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

CASE NO.

2225

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,
ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

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

July 20, 1981

Re: CASE NO. 7225
ORDER NO. R-6722-A

Mr. Thomas Kellahin
Kellahin and Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Applicant:

Knox Industries, Inc.

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/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 UNORTHODOX 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 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 Order 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 tunc as of July 1, 1981.

DONE at Santa Fe, New Mexico, on this 16th day of July, 1981.

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

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

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

July 2, 1981

Re: CASE NO. ~~7225~~
ORDER NO. ~~R-6722~~

Applicant:

~~Knox Industries, Inc.~~

Mr. Thomas Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/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

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 1st 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 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.

(5) That the offset operator to the west, Amoco Production Company, objected to the proposed unorthodox location.

(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.

(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-PRORATED 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.

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 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 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.

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
fd/

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

A P P E A R A N C E S

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

I N D E X

E X H I B I T S

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.

MR. MOTE: Mr. Examiner, I'm Clyde Mote, attorney from Houston, Texas, appearing on behalf of Amoco, in association with Atwood and Malone.

MR. NUTTER: We have a letter of appearance on your behalf from them, Mr. Mote.

MR. MOTE: Thank you, sir, And we'll have one witness.

(Witnesses sworn.)

RICHARD NEFF

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A. Richard Neff. I'm a consulting geologist.

Q. Mr. Neff, have you previously testified before the Oil Conservation Division as a geologist?

A. No, sir.

Q. Would you tell the Examiner when and where you obtained your geological degree?

A. Yes. I received a Bachelor's and Masters degree of science in geology at the University of Oklahoma in 1961.

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

A. First out of school I was hired with Mobil Oil Corporation and worked in Roswell and Hobbs with Mobil for eight years.

Q. During your employment with Mobil in Roswell and Hobbs, what was your area of responsibility?

A. Virtually all of southeast New Mexico in an exploration effort.

Q. And did that exploration effort include preparing geology for the drilling of Morrow wells?

A. Yes, sir.

Q. And other Pennsylvanian tests?

A. Yes, sir.

Q. Subsequent to your employment with Mobil where was your next employment as a geologist?

A. I was Exploration Manager for Occidental Petroleum in Midland, responsible for west Texas and southeast New Mexico.

Q. Did that --

A. For five years.

Q. Did that employment with Occidental also include exploration in the Pennsylvanian formations?

A. Yes, sir.

Q. In southeastern New Mexico?

A. Yes, sir, it did.

Q. All right, subsequent to that, what was your next employment?

A. I became independent and have been working as an independent operator and consultant for the last seven years.

Q. And where is your residence, Mr. Neff?

A. Midland, Texas.

Q. As an independent consultant in geology do you operate on a continuing basis to provide exploration geology in Pennsylvanian tests in southeastern New Mexico?

A. Yes, sir, I do.

Q. And pursuant to that consultation have you been employed by the applicant in this case?

A. Yes, sir.

Q. And what have you done for the applicant?

A. I've prepared several exhibits, maps and cross sections, in this matter.

Q. Are you generally familiar with the facts and circumstances surrounding the application of Knox Industries?

A. Yes, sir.

MR. KELLAHIN: We tender Mr. Neff as an expert petroleum geologist.

MR. NUTTER: Mr. Neff is qualified.

Q. Mr. Neff, I'd like to direct your attention first of all to what we've marked as the Applicant's Exhibit Number One, and have you identify that for me.

A. This is a lease ownership map in the subject area, surrounding about two miles.

Q. All right. What is the field involved in this proposed location?

A. Antelope Ridge Field, Morrow and Atoka zones.

Q. All right. Now in my discussions with you, you've indicated that this is a potential test for Atoka

as well as Morrow --

A. Yes, sir.

Q. -- gas? All right. What is your understanding of the spacing and proration rules with regards to a well located in Section 12?

A. The orthodox -- this is an unorthodox location that we are asking for.

Q. Would that be unorthodox for both an Atoka and a Morrow test?

A. Yes, sir.

Q. All right. What would a standard location for an Atoka-Morrow test require with regards to well location?

A. It would be in one of the center four 40-acre tracts within the south half of Section 12.

Q. With regards to footage it requires that you be no closer than 660 from the side line or 1980 from an end line of a proration unit, is that right?

A. Yes, sir.

Q. All right. Now if the proration unit was a west half proration unit for Section 12, would the location be unorthodox?

A. No, sir, it would be orthodox.

Q. All right.

MR. KELLAHIN: 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

leases.

Q. 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?

A. Yes, sir.

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

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

A. 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.

Q. All right, just a minute.

A. All right.

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

A. Yes, sir.

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

A. We feel like it is a 50 percent contri-

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

Structure is important, yes.

Q. 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.

Q. 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?

A. The last time I checked the production data on the well it was an extremely strong well.

Q. Could you give us some indication of what it produces now?

A. 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.

Q. Do you recall approximately when the Natomas well was completed?

A. This has been about a year ago.

Q. All right, sir. What other wells did you use as control wells for drawing the structure map?

A. Well, the BTA well in the southeast quarter of Section 14, and essentially a 40-acre offset to the Natomas well.

Q. Did that well encounter, or does it produce from the Morrow formation?

A. It produces from the Lower Atoka zone only. It found the Lower Morrow zone to be gas and water bearing but uneconomical and the Upper Atoka zone is absent by non-deposition.

Q. All right. What's the approximate distance between those two wells?

A. Oh, 1320 feet.

Q. All right, and despite the close proximity of those two wells one produces from the Morrow and the other does not.

A. That's correct.

Q. All right, sir. In terms of chronological order, was the BTA well drilled before or after the Natomas well?

A. They were both drilling at about the same time but the BTA well encountered problems and was completed at a later -- several months later.

Q. All right, sir. The application indicates that this is the Northeast Antelope Ridge Field. Generally what acreage does that include, do you know, Mr. Neff?

A. I'm not certain because this is just part of a trend that's continuous. It must be broken into more than one pool.

Q. All right.

A. Is there an Antelope Ridge Pool? I presume there is.

Q. All right. In terms of development identifying the Morrow trend in this area, where is the known Morrow production?

A. The known prolific Morrow production

extends -- this is the northernmost extent of it in the pool in Section -- in the southwest of 14.

The well in the northwest of Section 23, immediately south there, produces from the zone also. It is a very, very strong.

The next producers are on a -- on a trend to the southwest and off of this map. There are about four other wells in this reservoir.

Q. All right.

A. This prolific Lower Morrow reservoir.

MR. NUTTER: In other words, those two are the only Morrow wells on this exhibit?

A. There is a little question of terminology. This Lower Atoka zone has been called Morrow by some and -- but that is, in my opinion, correct, sir.

Q. All right. Is it fair to characterize, Mr. Neff, the proposed Knox location to be at the far northeastern extent of the known Morrow production?

A. From known well control, this is correct.

Q. All right, and -- and what is the purpose so far as structure is concerned of a well location as you've suggested?

A. On the Knox acreage to achieve the highest structural point.

Q. Let me ask you some questions about any other wells that you've looked at as possible control wells for your structure map, and direct your attention to the south half of Section 13.

Are there any Morrow tests in that acreage?

A. Yes, sir, Amoco's well in the northeast of the southwest of Section 13 tested this Lower Morrow zone and found it uneconomical, found it to be gas and water bearing.

Q. Approximately when was that done, Mr. Neff?

A. This has been dragging on for some time. If my -- approximately nine months ago.

Q. All right. Moving then counter-clockwise around the structure contours, I see a well located in the north half of 12. Did that well penetrate and test the Morrow formation?

A. North half of Section 2?

Q. I'm sorry, 2.

A. The well did not encounter the Lower Morrow zone. It was not present at that location.

Q. All right. Looking at the north half of Section 11, are there any wells in the north half of 11 that would have penetrated the Morrow formation?

A. There is currently a well drilling at shallow depth in the northeast quarter of the northwest of Section 11.

Q. All right.

MR. NUTTER: Is it projected as a deep well?

A. Yes, sir.

MR. NUTTER: How deep is it now?

A. I don't have a current report. I -- I might guess, approximately, running their 5000 foot string.

MR. NUTTER: Maybe halfway down.

A. Oh, probably a fourth, sir.

Q. All right, with regards, then, to your structure map, generally to the north and east there is an absence of existing Morrow tests from which you can base any structural control, is that not true?

A. That's correct, the zone is absent.

Q. All right. Based upon the currently available information to you, Mr. Neff, is the proposed location, based upon structural information, the optimum location from which to drill an Atoka and Morrow test in the south half of Section 12?

A. Yes, sir, that's correct.

Q. All right, sir, let's go to Exhibit

Number Three.

MR. NUTTER: While you're on Exhibit 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?

A. The last report I've had, they've evaluated all the -- the three pay zones that produce in the field, and they're attempting completion in a shallower zone.

MR. NUTTER: The Morrow, you said was gas and water bearing.

A. Yes, sir.

MR. NUTTER: Too much water for the amount of gas, though.

A. Right, and apparently the Atoka zones were -- were tight.

Q. Mr. Neff, I hand you what I have marked as Exhibit Number Three, which is a structure map on the top Upper Atoka zone marker. Is that what you have as Exhibit Three?

A. That's correct.

Q. All right, sir, would you generally identify for us the information contained on this exhibit?

A. Yes, sir. It's a structural contour map with 100 foot contour intervals, taking into account all

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.

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

A. That's correct.

Q. 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.

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

A. 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 absent in the BTA well.

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

Q. 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?

A. One well completed --

Q. Well, let's do it this way.

A. Okay.

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

A. The north half.

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

A. Yes, sir.

Q. 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?

A. The north half.

Q. Okay. There is no well in the south half of 11?

A. That is correct.

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.

A. That is correct.

Q. All right, sir, would you identify for us, then, going southward, any wells that would be unorthodox?

A. Only the wells in Section 22 appear to be unorthodox. The well, Estoril Curry Federal, in the northeast of the southeast, which has been completed as a gas well, and the well attempting completion in the northeast of the northeast of Section 22, Estoril Curry State.

MR. NUTTER: Those have the south half and the north half, respectively, dedicated to them?

A. Yes, sir, I believe that's correct.

Q. All right. In Section 13 the Amoco test in the south half, is that a south half proration unit?

A. Yes, it is, as is the well in 24, the abandoned producer in the south half of 24, with a south half unit.

Q. All right. Is it fair to characterize 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

structure?

A. This is my interpretation.

Q. All right.

A. Yes, sir.

Q. Let's go to Exhibit Number Four. Mr. Neff, I've given you what I've marked as Exhibit Number Four, which is identified as a net pay Isopach map of the Lower Morrow zone. Did you prepare this map?

A. Yes, sir, I did.

Q. Would you describe generally how you prepared the map?

A. The data was taken from well logs available in the area, utilizing a gamma ray cutoff of 75 percent and a porosity cutoff of 8 percent and water saturation of about 40 percent.

Q. Give me your parameters again.

A. Gamma ray cutoff of 75 percent.

Q. Okay.

A. And a net porosity cutoff of 8 percent.

Q. Okay.

A. What else?

Q. Water saturation.

A. Water saturation was about 40 percent; very difficult to determine a cutoff in here as many of the

wells made gas and water while seeming to look like they should have produced gas alone.

Q. How did you develop those parameters as a basis to determine the net pay Isopach map?

A. These are obtained from experience in mapping throughout Lea and Eddy Counties, New Mexico, Morrow -- Morrow wells.

Q. Are those percentages consistently used by other geologists in mapping the Morrow zone?

A. I think many of them do, yes.

Q. All right, proceed and tell me specifically what the Isopach tells you.

A. All right. This -- this is just the northward projection of what I believe to be a Lower Morrow channel trend, which moves to the south and even crosses over into the Bell Lake Field, but it's -- it's a very narrow channel and is strictly determined by generally to the northwest it becomes shale, where you have a fairly thick sand in the channel, and generally to the south and east the channel is still present but it is -- it becomes water-bearing.

Now there is not a strict structural datum at which it does become water-bearing, however. It tends to cross structural lines; no water level, as such.

Q. How does the productivity of the Natomas

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 identified, I believe, as having 40 feet of net pay?

A. Yes, sir. They are comparable wells. 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.

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

A. Correlate, it appears to be exactly the same zone.

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

A. I can't --

Q. Or 14?

A. I can't say that for sure, no.

Q. 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?

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.

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

A. Yes, sir.

Q. 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?

A. That is correct.

Q. 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?

A. 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.

Q. This is not then a map showing us absolutes?

A. No, sir.

Q. It's a question of identifying risk with regards to well location, as I understand it.

A. That is correct.

Q. All right. All right, sir, I'd like to direct your attention to what I've marked as Exhibit Number Five, which is identified as a net pay Isopach map of the Upper Atoka zone.

Have you mapped the Lower Atoka zone?

A. I have not. I have looked at it in the wells and deemed our -- the risk on our -- on the Knox acreage 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.

Q. The primary objectives, then, of a well

located here are the Morrow and then this Upper Atoka zone?

A. Yes, sir.

Q. All right, sir, would you tell us generally how you prepared Exhibit Number Five?

A. This net pay Isopach was prepared -- this is a different type of reservoir. This is a carbonate reservoir and it apparently is a fairly erratic reef. So I used a 5 percent porosity cutoff in mapping -- in counting my net pay for this particular map.

Q. The well control are the same wells we've been talking about generally with regards to these exhibits?

A. Yes, sir, the same wells were used.

Q. We find the Upper Atoka zone is identified by the center well symbol here on the legend?

A. That is correct, upper left -- well --

Q. Shows a clock shaded from 12:00 o'clock to 4:00 o'clock --

A. Right.

Q. -- in dark? All right. In the south half of 14 there appears to be the same well we've talked about that had the Lower Atoka production.

A. That is the Lower Atoka.

Q. Yes, sir.

A. The Upper Atoka zone was absent, shaled out in that well.

Q. Okay. With regards to the Amoco test in the south half of 13, did that well test either the Upper or Lower Atoka?

A. Not to my knowledge.

Q. Going north, then, to Section 2, there's the BTA well. That well appears to be productive in the Upper Atoka.

A. That's correct. The Upper Atoka is present there and it appears to be a quite good well, recently completed.

Q. Okay. With regards to the well in the north half of 11, this was the drilling well?

A. That is correct.

Q. Is -- do you have any knowledge or information with regards to whether or not that well is going to be productive from the Atoka?

A. Apparently it is right on trend and it should be productive in the Upper Atoka reef complex.

Q. All right. Again we're in an area where there is very few wells from which you can establish control for your Isopach is that not true?

A. That's correct, and the geologic risk

in the south half of Section 12 is -- is rather high, needless to say.

Q. What has caused you to draw the Isopach contour, specifically with regards to how it crosses through the south half of 12?

A. 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 out there would conform to the stratigraphy and the carbonate gas-bearing unit would be there.

Q. Is that a fair geological judgment on your part, based upon the comparison of the structure and the Isopach in the other wells?

A. Yes, sir, it is.

Q. Is there anything else you'd like to tell us about Exhibit Number Five, Mr. Neff?

A. No, sir.

Q. All right, sir, let's go to Exhibit Number Six.

All right, sir, would you identify Exhibit Number Six for us?

A. Yes, sir, this is a structural cross section utilizing almost the only two wells that I could legally obtain copies of the logs on, and I'm showing the

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 --

A. Yes.

Q. -- for the Atoka and the Morrow?

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

Q. Could you give us an approximation of

what the proposed well will cost as a dry hole?

