CASE 7088: SOUTHERN UNION EXPLORATION CO. FOR RECONSIDERATION OF DIVISION ORDER NO. R-6175, EDDY COUNTY, NEW MEXICO.

Case No.

7088

Application

Transcripts

Small Exhibits

ETC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

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

January 21, 1981

Re: CASE NO. 7088
ORDER NO. R-6175-A

Mr. Mark Adams
Rodey, Dickason, Sloan,
Akin & Robb
Attorneys at Law
P. O. Box 1888
Albuquerque, New Mexico 87103

Applicant:

Southern Union Exploration Co.

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC _____
Artesia OCC x
Aztec OCC _____

Other ~~Paul M. Zois, Owen Lopez, David Burleson~~

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December 22, 1980

Ernest L. Padilla, General Counsel
State of New Mexico Energy and
Minerals Department
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

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Re: Oil Conservation Commission Case No. 7088

Dear Ernie:

We noticed only one error in the transcript prepared by Sally Boyd for the November 18 Hearing. The word "no" was omitted before the word "harm" in line 13 on page 78, and should be inserted.

Please let me know if you have questions.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

BY Mark
MARK K. ADAMS

MKA:jf
cc: Paul M. Zeis, Esquire
David T. Burleson, Esquire

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December 23, 1980

Mr. Joe D. Ramey, Director
Oil Conservation Division
Energy and Minerals Department
State Land Office Building
Santa Fe, New Mexico 87501

Re: Oil Conservation Commission Case No. 7088

Dear Mr. Ramey:

Today we received copies of El Paso Natural Gas Company's December 12 letter and proposed order. We believe that we should re-emphasize one important point made in our December 19 letter to you and in the order proposed by Southern Union Exploration Company ("SX") which accompanied that letter.

There is no substantial evidence before the Commission that SX would in any way adversely affect the Washington Ranch Gas Storage Project by drilling a well in E/2 Section 32, Township 25 South, Range 24 East. Of course, El Paso Natural Gas Company, as the proponent of the Washington Ranch Gas Storage Project, has the burden of proving that such drilling would adversely affect the Project. International Min. & Chem. Corp. v. Public Serv. Comm'n, 81 NM 280, 283, 466 P2d 557 (1970). Although El Paso has speculated, most recently in the last paragraph on the second page of its December 12 letter to you, that reasons may exist for including E/2 Section 32 within the Project, its speculations are not supported by substantial evidence. Therefore, El Paso has not satisfied its burden of proving that E/2 Section 32 should be included within the Project. Consequently, it may not be. Of course, should El Paso develop substantial evidence by drilling an observation well in W/2 Section 33, Township 25 South, Range 24 East, or otherwise, that drilling in E/2 Section 32 would have an adverse effect upon the Project, El Paso can initiate appropriate action.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

BY
MARK K. ADAMS
MKA:jf
cc: Paul M. Zeis, Esquire
Ernest L. Padilla, Esquire
David T. Burleson, Esquire

NEW MEXICO OIL CONSERVATION COMMISSION

COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date NOVEMBER 18, 1980 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
Roy Sharrock	SX	Dallas
Michael L. Davies	SX	Dallas
Steven A. Jolie	SX	Dallas
Mark K. Adams	SX - Rodey Law Firm	Albuquerque
Owen L. Haselfine	SX	Dallas
Ronald M. Sentz	SX	Dallas
E. R. Manning	El Paso Natural Gas	El Paso
G. D. Tabbert	EPNG	ELP, Tx.
J. B. MAGRUDER	El Paso NAT. GAS	El Paso Tex
John A. Digch	El Paso Exploration Co.	" " "
Stephen P. KANGER	SX	Dallas
Michael W. Wiseman	El Paso Natural Gas Co.	El Paso, Tx.
L. E. Ludwick	" " "	" "
Dick Isaacks	El Paso Exploration	El Paso
Armando A. Lopez	USGS	Albuq. N.M.
David T. BURLESON	El Paso Natural Gas Co.	El Paso, Tx.
ROBERT C. CARROLL	EL PASO NAT GAS	EL PASO, TEX.
Owen Lopez	Montgomery & Andrews	Santa Fe
Jack Ezzell	TH. Hill Pet. Co.	Santa Fe
Bill Brinson	OCD	Artesia

NEW MEXICO OIL CONSERVATION COMMISSION

COMMISSION HEARING

SANTA FE, NEW MEXICO

Hearing Date NOVEMBER 18, 1980 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION

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

COMMISSION HEARING

IN THE MATTER OF:

Application of Southern Union Exploration Company for reconsideration of Division Order Number R-6175, Eddy County, New Mexico.

CASE 7088

BEFORE: Commissioner Ramey, Chairman
Commissioner Arnold

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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Legal Counsel to the Commission
State Land Office Bldg.
Santa Fe, New Mexico 87501

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and

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Assistant General Attorney
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and

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MR. RAMEY: The hearing will come to order.

We have one case on the docket this morning, Case 7088.

MR. PADILLA: Application of Southern Union Exploration Company for reconsideration of Division Order Number R-6175, Eddy County, New Mexico.

MR. RAMEY: Ask for appearances at this time.

MR. ADAMS: Mark Adams with the Rodey Law Firm in Albuquerque, representing Southern Union Exploration Company.

I'm joined by Paul Zeis of Dallas, Texas, representing also Southern Union Exploration Company. Mr. Zeis will present the Zeis will present the case.

MR. RAMEY: Will you spell that, please?

MR. ADAMS: Z-E-I-S, Paul M.

MR. RAMEY: And how many witnesses do you have?

MR. ZEIS: Six witnesses.

MR. LOPEZ: Owen Lopez, with the law firm of Montgomery and Andrews of Santa Fe, New Mexico, appearing on behalf of El Paso Natural Gas Company, and Mr. David Burleson, house counsel with El Paso in El Paso, Texas,

will be associated with us and he will present the case.

MR. RAMEY: And how many witnesses do you have, Mr. Burleson?

MR. BURLESON: We will have three witnesses.

