CASE 7401: MORRIS R. ANTWEIL FOR AN UNORTHODOX OIL WELL LOCATION, LEA COUNTY, NEW MEXICO

W.N.M.C.F.

Their recommends
88.5% quality
Also thinks 10 BOPD
would pay out

Both have no
response no penalty
known: 1% penalty is applied
N/S factor = 1.0
E/W factor = 1.0
average of 2 examples 1.0 : 1.0 = 57.7%
2 wells 1.0 : 1.0 = 57.7%
well known 88.5%

Evaluators think
rec. for

Case No.

7401

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

December 18, 1981

Mr. William F. Carr
Campbell, Byrd & Black
Attorneys at Law
Post Office Box 2208
Santa Fe, New Mexico

CASE NO. 7401
ORDER NO. R-6858

Applicant:

Morris R. Antweil

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 Allen Brill

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. 7401
Order No. R-6858

APPLICATION OF MORRIS R. ANTWEIL
FOR AN UNORTHODOX OIL WELL
LOCATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 4, 1981, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 18th day of December, 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, Morris R. Antweil, seeks authority to drill a Grayburg-San Andres oil well at an unorthodox location 2410 feet from the North line and 330 feet from the West line of Section 21, Township 18 South, Range 38 East, NMPM, Hobbs Pool, Lea County, New Mexico, and to dedicate thereto in the Hobbs Pool the SW/4 NW/4 of said Section 21.

(3) That the SW/4 NW/4 of said Section 21 is offset to the west, southwest, and south by lands within the North Hobbs Grayburg-San Andres Unit Area operated by Shell Oil Company, and upon which secondary recovery operations are being conducted.

(4) That Shell Oil Company appeared at the hearing and objected to the proposed unorthodox location inasmuch as it is planned to place the well directly offsetting the proposed unorthodox location to the west on water injection, and approval of the subject application without penalty according to Shell, would cause oil to migrate off the North Hobbs Grayburg-San Andres Unit Area onto Antweil's property for production at the proposed unorthodox location, thereby impairing the Unit Owners' correlative rights.

(5) That the proposed location is 100 feet south of a well drilled at a point 2310 feet from the North line and 330 feet from the West line of Section 21 by the applicant in 1952, said well having been plugged and abandoned as a dry hole after having recovered only oil-cut mud, water-cut mud, and oil and gas-cut mud on four separate drill stem tests in the Grayburg and San Andres formations, and swabbing dry or swabbing sulphur water only from three attempted completion intervals, one each in the Grayburg formation, Upper San Andres formation, and Lower San Andres formation.

(6) That the structural dip in the general area in question is to the Northeast, and it is reasonable to assume that those lands in the SW/4 NW/4 of Section 21 lying North and East of the aforesaid dry hole are not productive in the Grayburg or San Andres formation.

(7) That assuming that the productive limits of the Grayburg and San Andres formations, going Northeast from the main body of the pool, reach to but do not extend beyond the surface location of the aforesaid dry hole, then there are approximately 5.8 acres of productive formation in the SW/4 NW/4 of Section 21 belonging to applicant.

(8) That the unorthodox location requested by the applicant should be approved in order to permit him to produce his share of the oil and gas in the Hobbs Pool, thereby preventing waste, but the production from said well should be curtailed in order to protect the correlative rights of the owners of offsetting property.

(9) That the applicant has proposed a formula for determining the penalty which should be assessed against his proposed well, said formula being a combination of percentage impingement factors on offsetting properties on a footage basis on a north/south axis and on an east/west axis compared to a standard location, as well as a percentage impingement factor on offsetting properties on an acreage-drainage-beyond-lease-line basis compared to a standard location, and which in the case at hand would yield an allowable penalty factor of 12.1 percent and an allowable of 87.9 percent of top allowable for the Hobbs Pool.

(10) That the aforesaid formula has been utilized by the Division on previous occasions and has been found to be fair and equitable in certain cases involving unorthodox locations, but does not take into account the non-productive acreage which may be included in the proration unit dedicated to a well drilled at an unorthodox location.

(11) That in the instant case where only 5.8 acres of productive lands may be attributed to the well, the aforesaid formula yielding 87.9 percent of top allowable for the pool imposes an insufficient penalty on the proposed location and does not protect correlative rights, and should not be used.

(12) That in the absence of any other formula yielding a more equitable penalty, a straight productive acreage ratio should be applied in this case and the allowable factor for a well drilled at the proposed location should be (5.8 ÷ 40) x 100, or 14.5 percent.

(13) That any such well drilled at said location should be permitted to produce 14.5 percent of its productivity or 14.5 percent of the top unit allowable for the Hobbs Pool, whichever is less, provided however, that a reasonable minimum allowable should be provided in order to avoid premature abandonment and prevent waste.

(14) That ten barrels per day is a reasonable minimum allowable and should be established for a well drilled at the subject unorthodox location.

(15) That approval of the application in accordance with the above Findings is in the interest of conservation, will prevent waste, and protect correlative rights.

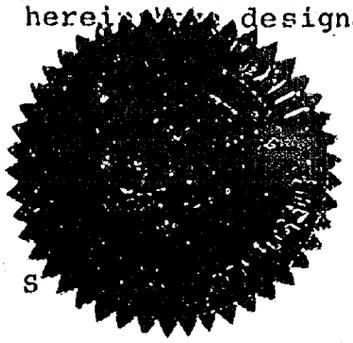
IT IS THEREFORE ORDERED:

(1) That the applicant, Morris R. Antweil, is hereby authorized to drill a well to test the Grayburg and San Andres formations at an unorthodox location 2410 feet from the North line and 330 feet from the East line of Section 21, Township 18 South, Range 38 East, NMPM, Hobbs Pool, Lea County, New Mexico.

(2) That said well, if completed as a producer from the Hobbs Pool, shall have an allowable factor of 14.5 percent of its productivity or 14.5 percent of top unit allowable for the Hobbs Pool, whichever is less, provided however, that said allowable factor shall not be imposed if it results in an allowable of less than ten barrels per day.

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

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



STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

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

EXAMINER HEARING

IN THE MATTER OF:

Application of Morris R. Antweil for an unorthodox oil well location, Lea County, New Mexico. CASE 7401

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: William F. Carr, Esq.
CAMPBELL, BYRD, & BLACK P.A.
Jefferson Place
Santa Fe, New Mexico 87501

A P P E A R A N C E S

For Shell Oil Co.: Allen C. Brill, Esq.
MONTGOMERY & ANDREWS
Paseo de Peralta
Santa Fe, New Mexico 87501

I N D E X

I N D E X

E X H I B I T S

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

We'll call next Case 7401.

MR. PEARCE: Application of Morris R. Antweil for an unorthodox well location, Lea County, New Mexico.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the law firm Campbell, Byrd, and Black, P. A., of Santa Fe, appearing on behalf of the applicant.

I have one witness.

MR. BRILL: Mr. Examiner, my name is Allen Brill, with the law firm of Montgomery and Andrews, P. A., and I represent Shell Oil.

We will have two witnesses.

(Witnesses sworn.)

R. M. WILLIAMS

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Will you state your full name and place of residence?

A. My name is R. M. Williams. I live in Hobbs, New Mexico.

Q. Mr. Williams, by whom are you employed and in what capacity?

A. Employed by Morris R. Antweil as an engineer.

Q. Have you previously testified before this commission or one of its examiners and had your credentials as an engineer accepted and made a matter of record?

A. Yes, I have.

Q. Are you familiar with the application filed on behalf of Morris R. Antweil in this case?

A. Yes, I am.

Q. And are you familiar with the subject area?

A. Yes.

MR. CARR: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q. Mr. Williams, will you briefly state what Morris R. Antweil seeks with this application?

A. We seek approval of an unorthodox loca-

tion in the southwest quarter of the northwest quarter of Section 21, Township 18 South, Range 38 East, in the Hobbs Grayburg-San Andres Pool. We seek approval of a location 2410 feet from the north line and 330 feet from the west line of that section.

Q. Have you prepared certain exhibits for introduction in this case?

A. Yes, I have.

Q. Will you please refer to what has been marked for identification as Antweil Exhibit Number One, identify this and explain to Mr. Nutter what it shows?

A. Exhibit Number One is a land map in the vicinity of the proposed well. The proposed location is shown on the map and the Hobbs -- North Hobbs Unit boundary is -- has been outlined in red to make it clear. The unit area is to the south and west of that boundary line, and then, also, the wells in the vicinity of the proposed location are shown on the map.

Q. Mr. Williams, as I look at the proposed location, it appears that there is a dry hole immediately offsetting that, is that correct?

A. Yes. This was a well that was drilled in 1952 by Morris Antweil and was unsuccessful.

Q. Have you reviewed the data on that well?

A. Yes, I have.

Q. And what conclusions can you reach about that well?

A. The -- our conclusions were that the well was -- was drilled too deep, got in big water, and then completion attempts were unsuccessful.

Q. In your opinion does that well condemn the acreage that you propose to dedicate to the subject well?

A. No, it doesn't, or we wouldn't be proposing to drill another well.

Q. And the proposed well is 100 feet from the dry hole?

A. Yes, it is.

Q. Would you now refer to what has been marked for identification as Antweil Exhibit Number Two and review this for Mr. Nutter?

A. Exhibit Number Two is a plat of the surface use of the land in the vicinity of the proposed location. This is the College Park Industrial Sub-Division to the City of Hobbs, and this was the map they used for designating the third unit to that industrial sub-division.

On their sub-division map, then, I have had located the -- the existing dry hole, the old well, that is designated there Antweil Well Location, just -- just south

of Commerce Street, and then in red I have designated the proposed location that we're considering in this case, and it is located 100 feet south of the existing dry hole.

I think the review of the map indicates that available surface area to drill a well on this 40-acre proration unit is somewhat limited, and this is why we are seeking an unorthodox location.

Q. Will you now refer to Antweil Exhibit Number Three and review this for Mr. Nutter?

A. Exhibit Three is a set of several letters concerning this application.

The first letter by Morris R. Antweil, dated August 14th, 1981, is our application for administrative approval of this unorthodox location, and the letter sets out the reasons for the unorthodox -- request for an unorthodox location.

The second letter, on the letterhead of Rose and Johnson, Attorneys at Law, signed by Larry Johnson, dated the 12th of August, is a letter from the attorney of the surface landowner of the College Park Sub-Division, more or less endorsing our location, pointing out it is desirable to them that we not locate our well within the platted sub-division.

The third letter is a letter on our

letterhead, dated August 14th, to Shell Oil Company, furnishing them a copy of the application for administrative approval.

The next letter is a letter on Shell Oil Company's letterhead, August 28, to the Oil Conservation Commission, objecting to the administrative approval of the unorthodox location, and setting out several possibilities that may be acceptable in -- and meeting this possibilities might make the application acceptable to them.

The -- I called Bob Phillips. I talked to Bob Phillips on the 16th of September concerning these possibilities and the possibilities really seemed to boil down into two possibilities. One, establishing a target area for the bottom of the well that -- for us to hit in drilling the well, and the second, a reduced allowable for the well.

And so subsequent to that, we replied to Shell, our letter of October 9th on our letterhead to Shell Oil Company, setting out one possibility of limiting the deviation of the -- of the well that might be -- meet their guidelines, or the -- pointing out that the other possibility of hitting a bottom hole target, we thought, was not feasible because of the majority of the section that you're drilling in drilling a well of this depth will be the salt section, and control of the deviation in a salt section would -- I would think would be impossible.

And then the final possibility of establishing reduced allowable, we pointed out we would - felt that this was probably our best chance for a settlement and that we would request that the application be set for hearing for the Commission to consider the -- that -- that alternative.

And the -- the last letter is a letter of 27th October furnishing Shell notice of this hearing.

Q. Mr. Williams, are you prepared to make a recommendation to the Examiner as to a penalty that should be applied to production from this well?

A. Yes. Our recommendation is really that there would be no penalty assessed the well because we do not feel that the 100-foot of -- the well being 100-foot unorthodox poses any threat to the correlative rights of the unit, but in the event that a penalty determination was considered, we have looked at methods the Division has employed in the past to determine a penalty factor, and this has been based on the average of three factors: A north/south unorthodox factor, an east/west unorthodox factor, and then a net acres of drainage encroachment factor.

The proposed unorthodox location is 230 feet from the south line and 0 feet from the west line of the 40-acre proration unit, this is, not of the section, but of the 40-acre proration unit.

These factors, then, can be determined. The north/south factor would be 230 divided by 330, or 69.7 percent. The east/west factor is not unorthodox; therefor, it would be 100 percent; and the net acre factor, I plotted the acres of the well at the -- at a standard location 330 by 330, and compared this to the drainage area, 40-acre drainage area, of a well at the proposed location, and there is an additional 2.4 acres of drainage area encroachment by the well being unorthodox. This would be a net acre factor of 94 percent.

If we average these three factors, then, you would get a penalty factor of 87.9 percent.

This type of calculation is based on the calculation method that the Division used in Order No. R-6468.

Q. Mr. Williams, in your opinion would granting this application be in the best interest of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, it would. We have the leasehold interest in this 40-acres and we would like to assume the risk of drilling a well and we're just looking for a location that we can drill it on.

We had difficulty with the surface location; therefor, we're asking for an unorthodox location.

Q. Were Exhibits One and Two prepared by you?

A. Yes, they -- Exhibit Two is actually the land surveyor's plat that I plotted the proposed location on.

Q. Was Exhibit One prepared by you?

A. Yes, it was.

Q. And was Exhibit Three compiled by you, being a list of letters?

A. Yes.

MR. CARR: At this time we would offer Applicant's Exhibits One through Three.

MR. NUTTER: Applicant's Exhibits One through Three will be admitted in evidence.

MR. CARR: I have nothing else.

MR. NUTTER: Any questions of the witness?

MR. BRILL: I have some questions, Mr. Examiner.