A. Approximately $2,000,000.

Q. Would you recommend drilling in the south half of Section 12 at a standard location?

A. 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.

Q. Do you have an opinion, Mr. Neff, as to whether or not the proposed location ought to be penalized because it is unorthodox?

A. I would think certainly not penalized.

Q. What reasons do you have for reaching that opinion?

A. Well, although my geology shows a trend, several trends, that appear to show the Amoco acreage nearby

in the south half of Section 12 to be within the same geologic feature, those maps were prepared just for our own use to 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.

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

A. Okay, yeah.

Q. In your opinion will a well 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.

Q. 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

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.

Q. 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?

A. Not at this time, no, sir.

Q. Were Exhibits One through Six prepared by you?

A. Yes, sir, they were.

Q. And in your opinion will approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, sir.

MR. KELLAHIN: I move the introduction of Exhibits One through Six.

MR. NUTTER: Exhibits One through Six will be admitted in evidence.

Mr. Mote, I presume you're going to have some questions of Mr. Neff.

MR. MOTE: Yes, sir.

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 taken.)

MR. NUTTER: The hearing will come to order, please.

Mr. Mote, did you have any questions of this witness?

MR. MOTE: Yes, sir.

CROSS EXAMINATION

BY MR. MOTE:

Q. Mr. Neff, I believe you testified you're a consulting geologist?

A. Yes, sir.

Q. And where is your business operated? Where is your office?

A. Midland, Texas, in the Blanks Building.

Q. 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.

Q. When did you prepare these exhibits?

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.

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

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

A. Yes. Okay.

Q. 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.

A. That's correct.

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

A. I'm not certain.

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

A. Yes, it is. That's right.

Q. 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?

A. 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.

Q. How about in the west half?

A. In the west half it is -- I feel -- I'm not positive. I think it's less than 1/16th.

Q. In the north half of the west half?

A. Yes, sir.

Q. It would be the northwest quarter, in other words?

A. Yes, sir.

Q. But do they have nearly all in the south half of Section 12?

A. Yes, sir, they have leasehold for their own account or trades made with the professional mineral owners in there.

Q. Did you attempt to obtain a farmout from the owners of leases in the west half of Section 12?

A. Yes, sir.

Q. And how long did you try to get those leases, to get farmout in that area?

A. Since -- since last April. It's been a year.

Q. And you were unsuccessful?

A. Yes, sir.

Q. I believe you stated in your direct examination that also the reason why you wanted the south half instead of in the west half of Section 12 is because it

was closer to existing production. Did you, did you make that statement?

A. Yes, sir, I did.

Q. Did you consider the BTA Antelope Ridge 8006 JVP Well?

A. That -- yes, that well is newly completed, as you're aware, and this prospect has been working for a year. The well was really not -- had nothing to do with setting this project up with this particular location in mind.

But I agree it appears to be almost the same distance.

Q. And it's completed in the Pennsylvanian, too, just like --

A. Yes.

Q. -- the other wells you mentioned down to the southwest, is it not?

A. That's correct.

Q. All right, go to your second exhibit, please.

Do you have any control at all north of the south half of Sections 13, 14, and 15 for your interpretation?

A. No, sir, other than the BTA well where the zone was absent.

Q. So you could have gone due north and south with those lines or even leaned them to the west and been just as accurate, if you had no control, couldn't you?

A. Right. These contours are just projected on my best geology trend application.

It is a projection; no well control for several miles to the north and east.

Q. North of this south half of Section 13, 14, and 15?

A. That's right.

Q. Why didn't you use that BTA Antelope Well in your structural interpretation?

A. The zone is not present in that well.

Q. Well, the Pennsylvanian is present, though, isn't it?

A. Yes, sir.

Q. Isn't there a very good marker right on the top of the Pennsylvanian you could have used in order to be able to more clearly and more accurately draw your structure map?

A. I could have projected it. I did submit in Exhibit Three structure on top of the Atoka zone, which I think fairly well mirrors this.

Q. Is the top of the Atoka in the exhibit

you just referred to, is that the same as the top of the Pennsylvanian?

A. It's near the top of the Pennsylvanian.

Q. About 30 feet off, or something like that?

A. No, it's probably a couple of hundred feet off, but it's representative.

Q. At what subsea depth, if you drilled at the proposed location, would you encounter the Morrow?

A. I would expect to encounter this Lower Morrow sand channel at approximately -9800 feet.

Q. All right. And if the Morrow were wet at 9800 feet and below, then you would get a duster, wouldn't you?

A. Yes, sir.

Q. At least it would be a wet duster.

A. A wet duster.

Q. Don't you think that on structure maps such as this that the Strawn or the upper part of the Pennsylvanian would have been a better indicator than the Morrow as to how these lines should go north of the south half of Sections 13, 14, and 15, where you have no control?

A. This is probably true. I mapped for this Lower Morrow strictly on a channel deposit and where it

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. Yes, sir.

Q. And I believe you've already agreed with

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 northeast, 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.

Q. 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

control for anything east of that, would you?

A. That is correct.

Q. What subsea depth would you expect to encounter the top of the Pennsylvanian by your proposed well, if it's drilled at the proposed location?

A. I could give you a subsea depth for this top Atoka zone marker, which is a shale in the middle of the carbonate pay zone near the top of the Pennsylvanian, if that will be satisfactory.

You asked for a subsea on top of the Pennsylvanian, I think.

Q. Yes.

A. And I really don't have that data.

Q. Okay, if you give it to me on the top of the Upper Atoka zone marker, would that be of some significance structural?

MR. SANFORD: That would be about 300 feet below.

Q. All right, give it to me on that --

A. Approximately -8750.

Q. Okay, and I believe you stated that the further east you go with this well the more risk you run into, is that correct?

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?

A. I feel this is true, yes.

Q. And the farther east you go the more probability of the fact that you might obtain commercial production.

A. That's correct.

Q. All right, go to your Exhibit Number Four.

Now, isn't it true with this net pay Isopach map, as well as the others we've asked you about, that there's no control for your interpretation north of the south half of Sections 13, 14, and 15?

A. That is correct.

Q. So the 40-foot sand doughnut that you've got running right through your proposed well is just pure or impure speculation, is that correct?

A. Right, geologic projection, I would call it.

Q. I believe in discussing this exhibit with your examiner you stated that the well in 23 and the well in 24 were somewhat different in sand, in net sands that were evident in those wells, is that correct?

A. I think you were talking about, let's

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

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

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

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

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

Q. 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?

A 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.

Q 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?

A. Well, that's -- that's not true. As I 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.

But geologically I have depicted it that way for the hearing.

Q. I don't know whether you answered my question or not.

A. Okay, I'm sorry.

Q. Would you be able to get production if you drilled a well east of this zero line on your map?

A. Certainly.

Q. You would be able to get production?

A. Yes, sir.

Q. In the Morrow and the Atoka?

A. Well, there would be considerably more risk in the Atoka, I feel, than the Morrow.

Q. Well, it looks like if you could get production you would have put your zero line farther on out so that there would be some production to the west.

If you had -- if you had no Morrow sand then you would not be able to get production, I guess is the question I want to ask.

A. Yes, sir.

Q. You would be able to get production?

A. Oh, I'm sorry.

Q. If there were no Morrow sand would you be able to get production?

A. That would be very difficult.

Q. Okay.

A. Right. Could I clarify something? I think I led you astray a little bit.

Q. All right, go ahead.

A. The Amoco "GA" Well down here has considerable sand.

Q. But it's wet, isn't it?

A. Yes, sir. Okay.

Q. All right, go to your Exhibit Number Five.

Now, this net pay Isopach on the Upper Atoka also shows your zero line to be west of the east half of your proposed drilling unit, does it not?

A. Yes, sir.

Q. 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 -- than 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.

Q. 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.

Q. On both this and the Morrow?

A. Yes, sir.

Q. 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?

A. Yes, sir.

Q. So why did you pull your -- your Isopach lines out to the east when you got around Section 12?

A. There's a -- it based primarily on my structural interpretation. I tried to stay with my

structural interpretation. Where I have the anticline pulling over into Section 12, I followed that, hoping that the Atoka carbonate rock, reservoir rock, will be present where the structure is that high, and that's the only reason I pulled it over there.

Q. Well, that's sort of like pulling yourself up by your own bootstraps, isn't it, if you don't have any control for your contour map, how could that give you any -- any feeling of security in doing the same thing with your Isopach that you did with your contour map?

A. This is a risky venture; very difficult.

Q. Let's go to your Exhibit Number Six. I believe we discussed awhile ago that the relative thickness of each of these zones appears to be about the same in the way you've got this cross section drawn, does it not?

A. Yes, sir.

Q. And is the top of the Upper Pennsylvanian shown on this exhibit?

A. No, sir, it's not, but I believe it's 200 to 300 feet above the first thing that I mapped.

Q. That top Upper Atoka zone --

A. Yes.

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

sylvanian is about 300 foot above there?

A. Yes, sir, 200 to 300.

Q. 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?

A. 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.

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

A. If I did, I don't remember saying that. 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 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?

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

that's what I said.

Q. Would you like to hear what you said? We have it available here for you if you'd like to hear it.

A. Okay, we'd better hear it then.

MR. MOTE: I'd like to ask the reporter, if she would, to play this for the witness.

(Thereupon the reporter played back the requested question and answer, as follows:)

QUESTION: (By Mr. Kellahin) Would you recommend drilling in the south half of Section 12 at a standard location?

ANSWER: (By Mr. Neff) 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.

(End of requested playback.)

Q. 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,

two of the three zones. The Lower Morrow might just be water-bearing in the east part of Section 12. The other two potential pay zones may or may not develop, and whether or not they're water-bearing is very, very unlikely.

Q. So what you're telling me, then, is you might get a completion in the Atoka but not in the Morrow because it is water-bearing?

A. From the data we have right now and the way I made my geologic projection, that's -- that is the case. Probably the east part will appear like the Amoco "GA' and the Natomas well.

But that is only one -- one sand in the Lower Morrow. Again, we have a shot at other potential Lower Morrow zones in the east part if we were inclined to drill over there.

Q. All right, but as far as the Lower Morrow is concerned, at least one half and probably more, a little bit more than one half is just scenery as far as the Morrow is concerned?

A. Of just one Lower Morrow zone, yes, sir, the main channel --

Q. Go ahead.

A. I'm -- I'm through.

Q. What will it cost for a producer at this

proposed location?

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

Q. Do you expect to encounter enough recoverable hydrocarbons to pay out the cost of drilling and operating and completing the well?

A. Yes, sir.

Q. At this proposed location?

A. Yes, sir.

Q. How many acres will the proposed well drain?

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.

Q. 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.

Q. It doesn't necessarily stop at the lease line, does it?

A. No, sir.

Q. And it's not going to drain just 660 feet and then stop at the Amoco lease line, is it?

A. I don't know the answer to that.

Q. But you pretty well know the answer to it, don't you?

A. No. No, sir, I'm not sure.

MR. MOTE: Pass the witness.

MR. NUTTER: Are there any further questions of this witness? He may be excused.

Mr. Mote, I think you said you had a witness?

MR. MOTE: Yes.

MR. NUTTER: Do you have any further witnesses, Mr. Kellahin?

MR. KELLAHIN: No, sir.

WILLIAM CASEY SANFORD

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

DIRECT EXAMINATION

BY MR. MOTE:

Q. Please state your name, by whom employed, and in what capacity and location.

A. My name is Casey Sanford. I'm a geologist employed by Amoco Production Company in Houston.

Q. Have you previously testified before the Division?

A. Yes, sir.

Q. And your qualifications as an expert in the field of geology are a matter of record, are they not?

A. They are.

Q. Please get out your first exhibit, or Exhibit Number One. I believe this is a structure map on top of the Penn, is it not?

A. Yes, sir, it is.

Q. And is that the same as you call the structure map on the Strawn? Is that the same as top of the Penn?

A. That is correct.

Q. All right, what is the arrow on the map? What does that indicate?

A. That arrow indicates the proposed location, proposed unorthodox location that Knox drilling company has

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.

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 reservoirs.

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?

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

MR. KELLAHIN: This is the well in Section 13?

A. Yes, sir.

Now what we believe, based on the structure 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 negative 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

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 interpretation, 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 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-

tion.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q. It's S-A-N-F-O-R-D?

A. That's correct.

Q. Mr. Sanford, your estimation of the number of productive acres of 72 with regards to the south half of Section 12, is that limited to the Morrow formation or did I misunderstand you?

A. That is based on the structural contour and limited to all formations because of the fact that every formation that was tested in all three wells to the south, the Atoka and the Morrow, did prove to be water-productive. Therefor, we assume that in the wells in Section 12 below that structural contour level would also be wet.

Q. All right, let me see if I understand your exhibit.

The structural contour you have presented is your opinion with regards to the Pennsylvanian structure, which would include the Morrow and the Atoka.

A. That is correct.

Q. All right. Mr. Sanford, you had available to you, I assume, the same limited well information that

Mr. Neff had available to him when he drew his --

A. No, sir, I had considerably more --

Q. -- structure map.

A. -- information than he did. In fact, we have our well in Section 13, which was a very key well in the map.

Q. All right. Let's see if we can isolate what the difference is.

If you'll take the BTA well in the north half of 12, all right? And if you'll take your well in the south half --

A. There is no BTA well in the north half of 12.

Q. North half of 12, I have -- I'm sorry, the -- it's 2. All right. In Section 2, and if you'll take your well in the south half of Section 13, and draw a straight line between those two points, and if you'll tell me what if any wells you used for control that lie north and east of that line?

A. None whatsoever.

Q. All right. So with regards to the projection of the potential number of productive feet in the south half of Section 12, you're working with the same disadvantage that Mr. Neff had.

A. With limitations, of course, because of the other two wells.

Q. 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?

A. I had more data than he did.

Q. 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.

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

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 shallow well, isn't it?

A. That well is a shallow well.

Q. That well didn't penetrate any Pennsylvanian.

A. That is correct.

Q. Okay. Tell me the status of your well in -- I'm sorry, it's not your well but you do -- Amoco does have an interest in the well in the north half of 11, does it not?

A. That is correct.

Q. Is the information available to you on that well?

A. It is.

Q. All right, would you tell us something about that well?

A. That well is drilling somewhat below 5000 feet at this time.

Q. All right, it hasn't reached the Pennsylvanian formation, then?

A. No, sir.

Q. The north half of Section 11 is dedicated to that well, is it?

A. The north half is the dedication and that is a legal location for that well, yes.

Q. Amoco has not yet elected to drill a test in the south half of Section 11, has it?

A. No, sir.

Q. All right. If Knox' application is approved at this location and they go ahead and drill and test the Pennyslvanian, then you'll have that information available to you to determine where you would drill, if at all in the south half of 11, would you not?

A. That information, I assume, will be available.

Q. And if they result in a well capable of production in paying quantities, then you could also offset the same lease line -- the same section, common section line, by the same amount of footage in order to adequately protect your correlative rights.

A. With the only penalty being the delay in time, of course.

Q. But with the distinct advantage of having the well precede you in the area.

Now, Mr. Sanford, did you participate as an expert witness in this hearing of Amoco's in Case 6930?

A. No, sir. That was the one in question

in --.

