STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
Santa Fe, New Mexico

18 June 1987

COMMISSION HEARING

IN THE MATTER OF:

Application of Texaco Producing Inc. for a drilling permit in the potash/oil area, Eddy County, New Mexico. CASE 9148 & ~~9158~~

BEFORE: William J. Lemay, Chairman
Erling A. Brostuen, Commissioner
William R. Humphries, Commissioner

TRANSCRIPT OF HEARING

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TESTIMONY GIVEN ON 18 JUNE 1987

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MR. LEMAY: We shall now call Cases 9148 and 9158.

MR. ROYBAL: Application of Texaco Producing, Incorporated, for a drilling permit in the potash/oil area, Eddy County, New Mexico.

Application in the above sought cause seeks authority to drill its proposed Forty-Niner Ridge Unit Well No. 3 to test the Delaware formation at a location 2310 -- a location 2,310 feet from north and east lines of Section 16, Township 23 South, Range 30 East, said location being within the boundaries of the potash/oil area as defined by a Division Order No. R-11-A, as amended, and having been objected to the owners of potash leases in the area.

MR. LEMAY: Appearances in Case 9148?

MR. HALL: Mr. Chairman, my name is Scott Hall from the Campbell & Black law firm, Santa Fe, on behalf of Texaco Producing.

MR. LEMAY: Additional appearances?

MR. HIGH: Charles C. High, Junior, and Joe McClaugherty, of Kemp, Smith, Duncan, and Hammond, for International Minerals and Chemical Corporation

and Western Ag-Minerals Company.

MR. LEMAY: Thank you. The other counsel is Duncan what, sir?

MR. HIGH: Mr. Joe McClaugherty.

MR. LEMAY: Jim McClaugherty?

MR. HIGH: Joe.

MR. LEMAY: Joe McClaugherty, thank you.

Without objection, counsel, can we consolidate Cases 9148 and 9158? Is that acceptable?

MR. HALL: We requested the --

MR. LEMAY: At your request I think that was. Is that acceptable?

MR. HIGH: Yes, we agree.

MR. LEMAY: Okay, I call now Case 9158.

MR. ROYBAL: Mr. Chairman, Case 9158. Application of Texaco Producing, Inc. for a drilling permit in the potash/oil area, Eddy County, New Mexico. Applicant in the above styled cause seeks authority to drill its proposed Forty-Niner Ridge Unit Well No. 3 to test the Delaware formation at a location 2,310 feet from the north line and 18 -- 1,980 feet from the west line of Section 16, Township 23 South, Range 30 East, said location being within

the boundaries of the potash/oil area as defined by Division Order No. R-111-A, as amended, and having been objected to by owners of the potash leases in the area.

MR. LEMAY: Okay, in the matter of 9148 and 9158, these cases at the request of counsel will be consolidated and we will begin with Mr. Hall.

Would you like to make an opening statement?

MR. HALL: Yes, Mr. Chairman, we have a preliminary matter I would like to clean up.

There were subpoenas issued to both sides, the Texaco and -- Texaco Producing, Inc., and the potash leaseholder opponents.

Pursuant to those subpoenas we have drafted confidentiality agreements, which will protect the dissemination of information or documents that both sides have identified and marked as confidential.

I believe both agreements have now been signed by both parties, protecting both sets of documents and we would request that those signed agreements be filed with the Commission and the documents protected according to the terms.

I've just given Mr. High the agreement that covers the documents produced by Texaco. Did you sign that, Charlie?

MR. HIGH: No, I haven't yet, but I will.

I would join in the request concerning confidentiality.

MR. ROYBAL: Mr. Chairman, we just received this stipulation and agreement about two minutes ago. If we could go off the record for another two or three minutes I think to review this I'd be able to --

MR. LEMAY: Let's go off the record just a couple minutes here concerning the confidentiality agreement.

(Thereupon a discssion was had off the record.)

MR. LEMAY: We'll go back on the record now.

Do you have, Mr. Roybal, some corrections you'd like to make to the documents as we see here on the stipulation of confidentiality?

MR. ROYBAL: Yes, Mr. Chairman.

On page 2 of the stipulation agreement governing protection of confidential information, paragraph 5 E and F refer to parties to this lawsuit, and after discussion with counsel, we're sure that what that language is meant to cover is this hearing and I think the

intent of counsel is that if there is further proceedings which do occur, that -- that they intend for it cover those also, but that this document itself is prepared for and controls this hearing before the Commission.

MR. LEMAY: Without objection that will be so noted.

The format for the hearing will be in such a way that the confidential matters on both sides, the Texaco and the potash, et al -- or the IMC, et al, will be handled upstairs in the OCD conference room but it will be a segment of the testimony and it will be restricted to only the witnesses and the Commission and the staff, of course, that are involved in the hearing, but all others will be barred from that portion of the testimony, at least for the IMC portion.

It can be that with the Texaco portion that's confidential, if it's only a few minutes of testimony and we're here and we're involved in it, we will ask you all to leave the room and for you to take a short break while we hear the confidential portions of the testimony, and those portions, as so stipulated in the letters signed by both, both counsels, or counsel for Texaco and the one for IMC, will be placed in sealed envelope and will not be available as part of the public record, and such testimony as will be given that is so noted to be confidential,

it will be stricken from the -- or not stricken but it will be placed in a sealed envelope separate from the testimony that will be public record.

With that as a format, we'll begin with Mr. Hall.

MR. HALL: Just one more question I missed a minute ago.

Is Mr. High entering an appearance for both IMC and Western Ag?

MR. HIGH: That's correct.

MR. HALL: And I wonder if I might beg one more stipulation from Mr. High, that notice of these combined proceedings have been given in accordance with the rules and regs of the Commission, if that's agreeable; otherwise I'm prepared to enter into the record the certified mail notices. I just did not make enough copies for everyone.

MR. HIGH: I don't know that to be a fact or not. We are not disputing notice; in fact we agreed on being here at the OCD, that these two cases be consolidated and heard today. We had notice, we're here, we're ready to go.

MR. LEMAY: Fine.

MR. HIGH: We raise no technical dissent with respect to notice.

MR. LEMAY: Fine, so noted.

Mr. McClaugherty is part of your -- co-counsel, Mr. High? He's not representing separate interest?

MR. HIGH: No, he is -- he is our local counsel. We're with the same firm.

MR. LEMAY: Okay.

MR. HIGH: His office is here in Santa Fe.

MR. LEMAY: Fine. Are we ready to begin, gentlemen?

MR. HIGH: Yes, sir.

MR. LEMAY: Mr. Hall.

MR. HALL: Mr. Chairman, I just have a few brief opening comments that frame the parameters in this hearing today.

Texaco Producing, Inc., is bringing to you two separate applications combined for two oil prospects in Eddy County, New Mexico. The locations are in the potash/oil area of Eddy County, both located in Section 16, Township 23 South, Range 30 East.

The first location is 2310 from the north line, 1980 from the west line.

The second is 2310 from the north and east lines.

It's interesting that both of these proposed locations are very near to a producing well, the Forty-Niner Unit Ridge No. 1 Well, which is now producing.

Texaco has the right to drill on Section 16. Section 16 is a State of New Mexico school land section, and the section comprises a part of the Forty-Niner Ridge Unit, which has been approved by fee owners, the Bureau of Land Management, and the State Land Office.

The unit agreement itself has a participating area provision which calls for the approval of periodic plans of development by the BLM and the Land Commissioner.

Here in this particular instance the State Land Office has made as a condition of their approval of the participating area for the Delaware formation that Texaco Producing, Inc., drill two wells before year's end. If those wells are not drilled, the participating area formula is jeopardized.

Also if they're not drilled, there is simply an absolute waste of the hydrocarbon resources underlying that section.

Both applications are brought under the (not understood) of Order R-111-A. Now it's interesting, we are not here to address the merits of the or-

der itself; simply applications for two locations within the boundaries defined by the subsequent amendments to the order.

We're not here to bring a collateral attack on any portion of the merits of that order itself. Instead, we think that the order itself simply -- the order itself does not delineate areas of commercially productive potash. The purpose of the order is simply trip wire. It delineates areas of concern if applications are brought to the Commission for permits to drill and the Commission and the applicant must take special precautions. The applicant must follow the drilling, cementing, and casing program set out in the order and then the OCC must make findings that the well does not result in undue waste or interference with potash resources in the area.

These findings must be within the overall mandate of the Oil Commission and staff, that the wells be allowed to drill in a manner so as to prevent waste, protect correlative rights, and otherwise protect the interest of conservation.

With that, we have five witnesses and we call first to the stand Mr. Tom Bryla.

Shall we have all five witnesses sworn at once?

MR. LEMAY: I think it might be

easier to do that. If you'll all stand, please.

(Witnesses sworn.)

THOMAS P. BRYLA,

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

DIRECT EXAMINATION

BY MR. HALL:

Q Will you state your name, please?

A My name is Thomas Bryla.

MR. HIGH: Mr. Chairman, I'm going to ask that the other witnesses be sequestered from the room.

MR. HALL: I'm going to object to that request. That is a condition under the Rules of Civil Procedure governing the District Courts. We know of no application of that rule to administrative proceedings in New Mexico.

We think it's inappropriate.

MR. LEMAY: Off the record for a minute, Sally.

(Thereupon a discussion was had off the record.)

MR. LEMAY: I'm going to overrule that objection on the basis that it has not been the policy for this Commission to handle affairs that way.

If there's confidential testimony, that's one matter, but where there's not confidential testimony, we will not honor that request.

MR. HALL: May I proceed?

MR. LEMAY: Please proceed.

Q Mr. Bryla, where do you live and by whom are you employed?

A I live in Midland, Texas. I'm employed by Texaco Producing, Inc.

Q And have you previously testified before the Commission and had your qualifications made a matter of record?

A Yes, sir, I have.

Q Are you familiar with the application in this case, the lands involved, and two well locations?

A Yes, I am.

MR. HALL: Mr. Commissioner, Mr. Chairman, are the witness's qualifications acceptable?

MR. LEMAY: His qualifications are acceptable.

Q Mr. Bryla, what is it that Texaco Producing, Inc. seeks by this application?

Texaco Producing, Inc. would like to have approval for two well locations to be located in Section 16, 23 South, Range 30 East, Eddy County, New Mexico.

Q All right.

MR. HALL: Can all the Commissioners hear the witness?

A I'm sorry, am I speaking --

MR. LEMAY: A little louder, please.

A Yes, sir.

Q What are the footage locations of those locations?

A May I refer to the Exhibit One map?

Would you like to have me identify all this?

Q Yeah, why don't you refer to Exhibit One, identify that, and explain what that shows to the Commission?

A Exhibit One on your desk is a enlarged -- well, an enlarged map of the location of both the Forty-Niner Ridge Unit, as well as two locations indicated in orange on Section 16, 23 South, 30 East.

The locations, as I mentioned previously, are 2310 from the north and east line of Section 16; 2310 from the north and 1980 from the west line of Section 16.

The delineated area of the hatched lines is the current, existing 6-section area, unit area, of the Forty-Niner Ridge Unit.

And, I'm sorry, you'll have to refresh me as to what exactly your question is again, now at this point.

Q You stated the footage locations?

A Right, the locations are 2310 from the north and east line of Section 16, and 2310 from the north line and 1980, the west line, of Section 16, 23 South, 30 east.

Q For the record, what type of lease is Section 16?

A Section 16 is a State of New Mexico lease.

Q All right, if you would, refer to Exhibit Two, identify that and explain what it's intended to reflect.

A Section -- excuse me, Exhibit Two is an enlargement of the map you see on the wall behind me. It's titled Preliminary Map Showing Distribution of Potash Resources, Carlsbad Mining District, Eddy and Lea Counties, New Mexico. It's provided by the Bureau of Land Management. It's dated 1984.

The blow-up that you see in front of you

was made from that map, as I mentioned. It shows in uncolored portions, just the grays -- and I'm going to leave the box just to point it out on here, if it's all right -- located as the arrow, this shaded area corresponds with this auburn-colored, blue corresponds with the lighter gray, which means in this case, taken directly from the legend, the area that the two wells are located are what's called the barren and/or minor potash mineralization areas. It's composed of sub-economic resources that would require a substantially higher market value or a major cost reducing technology for economical production.

Sub-economic resources also include other minerals not presently being recovered.

Q All right. And who prepared the map from which your exhibits were taken?

A It's, as far as preparation, it's provided by the BLM. The credits as to the actual information, well, it gives various references. It is prepared by the BLM.

Q All right. Is it -- is it a map that's a matter of public record and made available --

A Yes, it is. It is public record.

Q Is Exhibit Two an accurate depiction of the BLM map?

A Yes, sir, it is.

Q Mr. Bryla, are you familiar with the Forty-Niner Ridge unit agreement?

A Yes, sir, I am.

Q All right. I'd like you to refer to what's been marked Exhibit Three and identify that, please.

A Exhibit Three is the unit agreement for the Forty-Niner Ridge Unit. It delineates the original working interest area, which is twelve sections, which has since been restricted down to six. It's an agreement for the spreading of risk and the for the exploration and development of that area at that time for the Morrow. As currently provided, we are now trying to develop the Delaware.

Q All right, what type of lands are committed to the unit?

A In this case it's State, Federal, and some fee lands.

Q Does the unit have a participating area provision?

A Yes, it does. What it provides for is that there is an equitable distribution of the royalties and overriding royalties production, based on the -- an educated analysis of what the oil participation, or the reasonable participating, for the development of that acreage.

So, for instance, if it's the -- if it's considered to be all prospective for a particular formation,

then everybody's -- every royalty owner who has acreage within that area would be allowed to particpate in the royalties that are produced.

The working interest remains the same as per the unit operating agreement but the participation in the royalties easily can be varied.

Q All right. Well, the participating area provision, along with the other terms of the unit agreement, does that provide a means by which the interest owners can spread the risks, costs, and --

A Yes.

Q -- charges?

A Yes, it does. The entire intent of the agreement is, to go into it once again, is to -- for several owners, in this case the original ones being Bass Enterprises and Meridian -- I'm sorry, it was El Paso back then, and Skelly, who is now Texaco, Inc., to drill an area and share the risk and the cost of exploration and development for various formations and oil and gas.

Q All right. Well, now under the participating area provision, what happens if an operator is for some reason unable to meet the requirements of the plan of development for, say, non-diligence, or something like that?

A That -- there is a plan of development submitted to the State of New Mexico, which has to be ap-

proved by both the State and Federal government, that in essence is a requirement for reasonable development of the acreage and, of course, like anything, failure to reasonably develop can result in the termination of a lease that are contributed to the unit.

Q All right. Let me refer you to Exhibit Four. Would you identify that, please?

A Exhibit Four is a letter from the Commissioner of Public Lands, dated March 5th, 1987. It was written to Texaco USA, addressed to the Land Department of Texaco.

Q All right. Do you understand that this letter -- this letter to come from the public records of New Mexico State Land Office?

A As I understand, yes, it is.

Q All right, and although the letter speaks for itself, what is the thrust of the letter?

A The thrust of the letter is the State of New Mexico is dissatisfied with the current condition of development on the Forty-Niner Ridge Unit.

From the bottom of the second page it says, "In view of the above ..." can I quote this directly or --

Q Please do.

A Okay. "In view of the above, your re-

quest for approval of the initial Delaware Canyon Participating Area cannot be approved unless Texaco resubmits an acceptable plan of developed providing for the drilling and completion of two wells within the proposed participating area by December 31st, 1987. All other subsequent plans should also provide for the drilling of additional wells until this unit is fully developed."

So what this is addressing is we -- can I --

Q Please go ahead.

A The -- Texaco Inc. has submitted per the unit agreement for approval a new participating area once again for the royalty owners to share in the royalties produced under the Delaware formation.

They have asked for six sections. The State of New Mexico has very clearly said throughout the letter that it is dissatisfied with the way things have been done in the past, citing lack of due diligence, for instance, in following up on a proposed location, and that they don't believe that in this case, that they can grant us six sections participating area on a one-section Delaware Canyon producing well.

Q Let me refer you to what's been marked as Exhibit Five and have you identify that and explain that.

A All right. Exhibit Five is the response

by the State of New Mexico to Texaco, Inc., a letter from Mr. Joe King, who is a Texaco employee.

Q And is that letter a part of Exhibit Five, also?

A Yes, it is. The letter is dated from Texaco March 24th, 1987. It's the plan of development for the Forty-Niner Ridge Unit for 1987.

It lists two -- well, I'll just read the last paragraph.

"Texaco's plans for 1987 will be the drilling of two additional wells to the Delaware. These new wells will be drilled at the locations that are yet to be determined. Also, Texaco plans to recomplete Well No. 2 to the Delaware." Which, the No. 2 has already been recompleted, I believe, in the Delaware.

What that --that's the Texaco letter, and then the State of New Mexico letter reads, let's see, "The Commissioner of Public Lands has this date approved your 1987 Plan of Development for the Forty Niner Ridge Unit Area, Eddy County, New Mexico. Such plan provides..." or excuse me, "... proposes to recomplete the Unit Well No. 2 in the Delaware and you will also drill two additional wells to the Delaware.

Our approvel is subject to like approval by the New Mexico Oil Conservation Division and the Bureau

of Land Management."

And then courtesies are given.

Q All right, is the plan of development that the -- Texaco has resubmitted to the State Land Commissioner the reason that Texaco is here today?

A Yes, it is.

Q Mr. Bryla, in your opinion will the granting of Texaco's applications be in the best interest of conservation, the protection of correlative rights, and prevention of waste?

A Yes, it would.

Q All right, let me ask you, were Exhibits One and Two prepared by you or at your direction?

A Yes, they were.

Q And Exhibits Three, Four, and Five, are they matters of public record on file with the State Land Office?

A Yes, they are.

MR. HALL: At this point we'd move the admission of Exhibits One through Five.

MR. LEMAY: Without objection those exhibits will be entered into the record.

MR. HALL: Pass the witness.

MR. LEMAY: Mr. High?

CROSS EXAMINATION

BY MR. HIGH:

Q Mr. Bryla, is that how you pronounce it?

A Yes, sir.

Q How long have you been a landman for Texaco?

A Six and a half years.

Q So you're familiar -- you're familiar, I take it, with the thing that we call R-111-A?

A R -- pardon me?

Q R-111-A? Do you know what that means?

A No, I don't know what that means.

Q Do you know what R-111 means?

A No, sir, I don't.

Q Your office is in Midland?

A Yes, sir, it is.

Q And what do you do as a landman?

A Well, I prepare contracts. I advise other departments as to our rights on acreages that we have leases and various operating agreements or any kind of other correlative agreements.

Q Is it part of your responsibility to be familiar with the unit agreements or --

A Yes, it is.

Q -- operating or participating agreements

to which Texaco Producing, I-N-C is a party?

A Yes, sir.

Q And one of the agreements that you're familiar with, I guess, is the Forty-Niner Ridge Unit in Eddy County, New Mexico?

A As detailed as it is, the best I can, yes, sir.

Q I'm sorry, I can't hear you.

A As detailed as it is and as best as I can be, yes, sir, I am familiar with it.

Q Well, is it part of your responsibility to --

A Yes, it is.

Q -- keep up with it and track of it --

A Yes, sir, it is. It's my responsibility.

Q -- and report to superiors at Texaco with respect to what happens?

A That is correct. Anybody asks a question about the contract and what it means, that's my responsibility to try to give them an answer.

Q Okay, so you've had occasion to look at it, read it, study it, and you have a general understanding of what it --

A That is correct.

Q -- implies.

Now, the Forty-Niner Ridge Unit itself is now down to six sections, is that correct?

A That is correct. It's down to six.

Q The other sections have been eliminated, is that it?

A Yes.

Q And why were they eliminated, do you know?

A They were eliminated because they were not included within the original Morrow participating area within the five years after the establishment of the first participating area.

Q Okay, and the Morrow was abandoned, was it not?

A It was abandoned, yes, sir, I believe in 1984. I could be wrong on that. I can give you that, if you'd like.

Q Okay.

A Okay.

Q In fact it was abandoned, right?

A Yes, sir.

Q It was abandoned because there was nothing there, at least no commercial quantities of --

A That would be something engineering could provide you with the answer, but I believe that the logic of

that department was that it had been depleted.

Q Well, isn't it your understanding, Mr. Bryla, it was abandoned because it was not economical?

A Yes, sir.

Q They don't abandon economical reserves.

A That's correct, yes, sir.

Q So it was abandoned by Texaco.

A Yes, sir.

Q And upon that abandonment, then the original participating unit dissolved, did it not?

A The participating area, not the unit.

Q All right, I'm sorry, the participating area part of the Morrow dissolved.

A That's correct.

Q So now we have a Forty-Niner Ridge Unit that includes six sections and did I understand you correct to say that there is no participating area now under the Forty-Niner Ridge Unit?

A There is what you could call a temporary one which provided under the unit agreement means that the existing prior one will be maintained until such time as the new one is established.

Q Now would that include or exclude the areas that were previously eliminated from the Forty-Niner Ridge Unit?

A It would -- the ones that were previously eliminated are eliminated, period. Just the original, I mean, excuse me, just the currently existing six sections as shown in my exhibits.

Q So you're operating under a participating area that includes the six sections that make up Forty-Niner Ridge Unit.

A That's -- may I explain what I mean in my answer on this one, is that at this time that's what it is with the State and we are -- we have applied for the participating area to include six sections.

The State at this time has not approved the participating area, nor has the federal government.

We have merely applied for it.

Q You have applied for a participating area for the Delaware --

A Yes, sir.

Q -- that includes all six sections within the Forty-Niner Ridge Unit.

A That is correct.

Q And the State has not yet approved that.

A Right. They're waiting to see, as per these letters, how our plan of development proceeds.

Q All right. Why have they told you they won't approve it now?

A They're saying we haven't diligently developed the area.

Q Have they said anything about drainage?

A That was also mentioned in the letter, that at this time without further drilling of wells, that one well could not justify a six-section participating area; however, they said if we submitted suitable plans of development they might approve it.

May I quote my exhibit, their letter, in other words?

Q No, I (not understood).

A Okay.

Q I'm just -- just asking what you recall.

A Yes, sir. All right.

Q That's what the State said to you about the six-section participating area.

A The State has said that unless they see a suitable plan of development and further development, they won't approve the six-section participating area.

Q I believe that's why you said Texaco filed the APD's that are in this case?

A Well, we wanted to drill them, anyway, but that's certainly one of the reasons we're fighting this.

Q So is it -- if I understand you correctly, it is Texaco's intention if these APD's are granted,

that they will drill both the well locations, both wells at the locations we're talking about here today.

A APD being?

Q Application for permit to drill.

A All right, yes, that's what we would like to do. As I understand, that would be something engineering would have to testify to, I believe we're ready to drill those.

Q I'm sorry, my question, Mr. Bryla, was to you.

A All right, sir.

Q If the OCC approves the two APD's, these Applications for Permit to Drill we're here today on, --

A We will drill, yes.