CROSS EXAMINATION

BY MR. BRILL:

Q. Mr. Williams, this is a 40-acre unit, is that correct?

A. That's correct.

Q. And what is the target formation? Have you designated one?

A. That would be the Grayburg-San Andres pay zone but at this location it would undoubtedly be the Grayburg formation that you would have a chance to make a completion in.

Q. I think you indicated in a letter that is contained in your Exhibit Three that you were unable to pinpoint a bottom hole location, is that correct?

A. We think that to directionally drill a wellwhen the majority of the interval to be penetrated is a salt section would be extremely difficult, expensive, and possibly not feasible.

Q. You said that the majority of the interval to be penetrated consisted of a salt layer. How thick is that salt layer?

A. The bottom of the salt here would be at about 20, what, 2400 feet.

Q. And the top?

A. Well, the top is 1500, or something. Of course, any control that you had above that interval would be lost in a salt interval.

Q. And are you saying, then, that it is impossible for you to designate a bottom hole location?

A. It would be hard to say that it was impossible. We say -- I think it would be extremely difficult and extremely expensive, and not be -- not be considered feasible at this depth well.

Q. Mr. Williams, are you willing to survey the bottom hole location upon completion?

A. Yeah, I don't -- I don't think that would be a problem. We can -- we'll take the standard deviation test, or this well would be surveyed.

Q. So you are willing to conduct a survey of the bottom hole location?

Did I understand your testimony on direct to be that you felt that the well that was located 330 feet from the south line was not a dry hole?

A. I think -- yes, this was my testimony. I think that's obvious or we wouldn't be proposing to drill another well.

Q. If I may show you what we have marked as our Exhibit Number Two, and ask if you recognize what that is.

A. Yes, it's the -- part of the completion form for the -- apparently for the well. There's no heading on it.

Q. There is a location there, is there not?

A. It would be hard to say that it was impossible. We say -- I think it would be extremely difficult and extremely expensive, and not be -- not be considered feasible at this depth well.

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A. I think -- yes, this was my testimony. I think that's obvious or we wouldn't be proposing to drill another well.

Q. If I may show you what we have marked as our Exhibit Number Two, and ask if you recognize what that is.

A. Yes, it's the -- part of the completion form for the -- apparently for the well. There's no heading on it.

Q. There is a location there, is there not?

A. Right.

Q. Is that location the same location as the abandoned well on your unit?

A. Apparently.

Q. And what were the results there that are summarized at the bottom?

A. It shows that they tested the three intervals and swabbed dry, swabbed sulphur water, swabbed sulphur water.

Q. And what was the amount of sulphur water in the two tests?

A. Two and a half barrels on the one test and nineteen barrels an hour on the other test.

Q. Would you view either of those figures as being excessive?

A. I don't know what you mean by excessive. You could get a lot more water than that out of the San Andres.

Q. Well,did I understand your testimony to be on direct that the reason that this well was plugged and abandoned was not that it was a dry hole but that it penetrated a water level and that that was the reason that the well was not productive?

A. This is our analysis of it, that the water was penetrated, that with today's methods and today's

understanding of the -- of the completion practices along the edge of the Hobbs Unit, the Grayburg formation, that we think we can make a well, but we need to stay out of this water.

Q. Were the figures given there, though, for the amount of sulphur water so excessive as to prevent this well from being productive?

A. Yes, I think so.

Q. So 19-1/2 is quite excessive then in your opinion? 19-1/2 barrels?

A. Yeah. I mean this well wasn't completed.

Q. Well, I realize that, and in fact, what's this summary at the bottom in terms of it being a dry hole, no oil production, is that --

A. No oil production.

Q. -- what it states?

A. It's a dry hole.

Q. Okay, but you're stating now that the reason it was not completed and it never became a productive well is because of the water problem, is that it?

A. Yes.

Q. And this 19-1/2 is indicative of what the extent of that water problem was, 19-1/2 barrels.

A. I don't know what you mean. It -- it

produced 19-1/2 barrels, tested, apparently.

Q. But is that or is that not so excessive as to be the reason that this well was never completed and never produced?

A. Yes.

MR. NUTTER: Mr. Brill, I think probably what Mr. Williams is intending to convey is that maybe the water itself was not excessive but since there wasn't any oil with it, the ratio is excessive.

MR. BRILL: Mr. Examiner, I --

MR. NUTTER: Is that what you mean, Mr. Williams?

A. Well, the water production at 19-1/2 barrels an hour at that time I think would preclude any further attempt to complete the well.

MR. NUTTER: Did it make any oil with that water?

A. This was in 1952 and people weren't perforating and fracing the Grayburg section and so this at that time was a dry hole.

MR. NUTTER: You didn't make any oil with that water?

A. No.

MR. BRILL: Mr. Examiner, I think that's

exactly what our point is, that no oil was made.

Q. I'd like to also show you an exhibit that has been marked as Exhibit Number Eight and ask you if you recognize -- it's a collection of pictures, and I ask you if you recognize any of the scenes pictured there?

A. I think that picture A-1 would be the only one you could say that there was anything there that you could recognize. That's -- that does look like a corner of Commerce Street.

Q. And do those pictures indicate that there is anything that would prevent you from drilling a well closer to the location of the abandoned well or 100 feet east of the abandoned well? Do they indicate that there is any -- anything there physically present at this time?

A. No.

Q. And have you been on the site? I assume you have.

A. Yes.

Q. And there isn't anything presently existing that would prevent you from drilling a well at a location other than your proposed location.

A. The -- there's no buildings there. There is a dedicated sub-division, however.

Q. Referring to your Exhibit Number Two, if

I may, the location of the abandoned well is indicated here, am I correct?

A. That's right. The one designated Antweil Well Location.

Q. And am I also correct in viewing this as showing nothing in the immediate vicinity of the abandoned well or 100 feet east of the abandoned well as shown on this sub-division plat?

A. That's right.

Q. Mr. Williams, is it not at least one of the reasons that you are proposing this location that you would have to admit that the abandoned well is a dry hole and that you're attempting to move closer to the pool that's located in the North Hobbs Unit?

A. The way you phrase your question, first, we really don't believe that drilled today, that the existing well would be a dry hole. We think that with today's technology, completion practices, that that would -- could be completed as a producer in the -- in the Grayburg section, and this has been done many times along the flank of the Hobbs structure.

The -- we don't -- we do not feel that the well can be re-entered economically. The way it was abandoned, the risks you assume to re-enter it, we believe

overweigh the -- what you have to save in drilling costs, and so we propose to drill a new well.

We propose to move the location to be more beneficial to us, as we see it, up structure rather than to the east or to the north.

Q. So the sole reason for your proposing this location is not that the developer of this sub-division would prefer?

A. Yeah, I -- we --

Q. It is advantageous to you as well?

A. I think it's more advantageous to us to move to the south. We -- I think it's impossible for us to move to the north and -- and have a location, say, on the street. This has been dedicated by the City of Hobbs. I don't think we could get that done.

Q. Why would the risk of re-entering this abandoned well be so high? I think that's what you said.

A. The mechanical condition it was left in, the 7-inch was cut off and pulled. On re-entry you never know what was left in the hole, and though you have to run a full string of pipe, you're not -- you're not gaining any pipe in ground by making a re-entry. The risks are high and the savings aren't too great.

Q. And it has nothing to do with your eval-

uation of the productive history of lack of it of the abandoned well?

A. No. We -- we looked at the possibility, felt that we could get 5-1/2 inside that 7-inch and cement at the bottom and perforate the interval above the water, and treat those successfully, that we could make a well.

Q. Is it fair, Mr. Williams, to say that your recommendation as to penalty assumes that all of your unit is productive?

A. I don't think that was part of the assumption.

Q. So you still think that formula would be appropriate if, for instance, 75 or 80 percent of your unit could be shown to be nonproductive?

A. This was a method that has been used by the Commission and there is some precedent for -- the Division, and there's some precedent for it. That was the only reason that we inserted it in our testimony.

Q. Is it not the case, however, Mr. Williams, that that formula is applied only when drainage is an issue and when the extent of the productive acreage is not an issue?

A. I don't -- I don't that to be a fact or not.

Q. What production do you feel that you must have on a barrel per day basis before this well would pay out?

A. Oh, I think if we could get in the range of 20 barrels minimum, it would be attractive.

Q. It would be attractive?

A. To drill.

Q. Would you drill the well with less than 20 barrels?

A. No, I think we'd have to anticipate being able to get 20 barrels a day to justify drilling it.

MR. BRILL: No other questions.

MR. NUTTER: Are there any other questions of Mr. Williams? He may be excused.

JIM STEVENS

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

DIRECT EXAMINATION

BY MR. BRILL:

Q. Would you please give your name and address?

A. My name is Jim Stevens. I live in

Houston, Texas.

Q. What is your occupation, Mr. Stevens?

A. I'm an engineer in the Drilling Department of Shell Oil Company in Houston.

Q. Have you testified before the Division before?

A. No, I haven't.

Q. Would you then briefly summarize your professional qualifications?

A. I have a BS degree in mechanical engineering from Texas Tech University. I graduated in 1980. I have been employed by Shell since then.

Q. Are you familiar with the application at issue here, Case Number 7401?

A. Yes, I am.

MR. BRILL: Are the witness' qualifications acceptable as a petroleum --

MR. NUTTER: Yes, they are.

MR. BRILL: -- engineer?

Q. Mr. Stevens, did you hear the testimony offered by Mr. Williams concerning the difficulty of pinpointing a bottom hole location?

A. Yes, I did.

Q. And did you also hear his explanation

concerning the salt layer?

A. Yes, I did.

Q. Do you have any comments with respect to that testimony?

A. Well, in our Denver Unit we have in 1981 drilled four directional wells. The geology there is very similar to this. It does contain a salt section and we successfully drilled those directionally.

We didn't encounter any problems of deviation control or anything like that; directional control, I should say.

We are anticipating in the North Hobbs Unit itself to drill in the first quarter next year five directional wells in the North Hobbs Grayburg-San Andres Unit.

Q. Do you feel that the salt layer presents any obstacle at all to pinpointing a bottom hole location at this particular location?

A. No, I don't.

Q. Mr. Stevens, do you feel that a failure to pinpoint a bottom hole location would threaten Shell's correlative rights?

A. Yes, I do.

MR. BRILL: I have no other questions.

MR. NUTTER: Any questions of this wit-

ness?

MR. CARR: Yes, I have a couple.

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Stevens, you indicated that you've been involved with the drilling -- directional drilling of several wells, is that correct?

A. I have been working in the Drilling Department, yes.

Q. What does directionally drilling a hole do to the cost of a well?

A. It does increase it. You have to have supervision, directional supervision --

Q. Is it a substantial cost in drilling a well?

A. Depending on what you call substantial. As opposed to the total well project, no.

Q. Each of the wells that you were directionally drilling, were they -- what quality well were you attempting to drill at that time? Were they a better well than what you're looking at in this area?

A. They were infill wells. Due to surface problems we had to directionally drill them.

Q. And these directional infill wells, did you have data that would indicate to you that you were likely to make a commercial well by directionally drilling?

A. I don't know the economics of it. I don't.

Q. Were these infill wells in the Wasson Unit, is that what you said?

A. Yes, sir.

Q. And is that known to be a very good producing unit? The Wasson Unit?

A. Yeah, I believe so.

MR. CARR: I have no further questions.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Stevens, you mentioned those wells over there in that Wasson Unit were -- I believe that's San Andres production, isn't it?

A. That's true, yeah.

Q. Is that Grayburg in there, too?

A. I don't believe so, no.

Q. Okay, now you mentioned you had a salt section. What was the top of the salt in that area?

A. The top of the salt is, let's see, it's

about 2300, 2400 feet.

Q. The top of the salt is?

A. Yeah.

Q. What's the base of the salt?

A. It's roughly 800 feet, I think.

Q. Thick?

A. It's anhydrite salt stringers for a considerable part of the wellbore.

Q. So --

A. Very similar to this out here in the North Hobbs.

Q. Well, now, Mr. Williams, when you mentioned that the base of the salt in here would be approximately 2300, are you talking about the base of the salt, pure salt, or the base of the anhydrite stringers?

MR. WILLIAMS: On the salt anhydrite stringers the -- would be 23 or 2400, somewhere in that vicinity I would think. I didn't work it up.

Q. That wouldn't be the base of the pure salt; that's the base of this mixture of anhydrite and salt.

MR. WILLIAMS: There's all stringers through there of anhydrite and ledges, you get ledges pretty well all the way up through the salt.

Q. Well now, Mr. Stevens, you stated that

the top of the salt was about 2300 and then you'd have about 800 feet of salt and anhydrite salt stringers.

A. Just a minute, I have a cross section of that area.

Okay, the Salado formation over there comes in, well, about 2400, what I said, and we have salts and anhydrites to, okay, one, two -- I guess approximately, if you're going to consider salt and anhydrite stringers, for probably 1500 feet total.

The salt section itself, the real almost pure, would be approximately 800 feet.

Q. That would bring your anhydrite and salt stringers approximately 1500 feet thick?

A. Uh-huh.

Q. So the base would be about 3900?

A. That's -- that's correct.

Q. And then what's your pay over there?

A. Okay, our pay is below 4300. 43 to 5250.

Q. So you would only have 400 feet from the base of the salt anhydrite stringers down to the top of the pay?

A. Excuse me?

Q. Well, you said the base of the salt would be about -- the salt and anhydrite stringers would be

about 3900.

A. Right.

Q. And your pay is about 4300, so you'd only have about 400 feet, then, from the base of the salt anhydrite stringers --

A. Yes.

Q. -- to the top of the pay?

A. It's -- that's the San Andres top and it's really, the main pay is below the 4300 somewhat.

Q. How deep did you drill the wells?

A. 5250 on an average.

Q. 5250. Okay, 5250, then, for TD.

Well, that would apparently give you what I call solid formations from about 3900 feet on down to TD, or 1350 feet total, is that correct?