MR. RAMEY: We'd ask that all witnesses stand at this time and be sworn.

(Witnesses sworn.)

MR. RAMEY: All right, Mr. Zeis, you may proceed.

MR. ZEIS: Before I call a witness, I'd like to make a brief opening statement, if I may.

MR. RAMEY: You may.

MR. ZEIS: SX is here today respecfully requesting that the Division reconsider its Order R-6175, and one, set the order aside;or two, except from the terms of the order the east half of Section 32, Township 25 South, Range 24 East, Eddy County, New Mexico; or three, clarify the order to insure that it does not take, burden, or otherwise affect SX's property rights in the east half of Section 32.

Suggested changes to the order included in SX's petition for reconsideration filed in this case.

This request is made for the following reasons:

The Division failed to give SX effective notice of the hearing set on El Paso's application. Further, the Notice of Hearing which was published was insufficient under due process standards because it failed to include the east half of Section 32 in its description of El Paso's proposed project.

El Paso has not acquired SX's property through negotiations or condemnation. Any infringement upon SX's property right for the benefit of El Paso without compensation to SX denies SX, and the State of New Mexico as lessor, due process and equal protection of the law. Unless the Division reconsiders Order R-6175, El Paso will have circumvented the clear statutory requirements for acquisition of property for underground storage facilities.

SX's evidence will show that the Washington Ranch Gas Pool, in which El Paso proposed to store gas, is generally a closed stratigraphic and structural pool which does not include the east half of Section 32. El Paso's evidence has shown this.

The inclusion of the east half of Section 32 in Order R-6175 affects such property by preventing a completion attempt in the Morrow formation. We will also

show that even if the order were changed to allow SX to complete a well in the Morrow formation underlying the east half of Section 32, the requirements for additional casing would serve to inhibit the marketability of the east half of Section 32 as a prospect for joint operations with other oil and gas producers.

Further we will show that the inclusion of additional casing requirements in this order for the east half of Section 32 will significantly increase the cost and expense of drilling a well on the east half of Section 32. Such additional cost and expense will benefit El Paso; however, El Paso is not required -- has not been required to pay such benefits.

We feel our request is a simple one. We just want the east half of Section 32 deleted.

Thank you.

We'll call Steve Hanger.

STEVEN HANGER

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Please state your name.

A. Steven Hanger.

Q. Mr. Hanger, where are you from?

A. Dallas, Texas.

Q. All right, and how are you employed?

A. I'm currently land manager for PetroCel Resources in Dallas.

Q. Your office is in Dallas, Texas?

A. Yes.

Q. And I call your attention to the year 1978. How were you employed at that time?

A. I was employed as landman for Southern Union Exploration.

Q. Okay, and how long were you so employed, until what?

A. From February, 1978, through October of 1979.

Q. And in the course of your employment did you have reason to hear about El Paso's Washington Ranch Gas Storage Project?

A. Yes.

Q. And how did you -- how did you hear about it?

A. I was contacted by El Paso requesting

that we sell our acreage to them.

Q. Okay, and who contacted you from El Paso?

A. Richard Isaaks.

Q. And did you -- how did those negotiations proceed; not specifically, but they -- did they proceed over a period of time?

A. They went over, I would say, a six to seven month period from late 1978 through the summer of 1979.

Q. Okay.

MR. RAMEY: Could I interrupt just a minute? I wish both you gentlemen would speak up.

MR. ZEIS: All right, sir.

A. Okay.

MR. RAMEY: I think you're talking to us, not to each other, so be a little louder, if you would, please.

Q. I'm going to hand you a letter, Mr. Hanger, and would you identify that, please?

A. Yes. This is my letter I wrote to Dick Isaaks, dated June 15th, 1979.

Q. Okay, and with regard to the east half of Section 32, what does that letter say in substance?

A. El Paso had written us a letter on June

13th, making us an offer of $64,000 for the Morrow rights for the entire Section 32. They also asked in that letter that we consider selling just the east half of Section 32. I indicated in my letter of June 15th that Southern Union was not interested in selling Morrow rights for the entire section, nor were we interested in selling the east half of the section and I requested that they remove our acreage from their Washington Ranch Gas Storage Project.

Q. Did you have any --

MR. ZEIS: I move this exhibit be accepted as Petitioner's Exhibit Number One.

MR. RAMEY: It will be admitted. I would like to see a copy of the exhibit.

It will be admitted.

Q. Mr. Hanger, did you have any contact with El Paso either through Mr. Isaaks or anyone else after June 15, 1979?

A. To the best of my recollection, I do not remember any further contact. We have no record of any written contact and I don't believe we had any oral conversations with them. To the best of my recollection we did not.

Q. Okay.

MR. ZEIS: Pass the witness.

MR. RAMEY: Any questions of the witness?

MR. BURLESON: I have a question or so.

MR. RAMEY: Mr. Burleson.

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Hanger, did -- were you aware of the impending hearing before the New Mexico Oil Conservation Division which resulted in the order that's the subject of this hearing?

A. No, sir.

Q. No one contacted you and mentioned this hearing to you?

A. To the best of my recollection I was not contacted.

Q. Do you know if your company received a copy of the docket which the Division customarily sends out to various companies?

A. I do not recall seeing it, no, sir.

Q. You didn't see it, but my question was, do you know if anyone within your company received it?

A. I'm not aware of anyone receiving it, no, sir.

Q Who would customarily receive it? Had it been received?

A. It would either, depending on how it is routed, you could go to the land department or possibly to the operations department.

Q. All right. Where would it go to from the operations department, had it gone there?

A. To one of the engineers, staff engineers.

Q. Have you looked in your file and the staff engineers' file to determine if there is a copy of this docket in those files?

A. I have researched Southern Union's files and have not found any evidence of that instrument.

Q. When did you determine that the order had been issued that resulted from that hearing?

A. I'm not aware of that information. I left Southern Union in the fall of 1979.

Q. You left Southern Union prior to the time the order issued?

A. I'm not even aware of the date the order was issued.

MR. ZEIS: If I may say so, I believe he testified that he left in October, 1979.