Q -- the surface locations you've identified --

A Yes, we will drill. That is the plan at this time, to drill those.

Q -- it is your understanding Texaco will drill those wells.

A That is correct.

Q Now you said if you don't meet the development plan that the State is urging on you, which I believe is the drilling of two wells?

A Yes, sir.

Q You identified some bad things that would happen. Do you recall that?

A It's possible, yes, sir.

Q Now, is there any way you can avoid that, Mr. Bryla?

A On a State lease? I don't believe so. Other, in other words, what we have here, the problem is failure to develop. The State has indicated they're unhappy with our current situation out there. I believe on Federal lands you can apply for a suspension but on the State lands I don't believe you can get away with that.

Q So is it your testimony here today that it's your understanding that these APD's are disallowed; that the Forty-Niner Ridge Unit or participating area will dissolve?

A No. What I'm saying is that the State of New Mexico has indicated they are unhappy with the situation. What the options are, what they decide to do, I'm not sure of, but I'm certain one of the problems may be trying to get some of the leases returned to the State of New Mexico; releases for failure to develop.

Q But they -- do you know what Texaco's right would be under the unit operating agreement if something like that happened?

A I'm sorry.

Q Do you know what Texaco's rights would be if the OCC dissallowed the ADP's?

A I'm sure I'm not, let's put it this way. I'm not sure what your question is. The results, in other words, in this case, since the State has put us on notice they're unhappy, what would happen if the locations were not approved? The possiblity --

Q I believe, well, let me --

A Go ahead, I'm sorry.

Q I don't want to make you guess, Mr. Bryla. Let me refer to Texaco's Exhibit Number Three and refer you, if I may, to page 22.

A All right, sir. All right.

Q Paragraph 26 is entitled Unavoidable Delay.

That paragraph says, and let me just quote a portion of it to you, "All obligations under this agreement requiring the unit operator to commence or continue drilling, or to operate on or produce unitized substances from any of the lands covered by this agreement shall be suspended while the unit operator, despite the exercise of due care and diligence, is prevented from complying with such obligations in whole or in part, by strikes, acts of God, Federal, State, or municipal law or agencies, unavoidable accidents, uncontrollable delays in

transportation, inability to obtain necessary materials in open market, or other materials beyond the reasonable control of the unit operator, whether similar to matters herein enumerated, or not."

Now, if the State, the State being the Oil Conservation Commission, disapproves your applications for permit to drill at the two locations that you're here trying to get, do you know, Mr. Bryla, whether or not Texaco would have any rights under paragraph 26?

A The key word you read on there is "beyond the reasonable control of the unit operator". It's within our control to try to get these locations approved, and that's why --

Q It's not within your control if the OCC disallows these things, there is nothing else Texaco can do, is there, with respect to drilling these two locations?

A As far as I know. I would suppose we'd be allowed to appeal it.

Q Have you discussed paragraph 26 and whether or not that would be of a benefit to Texaco with anyone else within Texaco's organization?

A Yes, I have.

Q And did you discuss whether or not that would provide Texaco with a defense in the event these two APD's were disallowed?

A We have decided it's an arguable defense but it's not --

Q So you have considered this --

A Yes, sir, we have --

Q -- this question.

A -- considered it.

Q So if these two APD's are denied by the OCC, it's conceivable, at least, that the Forty-Niner Ridge Unit participating area could continue unaffected.

A It's conceivable, but as I said, it's a risk and that's what this whole -- this whole hearing is about.

Q Well, you're -- you're -- I assume that you're also aware, Mr. Bryla, that paragraph 30, and I refer you to page 24 --

A All right, sir.

Q -- of the unit operating agreement. You are aware, are you not, that paragraph 30 prohibits the drilling of oil or gas wells at locations on, quote, either Federal or State lands, and I quote, "...which in the opinion of the Commissioner would result in undue waste of potash deposits or constitute a hazard to or unduly interfere with mining operations being conducted for the extraction of potash deposits."

A I'm familiar with that --

MR. HALL: At this point I'm going to state an objection to the form of the question. I believe the language in section 30 speaks for itself and it's not what Mr. High --

MR. LEMAY: Perhaps you could rephrase the question.

MR. HIGH: I'm sorry and will be happy to.

Q Are you familiar, Mr. Bryla, with the requirements of paragraph 30 of the unit operating agreement?

A Yes, sir, I am.

Q So the fact that you're the unit operator, you being Texaco --

A Yes.

Q -- you don't have the rights under this unit operating agreement to waste potash.

A No, we don't have a right to waste potash.

Q Now, you -- you mentioned something about lease suspension. Are you involved as a landman in whether or not a lease should or should not be suspended by Texaco?

A Well, this is a State lease so it's not a question.

Q Well, my question, Mr. Bryla, is as a landman are you involved in getting or not getting suspen-

sion of leases on behalf of Texaco?

A At this point I've never been involved in applying or getting one.

Q Okay, so it's not part of your duties as a landman to be involved in --

A No, that's not what I said. What I said, I'd never been involved in one at this time. In my six and a half years at Texaco, we've never had to apply for suspension when I was working in that area. I'm not sure if we ever have at all, but in my six and a half years that duty has never arisen; the need has never arisen.

Q Okay. Well, I don't want to misunderstand your answer and I don't want you to misunderstand my question, so let's start all over. Is it part of your responsibility on behalf of Texaco to be responsible for the suspension of leases?

A I would be involved in that, yes, sir. I would be involved in other -- the best answer I can give you is it is not a decision on my part.

I certainly would be involved from the Land Department, as to advising the land situation, the -- any existing letters, for instance, the Oil and Gas Commission or the BLM, talking about development, and telling management what it is and if it came down to actually wanting to get a suspension, I would notify, I believe, the

engineers, who would write the letters requesting a suspension, explaining the reason, and we, of course, the Land Department, would either mail the letter at the direction of the Land Department, prepared by the Engineering Department.

I'm not really sure.

Q In the event a lease needed to be suspended or an application for suspension needed to be pursued by Texaco, --

A Yes, sir.

Q -- would you be aware of it as a landman?

A Probably. In all likelihood it's my area, so I probably would.

Q And what is your area, Mr. Bryla?

A I work Eddy County as well as parts of West Texas.

Q Okay, so if Texaco needed to suspend a lease in Eddy County, you should have some knowledge of it.

A In all likelihood they would let me know that it was being done.

Q Okay, would it be your responsibility as a landman to originate the possibility that a lease should be considered for suspension?

A I would be aware of the situation that, for instance, a lease was going to be in jeopardy due to existing circumstances. As to actually wrote up the re-

quest, I'm not sure. As I've said, I've never had to do one so I'm not sure what the delegation of authority is on that.

Q Okay, but you are generally familiar with -- with when a lease can be suspended and when it cannot be.

A No, I'm not.

Q You're involved and you have some responsibility but you're not aware of the --

A In other words, like I said, I've never had to prepare one yet. It's never come up. I don't know all the ins and outs of when you, for instance, can request a suspension.

I can tell you what I assume would be the case.

Q No, I'm -- I really don't want to know what you assume.

A I didn't think so.

Q Okay. But if something came up, then it would be your responsibility.

A It would be my responsibility to --

MR. HALL: Mr. Chairman, I'm going to object. This question has been asked and answered in ten different forms and I think we need to get on with it.

MR. HIGH: I'm not sure it's ever been answered, but I will move on.

Q Are you familiar at all, Mr. Bryla, with the rules and regulations of the New Mexico State Land Office?

A Some of them.

Q Did I understand you correct earlier to say that there is no provision for suspension of lease under the laws of the State of New Mexico?

A As far as I know, in a State lease, no, even for lack of development, as far as I know, no.

Q Is it your understanding that Texaco is here today on these APD's because of an understanding that the State lease cannot be suspended?

A That's part of it.

MR. HIGH: I would like, if I may, Mr. Chairman, to ask the Oil Conservation Commission to take judicial notice of Section 1.061 of the Rules and Regulations of the New Mexico State Land Office, and I would like to show that rule to the witness and ask him if he has ever seen that before.

Q Mr. Bryla, let me show you, please, what I will refer to as Section 1.061 of a document entitled New Mexico State Land Office.

A All right, sir.

Q All right, and that this is -- my copy is dated January, 1984.

A Yes, sir.

Q Without regard to whether or not this is or is not the actual rule, just tell me, if you would, take a look at -- at the language in that rule and tell me if you have ever heard of that before.

A I've never encountered it at this time -- until this morning, I'll put it that way.

Q Does that section, as you are looking at it now, provide the suspension of State leases in the potash area?

A I'll have to read all the way through it. If you'll give me a moment I'll do that.

Q Okay, if you would, please.

A This addresses the problem of whether -- this does seem to address the problem of waste and once again, this is one of those that it's arguable whether it applies.

Q It also seems to address the question of suspending a State lease, does it not?

A Yes, sir. That's why I use the attorneys when I want to know the answers to these questions.

Q So your understanding that a State lease could not be suspended, that's just your understanding.

A May I state the circumstances of my understanding to answer your question?

Q Feel free to answer the question anyway you want.

A Please, my understanding once again is that we're in an area where there -- the waste of the potash is questionable and that being the case, which that particular section you addressed me to talks about waste, well, we're saying there isn't waste, or at least not undue waste, and as a result, that section may or may not apply, and that is our problem. We're not sure of what the State of New Mexico would say under the circumstances, and if we'd win in the appeals, so we're doing our best to protect ourselves, keep the risk from being against us by applying for and trying to get these wells drilled, because we think it's not going to result in undue waste.

Q I'm sorry, maybe I misunderstood your answer --

A Well, as far as the answer --

Q -- to a question from Mr. Hall earlier -- excuse me, let me finish --

A Go ahead.

Q -- my question.

A I'm sorry.

Q I understood you to answer Mr. Hall's question earlier that it's your understanding there was no provision for the suspension --

A I did say that. I sure did. I was not aware of that particular section until just --

Q And that wasn't highly accurate, I guess.

A Well, it was accurate at the time; I'd never seen that particular rule. I have now.

Once -- may I add something to that for clarification, is that I'm not in the Legal Department. I am an attorney.

Q No, I understand that.

A Okay, but like I said, for the purpose of the Commission --

Q You answered my question, thank you.

A Well -- all right.

Q Go ahead.

A Like I said, I am a landman. I am an attorney at Texaco, but I'm not in the Legal Department. When it comes to these kind of questions, if I recognize there's a question I need to know the answer to, I go to Legal and I ask them, is there a particular section, in this case, for instance, that would apply. We have discussed this in the Land Department. I don't know if Legal is aware of this section or not. Prior to this meeting I did ask our counsel here today if he was aware of that section and he indicated he was not, so apparently, it's just a matter of expertise of the attorney in some cases, and once again, after reading

that, I'm not sure it applies, which is the crux of our argument. We need to --

MR. LEMAY: Well, it's perfectly acceptable to say that's beyond my realm of understanding and supervision. That's --

A Well, I wasn't sure if I was making that clear and I apologize if I went around on that. I wasn't trying to .

Q I understand, Mr. Bryla, you are not an attorney, you're a landman.

A No, I am an attorney but I'm not in the Legal Department at Texaco.

Q Okay. You don't practice law.

A Not in that sense. I'm not a legal representative of Texaco. I'm a landman.

Q You are not involved, I suppose, in determining the economics of wells and that sort of thing.

A No, that's an engineering/geological question.

Q You have identified a document, several documents this morning, Mr. Bryla. Let me refer you to them, if I may.

Let's look at Texaco's Exhibit Number Two.

A All right, sir.

Q I understood your testimony to be that the two red dots shown on Texaco's Exhibit Number Two, do you see that in front of you?

A Yes, sir, I sure do.

Q I understood you to say that those two dots were in a barren area.

A According to this map that's what it is, yes, sir.

Q All right, and when you -- when you use the word "barren", are you using the definition as it appears on the map that we have on the wall?

A Yes, sir, that's all I'm going by.

Q Of which Texaco Exhibit Two is a partial enlargement, is it not?

A Yes, sir. I'm using --

Q So you're using -- I'm sorry, do you have anything further?

A Yes, sir, that is the answer to the question, I'm using the map and its legend to identify the locations.

Q Okay, so your reference to the word "barren", you were simply repeating what the Bureau of Land Management has defined.

A That is correct.

Q And I believe you said that the two dots

shown on Texaco Exhibit Number Two were in the barren interval.

A As near as we can tell, yes, sir. In other words, owing to the accuracy of the way they drafted the maps and owing to the accuracy of the way we mapped these things using our little scales, that should be within the barren area.

Q Well, whether or not these two dots are in the barren area would depend on the size of the red dot, wouldn't it?

A Well, certainly. If you assume the very center of those dots is the center of the location, that's where we are.

Q Were you -- were you involved in putting the mark on the ground where these wells would be drilled?

A The actual ground itself?

Q Yes.

A No, sir, I was not.

Q Were you involved in the determination of the exact surface location involved in these two wells?

A If you mean actually getting out to the surveyor, or title examination? I'm not sure if I understand your question.

In other words, Texaco --

Q I'm sorry, I may not be asking it cor-

rectly.

A Well, you're probably asking but I'm not sure of what you want. In other words --

Q All right, well, just answer the --

A All right, I'll try to answer.

Q Let me rephrase it because obviously, --

A Yes, sir, please.

Q -- it was misleading.

The APD's involved in this case, one of them seeks a surface location, I believe it's 2310 and 2310.

A Yes, sir.

Q Were you involved in deciding that the well that should be drilled by Texaco should be 2310 and 2310?

A No, sir, I was not.

Q Were you -- well, that puzzels me now, Mr. Bryla, how do you know -- how do you know, then, that this is the location?

A Because I got out the Allen scales and I put the dots on the one you're holding in your hand. Like I said, once again, that's a reproduction of this map and if you assume its scale is accurate, and you take an Allen scale and plot out those locations and they appear in that colored area, which is labeled as the barren area, that -- my assumption is that that is in the barren area.

Q So you assume -- okay, you assume that the line shown on the BLM map is what might be called site specific, down to a fine --

A Well, no, I said that's the best information we have. Obviously that's something that can be argued, but that's the best information we had, at least that I had, and that's an engineering question as far as whether it is or isn't. I'm not an engineer.

Q You are aware that the potash companies say that these locations are in an area where there's mineralization, are you not?

A Yes, sir, I understand that's your contention.

Q Now you also said, Mr. Bryla, that you thought the allowing of these two wells would be in the best interest of conservation?

A As far as -- yes, sir. In other words, I consider this to be, if everything that our engineers and geologists told me, this would be the best locations based on development for these wells.

Once again I'm relying on their expertise as to what geologically and engineering is sound. That's not my department but with what they have told me, based on my understanding of the commitment Texaco has, the unit agreement, this would be the best way for future development

of that acreage; the best means, best method.

Q Do you know whether or not these wells can be developed in other surface locations?

MR. HALL: Let me object. This is way beyond the scope of the witness' testimony. He's testified as a landman. Mr. High wants to ask engineering and geologic questions, we have plenty of witnesses coming up.

MR. HIGH: Counsel covered them on direct. This person testified that these wells would be in the best interest of conversation (sic), and I simply wanted to show that he had no basis of knowledge and I'm through with that issue, if that's you're getting at.

MR. LEMAY: Conservation, is that correct?

MR. HALL: Pardon me?

MR. LEMAY: I'm trying to understand Mr. High's last comment. The interest of conservation was his testimony.

MR. LEMAY: Are you through with that particular line?

MR. HIGH: I'm through with that. I certainly am.

MR. LEMAY: Fine, we'll continue, then.

MR. HIGH: As a matter of fact, I have nothing else for Mr. Bryla. Thank you.

A All right, sir, thank you.

MR. LEMAY: Is there any additional -- yes, sir. Any follow-up questions on redirect?

MR. HALL: Yes, sir.

REDIRECT EXAMINATION

BY MR. HALL:

Q Mr. Bryla, listen, in spite of the questionable expertise of your counsel, let me ask a question.

A I'm sorry it came out that way.

Q That's all right. Despite the suspension of the State lease under Rule 1061, isn't there a 5-year limitation on that provision? In other words, you can't suspend it beyond five years.

MR. HIGH: I'm going to object. The witness has already said he doesn't know anything about it and hadn't even seen it until this morning. How can he know whether or not there's a 5-year provision?

MR. HALL: All right, we'll ask the Commission to take notice of the rule, then, and let it speak for itself.

MR. HIGH: That's fine. The rule speaks for itself.

MR. HALL: Thank you, counsel.

Q That notwithstanding, isn't it Texaco's primary concern that if you don't meet the plan of development, as you testified, then your participating area concept is jeopardized?

A Both participating area and the possible loss of leasehold.

Q All right.

MR. HALL: No further questions.

MR. LEMAY: Any additional questions of Mr. Bryla?

MR. BRYLA: I apologize to the court for my questions but I really am trying to give the best answer I can.

MR. LEMAY: We appreciate your answers.

MR. BRYLA: All right, sir, thank you.

MR. LEMAY: If there are no additional questions the witness may be excused.

Call your next witness, Mr. Hall.

MR. BRYLA: Thank you, sir.

MR. HALL: Mr. Chairman, we

call Terry McCance.

PRESSLY H. (Terry) McCANCE, III,

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

DIRECT EXAMINATION

BY MR. HALL:

Q For the record please state your name.

A My name is Pressly H. McCance, III.

Q And you go by Terry?

A I go by Terry.

Q Mr. McCance, where do you live and by whom are you employed?

A I live in Midland, Texas, and I'm employed by Texaco Producing, Incorporated.

Q All right. Now have you previously testified before the Commission and had your credentials made a matter of record?

A Yes, I have.

Q And are you familiar with the applications here today and the subject plans and the two well locations?

A Yes, I am.

MR. HALL: Mr. Chairman, are

the witness' qualifications acceptable?

MR. LEMAY: His qualifications are acceptable.

Q Mr. McCance, how are you employed by Texaco?

A I'm a geologist in the Development Group with Texaco.

Q And what is your area of responsibility?

A My area of responsibility is primarily for recommendation of primary drilling locations in southeast New Mexico, which includes Roosevelt, Chavez, Eddy County, and Lea County, as well as the Texas Panhandle.

Q All right. Have you constructed a -- conducted a geologic study of the area in connection with this application?

A Yes, I have.

Q And have you prepared exhibits in connection with that study?

A Yes, I have.

Q All right, would you refer to Exhibit Six, identify that, and explain to the Commission what that shows?

A Okay. Exhibit Six is my geological interpretation of the reservoir that's producing out of Cherry Canyon in the Forty-Niner Ridge Unit No. 1.

Texaco has designated that as an F-3 sandstone, which comes from a regional study that Exploration has done some years ago and it represents various sands that produce throughout the Delaware Basin.

The map shows -- it shows structural contours and Isopach contours. The structure contours are shown in the heavier, dark, black lines that run basically northeast/southwest or north/south. It shows regional dip to be to the east and the Isopach contours are highlighted in green and they represent a contour interval of 10 feet, and backing up a little bit, the scale is a scale of one inch to 2000 feet.

The Isopach contours show an F-3 sand, channel sand system, that runs in a basic north/south or northeast/southwest direction.

Q For the record, what is an F-3 sand?

A It's a pay sand that Texaco in their exploration studies of the Delaware Mountain Group has designated as a productive sand in various parts of the basin.

Q All right.

A And it correlates with the sand on a type log that they have put together.

In addition to the Isopach and structure contours, the various well locations with color coded production are represented.

The only F-3 production that we have out here is in the Forty-Niner Ridge Unit No. 1, which is shown in spot J of Section 16.

And there's a type log with the F-3 sand highlighted in green on the righthand margin of the structure Isopach map.

Q All right, let's look -- oh, excuse me. go ahead.

A In addition to the well locations that Texaco has proposed to drill, or would like to drill if a permit is -- is allowed.

Q Let's look at Exhibit Seven now. Why don't you identify that and explain that to the Commissioners?

A Exhibit Seven represents a stratigraphic cross section of a portion of the Cherry Canyon section in the Delaware Mountain Group. The F-3 sand is -- is notated on the righthand side of the log. The trace of the cross section is represented on the previous exhibit. In addition to the well logs there is some drill stem test information and what little perforation information is available on the respective logs, as well as completion dates and zones of completion at the bottom of each log, and they also show my -- my interpretation of the correlations in this part of the field area.

Q All right. Now referring back to Exhibit Six, it shows the two locations by red dots, does it not?

A Yes, sir, it does.

Q Did you have any sort of input into picking those locations?

A Yes, I did.

Q All right. Was geology a fairly important consideration in picking these locations?

A Yes, it was. It was a primary consideration with spotting of -- of our No. 3 Well, which is located 2310 from the north and 2310 from the east line. The geological considerations were such that the mechanism by which these sands are deposited, they actually represent numerous individual sand bodies and not -- not one thick deposit, so there is potential for having isolated reservoirs within this whole interval in addition to having -- having some tight sands juxtaposed to some porous sands, and in order to to hedge our bet or lessen our risk, we thought that a strike location to the north, which is the direction that these sands were transported from north to south, we thought that our best chances of intersecting those porous sands producing in the Forty-Niner Ridge No. 1, we felt that our best chance of intersecting those would be at a location north at that location.

Q All right. Are you aware that the potash

leaseholders who are opposing Texaco's applications are promoting alternate well locations further to the north and west?

A Yes, I am.

Q And what's your opinion of those?

A It's my understanding that they would -- they would approve or allow us to drill a location in spot D, which would be roughly 330 from the north and 330 from the west line of Section 16.

It's my opinion that that greatly increases the risk of not intersecting the porous sands out there, based on -- on my previous explanation of the possibility of having impermeable sands juxtaposed with these porous sands.

So it's my opinion that that is a much, much riskier location that Texaco would not be willing to take the risk and have to abandon the project.

Q It's an unacceptable --

A It's an unacceptable risk.

Q Mr. McCance, is there a greater likelihood that more oil reserves will be recovered from Texaco's proposed locations than the locations promoted by the potash --

A I believe so.

Q Do you know if any other oil operators

share your geologic assessment --

A I certainly --

Q -- of the area surrounding your two locations?

A I certainly do. 1985, the end of 1985, when we initiated this project, two oil companies, Santa Fe and Flag Redfern, requested a farmout or I don't recall what Santa Fe was interested in, or they were after a purchase of the acreage and the acreage that they wanted happened to coincide with our most prospective acreage, and we happen to have documentation of the Flag Redfern farmout request, if -- if anybody would be interested in pursuing that.

So there are other operators that share a similar opinion to me, as far as the feasibility of this reservoir.

Q All right, do you have anything further you wish to add on the geology of the region?

MR. LEMAY: I have just one quick interruption for a matter of clarity for the record.

Will you explain what A, B, C, D, what that refers to in terms of locations?

A A, B, C, oh, I'm sorry.

MR. LEMAY: You refer to a letter D location there.