A. Yes, pretty well, yes, sir.

Q. And you would have -- in other words, you'd have 1350 feet in which you could control your directional drilling.

A. We -- we kicked these off in the Rustler formation which is above the salt and we directionally drilled through all of the salt.

Q. And you maintained control through the salt?

A. We maintained control.

Q. Did you encounter any exceptional difficulty in maintaining control through the salt beds?

A. No, we don't. The key to successfully drilling through a salt is to have a saturated brine mud system. If you have that, there are no -- no problems.

In fact, in talking with the directional people, company, they prefer to drill directionally through the salt because of -- because it drills quicker and control can be obtained.

Q. You don't know what percentage of additional cost would be chargeable to those wells because of having to directionally drill them?

A. Well, as a comparison, I guess, okay, one of our wells total to drill and complete was approximately $330,000. Of that directional services were $24,000, so it's a pretty small fraction.

Q. That's less than ten percent, isn't it?

A. It's -- yes, it's real small.

MR. NUTTER: Are there any other questions of Mr. Stevens? Mr. Carr.

RECROSS EXAMINATION

BY MR. CARR:

Q. Mr. Stevens, I believe you indicated that the directional services were less than ten percent of the drilling costs of that well, is that right?

A. Yes, that's correct.

Q. Does directional drilling take a longer time -- does it take a longer period of time to directionally drill a well?

A. Yes, it does.

Q. And how much additional rig time would you be looking at?

A. Okay, a rule of thumb on that would be one-third of, say, the interval that you're going to be drilling a normal straight hole, you'd take one-third of that and add that to your straight hole days.

Q. So it would increase your drilling cost by a third?

A. Well, it would -- you'd have -- yeah, I guess you could say that.

You would have those additional days of rig time, that is correct.

MR. CARR: Nothing further.

MR. NUTTER: Are there any other questions

of the witness?

MR. BRILL: I have one more.

REDIRECT EXAMINATION

BY MR. BRILL:

Q. When you say that it increases it by one-third, you just mean hole time, don't you?

A. Just drilling time, penetration.

MR. BRILL: Nothing else.

MR. NUTTER: The witness may be excused.

WILLIAM LANCASTER

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

DIRECT EXAMINATION

BY MR. BRILL:

Q. Please state your name and address.

A. William Lancaster.

Q. Your occupation?

A. Reservoir engineer.

Q. Mr. Lancaster, have you testified before the Division before as a reservoir engineer and had your qualifications as an engineer accepted and made a matter of

record?

A. Yes.

Q. Now, are you familiar with the application at issue here, Case Number 7401?

A. Yes.

MR. BRILL: Are the witness'qualifications acceptable?

MR. NUTTER: They are.

Q. Mr. Lancaster, have you prepared certain exhibits to explain Shell's views as to the application at issue here?

A. Yes, I have.

Q. Referring to those exhibits, would you explain essentially what Shell's position is?

A. Shell's position basically is that the dry hole that was drilled back in 1952 condemned everything down dip in this area.

Q. Now on the basis --

A. From production.

Q. -- of your exhibits, what do Exhibits One and Two show about the abandoned well in this unit?

A. Okay, Exhibits One and Two are the drill stem test data and the production test data, basically. The drill stem test data number one,

through three were in the Grayburg of which they recovered little or nothing. Drill Stem test number four was a test of the San Andres interval.

And then when put on production the Grayburg intervals, or the Grayburg interval basically swabbed dry. The San Andres swabbed, the upper interval swabbed 2-1/2 barrels an hour and then they evidently deepened it and swabbed 19-1/2 barrels.

Q. Mr. Lancaster, did you hear Mr. Williams comments that his primary target area was the Grayburg?

A. Yes.

Q. Do you have any reaction to that?

A. Well, I would say it's our feeling that again this well has condemned the Grayburg in this area, the Grayburg area down dip from this well.

Q. Do you think if any area is -- any formation is the most likely to be productive that it's the Grayburg or the San Andres?

A. Well, if they could find San Andres above the water level it would probably be more productive than the Grayburg.

Q. The TD figure that's on Exhibit Number One, is that correct? On Exhibit Number One, the T -- the total depth figure?

A. No, the TD listed doesn't agree with the drill stem testing or the production testing. They're deeper. They evidently at some point deepened it, and I don't know why it wasn't reported.

Q. Do you have any views with respect to Mr. Williams comments that the reason that this well was abandoned?

A. Well, again, we disagree in the point that he thinks that the Grayburg could be made productive. I think that the recovered drill stem tests, typical of tests one, two, three, we would probably abandon the well.

And if you completed it and swabbed it dry, this is an indication that there's nothing there, that your permeability is very, very low.

Q. In Exhibit Two, the results of the production tests, are they summarized there?

A. Yes.

Q. And what does that say on Exhibit Two?

A. Well, the first test from 4100 to 4230, basically, is the test of the Grayburg, which they swabbed dry.

The second test from 4254 to 71 based on, again, this is based on our structural maps, this is the Upper San Andres where they swabbed 2-1/2 barrels of sulphur

water per hour.

And then 4271 to 7294 would be production test of the San Andres that we indicate to be below the water level, and that they did get water.

Q. Referring to Exhibit Three, what does that exhibit --

A. Exhibit Three is a structural map on the top of the basal Grayburg taken from the engineering report in the Hobbs Unit, showing and highlighted in here is the subject dry hole and then an indication of acreage that we think might be potentially productive up-dip from that, from that well.

Q. And that is what this estimated productive limit line is?

A. That's based on a line along the strike parallel to the abandoned well.

Q. And it's drawn through the abandoned well?

A. Yes.

Q. And drawing an inference from this did you prepare another exhibit?

A. Exhibit Four, then, is an expanded picture of the immediate area showing that a line drawn from -- on strike parallel to the structure through the abandoned well

would give this -- give the Antweil about 5.8 acres of potentially, possibly productive area.

Q. Now that is a minimum or a maximum?

A. That would be a maximum because you may have nothing there.

Q. And based on the acreage in the unit did you calculate a percentage of the unit that was productive at a maximum?

A. Well, based on a 5.8 acres out of 40, this would make the maximum productive acreage 14 percent, 14-1/2 percent.

Q. Did you prepare exhibits with reference to the San Andres formation?

A. Yes, these are Exhibits Five and Six, which show the same thing.

Exhibit Five is the structure map from the Grayburg-San Andres North Hobbs Unit study. Again, with a line drawn parallel to the strike through the abandoned well, with the estimate that anything down-dip from this has been condemned, and this is expanded on Exhibit Six, showing that in this instance there would be a maximum of 4.7 acres of possible, possible pay.

Q. Did you calculate a percentage of productive acreage based on these calculations?

A. Based on 4.7 out of 40 acres the percent productive would be 11.7 percent.

Q. Do you have any opinion as to whether a well with both the Grayburg and San Andres formations target would come closer to the Grayburg percentage of 14-1/2 or the San Andres percentage, 11.7, based on your knowledge of productive history of wells in the area?

A. The San Andres in this area is generally much more productive than the Grayburg, as indicated by the drill stem tests where you got 60 to 90 feet of just oil cut and water cut mud, where you got 2000 feet of oil and gas cut mud from the San Andres, and this kind of typical of the ratio, how one would be so much more productive than the other.

Q. So if one were to calculate a combined figure of productive acreage with reference to both formations, would the figure be closer to 11.7 or 14.5 in your opinion?

A. It would be closer to 11.7.

Q. What does Exhibit Number Seven show?

A. Exhibit Number Seven just shows what we consider to be a cross section through this immediate area, showing the North Hobbs Unit offset well, 21-131, and the dry and abandoned Antweil well No. 1.

In the well, again, based on the values from the North Hobbs study, the Antweil well encountered about one foot of San Andres pay and about five feet or five to seven feet of Grayburg pay. Again, it was excluded from the unit because the dry hole condemned the acreage.

The Shell well recovered about five feet of San Andres pay and about ten feet of Grayburg pay, and this just shows the rough structures and what was encountered.

It shows the oil/water contact in the lower righthand corner so that as they deepened their well, they -- it shows how they encountered the water.

Q. So using this exhibit and the information presented here, if we were to calculate the extent of the unit that was productive in terms of a volume measure, acre feet rather than just an area measure, would the figure, percentage calculated using those figures come out lower or higher than the figures that you have calculated based on the area?

A. They would come out lower.

Q. And is that because the net pay decreases in thickness?

A. The net pay increases in thickness on the unit acreage.

Q. Finally, in referring to Exhibit Number

Four, there is indicated towards the left Unit Well 24-21. Do you have any information with respect to what use is going to be made of that well in the future?

A. The unit plans are to eventually make this an injection well in the Grayburg.

Q. Do you think that that will have any effect on the well that Mr. Williams proposes to drill here, this proposed location?

A. Well, any -- any undrained oil between 24-21 and the new well would be -- a good portion of the oil in that area would be pushed into the new -- into the Antweil well.

Q. Based on this information, Mr. Lancaster, do you have a recommendation with respect to a penalty that you believe should be assessed?

A. The penalty that we believe should be assessed would be weighted very heavily to the drainage volumes and be 88-1/2 percent.

Q. Do you also have any opinion as to what barrels per day production would be required to make this an economic well?

A. I think it would be an economic well at ten barrels a day because it shouldn't decline at a rate; in fact, once we start the waterflood it would probably be

maintained.

Q. Mr. Lancaster, do you feel that assessing the penalty of 88-1/2 percent is necessary to protect your correlative rights?

A. Yes.

Q. While do you believe that that figure would still prevent waste and lead to the production of hydrocarbons?

A. Yes.

Q. Thank you.

MR. BRILL: We would at this time offer Exhibits One through Seven.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Lancaster, what did you -- you stated you recommended an 88.5 percent penalty?

A. Yes, that's --

Q. And what is that --

A. This -- this would come off the -- the Exhibit Six, would be the percent of productive acreage, the approximate percent of productive acreage.

Q. Well now, on Exhibit Six you showed 4.7 acres.

A. Yes.

Q. Right?

A. Yes.

Q. And that is in the, let's see, I believe that was the one for the San Andres, isn't it?

A. Right.

Q. And then you had 5.8 acres on the Exhibit Four for the Grayburg.

A. Correct.

Q. So did you by any chance average those and see what the --

A. No.

Q. I believe if you average them they come out about 13.1 percent productive for the two.

But your 88.5, I still don't know where it came from.

A. Well, if you round -- you took the exact it would be like 88.3.

Q. For the 11.7, huh?

A. Yes. Yes.

Q. 88.3, okay.

MR. HUTTER: Are there any questions of

the witness? Mr. Carr.

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Lancaster, if I look at your Exhibit Number One, it appears to me that the drill stem test on the Grayburg did have shows of oil and gas, is that correct?

A. Had some, yes.

Q. Is it possible that with today's completion processes and the fracture treatments a productive well might have been obtained in the Grayburg?

A. Well, my feeling at this point is no, because they are not very good shows. 90 feet is a pretty minimal amount.

Q. It's your testimony then that with today's completion practices even with that kind of a show and fracture treatment that you wouldn't be able to complete a well?

A. I don't think so.

Q. Had you gotten this kind of a show in a well that Shell was drilling you would not have recommended fracturing it?

A. No.

Q. Now I'd like to look at your Exhibit

Number Three, which is the structure map on top of the Grayburg.

And I believe it was your testimony that you drew the end of the productive limits of this pool through the dry hole, which was the Antweil well, is that correct?

A. That's right.

Q. And in making your interpretation of the productive limits of this pool did you rely on the Antweil well and the data from that well?

A. Yes.

Q. And this was the control point that you actually used for placing the limit in this particular area, is that right?

A. Right.

Q. Now if for some reason this well is not dry, would that extend the boundary of the productive limits of the pool?

A. Yes.

Q. And isn't it true that the boundaries of the limits of this pool have been extended on a number of occasions in the development of the pool?

A. I would estimate yes, that given an area where is there is no dry hole there have been outsteps at different times.

Q. Now --

A. I don't know of an instance where they've stepped out beyond a dry hole.

Q. If in fact we have a dry hole.

A. Yes.

Q. Now, are there wells structurally lower than the Antweil existing well on the proposed proration unit that are productive in the Grayburg?

A. Yes.

Q. And, Mr. Lancaster, looking at Exhibits -- well, I guess we can look at Exhibit Number Four or Number Six, I believe on both of these exhibits you have spotted your Unit Well 421. Was it your testimony that Shell plans to convert that to an injection well?

A. Yes.

Q. And this would be in the Grayburg?

A. Yes.

Q. I believe you testified that you were -- that approval of the Antweil location without a penalty would impair Shell's correlative rights, is that correct?

A. Correct.

Q. Now I assume that when you start injecting in the Unit Well 421 that that will increase the pressure around that well.

A. Correct.

Q. And won't that also create a pressure gradient from the higher pressure at the location of the injection fluids with a lower pressure toward the perimeter of the edge of the pool?

A. Yes.

Q. Well, once a pressure gradient is established by the injection of this water, is there any way for the unit wells to recover the oil that presently lies between your Well 421 and the proposed location?

A. Generally the sweep-out pattern is not a direct line. It goes out as a fan and then comes back in. So yes, there would be some oil lost, say, from the 500 foot on down.

Q. Is there any way to recover that absent the drilling of a well to the east of the Well Number 421?

A. No, I think most of the oil, in other words, I would envision that your sweep-out would by and large in this case go -- go in this format, as a fan would go out and come in.

MR. NUTTER: This format is not going to show in the record, Mr. Lancaster.

A. Well --

MR. NUTTER: Describe it.

A. Well, it would sweep basically to the

east and as it approached the Antweil well it would basically-- the stream lines, as we would talk about them. The outer stream line would go directly east and then sweep down to the north -- to the south towards the well 21-131.

MR. NUTTER: Absent the Antweil well, you mean.

A. Yes. With the Antweil well, we would then have stream lines sweeping toward the Antweil well.

MR. NUTTER: Like the flowers of a petal pointing toward it?

A. Yes.

Q. Absent the drilling, however, of a well to the east of the unit well 421, would oil be left that would not otherwise be recovered?

