	COUCLT-

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butor; the other being reservoir failure due to one or another
thing.

Structure is important, yes.

All right, sir. Now in preparing your

contour lines on the structure map, would you identify for us the wells, or well logs, you examined to determine the location of the structure?

A. The nearest control are the wells in Section 14. Natomas, in the west half, the Natomas-Supron Federal, and in the east half, BTA 8006 Ridge.

Q All right, just a minute, before you get too far ahead.

The Natomas well is located in the southwest of the section 14?

A. Yes, sir.

Q And that well produces from what formations?

A. It produces from all three pay zones in the area, Upper Atoka, Lower Atoka, and Lower Morrow. And I believe it's completed as a dual and I believe the two Atokas were commingled.

All right. In terms of the productivity of the Atoka-Morrow wells in this area, Mr. Neff, how does this well compare to the others?

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1		
2	A. 7	The last time I checked the production
3	data on the well it was	s an extremely strong well.
4	Q.	Could you give us some indication of
5	what it produces now?	
6	<b>a.</b>	I don't have the current data. It
7	in the initial months	of production, in which it paid out very
8	rapidly, it was deliver	ring 10-million cubic feet of gas per
9	day with about 500 barr	rels of condensate.
10	Q. 1	Do you recall approximately when the
11	Natomas well was comple	eted?
12	A	This has been about a year ago.
13	Q. 1	All right, sir. What other wells did
14	you use as control wel:	ls for drawing the structure map?
15	A. V	Well, the BTA well in the southeast
16	quarter of Section 14,	and essentially a 40-acre offset to
17	the Natomas well.	
18	Q. 1	Did that well encounter, or does it
19	produce from the Morro	w formation?
20	<b>A.</b>	It produces from the Lower Atoka zone
21	only. It found the Lor	wer Morrow zone to be gas and water
22		al and the Upper Atoka zone is absent
23	by non-deposition.	
24		All right. What's the approximate dis-
25	tance between those two	n walls?

w

13 1 Oh, 1320 feet, 2 All right, and despite the close proximity 3 4 of those two wells one produces from the Morrow and the other does not. That's correct. 6 7 All right, sir. In terms of chronological order, was the BTA well drilled before or after the Natomas 8 we11? 9 10 They were both drilling at about the same time but the BTA well encountered problems and was com-11 pleted at a later -- several months later. 12 13 All right, sir. The application indi-14 cates that this is the Northeast Antelope Ridge Field. Gener-15 ally what acreage does that include, do you know, Mr. Neff? I'm not certain because this is just 16 part of a trend that's continuous. It must be broken into 17 more than one pool. 18 19 All right. Is there an Antelope Ridge Pool? I pre-**20** sume there is. 21 All right. In terms of development 22 identifying the Morrow trend in this area, where is the known 23 Merrow production?

The known prolific Morrow production

highest structural point.

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2
                            Q
                                      Let me ask you some questions about any
               other wells that you've looked at as possible control wells
           3
               for your structure map, and direct your attention to the south
              half of Section 13.
                                    Are there any Morrow tests in that
          7
             acreage?
         8
                         A.
                                   Yes, sir, Amoco's well in the northeast
            of the sominwest of Section 13 tested this Lower Morrow zone
        9
            and found it uneconomical, found it to be gas and water bearing.
       10
       11
                                 Approximately when was that done, Mr.
      12
           Neff?
      13
                                 This has been dragging on for some time.
          If my -- approximately nine months ago.
     14
     15
                                All right. Moving then counter-clockwise
         around the structure contours, I see a well located in the
    16
        north half of 12. Did that well penetrate and test the
   17
   18
        Morrow formation?
   19
                   A,
                              North half of Section 2?
  20
                   Ω
                             I'm sorry, 2.
 21
                             The well did not encounter the Lower
 22
      Morrow zone.
                   It was not present at that location.
23
                            All right. Looking at the north half
     of Section 11, are there any wells in the north half of 11
24
25
    that would have penetrated the Morrow formation?
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of the available well control. This map is ways a little more useful than the Lower Morrow structure map in that the mapping horizon is present in all the wells. It's a shale marker in the midst of the Upper Atoka pay

Again you've used the same wells in Exhibit Three that you had for Exhibit Number Two?

A. That's correct.

And what conclusions, if any, do you reach with regards to an Atoka test in the south half of Section 12?

A. As in the Morrow, we feel fairly certain that the best possible location is that that's shown on the plat in the northwest of the southwest of Section 12.

Again with regards to the Atoka, what if any significance does structure play with regards to drilling productive Atoka wells?

It has probably less than 50 percent influence. The reservoir is some sort of a reef complex and it is very, very erratic, very patchy, comes and goes in a 40-acre location again, and this can be demonstrated to the south in comparing the Natomas and the BTA wells in Section 14. The Natomas well is completed in the zone and has considerable net pay. The zone is absolutely shaled out and the BTA well.

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So stratigraphy has -- and reservoir failure, has much more to do with entrapment than structure in the Atoka.

All right. Now, while we have both the Exhibits Two and Three in front of you, Mr. Neff, would you identify for us any wells shown on your plat that would be at unorthodox location for either the Atoka or the Morrow formations?

One well completed --

Well, let's do at this way.

Okay.

If you'll go to the BTA well in the north half of Section 2. What is the proration unit for that well?

The north half.

All right, sir, the well's at a standard Q

Yes, sir.

All right, let's go down to Section 11, with regards to the drilling well in Section 11, what's the proration unit for that well?

The north half.

Okay. There is no well in the south

location?

2 That is correct. 3 **Q**. All right. In 12 we have your proposed location in the south half and then there is no well in the north half of 12. That is correct. 7 All right, sir, would you identify for us, then, going southward, any wells that would be unorthodox? 9 Only the wells in Section 22 appear to 10 be unorthodox. The well, Estoril Curry Federal, in the 11 northeast of the southeast, which has been completed as a gas 12 well, and the well attempting completion in the northeast of 13 the northeast of Section 22, Estoril Curry State. 14 MR. NUTTER: Those have the south half 15 and the north half, respectively, dedicated to them? 16 Yes, sir, I believe that's correct. 17 All right. In Section 13 the Amoco 18 test in the south half, is that a south half proration unit? 19 Yes, it is, as is the well in 24, the A. 20 abandoned producer in the south half of 24, with a south half 21 unit. 22 All right. Is it fair to characterize 23 from Exhibits Two and Three that as you generally move to the

eastern side of your proration unit, that you thereby increase

the risk of an uneconomic well because you're moving down

25

1		21
2	structure?	
3	A.	This is my interpretation.
4	Q	All right.
5	. A.	Yes, sir.
6	Q.	Let's go to Exhibit Number Four. Mr.
7	Neff, I've given	you what I've marked as Exhibit Number Four,
8	which is identifi	led as a net pay Isopach map of the Lower Morro
9	zone. Did you p	cepare this map?
10	А.	Yes, sir, I did.
11	Q.	Would you describe generally how you
12	prepared the map?	
13	Α.	The data was taken from well logs avail-
14	able in the area,	utilizing a gamma ray cutoff of 75 percent
15	and a porosity cu	itoff of 8 percent and water saturation of
16	about 40 percent.	
17	<b>Q</b>	Give me your parameters again.
18	<b>A.</b>	Gamma ray cutoff of 75 percent.
19	Q	Okay.
20	A.	And a net porosity cutoff of 8 percent.
21		Okay.
22		What else?
23	Q	Water saturation.
24	<b>,</b>	Water saturation was about 40 percent;
25	very difficult to	determine a cutoff in here as many of the

14

16

17

20

21

23

24

well in the south half of 14, which you show as having 22 feet 2 of net pay, compare to the well in Section 23, that's identi-3 fied, I believe, as having 40 feet of net pay? 5 Yes, sir. They are comparable wells. 6 7

They're very comparable, and the reservoir has -- apparently has tremendous deliverability, and the increase in net pay, well, they're producing near capacity, I believe, anyway. But from production statistics I think you can only determine that they're fairly comparable, all right.

Is there any correlation between the two insofar as one has almost twice the net feet of pay as the other?

Correlate, it appears to be exactly the same zone.

No, I meant with regards to the productivity. Is the well in 23 twice as productive as the well in 22?

I can't ...

Or 14?

I can't say that for sure no.

All right. All right, let me go to the 40-foot Isopach contour line that is identified in the south half of Section 12. How did you determine that there was approximately that number of feet of the Morrow present there?

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A This is simply a geological projection.

Again, I hate to draw on wells to the south, but there the trend does move up this way and 40%s essentially a maximum number in the zone and I've projected geologically along what I believe to be the strike of the channel the 40-foot contour.

Q All right. What's the purpose of the map, Mr. Neff?

A. Basically it is to show that the optimum net pay thickness encountered in Section 12 will be at the proposed drillsite.

Q This mapping technique is done for the purposes of the well location?

A. Yes, sir.

All right, may we use this map for any other purpose with regard to determining the actual number of productive acres that may or may not be present in any of the proration units?

A I don't see how we can until we have --- actually have a well down and can do some reservoir tests.

Q Is it fair to conclude that the ultimate conclusion from the map is that it simply indicates that a well located in the northwest corner of the proration unit is the optimum location in which to drill a test of the Morrow zone?

2.5

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	1
	26
	located here are the Morrow and then this Upper Atoka zone?
	A Yes, sir.
	All right, sir, would you tell us gener-
	ally now you prepared Exhibit Number Five?
	• 1
	7 is a different type of reservoir. This is a carbonate reser-
	voir and it apparently is a carbonate reser-
3	voir and it apparently is a fairly erratic reef. So I used
10	a 5 percent porosity cutoff in mapping in counting my net
11	
12	Q The well control are the same wells
13	we've been talking about generally with regards to these
14	exhibits?
15	A. Yes, sir, the same wells were used.
+ 2 1 1	0. We find the Upper Atoka zone is identi-
16	fied by the center well symbol here on the legend?
17	A That is correct, upper left well
18	
19	Shows a clock shaded from 12:00 o'clock to 4:00 o'clock
20	
21	
22	half of 14 4
23	half of 14 there appears to be the same well we've talked
24	about that had the Lower Atoka production.
25	A. That is the Lower Atoka.
L	Q Yes, sir.

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2
                          À,
                                    The Upper Atoka zone was absent, shaled
         : 3
             out in that well.
                                   Okay. With regards to the Amoco test
            in the south half of 13, did that well test either the Upper
         5
            or Lower Atoka?
        7
                                  Not to my knowledge.
        8
                                 Going north, then, to Section 2, there's
       9
           the BTA well.
                          That well appears to be productive in the Upper
      10
          Atoka.
      11
                                That's correct. The Upper Atoka is
     12
         present there and it appears to be a quite good well, recently
     13
         completed.
    14
                               Okay. With regards to the well in the
    15
        north half of 11, this was the drilling well?
    16
                              That is correct.
   17
                             Is -- do you have any knowledge or
       information with regards to whether or not that well is going
  18
  19
      to be productive from the Atoka?
  ŝû
                            Apparently it is right on trend and it
 21
     should be productive in the Upper Atoka reef complex.
 22
                           All right. Again we're in an area where
23
    there is very few wells from which you can establish control
24
    for your Isopach is that not true?
25
                          That's correct, and the geologic risk
```

28 2 in the south half of Section 12 is -- is rather high, needless 3 to say. What has caused you to draw the Isopach 5 contour, specifically with regards to how it crosses through 6 the south half of 12? I followed, generally followed the structural contour as a guide, because I had no other -nothing else I could use, and hopefully, that structural pull 10 out there would conform to the stratigraphy and the carbonate 11 gas-bearing unit would be there. 12 Is that a fair geological judgment on 13 your part, based upon the comparison of the structure and the 14 Isopach in the other wells? 15 Yes, sir, it is. 16 Is there anything else you'd like to 17 tell us about Exhibit Number Five, Mr. Neff? 18 No, sir. 19 All right, sir, let's go to Exhibit 20 Number Six. 21 All right, sir, would you identify 22 Exhibit Number Six for us?

section utilizing almost the only two wells that I could

legally obtain copies of the logs on, and I'm showing the

23

24

25

ar s

Yes, sir, this is a structural cross

projection between those two wells in 14 to the Knox proposed drillsite.

It has been a little difficult to obtain data in this area and Amoco has not released their log in 13, nor BTA in Section 2, nor Estoril in their wells in 22 and 15, and I have been able to look at those in the offices of part owners in some of these wells, and so I do have the data, but have not been able to acquire copies of those logs.

Q. The purpose of the exhibit is simply to demonstrate to the Examiner the available copies of portions of the logs ---

Yes.

A That is correct, and this is representing the three major pay zones in the area and that are prospective

-- for the Atoka and the Morrow?

at the Knox drillsite.

Actually, it pretty well demonstrates the erratic nature of these reservoirs because we're dealing with the two wells 1320 feet apart, and showing a total absence of the gas productive Atoka; Upper Atoka; showing an erratic development of the Lower Atoka, both wells of which do produce out of the Lower Atoka; and also the rapid change in the channel of the Lower Morrow.

. Could you give us an approximation of

30 what the proposed well will cost as a dry hole? Approximately \$2,000,000. Would you recommend drilling in the south half of Section 12 at a standard location? No, sir, I cannot recommend that. A bad experience in the area, dealing with these kind of reservoirs, I think is shown just immediately south there in Section 13 in the Amoco well, which to my knowledge, will probably be plugged. Now that was drilled at a standard location. 11 The Natomas well at the same standard location in the south half of 24, also had no economical 13 reservoirs to produce there, and those are on a straight line with the standard location in Section 12, and that's pretty scarey to start with, plus with the geologic evidence that 16 I've presented, I believe the proposed drillsite is -- has **17** the least risk in a high risk area. Do you have an opinion, Mr. Neff, as to whether or not the proposed location ought to be penalized 20 because it is unorthodox? I would think certainly not penalized. What reasons do you have for reaching that opinion? Well, although my geology shows a trend, several trends, that appear to show the Amoco acreage nearby

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in the south half of Section 12 to be within the same geologic 2 feature, those maps were prepared just for our own use to 3 determine the risk, and are not -- we're not going to know until we get a well down and do some detail testing just what acreage is productive, to start with.

Well, let me ask you this, Mr. Neff.

Okay, yeah.

In your opinion will aswell at this proposed location without penalty violate the correlative rights of Amoco in Section 11?

MR. MOTE: Objection. That calls for a conclusion on the part of the witness.

MR. KELLAHIN: I believe Mr. Neff is qualified to determine whether or not in his opinion as a geologist it would impair Amoco's correlative rights with regards to the south half of Section 11, and I think it's an appropriate question.

MR. NUTTER: I think he can give an opinion as to whether or not it will violate their correlative rights.

Do you have such an opinion, Mr. Neff? A. With the data we have at hand, I could see no way that it should. We really don't have good data to say at this point. Geologically located wells really don't

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dictate what reservoir conditions are going to be encountered. And the Amoco acreage very well may not be productive. We don't have a well on the Amoco acreage. No, sir, I don't think it's going to violate their rights. 7 In your opinion, Mr. Neff, is there any way to establish what, if any, drainage will occur from the Amoco acreage by a Knox well located as you propose? 10 Not at this time, no, sir. 11 Were Exhibits One through Six prepared Q 12 by you? 13 Yes, sir, they were. 14 And in your opinion will approval of 15 this application be in the best interests of conservation, 16 the prevention of :waste, and the protection of correlative 17 rights? 18 Yes, sir. 19 MR. KELLAHIN: I move the introduction 20 of Exhibits One through Six. 21 MR. NUTTER: Exhibits One through Six 22 will be admitted in evidence. 23 Mr. Mote, I presume you're going to have some questions of Mr. Weff. MR. MOTE: Yes, sir.

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                           MR. NUTTER: It's seven minutes or six
 3
    minutes until twelve. Would you rather defer those questions
    until after lunch?
 5
                           MR. MOTE: Yes, sir.
                           MR. NUTTER: Okay, we'll recess the
    hearing, then, until 1:30.
8
9
                           (Thereupon the noon recess was
10
                           taken.)
11
12
                           MR. NUTTER: The hearing will come to
13
    order, please.
14
                           Mr. Mote, did you have any questions
15
    of this witness?
16
                           MR. MOTE: Yes, sir.
17
18
                           CROSS EXAMINATION
19
    BY MR. MOTE:
20
                           Mr. Neff, I believe you testified you're
21
    a consulting geologist?
22
                           Yes, sir.
23
                           And where is your business operated?
                 Q.
24
    Where is your office?
                           Midland, Texas, in the Blanks Building.
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×-,

All right. When were you hired by Knox for the work that you've done in this case?

A I've done consulting off and on. It's just been sporadic. I'm not on a permanent retainer with them; just one job or another.

A. These are modifications of my earlier prospecting maps. The other maps were done a year or so ago

and these, it was about three or four days ago these were finalized.

Q I see. These are not the maps that you had prepared when this hearing was set for --

A. These were ---

Q -- hearing on April 22nd? Are these the same maps or --

A. These are essentially the same maps.

I just cut off the rest of the pool, which I didn't think was germane to this, and got it down to this area that we are interested in here.

Q Did you change any of your interpretations in the area --

A. No, sir, I didn't. The basic interpretation is identical.

All right, sir, let's go to your Exhibit

	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
2	Number One. Do you have that in front of you?
3	A. Yes. Okay.
4	Ω I believe you stated on direct examina-
5	tion that the proposed well is unorthodox where you're asking
6	for it to be located as to the south half dedicated area, but
7	as to the west half it would be an orthodox location.
8	A. That's correct.
9	Q All right, would it also be an orthodox
10	location for a 160-acre dedicated area?
11	A. I'm not certain.
12	Q. Well, would you take my word for it,
13	subject to check, that it is an orthodox location for 160-
14	acre spacing unit?
15	A. Yes, it is. That's right.
16	Q All right. I believe you stated that
17	the only leases that you had were in the south half of Section
18	12 and you had none in the north half and that's why you used
19	the south half as the dedicated area rather than the west
20	half, is that correct?
21	A That's almost correct. Actually, Knox
22	Industries has they don't have 1/8th of the north half.
23	They have a portion of the north half that's less than 1/8th
24	in leasehold.
25	o How about in the west half?

4.7

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A,
                            In the west half it is -- I feel -- I'm
 3
     not positive.
                    I think it's less than 1/16th.
                            In the north half of the west half?
                            Yes, sir.
                           It would be the northwest quarter, in
 7
     other words?
                           Yes, sir.
 9
                           But do they have nearly all in the
10
     south half of Section 12?
11
                           Yes, sir, they have leasehold for their
12
     own account or trades made with the professional mineral owners
13
     in there.
14
                           Did you attempt to obtain a farmout from
15
     the owners of leases in the west half of Section 12?
16
                           Yes, sir,
17
                           And how long did you try to get those
18
    leases, to get farmout in that area?
19
                           Since -- since last April. It's been
    a year.
21
                           And you were unsuccessful?
22
                           Yes, sir.
23
                           I believe you stated in your direct
24
    examination that also the reason why you wanted the south
25
    half instead of in the west half of Section 12 is because it
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1
                                                               37
 2
     was closer to existing production. Did you, did you make
 3
     that statement?
                            Yes, sir, I did.
 5
                            Did you consider the BTA Antelope Ridge
 6
     8006 JVP Well?
 7
                            That -- yes, that well is newly com-
 8
     pleted, as you're aware, and this prospect has been working
 9
     for a year. The well was really not -- had nothing to do with
10
     setting this project up with this particular location in mind.
11
                           But I agree it appears to be almost the
12
     same distance.
13
                           And it's completed in the Pennsylvanian,
                 Q.
14
     too, just like ---
15
                 λ,
                           Yes.
16
                           -- the other wells you mentioned down
17
     to the southwest, is it not?
18
                           That's correct.
19
                           All right, go to your second exhibit,
20
     please.
21
                           Do you have any control at all north
22
     of the south half of Sections 13, 14, and 15 for your inter-
23.
     pretation?
24
                           No, sir, other than the BTA well where
25
     the zone was absent.
```