Q. Who took your place, Mr. Hanger?

A. What's Craig's last name?

MR. ZEIS: We will stipulate that Mr.

Craig Neilson --

A. Craig Neilson is the new land manager.

MR. ZEIS: -- is the new land manager, concerning that question.

MR. BURLESON: If I might inquire of counsel, will Mr. Neilson be a witness in this proceeding?

MR. ZEIS: He will not.

A. He came on board, what, in February or March of '80?

MR. ZEIS: Yes.

A. Something like that.

MR. BURLESON: That's all we have.

MR. ZEIS: I have one additional question.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Hanger, you testified you researched Southern Union's files. Did you research all of Southern Union's files or just your own?

A. I researched Southern Union's land files, to clarify your question. I did not get into engineering files.

MR. BURLESON: I have one additional

question.

RECROSS EXAMINATION

BY MR. BURLESON:

Q. Have you had occasion to communicate with the Oil Conservation Division to determine which companies are on the distribution list for the dockets which are mailed out by the Division?

A. No.

Q. Are you aware of whether Southern Union Exploration Company is on that distribution list?

A. I believe they are.

MR. BURLESON: No further questions.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: I have no other questions. I would ask that the witness be excused. He has other business and I request that he be excused at this time.

MR. BURLESON: We have no objection.

MR. RAMEY: The witness may be excused.

MR. ZEIS: We'd call Mike Davies.

MICHAEL DAVIES

being called as a witness and being duly sworn upon his oath,

testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Davies, will you state your name, please?

A. Michael Davies.

Q. And how are you employed, sir?

A. I am employed at Southern Union Exploration Company.

Q. And what are your duties for Southern Union Exploration Company?

A. I'm the staff geologist.

Q. All right, sir, and would you briefly describe your education?

A. I was educated at the University of New Mexico; graduated in 1978 with a Bachelor of Science in geology.

Q. Did you receive any honors?

A. I graduated cum laude.

Q. Did you -- have you been employed in the oil and gas business since this time?

A. Yes, I have, sir. I was employed in Farmington, New Mexico, with a consulting firm.

Q. What was that consulting firm?

A. Atterbury Geological Services, Incorporated.

Q. One minute. How long have you been employed with SX?

A. I was employed at SX on October the 1st, 1980.

MR. ZEIS: I would move that Mr. Davies be admitted as an expert witness in geology.

MR. RAMEY: I think Mr. Davies is qualified as a geologist.

Q. Mr. Davies, handing you an exhibit, has not been marked, was that exhibit prepared by you?

A. Yes, sir, it was.

Q. Would you briefly describe what this exhibit shows?

A. This exhibit is a structure map of the Washington Ranch area. The structure contours are drawn on the top of the Pennsylvanian Lower Morrow formation and generally represents the outlines of the Washington Ranch area.

Q. I'm sorry, would you repeat your last sentence?

A. It generally represents the outlines of the Washington Ranch area.

Q. All right. And what practical -- well, let me show you what -- let me mark this at this time. This will be marked SX Exhibit Number Two.

I would move that it be admitted into evidence.

MR. RAMEY: Exhibit Two will be admitted.

Q. What -- now, Mr. Davies, I'm going to hand you what has been marked SX Exhibit Number Three. Would you briefly describe what SX Exhibit Number Three shows?

A. The Exhibit Number Three is an Isopachous map of what we call the successfully perforated intervals within the Morrow formation. The contour lines represent thicknesses of the Morrow that were perforated. This depicts what we feel is the dimensions of the Washington Ranch producing field.

Q. All right, sir, was this -- was this exhibit prepared by you?

A. Yes, sir, it was.

Q. Would you explain the relationship between these two exhibits?

A. Well, the Isopachous map is shown to be on the structural high that is associated with the Washington Ranch Field.

Q. All right, sir, what -- what practical

affect does this show?

A. This shows the dimensions of the -- of the Washington Ranch Field that has certainly contained gas.

MR. ZEIS: Your Honor, I move the admission of Exhibit Number Three at this time.

MR. RAMEY: Mr. Zeis, why don't you wait until you, you know, complete all your testimony and exhibits and then present all your exhibits at one time? I think that would go a lot smoother.

MR. ZEIS: All right, sir, these are all the exhibits that we'll have of this witness.

MR. RAMEY: Okay, then we'll admit Exhibit Number Three at this time.

Q. Mr. Davies, do you have any information that would show that the Washington Ranch Gas Pool extends beyond the limits you've shown here?

A. There is no evidence that it does extend beyond the geo-Isopach of this map. No wells were completed outside that area.

MR. ZEIS: I pass the witness at this time.

MR. RAMEY: Any questions?

MR. BURLESON: I have just a couple questions.

MR. RAMEY: Mr. Burleson.

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Davies, I believe your map, which represents Exhibit Number Two, shows the existence of a well over in Section 30 of 25 South and 24 East, I believe.

A. Yes, sir.

Q. I find on that exhibit a notation of -3333.

A. Yes, sir.

Q. Would you tell me what that means, please?

A. Okay, that well was not drilled to the Morrow but we needed something to use some structural control over there, so we estimated the average thickness of the interval from where this well has penetrated to the top of the Morrow and used that as a thickness and estimated the top.

Q. Do you know the total depth of that well?

A. Not right off from memory, but I have the log here.

Q. Would you determine that for me, please, Mr. Witness?

A. The total depth, as recorded by this borehole compensated sonic gamma ray log from Schlumberger

indicates that the total depth logger was 4001 feet.

Q. I'm sorry, are you saying the total depth to which this well was drilled was 4000 feet?

A. That is correct, 4001 feet.

Q. Could you tell me if that well penetrated the Strawn formation?

A. Yes, it did, sir.

Q. Could you give me what you take to be the depth at which the top of the Strawn formation was encountered?

A. Let's see, no, excuse me, sir, I am sorry, that was the run number one.

On the run number two the total depth reached was 7059 feet and not 4000, excuse me.