A. Possibly some, yes.

Q. Does Shell plan to drill a well over there?

A. Not at this time, no.

Q. And so the existance of the Antweil well as to that oil, it certainly would not impair Shell's correlative rights.

A. Say that again.

Q. Antweil's Well producing the oil that would be left certainly that production would not impair your

correlative rights, would it?

A. Well, it would because some of the -- in other words, you would change the stream lines from the injector to the producer.

Q. If you don't have the Antweil well producing will oil be left in the ground that otherwise would not be produced?

A. Oh, yes.

Q. And would that result in waste of those hydrocarbons?

A. In some respects, yes. Now begin -- some of the oil that would have been recovered, the unit oil that would have been recovered at this point will now be recovered a substantial portion will now be recovered by the Antweil well.

Q. Do you happen to know when the Well 421 was drilled?

A. Oh, 421?

Q. Uh-huh.

A. No. It has a cumulative of about 73,000.

Q. Do you know when the Unit Well 131 was drilled?

A. No.

Q. Could it have been 25-30 years ago?

A. Yes.

Q. Do you have any idea what volumes have been produced through that well since it was drilled?

A. It has made over 500,000 barrels of oil.

Q. Would you suspect that with a normal radius of drainage, assuming that there is a continuous formation to the north, that it would have drained reserves from the Antweil tract?

A. No, because the oil that was recovered in a well like 131 came from the main portion of the San Andres. We made model studies in preparing the unit and this is only completed in Zone 1, and we know that Zone 1 has a water drive and it has swept oil from across the reservoir into this well.

So that the recovery hasn't necessarily come from the north, it's come from the east, from the west, and from the south.

Q. So it is your testimony that that well has not in thirty years producing half a million barrels drained anything from the adjoining tract?

A. No.

Q. You're only of the opinion, then, that you're going to have drainage from south to north, not from north to south?

A. There will be some drainage but it has not drained -- you couldn't put a -- you couldn't draw a circle and assign a 500,000 barrel recovery to that well and say that's the drainage area in that well.

Q. But it is your testimony that you have drained no reserves off the tract to the north.

A. I wouldn't expect that we had, no.

Q. Well, if you've been unable to drain from the Antweil tract, how is it that you believe you're going to -- the Antweil well is going to drain from your tract?

A. Because now they would be draining in the depletion. In other words, the high recovery, the high recovery that you have here is coming from the Grayburg -- from the San Andres Zone 1.

A Grayburg completion at the Antweil well is draining a depletion reservoir and in that respect it will drain a 40-acre or some -- depending on where your porosity, permeability in your reservoir is. It will drain an area symmetrical, more or less symmetrical to the well.

Q. What do you mean when you said depletion reservoir?

A. It does not have a water drive and it kind of just -- it just -- as you start to pump the well down,

you lower the pressure in the well and the reservoir around this well senses the pressure drop and the oil moves towards the low pressure, and this is a depletion. There's nothing in there to -- to help the oil move, like a water drive.

Q. And the Antweil well would be in the depletion reservoir?

A. If it's a Grayburg well, yes.

Q. And yet your testimony is that you haven't drained anything from the Grayburg formation, is that correct?

A. We have drained -- we have had 421 and probably some reserves from 131, but probably very little.

Q. I don't understand how this can be a well drilled in a depletion reservoir in your answer to one question and the other question being that you haven't drained or depleted the reserves underneath that tract. I don't understand it.

A. I don't understand the question, I guess.

MR. BRILL: May I have a question on redirect to --

MR. CARR: Okay.

REDIRECT EXAMINATION

BY MR. BRILL:

Q. As I understand your testimony, Mr. Lan-

cast..., we are discussing here in terms of the water drive and the Well 131, that is a well that is recovering primarily from the San Andres formation, is that correct?

A. We expect it has, yes.

Q. And that is a water drive formation, is that correct?

A. Yes. Right.

Q. And there has been very little production from the Grayburg formation.

A. Correct.

Q. And the Grayburg formation is the depletion formation, is that correct?

A. Correct.

RECROSS EXAMINATION

BY MR. CARR:

Q. And in your opinion the San Andres is not depleted?

A. No, not -- it is depleted in that in a large sense it is watered out. The water has moved through this area.

Q. In the Grayburg.

A. In the San Andres.

Q. In the San Andres but not in the Grayburg.

A. Not in the Grayburg.

MR. NUTTER: I think, Mr. Lancaster, in referring to the Grayburg as a depletion reservoir you mean a solution gas drive type reservoir --

A. Right.

MR. NUTTER: -- rather than a depleted reservoir.

A. Yes.

Q. I'd like to look now at your Exhibit Number Seven. As I look at the net pay you show in the Grayburg, it appears to me from this interpretation you're showing that there was Grayburg production in the Antweil dry hole.

A. No, I don't intend to show that. I intend to show what we -- what we included again from the -- from the North Hobbs Unit study, what they looked at the log and calculated was possible net pay in the log.

Now what can be net pay in a log and what can be productive pay are two different things.

Q. But this would show, then, that based on your studies from the unit, there is from the logs Grayburg net pay in both the proposed location and the quote-unquote dry hole?

A. Possible net pay, but in -- in the drill stem tests again of the -- of the dry hole, you condemn the

fact that that is not net pay.

Q. Is this a homogenous reservoir?

A. No.

Q. And a dry hole at one location doesn't necessarily condemn everything the other side of it, does it?

A. Pretty much. What you have is stringers. This was a -- it's not a mass but there are stringers going through there.

If you don't have the stringers here, you probably have less, if anything, down dip from it.

Q. But all you really have is if that is a dry hole the data that condemns that exact area around the wellbore.

A. Well, in the immediate vicinity, let's say 10 to 15 acres. You wouldn't get a dry hole and move over 100 feet and drill another well.

Q. Some people would.

A. Yeah, some people would.

Q. If you take a look at the data on your Exhibit Number Seven and you look at the Grayburg net pay, wouldn't your interpretation also extend that yellow line beyond the Antweil Well No. 1?

A. It, again, it's taken from the Isopach yes, and so they go down dip.

Q. Off to the east you would also be able to extend that yellow line and show a potential net pay over there.

A. Narrowing.

Q. All right. The narrower the interval is it fair to say the poorer the chance for commercial production?

A. Yes.

Q. Based on this, it looks to me like the chance for commercial production at the Antweil location is not as good as when you move to the west?

A. To the north.

Q. To the north.

A. It would be better to the west. You're moving up dip; the west and the south you're moving up dip.

Q. And consequently, a well at the proposed location there would be fewer feet of pay and it would naturally be able to produce less, is that correct?

A. Say again.

Q. A well at the proposed location, because of the thinning of the pay section, would be anticipated to produce less than a well --

A. If you moved it to the north?

Q. -- up structure.

A. In other words, the first well had about

seven net feet and it didn't produce. Moving up dip it would appear that you might pick up, as you have proposed, maybe a foot or two.

Moving down dip you'd pick up less pay.

Q. And the further down dip you get, wouldn't you expect a more limited well --

A. Oh, yes.

Q. -- the farther down dip you get, and that would naturally reduce the well's ability to produce.

A. It would -- it would diminish their chances.

Q. Now you're recommending a penalty. The penalty that you're recommending would probably make this an uneconomic venture, is that correct?

A. I don't think so. We set a limit of ten barrels a day, a minimum, and to me a ten barrel a day well produced over a period of time would be a very profitable well.

Q. And that's what you believe the proposed location would get?

A. That's our proposal.

Q. And if you limit that production and oil is swept past that well by your waterflood, that oil could never be recovered, is that correct?

A. It might not be.

MR. CARR: I have nothing further.

MR. BRILL: I have one, one question.

REDIRECT EXAMINATION

BY MR. BRILL:

Q. Mr. Lancaster, are you opposing the drilling of this well at the proposed location?

A. No, not at all.

Q. Is the, if I may, is the substance of your proposal that a penalty be levied while still making this an economic well so that it can pay out at some reasonable level?

A. Yes.

Q. But you do think the penalty should be a severe one concerning the -- considering the limited amount of productive acreage within the unit?

A. Yes.

RECROSS EXAMINATION

BY MR. NUTTER:

Q. Well, Mr. Lancaster, you mentioned that that No. 421 to the west would be put on injection. Does Shell have plans for any other injection wells in Section 21?

A. Not -- I'd have to look at the report. Not the Grayburg. Our Grayburg wells are limited there.

Q. So the one well you're talking about, the 421, is the only injection well that you propose that would in any way affect this location.

A. Right.

Q. Okay, now on your Exhibits Number Three and Five, which are the original unit studies of the -- of the structure, show that the oil/water contact in the San Andres was at about a -614, I think.

A. Correct.

Q. And that the oil/water contact in the Grayburg structure map is also at -614. Are these the original oil/water contacts?

A. Yes.

Q. Okay, now do you have any estimate as to where those oil/water contacts have moved by the time this study was made?

A. No, and the only thing we have is on our infill drilling we saw oil/water contacts that varied, but we didn't see any essentially big movement in the field. In other words, the water influx we've been able to prove comes into Zone 1, which is the top of the San Andres, in our -- and most of our drilling has been in the interior of

the field where what we see are Zones 2 and 3.

Q. Well now, if these were the original oil/water contacts and they were down at a -614, if we plot that oil/water contact on your Exhibit Seven, it would be clear down here off the -- off the map almost.

A. No, yeah --

Q. You do show it down here.

A. Yeah, what's plotted on there, it's shown on there.

Q. That's the original oil/water contact, is that it?

A. Right, uh-huh.

Q. But you don't know where it is now.

A. No, If it -- it probably has not moved in any of the Lower San Andres, and where we show the influx, and what we showed on the influx from the San Andres Zone 1 is that the water came from the north, the far north, and from the southwest, and we do not have a record of having a water influx into this area, and it has -- what happened was, it swept the oil across the reservoir into the wells, into the Zone 1 wells that lay along the east flank.

Q. Okay, well now these tests that were made on your Exhibit Number Two here, where they swabbed all this water, where would those be on this Exhibit Number Seven?

A. Okay, well, the lower one, the last one where he got 19-1/2 barrels, that would be below the oil/water contact. He doesn't --

Q. We don't have -- we don't have an elevation here so we --

A. What I think is the elevation is what -- I think is the elevation, is the number that's on this map which is 3851.

Q. Where's that?

A. Well, on the -- the number to the left of the well number.

Q. Is that a 3851 there?

A. I believe that's the number I would read. That may be the log depth.

(There followed discussion off the record.)

Q. Well, I just wonder where these drill stem tests are and where the swab tests are with respect to your Exhibit Number Seven.

A. Okay, our interpretation using the map would be that the first three tests were in the Grayburg.

Q. You're talking about your Exhibit One, now.

A. Yes.

Q. The first three drill stem tests.

A. And the first production test would be the Grayburg.

Q. Okay.

A. The second production test and the fourth drill stem test would be the Upper San Andres.

Q. Okay.

A. And the last production test would be the Lower San Andres.

See, okay, if 3651 is the elevation, if he starts at 4271 the top of that test is at -620, which is below the oil/water contact.

Q. Which would be below the oil/water contact.

A. Yes.

MR. NUTTER: Are there any other questions of Mr. Lancaster? He may be excused.

Do you have anything further, Mr. Brill?

MR. BRILL: Nothing further.

MR. NUTTER: Do you have anything further, Mr. Carr?

MR. CARR: Just a brief statement.

MR. PEARCE: Excuse me, Mr. Examiner, before you do that. Mr. Brill, you showed to Mr. Williams

an exhibit marked Shell Exhibit Eight.

Did you wish to enter that exhibit?

MR. BRILL: Yes, we wish to omit that..

MR. PEARCE: Fine.

MR. NUTTER: Okay, you were just showing him some pictures, then, you weren't showing him an exhibit, right?

MR. BRILL: That's correct.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 7401?

Okay, we'll call for closing statements. Mr. Carr, you can go last.

MR. BRILL: Mr. Examiner, I think that Shell has demonstrated that in fact the existing well in the unit is a dry hole; that it constitutes at a maximum the productive limit within that unit, and that somewhere between 11 and 14 percent of that unit at a maximum will be productive.

Further, I think we have shown that looking at the productive acreage that the percentage available for production is even less, and further, that the injection well that will be completed by Shell will further benefit this Antweil proposed location.

On the basis of those three things, we feel that the severe penalty is quite appropriate and in

fact we are proposing a penalty to within the limits of what would make an economic well.

We recognize that the drilling of a well here might well prevent waste but we are concerned with protecting our correlative rights. We feel that the only way to accomplish this is to establish a severe penalty with some sort of a minimum limit which allow this to be an economically feasible well.

Thank you, Mr. Examiner.

MR. NUTTER: Thank you.

MR. CARR: May it please the Examiner, Antweil is before you today seeking your approval for an unorthodox location. We have asked that a penalty be applied to this production from the proposed well and we submit we have given you a reasonable formula for applying such a penalty.

We submit that the penalty proposed by Shell would make the well uneconomic for anyone to drill and as Mr. Brill just submitted, would result in the waste of hydrocarbons.

We would note that the prevention of waste is a primary responsibility of the Oil Conservation Division. It is the central jurisdictional -- central function which you serve and your jurisdiction is based upon it.

Correlative rights is secondary to your duty of prevent waste.

We would note that Shell's proposed penalty is based on number of productive acres that they attribute to Antweil under the proposed spacing unit. Their own exhibits, however, show that there are -- there is potential net pay beyond the economic limit and they are basing all their data on data on one particular well that was drilled in 1952. There was a DST which showed gas shows and there's testimony today that if that well were drilled today Mr. Williams believes that they could make a commercial well at that location.

We submit that Antweil has reserves under the tract; that if it is not permitted to drill this well and do it in an economic way, waste will result and we ask that you adopt the recommendation of Antweil and the imposition of a reasonable penalty which would permit the development of reserves under the Antweil well.

MR. NUTTER: Thank you, Mr. Carr.