Q. Exhibit Two.

A. No, no, I did not.

Q. That was entered as a result of a hearing in June 25th of 1980?

A. Right, no, I did not.

Q. Were you working as a geologist for Amoco at that time?

A. Yes, sir, I was.

Q. Was this area one of your areas of responsibility at that time?

A. Yes, it was.

Q. How long have you been employed by Amoco as a geologist, Mr. Sanford?

A. A year and a half, roughly.

Q. And what is the length of your experience in Morrow and Pennsylvanian production in southeastern New Mexico?

A. A Year and a half.

Q. Would you concur in Mr. Neff's recommendation as with regards to a well location in the south half of 12?

A. In what way?

Q. To test the Atoka and Morrow formations.

A. At which location?

Q. At the proposed unorthodox location for the south half of 12. That's the subject --

A. Could you restate the --

Q. Yes, sir.

A. -- question?

Q. Mr. Neff has reached the opinion that the proposed unorthodox location of Knox Industries is the optimum location in the south half of 12. Would you concur in that recommendation?

A. I would.

MR. KELLAHIN: I have nothing further.

MR. NUTTER: Are there any further questions of this witness?

MR. MOTE: I'd like to ask one further question.

CROSS EXAMINATION

BY MR. MOTE:

Q. You say you concur in the recommendation. You were not agreeing that a well should be drilled at that location, were you?

A. That is correct. I believe that if they ever make a well in the south half of 12, it will be as

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

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.

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?

A. Can I --

Q. Yeah, please.

A. 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.

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

A. 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-

tions of the witness?

MR. KELLAHIN: Yes, sir, I want to see if I understand this.

RECROSS EXAMINATION

BY MR. KELLAHIN:

Q. The penalty is 50 percent of the 320-acre proration unit or 160 acres, is that you're talking about?

A. That is correct.

Q. If my recollection is correct on the previous Amoco order, the one of the June 8 hearing, Mr. Sanford, that was tied into setting some type of allowable.

For this particular case the field involved is not a prorated gas pool?

A. I don't believe it is, in fact, I'm sure that it is not a prorated gas pool.

Q. Okay.

MR. NUTTER: For the record's sake, the one in this order wasn't either. This is a production limitation even in a non-prorated pool.

Q. Because of the absence of a production limitation as a result of prorationing, I understand from your Exhibit Number Two that a formula was developed by the

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.

Q. 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-acre 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?

Q. 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?

A. 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

not appear or testify or participate.

A. That's correct.

Q. So you don't know whether this particular formula used in a different Amoco case is at all relevant or applicable to a penalty, if any, that is for this case.

A. That is correct.

MR. KELLAHIN: Nothing further.

MR. MOTE: That's still your recommendation, is it not?

A. That's still the recommendation.

MR. NUTTER: Are there any further questions of the witness? He may be excused.

Does anyone have anything further they wish to offer in Case Number 7225?

Any closing statements? Mr. Kellahin, you may go last.

MR. MOTE: Mr. Examiner, I think it's very clear that what's attempting to be done here is to obtain a location for a well immediately offsetting an Amoco lease on which granted Amoco has not yet drilled but it will very shortly, commence a well in that area, and thereby be able to drain the reserves of Amoco under the lease to the west.

The only purpose for going as far west 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 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.

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

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

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

it to their advantage.

We believe that that being the case, that no penalty ought to be awarded.

MR. NUTTER: Thank you, Mr. Kellahin.

Does anyone else have anything to offer in Case Number 7225?

We'll take the case under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY 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 CSR

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

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
Oil Conservation Division

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

A P P E A R A N C E S

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

I N D E X

E X H I B I T S

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.

MR. MOTE: Mr. Examiner, I'm Clyde Mote, attorney from Houston, Texas, appearing on behalf of Amoco, in association with Atwood and Malone.

MR. NUTTER: We have a letter of appearance on your behalf from them, Mr. Mote.

MR. MOTE: Thank you, sir. And we'll have one witness.

(Witnesses sworn.)

RICHARD NEFF

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A. Richard Neff. I'm a consulting geologist.

Q. Mr. Neff, have you previously testified before the Oil Conservation Division as a geologist?

A. No, sir.

Q. Would you tell the Examiner when and where you obtained your geological degree?

A. Yes. I received a Bachelor's and Masters degree of science in geology at the University of Oklahoma in 1961.

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

A. First out of school I was hired with Mobil Oil Corporation and worked in Roswell and Hobbs with Mobil for eight years.

Q. During your employment with Mobil in Roswell and Hobbs, what was your area of responsibility?

A. Virtually all of southeast New Mexico in an exploration effort.

Q. And did that exploration effort include preparing geology for the drilling of Morrow wells?

A. Yes, sir.

Q. And other Pennsylvanian tests?

A. Yes, sir.

Q. Subsequent to your employment with Mobil where was your next employment as a geologist?

A. I was Exploration Manager for Occidental Petroleum in Midland, responsible for west Texas and southeast New Mexico.

Q. Did that --

A. For five years.

Q. Did that employment with Occidental also include exploration in the Pennsylvanian formations?

A. Yes, sir.

Q. In southeastern New Mexico?

A. Yes, sir, it did.

Q. All right, subsequent to that, what was your next employment?

A. I became independent and have been working as an independent operator and consultant for the last seven years.

Q. And where is your residence, Mr. Neff?

A. Midland Texas.

Q. As an independent consultant in geology do you operate on a continuing basis to provide exploration geology in Pennsylvanian tests in southeastern New Mexico?

A. Yes, sir, I do.

Q. And pursuant to that consultation have you been employed by the applicant in this case?

A. Yes, sir.

Q. And what have you done for the applicant?

A. I've prepared several exhibits, maps and cross sections, in this matter.

Q. Are you generally familiar with the facts and circumstances surrounding the application of Knox Industries?

A. Yes, sir.

MR. KELLAHIN: We tender Mr. Neff as an expert petroleum geologist.

MR. NUTTER: Mr. Neff is qualified.

Q. Mr. Neff, I'd like to direct your attention first of all to what we've marked as the Applicant's Exhibit Number One, and have you identify that for me.

A. This is a lease ownership map in the subject area, surrounding about two miles.

Q. All right. What is the field involved in this proposed location?

A. Antelope Ridge Field, Morrow and Atoka zones.

Q. All right. Now in my discussions with you, you've indicated that this is a potential test for Atoka

as well as Morrow --

A. Yes, sir.

Q. -- gas? All right. What is your understanding of the spacing and proration rules with regards to a well located in Section 12?

A. The orthodox -- this is an unorthodox location that we are asking for.

Q. Would that be unorthodox for both an Atoka and a Morrow test?

A. Yes, sir.

Q. All right. What would a standard location for an Atoka-Morrow test require with regards to well location?

A. It would be in one of the center four 40-acre tracts within the south half of Section 12.

Q. With regards to footage it requires that you be no closer than 660 from the side line or 1980 from an end line of a proration unit, is that right?

A. Yes, sir.

Q. All right. Now if the proration unit was a west half proration unit for Section 12, would the location be unorthodox?

A. No, sir, it would be orthodox.

Q. All right.

MR. KELLAHIN: 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

leases.

Q. 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?

A. Yes, sir.

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

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

A. 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.

Q. All right, just a minute.

A. All right.

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

A. Yes, sir.

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

A. We feel like it is a 50 percent contri-

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

Structure is important, yes.

Q 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.

Q 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?

A. The last time I checked the production data on the well it was an extremely strong well.

Q. Could you give us some indication of what it produces now?

A. 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.

Q. Do you recall approximately when the Natomas well was completed?

A. This has been about a year ago.

Q. All right, sir. What other wells did you use as control wells for drawing the structure map?

A. Well, the BTA well in the southeast quarter of Section 14, and essentially a 40-acre offset to the Natomas well.

Q. Did that well encounter, or does it produce from the Morrow formation?

A. It produces from the Lower Atoka zone only. It found the Lower Morrow zone to be gas and water bearing but uneconomical and the Upper Atoka zone is absent by non-deposition.

Q. All right. What's the approximate distance between those two wells?

A. Oh, 1320 feet.

Q. All right, and despite the close proximity of those two wells one produces from the Morrow and the other does not.

A. That's correct.

Q. All right, sir. In terms of chronological order, was the BTA well drilled before or after the Natomas well?

A. They were both drilling at about the same time but the BTA well encountered problems and was completed at a later -- several months later.

Q. All right, sir. The application indicates that this is the Northeast Antelope Ridge Field. Generally what acreage does that include, do you know, Mr. Neff?

A. I'm not certain because this is just part of a trend that's continuous. It must be broken into more than one pool.

Q. All right.

A. Is there an Antelope Ridge Pool? I presume there is.

Q. All right. In terms of development identifying the Morrow trend in this area, where is the known Morrow production?

A. The known prolific Morrow production

extends -- this is the northernmost extent of it in the pool in Section -- in the southwest of 14.

The well in the northwest of Section 23, immediately south there, produces from the zone also. It is a very, very strong.

The next producers are on a -- on a trend to the southwest and off of this map. There are about four other wells in this reservoir.

Q. All right.

A. This prolific Lower Morrow reservoir.

MR. NUTTER: In other words, those two are the only Morrow wells on this exhibit?

A. There is a little question of terminology. This Lower Atoka zone has been called Morrow by some and -- but that is, in my opinion, correct, sir.

Q. All right. Is it fair to characterize, Mr. Neff, the proposed Knox location to be at the far north-eastern extent of the known Morrow production?

A. From known well control, this is correct.

Q. All right, and -- and what is the purpose so far as structure is concerned of a well location as you've suggested?

A. On the Knox acreage to achieve the highest structural point.

Q. Let me ask you some questions about any other wells that you've looked at as possible control wells for your structure map, and direct your attention to the south half of Section 13.

Are there any Morrow tests in that acreage?

A. Yes, sir, Amoco's well in the northeast of the southwest of Section 13 tested this Lower Morrow zone and found it uneconomical, found it to be gas and water bearing.

Q. Approximately when was that done, Mr. Neff?

A. This has been dragging on for some time. If my -- approximately nine months ago.

Q. All right. Moving then counter-clockwise around the structure contours, I see a well located in the north half of 12. Did that well penetrate and test the Morrow formation?

A. North half of Section 2?

Q. I'm sorry, 2.

A. The well did not encounter the Lower Morrow zone. It was not present at that location.

Q. All right. Looking at the north half of Section 11, are there any wells in the north half of 11 that would have penetrated the Morrow formation?

A. There is currently a well drilling at shallow depth in the northeast quarter of the northwest of Section 11.

Q. All right.

MR. NUTTER: Is it projected as a deep well?

A. Yes, sir.

MR. NUTTER: How deep is it now?

A. I don't have a current report. I -- I might guess, approximately, running their 5000 foot string.

MR. NUTTER: Maybe halfway down.

A. Oh, probably a fourth sir.

Q. All right, with regards, then, to your structure map, generally to the north and east there is an absence of existing Morrow tests from which you can base any structural control, is that not true?

A. That's correct, the zone is absent.

Q. All right. Based upon the currently available information to you, Mr. Neff, is the proposed location, based upon structural information, the optimum location from which to drill an Atoka and Morrow test in the south half of Section 12?

A. Yes, sir, that's correct.

Q. All right, sir, let's go to Exhibit

Number Three.

MR. NUTTER: While you're on Exhibit 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?

A. The last report I've had, they've evaluated all the -- the three pay zones that produce in the field, and they're attempting completion in a shallower zone.

MR. NUTTER: The Morrow, you said was gas and water bearing.

A. Yes, sir.

MR. NUTTER: Too much water for the amount of gas, though.

A. Right, and apparently the Atoka zones were -- were tight.

Q. Mr. Neff, I hand you what I have marked as Exhibit Number Three, which is a structure map on the top Upper Atoka zone marker. Is that what you have as Exhibit Three?

A. That's correct.

Q. All right, sir, would you generally identify for us the information contained on this exhibit?

A. Yes, sir. It's a structural contour map with 100 foot contour intervals, taking into account all

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.

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

A. That's correct.

Q. 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.

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

A. 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 absent in the BTA well.

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

Q 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?

A. One well completed --

Q. Well, let's do it this way.

A. Okay.

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

A. The north half.

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

A. Yes, sir.

Q. 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?

A. The north half.

Q. Okay. There is no well in the south half of 11?

A. That is correct.

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.

A. That is correct.

Q. All right, sir, would you identify for us, then, going southward, any wells that would be unorthodox?

A. Only the wells in Section 22 appear to be unorthodox. The well, Estoril Curry Federal, in the northeast of the southeast, which has been completed as a gas well, and the well attempting completion in the northeast of the northeast of Section 22, Estoril Curry State.

MR. NUTTER: Those have the south half and the north half, respectively, dedicated to them?

A. Yes, sir, I believe that's correct.

Q. All right. In Section 13 the Amoco test in the south half, is that a south half proration unit?

A. Yes, it is, as is the well in 24, the abandoned producer in the south half of 24, with a south half unit.

Q. All right. Is it fair to characterize 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

structure?

A. This is my interpretation.

Q. All right.

A. Yes, sir.

Q. Let's go to Exhibit Number Four. Mr. Neff, I've given you what I've marked as Exhibit Number Four, which is identified as a net pay Isopach map of the Lower Morrow zone. Did you prepare this map?

A. Yes, sir, I did.

Q. Would you describe generally how you prepared the map?

A. The data was taken from well logs available in the area, utilizing a gamma ray cutoff of 75 percent and a porosity cutoff of 8 percent and water saturation of about 40 percent.

Q. Give me your parameters again.

A. Gamma ray cutoff of 75 percent.

Q. Okay.

A. And a net porosity cutoff of 8 percent.

Q. Okay.

A. What else?

Q. Water saturation.

A. Water saturation was about 40 percent; very difficult to determine a cutoff in here as many of the

wells made gas and water while seeming to look like they should have produced gas alone.

Q. How did you develop those parameters as a basis to determine the net pay Isopach map?

A. These are obtained from experience in mapping throughout Lea and Eddy Counties, New Mexico, Morrow -- Morrow wells.

Q. Are those percentages consistently used by other geologists in mapping the Morrow zone?

A. I think many of them do, yes.

Q. All right, proceed and tell me specifically what the Isopach tells you.

A. All right. This -- this is just the northward projection of what I believe to be a Lower Morrow channel trend, which moves to the south and even crosses over into the Bell Lake Field, but it's -- it's a very narrow channel and is strictly determined by generally to the northwest it becomes shale, where you have a fairly thick sand in the channel, and generally to the south and east the channel is still present but it is -- it becomes water-bearing.

Now there is not a strict structural datum at which it does become water-bearing, however. It tends to cross structural lines; no water level, as such.

Q. How does the productivity of the Natomas

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 identified, I believe, as having 40 feet of net pay?

A. Yes, sir. They are comparable wells. 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.

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

A. Correlate, it appears to be exactly the same zone.

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

A. I can't --

Q. Or 14?

A. I can't say that for sure no.

Q. 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?

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.

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

A. Yes, sir.

Q. 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?

A. That is correct.

Q. 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?

A. 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.

Q. This is not then a map showing us absolutes?

A. No, sir.

Q. It's a question of identifying risk with regards to well location, as I understand it.

A. That is correct.

Q. All right. All right, sir, I'd like to direct your attention to what I've marked as Exhibit Number Five, which is identified as a net pay Isopach map of the Upper Atoka zone.

Have you mapped the Lower Atoka zone?

A. I have not. I have looked at it in the wells and deemed our -- the risk on our -- on the Knox acreage 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.

Q. The primary objectives, then, of a well

located here are the Morrow and then this Upper Atoka zone?