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1		
2		38
3	south with those line	
3	tines or even leaned the	
4	been just as accurate if	the west and
5	been just as accurate, if you had no control,	couldn't you?
6	Right. These contours	re just projec
7	on my best geology trend application.	- "
8	It is a projection; no we several miles to the north and east.	ell control for
9		
10	North of this south half	of Section 12
11	24, and 15?	
	A. That's right.	
12		
13 W	Q Why didn't you use that Bi ell in your structural interpretation?	A Antelope
14		
15	A The zone is not present in	that well
	Well, the Pennsylvanian	worl.
	lough, isn't it?	present,
7	A. Yes, sir.	
8		
the	toll t there a very good	ker right on
	the Pennsylvanian you could have were	
be	able to more clearly and more accurately draw ;	in order to
map	S accordent draw ?	our structure
1	A Company of the Comp	
In	T Could have projected 4.	I did submi+
1 -11 5	Three structure on top of the Atoka	a which -
thin	k fairly well mirrors this.	-, willen I
in a	Q Is the top of the Atoka in the	e exhibit

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                                                             39
2
    you just referred to, is that the same as the top of the
3
    Pennsylvanian?
                           It's near the top of the Pennsylvanian.
5
                           About 30 feet off, or something like
    that?
7
                           No, it's probably a couple of hundred
    feet off, but it's representative.
9
                           At what subsea depth, if you drilled at
10
    the proposed location, would you encounter the Morrow?
11
                           I would expect to encounter this Lower
12
    Morrow sand channel at approximately -9800 feet.
13
                           All right. And if the Morrow were wet
14
    at 9800 feet and below, then you would get a duster, wouldn't
15
    you?
16
                           Yes, sir.
17
                           At least it would be a wet duster.
18
                           A wet duster.
19
                           Don't you think that on structure maps
20
    such as this that the Strawn or the upper part of the Pennsyl-
21
    vanian would have been a better indicator than the Morrow as
22
    to how these lines should go north of the south half of
23
    Sections 13, 14, and 15, where you have no control?
24
                           This is probably true. I mapped for
25
    this Lower Morrow strictly on a channel deposit and where it
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2 is absent the contours I really can't project.

So I was just trying to represent the configuration of the channel itself rather than structure of the entire Pennsylvanian section, because this has no bearing, since it's absent over here, on -- on the trap over here in the south half of Section 12.

Q When you said "this over here", you're talking about the BTA Antelope Ridge 8006 JVP Well, or whatever it is?

A Yes, sir, that's correct.

Q But isn't it true that the Morrow and the Atoka and the Strawn all of them are more or less even throughout this area? They have a more or less uniform deposition?

A. The ...

Q Thickness, uniform thickness deposition?

A That's -- that's correct.

Q Okay. All right, turn to your Exhibit

Number Four, please, sir.

Now is this the one that you were talking about that you have on the top of the Upper Atoka zone marker?

This is a little bit below the top of the Pennsylvanian?

A. Yos, sir.

And I believe you've already agreed with

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me that it might have been better to go all the way to the
    top of the Pennsylvanian because there's a real good marker
1
     up at the top of the Pennsylvanian, didn't you agree to that?
2
3
                            What control do you have, if any, for
                            yes, sir.
 4
      that high just west of the proposed well? 8700 high you've
 5
       got there, 8700 foot contour line that's a high just west of
  6
  7
                              This -- this, as in the others, because
   8
       the proposed well?
        as you're aware there's very little well control to the north-
   9
         east, this is projected from the south off of this map, coming
   10
         up through, as the contours show, other separate closures,
   11
    12
          and it's simply a geologic projection.
                                 Well, if you have no control north of
    13
           the south of 13, 14, and 15, it's just pure speculation,
     14
     15
                                  Well, it's not - it's speculation.
      16
           isn't it?
      17
            I don't know if you could call it pure. There's --
       18
                                   Impure speculation.
                                    yes, sir, that's -- that's what it is.
       19
                         Q.
        20
                          A.
                                     In fact, if you drew a line between the
                                    All right.
        21
               Amoco State "GA" No. 1 in Section 13 and the BTA No. 1 Ante-
                          Q.
         22
               lope Well up there in Section 2, you wouldn't have a bit of
         23
          24
          25
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42 2 control for anything east of that, would you? 3 That is correct. What subsea depth would you expect to 5 encounter the top of the Pennsylvanian by your proposed well, 6 if it's drilled at the proposed location? 7 I could give you a subsea depth for this 8 top Atoka zone marker, which is a shale in the middle of the 9 carbonate pay zone near the top of the Pennsylvanian, if that 10 will be satisfactory. 11 You asked for a subsea on top of the 12 Pennsylvanian I think. 13 Q. And I really don't have that data. 14 A. 15 Okay, if you give it to me on the top Q. of the Upper Atoka zone marker, would that be of some signifi-16 17 cance structural? MR. SANFORD: That would be about 300 18 19 feet below. 20 All right, give it to me on that --Q 21 Approximately -8750. A. 22 Okay, and I believe you stated that the further east you go with this well the more risk you run into, 23 24 is that correct? In other words, you said that the further

1		and the second	er starten	en e		43
2	west you	go that t	he more cl	iances are	that you're	going to
3	get a wel	.l that yo	ou could pr	roduce, is	that correc	t?
4		۸.	I fee:	l this is t	rue, yes.	
5		Q	And th	ne farther	east you go	the more
6	probabili	ty of the	fact that	you might	obtain com	mercial pro-
7	duction.	e e				and the second s
8		A.	That's	correct.		
9		Q.	All ri	ght, go to	your Exhib	it Number
10	Four.			·		
11			Now, i	.sn't it tr	ue with thi	s net pay
12	Isopach m	ap, as we	as the	others we'	ve askeđ yo	u about, tha
13	there's n	o control	for your	interpreta	tion north	of the south
14	half of Sections 13, 14, and 15?					
15		Α.	That i	s correct.		
16		Q.	So the	40-foot s	and doughnu	t that you've
17	got running right through your proposed well is just pure					
18	or impure speculation, is that correct?					
19		A.	Right,	geologic	projection,	I would cal
20	it.	-	1	المرات والمواسط بساسري	. h 4	and the state of t
21		Q	I beli	eve in dis	cussing thi	s exhibit
22	with your	examiner	you state	d that the	well in 23	and the
23	well in 2	4 were so	mewhat dif	ferent in	sand, in ne	t sands
24	that were	evident	in those w	ells, is t	hat correct	?
25		A.	I thir	ak you word	talking ab	out, let's

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see, the producer in 14 and 23, is that correct?

Yes, sir, I believe that's the two you were talking about.

Right. One has about half of the net pay, according to the way I interpret it.

And I understood you to say that the amount of sand actually makes no difference in productivity, is that correct?

I think that's -- I think I could prove that statement, yes, sir.

Okay, then if -- if your zero line on this Tsopach map is where you say it is, then it would be just as easy to get a completion over inside your zero line, since the net pay of sand makes no difference, why couldn't you go ahead and put your well somewhere inside that zero line and expect to get a good productive well anywhere?

Well, I certainly think we could but I don't believe it would be a prudent risk. It's very likely that could produce over there and it could have 40 feet, as I'm sure you know, but we're trying to risk adjust this thing as close as we can, with the proposed drillsite.

Another thing about this exhibit, you wouldn't be expected, according to this exhibit then, to -anything east of your zero line, you wouldn't be expected to

get any production at all, would you, if you drilled past on, say east of that zero line? Well, that's -- that's not true. As I 5 think we've pretty well talked about, the Morrow is treacherous and it's possible that this well that we propose here could be on the edge, the very, very feather edge of -- of a Morrow reservoir, and the bulk of it would lie under the south half proration unit. 10 But geologically I have depicted it that 11 way for the hearing. 12 I don't know whether you answered my 13 question or not. 14 Okay, I'm sorry. 15 Would you be able to get production if Q. 16 you drilled a well east of this zero line on your map? 17 Certainly. 18 You would be able to get production? 19 Yes, sir. 20 In the Morrow and the Atoka? 21 Well, there would be considerably more 22 risk in the Atoka, I feel, than the Morrow.

production you would have put your zero line farther on out

so that there would be some production to the :west.

Well, it looks like if you could get

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	2	7.6 year h	
	3	If you had if you had no Morrow s	and
	4	not be able to get production r	he
		question I want to ask.	
	5	A. Yes, sir.	-
	6	Q. You would be able to get production?	
	8	Oh, I'm sorry.	
		If there were no Morrow sand would yo	u
		be able to get production?	1
1	0	A. That would be very difficult.	
		Q Okay.	
13		Right. Could I clarify something? I	
13	}   t	think I led you astray a little bit.	
14		All right, go ahead.	
15		A. The Amoco "GA" Well down here has con-	
16	si	iderable sand.	
1/		Q But it's wet, isn't it?	
18			
19		Yes, sir. Okay.	
20	Fi	Q All right, go to your Exhibit Number ve.	
21			
22	Ato	Now, this net pay Isopach on the Upper	
23	of	oka also shows your zero line to be west of the east half	
24	<b></b>	your proposed drilling unit, does it not?	
		A Yes, sir.	
25		So you wouldn't expect there to be any	

**.**~...

Upper Atoka sand east of that zero line, would you?

A. It is a carbonate reservoir rather than a -- then a sandstone, and it is -- I don't know if I stressed enough, it is a patch reef type development and it is very erratic carbonate reef development.

It's possible it's present over there on the east part of our proration unit, but I don't -- there is no way I can say for sure. This is my best interpretation here currently.

the zero line would show that at least half and probably 4/5ths of it, the proration unit which you're asking for the well to be located on, would be just scenery?

A. If that zero line is correct, yes, sir.

On both this and the Morrow?

Yes, sir.

This is the same as the other exhibits in that you have no control north of the south half of 13, 14, and 15, is that correct?

Yes, sir.

g so why did you pull your -- your Isopach

lines out to the east when you got around Section 12?

There's a -- it based primarily on

my structural interpretation. I tried to stay with my

sttructural interpretation. Where I have the anticline pulling 3 over into Section 12, I followed that, hoping that the Atoka carbonate rock, reservoir rock, will be present where the 5 structure is that high, and that's the only reason I pulled 6 it over there. 7 Well, that's sort of like pulling 8 yourself up by your own bootstraps, isn't it, if you don't 9 have any control for your contour map, how could that give 10 you any -- any feeling of security in doing the same thing 11 with your Isopach that you did with your contour map? 12 This is a risky venture; very difficult. 13 Let's go to your Exhibit Number Six. 0. 14 I believe we discussed awhile ago that the relative thickness of each of these zones appears to be 15 16 abbut the same in the way you've got this cross section drawn, 17 does it not? 18 Yes, sir. 19 And is the top of the Upper Pennsyl-20 vanian shown on this exhibit? 21 No, sir, it's not, but I believe it's Ā. 32 200 to 300 feet above the first thing that I mapped.

That top Upper Atoka zone ---

--- shown on here, the top of the Penn-

Yes.

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23

sylvanian is about 300 foot above there? 49 Yes, sir, 200 to 300. All right. In discussing this exhibit, as I remember, you mentioned the fact that the Amoco State 5 "GA" No. 1 in Section 13, that the Natomas North American 6 State 24 Com in Section 24, and the Superior State "R" No. 1 7 in Section 25 were all at orthodox locations, and that would probably be the same location that you'd have to have an 10 orthodox location in Section 12, did you not? 11 I did not mention the Superior well, I don't believe, but was it drilled on an orthodox location? ÎŽ 13 I'm sorry, I don't have it on my map. 14 Well, I understood you to say that, is 15 what I'm asking. 16 If I did, I don't remember saying that. 17

I did mention the well in 13 and the well in 24, for sure. Q. And I believe you further stated that you would fear that since both of those wells came in in the water, as I remember your testimony, that a well drilled -if you projected to on up north into Section 12, that a well drilled at the same location as those wells in Section 12 would probably be wet also.

Is that what you stated?

I'll have to beg off. I'm not positive

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that's what I said. 3 Would you like to hear what you said? We have it available here for you if you'd like to hear it. Okay, we'd better hear it then. MR. MOTE: I'd like to ask the reporter, 7 if she would, to play this for the witness. (Thereupon the reporter played back the requested question and 10 answer, as follows:) 11 12 QUESTION: (By Mr. Kellahin) Would you recommend 13 drilling in the south half of Section 12 at 14 a standard location? ANSWER: (By Mr. Neff) No, sir, I cannot 15 16 recommend that. A bad experience in the 17 area, dealing with these kind of reser-18 voirs, I think is shown just immediately 19 south there in Section 13 in the Amoco well, which to my knowledge, will probably 20 21 be plugged. Now that was drilled at a 22 standard location. 23 The Natomas well at the same 24

standard location in the south half of 24, also had no economical reservoirs

to produce there, and those are on a straight line with the standard location in Section 12, and that's pretty scarey to start with, plus with the geologic evidence that I've presented, 'I' believe the proposed drillsite is -- has the least risk in a high risk area.

(End of requested playback.)

Now that you've heard the testimony that you gave this morning concerning this, am I more or less correct in my statement that you testified that a well drilled at a regular location would probably come in wet like the wells did in Sections 13 and 24?

A. I never mentioned anything about wet in that statement, and I don't believe that is going to be necessarily the case.

In testing these wells in 13 and 24, they have been found to be in some cases water-bearing in some of the zones, but several of the field pays have been absent by reservoir failure due to facies change from carbonate reservoir quality rock to a shale or to a tight limestone.

In fact, that's the case in, I think,

What will it cost for a producer at this

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Q.

proposed location?

J

A. I understand the number is 2-1/2 million

Do you expect to encounter enough re-

\_

dollars.

drain?

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U

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operating and completing the well?

Q. At this proposed location?

Yes, sir.

coverable hydrocarbons to pay out the cost of drilling and

A. Yes, sir.

Q How many acres will the proposed well

A. I'm not a reservoir engineer. I can't say. We don't, like you said, we don't have any control for boundaries on it, either.