We'll take Case Number 7401 under advisement.

(Hearing concluded.)

C E R T I F I C A T E

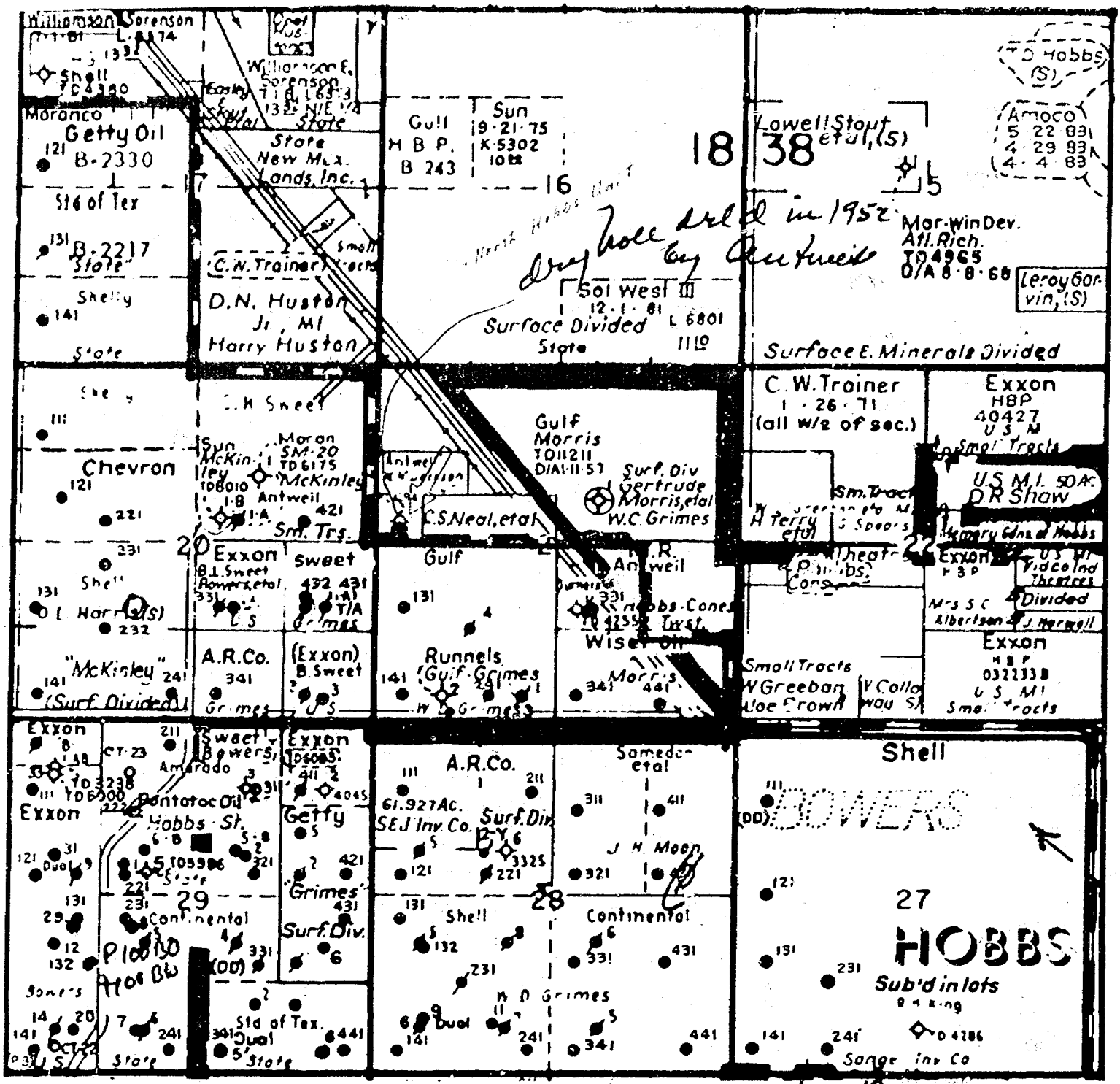
I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing transcript of hearing before the Oil Conservation Division was reported by me; that the said transcript is a true, and correct record of the hearing, prepared by me to the best of my ability.

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. 7401, heard by me on 11/4 1981.

, Examiner
Oil Conservation Division



Antweil 1

MORRIS R. ANTWEIL

Application for Unorthodox Location
Case No. 7401

● Proposed Location - 2410' FNL & 330' FWL
Sec. 21-T18S-R38E

7401

Docket
top of salt 1500'
bottom of salt 2300'
top salt 2400
base salt 3900
Yates 3250 TD

Morris R. Antweil
OIL OPERATOR
P. O. Box 2010
HOBBS, NEW MEXICO 88240

5250
3900
1350

4200
2300
1900

August 14, 1981

New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501
ATTN: Mr. Joe D. Ramey

BEFORE EXAMINER HUNTER
OIL CONSERVATION DIVISION
ANTWEIL EXHIBIT NO. 3
CASE NO. 7401

RE: Application for Administrative Approval of Unorthodox Location SW/4 NW/4 Section 21-T18S-R38E Lea County, New Mexico

Gentlemen:

Morris R. Antweil requests administrative approval of an unorthodox location be granted based on topographical conditions in the SW/4 NW/4 Section 21-T18S-R38E for the drilling of a 4200-foot Hobbs (Grayburg-San Andres) Field well.

Approval of a location 2410' FNL & 330' FWL of Section 21-T18S-R38E is requested to avoid the College Park Industrial Subdivision. The enclosed College Park Industrial Subdivision plat shows: (1) the location of the platted and approved units of the College Park Industrial Subdivision to the City of Hobbs, (2) the location of Commerce Street, (3) the location of Morris R. Antweil No. 1 Morris, a P & A well located 2310' FNL & 330' FWL of Section 21-T18S-R38E, and (4) the location of the proposed well 2410' FNL & 330' FWL of Section 21-T18S-R38E. We are proposing to drill a new well in an attempt to develop this 40-acre proration and spacing unit and recommend that the new location be at least 100 feet from the old well bore to avoid any possible interference. The proposed location, 100 feet south of the P & A well, appears to be the only feasible location available that will avoid the platted subdivision and Commerce Street. Enclosed is a letter from Lawrence H. Johnson, attorney for Ten, Inc., the owner and developer of the College Park Industrial Subdivision, endorsing our proposed location.

Enclosed is a land map which shows the proposed location, the location of other wells in the vicinity and

the boundary of the North Hobbs Unit. All of the offsetting wells are in the North Hobbs Unit which is operated by Shell Oil Company. Shell Oil Company, as Unit Operator, has been notified of this application by certified mail on this date.

Your favorable consideration of our application for administrative approval of an unorthodox location will be appreciated.

Respectfully,

MORRIS R. ANTWEIL

R. M. Williams

/pb

Enclosures

cc: New Mexico Oil Conservation Division
Hobbs District Office

ROSE AND JOHNSON
ATTORNEYS AT LAW

U. M. ROSE (1912-1978)
LAWRENCE H. JOHNSON

308 WEST TAYLOR STREET
POST OFFICE BOX 159
HOBBS, NEW MEXICO 88240
(505) 393-7702

August 12, 1981

Mr. Alan J. Antweil
P. O. Box 2010
Hobbs, New Mexico 88240

Dear Alan:

I

This letter is to advise you that Ten, Inc., developer of College Park Industrial Subdivision endorses your proposal to drill your well in the SW/4 NW/4 of Section 21, Township 18 South, Range 38 East, N.M.P.M., at a location at least 100 feet South of the existing well. The existing well is located 2310' feet from the North line and 330 feet from the West line of Section 21. It was plugged and abandoned in 1952.

II

We very much favor your proposed location.

If you were to drill the well 100 feet North of the existing well the location would be in the right of way of our proposed extension of Commerce Street.

A location 100 feet East of the existing well would be too close to another road which has been proposed in the development of College Park Industrial Subdivision.

For the above reasons the proposed location of 100 feet South of the existing well is the best location as far as Ten, Inc., is concerned.

Sincerely yours,

Lawrence H. Johnson

Lawrence H. Johnson

LHJ/cb

Morris R. Antweil
Oil Operator
P. O. Box 2010
Hobbs, New Mexico 88240

August 14, 1981
CERTIFIED MAIL

Shell Oil Company
P. O. Box 991
Houston, Texas 77001

RE: North Hobbs Unit
Lea County, New Mexico

Gentlemen:

Morris R. Antweil is making application for administrative approval of an unorthodox location offsetting the North Hobbs Unit. A copy of the application to the New Mexico Oil Conservation Division is enclosed to fulfill the requirement for notification of the offset operator.

Yours Very Truly,

MORRIS R. ANTWEIL

R. M. Williams

/pb

Enclosure

Shell Oil Company

P.O. Box 991
Houston, Texas 77001

August 28, 1981

CERTIFIED
RETURN RECEIPT REQUESTED

New Mexico Oil Conservation Division
ATTN Mr. Joe D. Ramey
P. O. Box 2088
Santa Fe, NM 87501

Morris Antweil's Application
For Administrative Approval of
Unorthodox Location
SW/4 NW/4 Section 21-T18S-R38E
Hobbs Field
Lea County, New Mexico

Gentlemen:

Shell Oil Company, as Operator of the North Hobbs (G/SA) Unit, objects to the subject requested unorthodox location. Our objection is based upon the fact that the application places no restriction on the bottom-hole location. The well directly offsets our Unit and normally-allowed drilling tolerance from a well only 230' away has definite potential for creating inequitable drainage.

Our objection will be waived if specific provision is made to protect these correlative rights. Acceptable possibilities include:

- reducing the generally-allowed deviation angle to insure the bottom-hole location would be no closer to our Unit than that permitted from an orthodox location.

- designating a bottom-hole target area.

- encouraging the operator to drill the new well closer to the P&A well. If that well has been properly plugged and the new well is properly cased and cemented, the risk of interference would be small even at very close spacing.

- establishing a reduced allowable, depending on results, to account for the edge location drainage area.

We are not opposed to the proposed well being drilled, fully recognizing the problems of surface locations at Hobbs, but rather want to maintain the intent of established well-spacing regulations.

Yours very truly,

W. W. Dover
Division Production Manager
Mid-Continent Division

AFO:jb

cc: Morris R. Antweil ✓
P. O. Box 2010
Hobbs, NM 88240

Working Interest Owners
North Hobbs (G/SA) Unit

Talked to Bob Phillips – 16 Sep 81
Re: Possible settlement ??

Morris R. Antweil
OIL OPERATOR
P. O. Box 2010
Hobbs, New Mexico 88240

October 9, 1981

Shell Oil Company
P. O. Box 991
Houston, Texas 77001
ATTN: W. W. Dover

RE: North Hobbs Unit
Lea County, New Mexico

Gentlemen:

In reference to your letter of August 28 to the New Mexico Conservation Division, we would like to address some of the possible conditions that have been listed as being acceptable to Shell Oil Company.

Considering the first possibility listed, that of reducing the allowed deviation angle, could be acceptable to us. We suggest a maximum deviation program according to the following guidelines; 1° average deviation for the first thousand feet, 2° average for the second thousand feet, 3° average for the third thousand feet and 4° average for the three thousand feet to total depth interval. This would place the maximum theoretical displacement of the wellbore within the limits of a well at an orthodox location and deviation limits allowed by commission rules.

The second possibility of designating a bottom-hole target area is one of which we are of the opinion is not practical or feasible due to the relatively small interval from the base of the salt to the total depth. Directional control would be difficult in the salt section and the small interval below would not allow sufficient length for correction.

The final possibility of establishing a reduced allowable is probably the settlement which will result. We are therefore requesting the Oil Conservation Division to docket our application for hearing on 4 November 1981. We

would be pleased to discuss possible alternates with you prior to the hearing.

Sincerely,

MORRIS R. ANTWEIL

R. M. Williams

RMW:pb

cc: Oil Conservation Division
Santa Fe, New Mexico

Morris R. Antweil
Oil Operator
P. O. Box 2010
Hobbs, New Mexico 88240

October 27, 1981

Shell Oil Company
P. O. Box 991
Houston, Texas 77001
ATTN: W. W. Dover

RE: North Hobbs Unit
Lea County, New Mexico

Gentlemen:

Enclosed is a copy of New Mexico Oil Conservation Division Docket No. 35-81 for the Examiner Hearing set on 4 November 1981. Your attention is directed to Case No. 7401, our application for an unorthodox location in Section 21-T18S-R38E offsetting the North Hobbs Unit.

You were previously advised of our intention to request a hearing on this matter by our letter of 9 October 1981.

Yours Very Truly,

MORRIS R. ANTWEIL

R. M. Williams

RMW:pb

Enclosure

cc: Oil Conservation Division
Santa Fe, New Mexico

bcc: Bill Carr

Dockets Nos. 36-81 and 37-81 are tentatively set for November 19 and December 4, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 4, 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 7396: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Sentry Oil Exploration Company and Lawyers Surety Corporation to appear and show cause why Farr Well No. 1, located in Unit G of Section 6, Township 31 North, Range 34 East, Union County, New Mexico, should not be ordered plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7380: (Continued and Readvertised)

Application of Bird Oil Corporation for an unorthodox location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox Entrada location of a well to be drilled 2110 feet from the North line and 1120 feet from the East line of Section 10, Township 22 South, Range 9 West, the SE/4 NE/4 of said Section 10 to be dedicated to the well.

CASE 7397: Application of Belco Petroleum Corporation for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Atoka and Strawn production in the wellbore of its Kimbley Well No. 1, located in Unit G of Section 21, Township 23 South, Range 28 East.

CASE 7398: Application of El Paso Natural Gas Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Wolfcamp-Penn well, to be drilled 660 feet from the South and West lines of Section 23, Township 26 South, Range 30 East, Ross Draw Area, the S/2 of said Section 23 to be dedicated to the well.