A. Yes, sir.

Q. All right, sir, would you tell us generally how you prepared Exhibit Number Five?

A. This net pay Isopach was prepared -- this is a different type of reservoir. This is a carbonate reservoir and it apparently is a fairly erratic reef. So I used a 5 percent porosity cutoff in mapping -- in counting my net pay for this particular map.

Q. The well control are the same wells we've been talking about generally with regards to these exhibits?

A. Yes, sir, the same wells were used.

Q. We find the Upper Atoka zone is identified by the center well symbol here on the legend?

A. That is correct, upper left -- well --

Q. Shows a clock shaded from 12:00 o'clock to 4:00 o'clock --

A. Right.

Q. -- in dark? All right. In the south half of 14 there appears to be the same well we've talked about that had the Lower Atoka production.

A. That is the Lower Atoka.

Q. Yes, sir.

A. The Upper Atoka zone was absent, shaled out in that well.

Q. Okay. With regards to the Amoco test in the south half of 13, did that well test either the Upper or Lower Atoka?

A. Not to my knowledge.

Q. Going north, then, to Section 2, there's the BTA well. That well appears to be productive in the Upper Atoka.

A. That's correct. The Upper Atoka is present there and it appears to be a quite good well, recently completed.

Q. Okay. With regards to the well in the north half of 11, this was the drilling well?

A. That is correct.

Q. Is -- do you have any knowledge or information with regards to whether or not that well is going to be productive from the Atoka?

A. Apparently it is right on trend and it should be productive in the Upper Atoka reef complex.

Q. All right. Again we're in an area where there is very few wells from which you can establish control for your Isopach is that not true?

A. That's correct, and the geologic risk

in the south half of Section 12 is -- is rather high, needless to say.

Q. What has caused you to draw the Isopach contour, specifically with regards to how it crosses through the south half of 12?

A. 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 out there would conform to the stratigraphy and the carbonate gas-bearing unit would be there.

Q. Is that a fair geological judgment on your part, based upon the comparison of the structure and the Isopach in the other wells?

A. Yes, sir, it is.

Q. Is there anything else you'd like to tell us about Exhibit Number Five, Mr. Neff?

A. No, sir.

Q. All right, sir, let's go to Exhibit Number Six.

All right, sir, would you identify Exhibit Number Six for us?

A. Yes, sir, this is a structural cross section utilizing almost the only two wells that I could legally obtain copies of the logs on, and I'm showing the

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 --

A. Yes.

Q. -- for the Atoka and the Morrow?

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

Q. Could you give us an approximation of

what the proposed well will cost as a dry hole?

A. Approximately $2,000,000.

Q. Would you recommend drilling in the south half of Section 12 at a standard location?

A. 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.

Q. Do you have an opinion, Mr. Neff, as to whether or not the proposed location ought to be penalized because it is unorthodox?

A. I would think certainly not penalized.

Q. What reasons do you have for reaching that opinion?

A. Well, although my geology shows a trend, several trends, that appear to show the Amoco acreage nearby

in the south half of Section 12 to be within the same geologic feature, those maps were prepared just for our own use to 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.

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

A. Okay, yeah.

Q. In your opinion will a well 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.

Q. 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

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.

Q. 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?

A. Not at this time, no, sir.

Q. Were Exhibits One through Six prepared by you?

A. Yes, sir, they were.

Q. And in your opinion will approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, sir.

MR. KELLAHIN: I move the introduction of Exhibits One through Six.

MR. NUTTER: Exhibits One through Six will be admitted in evidence.

Mr. Mote, I presume you're going to have some questions of Mr. Neff.

MR. MOTE: Yes, sir.

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 taken.)

MR. NUTTER: The hearing will come to order, please.

Mr. Mote, did you have any questions of this witness?

MR. MOTE: Yes, sir.

CROSS EXAMINATION

BY MR. MOTE:

Q. Mr. Neff, I believe you testified you're a consulting geologist?

A. Yes, sir.

Q. And where is your business operated? Where is your office?

A. Midland, Texas, in the Blanks Building.

Q 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.

Q. When did you prepare these exhibits?

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.

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

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

A. Yes. Okay.

Q. 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.

A. That's correct.

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

A. I'm not certain.

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

A. Yes, it is. That's right.

Q. 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?

A. 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.

Q. How about in the west half?

A. In the west half it is -- I feel -- I'm not positive. I think it's less than 1/16th.

Q. In the north half of the west half?

A. Yes, sir.

Q. It would be the northwest quarter, in other words?

A. Yes, sir.

Q. But do they have nearly all in the south half of Section 12?

A. Yes, sir, they have leasehold for their own account or trades made with the professional mineral owners in there.

Q. Did you attempt to obtain a farmout from the owners of leases in the west half of Section 12?

A. Yes, sir.

Q. And how long did you try to get those leases, to get farmout in that area?

A. Since -- since last April. It's been a year.

Q. And you were unsuccessful?

A. Yes, sir.

Q. I believe you stated in your direct examination that also the reason why you wanted the south half instead of in the west half of Section 12 is because it

was closer to existing production. Did you, did you make that statement?

A. Yes, sir, I did.

Q. Did you consider the BTA Antelope Ridge 8006 JVP Well?

A. That -- yes, that well is newly completed, as you're aware, and this prospect has been working for a year. The well was really not -- had nothing to do with setting this project up with this particular location in mind.

But I agree it appears to be almost the same distance.

Q. And it's completed in the Pennsylvanian, too, just like --

A. Yes.

Q. -- the other wells you mentioned down to the southwest, is it not?

A. That's correct.

Q. All right, go to your second exhibit, please.

Do you have any control at all north of the south half of Sections 13, 14, and 15 for your interpretation?

A. No, sir, other than the BTA well where the zone was absent.

Q. So you could have gone due north and south with those lines or even leaned them to the west and been just as accurate, if you had no control, couldn't you?

A. Right. These contours are just projected on my best geology trend application.

It is a projection; no well control for several miles to the north and east.

Q. North of this south half of Section 13, 14, and 15?

A. That's right.

Q. Why didn't you use that BTA Antelope Well in your structural interpretation?

A. The zone is not present in that well.

Q. Well, the Pennsylvanian is present, though, isn't it?

A. Yes, sir.

Q. Isn't there a very good marker right on the top of the Pennsylvanian you could have used in order to be able to more clearly and more accurately draw your structure map?

A. I could have projected it. I did submit in Exhibit Three structure on top of the Atoka zone, which I think fairly well mirrors this.

Q. Is the top of the Atoka in the exhibit

you just referred to, is that the same as the top of the Pennsylvanian?

A. It's near the top of the Pennsylvanian.

Q. About 30 feet off, or something like that?

A. No, it's probably a couple of hundred feet off, but it's representative.

Q. At what subsea depth, if you drilled at the proposed location, would you encounter the Morrow?

A. I would expect to encounter this Lower Morrow sand channel at approximately -9800 feet.

Q. All right. And if the Morrow were wet at 9800 feet and below, then you would get a duster, wouldn't you?

A. Yes, sir.

Q. At least it would be a wet duster.

A. A wet duster.

Q. Don't you think that on structure maps such as this that the Strawn or the upper part of the Pennsylvanian would have been a better indicator than the Morrow as to how these lines should go north of the south half of Sections 13, 14, and 15, where you have no control?

A. This is probably true. I mapped for this Lower Morrow strictly on a channel deposit and where it

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. Yes, sir.

Q. And I believe you've already agreed with

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.

Q. 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

control for anything east of that, would you?

A. That is correct.

Q. What subsea depth would you expect to encounter the top of the Pennsylvanian by your proposed well, if it's drilled at the proposed location?

A. I could give you a subsea depth for this top Atoka zone marker, which is a shale in the middle of the carbonate pay zone near the top of the Pennsylvanian, if that will be satisfactory.

You asked for a subsea on top of the Pennsylvanian I think.

Q. Yes.

A. And I really don't have that data.

Q. Okay, if you give it to me on the top of the Upper Atoka zone marker, would that be of some significance structural?

MR. SANFORD: That would be about 300 feet below.

Q. All right, give it to me on that --

A. Approximately -8750.

Q. Okay, and I believe you stated that the further east you go with this well the more risk you run into, is that correct?

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?

A. I feel this is true, yes.

Q. And the farther east you go the more probability of the fact that you might obtain commercial production.

A. That's correct.

Q. All right, go to your Exhibit Number Four.

Now, isn't it true with this net pay Isopach map, as well as the others we've asked you about, that there's no control for your interpretation north of the south half of Sections 13, 14, and 15?

A. That is correct.

Q. So the 40-foot sand doughnut that you've got running right through your proposed well is just pure or impure speculation, is that correct?

A. Right, geologic projection, I would call it.

Q. I believe in discussing this exhibit with your examiner you stated that the well in 23 and the well in 24 were somewhat different in sand, in net sands that were evident in those wells, is that correct?

A. I think you were talking about, let's

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

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

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

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

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

Q. 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?

A. 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.

Q. 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?

A. Well, that's -- that's not true. As I 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.

But geologically I have depicted it that way for the hearing.

Q. I don't know whether you answered my question or not.

A. Okay, I'm sorry.

Q. Would you be able to get production if you drilled a well east of this zero line on your map?

A. Certainly.

Q. You would be able to get production?

A. Yes, sir.

Q. In the Morrow and the Atoka?

A. Well, there would be considerably more risk in the Atoka, I feel, than the Morrow.

Q. Well, it looks like if you could get production you would have put your zero line farther on out so that there would be some production to the west.

If you had -- if you had no Morrow sand then you would not be able to get production, I guess is the question I want to ask.

A. Yes, sir.

Q. You would be able to get production?

A. Oh, I'm sorry.

Q. If there were no Morrow sand would you be able to get production?

A. That would be very difficult.

Q. Okay.

A. Right. Could I clarify something? I think I led you astray a little bit.

Q. All right, go ahead.

A. The Amoco "GA" Well down here has considerable sand.

Q. But it's wet, isn't it?

A. Yes, sir. Okay.

Q. All right, go to your Exhibit Number Five.

Now, this net pay Isopach on the Upper Atoka also shows your zero line to be west of the east half of your proposed drilling unit, does it not?

A. Yes, sir.

Q. 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 -- than 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.

Q. 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.

Q. On both this and the Morrow?

A. Yes, sir.

Q. 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?

A. Yes, sir.

Q. So why did you pull your -- your Isopach lines out to the east when you got around Section 12?

A. There's a -- it based primarily on my structural interpretation. I tried to stay with my

structural interpretation. Where I have the anticline pulling over into Section 12, I followed that, hoping that the Atoka carbonate rock, reservoir rock, will be present where the structure is that high, and that's the only reason I pulled it over there.

Q. Well, that's sort of like pulling yourself up by your own bootstraps, isn't it, if you don't have any control for your contour map, how could that give you any -- any feeling of security in doing the same thing with your Isopach that you did with your contour map?

A. This is a risky venture; very difficult.

Q. Let's go to your Exhibit Number Six.

I believe we discussed awhile ago that the relative thickness of each of these zones appears to be about the same in the way you've got this cross section drawn, does it not?

A. Yes, sir.

Q. And is the top of the Upper Pennsylvanian shown on this exhibit?

A. No, sir, it's not, but I believe it's 200 to 300 feet above the first thing that I mapped.

Q. That top Upper Atoka zone ---

A. Yes.

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

sylvanian is about 300 foot above there?

A. Yes, sir, 200 to 300.

Q. 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?

A. 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.

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

A. If I did, I don't remember saying that. 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 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?

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

that's what I said.

Q Would you like to hear what you said? We have it available here for you if you'd like to hear it.

A Okay, we'd better hear it then.

MR. MOTE: I'd like to ask the reporter, if she would, to play this for the witness.

(Thereupon the reporter played back the requested question and answer, as follows:)

QUESTION: (By Mr. Kellahin) Would you recommend drilling in the south half of Section 12 at a standard location?

ANSWER: (By Mr. Neff) 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.

(End of requested playback.)

Q. 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,

two of the three zones. The Lower Morrow might just be water-bearing in the east part of Section 12. The other two potential pay zones may or may not develop, and whether or not they're water-bearing is very, very unlikely.

Q. So what you're telling me, then, is you might get a completion in the Atoka but not in the Morrow because it is water-bearing?

A. From the data we have right now and the way I made my geologic projection, that's -- that is the case. Probably the east part will appear like the Amoco "GA" and the Natomas well.

But that is only one -- one sand in the Lower Morrow. Again, we have a shot at other potential Lower Morrow zones in the east part if we were inclined to drill over there.

Q. All right, but as far as the Lower Morrow is concerned, at least one half and probably more, a little bit more than one half is just scenery as far as the Morrow is concerned?

A. Of just one Lower Morrow zone, yes, sir, the main channel --

Q. Go ahead.

A. I'm -- I'm through.

Q. What will it cost for a producer at this

proposed location?

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

Q. Do you expect to encounter enough recoverable hydrocarbons to pay out the cost of drilling and operating and completing the well?

A. Yes, sir.

Q. At this proposed location?

A. Yes, sir.

Q. How many acres will the proposed well drain?

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.

Q. 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.

Q. It doesn't necessarily stop at the lease line, does it?

A. No, sir.

Q. And it's not going to drain just 660 feet and ther stop at the Amoco lease line, is it?

A. I don't know the answer to that.

Q. But you pretty well know the answer to it don't you?

A. No. No, sir. I'm not sure.

MR. MOTE: Pass the witness.

MR. NUTTER: Are there any further questions of this witness? He may be excused.

Mr. Mote, I think you said you had a witness?

MR. MOTE: Yes.

MR. NUTTER: Do you have any further witnesses, Mr. Kellahin?

MR. KELLAHIN: No, sir.

WILLIAM CASEY SANFORD

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

DIRECT EXAMINATION

BY MR. MOTE:

Q. Please state your name, by whom employed, and in what capacity and location.

A. My name is Casey Sanford. I'm a geologist employed by Amoco Production Company in Houston.

Q. Have you previously testified before the Division?

A. Yes, sir.

Q. And your qualifications as an expert in the field of geology are a matter of record, are they not?

A. They are.

Q. Please get out your first exhibit, or Exhibit Number One. I believe this is a structure map on top of the Penn, is it not?

A. Yes, sir, it is.

Q. And is that the same as you call the structure map on the Strawn? Is that the same as top of the Penn?

A. That is correct.

Q. All right, what is the arrow on the map? What does that indicate?

A. That arrow indicates the proposed location, proposed unorthodox location that Knox drilling company has

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.

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 reservoirs.

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?

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

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 reservoirs.

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?

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

MR. KELLAHIN: This is the well in Section 13?

A. Yes, sir.

Now what we believe, based on the structure 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 negative 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

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 interpretation, 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 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-

tion.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q. It's S-A-N-F-O-R-D?

A. That's correct.

Q. Mr. Sanford, your estimation of the number of productive acres of 72 with regards to the south half of Section 12, is that limited to the Morrow formation or did I misunderstand you?

A. That is based on the structural contour and limited to all formations because of the fact that every formation that was tested in all three wells to the south, the Atoka and the Morrow, did prove to be water-productive. Therefor, we assume that in the wells in Section 12 below that structural contour level would also be wet.

Q. All right, let me see if I understand your exhibit.

The structural contour you have presented is your opinion with regards to the Pennsylvanian structure, which would include the Morrow and the Atoka.