A Okay, I thought that was -- there -- each

section in New Mexico is set up into 40-acre proration units, where there are sixteen 40-acre proration units in a section, and spot A through P represent the quarter quarter sections running from the northeast corner to the northwest corner, it goes A, B, C, D, and then drops down, E, F, G, H, and then so forth and so on, and it just goes back and forth.

Q Are they also known as unit letters?

A They're known as unit letters.

MR. LEMAY: Thank you.

Q Do you have anything further?

A That's all I have.

Q All right. In your opinion will the granting of Texaco's two applications be in the best interest of conservation, the protection of correlative rights, and the prevention of waste?

A Yes, sir.

Q And did you prepare Exhibits Six and Seven or were they --

A They were --

Q -- prepared under your direction?

A They were both prepared by -- by me.

Q All right.

MR. HALL: We move the admission of Six and Seven.

MR. LEMAY: Without objections Exhibits Six and Seven will be admitted into the record.

MR. HALL: Pass the witness.

MR. LEMAY: Mr. High?

CROSS EXAMINATION

BY MR. HIGH:

Q Mr. McCance, how long have you been a geologist with Texaco?

A I've been a geologist with Getty and Texaco for nearly four years.

Q Nearly four years?

A Nearly four years.

Q And had you worked for anyone else prior to the time that --

A I was a student.

Q Pardon?

A I was a student.

Q Okay, so you have about four years experience in geology?

A With a major oil company and a year's worth of field experience with a mudlogging company, so I've been involved in the oil business for five years.

Q How long have you been working as a geologist?

A As a -- as a geologist for --
Q Yes.
A -- for nearly four years.
Q And where is your office located now?
A It's in Midland, Texas.
Q And has it been there the entire four year period?
A Yes, it has.
Q And do you have geographical responsibilities or are you just a geologist for anything?
A We have -- I am a member of the Hobbs District Group, which encompasses those areas that I've previously mentioned, and the areas that I've been personally interested in happen to be the Eddy County and Lea County, New Mexico, but I am free to work on whatever projects I can generate.
Q But would you say you have more expertise in Eddy and Lea County, New Mexico, than you do other areas?
A The most experience I have happens to be in the Delaware Mountain Group in -- in Eddy County.
Q Okay. So you are very familiar with the areas we're talking about here where Texaco wants to drill these.
A As -- as far as the Cherry Canyon is concerned, yes.

Q Okay. Now I believe you said you were involved in the decision as to where on the surface these wells would be located.

A I was -- I was one of several that contributed to that discussion.

Q And let's refer, if you will, to Texaco Exhibit Six, I believe it is.

A Yeah, it's a structure map, yes.

Q Yes. Has two dots?

A Yes.

Q Do you see that?

A Yes. I sure do.

MR. HIGH: If I may approach the witness, Mr. Chairman.

MR. LEMAY; Fine.

Q Look, if you will, Mr. McCance, at where you've put these -- where the two dots are on Texaco Exhibit Number Six.

A Okay, they're right here on the map that I have.

Q Is that the best location geologically speaking?

A Geologically speaking, I believe the best location is represented by the location that's -- that's spotted at 23 South -- 2310 from the north line and 2310

from the east line.

Q That would be the red dot on the right-hand side facing Exhibit Number -- Texaco Exhibit Number Six, would it not?

A On the righthand side of the two dots, that's correct.

Q Okay. Why is the -- why geologically is that the best location?

A Well, I mentioned previously there are a number of trapping mechanisms in the Delaware Mountain Group, one of which, as I mentioned before, the sands, the mechanism by which these sands were deposited represent pulses of sand and the thickness is not represented by this 65 feet that's colored in green. They actually represent smaller sand separated by impermeable sands or -- or shales that are so thin that they're beyond the resolution of the logging equipment that run at this point.

Core information would support that interpretation. Because these sands came from a northern direction, we feel as though our best chances of intersecting a porous sand and the porous sand that produces in the Forty-Niner Ridge No. 1 would be much greater than if we were to go to the west, which may be off depositional strike of that particular producing sand.

Q Isn't it a fact, Mr. McCance that the

geological data that you used to put the dot at 2310/2310 that you just described to us, that the geological data used to put that dot in there is derived from Forty-Niner Ridge Unit No. 1?

A That's incorrect.

Q What -- what Texaco has learned with respect to Forty-Niner Ridge Unit No. 1 played no part?

A Oh, it had -- it had a significant decision. We wouldn't want to offset Forty-Niner Ridge No. 2, which hasn't been perforated in that zone yet. And that zone, from what I can tell, does not look prospective.

Q I'm sorry, I said Forty-Niner Ridge Unit No. 1.

A I know, but you asked me if that was the only well that went into my decision and it was not the only well that prompted me to put that location there.

That's what you asked me, if I understood your question correctly.

Q Well, let me do it again, to make sure we don't misunderstand one another.

A Okay.

Q Did you or did you not consider the geological data that's been developed with respect to Forty-Niner Ridge Unit No. 1?

A I sure did consider that data.

Q That's very important stuff, isn't it?

A It's the only production that we have in that whole area, you bet.

Q It's good -- would you call that good production out of the Delaware?

A I'd say that that is --

Q It's okay, if you don't want to say --

MR. HALL: Well, I object to his putting words in --

MR. HIGH: Oh, I'm sorry.

MR. HALL: -- into the witness' mouth.

MR. HIGH: I'm sorry, go ahead. Go ahead, how would you characterize it?

A I would drill a well for that production, yes.

Q For the production that's now coming out of Forty-Niner Ridge Unit No. 1, you'd drill a well for that.

A I sure would. I wouldn't be sitting here today if I wasn't.

Q Okay. Doesn't the knowledge that you have from Forty-Niner Ridge -- Forty-Niner Ridge Unit No. 1 make the location at 2310 and 2310 a fairly good bet?

A As far as a successful completion?

Q Geological risk.

A Geological risk, yes, I'd say that that was our best bet at this point with the information that we have.

Q Wouldn't you in fact call the geological risk low?

A I'd say it was low based on -- on my knowledge of the size of some of these Cherry Canyon reservoirs.

Q Would you as a geologist anticipate production to be something similar to Forty-Niner Ridge Unit No. 1?

A As a geologist by training I'm an optimist, so I would expect it to be better than Forty-Niner Ridge --

Q Okay.

A -- No. 1.

Q Okay. All right, at least as good as.

A At least as good as.

Q Look again, if you will, (not understood) at Texaco Exhibit Number Six. If you'll notice coming and going from -- see the well, Forty-Niner Ridge No. 2?

A Yes, I sure do.

Q There's a -- you see that dashed dotted line going to Forty-Niner Ridge No. 1?

A Yes, I do.

Q And over to the left to --

A Yes.

Q What's that line?

A That's, as I mentioned before, that's the trace of my cross section that represents Exhibit Seven.

Q What is that? I don't understand.

A That just shows the points that are represented by this cross section. In other words if you were to follow that line --

Q I'm sorry, when you say "that line", show me if you will --

A The line --

Q -- what you mean.

A -- that you were making reference to. If you were to follow this line in this direction, that's the line --

Q Excuse me, if I followed the dashed dotted line that appears on Texaco Exhibit Number Six --

A Right.

Q -- from Forty-Niner Ridge Well No. 2 up to Well No. 1 and over in there --

A To the (not clearly understood).

THE REPORTER: I'm sorry, what did you say, Mr. McCance?

MR. HIGH: To the Nash Draw wells.

A Oh, to the Nash Draw Unit wells, the wells to the west.

If you look at the heading of these logs, if you sit down and read these, you'll see that this --

Q Excuse me, you're now referring to Texaco Exhibit Number Seven, is that --

A Could you -- could you ask your question all over again so we can get back on line with what's pertinent?

Q Well, my question is, I'm interested in knowing what the dashed dotted line is between Well No. 2 and Well No. 1 going over to Nash Draw.

A It represents the trace of the cross section shown on Exhibit Seven.

Q Okay. Refer, if you will, to Exhibit Number Seven.

A All right.

Q And tell me what is shown in the righthand column, the far righthand column on that exhibit.

A That well is Forty-Niner Ridge No. 2.

Q And -- and what -- what is shown with respect to Well No. 2.?

A It shows it has the -- the completion in-

formation and the various perforated intervals in that particular wellbore in addition to the correlations that I've made across the area.

Q Did you do that log?

A I didn't. I didn't do that log, no, sir.

Q That's information Texaco already had.

A That's information that was run back in 1974. I have access to that log. That's how -- but I had no part in its actual acquisition.

Q Okay, and you looked at -- at that Well No. 2 information.

A I sure did.

Q And did you identify the -- what you call the F-3 pay sand?

A I sure did. It's shown right in that interval right there.

Q And --

A I've got an expanded version of this. I blew this down. I should mention that the scale is actually 1.2 inches to 100 feet. I shot this down in half just -- I didn't realize we would be in a big conference room like this and for the sake of space I had this larger cross section reduced in half.

So if you would prefer to look at that, I've got an easier copy to look at.

Q Well, this is the one that Mr. Hall has chosen to introduce so we're kind of stuck with it.

A It's the same cross section. It's just been reduced in half.

Q I understand that, but this is the one marked for his --

A All right.

Q -- Exhibit Number Seven.

A That's fine.

Q All right, now if we look at the next to the next ot the righthand column on Texaco Exhibit Number Seven, that is the -- is log information from what well?

A The Forty-Niner Ridge No. 1.

Q Okay, that is the well that's currently producing out of the Delaware.

A That's correct.

Q And you've also identified on here the F-3 pay sand?

A That's correct. That's shown right here with the perforations indicated as well.

Q And you are satisfied, Mr. McCance, that the area that you've identified as being the F-3 pay sand on Forty-Niner Ridge No. 1 is the same area that you have marked as being the F-3 pay sand on Well No. 2?

A Yes, I am.

Q And the third column from the righthand side on Texaco Exhibit Number Seven is with respect to which well?

A That represents Nash Draw Unit No. 7, which is shown approximately 2-1/2 miles to the -- to the east or west of Forty-Niner Ridge Unit No. 1.

Q Is that in Section 18?

A That's in Section 18, and --

Q 23 South?

A -- Range 23 South.

Q And that is one of the points intersected by the line that I asked you to -- to describe for me on Texaco Exhibit Number Six, isn't it?

A Yes, it is.

Q What kind of a well is that?

A That's an Atoka producing gas well.

Q Is it producing out of the Delaware?

A It's not, to -- to my knowledge it's not. The only Delaware, other Delaware production in the Nash Draw Unit is -- is this particular well, which is Nash Draw Unit No. 4, which produces out of a stratigraphically higher sand, and that's shown on this particular cross section.

Q Okay. And the other column shown on Texaco Exhibit Number Seven, I take it for similar informa-

tion that you've just -- just described to me but for other wells. Is that correct?

A That's correct.

Q Okay. Now, would the area within the two lines where you have written F-3 pay sand, if I followed that across the document, across Texaco Exhibit Number Seven, would that tell me where you think, as a geologist, the F-3 pay sand is on all of the wells that's listed on Texaco Exhibit Number Seven?

A I'm not sure -- would you repeat your question, please, I'm not sure that I understand that.

Q Okay. You have indicated an area, and I assume that is a range, is it not, of where you believe the depth of the F-3 pay sand is?

A Yes, sir.

Q The top and the bottom of that?

A Yes, sir.

Q So if I look on the -- let's say, if I look on the far righthand column, which I believe you said was Unit Forty-Nine Ridge No. 2 --

A Yes, sir.

Q If I look in the space below and above the line where you've written F-3 pay sand, you are saying that's the Delaware area from which you think there's oil.

A I -- I believe that that is the F-3 pay

sand and that I'm not saying that everything in this interval is productive.

Q Well --

A I'm not saying that --

Q -- I understand.

A -- it is all one homogeneous sand.

Q Okay, but my question related only to where --

A That represents the F-3 sand as correlated from the Forty-Niner Ridge Unit No. 1.

Q All right, and if I follow that same area across as you have have drawn it on Texaco Exhibit Number Seven, is that the F-3 pay sand --

A That represents the F-3 pay sand but I guess my -- my notation is misleading, and I'm not trying to infer that all this is -- is productive pay sand. It is the F-3 sandstone. I would call it the F-3 pay sand in the Forty-Niner Ridge Unit No. 1, because it is producing from that interval, and these are stratigraphically equivalent sandstones. They don't represent the continuous sand that is producing in the Forty-Niner Ridge Unit No. 1.

Q All right, so if I looked on the lefthand side of the document, between these lines that you have F-3 pay sand, and I believe this one is for -- help me out here.

A Nash Draw No. 3.

Q Okay.

A If I can have my map back I'll show you where it is.

Q Well, let me just make this very simple, sir, if I may.

If I looked at the area between the lines that you have indicated being R-3 pay sand in the column that you call Nash Draw No. 3, you're not saying that at that depth there's F-3 pay sand.

A There's F-3 sandstone at that stratigraphic interval.

Q Okay, but you're not saying here as a geologist that it would be a producing area.

A Looking at that log, there's not enough porosity there to be a productive well.

Q So from a geological standpoint you have a better risk of hitting producing areas if you stay closer to what you have identified here as Forty-Niner Ridge Unit No. 1.

A That's correct.

Q Now, if you will look at Texaco Exhibit Number Six, Mr. McCance, Mr. Hall anticipated some questions that I would have about why you couldn't drill to the north and the west, and I believe you -- you said that wasn't good, but I'm not really sure if I recall why you said that.

A Well, it was -- I did mention the reason twice and I'll -- I'll go through it again, if you'd like. I've got a schematic that I can show you.

Q Well, --

MR. HALL: Just let him ask the questions.

Q Yeah, just let me do it my way just to make sure I understand.

A All right.

Q I am not a geologist so you'll have to bear with me here.

Look at Texaco Exhibit Number Six. Close to the area where you have the two red dots, do you see those --

A Yes.

Q -- there is a circle that is colored green.

A Yes.

Q (Not clearly understood), right?

A Yes.

Q What does that suggest to you as a geologist?

A That suggests, it's my interpretation that a thicker sand body representing 85 percent clean sandstone and greater than or equal to 18 percent porosity will

be present at that location.

Q Within that circle.

A I'd like to think that it would be exactly 50 feet. That would greatly increase our -- our reserves.

Q Well, I guess my question is, and maybe it's because of my lack of understanding about geology, but is the Isopach line that is a complete circle on Texaco Exhibit Number Six, is that suggestive of a good place to drill?

A Yes, it is.

Q Anywhere in that circle.

A At this point the geological information isn't such that I could say that anywhere in that circle would be -- I mean this is -- everywhere in that circle might be.

Q Pretty good stuff, right?

A Might be, but the farther that you get away from our location represented at 2310 from the north and from the east, the risk increases tremendously, based on my knowledge of the Delaware Mountain Group and the Cherry Canyon.

Q Why, then, well, I'm sorry, I don't know what you mean by my knowledge. Anywhere within the Isopach circle should be good, but you apparently have some

additional data, right?

A I think you need to rephrase that question. I --

Q I'm sorry. I understood you to say anywhere within that Isopach line should be good stuff.

A It could be good stuff.

Q Should be good stuff.

A Sure, I'll --

MR. HALL: I'll object. He's trying to put words in the witness' mouth. I think his answer speaks for itself.

MR. HIGH: My question is --

MR. LEMAY: The question would put words in the witness' mouth.

A Based on what I've mapped there it should be prospective acreage.

Q Anywhere within the Isopach line, circle, the complete circle.

A Sure, but you also introduce more risk the farther away that you get from known production. That's why people drill dry holes. If I knew how -- exactly what it was like I wouldn't have to work for Texaco.

Q Right. Right. And I'd be with you. I'd want to be your partner.

So the reason that you want to stay or

get wherever you put these dots at, is because you want to stay close to the enclosed Isopach circle and get as close to the known production in Unit Number 1 as you can.

MR. HALL: I'll object to the question. Are you asking him if that was his testimony?

MR. HIGH: No, I'm not. I'm asking him as a geologist.

MR. HALL: You want to restate your question?

MR. HIGH: If you -

A I'll -- I'll answer and if it is not sufficient --

MR. HIGH: No, I'm sorry, your counsel objects. Let me rephrase it. I don't want to -- to -- you to answer a question you may not understand.

Q As a geologist, would you want to put these dots within or as close as you could to the area within the enclosed Isopach line and as close to the known production in Unit 1 as you possibly could to reduce the geological risk of a dry hole?

A I'm going to ask you to repeat that one more time to make sure. I'm sorry, I --

MR. HALL: I was just objecting to the form.

MR. LEMAY: That's fine.

MR. HIGH: Don't ever answer a question, Mr. McCance, you don't understand, and I don't mind at all rephrasing it.

Q But from a geological standpoint wouldn't you want to locate an oil well at a location within this enclosed Isopach, or as close as you could get to the enclosed area, and as close as you could get to a well where you have known production to reduce the geological risk of drilling it?

A If you were to add other geological parameters that -- that aren't necessarily depicted by these lines, and that's geological experience.

Q Do you have it in this case, in the case of these two wells?

A The geological experience?

Q Yes.

A I am familiar with the different trapping mechanisms in the Cherry Canyon and applying those concepts, I would assume that it happens to be one of those, and to hedge our bet, a location along depositional strike, which would be to the north, would be most advantageous to us as far as a second well in a field.

Q Would -- would you want to go north because of the drive mechanism?

A No, because of the direction from which

the reservoir sands were transported.

In other words, the general depositional trend of the channel system that deposited those sands is in roughly a north/south direction. or in a north/northeast south/southwest direction.

And I believe that's -- that's accurately depicted on this Isopach map.

Q Is that an extension of this dashed dotted line that you have between Well No. 2 and No. 1?

MR. HALL: I'll object. Is what an extension?

Q If I projected beyond Well No. 1 in a northern direction, would that be the trend that you just referred to?

MR. HALL: Let me object. I still don't understand the question. Are you asking him if the Isopach --

MR. HIGH: I'll -- I'll withdraw the question.

Q Mr. McCance, look at Texaco Exhibit Number Six. You have this dashed dotted line going from Forty-Niner Ridge Unit Well No. 2 up to Unit No. 1, don't you?

A As I've shown on this Isopach map, that is -- is roughly oblique to depositional --

Q You drew that line. You're responsible

for that line being on this exhibit, aren't you?

A Oh, certainly.

Q Okay, and you said that shows the Delaware F-3 pay sand as you interpret it as a geologist, is that correct?

A That's correct.

Q Now, is this northerly trend that you just referred, would that be an extension of that line north over Forty-Niner Ridge Unit No. 1?

A Well, as I see this -- this location, it's in a north direction.

Q My question, Mr. Cance (sic), is this trend that you just mentioned. Is that an extension of that dashed dotted line?

A No, my trend was not derived from that particular line. It was defined by the particular data points that I have along that line.

That line just shows you the position of the wells on the cross section --

Q It shows you the Delaware sand, doesn't it?

A It shows me a cross section. That line has nothing to do with that sand being there.

Q Well, is it your testimony, I want to make sure I understand you, is the information shown on Tex-

aco Exhibit Number Seven, is that all relevant, was it even considered --

A That -- that information is relevant.

Q Let me finish my question.

A I'm sorry.

Q Was this information on Texaco Exhibit Number Seven considered in putting those red dots on Texaco Exhibit Number Six?

A Yes, it was.

MR. HIGH: Mr. Chairman, may I have a few minutes to (not clearly understood)?

MR. LEMAY: Fine. How much additional time do you think it will take for you to be through with --

MR. HIGH: I'm essentially through.

MR. LEMAY: We'll just wait here, then.

Q Are you familiar with the reservoir data concerning the proposed well?

A Just in passing. I'm -- I cannot testify to that particular data.

Q You don't know what the reserves are?

A I've got -- I know what the estimated reserves for the Forty-Niner Ridge Unit No. 1 happen to be but

we have testimony that will tell you exactly the information that you need to know.

Q And you don't know that.

A No. I've made my own projections but they're -- I'm not an engineer and I have access to their information and can make my own general conclusions to see if a project is worth pursuing.

Q I guess that's what puzzles me a little bit. You have to know something about --

A I have to -- I have to have a general ballpark idea.

Q Let me finish my question. You have to know something about the reserves data, the reservoir data, before you put the -- perform the (unclear) to drill the well, don't you?

A Sure.

MR. HALL: I'll object to the form. We don't know what he means by reservoir data. If you want to explain that, I'll --

MR. HIGH: If you don't understand that, I'll withdraw the question.

Q Mr. McCance, do you -- you understand what a reservoir is, don't you?

A Yes.

Q Do -- don't you have to know something

about the reservoir before you decide where you're going to drill the well?

A Yes, you do.

Q Who in Texaco can testify about that? You said you can't?

A I cannot testify to all the engineering parameters that go into our economic program. I know that I've got a well that has 35,000 barrels producing 25 barrels a day, roughly, and a production curve would suggest that you've got 60-to-80,000 barrels of reserves.

Q You're talking now about the Forty-Niner Ridge Unit No. 1.

A Ridge No. 1, right. And that's all I can testify to, is -- is that production, and as I've shown, we've got geologically a more optimum location and I would venture to guess that if that is the case, then we would have as good reserves.

Q The intent of these two wells is to develop the same reservoir as Forty-Niner Ridge Unit No. 1.

A That -- that is shown on the log. There may be --

Q I'm sorry, that's the intent?

A Yes. It is the intent.

MR. HIGH: I have no further questions.

MR. LEMAY: Any redirect?

MR. HALL: No, Mr. Chairman.

MR. LEMAY: Any additional questions of the witness?

Mr. Brostuen.

CROSS EXAMINATION

BY MR. BROSTUEN:

Q Mr. McCance, you've testified in a limited way regarding the transportation of sands and you used the term channel. Could you briefly discuss the -- the type of deposition of this sand in this general area?

Are we talking about a continental -- are we talking about continental deposits?

A No.

Q Are we talking about marine deposits and --

A We're talking about submarine channel deposits and conventional wisdom is such that the sands were deposited by density flow currents as opposed to the initial interpretation of turbidite deposits.

They're deposited within the confines of a channel system and within that system you develop various conduits for -- for sand, and shale that settles out in suspension.

Q Is it your contention, then, that the -- the sand which we are discussing, the -- the F-3 sand, may not be continuous laterally to the wells to the west that you've indicated on your cross section?

A I believe that they are stratigraphically equivalent sandstones but I don't believe that -- that they would be in continuity.

Q Thank you. That's all I have.

CROSS EXAMINATION

BY MR. LEMAY:

Q I've got one question, Mr. McCance.

In terms of your two sand trends that you've shown on this map, I note, take note that in your cross section that the Well Number Six did recover a cycle amount of water from that sand, sand being the F-6 -- the F-3 sand, is that -- is that correct?

A That's -- that's something I don't know. That was put on by the logging operator. That wasn't mine. I guess that represents that the data from the top of that line, the gamma ray data, is not accurate. That's something that the logging company put on there.

Q Well, I see a drill stem test number one.

A That's -- that's in a stratigraphically higher sand and it did, if I recall, it recovered some

drilling mud and and salt water.