You're more or less generally familiar with a drainage area occurs, are you not, around a well?

Isn't it usually in the form of a circle or somewhat like a circle, maybe elliptical, or whatever, but doesn't it radiate out, radiate out from the wellbore, a drainage area?

A It does radiate out from a wellbore, but in what manner, I think, varies considerably with these erratic reservoirs. Some very linear patterns, I'm sure, are prevalent.

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A ...

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 2
                Q.
                          It doesn't necessarily stop at the lease
 3
    line, does it?
                          No, sir.
 5
                          And it's not going to drain just 660
    feet and ther stop at the Amoco lease line, is it?
                          I don't know the answer to that.
                          But you pretty well know the answer to
 9
    it don't you?
10
                          No. No, sir I'm not sure.
11
                          MR. MOTE: Pass the witness.
12
                          MR. NUTTER. Are there any further ques-
13
    tions of this witness? He may be excused.
14
                          Mr. Mote, I think you said you had a
15
    witness?
16
                          MR. MOTE: Yes.
17
                          MR. NUTTER: Do you have any further
18
    witnesses, Mr. Kellahin?
19
                          MR. KELLAHIN: No, sir.
20
21
                          WILLIAM CASEY SANFORD
   being called as a witness and being duly sworn upon his oath.
    testified as follows, to-wit:
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1		· ·		55	
2		DIREC	r examination		
3	BY MR. MOTE	e de la companya de l			
4	BY MR. MOIL	Q. Pleas	e state your	name, by whom employed,	
5	and in what	capacity and lo			
6	and III what	A. My na	me is Casey S	sanford. I'm a geologis	E
7.	amplement by	Amoco Productio			
8	Ombroxed of	Q Have	you previous	ly testified before the	
9	Division?	<b>X</b>			
10	Division	A. Yes,	sir.	teneral de la companya de la company	
11				ations as an expert	
12	In the fie	•		record, are they not?	
13			are.		
14			se get out yo	our first exhibit, or	
15	   Exhibit Ni		ieve this is	a structure map on top	
10		nn, is it not?			
	7		sir, it is.		
	8	g And	is that the	same as you call the	
	9 structure	map on the Stra	wn? Is that	the same as top of the	
	20 Penn?				
	21	1.54	t is correct.		
	22	ο Α11	right, what	is the arrow on the map	?
	23 What does	that indicate?			
	24	A. The		cates the proposed locat	ion
	25 proposed	unorthodox locat	ion that Kno	x drilling company has	

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proposed in the southern half of Section 12.

All right. Now, for these contour lines that you show up and down, more or less from north and south on the map, do you have much control for these, for the contour lines?

Yes, sir, there are over twenty wells on this map that were used in constructing the map. We used the Strawn level because the Strawn is the best reflecter and does show the best structural representation of the structure as far as the Pennsylvanian goes in this area.

Q. And how do you determine the eastern productive limits of this field?

Okay. There are three wells which have been drilled in this area that have proven the Atoka and Morrow to be nonproductive and also to be water-productive.

Now the first well which was drilled was the Superior State "R" No. 1, which is located in the south half of Section 25. That well was drilled in 1976. It did test the Morrow with slight gas shows; did recover quite a bit of water.

They also perforated the Atoka and made quite a bit of water, also.

The next well to be drilled was the Natomas State 24 Com No. 1 in the south half of Section 24.

They perforated the Morrow in 1980 and it flowed water at a rate of 235 barrels of water per day.

They perforated the Atoka and it flowed water at a rate of 337 barrels of water per day.

Late in 1980, and also this year, Amoco drilled their Amoco State "GA" No. 1, testing the Morrow this year. They got it to flow gas at a rate of 250 Mcf gas per day and it did recover considerable amounts of water. The Amoco State "GA" is structurally higher than the Natomas well, which is also structurally higher than the Superior State "R" Com. Therefor, we believe that any well that is structurally lower in the Atoka and the Morrow than the Amoco State "GA" would probably encounter wet Pennsylvanian sand and other

MR. NUTTER: What was the result of the drilling of the Amoco well there, did you say?

A. Yes, sir. We finally got that well to flow at a rate of 250 Mcf gas per day, which proved to be uneconomic with the amount of water that we were recovering, also.

MR. NUTTER: Now that was from what

formation?

reservoirs.

A From the Morrow, yes, sir. The Atoka was, as Mr. Neff mentioned, untested in that well.

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MR. NUTTER: Now that was from what

23 | formation?

A. From the Morrow, yes, sir. The Atoka was, as Mr. Neff mentioned, untested in that well.

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MR. KELLAHIN: This is the well in
Section 13?
A. Yes, sir.
Now what we believe, based on the struc
ture map, based on the negative 8600 foot contour line, that
any well which is drilled to the east of that location along
the eastern flanks of this Antelope Ridge structure, would
probably encounter water-productive reservoirs.
MR. NUTTER: Now why wasn't the Atoka
tested in that well?
A. There was no porosity. There was no
MR. NUTTER: It didn't look good enough
to even test it?
A. Right, did not look good enough to even
test.
Q What would that be when you encountered
the Morrow, what subsea depth would that be?
A. The subsea depth on that would be 90
the top of the Morrow in the Amoco State "GA" would be negati
9756 for the top of the Middle Morrow formation.
Q So anything below that could be expected
to be water-producing, is that correct?
A Yes, sir, that is correct.
Q. Have you, using this contour map that

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you have in front of you, have you determined the amount, the maximum amount of productive acres in the south half of Section 12 that would be attributable to the proposed well?

Yes, sir. Based on this structural contour map, and using a planimeter, we have estimated the net acreage which could possibly be productive in the south half of Section 12, to be something less than 72 acres.

Q. All right. Do you have any recommendations concerning the proposed location should the Commission see fit to grant the relief requested?

Yes, sir. We recommend that if the proposed unerthodox location is granted, that the well should be assigned an allowable limitation factor based on a 160-acre spaced location, which limitation factor should be applied against the well's ability to produce into the pipeline, as determined by the periodic well tests.

Now this was the order of the Division in Case Number 6930, Order R-6415, concerning the Empire South Deep Unit, by order dated August 5th, 1980, which was a similar situation.

What you're saying is that since less than -- it appears that less than 160 acres is productive, even under the best of circumstances, according to your inter pretation, that they shouldn't receive more than 160 acres

allowable, is that correct?

A That is correct, because their location would be a legal location for a 160-acre gas well, of which the Morrow is not, of course.

MR. MOTE: That concludes the testimony.

I have prepared for introduction into evidence Exhibit Number

Two, which is a copy of the order of the Division which was

referred to in his recommendations, and at this time I'd like

to offer both Amoco Exhibits Number One and Two into evidence.

MR. NUTTER: Amoco Exhibits One and Two will be admitted in evidence.

MR. KELLAHIN: For the record, Mr. Nutter,

I'd like to note my objection to Exhibit Number Two, insofar

as counsel has failed to establish essential facts that would

determine that the factual situation involved today is the

same or similar of that fact situation involved in the pre
vious case.

We are unable to determine whether or not we're faced with offset acreage, it doesn't have a producing well, as opposed to whatever may have been entered in this order concerning drainage and what not. I think that's the kind of problem that needs to be looked at.

MR. NUTTER: Your exception is noted.

MR. MOTE: We tender for cross examina-

1 61 tion. CROSS EXAMINATION BY MR. KELLAHIN: Q It's S-A-N-F-O-R-D? 7 That's correct. A. Q. Mr. Sanford, your estimation of the 9 number of productive acres of 72 with regards to the south half 10 of Section 12, is that limited to the Morrow formation or did 11 I misunderstand you? 12 That is based on the structural contour 13 and limited to all formations because of the fact that every 14 formation that was tested in all three wells to the south, 15 the Atoka and the Morrow, did prove to be water-productive. 16 Therefor, we assume that in the wells in Section 12 below that 17 structural contour level would also be wet. 18 All right, let me see if I understand 19 your exhibit. 20 The structural contour you have presented 21 is your opinion with regards to the Pennsylvanian structure, 22 which would include the Morrow and the Atoka. 23 That is correct. 24 All right. Mr. Sanford, you had available to you, I assume, the same limited well information that

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    Mr. Neff had available to him when he drew his --
2
                          No, sir, I had considerably more --
                          -- structure map.
5
                          -- information than he did. In fact, we
6
    have our well in Section 13, which was a very key well in the
    map.
8
                          All right. Let's see if we can isolate
9
    what the difference is.
10
                          If you'll take the BTA well in the north
11
    half of 12, all right? And if you'll take your well in the
12
    south half --
13
                          There is no BTA well in the north half
14
    of 12.
15
                          North haif of 12, I have -- I'm sorry,
16
    the -- it's 2. All right. In Section 2, and if you'll take
17
    your well in the south half of Section 13, and draw a straight
18
    line between those two points, and if you'll tell me what if
19
    any wells you used for control that lie north and east of that
20
    line?
21
                          None whatsoever.
22
                          All right. So with regards to the pro-
23
    jection of the potential number of productive feet in the
24
    south half of Section 12, you're working with the same disad-
    vantage that Mr. Neff had.
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 A With limitations, of course, because of the other two wells.

All right. Everyone admits, then, that we have an absence of well control to the north and the east of the proposed location.

May we not conclude, Mr. Sanford, that what you have proposed is simply one geologist's opinion and Mr. Neff, as a separate geologist, has a different opinion, using the same data?

A. Using somewhat the same data.

Q All right, in what ways are the data used by you different from that of Mr. Neff?

I had more data than he did.

All right. What data do you have lying north and east of this line between the two wells that Mr.

Neff didn't have?

A Well, I do have wells that are north of a line which lies in the southern portion of 24, 23, 22, and 21, and also he did have the wells in Sections 14 and 15, but in constructing his map -- I'm sorry, the wells in 13, 14, 15, are the wells that he had. I did have one more well than he did.

The only well I can identify on your exhibit that lies north and east of this line between the two

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     wells I've identified, is a well located in the southwest of
 2
     the southwest of I guess that's Section 1, and that's a
 3
     shallow well, isn't it?
                 A.
                           That well is a shallow well.
                           That well didn't penetrate any Pennsyl-
 7
     vanian.
                           That is correct.
                           Okay. Tell me the status of your well
10
     in -- I'm sorry, it's not your well but you do -- Amoco does
11
     have an interest in the well in the north half of 11, does it
12
     not?
13
                           That is correct.
14
                           Is the information available to you on
15
     that well?
16
                           It is.
17
                           All right would you tell us something
18
     about that well?
19
                           That well is drilling somewhat below
20
     5000 feet at this time.
21
                           All right, it hasn't reached the Pennsyl
22
     vanian formation, then?
23
                           No, sir.
24
                           The north half of Section 11 is dedi-
25
     cated to that well, is it?
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1	65
2	A. The north half is the dedication and
3	that is a legal location for that well, yes.
4	Amoco has not yet elected to drill a
5	test in the south half of Section 11, has it?
6	A. No, sir.
7	Q All right. If Knox' application is
8	approved at this location and they go ahead and drill and
9	test the Pennyslvanian, then you'll have that information
10	available to you to determine where you would drill, if at.
11	all in the south half of 11, would you not?
12	A. That information, I assume, will be
13	available.
14	And if they result in a well capable
15	of production in paying quantities, then you could also
16	offset the same lease line the same section, common
17	section line, by the same amount of footage in order to
18	adequately protect your correlative rights.
19	A. With the only penalty being the delay
20	in time, of course.
21	
22	having the well precede you in the area.
23	Now, Mr. Sanford, did you participate
24	as an expert witness in this hearing of Amoco's in Case 69303

No, sir. That was the one in question

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                           Exhibit Two.
                           No, no, I did not.
                           That was entered as a result of a hearing
    in June 25th of 1980?
                           Right, no, I did not.
                           Were you working as a geologist for
    Amoco at that time?
10
                           Yes, sir, I was.
11
                           Was this area one of your areas of
    responsibility at that time?
13
                           Yes, it was.
14
                           How long bave you been employed by
15
    Amoco as a geologist, Mr. Sanford?
16
                           A year and a half, roughly.
17
                          And what is the length of your experience
    in Morrow and Pennsylvanian production in southeastern New
18
19
   Mexico?
20
                          A Year and a half.
21
                          Would you concur in Mr. Neff's recom-
   mendation as with regards to a well location in the south half
23
   of 12?
                A.
                          In what way?
                          To test the Atoka and Morrow formations.
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2	A. At	which location?
3	Q At	the proposed unorthodox location for
4	the south half of 12. T	hat's the subject
5	A. Co	uld you restate the
6	Q. Ye	s, sir.
7	A	question?
8	Q. Mr	. Neff has reached the opinion that
9	the proposed unorthodox	location of Knox Industries is the
10	optimum location in the	south half of 12. Would you concur
11	in that recommendation?	
12	<b>A.</b> (1.1)	vould.
13	MR.	KELLAHIN: I have nothing further.
14	MR.	. NUTTER: Are there any further
15	questions of this witness	s?
16	MR	MOTE: I'd like to ask one further
17	question.	
18		
19	CRO	DSS EXAMINATION
20	BY MR. MOTE:	
21		say you concur in the recommendation
22	You were not agreeing that	a well should be drilled at that
23	location, were you?	
24	A. Tha	t is correct. I believe that if
25	they ever make a well in	the south half of 12, it will be as

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far west as they can put it and that -- I do believe that if they drain anything in there, as Mr. Neff has indicated on his map, the entire reservoir lies to the west of their location; therefor, our acreage would be under the main part of the reservoir, which would be drained by their well.

You would anticipate that a large portion of the reserves that would obtained or recovered by their proposed location would be out from underneath Amoco's lease to the west, would you not?

A. I would say that the State of New Mexico has set the Morrow up on a 320-acre spacing unit for the fact that they do feel that in average cases the draining -- the drainage on an average Morrow well is 320 acres. Therefor, if you take a 320-acre radius around this well, it will entail a considerable amount of Amoco's acreage.

MR. MOTE: No further questions.

#### CROSS EXAMINATION

BY MR. NUTTER:

Q. Well, Mr. Sanford, now I don't understand what you were recommending with respect to this penalty that you were talking about and also this Order Number R-6415.

That order found that there were 195

productive acres in the east half of Section 36 where Amoco

proposed to drill a well, and it penalized the well to 50 percent of its productive capability because it was located at a 160-acre location.

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Now you mentioned that this was 160-acre location and also that there were only 72 acres. Now would you give this a penalty of 160/320 for the location and then penalize it 72/160, because it has -- doesn't have 160 productive acres?

Can I --

Q. Yeah, please.

Okay. What we had -- what we had done is given Knox drilling company the benefit of the doubt, and what we are asking for is because the well is a legal location for 160-acre spacing unit, which is exactly half of what a Morrow unit would be in this area, that we would go ahead and ask for a 50 percent allowable, as was the case.

And 72 acres doesn't enter into it at all, then.

We put that in to show that we felt that there was much less than that and to give them the benefit of the doubt. We could triple that and still have -- have 50 percent of the acreage needed for a proration unit.

> Q. Okay.

> > MR. NUTTER: Are there any further ques-

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your Exhibit Number Two that a formula was developed by the

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Commission to set the top allowable and thereby have a method to apply the penalty. Is that your understanding?

A I am not familiar with that.

You testified on your direct examination, Mr. Sanford, about some mechanism for setting the allowable.

Now would you tell us again what that was?

A. Okay. What we would like to do is ask for half allowable as far as the proration unit goes, because it is a 160-acro legal location.

Q. That much I understand. Now how are you going to determine what the top allowable is by which to apply the penalty?

A. Okay, now I'm not a -- I'm not sure exactly what was done during that case.

May we call another witness?

My point is, Mr. Sanford, is that you're not a petroleum engineer and you don't know anything about how to put this penalty together do you?

A. I do not. That is correct.

Q And you wouldn't know whether this penalty was fair or otherwise, would you?

That has been determined on other cases by the Division and also by other Amoco employees.

Q Yes, sir, but in cases for which you did

1 72 3 2 not appear or testify or participate. 3 That's correct. So you don't know whether this particular 5 formula used in a different Amoco case is at all relevant or 6 applicable to a penalty, if any, that is for this case. 7 That is correct. MR. KELLAHIN: Nothing further. 9 MR. MOTE: That's still your recommenda-10 tion, is it not? 11 That's still the recommendation. 12 MR. NUTTER: Are there any further 13 questions of the witness? He may be excused. 14 Does anyone have anything further they 15 wish to offer in Case Number 7225? 16 Any closing statements? Mr. Kellahin, 17 you may go last. 18 MR. MOTE: Mr. Examiner, I think it's 19 very clear that what's attempting to be done here is to obtain 20 a location for a well immediately offsetting an Amoco lease 21 on which granted Amoco has not yet drilled but it will very 22 shortly, commence a well in that area, and thereby be able to 23 drain the reserves of Amoco under the lease to the west. 24 The only purpose for going as far west 25 as they have done is to drain reserves outside their lease

limits.