CASE 7399: Application of Texaco, Inc. for a Unit Agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the North Vacuum Abo West Unit Area, comprising 2000 acres, more or less, of state lands in Township 17 South, Range 34 East.

CASE 7400: Application of Texaco, Inc. for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in its North Vacuum Abo West Unit Area by the injection of water into the Abo formation through 13 wells located in Sections 15,21,22,27,28 and 34, Township 17 South, Range 34 East, North Vacuum-Abo Pool.

CASE 7401: Application of Morris R. Antweil for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 2410 feet from the North line and 330 feet from the West line of Section 21, Township 18 South, Range 38 East, Hobbs Grayburg-San Andres Pool, the SW/4 NW/4 of said Section 21 to be dedicated to the well.

CASE 7304: (Continued from October 21, 1981, Examiner Hearing)

Application of Morris R. Antweil for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Abo formation underlying the NE/4 SW/4 of Section 5, Township 20 South, Range 38 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 7402: Application of MGF Oil Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Strawn formation underlying the NW/4 NW/4 of Section 5, Township 20 South, Range 39 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.

ANIWEIL #1

Spudded: 9-1-52

Plugged: 11-1-52

TD: 4230 (Grayburg)

OH: 4100' - 4230'

DST	Open	SI	Blow	Recovered
#1 - 4100-4206	1-1/2 hr.	15 min.	10 min. weak to strong	90' OCM
#2 - 4200-30	1 hr.	15 min.	--	90' O&GCM
#3 - 4230-57	1 hr.	5 min.	fair	90' WCM
#4 - 4257-71	1-1/2 hr.	15 min.	strong (GTS-4 min) good flow gas throughout	2000' O&GCM

QB upper SA

Tests #1, #2 and #3: Grayburg

Test #4; San Andres

N.B. TD does not agree with drill stem test data.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Sheel EXHIBIT NO. 1
CASE NO. 7401

Pool, ... County.

Well is 2310 feet from North line and 330 feet from East line of Section 21. If State Land the Oil and Gas Lease No. is .....

Drilling Commenced September 1, 1952 Drilling was Completed September 23, 1952

Name of Drilling Contractor Makin Drilling Company

Address P. O. Box 1628, Hobbs, New Mexico

Elevation above sea level at Top of Tubing Head 3457', Estimate The information given is to be kept confidential until NOT CONFIDENTIAL, 19.....

OIL SANDS OR ZONES

No. 1, from NONE to ..... No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from Shell to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from NONE to ..... feet. .....

No. 2, from ..... to ..... feet. .....

No. 3, from ..... to ..... feet. .....

No. 4, from ..... to ..... feet. .....

CASING RECORD

SIZE	WEIGHT PER FOOT	NEW OR USED	AMOUNT	KIND OF SHOE	CUT AND PULLED FROM	PERFORATIONS	PURPOSE
10-3/4"	40#	Used	283'	Texas Pattern	—	—	—
7"	20#	Used	4100'	Float	3300'		

MUDDING AND CEMENTING RECORD

SIZE OF HOLE	SIZE OF CASING	WHERE SET	NO. SACKS OF CEMENT	METHOD USED	MUD GRAVITY	AMOUNT OF MUD USED
15"	10-3/4"	283'	150	Displacement	10.0#	—
8-3/4"	7"	4100'	150	Plug Method	9.5#	9.5#

RECORD OF PRODUCTION AND STIMULATION

(Record the Process used, No. of Qts. or Gals. used, interval treated or shot.)

DB 500 gallons of acid from 4100' to 4230' - Swabbed dry

Upper SA 500 gallons of acid from 4254' to 4271' - Swabbed 2-1/2 bbls. sulphur water per hr.

Lower SA 2000 gallons of acid from 4271' to 4294' - Swabbed 19-1/2 bbls.

Result of Production Stimulation NO OIL PRODUCTION — DRY HOLE

Depth Cleaned Out .....

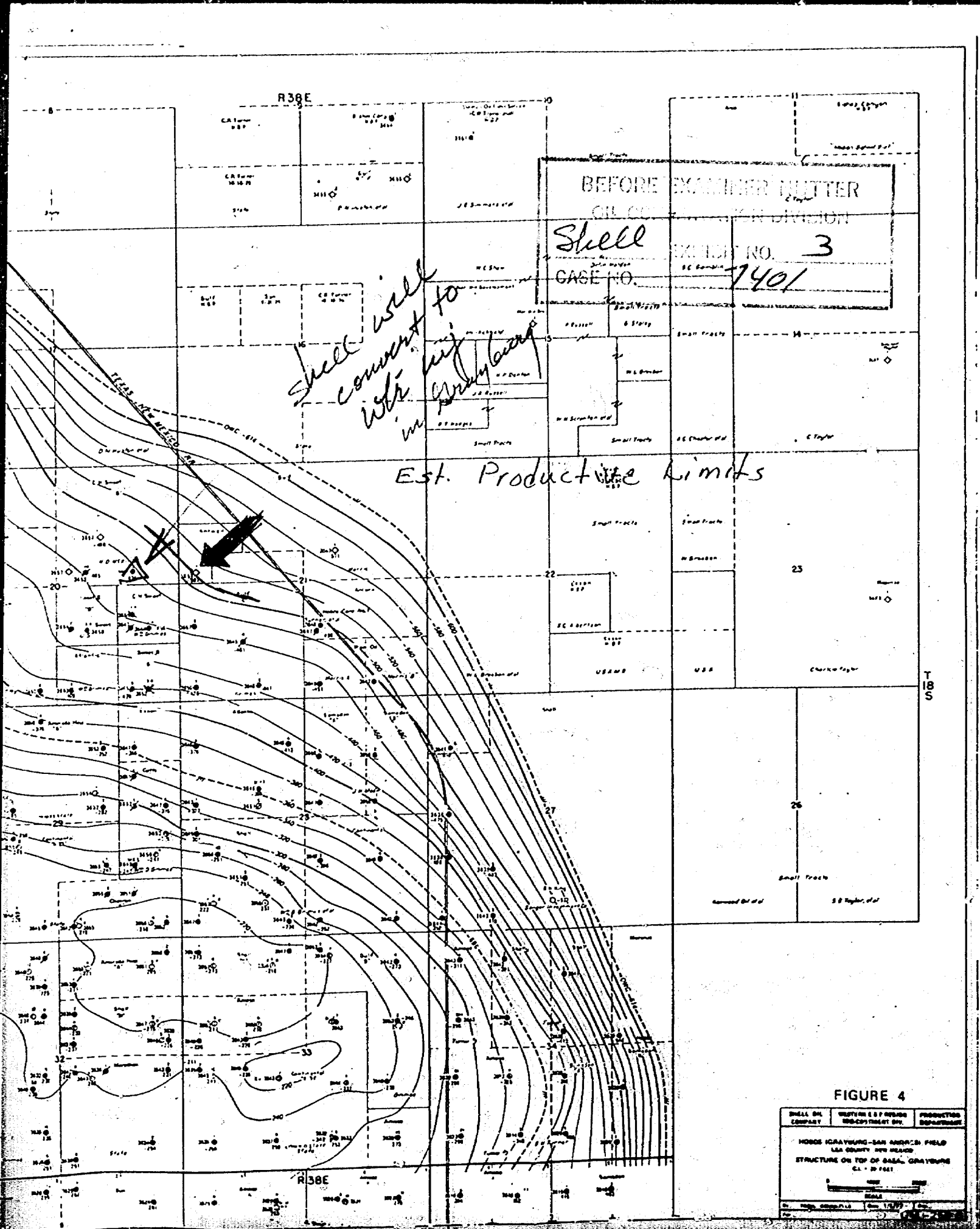


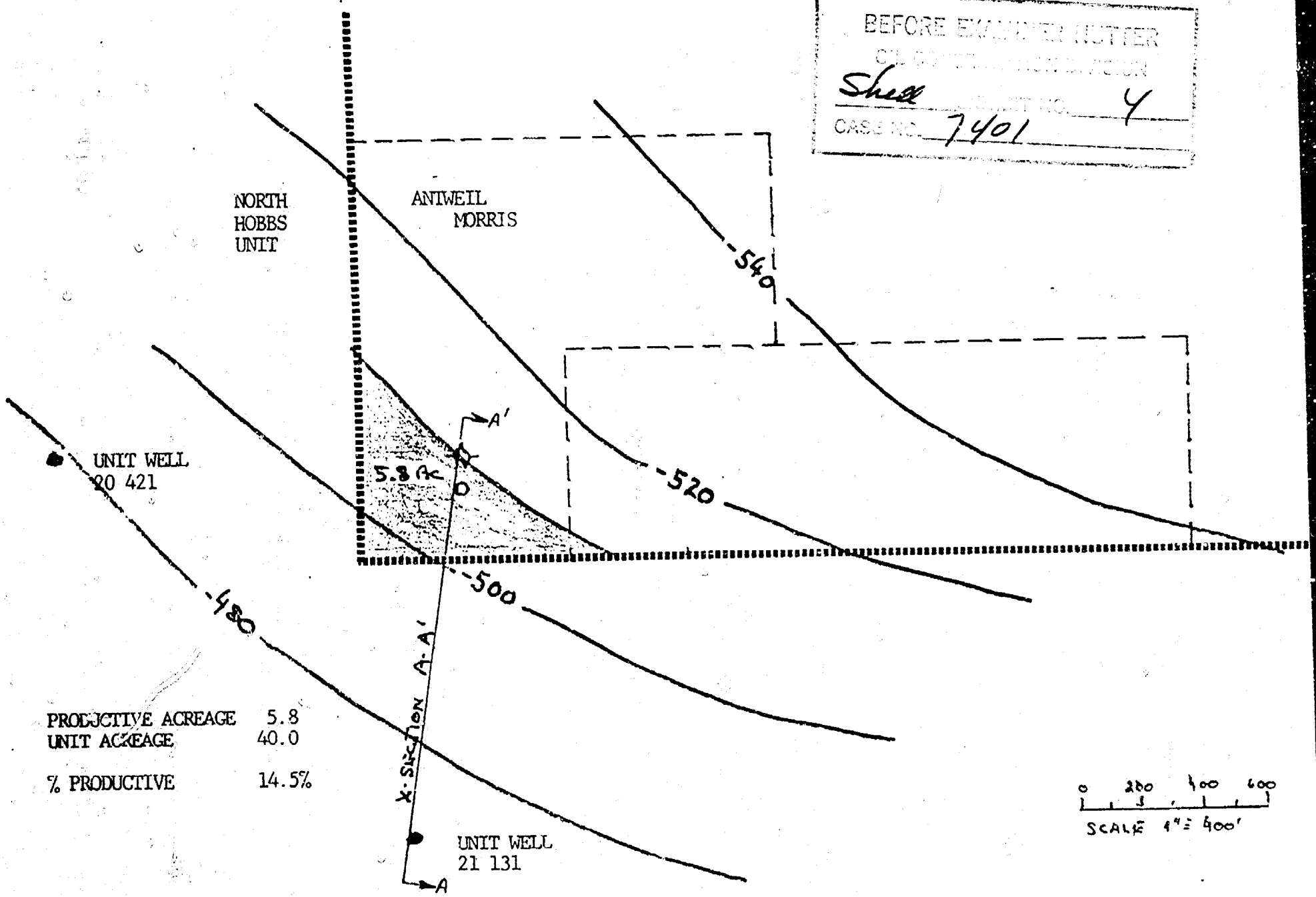
FIGURE 4

SHELL OIL COMPANY	WESTERN E & P REGION MID-CONTINENT DIV.	PRODUCTION DEPARTMENT

HOBBS (GRAYBURG-SAN ANDRES) FIELD
LEA COUNTY, NEW MEXICO
STRUCTURE ON TOP OF BASAL GRAYBURG
C.I. = 20 FEET
SCALE

STRUCTURE CONTOURS ON TOP GRAYBURG
IN VICINITY ANIWEIL MORRIS D&A NO. 1
SHOWING POTENTIAL PRODUCTIVE ACREAGE

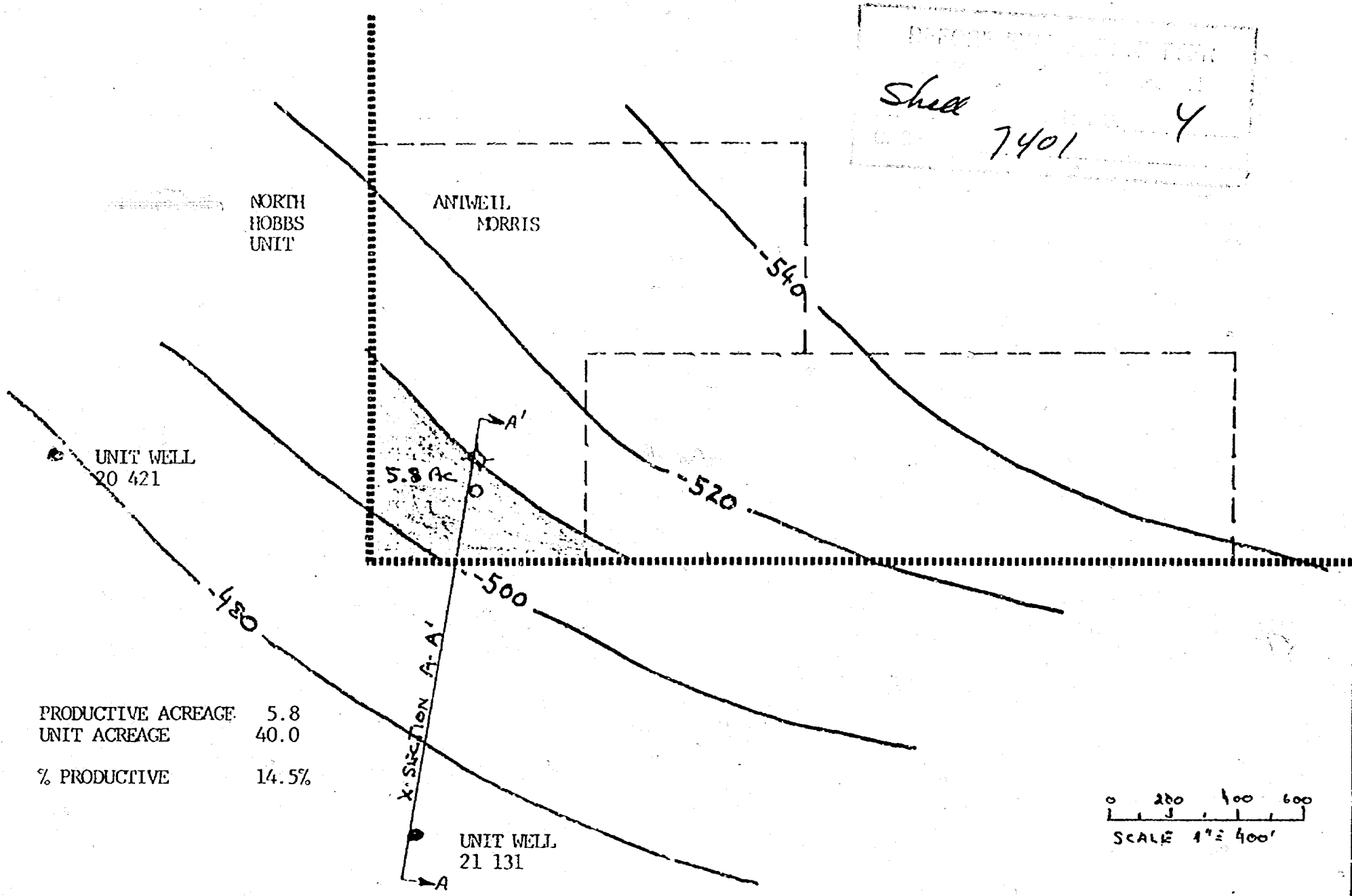
BEFORE EXAMINER UTTER
OIL CONSERVATION DIVISION
Shell EXHIBIT NO. 4
CASE NO. 7401