Q Then the -- that is not a drill stem test number two down there opposite --

A No, that's something that the logging guy put on.

Q Okay, in both cases, so there is no direct evidence of separation, I guess you'd say, of these two bodies except by your general knowledge of the area --

A That's correct.

Q -- being a certain width to these sand trends.

A That's correct.

MR. LEMAY: I have no additional questions. The witness may be excused if there's no additional questions, and we will take a fifteen minute break.

(Thereupon a fifteen minute recess was taken.)

REPORTER'S NOTE: Thereafter an announcement was made concerning confidential information to be given by the next witness and a closed session was requested for the period of time required for that testimony.

CONFIDENTIAL TESTIMONY AND REFERENCE TO EXHIBITS COMMENCING ON PAGE 92 AND CONTINUING THROUGH PAGE 112 INCLUSIVE.

Joseph L. Boyd CSR

(Thereafter at the hour of 12:50 p.m. the hearing was again convened at which time the following proceedings were had in open session, to-wit:)

MR. LEMAY: If you all are ready we will resume testimony. Cross examination is where we were, I think.

MR. HALL: Mr. Chairman, I'd like to reiterate that I believe it would be appropriate if we remained in executive session.

MR. LEMAY: Yes, we shall remain in executive session. So noted.

MR. HALL: Can we have the outsiders excluded from the --

MR. LEMAY: Yes. Gentlemen, we went into executive session because of confidential information that occurred before lunch and we're still continuing that, so as a stipulation we can only have present the lawyers and staff and experts of the different parties engaged in this suit.

So if you're not one of those, we're going to have to ask you to leave.

This is only for the cross examination of this witness.

What we'll do when that's

through, we'll get back to an open hearing. Executive session is over.

A SPECTATOR: What time do you project that to be?

MR. LEMAY: Oh, I'll take a stab at thirty minutes, Charlie, or twenty minutes, or what would you anticipate?

MR. HIGH: No, I think it will be, probably be forty-five minutes.

MR. LEMAY: You think forty-five minutes?

MR. HIGH: Thirty, forty-five minutes.

MR. LEMAY: We're guessing thirty to forty-five minutes on cross examination.

When we have nothing but authorized personnel in the room, we shall continue.

CONFIDENTIAL TESTIMONY AND REFERENCE TO EXHIBITS COMMENCING ON PAGE 116 AND CONTINUING THROUGH PAGE 170 INCLUSIVE.

Shelley L. Boyd CSR

MR. HALL: We'll call Mr. John Seeman.

JOHN SEEMAN,

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

DIRECT EXAMINATION

BY MR. HALL:

Q For the record please state your name.

A John Seeman.

Q Mr. Seeman, where do you live and by whom are you employed?

A I live in Hobbs, New Mexico, and I'm employed by Texaco.

Q And what do you do for Texaco?

A I'm District Engineering Manager.

Q All right, have you previously testified before the Commission?

A No, I haven't.

Q Why don't you give the Commission a brief summary of your educational background and work experience?

A Okay. I've got a Bachelor of Science degree from the University of Oklahoma in 1970.

I went to work for Texaco after gradua-

tion. I worked in Texaco's exploration, both Geological and Geophysical Departments for approximately six years. I've been practicing petroleum engineering since that time, since about 1976.

I've had various duties in petroleum engineering ranging from drilling, production, reservoir, management, regulatory, increasing responsibility and I'm a Registered Professional Engineer and currently I'm an Engineering Manager in Hobbs.

Q All right. Have you previously testified before the Texas Railroad Commission and Oklahoma Corporation Commission?

A Texas Railroad Commission.

Q Okay. Does your area of responsibility for Texaco now include southeast New Mexico?

A Yes, sir, it does.

Q And are you familiar with the applications Texaco has on the board here today?

A Yes, I am.

MR. HALL: Mr. Chairman, we offer Mr. Seeman as a qualified petroleum engineer.

MR. LEMAY: His qualifications are acceptable.

Q Mr. Seeman, what's been your involvement with Texaco's efforts to drill this location?

A My involvement's been, I guess, direct. My staff has prepared all the paperwork for the filings, et cetera, in one form or another.

This particular well shows, as we can see here, some duality between our Division office and the District. It turns out that it's a transition project.

Initially, Doug Quiett, a member of the Drilling Department who's on my staff, prepared the notification for the original well back in October of '85 -- or September of '85.

Q All right, what happened with that application?

A In September '85 we sent a nofication to the Potash Producers, Incorporated, at that time, and IMC, that we were proposing a well to be drilled in the Forty-Niner Ridge area.

About a month later we received back a notice or the application, or we at that time received no protest from the potash people.

We sent an Application to Drill, APD, to the Oil Commission here in Santa Fe. As a courtesy we sent a copy of that to the potash people.

Shortly after that we received a protest from the Potash Producers.

Let's see, in November we had a drilling

permit. Seems like it was the 27th of November we had a drilling permit issued from the OCD. We at that time had in hand a protest or an objection from the Potash Producers. We questioned the OCD as to the validity of the permit. They wrote us back and told us based on the sequence of events that happened that we did have a valid drilling permit.

At that time we proceeded to build a location at substantial cost. We contracted a drilling rig to begin drilling operations.

Q Let me ask you, you said you built a location at substantial cost. Do you know how much?

A I'd have to look at our records. I've looked at the location. I've looked at the territory. They are not a particularly difficult area to operate in, as far as locations go. I would say that $8-to-10,000 would be a good number.

Q All right. I didn't mean to interrupt you.

A No, that's okay. I just -- I haven't looked at those numbers but I could build it for 8-to-10,000.

Q All right. Go ahead and continue your explanation.

A Okay, let's see, where was I? We had a

-- oh, yeah, we invested the money in a drilling location. We contracted for a rig and were preparing to spud. There was evidently some contact between the Potash Producers, I mean I think it was Mr. High and Mr. Stamets, and a meeting was arranged between Mr. Stamets and Mr. High. I don't think Texaco was invited to that meeting. That was December 17th and we had a letter that was written December 17th from Mr. Stamets, who was the OCD Director at that time, that our permit had been rescinded, explanation being that the notification wasn't proper or I think that was generally it.

In that letter he set an arbitration date in January of '86. I didn't attend that, unfortunately, the Division office was still handling some of those matters. Russell Pool attended that meeting.

We got some correspondence back in Hobbs from Mr. High proposing to Texaco that if we would move to the north and the west that the possibility would be that there wouldn't be any problem with a location.

That information, of course, was related back to our development drilling group, the geologists and engineers, and my department in Hobbs pretty much went back to our business and don't -- I don't have any knowledge of exactly what transpired until it was determined that -- that we could move to the north or to -- mainly to the west, I guess it is.

Q At this point let me ask you to refer to Exhibit Ten, which everyone has --

A Okay.

Q -- and if you would just point out these locations you're talking about on that.

A Okay, the location that's been built, which is our original application, is just to the right above the letter 6 in 16.

We built a road. On the topo map you can see the road coming into the lease there and we built a road a short distance right across the top of 1 and 6 into that location, carved out a terrace pad, caliche road, it's a good, solid location, built a cellar.

Q All right, now I understand you to say that you understood the potash people to propose an alternate location elsewhere. Where abouts, do you understand?

A Well, in Mr. High's letter he referred to a location out of the potash -- out of the potash area, the minerals that were attractive to the potash people. His letter suggested to the north and west.

At what I understand to be great geologic risk, they -- they were able to move to the west and to the north wasn't favorable.

Q Is that on a location shown on Exhibit Ten?

A Yes, sir. That was just to the left of the other one. It's a small arrow there. directly parallel.

Q Okay. What happens when you proposed this compromise location?

A Seems like it was in April, April of '87, we notifed the potash producers of Texaco's intention to apply for the drilling permit at this revised location. I guess much to my surprise it was objected to also.

An arbitration meeting was then scheduled, which was, I don't know the date. It's just been a few weeks ago that we had the arbitration meeting on -- on that revised location.

Q Was this May 29th?

A Yeah, May 29th. Yeah.

We were unsuccessful at the arbitration meeting and requested that we go ahead and take these locations to hearing and try to obtain drilling permits for both wells.

Q If the applications are granted, is Texaco ready to drill the wells right now?

A Yes, sir. We've got a pad built and I don't have the drilling contract currently but I think I could get one shortly.

Q Is Texaco requesting an expedited order be entered on these applications?

A We'd sure like to have one.

Q Why is an expedited order necessary?

A Well, like I say, we're ready to get on with developing these minerals and the State letters, that I've looked at, at least, have a threatening quality to them. I'm not an attorney or a landman but to me they suggest that they would like us to --

Q With regard to geologic aspects, are locations to the north and west of your actual proposed locations less favorable for topographic reasons?

A Yes, sir. I went out there to observe the surface conditions and see what we would be faced with. At the arbitration meeting it was suggested that we could continue to move further to the north and west and if you'll look at the -- at the BLM potash map, that is indeed moving further and further into a barren area, as it's described on that map.

If you take that second location to the left there, and move, say, at a 45 degree angle into the corner of that section, it gets steep. There's a large earthen dam, stock tank, that's built in there. There's ranching activity. There's trailerhouses. There's quite a bit of ranching activity going that direction and across the big earthen dam and as you arrive in the -- in the corner of that section you're on a very steep incline. It would cause

us to have to build a road up the bank and then terrace out a location in there.

We could do it but it would be much more expensive than the one we've got built now.

Q So surface location is an important consideration to Texaco.

A Yes, sir.

Q Mr. Seeman, are you aware of the contentions of the potash leaseowners that develop in the potash area as proposed by these two locations will result in undue waste of potash?

A Am I aware of the contention?

Q Yes.

A Yes, sir.

Q How are you aware of that?

A Well, I've attended the arbitration meeting. I've, I guess, spent a good deal of my personal time in committee work with the potash producers. I've listened to their concerns. They've been very generous in educating me. I visited all the mines in the area. The one ot the north there is Western Ag. I visited that mine twice. I visited the IMC mine once. I have a feel for their -- for their business; it's very similar to ours in a lot of ways, and looking at this area, being aware of those facets and having some knowledge and education in their business, I

have -- I have a feel for the potash waste that may or may not occur, if that's your question.

Q All right, what are some of the specifics in their contentions? Do you know how much potash they are contending will be wasted?

MR. HIGH: I'm going to object. That's about as clear a hearsay as you can get. We, and I can assure you we will give that information from the horse's mouth. So I don't know --

MR. HALL: That's why it's not hearsay, Mr. Chairman. The party's right here.

MR. HIGH: I don't want this witness testifying about how much potash is going to be lost.

MR. LEMAY: Mr. High, I agree. I think that is a legitimate testimony from the potash companies, not Texaco, unless they have some evidence to back up what they believe to be.

Q Mr. Seeman, are you aware that the potash leaseholders are contending that drilling of a well in the potash area will require that an approximately 1200-foot pillar will necessarily have to be left surrounding the wellbore?

A Yes, sir, that number was discussed at some length at the arbitration hearing, that a very large

and substantial pillar, large in diameter, would be required to protect the wellbore against any future subsidence that may occur due to mining operations.

I contend that that's not necessary.

Q Why not?

A Basically because there isn't any subsidence during primary mining. It depends on what you're talking about.

Q What is primary mining? Why don't you explain that?

A Primary mining is an orderly way of developing the potash reserves whereby they produce approximately 65, (unclear) I guess it depends on -- on how they're doing it in an orderly way, leaving pillars in the mine to support the mine back and the mine back supports the world above it, and there is --

Q Excuse me, how large are those pillars, can you give us an idea?

A I've walked around them. I haven't measured them.

MR. HIGH: Mr. Chairman, I'm going to object. There's been no foundation laid to show that this witness has any knowledge at all about potash mining.

MR. HALL: Well, I challenge

that. He's testified he's been to the mines and been educated by Mr. High's clients and I'm not asking him to testify as a mining engineer. I'm asking him to testify to what he's seen.

MR. HIGH: He's been asked to testify to the size of the pillars.

MR. LEMAY: I'll accept the testimony only as it might relate to a wellbore being present in that pillar; therefore the two are interrelated as I see it. A mining engineer might not know the relationship of a wellbore, if that's where he's going.

MR. HIGH: I don't know.

MR. LEMAY: If there's casing in the hole that is part of a pillar I'll accept testimony. If it's -- if that's what you're trying to get at.

Q Let me ask you, did you see any pillars that were 1200 feet?

A No, sir, they were much smaller than that.

Q How small?

A I don't know. I've walked around them. I didn't measure them. They might have been, you know, 45 foot or 50 foot square. I don't know. They weren't -- they weren't very large.

Q Okay, and if I understand you, I believe

you stated that those pillars were a result of the process of primary mining.

A Yes, sir.

MR. HIGH: Same objection.

MR. LEMAY: Yes.

MR. HIGH: This witness doesn't know primary mining from secondary mining.

A Yes, I do.

MR. HIGH: And he's laid -- there's been no foundation laid to show that the witness, other than the one visit in connection to that committee. had ever set foot in a potash mine before, and I object to him testifying about primary and secondary mining.

MR. LEMAY: Well, I agree. If there's any testimony here that is an expert witness type testimony. We granted you your point on reserves, I think his observation of pillars in a mine is pertinent. It's only an observation. It's not a technical question on expertise, and I will allow that line of question as long as we're talking about non-expert type testimony.

Q You've already explained what you understand primary mining to be. What is secondary mining, Mr. Seeman?

A Secondary mining is a process after the primary mining has been accomplished. They were able to go

back in and extract the pillars, or a portion of the pillars. They can get 60 to 65 percent, something on that order, with primary mining, and then later on they can go back and extract another 20 percent of the reserves, which is removing pillars.

The portions that I saw after the pillars are removed is the back of the mine collapses and it's kind of in a plastic way to the floor, and, you know, that's what it looks like. It looks like a slumping. It's not a cave-in process by any means.

Q Is that what you call subsidence?

A That sloping inside the mine is what causes -- you can see them on the surface, where they've second mined. These depressions in the surface, you can see some slumping.

MR. HIGH: I object. I'm sorry, Mr. Chairman. I am sorry, this is not observation and I object to this whole line of testimony and I won't keep interrupting as long as it's understood I have -- that I can have a continued objection to this witness testifying about potash mining in the potash basin.

And if I can have a continued objection then I won't interrupt --

MR. LEMAY: We'll accept your continued objection. I would sustain the objection as it

applies to reserve estimates and highly technical mining issues. I will accept testimony on observations. If there is ground subsidence, that's an observation I think is pertinent to the record.

You may proceed.

Q Now, with respect to the subsidence, or slumping, that you saw, I believe you did say you saw that in a mine?

A Yes.

Q How close to you -- were you to that subsidence?

A 100 feet.

Q How far away from actual mining activities? By that I mean personnel working back and forth were they to the subsidence?

A I tell you, I can't really say, wandering around in the mine I was kind of lost, but I was within 100 feet and so was the group, so I assumed it was a safe place to be.

Q Did they take you in there or did you go on your own?

A No, I was taken in.

Q All right. How big a pillar do you feel is necessary to keep around the wellbore?

A As long as the back of the mine is sup-

ported with pillars, any pillar that would contain the wellbore would -- would be -- would suffice. I guess more directly is that with the primary mining and the pillars that already exist, the back of the mine and, consequently, the wellbore itself is supported. So any -- any size pillar, 200, 100 feet to 200 feet, whatever normal size pillar it is in a mine.

Q So something certainly less than 1200 feet.

A Certainly less than 1200 feet.

Q So by that can we conclude that you're not going to waste 100 percent of the reserves dedicated to -- potash reserves, dedicated to a pillar surrounding a wellbore.

A That's right.

MR. HIGH: I have my continuing objection.

MR. LEMAY: So noted, Mr. High.

Q Mr. Seeman, in your opinion will the drilling of Texaco's two wells result in the undue waste of potash deposits or unduly interfere with potash deposits?

A No, sir.

Q In your opinion will the granting of Texaco's applications be in the interest of conservation, the protection of correlative rights, and the prevention of

waste?

A Yes, it will.

MR. HALL: Pass the witness.

Let me also move the admission of Exhibit Ten. Did you prepare that or was it provided --

A I didn't prepare it personally but it was prepared by someone on my staff.

Q Did you direct that they prepare it?

A Yes, I did.

Q All right.

MR. LEMAY: Without objection Exhibit Ten -- is that the only one you're submitting by this witness?

MR. HALL; Yes, sir.

MR. LEMAY: Exhibit Ten will be admitted into evidence.

Cross examination, Mr. High?

MR. HIGH: Yes, Mr. Chairman. Thank you.

CROSS EXAMINATION

BY MR. HIGH:

Q Mr. Seeman, just so we can understand each other, you're not purporting to have any expertise in potash mining, are you?

A Yes, sir.

Q And you have a BS degree in what?

A Geological engineering.

Q And have you ever worked in the potash industry?

A No, sir.

Q And your office is now where?

A Hobbs.

Q And you've been with Texaco since 1970?

A Yes, sir.

Q So all of your professional practice has been with Texaco.

A Yes.

Q And you mentioned that you went underground in a potash mine?

A Several mines.

Q In the potash basin?

A Yes, sir.

Q And you went underground as part of the committee that we now have of potash people and oil and gas people?

A And I went once even before that with a member of the BLM.

Q And everytime you've gone underground someone has taken you and showed you around?

A Yes, sir.

Q Is that the basis on which you say you have some expertise?

A That, the committee work, some personal studies that I've done, discussions with the potash members of the committee, reading. It's been an education process which was one of the charges the OCD gave the Industrial Committee, was to educate one another and become familiar with each others operations and have some understanding, you know, about it. Yes, that's correct.

Q So based upon what has been said in this committee, which you and I are both a member, are we not?

A Yes, sir.

Q Based on what's said in that, that's a part of this expertise you feel you have in potash?

A Yes, sir.

Q Now, you, you testified that -- and I assume it's accurate -- that Texaco apparently built a pad and then had its approved APD (not understood), so to speak. Is that correct?

A Rescinded, yes, sir.

Q That's because of an error by Texaco, wasn't it?

A That was the OCD's interpretation.

Q That Texaco had erred in giving notice,

that it failed to attach the APD to the notice, did it not?

A Under your threat of litigation, I feel.

Q Did Texaco fail to attach an APD to the notice?

A The rule states that a notification must be given. It doesn't speak to an APD and it doesn't speak to a C-101. It says notification in the rule, Mr. High.

Q The OCD felt as though the APD had to be attached to the notice, did it not?

A Their initial interpretation, no.

Their secondqry -- their second interpretation after they'd met with you, that's the way it was interpreted, yes.

Q Have you read the rule recently.

A Yes. sir. I would like to read that part if you want to.

Q Texaco didn't challenge the OCD interpretation of that, either, did they?

A No, sir.

Q Now, you said you were surprised that the potash operators objected to your second APD.

A Yes, sir.

Q After the first APD we had an arbitration, didn't we?

A Uh-huh.

Q And a letter was sent, I believe, to Mr. Russell Pool, was it not, from -- from me, telling Texaco where we would not -- we being the potash operators would not -- object to a well being drilled, didn't we?

A That's the letter I referred to. It's -- after the first arbitration meeting a letter was sent to Mr. Pool, of which a copy was supplied to me, and that letter is the letter I spoke to in my testimony.

Q And why were you surprised that the second proposed well was protested?

A I interpreted your letter as to mean that if we would come to a compromise to move to try to conserve your potash, I looked at it in the form of a compromise on our part, if we could do it.

And your letter stated to the north and west and more into the barren area. The well is more to the west; it's more into the barren area.

I personally thought that that would suffice and it's the only location that at this point in time is viable for Texaco to drill, anyway.

Q Well, Mr. Sims, my concern --

A Seeman.

Q -- about this, are you -- you seem to be saying that -- that in being surprised that potash would -- somehow mislead you. Is that what you're trying to say?

MR. HALL: Well, I object to the mis-characterization of this testimony.

MR. LEMAY: Rephrase the question, Mr. High.

Q Did Texaco come out with the second location, which is the 21 -- 2310 and 1980 spot, is it not?

A Yes, sir.

Q Is that consistent with what my letter told Texaco we would not object to?

A Yes, sir.

Q Okay, then I'm going to have to pull out the letter, Mr. Sims, and read it.

A It's Mr. Seeman.

Q I'm sorry.

A Mr. Seeman.

Q I'm sorry. I've been mispronouncing it.

A Yeah. I've got one in my briefcase. I think this is it.

MR. HIGH: I would like to have this marked as Opponents' Exhibit B, and I will make copies. I will pull one out and make copies and supply them, if I may, so we can make sure this one gets back (inaudible.)

Q Let me show you what I'll --

MR. HALL: First of all, let me -- I'm not sure how to respond. It's somewhat of an unor-

thodox tender of an exhibit by counsel of his own letter. I hate to waive any objection but certainly don't object to any questions right now.

MR. HIGH: Well, it's a letter from me to Texaco (not understood.)

MR. HALL: That's right, but I'd hate to have to put you on the stand and have you vouch for your own credibility if we have to go into the letter.

MR. HIGH: That's -- Counsel, if you feel that's necessary, what can I say?

MR. LEMAY: Can we read the letter into the record and --

MR. HALL: Sure.

MR. LEMAY: -- not have any objection to it?

Or any points in the letter that you feel are pertinent.

MR. HIGH: Yes, Mr. Chairman, there are.

A Is that the one, Mr. High?

Q Yes. Let me -- let me, if I may, in this letter, this is -- Exhibit B is a letter from me to Mr. Russell Pool, is it not?

A Yes, sir.

Q And Mr. Russell Pool is a witness who

testified earlier, and it's your testimony that the well location proposed at 2310 and 1980 is consistent with what I said the potash people would not object to?

A Yes, sir.

Q Okay. Now in this letter I tell you where, if Texaco will move, the potash people will not oppose, right?

A Not exactly but in general northwest terms, yes.

Q Okay, but I get more specific than that, don't I?

A Sure.

Q Have you read the letter lately?

A Not lately, no.

Q Okay, let me tell you, the letter says, that this is -- this is (not understood) but let me just read the first paragraph.

Dear Russ, and that's Mr. Pool.

A Uh-huh.

Q This will confirm our telephone conservation today during which I informed you that the potash industry would not oppose your company's drilling of the above referenced well, and that's Well No. 3, provided it is relocated to the barren area north and west of the currently proposed site, right, and drilled from a surface location

which is a distance away from commercial grade ore equal to the depth of the ore plus 10 percent, plus whatever additional distance your company believes is necessary to prevent any migration of methane gas into our mine in the event of a leak.

That's the first paragraph. Is it your testimony that either of the well locations today is the depth of the ore plus 10 percent away from commercial mineral?

A No, my testimony was that as a compromise to that first paragraph, we moved our location over into the barren area as far as we could with all the geologic circumstances involved and --

Q Oh, I understand but --

A Well, that's my testimony. Now my testimony isn't the 10 percent and 1200 feet or -- no, that's not my testimony.