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We think that the fact that there is no control for the -- any of the exhibits shown by Mr. Neff, north of the south half of 13, 14, and 15, is nothing more than as

far as he even admitted, is nothing more than impure specula-

tion.

The best control that we have in the area was shown by our witness, who testified that anything west, anything east of the 8600 foot contour line shown on his Exhibit Number One would probably prove up to be completed in the water and would not be a commercially productive well.

a maximum now, of 71 acres that could be considered to be productive in Section 12. Since the 560 requested from lease lines is an orthodox location for 160 acres, we feel like that the well should be penalized accordingly and should not be allowed to produce more than as if it were on a 160-acre spaced location, and that it should be tested regularly by some method to test its ability to produce into the pipeline, and be restricted to 50 percent of that production as a limitation factor.

We would have no objection whatsoever to some sort of a minimum allowable as is also stated in that order in item number sixteen. Whether or not a million a day

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is appropriate, I don't know, but I would say that that's just about appropriate and would permit them to recover their operating costs as the well is produced.

So we would represent that we believe that a well permitted at the location which they have requested would be very detrimental to the correlative rights of Amoco Production Company and should not be granted at that location except it be granted on the penalty which we've suggested.

MR. NUTTER: Thank you, Mr. Mote.

Mr. Kellahin?

MR. KELLAHIN: Mr. Examiner, we believe that the application ought to be granted as requested without penalty.

As you've heard from Mr. Neff's testimony, the operator is unable to form a west half unit which would place this well at a standard location, and that he does have a substantial controlling interest in the south half of Section 12.

Amoco would have you believe that this case is something other than it is. This is a far different case from the kind of case where you have an operator crowding up against a producing well and attempting to get into the same producing formation.

In this case Amoco has acreage in the

1 2 south half of 11, which it has not drilled or developed. 3 can only speculate as to whether it's productive or not. Any penalty developed or based upon speculation that Amoco's acreage may or may not be productive, I believe, will not support any kind of test upon review. We believe it is appropriate in those cases to apply a penalty 8 where it's clear that the operator is moving to his advantage 9 against a producing lease. That is not the case here. 10 We believe by granting this application 11 for Knox Industries, Amoco, if left alone, has the best of 12 all possible worlds. Their acreage they believe is being 13 drained by the Knox well after it is completed, there is 14 nothing to preclude them from offsetting at the same location. 15 They are not blocked into a situation where an operator has 16 already drilled a well at a standard location and is forced 17 into a problem by an offset operator crowding the location. 18 In that situation the operator, having committed himself to 19 a producing well, can do nothing else. Here we do not have that problem. Amoco is going to have the ability to sit back and watch Knox Industries expend something in excess of two million dollars to determine whether this particular pool extends far enough north and east to show that any of this acreage is productive. They can thereby take that information and use

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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.

Surger Boyd CSP

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of heard by me on Examiner Oil Conservation Division

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. /
CASE NO. 7225

Amoco Production Company
HOUSTON REGION

STRUCTURAL MAP STRAWN

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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:

Empire Mount

CASE NO. 6930 Order No. R-6415

APPLICATION OF AMOCO PRODUCTION COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY, NEW MEXICO.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION

LNOCO EXHIBIT NO. 2

CASE NO. 7 2 2 5

ORDER OF THE DIVISION

#### BY THE DIVISION:

This cause came on for hearing at 9 a.m. on June 25, 1980, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 5th day of August, 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, Amoco Production Company, seeks approval of an unorthodox well location for its Empire South Deep Unit Well No. 21 to be drilled 660 feet from the North line and 660 feet from the East line of Section 36, Township 17 South, Range 28 East, NNPM, to test the Morrow formation, Eddy County, New Mexico.
- (3) That the E/2 of said Section 36 is to be dedicated to the well.
- (4) That a well at said unorthodox location will better enable applicant to produce the gas underlying the proration unit.
- (5) That the offset operator, ARCO Oil and Gas Company, has objected to the proposed location relative to one zone of

-2-Case No. 6930 Order No. R-6415

the Morrow formation identified as the "BV" Channel zone found at a depth of from 10,660 feet to 10,780 feet in its State "BV" Well No. 1 located in Unit J of Section 25, Township 17 South, Range 28 East, NMPM, Eddy County, New Mexico.

- (6) That said offset operator presented evidence tending to demonstrate that there are no more than approximately 54 productive acres in said "BV" channel sand under the E/2 of said Section 36.
- (7) That the applicant presented evidence tending to demonstrate that there are as many as 195 productive acres in said "BV" channel sand under the E/2 of said Section 36.
- (8) That all of the geologic evidence presented was interpretive, subjective, speculative and not subject to significant proof even if the well should be drilled as proposed.
- (9) That to offset such advantage gained over the protesting offset operator, production from the well at the proposed unorthodox location should be limited from the "BV" Channel zone of the Morrow formation.
- (10) That the unreliable estimates of productive acreage presented in this case should not be used as a tool to attempt to offset such advantage.
- (11) That in the absence of reliable data on productive acreage such limitation should be based upon the well location as it relates to a standard well location for the affected zone.
- (12) That the proposed unorthodox well location would be a standard location for a well in a 160-acre spaced gas reservoir.
- (13) That the well should be assigned an allowable limitation factor based upon a 160-acre spaced location or 50 percent (160 acres divided by 320 acres) in the Morrow "BV" channel sand only.
- (14) That no allowable limitation factor should be applied in any other zone of the Wolfcamp or Pennsylvanian formations.
- (15) That in the absence of any special rules and regulations for the prorationing of production from said Morrow "BV" channel sand, the aforesaid production limitation factor should be applied against said well's ability to produce into the pipeline as determined by periodic well tests.

-3-Case No. 6930 Order No. R-6415

- V(16) That the minimum calculated allowable for the subject well should be reasonable, and 1,000,000 cubic feet of gas per day is a reasonable figure for such minimum allowable.
- (17) That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject reservoir or other productive zones found, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

#### IT IS THEREFORE ORDERED:

- (1) That an unorthodox well location for the Wolfcamp and Pennsylvanian formations is hereby approved for the Amoco Production Company Empire South Deep Unit Well No. 21 to be located at a point 660 feet from the North line and 660 feet from the East line of Section 36, Township 17 South, Range 28 East, NMPM, Eddy County, New Mexico.
- (2) That the E/2 of said Section 36 shall be dedicated to the above-described well.
- (3) That said well is hereby assigned a Production Limitation Factor of 0.50 in the "BV" channel sand of the Morrow formation as described in Finding No. (5) of this order.
- (4) That in the absence of any Special Rules and Regulations prorating gas production in said Morrow "BV" channel sand, the Special rules hereinafter promulgated shall apply.
- (5) That the following Special Rules and Regulations for a non-prorated gas well at an unorthodox location shall apply to the subject well:

SPECIAL RULES AND REGULATIONS
FOR THE
APPLICATION OF A "PRODUCTION LIMITATION FACTOR"
TO A NON-PRORATED GAS WELL

#### APPLICATION OF RULES

RULE 1. These rules shall apply to the Amoco Production Company South Empire Deep Unit Well No. 21, located 660 feet from the North line and 660 feet from the East line of Section

Case No. 6930

36, Township 17 South, Range 28 East, NMPM, Eddy County, New Order No. R-6415 Mexico, which well's Production Limitation Factor of 0.50 shall be applied to the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production.

RULE 2. The allowable period for the subject well shall ALLOWABLE PERIOD

The year shall be divided into two allowable RULE ). The year shall be divided into two allowable periods commencing at 7:00 o'clock a.m. on January 1 and July 1. be six months.

RULE 4. Immediately upon connection of the well the operator shall determine the open flow capacity of the well in accordance with the Division "Manual for Back-Pressure Testing of Natural Cae Walle" then current and the well's initial DETERMINATION OF DELIVERY CAPACITY accordance with the Division "Manual for back-rressure lestion of Natural Gas Wells" then current, and the well's initial deliverability shall be calculated against average pipeline

\* RULE 5. The well's "subsequent deliverability" shall be determined twice a year, and shall be equal to its highest determined twice a year, and small de equal to the migness of May or single day's production during the months of April and May or single day's production during the months of April and May or Single way's production during the months of April and may or or of the Said subsequent of the appropriate District Office of the Division not later than June 15 and December 15 of each year.

RULE 6. The Division Director may authorize special deliverability tests to be conducted upon a showing that the well has been worked over or that the subsequent deliverability well has been worked over or that the subsequent office special determined under Rule 5 above is erroneous. Any such special test shall be conducted in accordance with Rule 4 above.

RULE 7. The operator shall notify the appropriate district office of the Division and all offset operators of the date and time of initial or special deliverability tests in order that the Division or any such operator may at their option witness

## such tests.

CALCULATION AND ASSIGNMENT OF ALLOWABLES RULE 8. The well's allowable shall commence upon the date of connection to a pipeline and when the operator has complied

-5-Case No. 6930 Order No. R-6415

with all appropriate filing requirements of the Rules and Regulations and any special rules and regulations.

- RULE 9. The well's allowable during its first allowable period shall be determined by multiplying its initial deliverability by its production limitation factor.
- RULE 10. The well's allowable during all ensuing allowable periods shall be determined by multiplying its latest subsequent deliverability, as determined under provisions of Rule 5, by its production limitation factor. If the well shall not have been producing for at least 60 days prior to the end of its first allowable period, the allowable for the second allowable period shall be determined in accordance with Rule 9.
- RULE 11. Revision of allowable based upon special well tests shall become effective upon the date of such test provided the results of such test are filed with the Division's district office within 30 days after the date of the test; otherwise the date shall be the date the test report is received in said office.
- RULE 12. Revised allowables based on special well tests shall remain effective until the beginning of the next allowable period.
- RULE 13. In no event shall the well receive an allowable of less than one million cubic feet of gas per day.

#### BALANCING OF PRODUCTION

- RULE 14. January 1 and July 1 of each year shall be known as the balancing dates.
- RULE 15. If the well has an underproduced status at the end of a six-month allowable period, it shall be allowed to carry such underproduction forward into the next period and may produce such underproduction in addition to its regularly assigned allowable. Any underproduction carried forward into any allowable period which remains unproduced at the end of the period shall be cancelled.
- RULE 16. Production during any one month of an allowable period in excess of the monthly allowable assigned to the well shall be applied against the underproduction carried into the period in determining the amount of allowable, if any, to be cancelled.

-6-Case No. 6930 Order No. R-6415

- RULE 17. If the well has an overproduced status at the end of a six-month allowable period, it shall be shut in until such overproduction is made up.
- RULE 18. If, during any month, it is discovered that the well is overproduced in an amount exceeding three times its average monthly allowable, it shall be shut in during that month and during each succeeding month until it is overproduced in an amount three times or less its monthly allowable, as determined hereinabove.
- KULE 19. The Director of the Division shall have authority to permit the well, if it is subject to shut in pursuant to Rules 17 and 18 above, to produce up to 500 MCF of gas per month upon proper showing to the Director that complete shut-in would cause undue hardship, provided however, such permission shall be rescinded for the well if it has produced in excess of the monthly rate authorized by the Director.
- RULE 20. The Division may allow overproduction to be made up at a lesser rate than permitted under Rules 17, 18, or 19 above upon a showing at public hearing that the same is necessary to avoid material damage to the well.

#### GENERAL

- RULE 21. Failure to comply with the provisions of this order or the rules contained herein or the Rules and Regulations of the Division shall result in the cancellation of allowable assigned to the well. No further allowable shall be assigned to the well until all rules and regulations are complied with. The Division shall notify the operator of the well and the purchaser, in writing, of the date of allowable cancellation and the reason therefor.
- (6) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

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

> STATE OF NEW MEXICO IL CONSERVATION DIVISION

JOE D. RAMEY Director

SEAL fd/

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
AMOSO EXHIBIT NO. /
CASE NO. Z225

Amoco Production Company
HOUSTON REGION

STRUCTURAL MAP STRAWN

DOCUMENT NO. GEOL.

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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:

Empire Mount

APPLICATION OF AMOCO PRODUCTION COMPANY FOR AN UNORTHODOX GAS WELL LOCATION, EDDY COUNTY,

BEFORE EXAMINER NUTTER

OIL CONSERVATION DIVISION

FINAND EXHIBIT NO. 2

CASE NO. 7 2 2 3

**CASE NO. 6930** 

ORDER OF THE DIVISION

#### BY THE DIVISION:

NEW MEXICO.

This cause came on for hearing at 9 a.m. on June 25, 1980, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 5th day of August, 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, Amoco Production Company, seeks approval of an unorthodox well location for its Empire South Deep Unit Well No. 21 to be drilled 660 feet from the North line and 660 feet from the East line of Section 36, Township 17 South, Range 28 East, NMPM, to test the Morrow formation, Eddy County, New Mexico.
- (3) That the E/2 of said Section 36 is to be dedicated to the well.
- (4) That a well at said unorthodox location will better enable applicant to produce the gas underlying the proration unit.
- (5) That the offset operator, ARCO Oil and Gas Company, has objected to the proposed location relative to one zone of

-2-Case No. 6930 Order No. R-6415

the Morrow formation identified as the "BV" Channel zone found at a depth of from 10,660 feet to 10,780 feet in its State "BV" Well No. 1 located in Unit J of Section 25, Township 17 South, Range 28 East, NMPM, Eddy County, New Mexico.

- (6) That said offset operator presented evidence tending to demonstrate that there are no more than approximately 54 productive acres in said "BV" channel sand under the E/2 of said Section 36.
- (7) That the applicant presented evidence tending to demonstrate that there are as many as 195 productive acres in said "BV" channel sand under the E/2 of said Section 36.
- (8) That all of the geologic evidence presented was interpretive, subjective, speculative and not subject to significant proof even if the well should be drilled as proposed.
- (9) That to offset such advantage gained over the protesting offset operator, production from the well at the proposed unorthodox location should be limited from the "BV" Channel zone of the Morrow formation.
- (10) That the unreliable estimates of productive acreage presented in this case should not be used as a tool to attempt to offset such advantage.
- (11) That in the absence of reliable data on productive acreage such limitation should be based upon the well location as it relates to a standard well location for the affected zone.
- (12) That the proposed unorthodox well location would be a standard location for a well in a 160-acre spaced gas reservoir.
- (13) That the well should be assigned an allowable limitation factor based upon a 160-acre spaced location or 50 percent (160 acres divided by 320 acres) in the Morrow "BV" channel sand only.
- (14) That no allowable limitation factor should be applied in any other zone of the Wolfcamp or Pennsylvanian formations.
- (15) That in the absence of any special rules and regulations for the prorationing of production from said Morrow "BV" channel sand, the aforesaid production limitation factor should be applied against said well's ability to produce into the pipeline as determined by periodic well tests.

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-3-Case No. 6930 Order No. R-6415

- (16) That the minimum calculated allowable for the subject well should be reasonable, and 1,000,000 cubic feet of gas per day is a reasonable figure for such minimum allowable.
- (17) That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject reservoir or other productive zones found, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

#### IT IS THEREFORE ORDERED:

- (1) That an unorthodox well location for the Wolfcamp and Pennsylvanian formations is hereby approved for the Amoco Production Company Empire South Deep Unit Well No. 21 to be located at a point 660 feet from the North line and 660 feet from the East line of Section 36, Township 17 South, Range 28 East, NMPM, Eddy County, New Mexico.
- (2) That the E/2 of said Section 36 shall be dedicated to the above-described well.
- (3) That said well is hereby assigned a Production Limitation Factor of 0.50 in the "BV" channel sand of the Morrow formation as described in Finding No. (5) of this order.
- (4) That in the absence of any Special Rules and Regulations prorating gas production in said Morrow "BV" channel sand, the Special rules hereinafter promulgated shall apply.
- (5) That the following Special Rules and Regulations for a non-prorated gas well at an unorthodox location shall apply to the subject well:

SPECIAL RULES AND REGULATIONS
FOR THE
APPLICATION OF A "PRODUCTION LIMITATION FACTOR"
TO A NON-PRORATED GAS WELL

#### APPLICATION OF RULES

RULE 1. These rules shall apply to the Amoco Production Company South Empire Deep Unit Well No. 21, located 660 feet from the North line and 660 feet from the East line of Section

Case No. 6930 Order No. R-6415

36, Township 17 South, Range 28 East, NMPM, Eddy County, New Mexico, which well's Production Limitation Factor of 0.50 shall be applied to the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production.

### ALLOWABLE PERIOD

The allowable period for the subject well shall be six months.

RULE 3. The year shall be divided into two allowable periods commencing at 7:00 o'clock a.m. on January 1 and July 1.