A. That is correct.

Q. All right. Mr. Sanford, you had available to you, I assume, the same limited well information that

Mr. Neff had available to him when he drew his --

A. No, sir, I had considerably more --

Q. -- structure map.

A. -- information than he did. In fact, we have our well in Section 13, which was a very key well in the map.

Q. All right. Let's see if we can isolate what the difference is.

If you'll take the BTA well in the north half of 12, all right? And if you'll take your well in the south half --

A. There is no BTA well in the north half of 12.

Q. North half of 12, I have -- I'm sorry, the -- it's 2. All right. In Section 2, and if you'll take your well in the south half of Section 13, and draw a straight line between those two points, and if you'll tell me what if any wells you used for control that lie north and east of that line?

A. None whatsoever.

Q. All right. So with regards to the projection of the potential number of productive feet in the south half of Section 12, you're working with the same disadvantage that Mr. Neff had.

A. With limitations, of course, because of the other two wells.

Q. 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?

A. I had more data than he did.

Q. 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.

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

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 shallow well, isn't it?

A. That well is a shallow well.

Q. That well didn't penetrate any Pennsylvanian.

A. That is correct.

Q. Okay. Tell me the status of your well in -- I'm sorry, it's not your well but you do -- Amoco does have an interest in the well in the north half of 11, does it not?

A. That is correct.

Q. Is the information available to you on that well?

A. It is.

Q. All right. would you tell us something about that well?

A. That well is drilling somewhat below 5000 feet at this time.

Q. All right, it hasn't reached the Pennsylvanian formation, then?

A. No, sir.

Q. The north half of Section 11 is dedicated to that well, is it?

A. The north half is the dedication and that is a legal location for that well, yes.

Q. Amoco has not yet elected to drill a test in the south half of Section 11, has it?

A. No, sir.

Q. All right. If Knox' application is approved at this location and they go ahead and drill and test the Pennyslvanian, then you'll have that information available to you to determine where you would drill, if at all in the south half of 11, would you not?

A. That information, I assume, will be available.

Q. And if they result in a well capable of production in paying quantities, then you could also offset the same lease line -- the same section, common section line, by the same amount of footage in order to adequately protect your correlative rights.

A. With the only penalty being the delay in time, of course.

Q. But with the distinct advantage of having the well precede you in the area.

Now, Mr. Sanford, did you participate as an expert witness in this hearing of Amoco's in Case 6930?

A. No, sir. That was the one in question

in --.

Q. Exhibit Two.

A. No, no, I did not.

Q. That was entered as a result of a hearing in June 25th of 1980?

A. Right, no, I did not.

Q. Were you working as a geologist for Amoco at that time?

A. Yes, sir, I was.

Q. Was this area one of your areas of responsibility at that time?

A. Yes, it was.

Q. How long have you been employed by Amoco as a geologist, Mr. Sanford?

A. A year and a half, roughly.

Q. And what is the length of your experience in Morrow and Pennsylvanian production in southeastern New Mexico?

A. A Year and a half.

Q. Would you concur in Mr. Neff's recommendation as with regards to a well location in the south half of 12?

A. In what way?

Q. To test the Atoka and Morrow formations.

A. At which location?

Q. At the proposed unorthodox location for the south half of 12. That's the subject --

A. Could you restate the --

Q. Yes, sir.

A. -- question?

Q. Mr. Neff has reached the opinion that the proposed unorthodox location of Knox Industries is the optimum location in the south half of 12. Would you concur in that recommendation?

A. I would.

MR. KELLAHIN: I have nothing further.

MR. NUTTER: Are there any further questions of this witness?

MR. MOTE: I'd like to ask one further question.

CROSS EXAMINATION

BY MR. MOTE:

Q. You say you concur in the recommendation. You were not agreeing that a well should be drilled at that location, were you?

A. That is correct. I believe that if they ever make a well in the south half of 12, it will be as

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

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.

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?

A. Can I --

Q. Yeah, please.

A. 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.

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

A. 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-

tions of the witness?

MR. KELLAHIN: Yes, sir, I want to see if I understand this.

RECROSS EXAMINATION

BY MR. KELLAHIN:

Q The penalty is 50 percent of the 320-acre proration unit or 160 acres, is that you're talking about?

A That is correct.

Q If my recollection is correct on the previous Amoco order, the one of the June 8 hearing, Mr. Sanford, that was tied into setting some type of allowable.

For this particular case the field involved is not a prorated gas pool?

A I don't believe it is, in fact, I'm sure that it is not a prorated gas pool.

Q Okay.

MR. NUTTER: For the record's sake, the one in this order wasn't either. This is a production limitation even in a non-prorated pool.

Q Because of the absence of a production limitation as a result of prorationing, I understand from your Exhibit Number Two that a formula was developed by the

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.

Q. 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-acre 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?

Q. 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?

A. 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

not appear or testify or participate.

A. That's correct.

Q. So you don't know whether this particular formula used in a different Amoco case is at all relevant or applicable to a penalty, if any, that is for this case.

A. That is correct.

MR. KELLAHIN: Nothing further.

MR. MOTE: That's still your recommendation, is it not?

A. That's still the recommendation.

MR. NUTTER: Are there any further questions of the witness? He may be excused.

Does anyone have anything further they wish to offer in Case Number 7225?

Any closing statements? Mr. Kellahin, you may go last.

MR. MOTE: Mr. Examiner, I think it's very clear that what's attempting to be done here is to obtain a location for a well immediately offsetting an Amoco lease on which granted Amoco has not yet drilled but it will very shortly, commence a well in that area, and thereby be able to drain the reserves of Amoco under the lease to the west.

The only purpose for going as far west 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 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.

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

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

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

it to their advantage.

We believe that that being the case, that no penalty ought to be awarded.

MR. NUTTER: Thank you, Mr. Kellahin.

Does anyone else have anything to offer in Case Number 7225?

We'll take the case under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY 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 CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7253, heard by me on 5/20 19 81.

Examiner
Oil Conservation Division

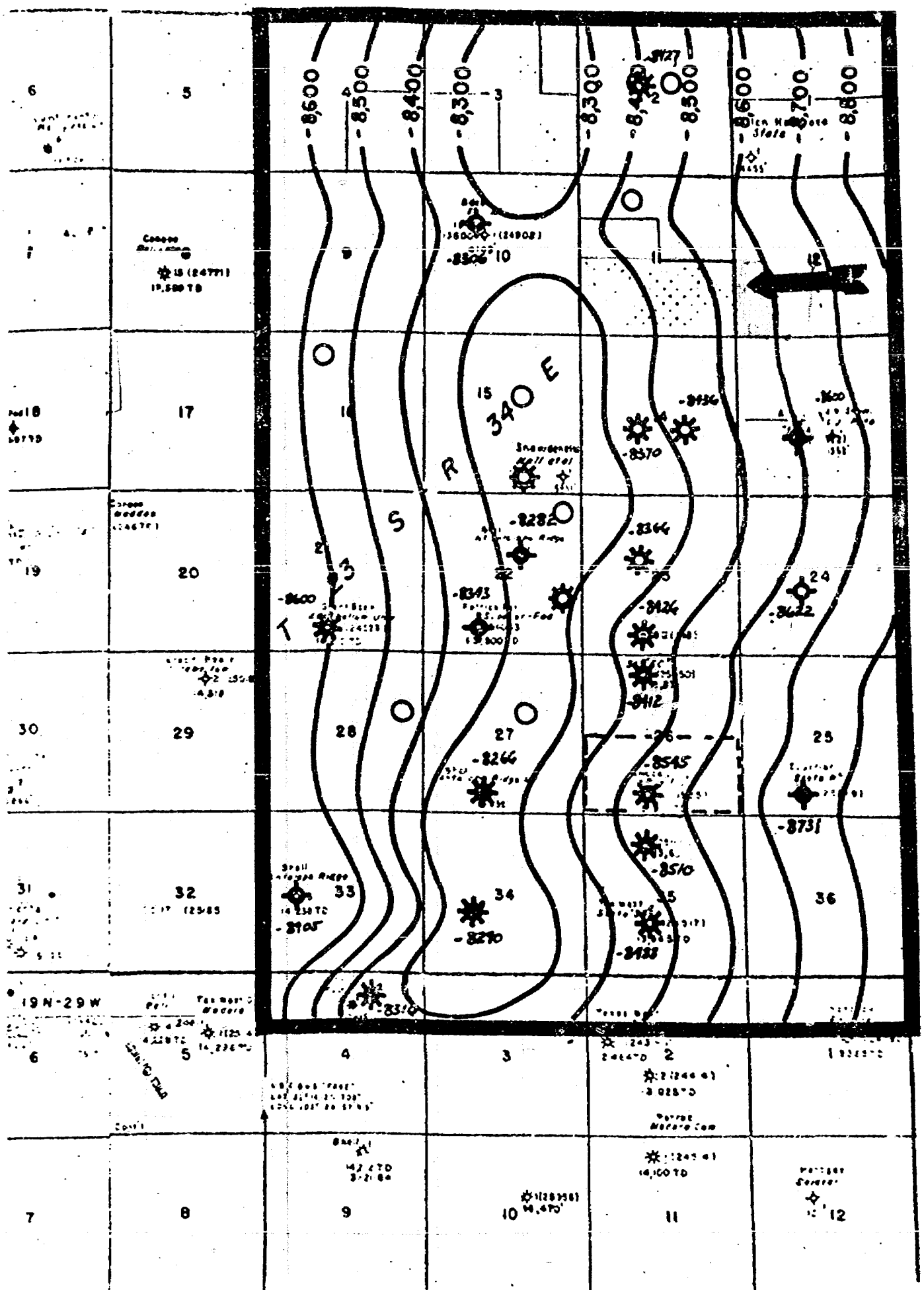
SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. 1
CASE NO. 7225

Amoco Production Company
HOUSTON REGION

STRUCTURAL MAP
STRAWN

ENCL. NO. _____ DATE _____
DOCUMENT NO. _____ GEOL. _____



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

Empire South Deep Unit

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

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
Amoco EXHIBIT NO. 2
CASE NO. 7225

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, 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

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.

(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

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

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 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

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.

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 herein-above designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

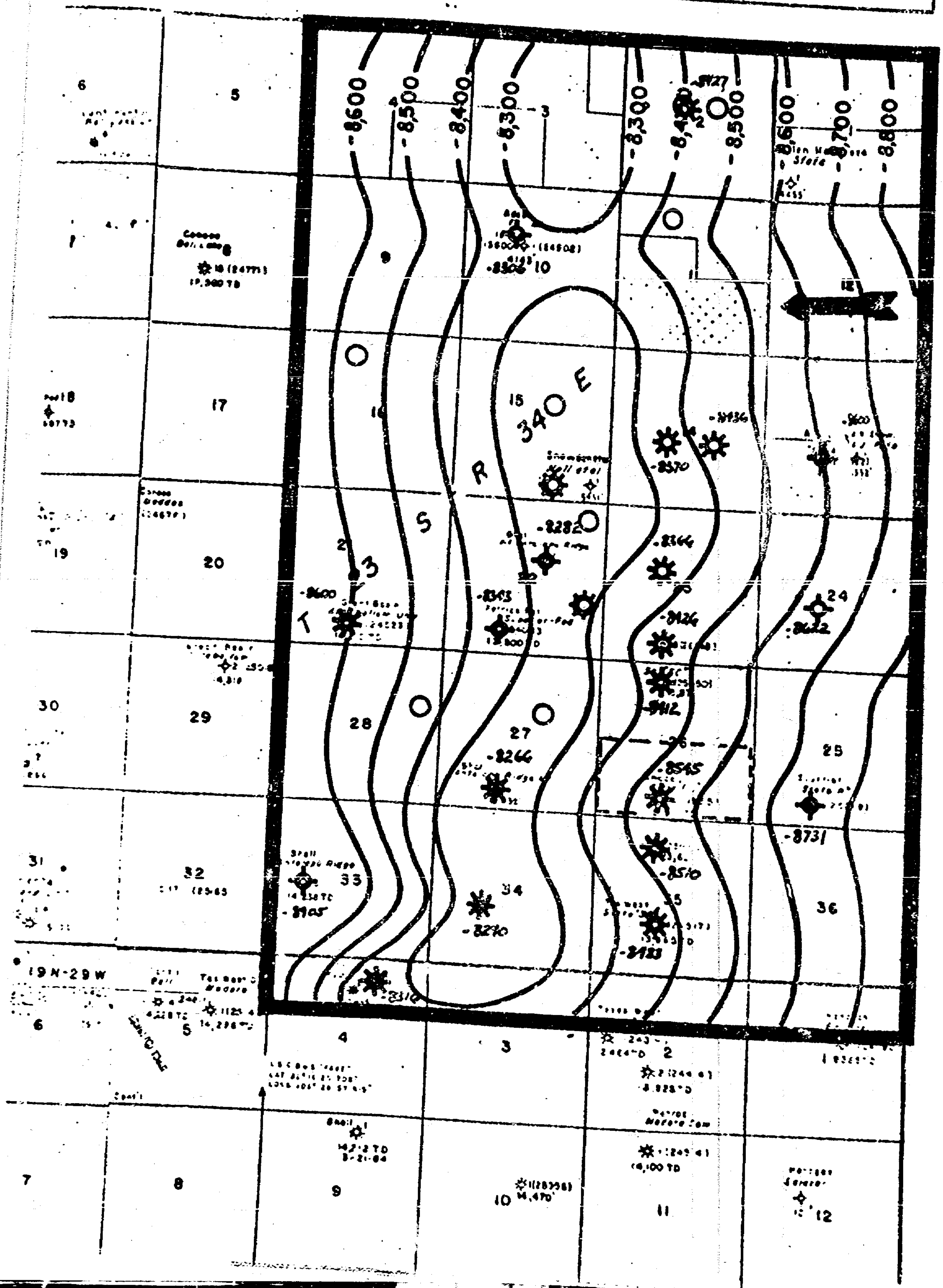
S E A L
fd/

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. 1
CASE NO. 7225

Amoco Production Company
HOUSTON REGION

STRUCTURAL MAP
STRAWN

ENCL. NO. ____ DATE ____
DOCUMENT NO. ____ GEOL. ____



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

Empire South Deep Unit

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

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
Amoco EXHIBIT NO. 2
CASE NO. 7225

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, 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

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.

(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

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

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 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

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.