Q Well, earlier you said you were surprised.

A Yes, I was.

Q And my question was whether or not --

A As a business man I was surprised, yes.

Q Well, is -- is either of the two APD's we're talking about here today, either of these two proposed surface locations, located the depth of the ore plus 10 per-

cent away from commercial grade ore?

A I don't believe so, but that isn't --

Q But that -- isn't that what I said we wouldn't object to?

MR. HALL: Well, let the witness --

A Well, no, no, it's not. There's several items in there. there's "ands", there's commas, there's lots of things in there, and I said, as a business man, as someone that's compromised our business at great substantial risk, I was surprised that we couldn't come to an agreement. That's what I'm saying.

MR. HIGH: I would offer Exhibit B.

MR. LEMAY: Without objection the letter of Mr. High to Mr. Pool will be admitted.

Do you have an objection to this?

MR. HALL: No objections but I'd certainly like for my previous comments to be taken into consideration. I just don't want to waive any rights. It's an unusual situation where counsel's offering his own testimony as part of the record.

MR. HIGH: Well, I submit that's -- I won't argue. I won't argue but I'll offer --

MR. HALL: It's in .

MR. LEMAY: We accepted it.

Q Mr. Seeman, did you play any part in deciding whether or not this well should or should not be drilled vertically or directionally?

A Did I play any part in what part of it, Mr. High?

Q I'll withdraw the question. Do you know anything about diretional drilling?

A I've never drilled a directional well in southeast New Mexico, no, sir. We investigated -- I had someone on our -- on my staff investigate the cost to see if it was viable. We did this after the arbitration meeting, actually, just -- I wanted to see what the additional cost would be and the economics associated with it exactly.

MR. HIGH: I have no further questions.

MR. LEMAY: Any questions of the witness?

CROSS EXAMINATION

BY MR. LEMAY:

Q I might have just a question or two, Mr. Seeman. When you mentioned an increased location cost by going northwest, you get in that steep country, it looks

like you get into some ridges there.

A Yes, sir.

Q Going from $8-to-10,000, what would you estimate just offhand a location would cost up there in that -- on top, is there any idea?

A Oh, if it was -- well, it would kind of depend. If it's all the way up into the corner, say, the first regular location out of that corner, it would have to be terraced. I would say that it would take at least three more days, it, say $20,000.

It would at least double it, at least. To give you a picture, that's not -- it's not terribly difficult country. It's the -- it's not rock, it's loose sand but -- and yet there is some very consolidated ridges in there and with bulldozers we go in and we could tear it out of there pretty easy, but it still takes several days of dirt work and caliche, et cetera. That's the kind of country it is.

Q Was it also your testimony, then, that a location in the, I guess, 2310 to the north and west, or that one with the arrow --

A Uh-huh.

Q -- where a pad has not been built, did you say a pad was built there or not?

A A pad has been built for the one to the

right of the 6. That's our first --

Q Right.

A That's our original location.

Q I understood that. How about the one on the left of the 6?

A No, sir, a pad has not been built there.

Q That's only been staked?

A That's been -- that's been staked and that was one of my purposes, to see where that location was, you know, we applied for the permit and we hadn't -- we don't -- we didn't have a drilling permit yet, so we're not going to sink any funds into that one.

But we have had a surveyor go out there and put a stake in the ground so we know where it's at, and that's in a -- that's in an open field -- open sandy field. That one would -- you can almost drive to it with a car right now.

MR. LEMAY; I have no further questions.

If there are no further questions the witness may be excused, and we'll take a fifteen minute recess.

(Thereupon a recess was taken.)

MR. LEMAY: Are we ready to continue?

MR. HALL: Yes, sir. Call W. A. Baker, if you please.

W. A. BAKER,

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

DIRECT EXAMINATION

BY MR. HALL:

Q For the record state your name.

A W. A. Baker.

Q Mr. Baker, where do you live and for whom do you work?

A I live in Hobbs, New Mexico, and Texaco.

Q What do you do for Texaco?

A I'm an Area Manager in Andrews, Texas.

Q Have you previously testified before this Commission?

A No, sir, I have not.

Q Why don't you give the Commission a brief summary of your educational background and work experience?

A I graduated from the University of Mis-

souri at Rolla with a Bachelor's degree in petroleum engineering and have worked for Texaco for approximately seventeen years, seven years on the Gulf Coast and remaining years in West Texas and southeast New Mexico.

All of that seventeen years has been in drilling and production operations.

Q All right. What are your job responsibilities right now for Texaco?

A I'm an Area Manager in Andrews, Texas, and my primary responsibilities are supervising production operations for those properties in that area.

Q All right, does your area of responsibility now, or has it ever included southeast New Mexico?

A It does not now. Up until six months ago, the two years prior to six months ago, I was a Drilling Operations Manager in Hobbs. The area covered southeast New Mexico and from basically Midland, Texaco, north through the panhandle of Texas.

Q Are you familiar with the applications here today and the lands involved and the two wells?

A Yes, sir, I am.

MR. HALL: At this point we offer Mr. Baker as a qualified engineer.

MR. LEMAY: His qualifications are acceptable.

Q Mr. Baker, how did you become familiar with this project?

A At the time the well was first proposed in August/September of 1985 I was the Drilling Operations Manager for Texaco in Hobbs and part ofour responsibility was the preparation of the estimate, cost estimates, and drilling program for the well.

Q All right, are you also familiar with Order R-111-A?

A Yes, sir, I am.

Q Are you familiar with the casing and cementing requirements under R-111-A?

A Yes, sir, I am.

Q And would you be able to tell how they would be applied to these wells?

A The wells as we propose them will be drilled in accordance with that rule or even applying additional engineering to it to make them more safe.

Q All right. Let's look at Exhibit Eleven and Exhibit Twelve. Why don't you identify those and explain those to the Commission?

A Exhibit Number Eleven, page one, is a wellbore diagram and it sets out on, starting on the lefthand side of the page, the mud program for each hole section from top to bottom.

Then it has the formations to be drilled and the approximate depths and where they are anticipated, and the casing sizes, or the casing program shown, and on the righthand side of the casings there it shows the hole size, the casing programs, for each different hole size.

Page two is the same wellbore diagram only on the lefthand side it shows the -- each casing specification and right below that the cementing program for that whole section.

Q All right, do you have more?

A Page three is Texaco's Form M-112, which is a cost estimate to drill the well as sketched on pages one and two.

Q All right, now with respect to Exhibit Eleven, what is Texaco's casing and cementing program to be applied to this well?

A Okay, we will drill a 17-1/2 inch surface hole and set 13-3/8ths inch casing at approximately 400 feet and will be cemented with 600 sacks of cement, which is 155 percent excess cement.

The intermediate hole will be 12-1/4 inch size. We'll run 8-5/8ths inch 24 and 28 pound casing and set it at approximately 3500 feet, and will be cemented back to surface.

Q Let me ask you, will that second string

take you through the salt zones?

A Yes, sir. The first string is set just above the salt and the 8-5/8ths set at 3500 feet will be just below the base of the salt.

Q All right.

A Then the production hole will be 7-7/8ths inch and we will run 5-1/2 inch 15 50 pound casing and we'll cement back to surface in two stages.

Q Now is this casing and cementing program in compliance with the specifications of Order R-111-A?

A Yes, sir, it meets or exceeds all requirements in R-111-A.

Q In your opinion will Texaco's proposed compliance with the casing and cementing specifications of Order R-111-A prevent the escape of gas?

A Yes, sir.

Q What's the basis of your opinion?

A Well, R-111-A was proposed as a safe way to drill these wells. All of the engineering that has gone into the preparation of this exhibit is designed to preclude any gas escaping and also the Forty-Niner Ridge No. 1 and No. 2 Wells have produced for approximately fourteen years without any history of gas escaping.

Q Let me ask you, is Texaco likely to encounter H2S in drilling these two wells?

A No, sir, we are not.

Q Let's look at Exhibit Twelve now. Would you explain that to the Commission, please?

A Exhibit Twelve is a wellbore diagram of a deviated well. The mud program would be identical to the mud program on Exhibit Eleven.

The formation depths would be approximately the same. They'd be identical down to the point of deviation is why they're not included on there.

Hole sizes and casing sizes are identical to Exhibit Number Eleven.

Page two of Exhibit Twelve is Texaco's Form M-112 cost estimate showing the estimated cost to drill such a deviated hole.

Q All right, why don't we compare the cost estimate on Exhibit Twelve with that of Exhibit Eleven.

A The cost to drill a straight hole, such as proposed or shown on Exhibit Eleven is $301,000.

The cost to drill a deviated hole, as shown on Exhibit Twelve, is $361,000.

Q Does a deviated hole involve greater mechanical risks than those involved with straight hole completions?

A Yes, sir, it does.

Q What are they?

A In addition to the additional cost, the tools required to drill such a hole are more sophisticated and thus subject to failures.

Fishing in a directional hole is much more difficult than fishing in a straight hole.

Drilling a directional hole will require more time, which will cause extended or extra rotating hours inside the intermediate casing, which will cause some additional wear, although we anticipate it to be minimal, some additional wear to the intermediate casing.

That's the most important reasons.

Q Now, in a deviated hole, will your casing lay against the borehole in a different manner in the deviated portion than it would in a straight hole?

A In the deviated portion of it, it will, but in the straight hole part of it, it will -- should hang vertical.

Q Do you have anything further to add with respect to these two exhibits?

A From a production operations standpoint it will require, as has been testified earlier, that in a deviated hole we would elect to run an electrical, submersible pump to produce the well rather than rod pump, which is another reason for why deviated holes are -- are more expensive than -- than vertical holes. The operating expenses

are much higher generally an ESP, a submersible pump, than a rod pump will.

Q All right, and I believe the previous testimony has been that it would cost about $28.000 to run electric power to the location.

A Yes, sir, that is right.

Q Do you concur with that?

A Yes, sir, I do.

Q Do you know how much line that's going to involve?

A It would be approximately two miles.

Q Do you have anything further to add?

A No, sir.

Q Mr. Baker, in your opinion will straight holes unduly interfere with the potash deposits?

A No, sir.

Q In your opinion will the granting of Texaco's applications be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A Yes, sir, it will.

MR. HALL: We move the admission of the Exhibits One and Two. Let me ask you, did you prepare Exhibits Eleven and Twelve?

A They were prepared under my supervision.

MR. HALL: We move the admission of Exhibits Eleven and Twelve.

MR. LEMAY: Without objection Exhibits Eleven and Twelve will be admitted into evidence.

Mr. High.

CROSS EXAMINATION

BY MR. HIGH:

Q Mr. Baker, well, you have some experience with directional drilling, I take it.

A Yes, sir, I do.

Q Did you get that, I take it, on the Gulf Coast?

A One well was on the Gulf Coast. The rest of the experience was drilling sidetrack wells in West Texas.

Q Okay, how many directional wells have you drilled?

A One directional well.

Q You've had experience with one directional well?

A Yes sir, and four or five sidetrack wells.

Q What do you mean when you say sidetrack well?

A It's a hole that requires sidetracking, generally around junk left in the hole, unable to fish out for one reason or another.

The technology to drill a sidetrack hole is very similar to drilling a directional hole.

Q And the one well, the one deviated well that you were involved with, what was the degree of deviation in that well?

A Well, that was ten years ago; to the best of my recollection, 15 to 20 degrees.

Q And you prepared the cost estimates, as I understand it, in Texaco Exhibits Eleven and Twelve?

A They were prepared under my supervision, yes, sir.

Q And these show, do they not, it would be, what, $60,000 more for a directional well --

A Yes, sir.

Q -- than the conventional well?

A Yes, sir.

Q And now looking at Texaco Exhibit Number Twelve, the $361,000 estimate for the deviated well, I take it is for a deviation of 24 degrees, is that correct?

A Yes, sir, that is right.

Q Is that what -- is that what it would take, Mr. Baker, to drill one of these wells from around the

Forty-Niner Ridge No. 1?

A Yes, sir, that's an approximation of it.

Q What would be the total bottom hole distance on a 24 degree deviation?

A To drill such a deviated hole from approximately where Forty-Niner Ridge No. 1 is located to a bottom hole location under our 2310 from the north and west line -- I'm sorry, what was the question?

Q Okay, let me ask you this, if I may use the board to do this. Let's suppose that's the surface and this is where you're drilling.

Texaco Exhibit Number Twelve shows a deviation of 24 degrees, does it not?

A Yes, sir.

Q And that's the -- that ties in with the estimated cost of $361,000?

A Yes, sir.

Q Okay, if that is a 14-degree deviation, do you know how much in feet that would offset?

A 903 feet.

Q Is this 24 degrees, is that what you're saying, Mr. Baker, would be required if these wells were drilled by the Skelly No. 1 -- by the Skelly No. 1 and deviated to hit the bottom hole location that Texaco wants to hit? Is it 24 degrees what you calculated it to be?

A Well, the actual degree would depend upon the depth where the deviation was actually started.

Q Kickoff point.

A Right.

Q What did you assume in preparing Texaco Exhibit Number Twelve?

A At the kickoff point?

Q Yes, sir.

A I'm not exactly sure. Don't remember. But it can be kicked off anywhere below that intermediate pipe, just at different angles and whether you kickoff at 3500 feet and drill a 5 degree or go to 5000 feet and drill a 24 degree hole, the costs are going to be the same, both points.

Q The kickoff point doesn't have anything to do with cost?

A In this instance, very little.

Q Let me ask you this. If -- if you came down let's suppose to what I'm going to call point A on the bulletin board here and deviated to hit what I'm going to call or label point B, that would be a pretty sharp angle, wouldn't it?

A As you have it drawn there, yes, sir.

Q Whereas if you drill down, let's say, only to point -- what I'll call point C and then start devi-

ating to arrive at point B, the angle would be much smaller, wouldn't it, sir?

A Yes.

Q Is it your testimony that the cost of both of those would be the same?

A Probably not identical but very close to the same.

Q The cost for the conventional well, is $301,000 what you came up with?

A Yes, sir.

Q If both of these wells, if both of the wells we're talking about here today were drilled from around Forty-Niner Ridge No. 1, directionally to hit the bottom hole location you guys want, are there any costs that are reflected in Texaco Exhibit Number Twelve that could be reduced.

A No, sir, and as a matter of fact, if you're going to drill the second location, of which Texaco has applied for, that's going to require a much longer deviated interval and probably cause the cost to go up.

Q Well, if they were all close together wouldn't you save some pipe hooking up to a pipeline?

MR. HALL: I'm going to object. That calls for speculation, I believe. It's not within the scope of direct.

His testimony's been limited to drilling costs. We're not concerned about whatever El Paso or whomever is going to charge for a pipeline.

MR. HIGH: Well, I'll -- let me rephrase the question.

Q If you -- if these two wells were drilled at the location Texaco wants, you would have to lay a pipeline, wouldn't you?

MR. HALL: I'll object again. That calls for speculation. He doesn't know if El Paso -- or the purchaser is going the pipeline or producer.

Q Is there a pipeline in the area of the surface location that Texaco -- that's involved in these APD's?

A Not that I'm aware of.

Q Is there a pipeline in the --in the vicinity of Forty-Niner Ridge No. 1?

A I would assume so. I have not seen it myself, no.

Q If they were drilled in the vicinity of Forty-Niner Ridge No. 1 and deviated to the bottom hole locations, would there be a savings in the surface cost, for example, building pads?

A Well, there's already a surface location built at 2310 from the north and west line. Texaco has al-

ready spent that money.

To build a location close to Forty-Niner Ridge No. 1 we would estimate would cost approximately $10,000, which is what Exhibit Eleven and Twelve both reflect to be location work. It would cost about the same amount of money whether it's built close to Forty-Niner Ridge or where we want to drill our proposed locations.

Q So you're saying the surface location work would be -- you'd have to spend that money whether or not it's over where you're seeking in this hearing or if it was around the Forty-Niner No. 1?

A Cost of the surface location would be approximately the same, except for the fact we've already built and paid for one surface location.

Q What is transportation and (not understood)?

A It's the cost to truck the casing, haul water, all kinds of drayage.

Q And that would be more for a directional well?

A Yes, sir.

Q Are these numbers, Mr. Baker, in-house numbers, so to speak? I mean you came up with these numbers, right?

A An engineer on my staff came up with

them, yes, sir.

Q Okay. And I take it Texaco does it's own drilling?

A We hire drilling contractors and we supervise their work.

Q Well, did you -- did you consult with any drilling contractors on these numbers?

A No, sir, these -- these numbers are based on experience in southeast New Mexico on similar type wells.

Q Okay, but is that the one well you referred to, that you said you'd been involved in?

A You're talking about the directional --

Q Yes, sir.

A -- hole? The -- the difference in cost, if you'll look at -- down there under intangible development cost, where it says contract drilling, 20 days, that's 5 more days to drill a directional hole than the 15 days to drill a straight hole, which represents 20,000 of the $60,000 difference.

Q But that's assuming a 24 degree angle, is it not?

A Yes, sir.

Q But you do know whether or not it will take more or less time to drill either a smaller or a larger angle? Or do you know?

A The time would be approximately the same, in my opinion.

Q So the big cost is the time it would take to drill, is that correct?

A Well, that's $20,000 of it. The majority of the rest of it would be extra tool rental.

Q And is -- I take it then, Mr. Baker, since you deal with these numbers you are comfortable that these numbers are fairly accurate and are reasonable with respect to the cost it would take to drill a 24 -- a deviated 24 degree well?

A Yes, sir, at this time.

Q And you mentioned production problems that you would have with a deviated well.

A Yes, sir.

Q And you said that was because of a submersible pump?

A Typically a submersible -- downhole submersible pump installation is more expensive to operate.

Q Don't you have some of those right now?

A Yes, sir.

Q Are they -- they -- they're not unique to a deviated well.

A No, sir.

Q Do you know at what point in a deviated

well you reach before you go to submersible versus conventional pumping?

A No, sir, I don't.

Q Do you know whether or not you could pump by conventional methods a 24-degree deviated well?

A I have never done it. In my opinion we could not do it economically.

Q Do you know whether or not it could be done?

A No, sir, I don't.

Q Now you mentioned two miles of line. Is that with respect to electricity?

A Yes, sir, two mile of power line.

Q All right, so I take it, then, there's a source of electricity within two miles?

A Yes, sir.

Q And if you ran that to -- to the area around Forty-Niner Ridge Unit No. 1, that would be a one-time cost, wouldn't it?

A Yes, sir.

Q So if then you drilled a second well from that area you wouldn't have that cost, right?

A Not $28,000, it would be some number less than that, depending on how far away.

Q So you could -- you could have some sav-

ings that would reduce this $361,000 for a second deviated well, couldn't you?

A The cost of the electricity installation is not in the $361,000.

Q That's just drilling costs.

A Yes, sir.

Q Well, were you involved in the preparation of Texaco's Exhibit Number Eight that Mr. Pool was talking about?

A No, sir, I was not.

Q Did you see it before today?

A Yes, sir, I saw it yesterday.

Q You played no part in the preparation of that?

A No, sir.

Q Did Mr. Pool talk to you and get these numbers?

A I believe he got them from the same engineer that prepared these drilling estimates.

Q Okay, is that engineer here today?

A No, sir, he's not.

Q He's not sitting in the audience here?

A No, sir, he is not.

Q And you got your data from that same person, I guess.

A Yes, sir.

Q Mr. Baker, do you know how many -- well, I'm sorry. What's this engineer's name you're talking about?

A Doug Quiett.

Q Do you know how many directional wells he has prepared a cost estimate for before?

A No, sir, I don't. I might add that he prepared these numbers after a consultation with a directional drilling company contractor.

Q Were you present when that happened?

A No, sir, I wasn't.

Q Or he just told you that.

A Yes, sir, he told me he did and I believed him.

Q Okay. Do you know what -- what drilling company he talked to?

A Christianson out of Midland, Texas, I believe.

Q But you haven't seen any paperwork or anything come from that drilling company on what it would cost to drill this --

A Not a written proposal, no, sir.

Q Well, do you know whether or not any oral proposal or oral bids were gotten from Christianson?

A Doug said he talked to Christianson and got an oral estimate proposal of what it would cost to drill a 24-degree hole.

Q Well, let me ask a question. On Texaco Exhibit Twelve, is this, this $361,000 (sic) is that an estimate that it would cost Texaco to drill it or is this an estimate, are you saying, that Christianson would drill it?

A This is what it would cost Texaco and its other working interest owners to drill such a well.

Q Who would be doing the drilling?

A Texaco would be doing the drilling. Christianson would be providing the directional services under Texaco's supervision.

MR. HIGH: I have no further questions.

MR. LEMAY: Yes, sir, Mr. Hall.

MR. HALL: Short redirect.

MR. LEMAY: Redirect.

REDIRECT EXAMINATION

BY MR. HALL:

Q Mr. Baker, do you ever consult with the accounting people at Texaco's Houston office in preparation of your paycheck?

A No, sir.

Q Do you believe the numbers on your paycheck to be accurate and reliable?

A I sure hope so.

Q How about the numbers on Exhibits Eleven and Twelve, are they reliable?

A Yes, sir, I believe they are.

Q All right, thank you. Nothing further.

MR. LEMAY: Any additional questions?

MR. HIGH: We have none, Mr. Chairman.

MR. LEMAY: I have one.

CROSS EXAMINATION

BY MR. LEMAY:

Q Mr. Baker, I notice you -- Texaco's AFE form does not have a contingency factor. Is that typical or do you work with contingency factors?

A Texaco does not include contingencies in drilling cost estimates. That Texaco policy.

Q I see.

MR. HIGH: Mr. Chairman, I do have one question, if I may.

MR. LEMAY: Yes.

RECROSS EXAMINATION

BY MR. HIGH:

Q Mr. Baker, perhaps you're the person I should do this with.

Let me show you what we've marked as Opponents' Exhibit A, which is -- it's another Texaco Form M-112, is it not?

A Yes, it is.

Q And that's dated what, 1-1-85?

A August the 2nd, '85.

Q I'm sorry, okay. And Texaco Exhibit Eleven is also a Form M-112 dated June 9th, 1987.

A Yes, sir.

Q Now the proposed cost to drill shown on Opponents' Exhibit A is for a straight hole, is it not?

A Yes, sir, it is.

Q At 2310 and 2310.

A Yes, sir.

Q Is that the same location as referred to in Texaco Exhibit Eleven?

A Yes, sir, it is.

Q And the estimated cost on August 2, 1985, was $340,000, was it not?

A Yes, sir.

Q And the estimated cost on June 7th, '87, was $301.000.

A Yes, sir.

Q Is that because some things have gone down?

A Yes, sir.

MR. HIGH: I would offer Opponents' Exhibit A.

MR. HALL: Isn't it already entered?

MR. LEMAY; I think it's been accepted in evidence already, yes, sir.

MR. HIGH: All right.

MR. LEMAY: Are there additional questions of the witness?

If not, he may be excused.

Do you have anything more, Mr. Hall.

MR. HALL: No, Mr. Chairman, I think that's our case on direct.