### DETERMINATION OF DELIVERY CAPACITY

RULE 4. Immediately upon connection of the well the operator shall determine the open flow capacity of the well in accordance with the Division "Manual for Back-Pressure Testing of Natural Gas Wells" then current, and the well's initial deliverability shall be calculated against average pipeline

\* RULE 5. The well's "subsequent deliverability" shall be determined twice a year, and shall be equal to its highest single day's production during the months of April and May or October and November, whichever is applicable. Said subsequent deliverability, certified by the pipeline, shall be submitted to the appropriate District Office of the Division not later than

The Division Director may authorize special deliverability tests to be conducted upon a showing that the well has been worked over or that the subsequent deliverability determined under Rule 5 above is erroneous. Any such special test shall be conducted in accordance with Rule 4 above.

The operator shall notify the appropriate district office of the Division and all offset operators of the date and time of initial or special deliverability tests in order that the Division or any such operator may at their option witness

## CALCULATION AND ASSIGNMENT OF ALLOWABLES

RULE 8. The well's allowable shall commence upon the date of connection to a pipeline and when the operator has complied

-5-Case No. 6930 Order No. R-6415

with all appropriate filing requirements of the Rules and Regulations and any special rules and regulations.

- RULE 9. The well's allowable during its first allowable period shall be determined by multiplying its initial deliverability by its production limitation factor.
- RULE 10. The well's allowable during all ensuing allowable periods shall be determined by multiplying its latest subsequent deliverability, as determined under provisions of Rule 5, by its production limitation factor. If the well shall not have been producing for at least 60 days prior to the end of its first allowable period, the allowable for the second allowable period shall be determined in accordance with Rule 9.
- RULE 11. Revision of allowable based upon special well tests shall become effective upon the date of such test provided the results of such test are filed with the Division's district office within 30 days after the date of the test; otherwise the date shall be the date the test report is received in said office.
- RULE 12. Revised allowables based on special well tests shall remain effective until the beginning of the next allowable period.
- RULE 13. In no event shall the well receive an allowable of less than one million cubic feet of gas per day.

### BALANCING OF PRODUCTION

- RULE 14. January I and July 1 of each year shall be known as the balancing dates.
- RULE 15. If the well has an underproduced status at the end of a six-month allowable period, it shall be allowed to carry such underproduction forward into the next period and may produce such underproduction in addition to its regularly assigned allowable. Any underproduction carried forward into any allowable period which remains unproduced at the end of the period shall be cancelled.
- RULE 16. Production during any one month of an allowable period in excess of the monthly allowable assigned to the well shall be applied against the underproduction carried into the period in determining the amount of allowable, if any, to be cancelled.

-6-Case No. 6930 Order No. R-6415

- RULE 17. If the well has an overproduced status at the end of a six-month allowable period, it shall be shut in until such overproduction is made up.
- RULE 18. If, during any month, it is discovered that the well is overproduced in an amount exceeding three times its average monthly allowable, it shall be shut in during that month and during each succeeding month until it is overproduced in an amount three times or less its monthly allowable, as determined hereinahove.
- RULE 19. The Director of the Division shall have authority to permit the well, if it is subject to shut in pursuant to Rules 17 and 18 above, to produce up to 500 MCF of gas per month upon proper showing to the Director that complete shut in would cause undue hardship, provided however, such permission shall be rescinded for the well if it has produced in excess of the monthly rate authorized by the Director.
- RULE 20. The Division may allow overproduction to be made up at a lesser rate than permitted under Rules 17, 18, or 19 above upon a showing at public hearing that the same is necessary to avoid material damage to the well.

### GENERAL

- RULE 21. Failure to comply with the provisions of this order or the rules contained herein or the Rules and Regulations of the Division shall result in the cancellation of allowable assigned to the well. No further allowable shall be assigned to the well until all rules and regulations are complied with. The Division shall notify the operator of the well and the purchaser, in writing, of the date of allowable cancellation and the reason therefor.
- (6) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

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

> STATE OF NEW MEXICO IL CONSERVATION DIVISION

JOE D. RAMEY Director

SEAL fd/

Amoco Production Company HOUSTON REGION

> STRUCTURAL MAP STRAWN

DOCUMENT NO. GEOL.

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# ATWOOD, MALONE, MANN & COOTER

A PROFESSIONAL ASSOCIATION LAWYERS

JEFF D. ATWOOD [1883-1860] ROSS L. MALONE [1910-1974]

P. O. DRAWER 700 SECURITY NATIONAL BANK BUILDING ROSWELL, NEW MEXICO 88201 [505] 622-6221

CHARLES F. MALONE
RUSSELL D. MANN
PAUL A. COOTER
BOB F. TURNER
JOHN W. BASSETT
ROBERT E. SABIN
BRIAN W. COPPLE

STEVEN L.BELL WILLIAM P. LYNCH RODNEY M. SCHUMACHER

May 18, 1981

Mr. Joe D. Ramey Oil Conservation Commission State Land Office Building Santa Fe, New Mexico 87501

RE: No. 7260

Examiner Hearing for Wednesday, May 20, 1981

Dear Mr. Ramey:

Would you please file the enclosed Entry of Appearance in the captioned case. The presentation will be handled by C. A. Mote of Amoco's Houston office.

Appreciating your courtesy, we are,

Very truly yours

Paul Cooter

PC:sas cc: C. A. Mote, Esquire

### BEFORE THE OIL CONSERVATION COMMISSION

### STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING FOR AN ORDER CREATING, ABOLISHING, CONTRACTING VERTICAL LIMITS AND EXTENDING HORIZONAL LIMITS OF CERTAIN POOLS IN EDDY, LEA AND ROOSEVELT COUNTIES, NEW MEXICO.

No. 7260

## ENTRY OF APPEARANCE

The undersigned, Atwood, Malone, Mani & Cooter,
P.A., of Roswell, New Mexico, hereby enter their appearance
herein on behalf of Amoco Production Company, with C. A. Mote,
Esquire, of Houston, Texas.

P. O. Drawer 700
Roswell, New Mexico 88201

Attorneys for Amoco Production Company

### BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING FOR AN ORDER CREATING, ABOLISHING, CONTRACTING VERTICAL LIMITS AND EXTENDING HORIZONAL LIMITS OF CERTAIN POOLS IN EDDY, LEA AND ROOSEVELT COUNTIES, NEW MEXICO.

No. 7260

### ENTRY OF APPEARANCE

The undersigned, Atwood, Malone, Mann & Cooter,
P.A., of Roswell, New Mexico, hereby enter their appearance
herein on behalf of Amoco Production Company, with C. A. Mote,
Esquire, of Houston, Texas.

ATWOOD, MALONE MANN & COOTER, P.A.

P. O. Drawer 700

Roswell, New Mexico 88201

Attorneys for Amoco Production Company

Dockets Nos. 17-81 and 18-81 are tentatively set for June 3 and 17, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

#### DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 20, 1981

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 June, 1981, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.
  - (2) Consideration of the allowable production of gas for June, 1981, from four provated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

#### CASE 7242: (Readvertised)

Application of Harvey E. Yates Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox Wolfcamp-Mississippian location of its McDonald Well No. 1 to be drilled 660 feet from the South line and 990 feet from the East line of Section 33, Township 13 South, Range 36 East, the S/2 of said Section 33 to be dedicated to the well.

#### CASE 7243: (Readvertised)

Application of Harvey E. Yates Company for compulsory pooling, Lea County, New Mexico.

Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian and Mississippian formations underlying the S/2 of Section 55. Township 13 South, Range 36 East, for a gas completion and/or all mineral interests in the Pennsylvanian-Devonian formations underlying the SE/4 SE/4 of said Section 33 for an oil completion. 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, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

- CASE 7253: Application of Bandera Energy Company for compulsory pooling, Lea County, New Mexico.

  Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying the E/2 of Section 27, Township 16 South, Range 35 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge
- CASE 7254: Application of Mesa Petroleum Company for compulsory pooling, San Juan County, New Mexico.

  Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Mesaverde formation underlying the W/2 of Section 15, Township 30 North, Range 11 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, designation of applicant as exerator of the well, and a charge for risk involved in drilling said well.
- CASE 7255: Application of Gulf Oil Corporation for compulsory pooling, Lea County, New Mexico.

  Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the top of the Wolfcamp formation to the base of the Morrow formation underlying the W/2 of Section 28, Township 18 South, Range 32 East, to be dedicated to a well to be drilled at a standard location thereon.

  Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.
- CASE 7256: Application of Petro-Lewis Corporation for downhole commingling, Lea County, New Mexico.

  Applicant, in the above-styled cause, seeks approval for the downhole commingling of Blinebry,
  Drinkard, and Abo production in the wellbore of its Gulf Sarkeys Well No. 2 located in Unit F of
  Section 25, Township 21 South, Range 37 East.
- CASE 7257: (This case will be dismissed and a different well will be docketed for hearing later.)

Application of Cities Service Company for a salt water disposal well, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Entrada formation at approximately 5300 feet in its Federal "M" Well No. 1 in Unit P of Section 21, Township 19 North, Range 5 West.

Page 2 of 5 Examiner Hearing - Wednesday - May 20, 1981

Docket No. 16-81

CASE 7225: (Continued from April 22, 1981, Examiner Hearing)

Application of Knox Industries, Inc. for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox Morrow location of its Maddox Well No. 1 to be drilled 1980 feet from the South line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, Northeast Antelope Ridge Field, the S/2 of said Section 12 to be dedicated to the well.

CASE 7258: Application of HNG Oil Company for compulsory pooling, Lea County, New Mexico.

Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp and Pennsylvanian formations underlying the S/2 of Section 32, Township 21 South, Range 35 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for the risk involved in drilling said well.

CASE 7086: (Continued from April 8, 1981, Examiner Hearing)

Application of Blackwood & Nichols Company, Ltd. for designation of a tight formation, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Pictured Cliffs formation underlying portions of Townships 30 and 31 North, Ranges 6, 7, and 8 West, containing 33,500 acres, more or less, as a tight formation pursuant to Section 107 of the Natural Cas Policy Act and 18 CFR Section 271.701-705.

CASE 7259: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit
New Mexico State University and Fireman's Fund Insurance Company to appear and show cause why two
certain geothermal wells, being the New Mexico State University Well No. TC-3 and Well No. DT-4,
both located in the NW/4 SE/4 of Section 14, Township 29 South, Range 8 West, Luna County, New
Mexico, should not be ordered plugged and abandoned in accordance with a Division-approved plugging
program.

CASE 7260: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, abolishing, contracting vertical limits, and extending horizontal limits of certain pools in Eddy, Lea, and Roosevelt Counties, New Mexico:

(a) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Atoka production and designated as the West Antelope Ridge-Atoka Gas Pool. The discovery well is Monsanto Company Back Basin Well No. 1 located in Unit I of Section 20, Township 23 South, Range 34 East, NMPM. Said pool would comprise:

# TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM Section 20: E/2

(b) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Strawn production and designated as the Antelope Ridge-Strawn Gas Pool. The discovery well is Estoril Production Corporation Curry Federal Well No. 1 located in Unit I of Section 22, Township 23 South, Range 34 East, NMPM. Said pool would comprise:

TOWNSHIP 23 SOUTH, RANGE 34 FAST, EMPH Section 15: S/2 Section 22: All

(c) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Montoya production and designated as the Fowler-Montoya Pool. The discovery well is Gulf Oil Corporation Lillie Well No. 1 located in Unit D of Section 23, Township 24 South, Range 37 East, NMPM. Said pool would comprise:

## TOWNSHIP 24 SOUTH, RANGE 37 EAST, NMPM Section 23: NW/4

(d) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Atoka production and designated as the Grama Ridge Atoka Gas Pool. The discovery well is Minerals, Inc. Llano 33 State Well No. 1 located in Unit J of Section 33, Township 21 South, Range 34 East, NMPM. Said pool would comprise:

TOWNSHIP 21 SOUTH, RANGE 34 EAST, NMPM Section 33: S/2

( **)** 

(e) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Wolfcamp production and designated as the McNillan-Wolfcamp Gas Pool. The discovery well is Marbob Energy Corporation State CJ Com Well No. 1 located in Unit G of Section 24, Township 20 South, Range 26 East, NNPM. Said pool would comprise:

# TOWNSHIP 20 SOUTH, RANGE 26 EAST, NMPM Section 24: N/2

(f) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Bone Spring production and designated as the North Osudo-Bone Spring Pool. The discovery well is Jake L. Hamon Hamon-Samedan-Petty Well No. 1 located in Unit N of Section 8, Township 20 South, Range 36 East, NMPM. Said pool would comprise:

# TOWNSHIP 20 SCUTH, RANGE 36 EAST, NMPM Section 8: SW/4

(g) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Wolfcamp production and designated as the West Palmillo-Wolfcamp Pool. The discovery well is Bass Enterprises Production Company Palmillo State Well No. 1 located in Unit J of Section 1, Township 19 South, Range 28 East, NMPM. Said pool would comprise:

# TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM Section 1: NW/4 SE/4

(h) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Atoka production and designated as the Scoggin Draw-Atoka Gas Pool. The discovery well is Amoco Production Company Federal F Gas Com Well No. 1 located in Unit G of Section 3, Township 18 South, Range 27 East, NNPM. Said pool would comprise:

## TOWNSHIP 18 SOUTH, RANGE 27 EAST, NMPM Section 3: E/2

(i) CREATE a new pool in Roosevelt County, New Mexico, classified as an oil pool for Cisco production and designated as the East Tanneyhill-Cisco Pool. The discovery well is Energy Reserves Group, Inc. El Paso State Well No. 1 located in Unit P of Section 8, Township 6 South, Range 34 East, NMPM. Said pool would comprise:

#### TOWNSHIP 6 SOUTH, NANGE 34 EAST, NMPM Section 8: SE/4

(j) ABOLISH the Carlsbad-Canyon Gas Pool in Pir County, New Mexico, described as: (acreage to be added to East Carlsbad-Wolfcamp Gas Pool)

# TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM Section 21: 5/2

(k) ABOLISH the Carlsbad Permo-Pennsylvanian Gas Pool in Eddy County, New Mexico, described as: (acreage to be added to East Carlsbad-Wolfcamp Gas Pool)

# TOWNSHIP 22 SOUTH, RANGE 27 EAST, NNPM Section 15: All

(1) EXTEND the Baldridge Canyon-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 24 EAST, NMPM Section 36: S/2

TOWNSHIP 23 SOUTH, RANGE 25 EAST, NMPM Section 31: S/2

TOWNSHIP 24 SOUTH, RANGE 24 EAST, NMPM Section 1: E/2 Section 12: E/2

TOWNSHIP 24 SOUTH, RANGE 25 EAST, NMPM Section 6: W/2

Section 7: N/2

(m) EXTEND the Baum-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein: Docket No. 16-81 TOWNSHIP 13 SOUTH, RANGE 33 EAST, IMPM Section 30: SE/4

(n) EXTEND the Bull's Eye-San Andres Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 28 EAST, NMPM Section 12: N/2 SE/4

TOWNSHIP 8 SOUTH, RANGE 29 EAST, NMPM Section 7: NM/4 SW/4

(o) EXTEND the North Caprock-Mississippian Pool in Lea County, New Mexico, to include therein: TOWNSHIP 12 SOUTH, RANGE 32 EAST, NMPH Section 5: SE/4

(p) EXTEND the East Carlobad-Wolfcamp Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM Section 14: N/2 Section 14: M/2
Section 15: All
Section 16: R/2
Section 20: E/2

Section 21: All

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

TOWNSHIP 20 SOUTH, RANGE 26 EAST, NMPM Section 33: E/2

(r) EXTEND the Comanche Stateline Tansill-Yates-Seven Rivers-Queen Pool in Lea County, New Mexico,

TOWNSHIP 26 SOUTH, RANGE 36 EAST, NMPM Section 20: E/2 NE/4

(s) EXTEND the Diamond Mound-Morrow Gas Pool in Eddy County, New Mexico, to include therein: TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMP)

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

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM Section 22: S/2
Section 27: N/2

(u) EXTEND the East Empire Yates-Seven Rivers Pool in Eddy County, New Mexico, to include therein: TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM Section 23: NW/4 SW/4

(v) EXTEND the Hare-San Andres Gas Pool in Les County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM Section 21: 5/2

(w) EXTEND the South Kemnitz Atoka-Morrow Gas Pool in Lea County, New Mexico, to include therein: TOWNSHIP 16 SOUTH, RANGE 34 EAST, NMPM Section 30: E/2

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

TOWNSHIP 19 SOUTH, RANGE 27 EAST, NMPM Section 21: S/2

Page 5 of 5 Examinor Hearing - Wednesday - May 20, 1981

Docket No. 16-81

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

TOWNSHIP 17 SOUTH, RANGE 32 EAST, NMPM Section 28: W/2

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

TOWNSHIP 24 SOUTH, RANCE 28 EAST, NMPM Section 10: S/2 Section 23: N/2

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

TOWNSHIP 4 SOUTH, RANGE 33 EAST, NMPM Section 17: SE/4

(bb) EXTEND the South Salt Lake-Horrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 32 EAST, NM° Section 5: Lots 1, 2, 3, 4, 5, 6, /, and 8

(cc) CONTRACT the vertical limits of the Shugart-Pennsylvanian Gas Pool to include the Morrow formation only and redesignate said pool as Shugart-Morrow Gas Pool, and extend the horizontal limits of said pool to include therein:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM Section 26: N/2

(dd) EXTEND the North Shugart-Horrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM Section 7: E/2 Section 18: All

(ee) EXTEND the East Weir-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM Section 7: N/2 N/2
Section 8: N/2 N/2
Section 9: W/2 NW/4

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STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION STATE LAND OFFICE BLDG. SANTA FE, NEW MEXICO 22 April 1981 EXAMINER HEARING IN THE MATTER OF: Application of Knox Industries, Inc. ) for an unorthodox gas well location, ) Lea County, New Mexico. CASE 7226 10 11 12 TRANSCRIPT OF HEARING 13 14 APPEARANCES 15 16 For the Oil Conservation Ernest L. Padilla, Esq. 17 Division: Legal Counsel to the Division State Land Office Bldg. 18 Santa Fe, New Mexico 37501 19 20 For the Applicant: W. Thomas Kellahin, Esq. 21 KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501

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MR. NUTTER: Call Case Number 7225. MR. PADILLA: Application of Knox Industries, Inc., for an unorthodox gas well location, Lea County, New Mexico. MR. KELLAHIN: Applicant requests that that case be continued to the hearing on May 20. MR. NUTTER: Case Number 7225 will be continued to the Examiner Hearing scheduled to be held at 9:00 o'clock a. m. on May 20, 1981, at this same place. (Hearing concluded.) 