Q. All right, and would you answer my question, please?

A. Yes, I estimate the Strawn comes in at about 4100 feet.

Q. And that's the top of the Strawn?

A. Yes, as close as I could figure it now. I don't have any correlation on the Strawn here, but that looks like about the top.

MR. RAMEY: You said 4100 feet?

A. Yes, sir.

Q. Mr. Davies, have you looked at a PI card for that well?

A. Yes, sir, I have.

Q. Do you recall that the Strawn -- the top of the Strawn formation was indicated on that PI card?

A. No, I do not.

MR. BURLESON: I'd like to hand the witness a card which I have here and have him identify that, if I might.

MR. ZEIS: We have no objection.

Q. Would you look at that card, please, Mr. Davies, and tell us what is indicated with respect to the occurrence of the Strawn formation?

A. The Strawn is indicated on the card as 6579.

Q. Now that's for -- that is for the well in Section 30, 25 South, Range 24 East, is that correct?

A. That is correct.

Q. If I might have this back, please.

A. Yes, sir.

Q. Have you looked at any of the other logs for wells in this general area, Mr. Davies?

A. Yes, sir, I have.

Q. Have you looked at a log for a well which

is located in the northeast quarter of Section 5?

A. Yes, sir, I have.

Q. That would be 26 south, I believe, and 24 east?

A. That's correct. I have.

Q. Would you tell us the name of that well, please?

A. I don't know the name of it right offhand.

Q. Could you tell us where the top of the Strawn formation occurred in that well?

A. Not without taking a look at the log. I never correlated the Strawn across any of these wells.

MR. BURLESON: Mr. Zeis, will you have another witness who has correlated the Strawn formation across this area?

MR. ZEIS: No. No, we won't. Our testimony is mainly directed at the Morrow formation.

Q. Mr. Davies, could I then ask you to get the log which you have available to you and tell us where you pick the top of the Strawn formation in that well?

MR. ZEIS: Well, I would -- I would object to the introduction of any evidence as to the Strawn until counsel can show some relevance.

MR. BURLESON: Mr. Chairman, the relevance, of course, is that the Strawn formation is in a certain

position relative to the Morrow formation, which is the subject of this hearing. So as a consequence, I think it's highly relevant as to where the Strawn formation occurs in these two wells to which I'm directing my examination.

MR. RAMEY: Well, it seems to me, Mr. Burleson, this well in Section5 penetrated the -- did it not penetrate the Morrow?

MR. BURLESON: Yes, sir, it did, but the well in Section 30 did not penetrate the Morrow, so that's why it was necessary to determine where the Strawn is in the two locations.

MR. RAMEY: And your questions are relevant to the well in 30, which only penetrated the Strawn but not the Morrow --

MR. BURLESON: Yes, sir, which --

MR. RAMEY: -- which he interpreted down to the Morrow.

MR. BURLESON: We're trying to establish where the Morrow formation should likely be found in the well in Section 30, had it been penetrated.

MR. ZEIS: Well, what relevance does that have to the storage project?

MR. BURLESON: Well, it has relevance to the map that you presented, Mr. Zeis.

MR. ZEIS: Well, we just testified as to the storage project.

MR. BURLESON: Well, your map also covers lands without the storage project. It extends over into Section 32, 31, 36 of the township and range to the west.

MR. ZEIS: But that still is not relevant to the storage project.

MR. RAMEY: I think since the witness did -- did interpret a top for the well in 30, and that is part of the exhibit, I think the question is relevant and I'll overrule the objection.

A. Could you repeat your last question?

Q. Yes. Mr. Davies, I'll ask you if you have had access to a log, and I will ask you if you will take that log and determine where the top of the Strawn formation occurred in the well in the northeast quarter of Section 5 of 26 South, and 24 east?

A. Yes.

MR. ZEIS: Would counsel mind if we show the witness some additional information?

MR. BURLESON: Well, I prefer him to take the information off the log.

MR. ZEIS: That will be fine.

A. Well, on the card they indicate the top

of the Strawn as being about 6559, and that correlates to the log in Section 5, the northeast of Section 5, Township 26 North, 24 East, to a depth of about 6709.

Q. Now that 6709 is the depth of the zone to which it correlates to the well in Section 30? Is that your answer?

A. Yes, that's correct.

Q. Let me ask you to also look at the log in the well in Section 5, which I just referenced you to.

A. Uh-huh.

Q. And tell me where you find the top of the Morrow formation?

A. The top of the Morrow formation in that well is,what we call the top of the Morrow Clastics,is at 7328.

Q. All right. Now from the top of the Strawn formation to the top of the Morrow formation is a difference of how many feet, Mr. Davies?

A. It's about 590 feet.

Q. All right. Now in light of that, do you still feel that your correlation -- that your data which is contained on Exhibit Number Two with respect to the occurrence of the Morrow formation, projected occurrence of the Morrow formation is correct?

A. Yes, sir, I do.

Q. I think you gave me as the top of the Strawn in the well in Section 5 a depth of 6559, is this correct?

A. I believe that's what the card said.

Q. Well, were you merely taking the information that's on the card? You were not making correlations?

A. Right.

Q. You were not making a pick from --

A. Right.

Q. -- the log which you have?

A. I did not have the Strawn correlated on any of the logs.

Q. Okay, so you can't pick the top of the Strawn?

A. No, I said I'd estimate it to be at 4000 feet, but that was obviously incorrect.

Q. The depth -- the card which I gave you a moment ago, Mr. Davies, was a card for the well in Section 30. It was not a card for the well in Section 5.

A. Uh-huh.

Q. Now, my question is where do you get the top of the -- where do you get the depth of the top of the Strawn formation of 6559 for the well in Section 5, which you just gave me?

A. I correlated from the depth that you gave me on the card from this well, from the well in Section 30 to the well in Section 5.

Q. And you think that it's located at 6559. In other words, approximately -- that the structure would be approximately flat.

A. No.

Q. With respect to those two wells.

A. It was 6559 in the well in Section 30 and at -- if I remember correctly that's what the card said, and that corresponds to a depth of about 6709 in the well in Section 5.