MR. LEMAY: Thank you.

END OF TESTIMONY IN THE DIRECT CASE OF TEXACO.

MR. LEMAY: Thank you. I think at this point we will start the opposition's case.

Mr. High, are you ready to proceed?

MR. HIGH: Yes, but may I have a few minutes to get our exhibits together?

(Thereupon a discussion was had off the record.)

MR. LEMAY: We will continue with the opposition, the potash case. Mr. High?

MR. HIGH: Mr. Chairman, thank you.

We would call Mr. Walt Thayer and we will be offering testimony and evidence with respect to confidential information at the very outset.

MR. LEMAY: So we shall go into executive session with Mr. Thayer on confidential information?

Okay. Those of you not directly related will leave the room again because we're going into executive session for -- staff can stay.

CONFIDENTIAL TESTIMONY AND REFERENCE TO EXHIBITS COMMENCING ON Page 226 CONTINUING THROUGH PAGE 279 INCLUSIVE.

Sally W. Boyd CSR.

ROBERT W. NICHOLSON,

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

DIRECT EXAMINATION

BY MR. HIGH:

Q Will you state your full name, please, sir?

A My name is Robert W. Nicholson.

Q And where do you reside, Mr. Nicholson?

A I live presently in Boulder City, Nevada.

Q And with whom are you employed?

A I'm self-employed. I'm a consulting engineer.

Q Have you ever testified before the Oil Conservation Division before, Mr. Nicholson?

A No, I haven't.

Q What is your educational background?

A I have a BS and MS in petroleum engineering from Louisiana State University and I have a PhD in petroleum engineering from the University of Tulsa.

Q Okay, when did you get your PhD?

A 1972.

Q I'm sorry, that was in petroleum engineering?

A In petroleum engineering.

Q I assume as part of that PhD program you wrote a dissertation, did you not?

A That's correct.

Q What was the title of your dissertation?

A Constraint Nonlinear Analysis of Directional Drilling Assemblies.

Q For us lay people that has some thing to do with directional drilling, doesn't it?

A That has something to do with directional drilling, yes, sir.

Q After you got your BS and MS degrees, Mr. Nicholson, I take it you went to work somewhere?

A I went to work for Sinclair Research while I was also going to school at the University of Tulsa.

Q Would you relate for us, if you will, your employment history as a petroleum engineer?

A Well, I've -- seems like I've always been employed in the petroleum industry, but my first -- I worked for Halliburton Company while I was going to get my MS and BS degrees at Lousiana State University, and I worked for Sinclair Research, as I said, while I was getting my doctorate.

I went to work after that for Chevron, or Calco at that time in south Louisiana as a supervising

drilling engineer and drilling specialist and I worked for Chevron for approximately seven years.

I was -- left them in 1979. I was a -- excuse me, 1978, I guess it was. I was a drilling manager for operations in the North Sea at the time, temporary assignment, and engaged in drilling operations, supervised drilling in South Texas, West Texas, Louisiana, Mississippi, Alabama, all over the south, southeast and southwest United States.

And I also worked for them in Columbia, drilling manager there, and drilled wells all over Europe.

And since then, after I left them I went to work for a short period of time for a small geothermal company in California and after that I went into business for myself.

Q In the course of your work have you had occasion to do well design, casing design?

A Constantly; all the time.

Q And have you had occasion to -- any experience with directionally drilling wells?

A Many. I've probably designed and costed in excess of 1000.

Q Okay, and where would those wells be, Mr. Nicholson, that you have been involved in directioally drilling?

A They've been just about everywhere. Most of the drilling problems in the United States; North Sea, I did all those; I did a whole project in Beverly Hills, California; and I also handle the engineering services contract for the hot thermal rock on Bitten (sic) Hill up in New Mexico and last year we directionally drilled one of those wells, as a matter of fact.

Q Is that a contract with the Department of Energy at Los Alamos National Laboratory?

A It's a contract with Los Alamos National Lab.

Q And did that involve directional drilling?

A Yes, it did.

Q How deep are those wells?

A Oh, that -- we kicked that well off at about 9200 feet and drilled to 13,000.

Q Of the directionally drilled wells that you've been involved in, what would be the angle of deviation, the range of deviation that you've had some experience with?

A Well, I've deviated them from what I consider low angle holes, I'll say 10 to 15 degrees, all the way up to 60 degrees.

Q 60 degrees?

A Yes.

MR. LEMAY: Mr. High, before you get on this, are you going to qualify him as an expert, before you get into --

MR. HIGH: We -- we would, yes. We would offer Mr. Nicholson as a qualified expert.

MR. LEMAY: His qualifications are accepted.

MR. HIGH: Thank you.

Q Mr. Nicholson, you are aware, are you not, of the surface locations being sought by Texaco in this case?

A Yes, I am.

Q And you were retained by me, were you not, to assist me because I know nothing about oil and gas? Isn't that what I told you?

A I was retained to assist you, yes.

Q Okay, and I have provided you with information concerning the applications for permit to drill filed by Texaco.

A That's correct.

Q And you've had a chance to look at those, have you not?

A Yes, I've received them.

Q All right, let me show you what's been received into evidence as Texaco's Exhibit Number Six, which shows a well, Forty-Niner Ridge No. 1.

A Right.

Q And you're familiar now with that well, are you not?

A I'm familiar with that well, that's correct.

Q And you're familiar also with the two dots shown here as the -- the two well locations that --

A Yes, I am.

Q -- Texaco is seeking? Correct?

A That is correct. I'm familiar with those two wells.

Q Did I ask you to -- to look at those well locations and determine whether or not there were any technological reasons why the two wells being sought by Texaco could not be directionally drilled from the Skelly No. 1?

A That is correct. I saw -

Q Have you done that?

A I did. I looked at the technical feasibility of drilling either or both of those wells from that Skelly location.

Q Okay, is there any technological reason

why the two wells being sought be Texaco in this case cannot be drilled from around the Forty-Niner Ridge No. 1?

A No, there's no technological reason.

Q Would it be -- how would you characterize it in terms of difficulty?

A Very easy. Very good. It looks like a fairly easy directional drilling situation; reasonable angle; reasonable build rates, which are just classified as doglegs in the hole, which would minimize production problems or problems with tubing/casing during production operations because of their reasonable low angle. That angle of around 22 to 24 degrees, which I estimate these wells would have to be drilled at, is probably an optimum angle to drill directional wells at. It's very easy to maintain your direction and you can drill them relatively rapidly with almost -- you can drill them as rapidly as a straight hole.

Q And did you make any determination of what degree of deviation would be required for Texaco to hit the bottom hole location they want in these cases?

A Yes, I -- well, I don't know where -- where Texaco's primary target is relative to the depth of the well.

I estimated 22 degrees to be out 1000 feet at 6400 feet total vertical depth and looking at some of the information and listening to some of the other

people, apparently they want to be 1000 feet, approximately, from that surface location at a slightly shallower depth than 6400 feet. So the pay zone is probably intended to be penetrated, maybe at 5400 feet or 5200 feet instead of the 6400 feet that I had data on originally.

So it would require that -- one of two things: The hole angle come up a little bit so it would go up from 22 to maybe 26, as previously said, or you could kick it off at slightly different depth and maintain -- still maintain the 22 or 21 degrees, and --

Q Is the point that you kick off on deviation, does that enter into what angle of deviation you use?

A Yes, it does. It enters into the angle of deviation and also enters into the difficulty of the well. Normally people like to drill directional wells that kick off at as shallow a depth as reasonably possible. In this case from the information I had, 3340 feet was the bottom of the -- the bottom of the salt zones, and so the deviation would then be primarily directed at the bottom of that casing at 3340 feet.

Q Okay, so -- so if you drilled through the bottom of the salt and then kicked off --

A Uh-huh.

Q -- the angle of deviation would be--is that 22 or 23 degrees?

A Yes, I estimated 22 degrees for 6400 feet at 1000 foot departure from the surface, that's correct.

Q And that's not difficult to drill?

A That's not difficult to drill, no.

Q Okay. Is there a way that there could even be a -- well, let me withdraw that.

You've been in the room, in the hearing room all day today, have you not?

A That's correct.

Q And I believe you heard, I believe it was the testimony of Mr. Baker that the cost of directional drilling is essentially the same regardless of the angle of deviation?

A That's --

Q Do you agree with that?

A No, I don't, I don't agree with that. The higher the angle, the higher the cost and the higher the risk.

Q Okay, the higher the risk of what, something bad happening?

A Something bad happening, such as fishing operations, fatigue of your drill pipe, casing problems later in production operations, so the higher the angle and the higher the dogleg, or the amount -- the rate at which you bend the well, the more costly and the more risky the

well is.

Q Okay, so the smaller the angle of deviation, the less expensive it is to drill it.

A That's generally correct until you get below about 15 degrees. Then it's very difficult to maintain your desired azimuth in the well.

Q Okay. Is there a way that these two wells can be drilled by the Forty-Niner Ridge No. 1 and deviated at an angle less than 22?

A Yes. If they kick off slightly shallower than the 3340 feet that I estimated, then they could drill them at whatever, you know, as low as 10 degrees, as a matter of fact, or 13 degrees.

Q That would require --

A But that would require kicking off, doing some modest directional work in the salt section.

Q Okay, and if they kicked off at a distance less than the bottom of the salt, the angle of deviation could be as low as what, 15 or 16 degrees?

A 15 to 16 degrees would be a desired low angle, desired angle on the low side of the wellbore, because at 15 to 16 degrees that angle and a -- and a build rate of 1.5 degrees per 100 foot would allow conventional pumping, rod beam pumping type operations, with no -- no significant increase in tubing wear, rod wear, or cost for

production of the well.

So the low angle, the 15 to 16 degrees at 1-1/2 degrees per 100 would allow conventional production operations to be maintained.

I would imagine that they are probably pumping some of those wells in this area that have a natural deviation in that range, anyhow.

Q Unintentional deviation?

A Yes. Wells generally -- wells do not go straight. They always bend.

Q Okay. So if these wells were deviated -- well, let me withdraw that.

If you kick off a deviation on these two wells before the bottom of the salt, you therefore had an angle of deviation around 15 to 16 degrees, those wells, did you say, could be pumped by the conventional method?

A Yes, that's correct. They wouldn't have to go to the submersible pumps, electrical pumps.

Q Now, even at a higher angle of 22 or 23 degrees, could those be conventionally pumped?

A They could be but you would -- you would have significantly increased cost for operating the wells due to failures of rods and wear in the tubing strings, so when you get up to those high angles, you also increase your cost for power to -- to pump them because of the friction

and drag in the hole on the rods, so it's generally -- people do pump wells up to as high as 30 degrees with rod pumps, but it is generally not a good practice for a long term well such as these appear to be, that will pump for 10 or 12 years or whatever the production life of these wells are.

Q So if you got -- if you got to that degree of deviation you would use a submersible pump?

A You would -- you would primarily go to an alternate pumping method, either a submersible pump or a hydraulic pump.

Q How would those be powered?

A Those are primarily powered by -- by electricity.

Q Could that be done with a generator?

A That could be done with a generator.

Q Is that an accepted practice in the industry?

A People do that, yes.

Q And what powers that generator?

A You can use your production, just as you use production gas to drive your pumping jack, and that's -- that is done in some shallow offshore wells where -- generally pumping is not done on offshore wells. This is primarily gas lift, but since high pressure gas does not appear to

be available or desirable in the area, then a pumping method instead of gas lift would be the preferable production method, and --

Q So you could actually run the submersible pumps without having to run an electrical connection, electrical line from the outside?

A You could, yes.

Q Now, Mr. Nicolson, did I also ask you to determine the cost that should be involved if these wells were drilled from around the Skelly No. 1 Well?

A That's correct, I did.

Q Did you do that?

A I estimated the cost for drilling those wells and I estimated approximately $51,000 additional cost for drilling and completing the well over and above the straight hole and it takes approximately four days more to directionally drill the well than -- than a straight hole.

Q If you drilled the wells from around the Skelly No. 1 on a deviated basis it would cost roughly 51,000 more, in your opinion?

A Yes, I estimated four days of rig time at an average daily cost of the rig of around $10,000 a day; that I'm not positive about but I'd imagine it varies in the area from $8750 to $10,000 a day total operating cost, and the directional tools and directional person to -- services

required to directionally drill a well would cost approximately $12-to-$13,000. And you have a slightly increased cost for casing and tubing, et cetera.

Q Would there by a saving by drilling both of these that would affect the costs or a decision to either directionally drill or drill conventionally?

A Yes, there are savings in costs and oftentimes wells are directionally drilled from one area to save those costs, such as pipeline cost and pad construction cost, for example, and if you're, you know, if you're going to electrically -- pump the wells electrically with submersible pumps, you can have combined facilities at the surface so the cost would be significantly reduced versus drilling them from various areas.

So you would save the cost of the roads and the cost of the pipelines and it depends on how the production is handled whether it's separated at the well or not. If it's separated at the well, obviously, you can use one tank battery for a series of wells instead of individual tank batteries.

So there are -- there are -- there is an economy of cost of drilling wells, a number of wells from a single area if the directional drilling is -- is not too costly and risky.

Q You are familiar with the current produc-

tion of the Forty-Niner Ridge No. 1?

A Yes, I am.

Q And I showed you some data, did I not, that we received from Texaco concerning the production of that well?

A That's correct.

Q Is there any reason in your opinion, Mr. Nicholson, why the two wells involved in this case could not economically be drilled directionally from around the Skelly?

A There is an increase in cost, increase in the initial cost of approximately, approximately $50,000. The power situation, that's something that you'd have to work out in the most economical fashion, whether you bring a line in or whether you put your own generator station in.

But overall I think the total cost of drilling the directional well over the -- over the straight hole, if you're going to drill two wells there, would probably not be more than about 10 to 15 percent increase.

Q And the difference in the cost between the two wells -- I'm sorry, the difference in the cost between drilling --

A Two separate wells versus -- two -- wells from two separate pads versus the drilling of the well from the single pad, both wells from the single pad.

Q The drilling of them from the single pad directionally should only cost about 10 to 15 percent more --

A That's correct.

Q -- than drilling vertically at the two separate loations.

A That's correct. And that's, as a matter of fact, that number is a pretty standard type number that I've used in a lot of cost estimates.

Q Would there be any geological risk in directionally drilling from around the Skelly that you wouldn't have if you drilled vertically?

A No, not that I can see. As a matter of fact, directional drilling is also an exploration tool, so if they did not hit the area that they wanted, they could easily kick the well off and have another bottom hole location even a little further out so that they would -- they could actually explore an area with a single wellbore instead of multiple wellbores and multiple surface locations.

Q Mr. Nicholson, let me show you Texaco's Exhibit Number Nine and you've seen those before, I take it?

A Right. I looked at those awhile ago.

Q And that is, I believe, an economic analysis?

A Uh-huh.

Q Are the numbers on there reasonable. I'm searching for a different word, is there anything on there that variable or --

A This is a pretty standard economic analysis done for an individual well by major oil companies. I've seen many of these and it's -- I don't know and we would not know, and maybe even the person who did the input on this would know how these -- how some of these particular economic criteria are developed, but that's usually internal to do this, most of the time.

Q Page two of that, according to Texaco, shows that a deviated well would be uneconomical.

A That's Correct.

Q That is dependent upon what?

A That's primarily dependent upon the initial investment cost and their initial investment cost increased approximately $60,000 from the $282,000 where they had a 27 percent --

MR. ROYBAL: Mr. Chairman, I'm afraid we are getting into some of the data on Exhibit Nine.

MR. LEMAY: Which is classified as confidential by Texaco.

A Oh, I'm sorry.

Q Without referring to the Exhibit Number Nine, without referring to Exhibit Number Nine, what would

determine the economic -- what would make a well uneconomical? You said --

A Primarily the initial investment costs because when you discount that -- that cost, especially at these low rate wells, it's extremely significant because you don't get your money back for a long time period in the future.

If there were high production, higher production rate wells it wouldn't be so significant. Or at least higher production rate initially and more rapid decline.

Q Let me show you Texaco Exhibit Number Eight, which is not marked confidential, which deals with cost of drilling a conventional hole and a directionally drilled hole according to Texaco.

A Uh-huh.

Q Are there -- is there any place in there where the drilling cost of a traditional hole might be reduced to where it might be economical?

A You mean the directional hole?

Q Yes, I'm sorry, the directional hole.

A Well, these costs, these costs for wells vary a good bit and they estimated slightly higher directional drilling costs than I did of $10,000, but that's certainly within the realm of cost estimating, drilling cost

estimating accuracy, so I don't necessarily see that these are -- are -- they're a little more pessimistic than I would probably use in this general area, but they're not, certainly, out of line.

It surprises me the economics change so drastically.

Q What surprises you?

A That the economics change so drastically between the straight hole and the directional hole in this particular case.

Q That seems unusual to you?

A That seems -- it seemed a little change to me but you have -- I would have to sit down and actually do the same numbers and I may come up with the same answers.

The -- however, the geologist said earlier that he anticipated a better well and it may not have to be very much better, maybe one or two barrels of oil a day average, and you would have the same economics as a straight hole.

So doing the economics and doing the well costing estimate, there are some variations and that won't be known until after the well's done, obviously.

Q Well, based on what you have learned about the Forty-Niner Ridge No. 1 and the two proposed in this case --

A Uh-huh.

Q -- and given the production history of the Forty-Niner Ridge No. 1, is it your opinion that the two wells we're talking about here should be economic if directionally drilled from around this pad?

A I believe, if it were my project and I was the manager, I would probably drill those two wells directionally from the pad.

Q It's both technologically feasible and should be economically feasible.

A That's correct.

Q Fine.

MR. HIGH: Pass the witness.

MR. LEMAY: Mr. Hall?

CROSS EXAMINATION

BY MR. HALL:

Q Mr. Nicholson, I may have missed it, do you have any experience in southeast New Mexico?

A I have not drilled a well in southeast New Mexico.

Q And when were you retained by Mr. High?

A In 1984.

Q For this particular case.

A No, for another case but still in regards

to the potash enclave drilling situation.

Q All right, when did you first consult with him in regards to this case on assessing the directional drilling of these two wells?

A I can't remember the exact date right now, but approximately three weeks ago, I guess.

Q Was last night the first time you looked at any information on these wells?

A No, I've looked at the information two weeks ago in a meeting at -- at -- in Carlsbad.

Q I gather that most of your expertise lay in drilling area, is that correct?

A Drilling -- yeah, right, primarily in drilling and production operations.

Q But mostly in drilling as opposed to production, of the two?

A Primarily in drilling but I would say, you know, I know what I'm about in production, too.

As a drilling engineer for Chevron you also do all the workover operations, and a lot of production operations, too, so in the realm of drilling it depends on what company you work with as to how regimented these specialities are.

Q Well, in view of all that experience you'll agree with me that straight holes are preferable,

won't you?

A Sure.

Q Did you have any time -- let me ask, are you familiar with the Delaware production at all?

A Just what I've studied here in this -- from what I've seen in the reports and everything.

Q Okay, are you aware that these wells are planned on producing approximately 300 barrels of fluid per day?

A That's correct, yes.

Q Took that into consideration?

A Actually I thought they'ld probably get a little bit more than that, probably up to about 800 barrels a day and more later on in life, because they're fairly high water saturation wells and these type of lens, river sands, typically are fairly high water production wells, especially as the oil saturation drops.

Q What are some of the troubles you have when you directionally drill that you don't experience in striaght hole drilling?

A At these particularly low angles I would not anticipate any additional problems in drilling versus -- versus straight hole drilling.

Q Well, generally don't you have increased interior casing wear?

A The casing, the directional drilling that will be done in these wells will be through straight set -- the casing will be straight, so there won't be any additional casing wear.

The casing in these wells will not be run until after the wells are completed, or after the well has reached TD, total depth, so there's no additional casing wear.

Q All right, but you testified you did not know the exact angle of incidence planned by Texaco.

A That has nothing to do with casing wear.

Q The answer to my question is no, isn't that correct?

A There -- there will be no additional casing wear in these wells.

Q You did not know the angle of incidence that Texaco planned on --

A No, but I knew the order of magnitude. It's in the -- there's not -- there's not a significant difference between 22 and 26 degrees angle.

Q Don't generally directional holes have an increased tendency to miss their objectives?

A I would not anticipate that problem here. Only --

Q Well, I'm asking you generally if your --

A Generally, I would say no. As a matter of fact, oftentimes directional wells are much better in hitting their targets than straight holes.

Q Isn't the incidence of stuck pipe more frequent in directional holes?

A Only when you get above about 30 degrees of angle.

Q Okay, so the answer is yes.

In a directional hole isn't it more difficult to fish for tools?

A Not unless the directional angle is greater than 30 degrees.

Q So again the answer to my question is yes.

A Yes.

Q Are there increased logging difficulties?

A Only when you get up to a higher angle. At these angles there is no difference. There is really a minimal difference between a straight hole and a directional.

As I said earlier, many straight holes naturally deviate up to this 18, 20, 25 degrees, so I don't see any real signfiicant problem.

Q All right. You're drilling an area where there is some expressed concern about casing/tubing fail-

ures, escape of gas from the welbore, wouldn't you be concerned that it's so much more difficult to run an adequate cement job on a directional hole than a straight hole?

A If the rate of change of the angle is kept less than 3 degrees and the casing is properly centralized, no.

Q Less than 3 degrees.

A The rate of change of angle, 3 degrees per 100.

Q But generally isn't it easier to tie your cement back up to the surface and get an adequate lining job for straight holes as compared to directional holes?

A Well, they've already stated that they're going to use stage cementing, so their casing -- their cementing through the salt ought to be just as good in the directional well as it should be in a straight well.

Q But generally isn't it true?

A Sure.

Q Let's see, one of the cost items you mentioned, you said they could bring in a generator to operate a pumping (unclear) unit.

A Did I say that? No, I said a submersible pump, supply electricity for a submersible pump.

You could do it for the walking beam, too, if you wanted that expense.

Q Do run the power to the submersible pump off the generator, did you account for the cost of acquiring and operating a generator? Wouldn't that simply eat up the difference?

A Well, a generator is not, to supply the power you need for these -- for pumping these type of wells, is not a very big generator. You're only talking about approximately 25 horsepower; that's a pretty small unit.

Q Wouldn't the cost difference eat up --

A Not much more than $28,000. For $28,000 you can put in a pretty nice generating station.

Q Yeah, but you have more operating and maintenance expenses with a generator than you do with electrical line, do you not?

A Not much. Well, I don't know; not much. I mean that's an option if you're going to spend a lot of money for a transmission line. It's commonly done.

Q You testified you're involved in quite a few directional wells. Have you ever had any miss their targets?

A Well, I've drilled a few dry holes. I don't know if they missed their targets.

Q Their bottom hole location is what I'm asking.

A I can't -- I don't ever remember missing a target directionally drilling that resulted in a nonproductive well.

Q Do you have to make correction runs?

A I've had to make correction runs, sure.

Q They jack up the cost, don't they?