Page \_\_\_\_\_\_3

### CERTIFICATE

I, SALLY W. BOYD, C.S.R., DO HEREPY 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.

Sully W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1225 heard by me on 1981.

Oil Conservation Division

SALLY W. BOYD, C.S.F Ri. 1 Box 193-B Sunta Fe, New Mexico 87501 Phone (505) 455-7409 STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
22 April 1981

# EXAMINER HEARING

IN THE MATTER OF:

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Application of Knox Industries, Inc. )
for an unorthodox gas well location, )
Lea County, New Mexico.

7226

TRANSCRIPT OF HEARING

APPEARANCES

For the Oil Conservation Division:

Ernest L. Padilla, Esq. Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501

For the Applicant:

W. Thomas Kellahin, Esq. KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501

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MR. NUTTER: Call Case Number 7225.

MR. PADILLA: Application of Knox Industries, Inc., for an unorthodox gas well location, Lea County, New Mexico.

MR. KELLAHIN: Applicant requests that that case be continued to the hearing on May 20.

MR. NUTTER: Case Number 7225 will be continued to the Examiner Hearing scheduled to be held at 9:00 o'clock a.m. on May 20, 1981 at this same place.

(Hearing concluded.)

**.** .

CERTIFICATÉ

I, SALLY W. BOYD, C.S.R., DO HEREPY 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.

Suly W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Exampler hearing of Case No. 7225 heard by me on 422 19.81. Examiner

Oil Conservation Division

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ATWOOD, MALONE, MANN & COO

A PROFESSIONAL ASSOCIATION

JEFF D. ATWOOD [[882-1980] ROSS L. MALONE [1910-1974] OIL CONSERVATION DIVISION
SANTA FE

P. O. DRAWER 700 SECURITY NATIONAL BANK BUILDING ROSWELL, NEW MEXICO 88201 [505] 622-6221 CHARLES F. MALONE
RUSSELL D. MANN
PAUL A.COOTER
BOB F. TURNER
JOHN W. BASSETT
ROBERT E. SABIN
BRIAN W. COPPLE

STEVEN L. BELL WILLIAM P. LYNCH RODNEY M. SCHUMACHER

April 16, 1981

Mr. Joe Ramey Secretary-Director Oil Conservation Commission P. O. Box 2088 Santa Fe, New Mexico 87501

> RE: Examiner Hearing - Wednesday, April 22, 1981 Cause No. 7225

Dear Mr. Ramey:

We would appreciate your filing the enclosed Entry of Appearance for Amoco Production Company in Cause No. 7225.

Your assistance in this matter is appreciated.

Very truly yours,

Paul Cooter

PC/le

Enc.

cc: C. A. Mote, Esq.



### BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF KNOX INDUSTRIES, INC. FOR AN UNORTHODOX GAS WELL LOCATION, LEA COUNTY, NEW MEXICO.

NO. 7225

## ENTRY OF APPEARANCE

The undersigned hereby enter their appearance on behalf of Amoco Production Company with C. A. Mote of Houston, Texas.

ATWOOD, MALONE, MANN & COOTER, P.A.

P. O. Drawer 700
Roswell, New Mexico 88201

Dockets Nos. 15-81 and 16-81 are tentatively set for May o and 20, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

#### DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 22, 1981

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

- The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:
- CASE 7220: Application of McClellan Oil Corporation for a unit agreement, Chaves County, New Mexico.

  Applicant, in the above-styled cause, seeks approval for the Connor Unit Area, comprising 5,120 acres, more or less, of State and Federal lands in Township 13 South, Range 29 East.
- CASE 7221: Application of Maddox Energy Corporation for a unit agreement, Eddy County, New Mexico.

  Applicant, in the above-styled cause, seeks approval for the Flower Draw Unit Area, comprising 3,760 acres, more or less, of State lands in Townships 25 and 26 South, Range 28 East.
- CASE 7222: Application of GMW Oil Company for a unit agreement, Lea County, New Mexico.

  Applicant, in the above-styled cause, seeks approval for the Starman Unit Area, comprising 2,803 acres, more or less, of State, Federal, and fee lands in Township 26 South, Range 35 East.
- CASE 7211: (Continued from April 8, 1981, Examiner Hearing)

  Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico.

Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico.

Applicant, in the above-styled cause, seeks approval for the North Rock Lake State Unit Area, comprising 2,880 acres, more or less, of State land in Township 22 South, Range 35 East.

- CASE 7223: Application of Sun Oil Company for a dual completion and simultaneous dedication, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of a well to be drilled in Unit M of Section 1, Township 22 South, Range 37 East, to produce oil from the Wantz-Granite Wash Pool and gas from the Tubb formation and to simultaneously dedicate the SW/4 of said Section 1 to said well and to its Lynch Christmas Com Well No. 4 in Unit L.
- CASE 7224: Application of S & I Oil Company for compulsory pooling, San Juan County, New Mexico.

  Applicant, in the above-styled cause, seeks an order pooling all mineral interests in all formations underlying the SW/4 SW/4 of Section 2, Township 29 North, Range 15 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, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.
- CASE 7225: Application of Knox Industries, Inc. for an unorthodox gas well location, Lea County, New Mexico.

  Applicant, in the above-styled cause, seeks approval for the unorthodox Morrow location of its Maddox Well No. 1 to be drilled 1980 feet from the South line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, Northeast Antelope Ridge Field, the S/2 of said Section 12 to be dedicated to the well.
  - CASE 7226: Application of Enserch Exploration, Inc. for salt water disposal, Roosevelt County, New Mexico.

    Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Montoya formation in the interval from 7902 feet to 7930 feet in its Rader Well No. 2 in Unit E of Section 32, Township 5 South, Range 33 East.
- CASE 7227: Application of Alpha Twenty-One Production Company for an unorthodox gas well location and a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 120-acre non-standard proration unit comprising the E/2 SW/4 and SW/4 SE/4 of Section. 21, Town-ship 21 South, Range 37 East, Hare-San Andres Gas Pool, to be dedicated to its Lansford Well No. 1 at an unorthodox location 660 feet from the South line and 1650 feet from the West line of said Section 21.
- CASE 7228: Application of Yates Petroleum Corporation for an unorthodox gas well location and simultaneous dedication, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox Wolfcamp-Pennsylvanian location of its Rio Penasco "KD" Well No. 3 to be drilled 990 feet from the North line and 660 feet from the East line of Section 11, Township 19 South, Range 25 East, the N/2 of said Section 11 to be dedicated to said well and to applicant's Rio Penasco "MF" Federal Well No. 1 located in Unit F.

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ECEIVED THONE 682.6261 OIL CONSERVATION DIVISION

SANTA FE

KNOX INDUSTRIES, INC. P. O. BOX 3023

MIDLAND, TEXAS 79702

March 18, 1981

GORDON S. KNOX PRESIDENT

> Division Director Oil Conservation Director P. R. Box 2088 Santa Fe. N.M. 87501

Case 7225

Dear Sir:

Knox Industries, Inc., hereby applies for an unorthodox location for its Maddox No. 1 to be located:

Unit L, 1980' FSL & 660' FWL of Sec. 12 T-23S, R-34E, Lea County, New Mexico

The well is a proposed 13,900' Morrow test in the NE Antelope Ridge Field. The spacing unit to be attributed, if the well is productive, is the South half of Section 12.

Enclosed please find copies of C-101 and C-102, and a plat showing ownership of all offsetting acreage as well as a list of well owners showing the fractional interests owned. A copy of the application to drill was sent by certified mail to all offset owners on December 8, 1980.

The proposal is not a reentry, nor was the location moved from a standard location for reasons of topography.

Please set this matter for hearing at the earliest possible time.

Very truly yours. Feland Franz

LF:bm enc1.

Revised 10-1-18

Revised 10-18

Revised 10-18

Revised 10 Forn C-101 -1-18 OIL CONSERVATION DIVISION ETOTO OH & GUS LAVOS No. E OF NEW MEXICO APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUC BALLANTA FE MINERALS TEPARTMENT B. Farm or Leoso Nome Maddox III NINUTION 9. Well No. 10. Field and Pool, or Wildcol IN FE Antelope Ridge, N.E. PERATOR ype of Work DRILL X Will IX Type of Well Knox Industries, Inc. Lea OIL CONTROL TO 79702 p. 0. Box 3023, Midland, TX Rotary Address of Operator July 15, 1981 · Loco: lon of Well Morrow 13,900 Willbros Drlg. Co. Surface SACKS OF CEMENT Surface PROPOSED CASING AND CEMENT PROGRAM Redi-Mix 2,500 SETTING DEPTH \* Blanket yds . 14 450 9,000 Set conductor W/rat hole machine. MI&RURT. Drill a 17-1/2" hole to 600' W/fresh water 80P & 40C 18 hrs. 9-5/8" casing at 5700 significant w/brine. Set of 700 significant w/brine. Wor 13,900, 13,900, 13,900 with w/brine. Wor 18 hrs. NUBOP. Test BOP & casing DST significant w/brine. Wor 18 hrs. NUBOP. Test BOP & casing brise. Wor 18 hrs. Wor 13,900, 13,900 with w/brine. Wor 18 hrs. Wor 13,900, 13,900 with w/brine. Wor 18 hrs. NuBOP. Set of 600 psi for 30 mins. 18 hrs. to 12,200' w/cut w/350 sx. W/6-3/4" bit to 13,900 with w/brine word w/brine. Wor 18 hrs. Wor 13,900 with w/brine word w/brine. Wor 18 hrs. Wor 18 hrs. Wor 19 with w/brine word w/brine. Wor 18 hrs. NuBOP. Set of 600 psi for 30 mins. 18 hrs. to 12,200' w/cut w/350 sx. W/6-3/4" bit to 13,900 w/cut w/st. SIZE OF CASING WEIGHT PER FOOT 17,800 3357' GR SIZE OF HOLE 17-172" 12-17A" sx. MORT to complete.

Application is being sent this date to all off-set operators by certified mail. \* In process of secruring blanket bond. ABOVE SPACE DESCRIBE PROPOSED PROGRAMI IV PROPOSAL 13 TO DEEPEN OR IV ANY. Production Manager (This stace for State lise) HOLYTONS OF APPROVAL, IF ARYI

NEW MEXICO OIL CO YELL LOCATION AND	North Atto	ii cound	m.E	CEI	$V \mathbb{Z}$	E
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flective 1-1-65

OIL CONSTRUCTION DIMENON Knox Industries, Inc Maddox SANTA FE Unit Letter Township **23-S** 34-E Lea 12 Actual Footage Location of Well: West 1980 South 660 feet from the feet from the line and Ground Level Elev: Producing Formation Dedicated Acreage: 3357' 320 Morrow Antelope Ridge, NE 1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below. 2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). 3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc? If answer is "yes," type of consolidation Yes X No If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of the form if necessary). See reverse this form if necessary.). No allowable will be assisted to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commis-CERTIFICATION I hereby certify that the information contained herein is true and complete to the of my knowledge and belief. **Production Manager** Knox Industries, Inc. December 8, 1980 I hereby certify that the well location shown on this plat was plotted from field 660-0 notes of actual surveys made by me or under my supervision, and that the same Is true and correct to the best of my knowledge and belief. Date Surveyed Dec. 3, 1980
Registered Professional Engineer and/or Land Surveyor Myle E. Stores

Tracts & Owners that have been consolidated in S/2 Unit:

Tract NW 1/4 SW 1/4 40/40	Owners All	• • • • • • • • • • • • • • • • • • •	Acres 40
SW 1/4 SW 1/4 26.67/40	Powhatan Carter, Jr. Anderson Carter Dean Stoltz		10 10 6.67
NE 1/4 SW 1/4 23.33/40	Powhatan Carter, Jr. Anderson Carter Dean Stoltz Ken E. Moore John Ellett		5 5 3.33 6.67 3.33
SE 1/4 SW 1/4 40/40	ATT		40
NW 1/4 SE 1/4 29.82/40 SW 1/4 SE 1/4 29.835/40	Beulah Baird Annis B. Hollis Ora Mae Davis J. H. Medlin Grace Medlin Ruth Marion Dorothy C. McFarland Est. Ken E. Moore Aileen Olson Luella Collett Richard Moran, Trustee Dorothy C. McFarland Est. Ken E. Moore Aileen Olson, et al Luella Collett Richard Moran, Turstee N.M. Bk. & Trust Co., Tr.		3.33 3.33 3.33 3.33 3.33 1.04 1.04 1.04 1.04 1.04 1.04 1.04 1.04
SE 1,'4 SE 1/4 13.33/40	Powhatan Carter, Jr. Anderson Carter Dean Stoltz		5 5 3.33
NE 1/4 SE 1/4	Dorothy C. McFarland Est. Kan E. Moore Aileen Olson, et al Luella Collett Richard Moran, Trustee Lois Horton		1.38 1.38 1.38 2.50 4.84375

Total committed Acres

224.6875

(70.15%)

U.S. M.I. W.A. Modderls	u ș.	Texos Pocific  15 1 05  25 100  U.S.  W.A.Moddox(S)	R34E   "	# # # R 35 E	Philips  HBP HNG E-1924 2-1-37 C6993 I 10B Shalls Stote 10 4010
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Office ( Speratice)

Deane H. Stoltz P. O. Box 3179 Midland, TX 79702

Texas International Petroleum Suite 300, National Foundation Center 3535 NW 58th St. Oklahoma City, OK 73112

Gulf Oil Exploration & Production Co. P. O. Box 1150 Midland, TX 79702

M. M. Merritt P. O. Box 4182 Midland, TX 79702

Amoco Production Co. P. O. Box 68 Hobbs, N.M. 88240

Northern Natural Gas Co. 403 Wall Tower West Midland, TX 79701

Yates Petroleum Corporation 207 S. 4th Artesia, N.M. 88210

BTA 011 Producers 104 South Pecos Midland, TX 79701

Phillips Petroleum. Co. 4001 Penbrook Odessa, TX 79762

Sun Texas Company 1509 West Wall Midland, TX 79701

Belco Petroleum Corp. 411 Petroleum Building Midland, TX 79701

Roy G. Barton, Jr. 300 West Taylor Hobbs, N. M. 88240

Richard Moore, et al Blanks Building Midland, TX 79701

Max Coll Estate % Charles Coll P. O. Box 1818 Roswell, N.M. 88201 Lois Haskell Straight Johnson 1561 Pecan Place Bartlesville, Oklahoma 74003

HONE 682-6261 KNOX INDUSTRIES, INC. OIL CONSTRUCTION DIVISION

SANTA FE

P. O. BOX 3023 MIDLAND, TEXAS 79702

March 18, 1981

GORDON & KNOX PRESIDENT

> Division Director 0il Conservation Director P. R. Box 2088 Santa Fe, N.M. 87501

Case 7225

Dear Sir:

Knox Industries. Inc., hereby applies for an unorthodox location

Unit L, 1980' FSL & 660' FWL of Sec. 12 T-23S, R-34E, Lea County, New Mexico

The well is a proposed 13.900' Morrow test in the NE Antelope Ridge Field. The spacing unit to be attributed, if the well is productive.

Enclosed please find copies of C-101 and C-102, and a plat showing ownership of all offsetting acreage as well as a list of well owners showing the fractional interests owned. A copy of the application to drill was sent by certified mail to all offset owners on December 8. 1980.

The proposal is not a reentry, nor was the location moved from a standard location for reasons of topography.

Please set this matter for hearing at the earliest possible time.

Very truly yours.

LF:bm encl.