Q. All right. Mr. Davies, I notice on your Exhibit Number Two that you show a high extending from the south up into Sections 31 and 32 of 25 South and 24 East. Would you tell me the basis for extension of this high into this area?

A. Into Section 32?

Q. Yes, sir.

A. We have several structure points there, including the one in -- that we were previously talking about in Section 5, the northeast of Section 5, 26 South, 24 East, and then the well in the southwest quarter of Section 21, 25 south, 24 East, and those indicate that the structure contours

do curve around in there.

Q. Well, I don't, I really don't see how based on those wells that you've just cited me, that that necessarily indicates a high there. It seems to me you could bring the contours directly around, could you not?

A. Well, I had no direct evidence that says that I should bring them around.

Q. My point is you don't have any direct evidence that says that there should be a high extending up into the Section 32 and 31.

A. Excuse me, I didn't hear your statement.

Q. I see no direct evidence that you've presented that indicates why the high should be extended into 31 and 32, such as you have done.

MR. ZEIS: I'd like to point out that this is -- that this is -- he's giving his opinion as to what these formations do.

MR. BURLESON: I'm not quarreling with his opinion. I'm trying to determine the basis of his opinion really, so I --

A. The basis --

MR. BURLESON: If I appear to be arguing with the opinion, I don't intend to do that. I'm really trying to determine the basis.

A. The basis for the opinion was those two wells right there that showed the structure contours curving around.

MR. BURLESON: No further questions.

MR. RAMEY: Any other questions of this witness? Mr. Zeis?

MR. ZEIS: Could we have just a minute? I have one further question of the witness; maybe several questions.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Davies, your map has to do with the Morrow formation, does it not?

A. Yes, sir, it does.

Q. All right, and how did you determine the top of the Morrow in Section 30?

A. I correlated with several markers that I used in the formations above the Morrow, and I correlated these markers all the way across the field.

Q. Okay. Did you -- did you use the top of the Strawn?

A. No, I did not.

MR. ZEIS: No questions.

QUESTIONS BY MR. STAMETS

Q. Mr. Davies, what parameters did you use in determining the zero Isopach line on your Exhibit Number Three?

A. That was an area that outlined the perforated intervals. In other words, outside of that area there were no successful perforations.

Q. So you don't have any specific set of parameters as to feet of zone or porosity or water saturation or anything like that in this determination?

A. That is not implied in that Isopach, no, sir.

Q. Okay. I see a well in what appears to be the southwest quarter -- southeast quarter of the southwest quarter of Section 33 that you have a zero footage mark on. Will you give us the name of that well?

The point is I was looking at one of the El Paso exhibits from the original hearing and I don't see that well on there.

A. Just a moment, let me look.

The name of that well is the No. 2 Federal "BR".

Q. Who is the operator of the well, please?

A. Black River Corporation.

Q. Does it give a location?

A. Yes, it does. It's 660 from the south and 2310 from the west line.

Q. Okay. Thank you. Now getting back to the zero Isopach line, if you based that strictly on the fact the wells were not completed beyond that line, does that mean that the formation is not potentially productive, at least at noncommercial rates, beyond that line?

A. I would say that it's not potentially productive within -- within the Washington Ranch Field area, but I think that there are possibilities of production --

Q. Well, now why do you say it's nonproductive? Just simply because nobody perforated and completed it?

A. No, sir. The -- the Isopach indicates wells that were successfully perforated and conforms to the performance of the wells.

Q. But you've made no analysis of the formation yourself to demonstrate that it does or does not contain gas in producing quantities, have you?

A. Inside the --

Q. Well, on the zero Isopach line?

A. There is indications that there -- the wells that are drilled on the zero line did not produce.

Q. I think that's obvious but I believe from your own testimony you said that you had made no analysis of why the zero line should be there except for the fact that wells aren't completed beyond that line.

A. That is correct.

Q. So on that basis is there any reason that this Commission should consider that that's not potentially productive, at least even in noncommercial amounts?

A. Could you repeat that?

Q. Okay. Do you have any solid evidence to show that there is no producible gas beyond the zero line? Do you have any information relative to thickness, porosity, water saturations, any -- any solid evidence which would show that that line should be where it's located?

A. No, sir, I do not.

MR. STAMETS: I'm through.

MR. BURLESON: I have one other question.

MR. RAMEY: Mr. Burleson.

RECROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Davies, you, in response to Mr. Stamets, indicated that the well in Section -- there was a well in Section 33, 25 South, 24 East, do you know the total depth

of that well?

A. Yes, sir, I do. That well was not penetrated to the Morrow.

Q. Okay, what -- do you know the total depth to which that well was penetrated?

A. I can't seem to find the card right now but if -- I remember looking at it just a second ago, it was about 1400 feet, but I'm --

Q. In view of that, I'd like to ask you what this symbol right beside that well means on your Exhibit Number Three? It appears to be a zero feet.

A. Yeah, I believe it's a typographic error.

Q. In other words, you think that sould be excised from this?

A. Right, yes, sir.

MR. BURLESON: That's all I have.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: One minute, please. No further questions.

MR. RAMEY: The witness may be excused.

MR. ZEIS: One minute, please, sir. We would call Mr. Ron Sehtz at this time.

RON SENTZ

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Sentz, since you've said your name, how are you employed?

A. I'm employed with Southern Union Exploration as a drilling and production engineer.

Q. And what is your education?

A. I have a Bachelor of Science in mechanical engineering from the University of Colorado.

Q. And how long -- when did you get that degree?

A. In December of '74.

Q. And how have you been employed since that time?

A. After graduation I was employed with Halliburton Services as a field engineer. I worked there almost two years; went to work as a consultant for an independent in Colorado, Apsco, Incorporated (sic) by name. I worked there until coming to work for Southern Union Exploration on

July 5th of '78.

Q. What are your duties at Southern Union Exploration Company?

A. I handle all drilling contracts; line up consultants to do the work on the wells; purchase materials; prepare AFE's; drilling prognoses; oversee the completion operations on wells; purchase production equipment; oversee production thereafter.

Q. All right.

MR. ZEIS: I would move that Mr. Sentz be admitted as an expert witness.