A Right, they can. Not if the -- you know, it depends on the drilling environment.

I looked at this particular area. This ought to be duck soup directional drilling area.

You know, if you're drilling alongside of a mountain where you have steep faults and things, then it becomes difficult.

Q Do you design lifting equipment?

A I have designed pumping operations, submersible pumps, that's correct.

Q How much of that do you do?

A I haven't done, let's see, have I done any recently? I don't think I've done any in the last year, but I have done some in the past for specialized -- for specialized operations, right. I've helped people design.

Q Did you have access to the dynamometer tests for the --

A No, I have not seen it; have not seen a dynamometer. I don't know, do they even run them?

MR. HALL: Thank you very much.

MR. LEMAY: Are there additional questions of Mr. Nicholson?

MR. HIGH: I have a few on re-direct.

MR. LEMAY: Mr. High.

REDIRECT EXAMINATION

BY MR. HIGH:

Q Dr. Nicholson, did you have occasion to look at the documentation concerning the type of water in the R-111-A area?

A Yes, I did. There was a chemical analysis in some of that stuff.

Q Did you notice anything about that water that was of any significance?

A Yes. It was surprising to me, and maybe it shouldn't have been surprising, that the total dissolved solids in the water was extremely high for being significantly below the salt section, and I -- since I've been doing a lot of work in recent years in geothermal operations. those kind of things usually stick in my mind, and I noticed that the -- that those waters should have a fairly high scaling tendency.

Q And did you look through some of the doc-

uments and in fact find a number of instances where wells had been acidized?

A Yes, I did.

Q Is that because of scaling?

A Primarily because of scaling, yes. I either would imagine acidization in this area is very common, both on initial production to get wells to produce initially, to clean them up, and also later on both for scaling in the production equipment and within the perforation area itself.

Q Did you determine the kind of acid that was used in the acidization process around here?

A Well, HCL is one of the primary acids, and I'm not positive what some of the others -- other stuff they used. The names sometimes are generic to the service company who supplies the acid.

But HCL, 50 percent HCL appears to be fairly common.

Q Have you had experience with acidizing wells?

A I sure have.

Q Have you had any experience with what acid can do to a well casing?

A Yes, I have.

Q What can it do?

A It can vaporize it, liquify it, eat it up.

Q What will acid do to cement in a well casing?

A It can destroy the cement, also.

Q So unless an acid job is properly done, it could cause a leak or a hole in the casing?

A It certainly can.

Q Even through layers of cement?

A Two and three strings of casing.

Q Has that -- has that ever occurred on any job that you've been involved with?

A Yes, I'm involved in a lawsuit where they acidized through two strings of casing and the cement jobs and the well blew out and it's a negligence suit for the guy who did the acid job, obviously.

Q And the -- what did the acid do to casing and cementing?

A Ate it up.

MR. HIGH: I have no further questions.

MR. LEMAY: Any questions? Yes.

MR. HALL: May I follow up?

RECROSS EXAMINATION

BY MR.HALL:

Q Did you, in your research in this particular case, did you become aware of any sort of casing failures in connection with the Forty-Niner Ridge Unit No. 1 Well, which has been pumping for fifteen years?

A No, I haven't.

Q Okay. Do you have any problem with the casing program and cementing program under the R-111-A order?

A There are some inadequacies in it that I would feel a little more comfortable if something were done; a little bit there that wouldn't really significantly increase the cost (unclear).

Q But you don't know of any failures where that program's been complied with, do you?

MR. HIGH: I'm going to object, Mr. Chairman. We're getting into something else that I have intentionally tried to avoid.

We will be bringing up the R-111-A casing program probably in another forum but not here.

MR. LEMAY: I hope you realize that we did stipulate, at least the Oil Conservation Commission said we will not entertain a collateral attack on

R-111-A rules.

If you want to address a particular casing string of this well and the safety of that string, that may be a separate topic but not in relationship to the R-111-A rules.

MR. HIGH: Well, I'm not sure what all that means.

MR. LEMAY: Well, it can be that -- it can be this witness' opinion that the casing string as designed is adequate or inadequate and he can give a reason for it.

MR. HIGH: Fine. If you'll allow that testimony that's fine with me.

MR. LEMAY: I think that's admissible.

Q If I understand your previous testimony. you said as long as the acid job is done properly there's no problem with casing failure.

A That's correct.

Q And there wouldn't be any problem with casing failure if casing and cement jobs where you meet R-111-A specs as Texaco proposes on these two wells.

A I -- I can't -- I don't understand that question.

Q Texaco performs an adequate, correct,

acidization job on these two proposed wells that's deemed necessary, there won't be any problem with casing failure in those wells, even when they comply with the R-111-A specs.

A There could be.

Q That's just conjecture and speculation on your part.

A Well --

MR. HIGH: It's an opinion. It's what he asked for and it's what he got.

A My opinion is that -- that any time you pump the acid down the well you lose control of it once it passes the casinghead. You may have holes in the tubing or pipe or something that you're unaware of; whereas if the acid job is done properly and it's done correctly, which it appears that it has been, so far, then I see no problems with it, but to say that there won't be a failure because of it, I cannot say that.

Q I don't mean to ask you to testify as to absolutes, but there probably will not be if the -- if the acid job is done correctly. Isn't that what I understand you to say? Isn't that your testimony?

A I don't want to --

MR. LEMAY: Mr. Hall, we went through this (not understood) where he's given testimony and if he wants to change that if you want to rephrase a ques-

tion, but I'd prefer you not to put words in his mouth.

MR. HALL: We'll withdraw the question.

That concludes my redirect.

REDIRECT EXAMINATION

BY MR. HIGH:

Q Dr. Nicholson, I want to show you Texaco Exhibit Number Eleven and ask you would you look at that.

You are familiar, are you not, with the R-111-A casing program?

A I'm somewhat familiar with it. I don't know all the ins and outs of it, but yes.

Q I would ask you to take a look at that and I have discussed this, at least to some extent, with you, have I not?

A Right.

Q Would you identify for us, if you can, Dr. Nicholson, what could cause gas to get from inside a casing and cementing program done in accordance with Texaco Exhibit Eleven, which is the R-111-A casing program?

Well, let me rephrase the question.

Looking at Texaco Exhibit Number Eleven, what event could cause methane gas to get from inside that casing outside into the strata surrounding the casing?

A Well, holes in the casing, obviously.

Q And part of that could come from the acidizing job?

A It could come from corrosion or acid or a combination of stress corrosion.

Q Any other events that you could identify for us that could cause methane to get from the inside of the casing to the outside?

A During production operations those would be the primary -- primary failure mechanisms; probably, you know, one of the practices here is to fracture these wells. Maybe fracturing could -- could cause a casing failure.

Inadequate cementing job, of course, would enhance that, so there -- there are mechanisms for any well to fail.

Q So it is possible for methane gas to get inside the well casing shown in Texaco 11 out into the strata.

A It is possible.

Q Thank you.

MR. LEMAY: Mr. Hall.

RECROSS EXAMINATION

BY MR. HALL:

Q I believe you testified, Mr. Nicholson,

you were involved in a lawsuit involving a casing failure due to a poor acid job.

A That's correct.

Q Can you give me an estimate as to how many successful acid jobs there have been in the world without casing failures? Millions?

A Well, let's put it this way. There is always a little bit of failure when you do an acid job.

Q But there have been millions of successful acid jobs, have there not?

A There have been millions of successful acid jobs but those that are unsuccessful are dramatically unsuccessful.

Q In other words, the odds are against it.

Let me ask you, you have testified about some of the causes that you thought could allow the escape of gas from the Texaco completion shown on Exhibit Eleven. One of the things you mentioned was an inadequate cement job.

A That is possible.

Q Isn't it more likely, isn't there a greater likelihood, a greater possibility for an inadequate cement job on a deviated hole as there is on the straight hole?

A In this particular case, I don't believe

that that's true, because of the method of completing the well, which I like a whole lot. I think it's a good way of going, is to run a DV tool or stage cementing tool in the -- or slightly below the intermediate casing string so that you should be able to, even if the well is deviated, have as good a cement job between the protection -- the salt protection string and the primary production string.

So I don't think that that -- I don't think that that well being deviated is going to change that particular aspect of protection.

Q The gas pressures associated with Delaware production are on (unclear), aren't they?

A They are very low.

MR. HALL: No further questions.

MR. LEMAY: Additional questions?

MR. HIGH: We have nothing, Mr. Chairman.

MR. LEMAY: I have one.

CROSS EXAMINATION

BY MR. LEMAY:

Q Dr. Nicholson, are you familiar with the Oil Conservation Division of New Mexico rules concerning de-

viation?

A I'm not sure if I know the details right now. I work in a lot of different areas and --

Q I know that. That's why -- we have a rule that requires that TATCO been run in every trip and that the deviation cannot exceed 5 percent. If it does we require a bottom hole survey to be done.

A That's correct. It's not -- I realize that there are limits that a directional survey, such that you have -- you can locate the bottom of a well, which a TATCO survey cannot do, must be run under certain conditions (unclear.).

Q All right.

MR. LEMAY: Additional questions of the witness? If there are none, he may be excused.

And we're running a little overtime here, as I mentioned. Let's go off the record, Sally, just for a minute.

(Thereupon a discussion was had off the record.)

(Thereafter the evening recess was taken.)

Thereafter at the hour of 8:30 a.m. on the 19th day of June, 1987, the hearing was again called to order, at which time the following proceedings were had:

MR. LEMAY: The executive session, of which we will have another one today to finish up Mr. Thayer's testimony, but for the record, I think it's appropriate to read in the New Mexico Statutes, 1978, Paragraph 71-2-8, Confidentiality Penalty.

The provisions of any confidential contract or any other confidential information required or possessed by the Department shall be held confidential by the Department upon written request of the party supplying it; and, any employee of the Department, whether temporary or permanent, who willfully violates the provisions of this section, shall be guilty of a high misdemeanor.

Nothing in this section shall be construed to prevent statistical information from being derived from the information in the hands of the Department or its use in public hearings before the Department or in appeals from decisions of the Department for which information is essential, notwithstanding the provisions of Section 10-15-1 through 10-15-4 NMSA 1978, or any other act requiring meetings of public bodies to be open. The Department may close that part of any meeting where confidential infor-

mation covered by this section is discussed by the Department.

I think it's appropriate that we read in the record because that is the justification for -- for closing the meeting to those of you that aren't directly involved in the staff or the -- the staff of OCD or the staff of the parties here before us today.

And with that as part of the open record, we shall now go into executive session again. So those of you that are not part of the staffs of either Texaco, IMC, or the OCD, I'd like to request that you leave at this time.

MR. LEMAY: We shall continue now.

MR. HIGH: Mr. Chairman, I would like the record to reflect that I have looked around the hearing room and that there is no representative of Western Ag in the room at this time. Thank you.

MR. HALL: Mr. Chairman.

MR. LEMAY: Yes, sir, Mr. Hall.

MR. HALL: We would like to resume with the cross examination of Walt Thayer.

CONFIDENTIAL TESTIMONY AND REFERENCE TO EXHIBITS COMMENCING ON PAGE 321 AND CONTINUING THROUGH PAGE 384 INCLUSIVE.

Sally W. Boyd CSR

MR. LEMAY: Mr. High?

MR. HIGH: Yes, Mr. Chairman, at this time I would like to offer into evidence what I have marked and delivered to the Commissioners, as Opponents Exhibit L, which are forms filed by Texaco Producing, Inc., to the OCC concerning notification of prior breaks, spills, leaks, and blowouts which were produced to us by Texaco in response to our subpoena.

I'd like to offer that into evidence as Opponents Exhibit L.

MR. LEMAY: Without objection --

MR. HALL: Well, there is an objection.

MR. LEMAY: Yes, sir.

MR. HALL: I have had a chance to briefly review those when I received them from Texaco and I'm not sure for what purpose they're being offered.

The majority of them seem to have to do with flow line leaks and the like. I don't know that there were any reports of casing failure in there. If there were, I'm sure Mr. High would like to offer those, but if he does, I'd like to question their relevance. Some of those casing failures may be from wells in waterfloods or

from casing jobs where cement was not tied all the way back up to the surface.

Who knows what the cause of it could be from wells drilled in the 1920's for all we know. I don't see how they relate to the possibility of casing failures, if any, where there is an adequate cement bonding job along the lines of --

MR. LEMAY: I don't know, where are you going with these?

MR. HIGH: They are -- they all show unplanned events. They were unintentional accidents.

MR. LEMAY: I'm sure that's true.

MR. HIGH: That's what they're intended to show.

MR. LEMAY: And we'll accept them as such, as unintended happenings, and without objection -- is there an objection to --

MR. HALL: Well, we'll object to relevance.

MR. HIGH: And we would offer as Opponents Exhibit M material produced by Texaco to us in response to our subpoena, which is a collection of Forms C-103 filed with the OCC concerning casing leaks and a whole host of things covered by the C-103.

Again these are unintentional happenings, and we would offer those as Opponents Exhibit M.

MR. HALL: Same objection basically. We're not sure where these casing leaks occurred or under what circumstances.

They're not relevant.

MR. LEMAY: We'll note your objection. Exhibits L and M will be -- of IMC, will be admitted with objection.

MR. HIGH: And we would offer as Opponents Exhibits N, as in November, and O, N, Exhibit N being a memorandum dated November 14, 1974, entitled Operation Report, Midland E & P District concerning an accident that happend on the Forty-Niner Ridge Unit Well No. 2 during which 27 drill collars and 6/1/2 inch bit were dropped into the hole as a result of running the block into the ground.

And Exhibit O being a similar document, entitled Operations Report, Midland E & P District, dated December 10, 1974, concerning apparently the same incident, just showing some costs and I assume that's a reference to the same incident.

We would offer those as Opponents Exhibits N and O.

MR. LEMAY: Same objection?

MR. HALL: Yes, we object to

the relevance of those.

MR. LEMAY: Those will be admitted with objections.

MR. HIGH: And we would offer as Opponents Exhibit P a multi-page document entitled Hydrogen Sulfide Survey as produced by Texaco in response to our subpoena. It's dated October 17, 1986. There's no explanation offered as to why only information for one particular day would be recited.

This is one of the docments we received from Texaco concerning the encounter with H2S, and I might add that the OCC modified our subpoena and limited the information that Texaco was required to provide on encounters with H2S within R-111-A or within ten miles of R-111-A, if I recall correctly.

MR. LEMAY: That's true.

MR. HIGH: And we would offer into evidence the information produced by Texaco showing nine instances of encounters with H2S in R-111-A. and we would offer that as Opponents Exhibit P.

MR. HALL: Well, I'll object. I don't think it shows nine instances of H2S within R-111.

In particular, if you'll note page 414, there's a reference to the Forty-Niner Ridge No. 1, there was zero H2S.

A preponderance of those are for the Monument Sub Area, Management area for Texaco in the Hobbs area.

MR. HIGH: Well, my information, Mr. Chairman, comes from Texaco. There is a notation on the righthand side of the document that says, highlights indicate wells within 10 miles of R-111-A area, and Texaco highlighted the ones that are on your copies.

If you look at the ones that Texaco highlighted, there's nine of those in which there was H2S present. I don't know where it's located. Texaco said it's within R-111-A or within ten miles.

If I miscounted, then I miscounted, but on page 4 -- I'm sorry, page 5, there is one, two, three instances in which H2S was encountered with wells that were highlighted by Texaco, Getty No. 6, Getty 35, and Getty 35 out of the Bone Springs.

To continue on, on page 6 there's another employee encounter that's indicated by Texaco as being an encounter with H2S.

If you look on page 7, there is another incident that's identified by -- in fact two of them, identified by Texaco as -- it looks like BB Lynch A and B, in which there was a whole lot of H2S.

MR. LEMAY: What page are you

looking at there?

MR. HIGH: Page 7.

MR. LEMAY; Page 7. Well, are you looking at the right column? I don't know if we're examining this in terms of testimony, but the H2S concentration on the tank match, which is one, two, three, the fourth column over, has many zeros.

MR. HIGH: That's correct.

MR. LEMAY: It does have a few higher readings on some of the highlighted wells.

MR. HIGH: That's right.

MR. LEMAY: And it varies quite a bit.

MR. HIGH: That's right. Whatever it shows, they're the one that marked it. We would offer it as Opponents Exhibit P.

MR. HALL: Same -- we object as to relevance. Mr. High is offering it for purposes of showing encounters with H2S, as he stated, within the R-111 area. None of them show that. This shows incidents within ten miles of it. That was in response to the subpoena.

MR. HIGH: I stated that.

MR. HALL: Not a single well shows H2S in the 111 area.

MR. HIGH: I stand corrected.

Whatever Texaco indicated on the document, we're satisfied with it; within ten miles, fine.

MR. LEMAY: We'll accept the exhibits with objection and the relevance, but how are you going to show relevance.

MR. HIGH: We would call Mr. Jim Wilcox, and Mr. Wilcox will not be testifying about confidential information.

JAMES R. WILCOX,

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

DIRECT EXAMINATION

BY MR. HIGH:

Q Mr. Wilcox, would you state your name, please?

A James R. Wilcox.

Q I'm sorry, were you sworn in earlier, Mr. Wilcox?

A Yes, yesterday.

Q And where do you reside, Mr. Wilcox?

A In Carlsbad.

Q And where are you employed?

A International Minerals and Chemical Corporation.

Q And what position are you employed in there?

A Safety Manager.

Q Have you previously testified before the OCC?

A I don't believe I have. I've been up here to testify but I don't believe I have.

Q Have you testified before other State or governmental bodies?

A Yes.

Q Has that testimony involved safety regulations?

A Yes.

Q Would you relate to us, if you will, Mr. Wilcox, how long you've been in mine safety and health?

A Nine years.

Q And you started out in what position?

A As Safety Manager at IMC.

Q And prior to the time you became Safety Manager did you have mining experience?

A Yes, I've worked for IMC a total of 21 years.

Q Okay, and the last nine of that 21 years being in mine -- as Safety Director?

A Yes.

Q And as Safety Director what are your duties and responsibilities?

A All the safety activities of the Carlsbad operation, safety and security.

Q And during the time you've been Safety Director, what type of training have you had concerning mine safety?

A Numerous -- I've completed numerous classes, Mine Health and Safety Academy in Bethany, West Virginia, relating to safety issues.

I've --

Q Is that the same school that the Federal Mine Safety and Health Administration sends their inspectors to?

A Yes.

Q I'm sorry, go ahead. What other training have you had?

A I've attended numerous seminars, you know, dealing with safety. In fact we've got something going on continuously, you know, some sort of training classes.

Q Have you served on any committees representing industry position in connection with health and safety issues?

A Yes, I've served several years on numerous American Mining Congress rule making committees.

Q When you say rule making committees, what type of committees are those?

A These are committees comprised of various segments of the mining industry. The American Mining Congress gets these groups together and we review proposed rules that are set forth by the government, Mine Safety and

Health Administration.

Q Now when you say rules, you're talking about rules regarding mine safety and health?

A Yes, --

Q And I take it --

A -- the rules governing our activities, our safety activities.

Q Are you familiar then with the Mine Safety and Health laws that apply to underground mines?

A Yes.

MR. HIGH: Mr. Chairman, we would offer Mr. Wilcox as a qualified witness on mine safety and health.

MR. LEMAY: Mr. Wilcos is so qualified.

MR. HALL: May I have a chance to voir dire the witness?

MR. LEMAY: Pardon?

MR. HALL: May I have a chance to void dire the witness on this, on his competency to testify?

MR. LEMAY: We'll have to go off the record until I find out what you mean by that.

(Thereupon a discussion was had off the record.)

VOIR DIRE EXAMINATION

BY MR. HALL:

Q Mr. Wilcox, I understand you're the Safety Manager basically for the mine.

A Yes.

Q Is the -- I imagine you're involved quite a bit with Workmen's Compensation issues and Workmen's Compensation claims for injuries on the job.

A Yes, sir.

Q In fact, that probably takes up a great amount of your time, doesn't it?

A It takes up some of my time.

Q The preponderance of your time?

A No. I have a staff of five people.

Q Just to deal with Workmen's Compensation --

A No.

Q -- issues?

A No, no, not hardly.

Q How much of the time of your whole department is taken up with Workmen's Compensation issues?

A Probably 20 percent.

Q All right. Do you have any background in petroleum engineering?

A No.

Q Then you're not able to testify or render an opinion about oil well drilling, casing, and cementing, are you?

A No. I visited a drilling rig but I don't feel like I'm an expert.

MR. HALL: Mr. Lemay, I'm going to -- Mr. Chairman, I'm going to move that the witness is incompetent to testify about relevant matters before the Commission today and that he be stricken.

MR. LEMAY: Well, I don't think so. I think he's been qualified as an expert in mine safety. It depends on the testimony he's about to give. I certainly don't -- he's indicated he's not competent to testify as to drilling procedures and how drilling of this might affect the mine, but I think he's qualified to on mine safety.

MR. HALL: Well, in view of the scope of this proceeding, we're concerned about two applications for permits to drill and whether or not compliance with the R-111-A specifications will insure safety.

Beyond that we cannot engage in any sort of collateral attack against the specifics of R-111-A. I believe that's where his testimony is leading.

MR. LEMAY: Well, let's see if

it's going that way, Mr. Hall, and if it is we'll certainly let Mr. High know that it's unacceptable testimony. In fact we expect you to raise an objection if you feel that his testimony is going in that direction.

You may proceed, Mr. High.

MR. HIGH: Thank you, Mr. Chairman.

DIRECT EXAMINATION CONTINUED

BY MR. HIGH:

Q Mr. Wilcox, do you have responsibility for safety throughout the IMC mine?

A Yes.

Q Do you have responsibility for safety at locations other than the IMC mine?

A Yes.

Q And what locations are those?

A Our Petroleum Co. ship loading facility in Long Beach, California, and Petroleum Co. manufacturing plant in Bakersfield, California.

Q How large is the IMC mine?

A We have approximately 2200 miles of open tunnel underground.

Q And you are familiar, are you not, with the Mine Safety and Health Act they came out with for the

work in the underground mine?

A Yes, that's when I went into the safety field.

Q And when was that?

A 1978.

Q And that's when the Act was passed?

A No, the Act was passed in '77 but they didn't actually begin the compliance proceedings until '78.

Q Did that impose upon the IMC underground mine safety requirements that it previously did not have?

A Yes.

Q And was it your responsibility and duty as Safety Director to come into compliance with those requirements?

A Yes.

Q And you are familiar, I take it then, with those regulations.

A Yes.

Q Do any of the regulations that -- that apply to the IMC mine regulate the presence of methane gas?

A Yes, they do.

Q And what are those regulations called?

A Gassy mine regulations.

Q And have you had any experience involved with those regulations?

A Yes, sir, I have.

Q Let me show you, Mr. Wilcox, what I've marked as Opponents Exhibit Q and ask if you will take a look at that, please, sir.

Can you identify that for me, Mr. Wilcox?