PRODUCTIVE ACREAGE	5.8
UNIT ACREAGE	40.0
% PRODUCTIVE	14.5%

STRUCTURE CONTOURS ON TOP GRAYBURG
IN VICINITY ANTWELL MORRIS D&A NO. 1
SHOWING POTENTIAL PRODUCTIVE ACREAGE

Sheet 7401 4



PRODUCTIVE ACREAGE	5.8
UNIT ACREAGE	40.0
% PRODUCTIVE	14.5%

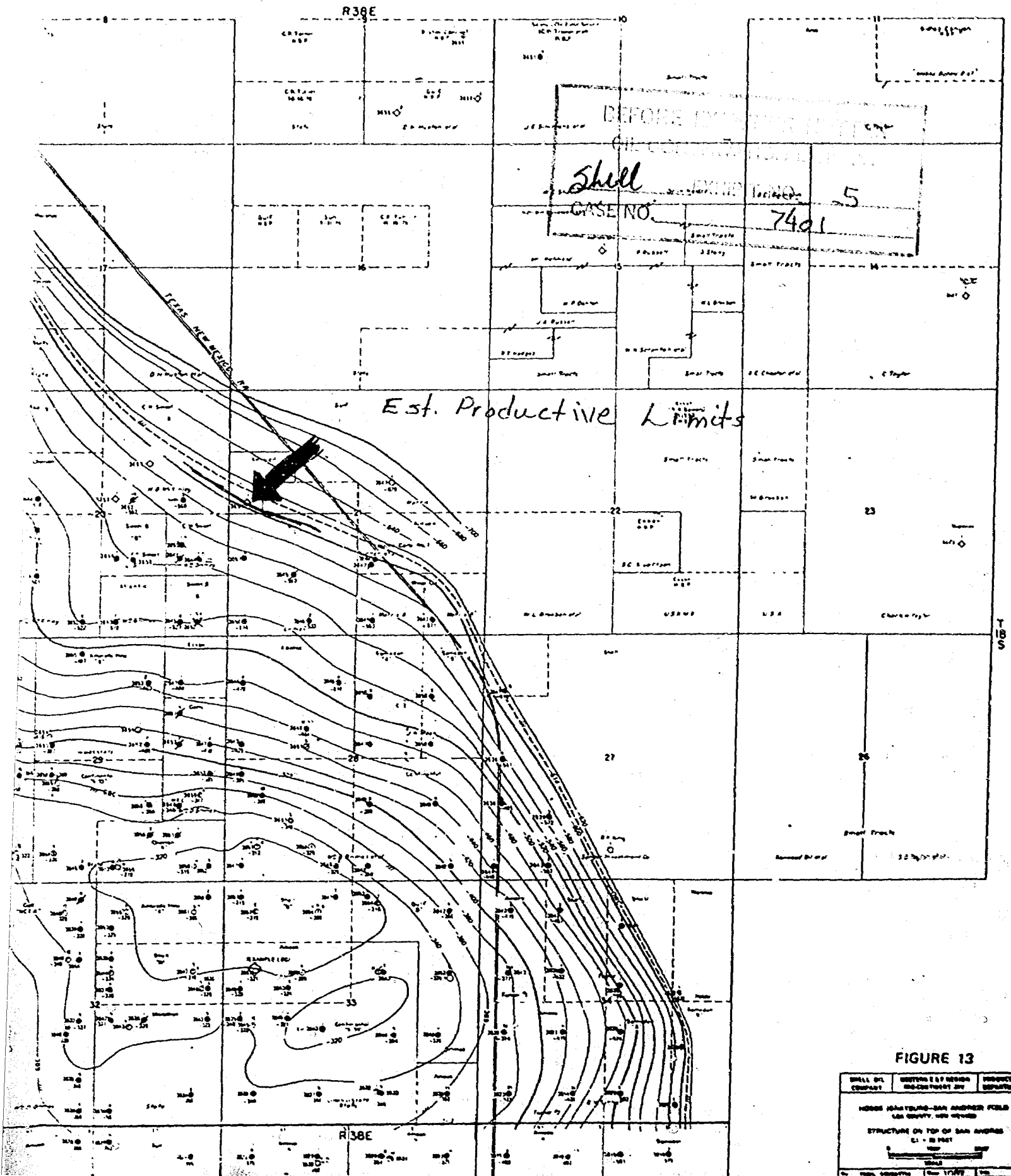
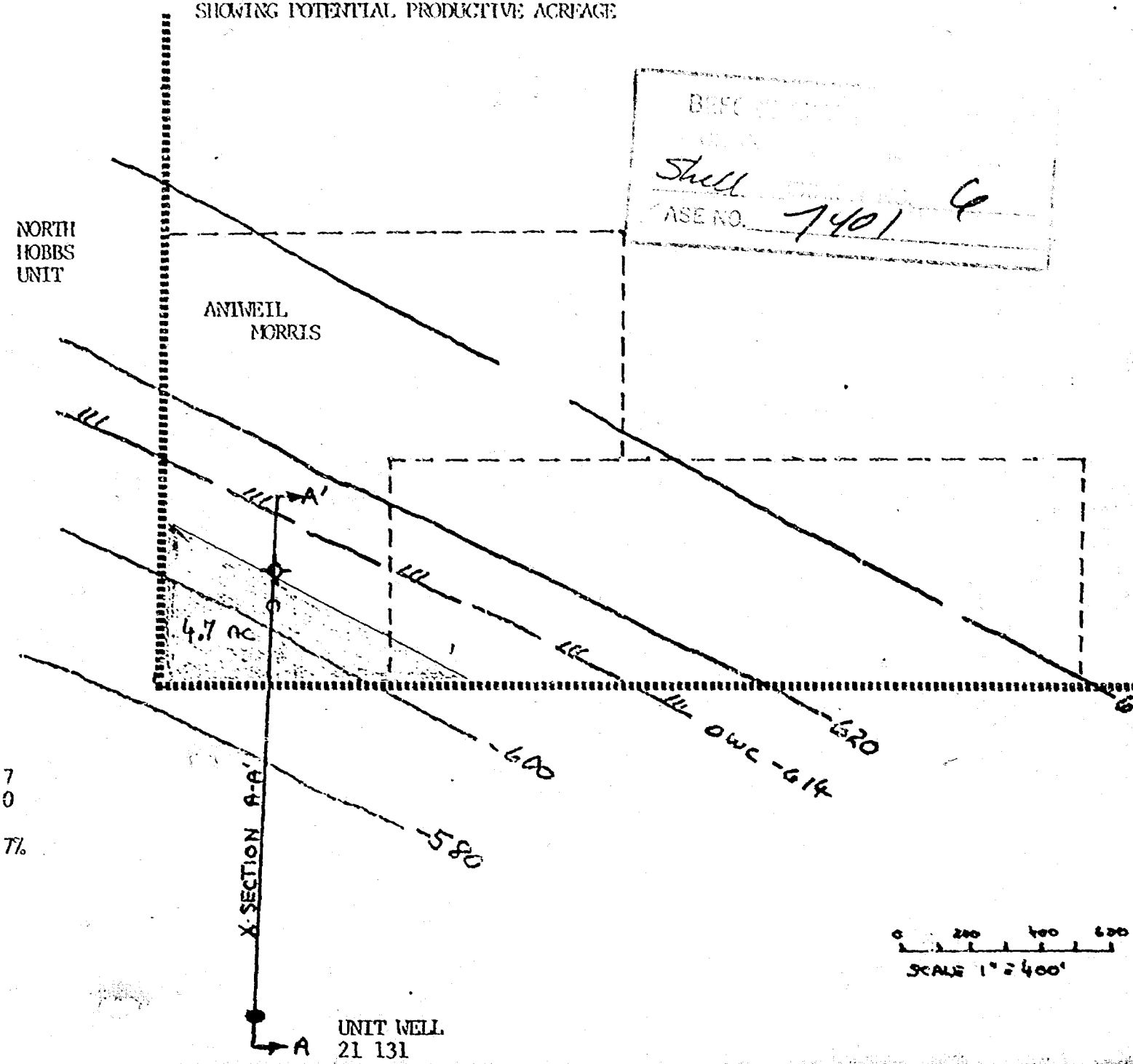

R38E
Shell
EXHIBIT NO. 5
CASE NO. 7401
Est. Productive Limits
T 18 S
R38E

FIGURE 13

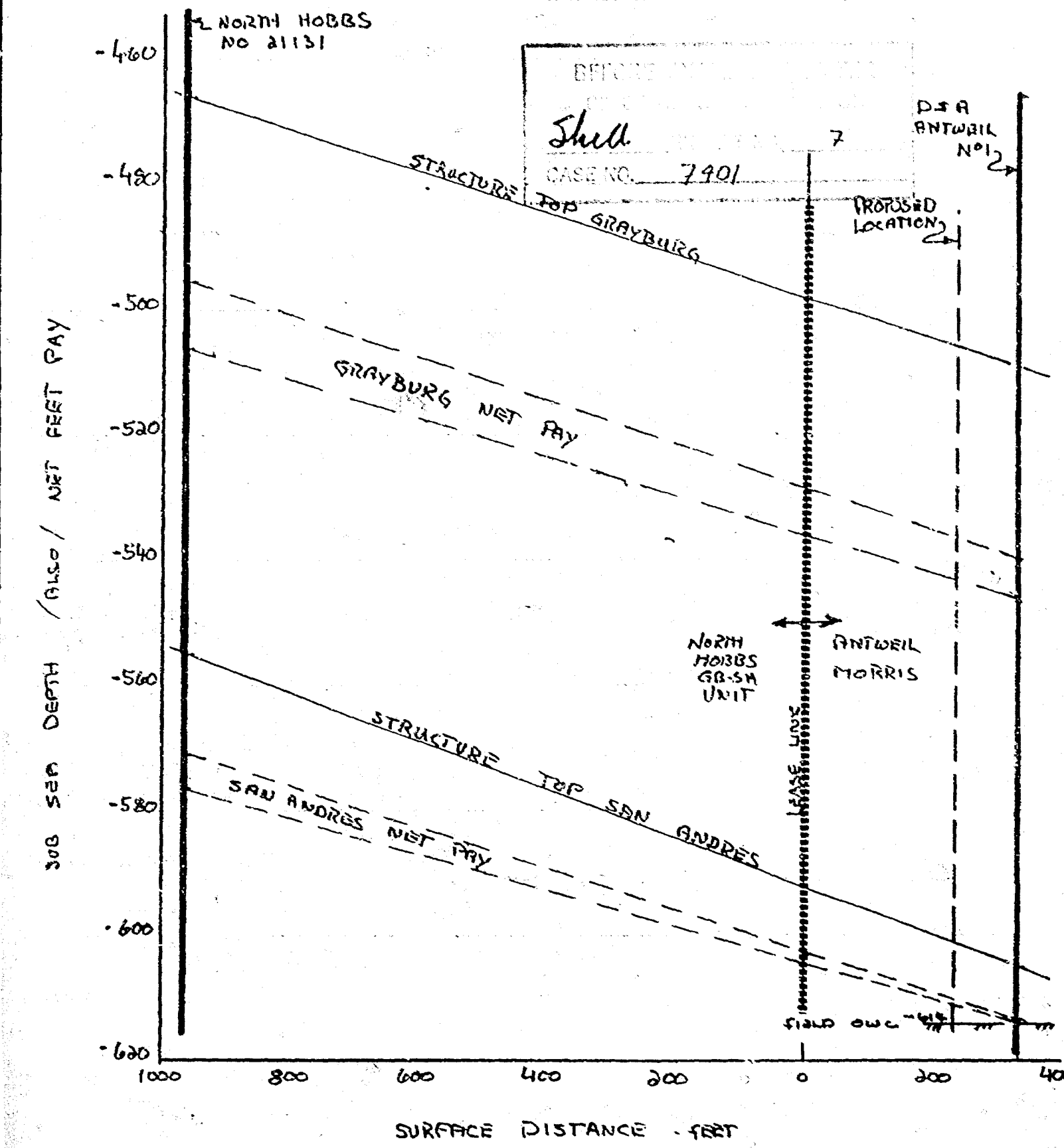
STRUCTURE CONTOURS ON TOP SAN ANDRES
IN VICINITY ANWEIL MORRIS D&A NO. 1
SHOWING POTENTIAL PRODUCTIVE ACREAGE



● UNIT WELL
20 421

PRODUCTIVE ACREAGE	4.7
UNIT ACREAGE	40.0
% PRODUCTIVE	11.7%

X SECTION A-A'
GRAYBURG-SAN ANDRES
ANTWEIL MORRIS-NORTH HOBBS UNIT



Morris R. Antweil
Oil Operator
P. O. Box 2010
Hobbs, New Mexico 88240

October 27, 1981

Shell Oil Company
P. O. Box 991
Houston, Texas 77001
ATTN: W. W. Dover

RE: North Hobbs Unit
Lea County, New Mexico

Gentlemen:

Enclosed is a copy of New Mexico Oil Conservation Division Docket No. 35-81 for the Examiner Hearing set on 4 November 1981. Your attention is directed to Case No. 7401, our application for an unorthodox location in Section 21-T18S-R38E offsetting the North Hobbs Unit.