MR. RAMEY: So qualified.

Q. Mr. Sentz, have you read Order Number R-6175 in Case Number 6703?

A. Yes, I have.

Q. And in particular have you read -- or in paragraph (9) requiring extra -- extra casing in the Morrow formation?

A. Yes, I have.

Q. All right, sir. Now, I'm going to ask you if you prepared a well cost estimate for an exploration well in search of gas drilled to the primary target of the Morrow formation in Section 32. Have you prepared such an estimate?

A. Yes, I have.

Q. Okay. Mr. Sentz, I'm handing you an unmarked -- excuse me a minute.

I'll mark this SX's Exhibit Number Four. Handing you what's been marked SX's Exhibit Number Four, was that prepared by you or at your direction?

A. Yes, it was.

Q. Would you describe for the Commission what that depicts?

A. This shows the amount of time it would take to drill the well, the casing program projected for that well, the overall cost of a dry hole, and the overall cost to drill and complete that particular well.

Q. Okay. What -- how deep is this well projected to be drilled?

A. A projection of 7600 feet.

Q. Why have you picked that depth?

A. This is based on data from geology giving the average depth of the Morrow formation in that area, and projecting 100 feet below it, giving a sufficient amount of rathole for operation.

Q. Okay. Is it normal practice to drill below a target formation?

A. Normally yes.

Q. All right, sir. This Exhibit Number Four indicates that the total estimated cost for a dry hole is $444,150. The additional cost for a producer would be $279,050, for a total actual cost of $723,200. And then I noticed down at the bottom a total estimated cost for the dry hole is added to a plug and abandoning cost, P&A'd cost. Is that plugged and abandoned?

A. That's correct.

Q. Of $20,000, less salvage value, for a net dry hole cost of $444,445.

All right, Mr. Sentz, on the second page of Exhibit Number Four I notice a schematic diagram. Is that a diagram of this well you've estimated cost for?

A. That is correct.

Q. Mr. Sentz, I'm handing you an exhibit marked SX Exhibit Number Five. Would you describe what this exhibit shows, please?

A. This exhibit was made up because of confusion in interprting the order that was given. This shows a Morrow well to the same depth with what would be interpreted as an extra casing string to protect the Morrow, which would be the 5-inch liner which is shown here, 1200 foot of it. The extra string, in fact, would be the 5-inch liner, using a 7-5/8ths string as an additional intermediate to get down to the area above the top of the Morrow would not normally

be run for an exploratory well.

Q. All right, sir, is page two a diagram, schematic diagram of this well?

A. That is correct.

Q. And I note your dry hole cost is $694,950; additional cost for a producer of $215,000, for a total of $909,950. And I also note down at the bottom, using the same procedure used on Exhibit Four, the net dry hole cost is $636,012.

Mr. Sentz, I'm handing you what has been marked SX's EXhibit Number Six. Would you identify that for the Commission, please?

A. This is my projected cost to drill a Devonian test and allow myself working room below formation of interest. This is in conjunction with Order Nine to where interpretation is that we would protect the Morrow and produce below it, not allowing us entrance into the Morrow formation.

Q. Mr. Sentz, would you -- will you read the first line of the -- of the exhibit, please?

A. Washington Ranch Area standard well.

Q. All right, sir. Your testimony is that this does contain the extra string of casing?

A. No, I did not say it contained --

Q. All right.

A. -- the extra string of casing. This is the standard procedure for that well.

Q. Okay. Is this --

A. And if you completed in the Devonian formation, this would still allow the Morrow to be protected as you would cement through the Morrow formation.

Q. All right, sir. On the second page of this, is this your schematic diagram of this well?

A. That's correct.

Q. All right. And I note this -- the total dry hole cost of this well is $461,750; additional cost if it's a producer of $284,650; for an actual cost of $746,400. And also I note the net dry hole cost for this well is $462,045.

Mr. Sentz, I'm handing you what has been marked SX Exhibit Number Seven. Would you describe this exhibit for us, please?

A. This AFE was prepared on a basis of an interpretation of Order Nine to show the difference in cost to drill a Devonian test and complete it, following that order as interpreted, as compared to the standard Devonian test, which was Exhibit Number Six.

This contains the extra casing string to protect the Morrow, which would be the 7-5/8ths set to 7600 feet with a liner set to total depth of 8000 feet, through

which we could perforate and test the Devonian formation.

Q. All right, sir, and I ask on page two of that exhibit is a schematic diagram of your well design, is that correct?

A. That's correct.

Q. I note on your -- on your exhibit that the total estimated dry hole cost is $723,050; $216,000 if it's a producer; for a total actual cost of $939,050.

Again I note the net dry hole cost of $664,112.

Mr. Sentz, on Exhibits -- on Exhibit Five and Exhibit Seven, what was the reason for the extra string of casing on those exhibits?

A. The reason for the additional string of casing on that was in interpretation of Order Nine, indicating that an extra casing string would be set through the Morrow formation to a depth 100 feet below the bottom of the Morrow formation.

MR. ZEIS: Pass the witness.

MR. RAMEY: Any questions of Mr. Sentz?

MR. BURLESON: I have a few.

MR. ZEIS: I'm sorry, sir, I forgot to move the introduction of these exhibits into evidence.

MR. RAMEY: You move the introduction of

Exhibits Four, Five, Six, and Seven?

MR. ZEIS: Yes, sir.

MR. RAMEY: They will be admitted.

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Sentz, with respect to your Exhibit Number Five, I would like to know how you are reading paragraph nine of the Commission order. Specifically, I note that the -- your Exhibit Number Five refers to the primary target as being the Morrow formation.

A. Yes, sir.

Q. And I also note that paragraph nine of the Commission order provides that should any operator drill a well to a formation deeper than the Morrow storage zone, do you consider that this well, which is -- the AFE for which is shown as Exhibit Number Five, is a well drilled to a formation deeper than the Morrow storage zone?

A. We have penetrated, according to the AFE I worked up, 100 feet below the Morrow formation, and I have a difficult time interpreting the order from the standpoint of whether we are going to be allowed to test the Morrow formation or whether we are to look at a formation below that and not be allowed to test the Morrow formation. This is why

the different number of exhibits I prepared.