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

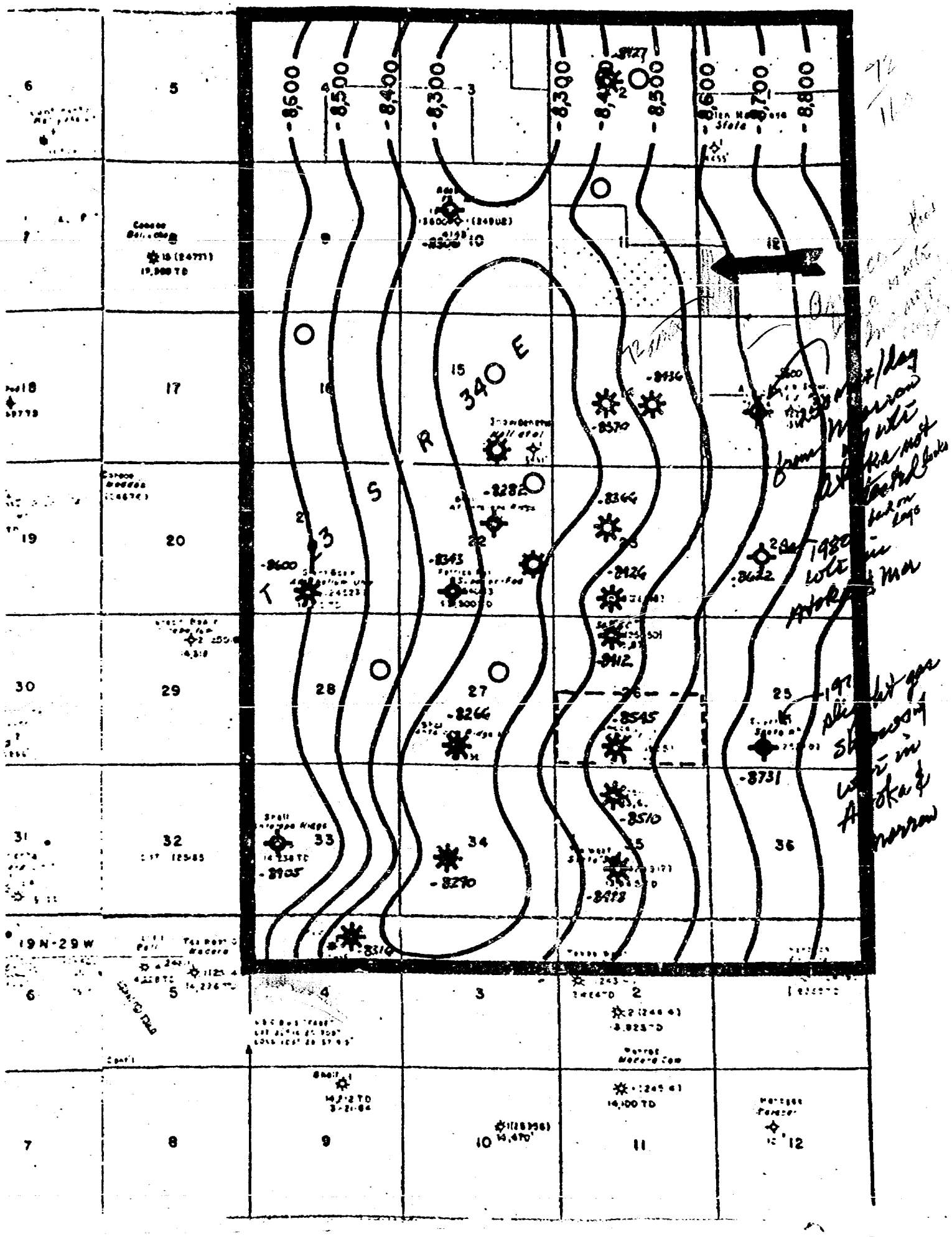
S E A L
fd/

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Amoco EXHIBIT NO. 1
CASE NO. 7225

Amoco Production Company
HOUSTON REGION

STRUCTURAL MAP
STRAWN

ENCL NO. _____ DATE _____
DOCUMENT NO. _____ GEOL. _____



ATWOOD, MALONE, MANN & COOTER
A PROFESSIONAL ASSOCIATION
LAWYERS

JEFF D. ATWOOD (1883-1960)
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, 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.

BY _____

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.

BY _____

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 prorated 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 33, 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 for risk involved in drilling said well.

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 operator 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.

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 Gas 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 EAST, NMPM
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 McMillan-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, NMPM. 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 SOUTH, 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, NMPM. 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, RANGE 34 EAST, NMPM
Section 8: SE/4

(j) ABOLISH the Carlsbad-Canyon 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, NMPM
Section 21: S/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, NMPM
Section 15: All

(l) 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

Docket No. 16-81

(m) EXTEND the Baum-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 13 SOUTH, RANGE 33 EAST, NMPM
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: NW/4 SW/4

(o) EXTEND the North Caprock-Mississippian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 12 SOUTH, RANGE 32 EAST, NMPM
Section 5: SE/4

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

TOWNSHIP 22 SOUTH, RANGE 27 EAST, NMPM
Section 14: N/2
Section 15: All
Section 16: E/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, to include therein:

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, NMPM
Section 6: S/2

(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 Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 21: S/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

(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, RANGE 28 EAST, NMPM
Section 10: S/2
Section 23: N/2

(aa) 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-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 32 EAST, NMPM
Section 5: Lots 1, 2, 3, 4, 5, 6, 7, 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-Morrow 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

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

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

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.)

C E R T I F I C A T E

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.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7225 heard by me on 4/22 1981.

_____, Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 435-7409

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:

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

CASE 7226

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Ernest L. Padilla, Esq.
Legal Counsel 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

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.)

C E R T I F I C A T E

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.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7225 heard by me on 4/22 19 81.

, Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

ATWOOD, MALONE, MANN & COOTER
A PROFESSIONAL ASSOCIATION
LAWYERS

JEFF D. ATWOOD [1881-1980]
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

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

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) NO. 7225
UNORTHODOX GAS WELL LOCATION,)
LEA COUNTY, NEW MEXICO.)

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.

By Paul Cooter le
P. O. Drawer 700
Roswell, New Mexico 88201

Dockets Nos. 15-81 and 16-81 are tentatively set for May 6 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 MEXICO

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. 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, Township 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.

KNOX INDUSTRIES, INC.
P. O. BOX 3023
MIDLAND, TEXAS 79702

GORDON S. KNOX
PRESIDENT

PHONE 682-6261

March 18, 1981

Case 7225

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

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.

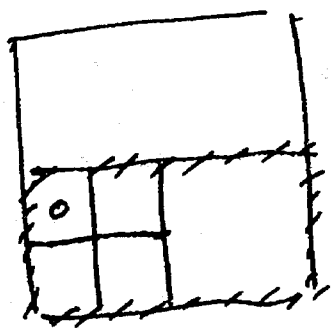
Please set this matter for hearing at the earliest possible time.

Very truly yours,

Leland Franz

Leland Franz

LF:bm
encl.



E OF NEW MEXICO
D MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RECEIVED
MAR 23 1981
OIL CONSERVATION DIVISION
SANTA FE

Form C-101
Revised 10-1-78

5A. Indicate Type of Lease STATE [ ] FEE [X]
5. State Oil & Gas Lease No.

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work: DRILL [X] DEEPEN [ ] PLUG BACK [ ]
b. Type of Well: OIL WELL [ ] GAS WELL [X] OTHER — SINGLE ZONE [ ] MULTIPLE ZONE [ ]
7. Unit Agreement Name
8. Farm or Lease Name: Maddox
9. Well No.: 1
2. Name of Operator: Knox Industries, Inc.
10. Field and Pool, or Wildcat: Antelope Ridge, N.E.
3. Address of Operator: P. O. Box 3023, Midland, TX 79702
4. Location of Well: UNIT LETTER L LOCATED 1980 FEET FROM THE South LINE AND 660 FEET FROM THE West LINE OF SEC. 12 TWP. 23-S RGE. 34-E NMPM
12. County: Lea
19. Proposed Depth: 13,900
19A. Formation: Morrow
20. Rotary or C.T.: Rotary
21. Elevations (Show whether DF, RT, etc.): 3357' GR
21A. Kind & Status Plug. Bond: * Blanket
21B. Drilling Contractor: Willbros Drlg. Co.
22. Approx. Date Work will start: July 15, 1981

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
26"	20"	94#	40	4 yds. Redi-Mix	Surface
17-1/2"	13-3/8"	48#	600	450	Surface
12-1/4"	9-5/8"	36# & 40#	5,700	1075	2,500
8-3/4"	7-5/8"	29.70#	12,200	350	9,000
6-3/4"	5"	17#	13,900	245	11,800

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 & casing to 600 psi for 30 mins. Drill 12-1/4" hole to 5700' w/brine. Set 9-5/8" casing at 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', cement w/cut brine. DST significant shows. Run open hole logs. Set 7-7/8" casing at 12,200', cement w/350 sx. WOC 18 hrs. NUBOP's. Test BOP's & casing to 5000 psi for 30 mins. Drill out & drill ahead w/6-3/4" bit to 13,900, testing significant shows. Run open hole logs. If productive, run and cement 5" liner w/245 sx. MORT to complete.

Application is being sent this date to all off-set operators by certified mail.

* In process of secruring blanket bond.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed Leland Finn Title Production Manager Date December 8, 1980

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION

RECEIVED
MAR 23 1981
OIL CONSERVATION DIVISION
SANTA FE

Form C-102
Supersedes C-128
Effective 1-1-65

WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Knox Industries, Inc.	Maddox	1

Unit Letter	Section	Township	Range	County
L	12	23-S	34-E	Lea

Actual Footage Location of Well:
1980 feet from the South line and 660 feet from the West line

Ground Level Elev:	Producing Formation	Pool	Dedicated Acreage:
3357'	Morrow	Antelope Ridge, NE	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

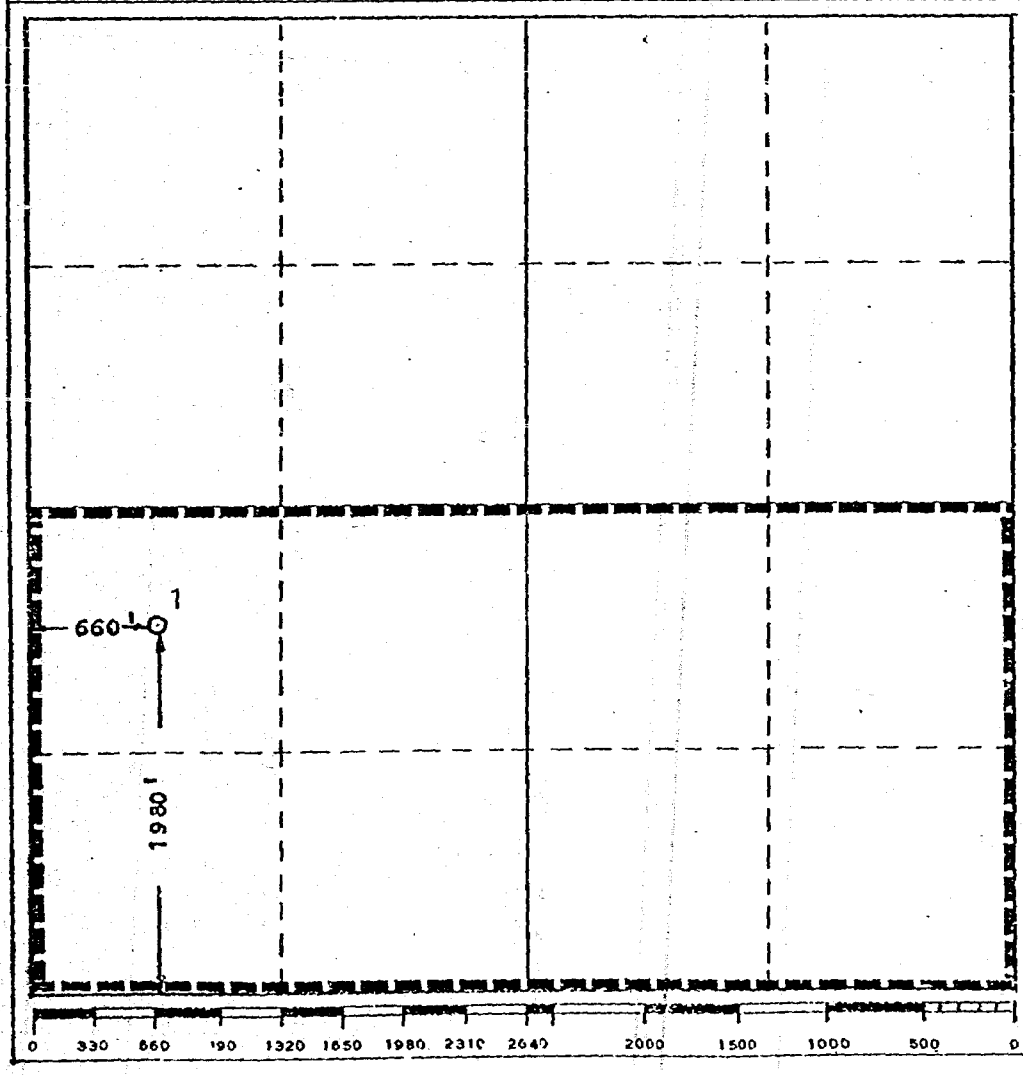
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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?

☐ Yes ☒ No 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 this form if necessary.) See reverse

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 Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Leland Francis

Name
Production Manager

Position
Knox Industries, Inc.

Company
December 8, 1980

Date

I hereby certify that the well location shown on this plat was plotted from field 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

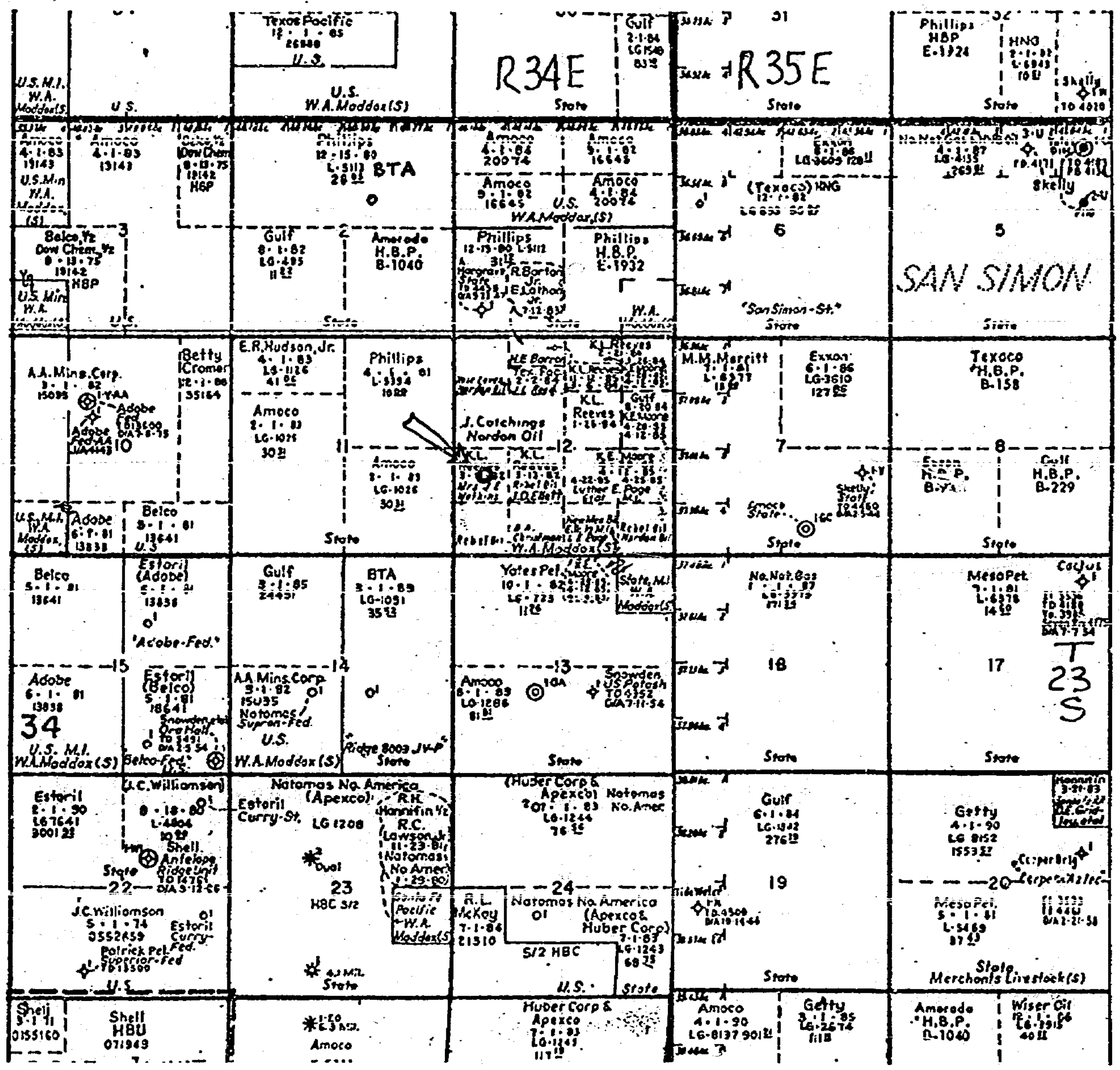
Mark E. Stroud

Certificate No.
2189

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

Tract	Owners	Acres
NW 1/4 SW 1/4 40/40	All	40
SW 1/4 SW 1/4 26.67/40	Powhatan Carter, Jr.	10
	Anderson Carter	10
	Dean Stoltz	6.67
NE 1/4 SW 1/4 23.33/40	Powhatan Carter, Jr.	5
	Anderson Carter	5
	Dean Stoltz	3.33
	Ken E. Moore	6.67
	John Ellett	3.33
SE 1/4 SW 1/4 40/40	All	40
NW 1/4 SE 1/4 29.82/40	Beulah Baird	3.33
	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.	1.04
	Ken E. Moore	1.04
	Aileen Olson	1.04
	Luella Collett	1.875
	Richard Moran, Trustee	4.84
SW 1/4 SE 1/4 29.835/40	Dorothy C. McFarland Est.	1.04
	Ken E. Moore	1.04
	Aileen Olson, et al	1.04
	Luella Collett	1.875
	Richard Moran, Turstee	4.84
	N.M. Bk. & Trust Co., Tr.	20
SE 1/4 SE 1/4 13.33/40	Powhatan Carter, Jr.	5
	Anderson Carter	5
	Dean Stoltz	3.33
NE 1/4 SE 1/4	Dorothy C. McFarland Est.	1.38
	Ken E. Moore	1.38
	Aileen Olson, et al	1.38
	Luella Collett	2.50
	Richard Moran, Trustee	4.84375
	Lois Horton	10.