You were previously advised of our intention to request a hearing on this matter by our letter of 9 October 1981.

Yours Very Truly,

MORRIS R. ANTWEIL

R. M. Williams

RMW:pb

Enclosure

cc: Oil Conservation Division
Santa Fe, New Mexico

Dockets Nos. 36-81 and 37-81 are tentatively set for November 19 and December 4, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 4, 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 7396: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Sentry Oil Exploration Company and Lawyers Surety Corporation to appear and show cause why Farr Well No. 1, located in Unit G of Section 6, Township 31 North, Range 34 East, Union County, New Mexico, should not be ordered plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7380: (Continued and Readvertised)

Application of Bird Oil Corporation for an unorthodox location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox Entrada location of a well to be drilled 2110 feet from the North line and 1120 feet from the East line of Section 10, Township 22 South, Range 9 West, the SE/4 NE/4 of said Section 10 to be dedicated to the well.

CASE 7397: Application of Belco Petroleum Corporation for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Atoka and Strawn production in the wellbore of its Kimbley Well No. 1, located in Unit G of Section 21, Township 23 South, Range 28 East.

CASE 7398: Application of El Paso Natural Gas Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Wolfcamp-Penn well, to be drilled 660 feet from the South and West lines of Section 23, Township 26 South, Range 30 East, Ross Draw Area, the S/2 of said Section 23 to be dedicated to the well.

CASE 7399: Application of Texaco, Inc. for a Unit Agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the North Vacuum Abo West Unit Area, comprising 2000 acres, more or less, of state lands in Township 17 South, Range 34 East.

CASE 7400: Application of Texaco, Inc. for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in its North Vacuum Abo West Unit Area by the injection of water into the Abo formation through 13 wells located in Sections 15,21,22,27,28 and 34, Township 17 South, Range 34 East, North Vacuum-Abo Pool.

CASE 7401: Application of Morris R. Antweil for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 2410 feet from the North line and 330 feet from the West line of Section 21, Township 18 South, Range 38 East, Hobbs Grayburg-San Andres Pool, the SW/4 NW/4 of said Section 21 to be dedicated to the well.

CASE 7306: (Continued from October 21, 1981, Examiner Hearing)

Application of Morris R. Antweil for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Abo formation underlying the NE/4 SW/4 of Section 5, Township 20 South, Range 38 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 7402: Application of MGF Oil Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Strawn formation underlying the NW/4 NW/4 of Section 5, Township 20 South, Range 39 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.

Morris R. Antweil
Oil Operator
P. O. Box 2010
Hobbs, New Mexico 88240

October 9, 1981

Shell Oil Company
P. O. Box 991
Houston, Texas 77001
ATTN: W. W. Dover

Case 7401

RE: North Hobbs Unit
Lea County, New Mexico

Gentlemen:

In reference to your letter of August 28 to the New Mexico Conservation Division, we would like to address some of the possible conditions that have been listed as being acceptable to Shell Oil Company.

Considering the first possibility listed, that of reducing the allowed deviation angle, could be acceptable to us. We suggest a maximum deviation program according to the following guidelines; 1° average deviation for the first thousand feet, 2° average for the second thousand feet, 3° average for the third thousand feet and 4° average for the three thousand feet to total depth interval. This would place the maximum theoretical displacement of the wellbore within the limits of a well at an orthodox location and deviation limits allowed by commission rules.

The second possibility of designating a bottom-hole target area is one of which we are of the opinion is not practical or feasible due to the relatively small interval from the base of the salt to the total depth. Directional control would be difficult in the salt section and the small interval below would not allow sufficient length for correction.

The final possibility of establishing a reduced allowable is probably the settlement which will result. We are therefore requesting the Oil Conservation Division to docket our application for hearing on 4 November 1981. We

would be pleased to discuss possible alternates with you prior to the hearing.

Sincerely,

MORRIS R. ANTWEIL

R. M. Williams

RMW:pb

cc: Oil Conservation Division
Santa Fe, New Mexico

CAMPBELL, BYRD & BLACK, P.A.
LAWYERS

JACK M. CAMPBELL
HARL D. BYRD
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POST OFFICE BOX 2208
SANTA FE, NEW MEXICO 87501
TELEPHONE: (505) 988-4421
TELECOPIER: (505) 983-6043

October 12, 1981

Mr. Joe D. Ramey
Division Director
Oil Conservation Division
New Mexico Department of
Energy and Minerals
Post Office Box 2088
Santa Fe, New Mexico 87501

Case 7401

Re: Application of Morris R. Antweil for an Unorthodox Well Location, Lea County, New Mexico

Dear Mr. Ramey:

Enclosed in triplicate is the application of Morris R. Antweil in the above-referenced matter.

The applicant requests that this matter be included on the docket for the examiner hearing scheduled to be held on November 4, 1981

Very truly yours,

William F. Carr

WFC:lr

Enclosures

cc: Mr. R. M. Williams

BEFORE THE

OIL CONSERVATION DIVISION

NEW MEXICO LEPARTMENT OF ENERGY AND MINERALS

IN THE MATTER OF THE APPLICATION OF MORRIS R. ANTWEIL FOR AN UNORTHODOX WELL LOCATION, LEA COUNTY, NEW MEXICO.

CASE 7401

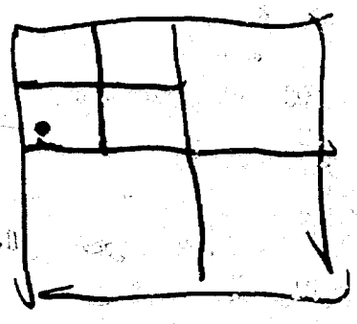
APPLICATION

Comes now, MORRIS R. ANTWEIL, by and through his undersigned attorneys, and hereby makes application to the Oil Conservation Division for approval of an unorthodox well location and in support thereof, respectfully states:

1. Applicant is the operator of the Grayburg-San Andres Formations underlying the SW/4 NW/4 of Section 21, Township 18 South, Range 38 East, N.M.P.M., Lea County, New Mexico.

2. Applicant proposes to drill a well to test the Grayburg and San Andres Formations at an unorthodox location 2410 feet from the North line and 330 feet from the West line of said Section 21.

3. The unorthodox location is necessitated by the fact that this well will be drilled within the College Park Industrial Subdivision, Hobbs, New Mexico, and is surrounded by streets and other wells so as to make this location the only feasible location available to the applicant.



4. Applicant, therefore, seeks an exception to the well location requirements of Oil Conservation Rule 104 B, I (b) for said well.

5. A standard 40 acre spacing unit to be comprised of the SW/4 NW/4 of said Section 21 will be dedicated to the well.

6. That approval of this application will afford applicant the opportunity to produce its just and fair share of the reserves from the Grayburg and San Andres formation thereby protecting correlative rights, will result in the production of hydrocarbons that otherwise would not be produced and will otherwise be in the best interest of conservation.

WHEREFORE, Morris R. Antweil requests that this application be set for hearing before a duly appointed examiner of the Oil Conservation Division, that notice be given as required by law and the rules of the Division and that the Division enter its Order granting the application and making such other provisions as it deems proper in the premises.

Respectfully submitted,

CAMPBELL, BYRD & BLACK, P.A.

By _____
William F. Carr
Attorneys for Applicant
Post Office Box 2208
Santa Fe, New Mexico 87501

HERBIE DAN

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. 7401
Order No. R-6858

APPLICATION OF MORRIS R. ANTWEIL
FOR AN UNORTHODOX OIL WELL
LOCATION, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 4, 1981, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this_____day of December, 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, Morris R. Antweil, seeks authority to drill a Grayburg-San Andres oil well at an unorthodox location 2410 feet from the North line and 330 feet from the West line of Section 21, Township 18 South, Range 38 East, NMPM, Hobbs Pool, Lea County, New Mexico, and to dedicate thereto in the Hobbs Pool the SW/4 NW/4 of said Section 21.

(3) That the SW/4 NW/4 of said Section 21 is offset to the west, southwest, and south by lands within the North Hobbs Grayburg-San Andres Unit Area operated by Shell Oil Company, and upon which secondary recovery operations are being conducted.

(4) That Shell Oil Company appeared at the hearing and objected to the proposed unorthodox location inasmuch as it is planned to place the well directly offsetting the proposed unorthodox location to the west on water injection, and approval of the subject application without penalty, according to Shell, would cause oil to migrate off the North Hobbs Grayburg-San Andres Unit Area onto Antweil's property for production at the proposed unorthodox location, thereby impairing the Unit Owners' correlative rights.

(5) That the proposed location is 100 feet south of a well drilled at a point 2310 feet from the North line and 330 feet from the West line of Section 21 by the applicant in 1952, said well having been plugged and abandoned as a dry hole after having recovered only oil-cut mud, water-cut mud, and oil and gas-cut mud on four separate drill stem tests in the Grayburg and San Andres formations, and swabbing dry or swabbing sulphur water only from three attempted completion intervals, one each

in the Grayburg formation, Upper San Andres formation, and Lower San Andres formation.

(6) That the structural dip in the general area in question is to the Northeast, and it is reasonable to assume that those lands in the SW/4 NW/4 of Section 21 lying North and East of the aforesaid dry hole are not productive in the Grayburg or San Andres formation.

(7) That assuming that the productive limits of the Grayburg and San Andres formations, going Northeast from the main body of the pool, reach to but do not extend beyond the surface location of the aforesaid dry hole, then there are approximately 5.8 acres of productive formation in the SW/4 NW/4 of Section 21 belonging to applicant.

(8) That the unorthodox location requested by the applicant should be approved in order to permit him to produce his share of the oil and gas in the Hobbs Pool, thereby preventing waste, but the production from said well should be curtailed in order to protect the correlative rights of the owners of offsetting property.

(9) That the applicant has proposed a formula for determining the penalty which should be assessed against his proposed well, said formula being a combination of percentage impingement factors on offsetting properties on a footage basis on a north/south axis and on an east/west axis compared to a standard location, as well as a percentage impingement factor on offsetting properties on an acreage-drainage-beyond-lease-line basis compared to a standard location, and which in the case at hand would yield an allowable penalty factor of 12.1 percent and

an allowable of 87.9 percent of top allowable for the Hobbs Pool.

(10) That the aforesaid formula has been utilized by the Division on previous occasions and has been found to be fair and equitable in certain cases involving unorthodox locations, but does not take into account the non-productive acreage which may be included in the proration unit dedicated to a well drilled at an unorthodox location.

(11) That in the instant case where only 5.8 acres of productive lands may be attributed to the well, the aforesaid formula yielding 87.9 percent of top allowable for the pool imposes an insufficient penalty on the proposed location and does not protect correlative rights, and should not be used.

(12) That in the absence of any other formula yielding a more equitable penalty, a straight productive acreage ratio should be applied in this case and the allowable factor for a well drilled at the proposed location should be (5.8 ÷ 40) x 100, or 14.5 percent.

(13) That any such well drilled at said location should be permitted to produce 14.5 percent of its productivity or 14.5 percent of the top unit allowable for the Hobbs Pool, whichever is less, provided however, that a reasonable minimum allowable should be provided in order to avoid premature abandonment and prevent waste.

(14) That ten barrels per day is a reasonable minimum allowable and should be established for a well drilled at the subject unorthodox location.

(15) That approval of the application in accordance with the above Findings is in the interest of conservation, will prevent waste, and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Morris R. Antweil, is hereby authorized to drill a well to test the Grayburg and San Andres formations at an unorthodox location 2410 feet from the North line and 330 feet from the East line of Section 21, Township 18 South, Range 38 East, NMPM, Hobbs Pool, Lea County, New Mexico.

(2) That said well, if completed as a producer from the Hobbs Pool, shall have an allowable factor of 14.5 percent of its productivity or 14.5 percent of top unit allowable for the Hobbs Pool, whichever is less, provided however, that said allowable factor shall not be imposed if it results in an allowable of less than ten barrels per day.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

concurrently present, to the Division, a plan for remedial action.

(5) 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

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. 7376
Order No. R-6825

APPLICATION OF DUGAN PRODUCTION CORPORATION FOR DOWNHOLE COMMINGLING, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 21, 1981, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 24th day of November, 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, Dugan Production Corporation, is the owner and operator of the Big 8 Well No. 1-E, to be drilled in Unit O of Section 8, Township 24 North, Range 9 West, NMPM, San Juan County, New Mexico.

(3) That the applicant seeks authority to commingle Basin-Dakota and Bisti-Lower Gallup production within the wellbore of the above-described well.

(4) That from the Basin-Dakota zone, the subject well is expected to be capable of low marginal production only.

(5) That from the Bisti-Lower Gallup zone, the subject well is expected to be capable of low marginal production only.

(6) That the proposed commingling may result in the recovery of additional hydrocarbons from each of the subject pools, thereby preventing waste, and will not violate correlative rights.