Q. In other words, you conceive that paragraph nine of this order is triggered one inch into a formation deeper than the Morrow formation.

A. That, I believe, could be interpreted from that.

Q. And you would anticipate that a normal completion in the Morrow formation would entail and require the penetration of the formation below the Morrow formation?

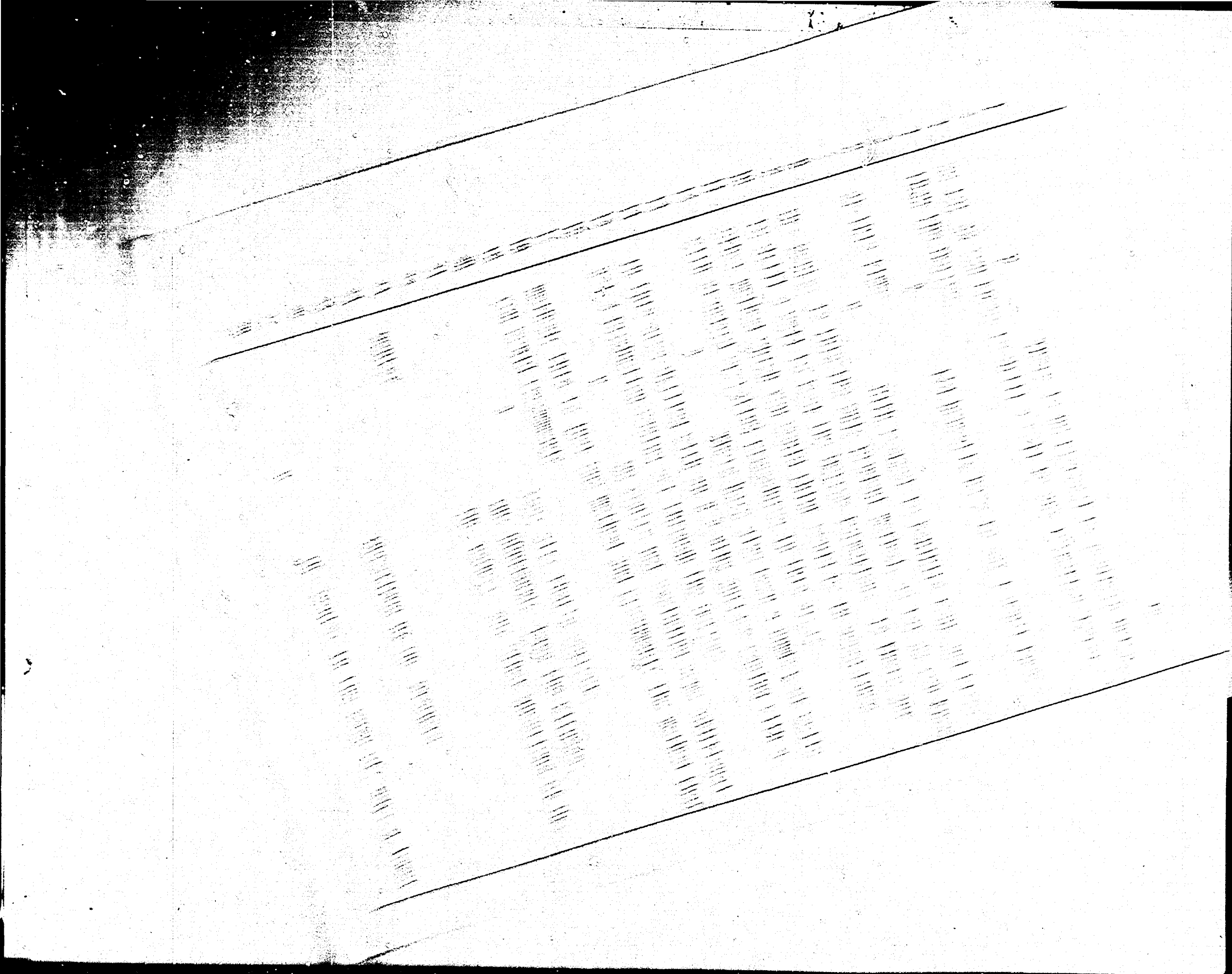
A. I would, yes.

Q. All right. With respect to Exhibits Six and Seven, which relate to AFE's for wells projected to formations below the Morrow formation, specifically the Devonian formation, I might ask, does Southern Union propose to drill a well to a formation -- to the Devonian formation?

A. I don't know at this time if they propose to drill it, but it was inquired of me what the drilling costs would be to do this, and normally that's set forth to me on the basis that they are looking at drilling a well in that area.

Q. This is -- this was just an academic inquiry, then, as to what the additional cost would be of complying with Order Number 6175?

A. Yes, sir.



Morrow completion interval that Southern Union might have in the east half of Section 32, could you propose a different type of casing and cementing program which would protect the -- El Paso's injection interval?

A. I'm not sure I understand your question. When you refer to a lower Morrow, as I understand the order, we're to protect all the Morrow.

Q. Oh, I'm not talking about the order, now. Let's just say that El Paso has a storage project and Southern Union is out there, or Southern Union Exploration, and you drill through their storage interval all the way to the base of the Morrow, could you recommend to this Commission a casing and cementing program for your well that would not only allow you to produce but also assure the protection of El Paso's storage project?

A. The Exhibit Number Four -- let me withdraw that statement.

Exhibit Number Six would be, if I were drilling to the deeper formation, would be my recommended drilling and completion procedure for the deeper test, and in my opinion it would protect the Morrow formation as cement would be brought back up across the Morrow and a height above it, and without perforating the pipe, based on bond logs, it would protect that Morrow formation.

Q. How far above the storage zone would you bring your cement?

A. 1500 feet, I believe is what was asked for, and that is common in that area.

Q. And I presume, then, your -- your answer would be the same to any well which was drilled to a depth of 8000 feet in this area?

A. As far as how far back to bring the cement? I would base that on service company recommendations, as well as other zones which needed to be protected.