Total committed Acres 224.6875 (70.15%)



R34E
R35E
T 23 S
SAN SIMON
"San Simon-St."
BTA
Phillips
H.B.P.
E-1932
Amoco
Gulf
Texaco
H.B.P.
B-158
Exxon
Amerada
H.B.P.
B-1040
J. Catchings
Nordon Oil
W.A. Maddox (S)
"Adobe-Fed."
Belco-Fed.
Natomas No. America
(Apexco)
Estoril
Curry-St.
J.C. Williamson
Shell
Antelope Ridge Unit
Getty
MesoPet.
Merchants Livestock (S)
Huber Corp &
Apexco
R.L. McKoy
S/2 HBC
HBC S/2
A.A. Mins. Corp.
Yates Pet.
Texas Pacific
Shell
HBU
State
U.S.

Offset Operators

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 Oil 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

GORDON S. KNOX
PRESIDENT

KNOX INDUSTRIES, INC.
P. O. BOX 3023
MIDLAND, TEXAS 79702
PHONE 682-6261

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,

Leland Franz

LF:bm
encl.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

NO. OF COPIES RECEIVED		
DISTRIBUTION		
SANTA FE		
FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RECEIVED
MAR 23 1981
OIL CONSERVATION DIVISION
SANTA FE

Form C-101
Revised 10-1-78

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5A. Indicate Type of Lease: State [ ] Fee [X]

5. State Oil & Gas Lease No.

1a. Type of Work

1b. Type of Well: DRILL [X] DEEPEN [ ] PLUG BACK [ ]
OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [ ]

7. Unit Agreement Name

2. Name of Operator
Knox Industries, Inc.

8. Farm or Lease Name
Maddox

3. Address of Operator
P. O. Box 3023, Midland, TX 79702

9. Well No.
1

4. Location of Well
UNIT LETTER L LOCATED 1980 FEET FROM THE South LINE
AND 660 FEET FROM THE West LINE OF SEC. 12 TWP. 23-S RGE. 34-E NMPM

10. Field and Pool, or Wildcat
Antelope Ridge, N.E.

12. County
Lea

19. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	15. Proposed Depth	19A. Formation	20. Rotary or C.T.
3357' GR	* Blanket	13,900	Morrow	Rotary

21B. Drilling Contractor: Willbros Drlg. Co.

22. Approx. Date Work will start: July 15, 1981

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
26"	20"	94#	40	4 yds. Redi-Mix	Surface
17-1/2"	13-3/8"	48#	600	450	Surface
12-1/4"	9-5/8"	36# & 40#	5,700	1075	2,500
8-3/4"	7-5/8"	29.70#	12,200	350	9,000
6-3/4"	5"	17#	13,900	245	11,800

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 & casing to 600 psi for 30 mins. Drill 12-1/4" hole to 5700' w/brine. Set 9-5/8" casing at 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. Run open hole logs. Set 7-7/8" casing at 12,200', cement w/350 sx. WOC 18 hrs. NUBOP's. Test BOP's & casing to 5000 psi for 30 mins. Drill out & drill ahead w/6-3/4" bit to 13,900, testing significant shows. Run open hole logs. If productive, run and cement 5" liner w/245 sx. MORT to complete.
Application is being sent this date to all off-set operators by certified mail.

* In process of secruring blanket bond.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed Leland Finn Title Production Manager Date December 8, 1980

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION

WELL LOCATION AND ACREAGE DEDICATION PLAT

RECEIVED
MAR 23 1981
OIL CONSERVATION DIVISION
SANTA FE

Form C-102
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section

Operator		Lease		
Knox Industries, Inc.		Maddox		Well No. 1
Unit Letter L	**Section** 12	**Township** 23-S	**Range** 34-E	**County** Lea
Actual Footage Location of Well: 1980 feet from the South line and 660 feet from the West line				
Ground Level Elev. 3357'	**Producing Formation** Morrow	**Pool** Antelope Ridge, NE		**Dedicated Acreage:** 320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

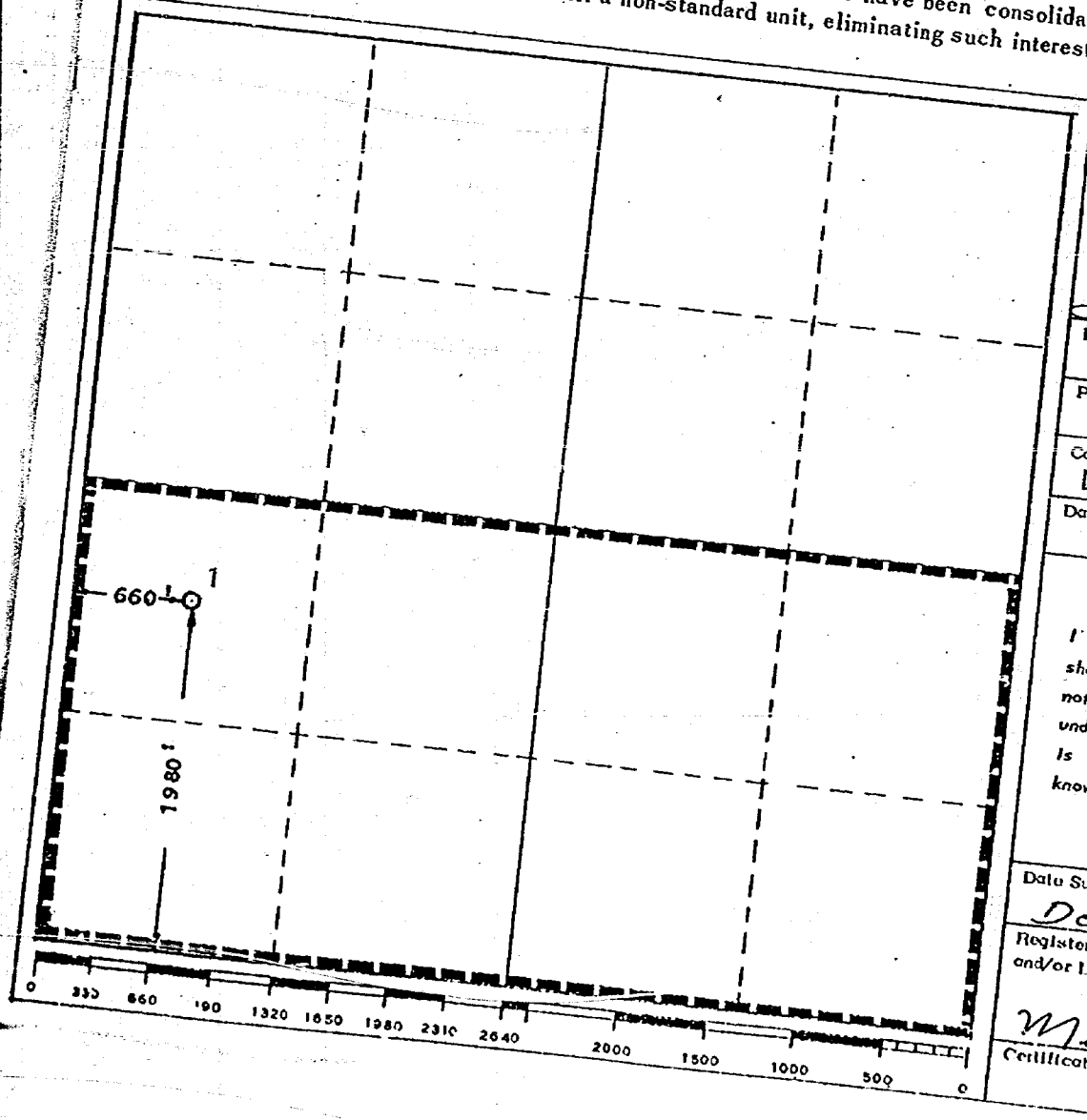
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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?

☐ Yes ☒ No 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 this form if necessary.) See reverse

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 Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Production Manager

Position: Knox Industries, Inc.

Company: December 8, 1980

Date

I hereby certify that the well location shown on this plat was plotted from field 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

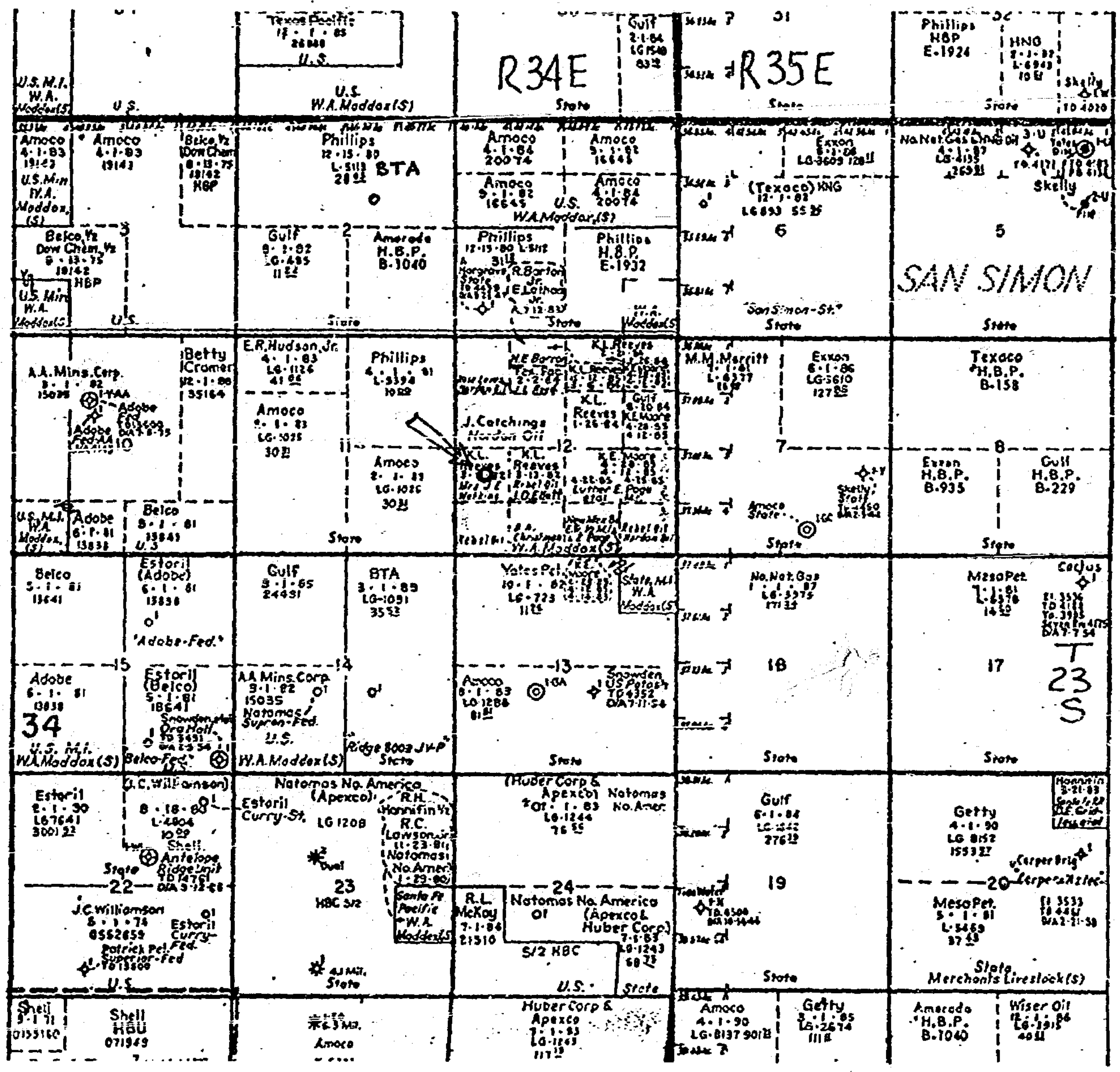
Registered Professional Engineer and/or Land Surveyor

Certificate No. 2189

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

Tract	Owners	Acres
NW 1/4 SW 1/4 40/40	All	40
SW 1/4 SW 1/4 26.67/40	Powhatan Carter, Jr.	.10
	Anderson Carter	10
	Dean Stoltz	6.67
NE 1/4 SW 1/4 23.33/40	Powhatan Carter, Jr.	5
	Anderson Carter	5
	Dean Stoltz	3.33
	Ken E. Moore	6.67
	John Ellett	3.33
SE 1/4 SW 1/4 40/40	All	40
NW 1/4 SE 1/4 29.82/40	Beulah Baird	3.33
	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.	1.04
	Ken E. Moore	1.04
	Aileen Olson	1.04
	Luella Collett	1.875
	Richard Moran, Trustee	4.84
SW 1/4 SE 1/4 29.835/40	Dorothy C. McFarland Est.	1.04
	Ken E. Moore	1.04
	Aileen Olson, et al	1.04
	Luella Collett	1.875
	Richard Moran, Turstee	4.84
	N.M. Bk. & Trust Co., Tr.	20
SE 1/4 SE 1/4 13.33/40	Powhatan Carter, Jr.	5
	Anderson Carter	5
	Dean Stoltz	3.33
NE 1/4 SE 1/4	Dorothy C. McFarland Est.	1.38
	Ken E. Moore	1.38
	Aileen Olson, et al	1.38
	Luella Collett	2.50
	Richard Moran, Trustee	4.84375
	Lois Horton	10.