Leland Franz

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STATE OF NE					
NERGY AND MINERA	W MEXICO		•		No. 8 Control of the
* ************************************	15 //	• "	•		
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· lione of Operator	OTHER	· · · · · · · · · · · · · · · · · · ·		PLUG BACK	7. Unit Agreement Filters
Knox Indus			SINGLE F-		
Address of Operator	es, Inc.		SONE	MULTIPLE T	8. Farm or Leaso Name
D Operator	3, Midland, TX			MULTIPLE DONE	Maddox
U. Box 302	3 M:				9. Well No.
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			21B. Drilling Contro		
<u> </u>			HILLINGAA A S		Rotary Rotary
SIZE OF HOLE	<u> </u>	PROPOSED CASING AN	Willbros Drl	· (0.	22. Armox. Date Work will stone
26" "IOLE	SIZE OF CASING	CASING AN	D CEMENT DOG		July 15, 1981
17 1700	20" CASING	WEIGHT PER FOOT	TOURA	K.	
17-172"		OA FOOT	SETTING DEF		
12-1/4"	13-3/8 <sup>11</sup>	94#	AG DEF	TH SACKS OF C	
8-3/4"	9-5/8"	48#	40	4 vdc D	I-Miy C. TOP
6-3/4"	7-5/01	36# & 40#	600	4 yds. Red	1-Mix Sunfa
V-3/4"	7-5/8" 5"	20 70#	5,700	400	
•	. •	29.70#	12 200	1075	Surface
		17#	12 000	350	2,500
conductor w/a		분기 기계	13,900	240	9,000
et conductor w/ra 3-3/8" casing at asing to 600 psi	it note machine	ne i de la companya d	•	245	71 000
asing to 600 psi	600' Comont	MI &RURT DAS	77 - 5-		11,800
True to 600 before	call a cellent W	7450 es :	11 a 17-1791	£ 2 m	

Set conductor w/rat hole machine. MI&RURT. Drill a 17-1/2" hole to 600' w/fresh water. Set 13-3/8" casing at 600', cement w/450 sx. Circulate cement. WOC 18 hrs. NUBOP, test BOP & 5700', cement w/1075 sx. WOC 18 hrs. NUBOP. Test BOP & casing to 2500 psi for 30 mins. Drill out and drill ahead w/8-3/4" bit to 12,200' w/cut brine. DST significant shows. BOP's & casing to 5000 psi for 30 mins. testing significant shows. Run open hole logs. Set 7-7/8" casing at 12,200', cement w/350 sx. WOC 18 hrs. NUBOP's. Run significant shows. Run open hole logs. If productive, run and cement to 13,900, 5" liner w/245 Application is being sent this date to all off-set operators by certified mail.

process of some	off-set one		iner w/245
ABOVE SPACE DESCRIBE PROPOSED TO	g blanket bond.	rators by certified mail.	
Moby certify that the information above to true	RAMI IP PROPOSAL IS TO DEEPEN OR PLUG BACK, G	IVE DAYA ON O.	
Tais 1986 to 5	ANY.  And complete to the best of my knowledge and be production Manage	ollef.	PROPOSED HEW PRODUC.
Space for State (1:2)	Production Manag	^~	
SITIONS OF APPROVAL, IF ANY	YIYLE	The state of the s	per 8, 1980
		DAYE	•

NEW MEXICO OIL CONSERVATION COMMISSION WELL LOCATION AND ACREAGE DEDICATION PL All distances must be from the outer boundaries of the Section [] Knox Industries, Inc. Township Actual Footage Location of Well: MaddoxMellyslow Ronge 23-5 1980 County 34-E tool from the South Ground Level Ele: Lea Producing Formation 3357' line and 660 1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat helow. Morrow 2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working Dedicated Acreages 3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consoli-If answer is "yes," type of consolidation If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commis-CERTIFICATION I hereby certify that the Information contained herein is true and complete to the Production Manager Knox Industries, Inc. December 8, 1980 66040 I heraby certify that the well location shown on this plat was plotted from field notes of octual surveys made by me or under my supervision, and that the some Is true and correct to the best of my knowledge and belief. Date Surveyed 3,1980 Registered Professional Engineer and/or Land Surveyor

Tracts & Owners that have been consolidated in S/2 Unit:

Tract	<u>Owners</u>		•
NW 1/4 SW 1/4	ATT	en e	Acres
40/40			- 40
SW 1/4 SW 1/4			in the second of
26.67/40	Powhatan Carter, Jr.		30
20.07/40	Anderson Carter		10
er e voja i tropie e kaj jedinoj.	Dean Stoltz		10
NE 374 CH 374			6.67
NE 1/4 SW 1/4 23.33/40	Powhatan Carter, Jr.		e e grande de la companya de la comp
23.33/40	Anderson Carter		· · · · · · · · · · · · · · · · · · ·
4 ***	Dean Stoltz		5
	Ken E. Moore		3.33
	John Ellett	• •	6.67
. CE 3./A			3.33
SE 1/4 SW 1/4	All		
40/40	and the second s		40
	The state of the s		
NN 1/4 SE 1/4	Beulah Baird		
29.82/40	Annis B. Hollis		3.33
	Ora Mae Davis		3.33
• .	J. H. Medlin	- -	3.33
	Grace Medlin		3.33
• • •	Ruth Marion	, ·	3.33
	Dorothy C. McFarland Est.		3.33
•	Ken E. Moore	•	1.04
	Aileen Olson		1.04
·(*)	Luella Collett		1.04
	Richard Moran, Trustee		1.875
SW 1/4 SE 1/4	Dorothy C. McFarland Est.	•	4.84
29.835/40	Ken E. Moore		1.04
	Aileen Olson, et al		1.04
	Luella Collett		1.04
	Richard Moran, Turstee		1.875
	N.M. Bk. & Trust Co., Tr.		4.84
Andrews and the second	bk. a must co., ir.		20
SE 1/4 SE 1/4	Powhatan Carter, Jr.		
13.33/40	Anderson Carter	•	. 5
	Dean Stoltz	•	5 5
	> 20167		3.33
E 7/4 SE 7/4	Dorothy C. McFarland Est.		
	Ken E. Moore	•	1.38
	Aileen Olson, et al		1.38
	Luella Collett		1.38
	Richard Moran, Trustee	•	2.50
· · · · · · · · · · · · · · · · · · ·	Lois Horton		4.84375
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Total committed	Acres 224,6875 (7	0 7 5 4 5	
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Offeel Operation

Deane H. Stoltz P. O. Box 3179 Midland, TX 79702

Texas International Petroleum Suite 300, National Foundation Center 3535 NW 58th St. Oklahoma City, OK 73112

Gulf Oil Exploration & Production Co. P. O. Box 1150 Midland, TX 79702

M. M. Merritt
P. O. Box 4182
Midland, TX 79702

Amoco Production Co. P. O. Box 68 Hobbs, N.M. 88240

Northern Natural Gas Co. 403 Wall Tower West Midland, TX 79701

Yates Petroleum Corporation 207 S. 4th Artesia, N.M. 88210

BTA 0il Producers 104 South Pecos Midland, TX 79701

Phillips Petroleum. Co. 4001 Penbrook Odessa, TX 79762

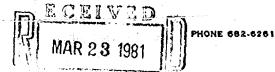
Sun Texas Company 1509 West Wall Midland, TX 79701

Belco Petroleum Corp. 411 Petroleum Building Midland, TX 79701

Roy G. Barton, Jr. 300 West Taylor Hobbs, N. M. 88240

. Richard Moore, et al Blanks Building Midland, TX 79701

Max Coll Estate % Charles Coll P. O. Box 1818 Roswell, N.M. 88201 Lois Haskell Straight Johnson 1561 Pecan Place Bartlesville, Oklahoma 74003



KNOX INDUSTRIES, INOIL CONSURVATION DIVISION
P. O. BOX 3023
SANTA FE
MIDLAND, TEXAS 79702

GORDON 5. KNOX

March 18, 1981

Division Director Oil Conservation Director P. R. Box 2088 Santa Fe, N.M. 87501 Case 7225

Dear Sir:

Knox Industries. Inc.. hereby applies for an unorthodox location for its Maddox No. 1 to be located:

Unit L, 1980' FSL & 660' FWL of Sec. 12 T-23S, R-34E, Lea County, New Mexico

The well is a proposed 13,900! Morrow test in the NE Antelope Ridge Field. The spacing unit to be attributed. If the well is productive, is the South half of Section 12.

Enclosed please find copies of C-101 and C-102, and a plat showing ownership of all offsetting acreage as well as a list of well owners showing the fractional interests owned. A copy of the application to drill was sent by certified mail to all offset owners on December 8, 1980.

The proposal is not a reentry, nor was the location moved from a standard location for reasons of topography.

Please set this matter for hearing at the earliest possible time.

Very truly yours.

LF:bm encl.

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size of hole 26" 17-1/2"	20" 13-	CASING	ROPOSED CASING AN WEIGHT PER FOO 94# 48#	ND CEMENT PROG DT SETTING D 40 600	RAM ÉPTH S	yds. R 450	CEMENT	EST. TO Surface Surface	OP
SIZE OF HOLE 26" 17-1/2" 12-1/4"	20" 13- 9-	P CASING -3/8"	ROPOSED CASING AND WEIGHT PER FOO 94# 48# 36# & 40#	ND CEMENT PROG DT SETTING D 40 600 5,700	RAM ÉPTH S	yds. R 450 1075	CEMENT	EST. TO Surface Surface 2,500	OP
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"	20" 13- 9- 7-	CASING -3/8" -5/8"	ROPOSED CASING AN WEIGHT PER FOO 94# 48#	ND CEMENT PROG SETTING D 40 600 5,700 12,200	RAM ÉPTH S	yds. R 450	CEMENT	EST. TO Surface Surface	08
SIZE OF HOLE  26"  17-1/2"  12-1/4"	20" 13- 9-	CASING -3/8" -5/8"	ROPOSED CASING AND WEIGHT PER FOO 94# 48# 36# & 40#	ND CEMENT PROG DT SETTING D 40 600 5,700	RAM ÉPTH S	yds. R 450 1075	CEMENT	EST. TO Surface Surface 2,500 9,000	OP.
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"	20" 13- 9- 7-	CASING -3/8" -5/8"	ROPOSED CASING AI WEIGHT PER FOO 94# 48# 36# & 40# 29.70#	ND CEMENT PROG SETTING D 40 600 5,700 12,200	RAM ÉPTH S	yds. R 450 1075 350	CEMENT	EST. TO Surface Surface 2,500	OP
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"  6-3/4"	20" 13- 9- 7- 5"	2/8" -3/8" -5/8"	ROPOSED CASING AN WEIGHT PER FOO 94# 48# 36# & 40# 29.70# 17#	OT SETTING D 40 600 5,700 12,200 13,900	RAM EPTH S 4	yds. R 450 1075 350 245	CEMENT ledi-Mix	EST. TO Surface Surface 2,500 9,000 11,800	
size of Hole 26" 17-1/2" 12-1/4" 8-3/4" 6-3/4" Set conductor w/	20" 13- 9- 7- 5" 'rat hole	3/8" . 5/8" . 5/8" . machin	ROPOSED CASING AND WEIGHT PER FOOT 94# 48# 36# & 40# 29.70# 17# e. MI&RURT. I	OT SETTING D 40 600 5,700 12,200 13,900 Drill a 17-1/	RAM EPTH S. 4	yds, R 450 1075 350 245	CEMENT ledi-Mix	EST. TO Surface Surface 2,500 9,000 11,800 sh water.	Set
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"  6-3/4"  Set conductor w/ 13-3/8" casing a	20" 13- 9- 7- 5" 'rat hole it 600',	CASING 3/8" 5/8" 5/8" machine	ROPOSED CASING AN WEIGHT PER FOO 94# 48# 36# & 40# 29.70# 17# e. MI&RURT. I	ND CEMENT PROG T SETTING D 40 600 5,700 12,200 13,900 Drill a 17-1/	RAM EPTH S. 4  /2" hole	yds. R 450 1075 350 245 e to 60 C 18 hr	CEMENT Redi-Mix	EST. TO Surface Surface 2,500 9,000 11,800 sh water.	Set DP &
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"  6-3/4"  Set conductor w/ 13-3/8" casing a casing to 600 ps	20" 13- 9- 7- 5" 'rat hole it 600', i for 30	CASING  3/8" 5/8" 5/8" machine cement	ROPOSED CASING AND WEIGHT PER FOO 94# 48# 36# & 40# 29.70# 17# e. MI&RURT. I	DT SETTING D 40 600 5,700 12,200 13,900 Drill a 17-1/ rculate cement	/2" hold	yds. R 450 1075 350 245 e to 60 C 18 hr	CEMENT Redi-Mix 0' w/fre s. NUBO Set 9-5/	EST. TO Surface Surface 2,500 9,000 11,800 sh water. P, test 80 8" casing	Set )P & at
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"  6-3/4"  Set conductor w/ 13-3/8" casing a casing to 600 ps 5700', cement w/	20" 13- 9- 7- 5" 'rat hole it 600', i for 30	CASING  3/8"  5/8"  machin cement wins.  WOC 1	ROPOSED CASING AND WEIGHT PER FOOT 94# 48# 36# & 40# 29.70# 17# e. MI&RURT. I w/450 sx. Cip Drill 12-1/4'8 hrs. NUBOP	DEFINITION DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DE LA COMPANIA DEL COMPANIA DEL COMPANIA DEL COMPANIA DE LA COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA D	PTH S 4  /2" hole nt. WOO 00' w/bo	yds. R 450 1075 350 245 e to 60 18 hr rine. g to 25	CEMENT ledi-Mix 0' w/fre s. NUBO Set 9-5/	Surface Surface 2,500 9,000 11,800 sh water. P, test BC 8" casing or 30 mins	Set )P & at
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"  6-3/4"  Set conductor w/ 13-3/8" casing a casing to 600 ps	20" 13- 9- 7- 5" 'rat hole it 600', i for 30	CASING  3/8"  5/8"  machin cement wins.  WOC 1	ROPOSED CASING AND WEIGHT PER FOOT 94# 48# 36# & 40# 29.70# 17# e. MI&RURT. I w/450 sx. Cip Drill 12-1/4'8 hrs. NUBOP	DEFINITION DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DE LA COMPANIA DEL COMPANIA DEL COMPANIA DEL COMPANIA DE LA COMPANIA DE LA COMPANIA DEL COMPANIA DE LA COMPANIA DEL COMPANIA D	PTH S 4  /2" hole nt. WOO 00' w/bo	yds. R 450 1075 350 245 e to 60 18 hr rine. g to 25	CEMENT ledi-Mix 0' w/fre s. NUBO Set 9-5/	Surface Surface 2,500 9,000 11,800 sh water. P, test BC 8" casing or 30 mins	Set )P & at
SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"  6-3/4"  Set conductor w/ 13-3/8" casing a casing to 600 ps 5700', cement w/ Drill out and dr	20" 13- 9- 7- 5" 'rat hole it 600', i for 30 '1075 sx.	3/8" 5/8" 5/8" machinement mins. WOC 1	ROPOSED CASING AND WEIGHT PER FOOT 94# 48# 36# & 40# 29.70# 17# e. MI&RURT. I w/450 sx. Cin Drill 12-1/4'8 hrs. NUBOP/4" bit to 12	DT SETTING D 40 600 5,700 12,200 13,900 Drill a 17-1/ rculate cemer ' hole to 570 Test BOP 8	/2" hole nt. Woo % casing	yds. R 450 1075 350 245 e to 60 18 hr rine. g to 25 DST si	O' w/fre s. NUBO Set 9-5/ 00 psi f	Surface Surface 2,500 9,000 11,800 sh water. P, test BO 8" casing or 30 mins t shows.	Set )P & at  Run
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SIZE OF HOLE  26"  17-1/2"  12-1/4"  8-3/4"  6-3/4"  Set conductor w/ 13-3/8" casing a casing to 600 ps 5700', cement w/ Drill out and dr open hole logs.  BOP's & casing t testing signific sx. MORT to com Application is b  * In process of	rat hole t 600', i for 30 '1075 sx. ill ahea Set 7-7 to 5000 p ant show plete. secrurin	machine cement work is a Run	ROPOSED CASING AND WEIGHT PER FOOT 94#  48#  36# & 40# 29.70# 17#  e. MI&RURT. I w/450 sx. Cin Drill 12-1/4' 8 hrs. NUBOP /4" bit to 12 ing at 12,200 30 mins. Dril open hole log date to all of et bond.	T SETTING D 40 600 5,700 12,200 13,900 0rill a 17-1/ reulate cement hole to 570 Test BOP 8 200' w/cut to 1, cement w/3 11 out & drill gs. If product ff-set operate to the set operate t	/2" hold for w/bit w/bit satisfactive, tors by	yds. R 450 1075 350 245 e to 60 18 hr rine. g to 25 DST si WOC 1 d w/6-3 run an	O' W/frees. NUBO Set 9-5/00 psi f gnifican 8 hrs. 1/4" bit d cement ied mail	Surface Surface 2,500 9,000 11,800 sh water. P, test BC 8" casing or 30 mins t shows. NUBOP's. to 13,900, 5" liner	Set  P & at  Run Test  W/245
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NEW MEXICO OIL CONSERVATION COMMISSION MAR 28 1981 Spersedes C-12 WELL LOCATION AND ACREAGE DEDICATION PLAT