A Yes, it is the current Mine Safety and health Administration's Gassy Mine Standards.

Q Are all mines subject to this right now?

A No, we're not subject to this right now.

Q What has to happen before you become subject to this?

A There's four, any one of four events that can occur before a mine can be classified gassy.

One is the state in which the mine is located would classify as gassy. Then the Mine Safety and Health Administration follows suit. That's part of the standard.

If flammable gas is emitting from the ore body and that gas is ignited, that can get it into a gassy mine classification.

Q That means if there's an underground explosion? Is that what that means?

A Yes.

Q Okay. So if you have --

A Well, maybe not even an explosion, just

an ignition.

Q Okay, so if there's an underground ignition, that, the fact that that event occurred would result in a mine being classified gassy.

A Yes.

Q Okay, I'm sorry, go ahead.

A Any time there's a concentration of .25 percent of flammable gas found in the mine atmosphere, then the mine will be classified gassy.

Q Okay, and how would such a sample like that be discovered?

A From an air sample, a methanometer (sic). Of course the sample has to be analyzed before it can be classified gassy.

Q How do you take -- physically how do you take an air sample?

A We have devices that we call cricket samplers.

Q Cricket?

A Yes.

Q Like the insect?

A Yes, right. In fact, that is the term; that's what they are, is cricket samplers, but it's a little device that you squeeze all the air out of and then you pop it and it sucks air in, and then you seal it.

Q Do you know how much total air that little device holds?

A I'm not sure of the volume, no, not very much.

Q How large is the sampling device that you have.

A It's approximately 3 inches in diameter and about a quarter inch thick.

Q And that's how an air sample is taken?

A Yes.

Q And if that air sample contains .25 percent flammable gas, the mine will be classified gassy?

A Yes, that's correct.

Q Will .25 percent methane burn, Mr. Wilcox?

A No.

Q But that's still enough for a mine to be classified gassy.

A Yes.

Q And if a mine, if one of those events occurs and a mine is classified gassy, what are the consequences? What happens?

A If you're classified gassy then all your equipment has to be permissible. There's --

Q Excuse me, what -- what does permissible

equipment mean, the way you used it?

A It means equipment that is explosion proof or will not be the ignition source of a flammable gas.

Q Would that be specially designed equipment that could be operated in an atmosphere that -- that would not cause an explosion --

A Yes.

Q Okay. And I'm sorry, go ahead. What -- what other consequences would occur?

A Well, there's 62 additional standards which we would have to comply with that we don't have to comply with at this time.

This is this entire group right here.

Q Have you had an occasion and opportunity to review those standards and determine what would -- what it would cost for IMC mine if it had to come into compliance with those standards?

MR. HALL: Well, I think this is the point we need to object. There's a question posed to the witness that calls for speculation that they will be required to comply with the standards involved at all.

We have no reason to believe that they're going to be a gassy mine. I can see what this is all leading to. They're going to try to link this to well drilling in the area, obviously, and specifically --

MR. LEMAY: Wait till they get there. They're not there yet, I don't think. Right now they're just explaining the mine situation.

A Can I answer the question?

MR. LEMAY: Please do.

Q Yes.

A We did a study a number of years ago and at that time, and it would depend on whether some of the equipment we have now could be modified and deemed permissible.

Q Is the equipment that's currently used by the mine in its mining operation maintained in an explosion proof or a permissible condition?

A No.

Q Okay.

A Some of the equipment that we purchased at the time it was purchased it was probably deemed permissible but it has not been permissible in years.

Q Okay.

A If that equipment could be modified to where it would be permissible again, our initial capital outlay would be approximately $45,000,000. If that equipment cannot be brought into compliance, then the capital outlay would be $80,000,000; somewhere in the approximate location.

Q That would be the cost just for IMC to comply with the gassy mine regulations.

A Yes, sir.

Q And that expenditure would be required, as I understand your testimony, if as little as .25 percent meathane was found in the mine?

A Yes, that's correct.

Q Now what if the Federal government told IMC to comply with those regulations and IMC didn't do it? What would happen to the mine?

A They would issue a closure order, withdraw all of our people, and not let anyone go underground until we agreed.

Q What does the word withdrawal mean in the mining business?

A It means removing everyone from the working areas.

Q Does the Federal Mine Safety and Health Inspectors have the authority to order that to happen?

A Yes, immediately.

Q Do they have the authority to close down the mine?

A Yes.

Q Under what conditions do they order a mine closed?

A Well, if anything they deem an imminent danger situation.

Q And how physically would that happen? Would they just write out a piece of paper or do they go to court? How do they do it?

A No, they don't have to go to court. They just --

Q What's the procedure?

A They issue an order. It's just a piece of paper and they present to the mine operator and you have a chance of complying or pay $10,000 a day and go to jail.

Q And if you choose to litigate that, can you keep the mine open or do they close it?

A No. No, you have to close it.

Q You close the mine, then litigate it?

A Right.

Q In the course, Mr. Wilcox, of your duties and responsibilities as Safety Director, have you had occasion to conduct any studies concerning the migration of gases in the mine?

A Yes, about four years ago during a summer shutdown we had a development panel that was four rooms wide. Because of the width and the roof control that we were doing we hadn't drilled any air relief holes in the roof on the back of the mine.

MR. LEMAY: Couldn't hear you; speak a little louder.

A Okay.

Q What is an air relief hole?

A There is air trapped in some areas of our mining panels above the roof. That air pressure can force down the mine roof if we don't drill up and relieve that pressure.

Q Okay, do you know the chemical composition of that air pressure?

A It's nitrogen.

Q So when you say air you're talking about a substance -- a mixture that's primarily nitrogen.

A Yeah, it's an inert gas.

Q Okay, fine, go ahead.

A And during this process we went down and started drilling air relief holes and we were getting air blows at every intersection that we drilled.

So one day we skipped an intersection and didn't drill it that day; came back the next day and we drilled it and there was no air blow. So that indicated that the gas had migrated one direction or the other.

We tried that later on for a distance of six rooms and with the same result.

Q How -- what is the footage of six rooms?

A From one drill hole to the next drill hole, the area in between that we skipped I believe was 452 feet.

Q And did gas migrate -- did you -- what happened in this experiment?

A We waited 24 hours and went back and drilled in between and we did not get any air blows, so --

Q Which indicated to you what?

A The gas had migrated and gone out the holes that we had drilled previously.

Q Okay, and did --

MR. HALL: I'm going to object to the question and move that the answer be stricken. The witess has testified he's not a petroleum engineer. I don't believe he can really render an opinion as to whether gas has migrated and what the source of those (unclear) were.

MR. LEMAY: We'll take under consideration his conclusions but he's making observations, I think now. His conclusions can be subject to cross examination certainly.

Q This experiment, Mr. Wilcox, indicated that the air would migrate what distance?

A Well, at least half that distance.

Q Which would be how many feet?

A 225 feet, 226.

MR. HIGH: Pass the witness.

MR. LEMAY: Mr. Hall.

CROSS EXAMINATION

BY MR. HALL:

Q Let me ask you when IMC drilled this air holes, isn't it safe to assume that a different drilling technique was used than what is ordinarily employed when drilling oil wells?

A Sure. I would hope so. We drill up and you were probably drilling down.

Q And we use different equipment.

A Oh, yes.

Q Do you have a mud program?

A A mud program?

Q I guess you did not.

A No.

Q Didn't have a cementing or casing program?

A No.

Q Do you know Darcy's law?

A No.

Q Are there mines in the oil/potash area that are operating under the gassy mine regulations?

A No.

MR. HALL: Nothing further.

MR. LEMAY: Are there additional questions of the witness?

MR. ROYBAL: I did have a couple.

MR. LEMAY: Mr. Roybal.

CROSS EXAMINATION

BY MR. ROYBAL:

Q Could you describe the content of the gas or air that you were hitting or not hitting in this experiment? Was it methane?

A No.

Q It's compressed air, mostly nitrogen, is that right?

A Yes.

Q Okay.

MR. ROYBAL: That's the main question I wanted to ask.

CROSS EXAMINATION

BY MR. LEMAY:

Q I have a question concerning these, as I understand it, these kind of puffs that you'll hit occasionally where there may be nitrogen, have you hit any of those

where they are methane gas, where they deplete quite rapidly?

A We've hit some where there's traces of methane gas in them.

Q But generally have you hit any kind of a pocket where there's been any sustained flow for any period of time, or is it usually dissipated quickly within a 30 minute --

A It's normally dissipated within a matter of minutes. We have had some -- there was a blow detectable for I'll guess 24 hours but it, you know, it was not a hard blow.

Q And it was -- that was not methane.

A No.

Q That would be nitrogen down there.

A Yes.

MR. BROSTUEN: I have a question.

MR. LEMAY: Mr. Brostuen.

CROSS EXAMINATION

BY MR. BROSTUEN:

Q When EMSHA conducts investigation of mining operations, where does it collect samples of gas? Throughout the mine, or just where?

A They take a sample in one of the face areas of a working place in the mine.

They take a sample at the exhaust of that working place, where the exhaust of all the exhaust of all the working faces is going out in one particular --

Q Are you talking about -- excuse me, are you talking about where the ventilation --

A Yes, the ventilation, in a working section. They do that in every working section, two samples. And then they take a sample of the main exhaust air where it's coming out ot the shaft on the surface.

Q And how frequently is this performed?

A At least every quarter, every three months.

MR. LEMAY: Additional questions of the witness?

MR. HIGH: I just have one.

REDIRECT EXAMINATION

BY MR. HIGH:

Q The inspection that's conducted every quarter, Mr. Wilcox, is that number of inspections mandated by Federal law?

A Yes, there has to be four a year for an underground operation.

Q Thank you.

MR. LEMAY: Additional questions of the witness?

If not, he may be excused.

Do you have any additional witnesses, Mr. High?

MR. HIGH: No, sir. At this time, Mr. Chairman, I would like to offer two more exhibits into evidence, if I may.

I'll mark these as Opponents Exhibits R and S, with Opponents Exhibit R being a letter dated May 5, 1986, addressed to the Bureau of Land Management and signed by Mr. D. E. Hellman, H-E-L-L-M-A-N, for Texaco Producing, Inc., and Opponents Exhibit S being a -- I guess it's a memorandum dated March 21, 1986, to Mr. Allen R. (not understood) from Mr. Joe E. Keene. That was a subject matter of Government Relations, Department of Interior, Delaware Participating Unit, Forty-Nine Ridge Unit, Eddy County, New Mexico.

We would offer those documents into evidence.

MR. HALL: Well, we object only to the extent that we don't know for what purposes they're being offered. I would comment that these documents are well over a year old and they look like information on hand

at that time. Otherwise they appear to be public documents. Well, the first one does, anyway, Exhibit R.

MR. LEMAY: With objection Exhibits R and S will be admitted into evidence.

MR. ROYBAL: Mr. Chairman, the reporter and I don't have Exhibit Q being offered and admitted.

MR. LEMAY: Q has not been.

MR. HIGH: I'm sorry. I would offer Opponents Exhibit Q and also for purposes of the record I would offer into evidence all other exhibits that I've identified but failed to offer.

I would offer those into evidence at this time.

MR. LEMAY: Are there objections to the --

MR. HALL: None that I haven't made before.

MR. LEMAY: The exhibits will be admitted into the record.

MR. HIGH: We have nothing further, Mr. Chairman.

MR. LEMAY: I think the record is complete.

Are there additional statements

in these cases?

MR. HALL: A brief closing statement, if I may, Mr. Chairman.

Mr. Chairman, Members of the Commission.

Texaco's application presents an examination of competing interests here today and they're competing interests that must be examined within the confines of two regulatory (not understood).

This Commission must examine the evidence and determine the following:

One, that there will be no undue waste of potash as opposed to waste of potash. The rule, the statute says "undue" waste of potash.

And secondly, the Commission must find that the waste of oil resources will be prevented.

Safety is a non-issue here. It hasn't been discussed much. Anything that constitutes a collateral attack on R-111-A should be disregarded. R-111-A has proven safe. You shouldn't even be worried about safety.

Let's look at the evidence that we've seen over the past two days.

Texaco's consists of the following:

Texaco has the best geological-engineering evidence. There's a very good likelihood that there's recoverable oil at both its locations, one location being presently near a producing oil well.

Texaco is also ready, willing, and able to go. They have drilling funds committed. They're ready to go. They have a location built.

Texaco has also shown the best evidence on economics. Our cost figures are reliable. They also include gross end cost figures. We have been willing to share with the Commission and the opponents our operating costs. On the other hand, they have absolutely refused to.

They vacillated on their answers to every question in that regard.

Texaco has also shown that it will comply with the R-111 casing and cementing standards and that ipso facto is a prima facie case of safety.

All the talk we've heard about gassy mine standards is irrelevant.

Now, let's look at what the potash companies have shown us.

There are no plans to mine Section 16. Western Ag says it won't mine it. IMC says it might but their exhibits show no intention of doing so. IMC doesn't even have the lease rights to mine Section 16. They

say they might have an agreement with Western Ag but they haven't produced it to us. There's nothing written down.

Technically the potash opponents geology is very suspect. Some of their critical exhibits they have failed to honor a critical core log, even though they were aware of it coming into the hearing. That core hole ripped a big hole in their arguments, in their contentions about the reserves and in fact resulted in the expansion of what we know to be the potash barren area, as shown on the BLM map.

Let's look at their economics. They're suspect as well. As I've stated, they failed to reveal to this Commission anything about what their operating, production, and processing costs are. They throw at us huge, inflated numbers for the value of potash to be lost under suspect scenarios involving pillars of varying sizes.

They failed to tell you that they won't lose 100 percent of that potash, even if it is mined. They can still recover 75 percent of it. Nonetheless, they come back and try to make this Commission believe that we're going to losing millions of dollars in potash but they fail to deduct appropriate operating costs and expenses. That's a bogus number.

Finally the potash operators have come in with their benevolent position that we will al-

low drilling as long as you do it at a deviated location. They've tried to put on testimony showing that it is economically and mechanically practicable, but as a matter of fact, their evidence is unconvincing.

Their drilling engineer, his figures did not differ that much from Texaco's. Texaco's were based upon actually quotes received from deviated drilling contractors in the area. The potash company's were mere speculation.

Texaco's applications seek a multiple use of the area. They seek to recover oil while still allowing for safe potash mining. There will be no undue waste of potash. On the contrary, the potash leaseholders would have us leave both resources in the ground. That is waste and that is in direct violation of all of this Commission's statutory mandates.

Thank you.

MR. LEMAY: Mr. High.

MR. HIGH: Mr. Chairman, I pray to God that this Commission has not misunderstood our evidence as much as Mr. Hall apparently has. He has either misunderstood, doesn't understand, or has deliberately overstated his position, and let me explain why.

We set forth to this Commission what the issues in this case are, and it's very clear under

the Oil and Gas Act that this Commission has the statutory duty to prevent the waste of potash due to oil and gas operations. That is a function and one of the primary purposes of the OCC.

R-111-A also prohibits the drilling of any oil and gas well that will create a hazard to underground mining. That is clear. So while safety may not be an issue to Mr. Hall, I can understand that. He doesn't have to work underground. It is an issue, it is a paramount issue to the mining industry because we have people underground. If anyone's blown up, it's us. If anyone's killed, it's us. If anyone's put out of business, it's us, because of the operation of oil and gas units. So we submit that safety is not only an issue but it is a very crucial issue to the decision of the OCC in this case.

The OCC has to decide under the statute whether or not these APD's, if allowed, would waste potash and/or create a hazard to the mining industry. Now, to reach those, to make those two critical decisions there are sub-issues that the OCC has to consider.

First of all it has to determine whether or not in the area that we're talking about here that's being proposed by Texaco, is there mineralization. Is there potash there to be wasted? That's the first issue. We think that's clear. We have presented to the OCC

the evidence in both the files of IMC and the files of Western Ag that shows core hole data from Drill Hole 16 that shows mineralization in two ore zones. We've presented core data from Drill Hole No. 2 which shows mineralization, I believe it was in either the eighth or the tenth ore zone but nothing in the fourth ore zone, and there's also, and our witnesses candidly admitted that there is a FR-10 core hole which at the time we did our calculations, we did not have the data. IMC did not have the data when they prepared those calculations and Mr. Walt Thayer admitted that. He said if we had the information, we knew nothing about the hole, and he admitted that if that were blank, as he had been told, that it would alter to some extent, but not eliminate, the amount of potash that was lost.

So that's information that we didn't have when we prepared for this hearing.

So, but the bottom line is that there is mineralization in the areas where these two wells will be. So if there's potash there, which there is, and the evidence in this case irrefutably establishes that point, then the next question is will the OCC violate its statutory duty to prevent that waste if it allows these wells.

Well, there are sub-issues to make that decision.

If these wells will -- are allowed, will there be potash that cannot be mined as a result of those wells? The answer to that is yes, that if these wells are allowed and Opponents Exhibit F, I believe it is, has the maps attached to the back of it, shows that if these wells are allowed there will be a distance of at least, at an absolute minimum of 1232 feet that the potash industry will no longer be able to do secondary mining, it can do primary mining if it forgets the safety issue, but at an absolute minimum, there will be no secondary mining within 1232 feet of either of these two wells.

That is the -- that's the best case can happen. If that happens how much potash is lost? And this Commission's statutory duty is to prevent the waste of potash. The value of that potash that would be lost on the marketplace would be, as we calculated and set forth on our exhibit, from $2.2-million at an absolute minimum up to a maximum of $11.4-million if the -- if no primary mining is done.

So there's a range. But we know from our calculations and the history and the evidence on subsidence, that at an absolute minimum, if the OCC allows these wells, you are going to condemn forever $2.2-million worth of potash that cannot be mined because of subsidence.

Now, what could the OCC do to avoid losing that potash? It's very simple. There is one thing this Commission can do that would allow that potash to be recovered and at the same time allow Texaco to get its oil, and that is to deny these APD's and say to Texaco, Mr. Texaco, we want you to drill a directional well from around the Forty-Niner Ridge No. 1. It is 1000 feet away. The Forty-Niner Ridge Well is 1000 feet away from where they now want to drill. What possible justification is there to waste more potash when there's already some around Forty-Niner Ridge No. 1 that's already wasted? Why not require them to drill from that location?

That would require a deviated hole of no more than 1000 feet, and you heard Dr. Nicholson testify that that -- I think he characterized it as duck soup, and that the drilling of these two wells from a drilling island around the Forty-Niner Ridge No. 1 would first of all not waste any additional potash beyod that already wasted by the Forty-Niner Ridge No. 1, and should not ordinarily, in his expert opinion, cost more tan 10 to 15 percent more than the drilling of these two wells vertically from where they propose to do so.

Now, Texaco has come forward and said, in anticipate of our argument, which they knew of well in advance, saying we can't do that; that it would cost

us too much to -- to deviate these two wells, and therefore we wouldn't recommend that they be drilled.

Well, they have -- they have sat on this lease for eleven years and done nothing and it doesn't really surprise me they want to drill these wells, but if you look at their numbers, Texaco Exhibit Number Nine, which I spent a lot of time with Mr. Pool on, a lot of it unnecessary, as it turned out, because he didn't know that much about it, and I should have realized that early on and I apologize to the OCC for taking up so much time for something he didn't know a lot about, and which I obviously didn't either, but if you look at those numbers, and you say, why is it that these two wells vertically would be economically feasible in Texaco's opinion, but if you deviate them, they would not be? And there is a wide difference in profitability when they are assuming cost of a straight hole and cost of a directional hole, and whether or not it's economical or not, depends upon what it costs you to drill the well.

Well, if you look at Opponents exhibits that we just gave the Commission, the last two, letters from Texaco, they also discuss the profitability and economics of this well. Those two letters show a rate of return, a projected rate of return in 1986 of over 40 percent with a drilling cost of $350,000.

If you compare that, those numbers, drilling cost of 350 and a rate of return of 47-some odd percent in 1986, they come in here in this hearing and say with a drilling cost of roughly the same, the rate of return would only be 27-something.

I don't know the difference in those two numbers. I don't understand why if the drilling cost is essentially, roughly the same, why the rate of return would be so much higher on one of them than on the other.

I ask this Commission to look at the estimates made by Texaco to drill these wells on a deviated basis. I submit that with the production out of Forty-Niner Ridge No. 1, the known production, and the testimony of Texaco that these additional wells would, they hope, would even be better, that given that production and the reserves that they now estimated based upon Forty-Niner Ridge No. 1, which I recall to be somewhere around 87,000 stock tank barrels, if I'm not mistaken, I submit those economic figures justify expenditure of an additional $51,000, number one.

Number two, in particular when spending $50,000 will save $2.2-million in potash.

Now, those are the economics of it. Should Texaco be required to spend an additional $50-

plus -- $50-to-60,000 to save $2.2-million? To me that's a pretty good deal.

Texaco has said if we're required to deviate them, we won't drill these wells. That to me a challenge to the OCC. If they won't drill these wells, given the economics, you heard Dr. Nicholson testify that this should be economically feasible, if they don't think it's economically feasible, I'll submit to this OCC, let them walk away and I think someone else will. The economics on this look good enough to Dr. Nicholson that they should be able to deviate these wells and economically drill them and produce them.

Now, when you're considering waste, you also have to consider safety because if the drilling of oil and gas wells in the potash area creates such a safety hazard that you can no longer mine the potash, you've wasted it. So if the OCC allows a condition in the -- in the potash deposits that prevents that mining, that's the same as condemning it forever. That's waste, in our opinion, and we think that's an issue that the OCC should decide, should consider, whether or not there is a possibility that if these wells are allowed it will create a safety hazard. You heard Dr. Nicholson testify that yes, it is possible for methane to get inside from the inside of R-111-A casing to the outside. You have exhibits that show that

Texaco, and I'm sure that no more so than any other producer or operator, has had a large number of unplanned events. That happens. Every business has unplanned events, so I don't care how carefully designed the casing and cementing program is, there is a possibility that that well will leak methane sometime. That's a possibility. There's no one that can say, and I submit the evidence we've presented from Texaco establishes that reservation, no one can say that these wells will never leak methane if they're allowed.

If they do, if methane is leaked, you heard Mr. Jim Wilcox testify that there is a possibility of some migration in the basement. So the question is, if these wells are allowed, will it be a safety hazard? Well, you have to decide as a Commission that it will not.

So if you allow these wells, you are telling the mining industry and the public that these are not a safety hazard; that methane will not escape, and if it does it will not migrate into the mine; if it does migrate into the mine it's not going to hurt anything. That decision requires very careful analysis and study before it's made.

We would ask the OCC to deny both of thee APD's. There is another way that both the potash and the oil can be captured and that can be from a de-

viated well around the Forty-Niner Ridge No. 1. We submit that's the way that the OCC should develop both this potash lease and the oil and gas lease.

So we'd ask that both APD's be denied.

Thank you.

MR. LEMAY: Thank you, Mr. High. Are there additional statements in these cases?

If not, they will be taken 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 the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record prepared by me to the best of my ability.

Sally W. Boyd CSR