Total committed Acres 224.6875 (70.15%)


R34E
R35E
SAN SIMON
T 23 S
Phillips
BTA
Amoco
Gulf
Amerada H.B.P. B-1040
W.A.Maddox(S)
Texaco
Exxon
Skelly
A.A.Mins.Corp.
Betty Cromer
E.R.Hudson Jr.
J.Catchings
K.L. Reeves
M.M.Merritt
Belco
Adobe
Estoril (Adobe)
'Adobe-Fed.'
Yates Pet.
MesoPet.
Cactus
Snowden
Estoril (Belco)
34
U.S.
State
Natomas No. America (Apexco)
R.L. McKoy
Huber Corp & Apexco
J.C.Williamson
Getty
Merchants Livestock(S)
Wiser Oil
Shell HBU

Offset Operators

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 Oil 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, INC.
P. O. BOX 3023
MIDLAND, TEXAS 79702

PHONE 682-6261

GORDON S. KNOX
PRESIDENT

March 18, 1981

Case 7225

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

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,

Leland Franz

LF:bm
encl.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

NO. OF COPIES RECEIVED		
DISTRIBUTION		
SANTA FE		
FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RECEIVED
MAR 23 1981
OIL CONSERVATION DIVISION
SANTA FE

Form C-101
Revised 10-1-78

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. Type of Well: OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [ ]

2. Name of Operator: Knox Industries, Inc.

3. Address of Operator: P. O. Box 3023, Midland, TX 79702

4. Location of Well: UNIT LETTER L LOCATED 1980 FEET FROM THE South LINE AND 660 FEET FROM THE West LINE OF SEC. 12 TWP. 23-S RGE. 34-E NMPM

5A. Indicate Type of Lease: STATE [ ] FEE [X]

5. State Oil & Gas Lease No.:

7. Unit Agreement Name:

8. Farm or Lease Name: Maddox

9. Well No.: 1

10. Field and Pool, or Wildcat: Antelope Ridge, N.E.

12. County: Lea

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
13,900	Morrow	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
3357' GR	* Blanket	Willbros Drlg. Co.	July 15, 1981

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
26"	20"	94#	40	4 yds. Redi-Mix	Surface
17-1/2"	13-3/8"	48#	600	450	Surface
12-1/4"	9-5/8"	36# & 40#	5,700	1075	2,500
8-3/4"	7-5/8"	29.70#	12,200	350	9,000
6-3/4"	5"	17#	13,900	245	11,800

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 & casing to 600 psi for 30 mins. Drill 12-1/4" hole to 5700' w/brine. Set 9-5/8" casing at 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. Run open hole logs. Set 7-7/8" casing at 12,200', cement w/350 sx. WOC 18 hrs. NUBOP's. Test BOP's & casing to 5000 psi for 30 mins. Drill out & drill ahead w/6-3/4" bit to 13,900, testing significant shows. Run open hole logs. If productive, run and cement 5" liner w/245 sx. MORT to complete.

Application is being sent this date to all off-set operators by certified mail.

* In process of secruring blanket bond.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed: Edmund Frans Title: Production Manager Date: December 8, 1980

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

RECEIVED
MAR 23 1981
OIL CONSERVATION DIVISION
SANTA FE

NEW MEXICO OIL CONSERVATION COMMISSION

WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
Knox Industries, Inc.	Maddox	1

Unit Letter	Section	Township	Range	County
L	12	23-S	34-E	Lea

Actual Footage Location of Well:
1980 feet from the South line and 660 feet from the West line

Ground Level Elev:	Producing Formation	Pool	Dedicated Acreage:
3357'	Morrow	Antelope Ridge, NE	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

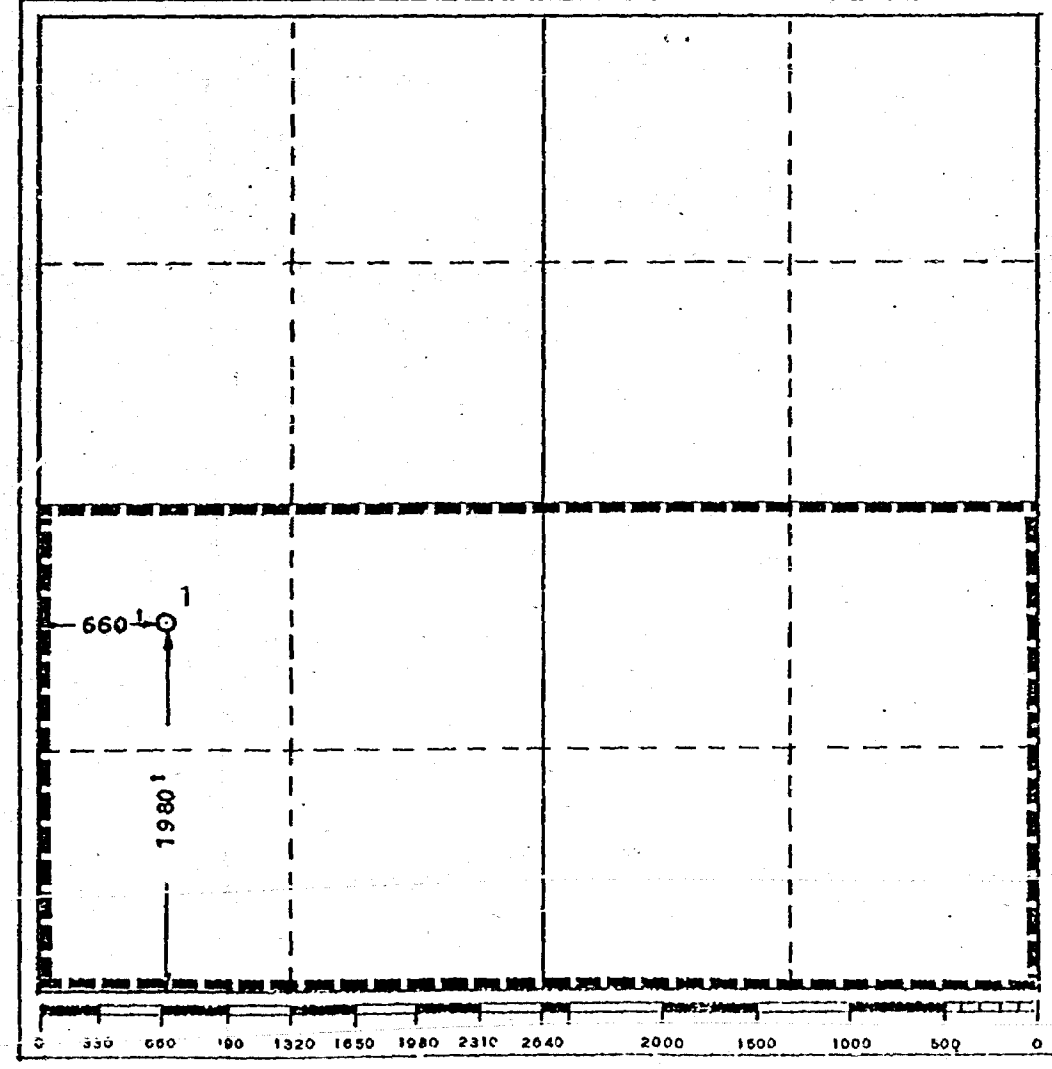
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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?

☐ Yes ☒ No 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 this form if necessary.) See reverse

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 Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Leland Adams

Name
Production Manager

Position
Knox Industries, Inc.

Company
December 8, 1980

Date

I hereby certify that the well location shown on this plat was plotted from field 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

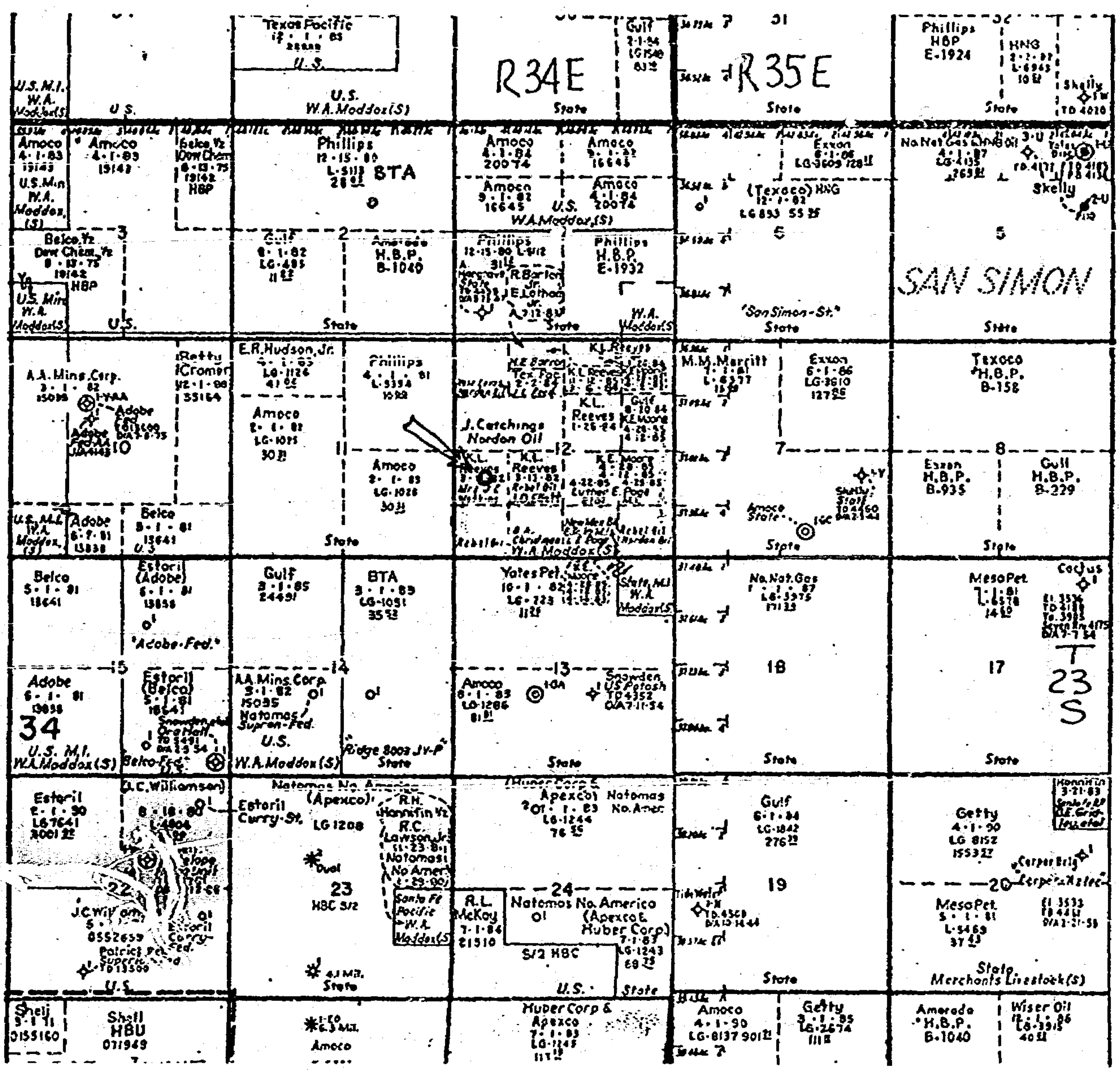
Mark E. Stroud

Certificate No.
2189

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

Tract	Owners	Acres
NW 1/4 SW 1/4 40/40	All	40
SW 1/4 SW 1/4 26.67/40	Powhatan Carter, Jr.	10
	Anderson Carter	10
	Dean Stoltz	6.67
NE 1/4 SW 1/4 23.33/40	Powhatan Carter, Jr.	5
	Anderson Carter	5
	Dean Stoltz	3.33
	Ken E. Moore	6.67
	John Ellett	3.33
SE 1/4 SW 1/4 40/40	All	40
NW 1/4 SE 1/4 29.82/40	Beulah Baird	3.33
	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.	1.04
	Ken E. Moore	1.04
	Aileen Olson	1.04
	Luella Collett	1.875
	Richard Moran, Trustee	4.84
SW 1/4 SE 1/4 29.835/40	Dorothy C. McFarland Est.	1.04
	Ken E. Moore	1.04
	Aileen Olson, et al	1.04
	Luella Collett	1.875
	Richard Moran, Turstee	4.84
	N.M. Bk. & Trust Co., Tr.	20
SE 1/4 SE 1/4 13.33/40	Powhatan Carter, Jr.	5
	Anderson Carter	5
	Dean Stoltz	3.33
NE 1/4 SE 1/4	Dorothy C. McFarland Est.	1.38
	Ken E. Moore	1.38
	Aileen Olson, et al	1.38
	Luella Collett	2.50
	Richard Moran, Trustee	4.84375
	Lois Horton	10.

Total committed Acres 224.6875 (70.15%)



R34E
R35E
T 23 S
SAN SIMON
"San Simon-St."
Texas Pacific
W.A. Maddox (S)
U.S.
State
Phillips
BTA
Amoco
Gulf
Amerada H.B.P. B-1040
Phillips H.B.P. E-1932
Phillips HBP E-1924
Skelly
Exxon
(Texaco) HNG
Belco
A.A. Mins. Corp.
Adobe
E.R. Hudson, Jr.
J. Catchings Nordon Oil
K.L. Reeves
M.M. Merritt
Texaco H.B.P. B-158
Exxon H.B.P. B-935
Gulf H.B.P. B-229
Amoco State
Estoril (Adobe)
"Adobe-Fed."
Yates Pet.
No. Nat. Gas
MesoPet.
Estoril (Belco)
Natomas Supron-Fed.
Ridge 8003 JV-P State
D.C. Williamson
Estoril Curry-St.
Natomas No. America (Apexco)
Apexco Natomas No. Amer.
Gulf
Getty
R.L. McKoy
Natomas No. America (Apexco & Huber Corp)
S/2 HBC
State Merchants Livestock (S)
Shell HBU
Huber Corp & Apexco
Amoco
Getty
Amerada H.B.P. B-1040
Wiser Oil

Offset Operators

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 Oil 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

DRAFT

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 7225

ORDER NO. R-6223

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~~ May 20, 19 81, at Santa Fe, New Mexico, before Examiner ~~Daniel S. Nutter~~.

NOW, on this _____ day of ~~April~~ July, 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/ 1980 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, ~~Pool~~, 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 ~~no~~ the offset operator to the west, Amoco Production Company, objected to the proposed unorthodox location.

(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~~ any productive sands which ~~would~~ 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 ~~a~~ 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.

(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 ~~Wolfcamp and Pennsylvanian~~ Morrow formations is hereby approved for the Knox Industries, Inc. Maddox well No 1 ~~Deep Unit Well No. 21~~ 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 ~~"BW" 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 ~~formation~~ ~~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 Knox Industries Maddox ~~Shell Empire Deep Unit Well No. 21~~ well No 1 located 1980 feet from the North line and 660 feet from the West line of Section

12, Township 23 South, Range 30 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.

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 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

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.

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 herein-above designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L
fd/

DRAFT

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 UNORTHODOX 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, 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 Order 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 tunc 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 copy of R-6722 to you?

Oil Conservation Division Hobbs, New Mexico

(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 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 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-PRORATED 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 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.

ASE NO.

7226

PLICATION,

RANSCRIPTS,

ALL EXHIBITS,

ETC.