	·	All distances must	be from the outer bo	OIL undaries of the Section	CONSTRACTOR DI	VISION
Operator	<b>Y</b>		Lease		SANTA FE	Yeli No.
Knox Industri	Section	I manusa abba		Maddox	<u></u>	
L Letter	12	Township 23-S	Range 34-	County	Lea	
Actual Footage Loca						
1980		uth line o	<sub>md</sub> 660	feet from the		nø .
Ground Level Elev: 33571	Producing For Morro		P∞1 Antelop	e Ridge, NE	Dedicate 32	d Acreage;
1. Outline the	e acreage dedica	ted to the subject	well by colored	pencil or hachur	e marks on the plat l	elow.
2. If more the interest an		dedicated to the r	vell, outline eac	li and identify the	ownership thereof (	ooth as to working
	ommunitization, u	nitization, force-po	ooling. etc?	•	interests of all own	iers been consoli-
Yes	X No If a	iswer is "yes;" typ	e of consolidati	on	·	<del></del>
If answer i	s "no," list the	owners and tract de	escriptions which	h have actually b	een consolidated. (U	se reverse side of
A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	necessary.)	See reverse			· · · · · · · · · · · · · · · · · · ·	<del></del>
				and the second s	ited (by communitize	
forced-pool sion.	ing, or otherwise)	or until a non-stan	dard unit, elimin	ating such interes	sts, has been approve	ed by the Commis-
					<b>, 1</b>	
					CERTI	FICATION
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Tracts & Owners that have been consolidated in S/2 Unit:

Tract NW 1/4 SW 1/4	<u>Owners</u>		
40/40	All		Acres
40/40			40
SH 177 CH 374			
SW 1/4 SW 1/4	Powhatan Carter, Jr.		
26.67/40	Anderson Carter		-10
	Dean Stoltz		10
tikk <u>a ya kulu</u> ukutanisa		the state of the s	6.67
NE 1/4 SW 1/4	Powhatan Carter, Jr.		
23.33/40	Anderson Carter		5
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	Ken E. Moore	•	
	John Ellett		6.67
SE 1/4 SW 1/4	A 2 2		3.33
40/40	A11		
707 10			40
MIL 3 /A OF THE			
NW 1/4 SE 1/4	Beulah Baird		
29.82/40	Annis B. Hollis		3.33
	Ora Mae Davis		3.33
	J. H. Medlin	in the second	3.33
• *	Grace Medlin	:	3.33
	Ruth Marion		
· ""	Donothi o w =	•	3.33
	Dorothy C. McFarland Est	•	3.33
	Ken E. Moore	•	1.04
	Aileen Olson		1.04
	Luella Collett		1.04
SW 1/4 SE 1/4	Richard Moran, Trustee		1.875
29.835/40	DUPOTHY C. McFarland Ect		4.84
23.003/40	NEIL E. MOORA		1.04
	Aileen Olson, et al		1.04
	ruella Collett		1.04
<ul> <li>A state of the sta</li></ul>	Richard Moran, Turstee	<del>-</del>	1.875
	N.M. Bk. & Trust Co., Tr.		4.84
	and mase co., Ir.		20
SE 1/4 SE 1/4	Powhatan Carter, Jr.		
13.33/40	Anderson Carter		5
	Dean Stoltz		5
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NE 1/4 SE 1/4	Dorothy o u -		3.33
	Dorothy C. McFarland Est.	•	2.00
nun <sup>±1</sup>	reli E. Moore		1.38
	Aileen Olson, et al		1.38
	ruella Collett		1.38
	Richard Moran, Trustee		2.50
	Lois Horton		4.84375
Total			10.
Total committed	Acres 224,6875 (7)	0 1641	

cal committed Acres 224.6875 (70.15%)

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Offset Operation

Deane H. Stoltz P. O. Box 3179 Midland, TX 79702

Texas International Petroleum Suite 300, National Foundation Center 3535 NW 58th St. Oklahoma City, OK 73112

Gulf Oil Exploration & Production Co. P. O. Box 1150 Midland, TX 79702

M. M. Merritt P. O. Box 4182 Midland, TX 79702

Amoco Production Co. P. O. Box 68 Hobbs, N.M. 88240

Northern Natural Gas Co. 403 Wall Tower West Midland, TX 79701

Yates Petroleum Corporation 207 S. 4th Artesia, N.M. 88210

BTA 0il Producers 164 South Pecos Midland, TX 79701

Phillips Petroleum. Co. 4001 Penbrook Odessa, TX 79762

Sun Texas Company 1509 West Wall Midland, TX 79701

Belco Petroleum Corp. 411 Petroleum Building Midland, TX 79701

Roy G. Barton, Jr. 300 West Taylor Hobbs, N. M. 88240

Richard Moore, et al Blanks Building Midland, TX 79701

Max Coll Estate % Charles Coll P. O. Box 1818 Roswell, N.M. 88201 Lois Haskell Straight Johnson 1561 Pecan Place Bartlesville, Oklahoma 74003 DRAFT

# STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

Chi or so

dr/

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

location.

CONSIDERING:
CASE NO. 7225
ORDER NO. R- 6722
APPLICATION OF KNOX INDUSTRIES, INC.
FOR AN UNORTHODOX GAS WELL LOCATION,
LEA COUNTY, NEW MEXICO.
ORDER OF THE DIVISION
BY THE DIVISION:
This cause came on for hearing at 9 a.m. on April 22
19 81, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter
NOW, on thisday of, 19 81 , 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, Knox Industries, Inc. for its Maddox Well No. 1 to be drilled seeks approval of an unorthodox gas well location/
feet from the South line and 660 feet from the
West line of Section 12 , Township 23 South
Range 34 East , NMPM, to test the Morrow .
formation, Northeast Antelope Ridge Field. Lea
County, New Mexico.
(3) That the S/2 of said Section 12 is to be
dedicated to the well.
(4) That a well at said unorthodox location will better
enable applicant to produce the gas underlying the proration unit.  to the west, Ameco Production Company (5) That no offset operator objected to the proposed unorthodox

- (6) That from the evidence presented at the hearing by both the applicant and the opposition it appears that there is little likelihood of commercial gas reserves being found in the SE/4 of the subject Section 12.
- (7) That the productive sands which would be encountered by a well drilled at the proposed unorthodox location would most likely extend from the SW/4 of Section 12 westward into the SE/4 of Section 11, which lands are uwned by Amoco.
- (8) That although applicant foresees the possibility of the remagnization obtaining production in the Upper and Lower Atoka zones, and presented evidence concerning said zones, the application was tiled for the Morrow only, and the legal notice for this case is for the Morrow only.
- (9) That should applicant encounter production in the Upper or Lower Atoka, the case should be reopened and the evidence pertaining to said Atoka zones considered at that time.
- (10) That to produce a well at full allowable at the proposed location would give the owner of such well an unfair advantage over the owner to the west, unless such owner drilled a well at an unorthodox location equidistant from its lease line as applicant's proposed location is from its lease line.
- applicant's proposed location is from its lease line.

  (11) That to offset the aforesaid advantage some method

  of restricting production from the proposed well at compared unorthodox location should be imposed.
- (12) That the proposed unorthodox well location would be a standard location for a well in a 160-acre spaced gas reservoir.
- (13) That the well should be assigned an allowance limitation factor based upon a 160-acre spaced location or 50 percent, (160 acres divided by 320 acres x 100), in the Morrow zone of the Pennsylvanian formation.

-3-Case No. 7225 Order No. R-

(14) That in the absence of any special rules and regulations for the prorationing of production from the Morrow formation, the aforesaid production limitation factor should be applied against said well's ability to produce into the pipeline as determined by periodic well tests.

-)-8200 NO. 6938 Order No. B 6415

- (15) That the minimum calculated allowable for the subject well should be reasonable, and 1,000,000 cubic feet of gas per day is a reasonable figure for such minimum allowable.
- (16) That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject reservoir or other productive zones found, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

## IT IS THEREFORE ORDERED:

- (1) That an unorthodox well location for the Wolfeams and Penneylarian formations is hereby approved for the Knoex Industries, Inc. Compadate Note Shino Deep Hait Well No. 21 to be located at a point 1910 feet from the North line and 660 feet from the Mest line of Section 12, Township 23 South, Range 39 East, NMPM, Northeat Antelepet Ridger Rielico Lee County, New Mexico.
- (2) That the **S/2** of said Section **12** shall be dedicated to the above-described well.
- (3) That said well is hereby assigned a Production Limitation Factor of 0.50 in the "DY" shaped and of the Morrow formation.co described in Finding No. (5) of this order.
- (4) That in the absence of any Special Rules and Regulations prorating gas production in said Morrow (Revisional cand, the special rules hereinafter promulgated shall apply.
- (5) That the following Special Rules and Regulations for a non-prorated gas well at an unorthodox location shall apply to the subject well:

SPECIAL RULES AND REGULATIONS
FOR THE
APPLICATION OF A "PRODUCTION LIMITATION FACTOR"
TO A NON-PRORATED GAS WELL

APPLICATION OF RULES

RULE 1. These rules shall apply to the KNOK from Street from the North line and 660 feet from the Mest line of Section

-4-Case No. 6930 Order No. R-6415

**12.** Township **13** South, Range **24** East, NMPM, **Lag**-County, New Mexico, which well's Production Limitation factor of 0.50 shall be applied to the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production.

# ALLOWABLE PERIOD

- RULE 2. The allowable period for the subject well shall be six months.
- RULE 3. The year shall be divided into two allowable periods commencing at 7:00 o'clock a.m. on January 1 and July 1.

# DETERMINATION OF DELIVERY CAPACITY

- RULE 4. Immediately upon connection of the well the operator shall determine the open flow capacity of the well in accordance with the Division "Manual for Back-Pressure Testing of Natural Gas Wells" then current, and the well's initial deliverability shall be calculated against average pipeline pressure.
- RULE 5. The well's "subsequent deliverability" shall be determined twice a year, and shall be equal to its highest single day's production during the months of April and May or October and November, whichever is applicable. Said subsequent deliverability, certified by the pipeline, shall be submitted to the appropriate District Office of the Division not later than June 15 and December 15 of each year.
- RULF 6. The Division Director may authorize special deliverability tests to be conducted upon a showing that the well has been worked over or that the subsequent deliverability determined under Rule 5 above is erroneous. Any such special test shall be conducted in accordance with Rule 4 above.
- RULE 7. The operator shall notify the appropriate district office of the Division and all offset operators of the date and time of initial or special deliverability tests in order that the Division or any such operator may at their option witness such tests.

# CALCULATION AND ASSIGNMENT OF ALLOWABLES

RULE 8. The well's allowable shall commence upon the date of connection to a pipeline and when the operator has complied

->-Case No. 6930 Order No. R-6415

with all appropriate filing requirements of the Rules and Regulations and any special rules and regulations.

- RULE 9. The well's allowable during its first allowable period shall be determined by multiplying its initial deliverability by its production limitation factor.
- RULE 10. The well's allowable during all ensuing allowable periods shall be determined by multiplying its latest subsequent deliverability, as determined under provisions of Rule 5, by its production limitation factor. If the well shall not have been producing for at least 60 days prior to the end of its first allowable period, the allowable for the second allowable period shall be determined in accordance with Rule 9.
- RULE 11. Revision of allowable based upon special well tests shall become effective upon the date of such test provided the results of such test are filed with the Division's district office within 30 days after the date of the test; otherwise the date shall be the date the test report is received in said office.
- RULE 12. Revised allowables based on special well tests shall remain effective until the beginning of the next allowable period.
- RULE 13. In no event shall the well receive an allowable of less than one million cubic feet of gas per day.

# BALANCING OF PRODUCTION

- RULE 14. January 1 and July 1 of each year shall be known as the balancing dates.
- RULE 15. If the well has an underproduced status at the end of a six-month allowable period, it shall be allowed to carry such underproduction forward into the next period and may produce such underproduction in addition to its regularly assigned allowable. Any underproduction carried forward into any allowable period which remains unproduced at the end of the period shall be cancelled.
- RULE 16. Production during any one month of an allowable period in excess of the monthly allowable assigned to the well shall be applied against the underproduction carried into the period in determining the amount of allowable, if any, to be cancelled.

-6-Case No. 6930 Order No. R-6415

RULE 17. If the well has an overproduced status at the end of a six-month allowable period, it shall be shut in until such overproduction is made up:

RULE 18. If, during any month, it is discovered that the well is overproduced in an amount exceeding three times its average monthly allowable, it shall be shut in during that month and during each succeeding month until it is overproduced in an amount three times or less its monthly allowable, as determined hereinabove.

RULE 19. The Director of the Division shall have authority to permit the well, if it is subject to shut-in pursuant to Rules 17 and 18 above, to produce up to 500 MCF of gas per month upon proper showing to the Director that complete shut-in would cause undue hardship, provided however, such permission shall be rescinded for the well if it has produced in excess of the monthly rate authorized by the Director.

RULE 20. The Division may allow overproduction to be made up at a lesser rate than permitted under Rules 17, 18, or 19 above upon a showing at public hearing that the same is necessary to avoid material damage to the well.

### GENERAL

- RULE 21. Failure to comply with the provisions of this order or the rules contained herein or the Rules and Regulations of the Division shall result in the cancellation of allowable assigned to the well. No further allowable shall be assigned to the well until all rules and regulations are complied with. The Division shall notify the operator of the well and the purchaser, in writing, of the date of allowable cancellation and the reason therefor.
- (6) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

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

> STATE OF NEW MEXICO OIL CONSERVATION DIVISION

JOE D. RAMEY

Director

S E A L fd/

# STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION

CASE NO.	7225
Ordon Mó	<sub>B-</sub> 6722-A

APPLIC	CATION C	F KNO	OX IN	DUSTRIES,	INC.	FOR		
AN UNC	RTHODOX	GAS 1	WELL	LOCATION,			$\bigcap$	0

COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

# BY THE DIVISION:

It appearing to the Division that Order No.  $R-\frac{6722}{1}$ , 19 81 , does not correctly state the intended order of the Division,

# IT IS THEREFORE ORDERED:

- (1) That Order No. (1) on page 3 of Order No. R-6722 be and the same is hereby corrected to read in its entirety as follows:
  - "(1) That an unorthodox well location for the Morrow formation is hereby approved for the Knox Industries, Inc., Maddox Well No. 1, to be located at a point 1980 feet from the South line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, NMPM, Northeast Antelope Ridge Field, Lea County, New Mexico."
- (2) That Rule 1 of the Special Rules and Regulations on page 3 of Urder No. R-6722 be and the same is hereby corrected to read in its entirety as follows:
  - "RULE 1. These rules shall apply to the Knox Industries, Inc. Maddox Well No. 1, to be located 1980 feet from the South line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico, which well's Production Limitation Factor of 0.50 shall be applied to the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production."
- (3) That the corrections set forth in this order be entered nunc pro tune as of July 1, 1981.

DONE at Santa Fe, New Mexico, on this \_\_\_\_day of July, 1981.

# Memo

From

MELBA CARPENTER
Oil Conservation Staff
Specialist

To Dan

Did Dick mention the corrections shown on the attached co. 7 of R-6722 to you?

Oil Conservation Division

Hobbs, New Mexico

-3-Case No. 7225 Order No. R-6722

(16) That approval of the subject application subject to the above provisions and limitations will afford the applicant the opportunity to produce its just and equitable share of the gas in the subject reservoir or other productive zones found, will prevent the economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

# IT IS THEREFORE ORDERED:

- (1) That an unorthodox well location for the Morrow formation is hereby approved for the Knox Industries, Inc., Maddox well No. 1, to be located at a point 1980 feet from the North line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, NMPM, Northeast Antelope Ridge Field, Lea County, New Mexico.
- (2) That the S/2 of said Section 12 shall be dedicated to the above-described well.
- (3) That said well is hereby assigned a Production Limitation Factor of 0.50 in the Morrow formation.
- (4) That in the absence of any Special Rules and Regulations prorating gas production in said Morrow formation, the special rules hereinafter promulgated shall apply.
- (5) That the following Special Rules and Regulations for a non-prorated gas well at an unorthodox location shall apply to the subject well:

SPECIAL RULES AND REGULATIONS
FOR THE
APPLICATION OF A "PRODUCTION LIMITATION FACTOR"
TO A NON-PROPATED GAS WELL

# APPLICATION OF RULES

RULE 1. These rules shall apply to the Knox Industries. Inc. Maddox Well No. 1, to be located 1980 feet from the North line and 660 feet from the West line of Section 12, Township 23 South, Range 34 East, NMPM, Lea County, New Mexico, which well's Production Limitation Factor of 0.50 shall be applied to the well's deliverability (as determined by the hereinafter set forth procedure) to determine its maximum allowable rate of production.



# ASE MO.

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