Q. All right. Are there zones which could be explored at depths greater than 8000 feet in the east half of Section 32?

A. I'm not an expert on the geology there, sir.

Q. That's perhaps a question which ought to be answered here today, and also what is the maximum depth below the proposed storage zone that casing could be safely run and still provide protection for that zone.

MR. STAMETS: That's all the questions I have.

MR. ZEIS: I have just a few more for this witness.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Sentz, you testified that Exhibit Number Six would be your recommendation for drilling to a formation -- to the Devonian and protecting the Morrow.

A. That's correct.

Q. Now, you assume in your answer, or did you assume that in your answer -- let me rephrase that.

Could you perforate that well in the Morrow formation?

A. With this casing program?

Q. Yes.

A. Yes, you could.

Q. Okay, would that protect the Morrow formation?

A. If you perforated the Morrow formation with this casing program you would not protect the formation.

Q. Okay. Does Exhibit Number Six call for an extra string of casing?

A. No, it does not.

Q. Okay. Now you said that -- that if you perforated in the Morrow, it would not protect the Morrow. In other words, could that well be dually completed?

A. Yes, it could.

Q. All right. If you completed it in the Morrow and another formation, would that protect the Morrow?

A. If you completed in the Morrow formation, the Morrow would not be protected.

Q. Okay.

MR. ZEIS: One minute, please, sir.

QUESTIONS BY MR. STAMETS

Q. While he's conferring, let me clarify Mr. Sentz response to that question.

When you say that the Morrow formation is perforated and the Morrow is not protected, are you talking about that individual zone in the Morrow, or are you talking about that zone plus the storage interval? In other words, will any perforations in the Morrow cause lost integrity to the storage interval?

A. Based on my knowledge of the formation itself, it could, if that formation were open to you from the storage zone.

In other words, if you didn't have a break between the El Paso storage area and your well, then you could enter the storage project.

Q. Well, you're talking about a break verti-

cally, such as a shale zone, some sort of a permeability barrier between the storage zone and the zone which was completed?

A. Yes, sir, some permeability barrier.

Q. And this is the sort of thing which could be demonstrated by logs, cores, sample analysis, is that correct?

A. I believe so.

MR. ZEIS: No other questions.

MR. RAMEY: Any other questions?

MR. BURLESON: I think I might have a question to clarify a matter that Mr. Sentz has raised.

RECROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Sentz, in your response to your counsel's questions you were speaking or responding as to what would be required to protect the Morrow formation, and specifically he asked you, as I recall, whether if you went back and perforated into the Morrow formation, whether the Morrow formation would be protected. Was that the way you understood his question?

A. Yes, that's correct.

Q. And when you said no, what you intended to convey, I suppose, was that -- that gas could flow then and

thereafter from the Morrow formation. You did not intend to suggest that there would be an incursion of water or some damage to the formation, other than just opening the formation to produce it?

A. That is also correct.

Q. Are you saying there would be some problem with the water where you --

A. No. I'm talking from the standpoint of if the Morrow was perforated and you could produce gas from it, if the gas was there in the formation.

Q. Right, so what you're saying is that the integrity of the Morrow formation would not thereafter be protected once you perforated that formation, the Morrow formation.

A. That's correct. As I understand the order, you could interpret it to mean that we're not allowed to perforate the Morrow formation.

Q. Would you point to the provision in the order that you think is subject to that interpretation?

A. Okay. In Article (9), Section (B), a separate or extra casing string shall be set at a point 100 feet below the base of the Morrow Clastics, as found at a log depth of 6864 feet on the Schlumberger Gamma Ray-Sonic log of the Black River-Cities Federal Well No. 1, located in Unit F of Section 34, Township 25 South, Range 24 East, Eddy County,

New Mexico.

Q. But of course, with respect to both of your -- your Exhibits Six and Seven, you would have set such -- such a casing, is that correct?

A. Exhibit Number Six shows a standard Devonian completion with no extra casing string in the program.

Exhibit Number Seven shows that Devonian completion with the extra string in, to comply with an interpretation of this order.

Q. So it does comply, your Exhibit Number Seven does comply with -- with the order in paragraph (9) (B), is that correct?

A. Under one interpretation, yes, sir.

Q. Now do you find anything further in here that precludes you from perforating that casing which you have then set consistently with order in paragraph (9) (B)?

A. I don't understand your question. Do you mean anything in this order that says I cannot complete in the Morrow?

Q. Yes, that you can't then, after having set this casing, then perforate this casing. Do you see anything in here that suggests that you can't do that?

A. Under the interpretation of protecting the integrity of the Morrow formation --

Q. Well, where are those words found, Mr. Sentz?

A. I don't find at this time explicit wording to that effect. It may have been an interpretation on my part, as I don't understand why you would set the extra casing string through the Morrow if you were going to be allowed to complete in that Morrow formation.

It would be a waste of money.

Q. Mr. Sentz, would it be a waste of money in that upon drilling on down to the Devonian formation you might choose to complete in a deeper formation; In that event, would you not need some protecting device to protect the Morrow formation from the migration of gas from some -- from that formation into some other formation, or from some other formation into that formation?

A. A proper cement job would avoid that contamination of your Morrow formation.

Q. Then you do not think that the additional string of casing is required?

A. I don't feel it's necessary.

Q. And that's your problem, at least as to -- in that respect, with the order?

A. Yes, sir.

Q. Would you -- could you have a potential

problem if you were to encounter trouble in attempting to complete the well in the Devonian formation and consequently lose the hole, perhaps?

In that event, what would protect the Morrow formation?

A. If you were to have a problem completing that -- or drilling the lower formation where it got away from you, then you would have to proceed to regain control of that well, and you would continue your completion, or you would have to plug and abandon that well to protect the Morrow formation with cement.

MR. BURLESON: No further questions.

CROSS EXAMINATION

BY MR. RAMEY:

Q. Mr. Sentz, are you implying from the order that if you drilled a Morrow well and found a separate and distinct zone that wasn't connected to the storage area, that you would be unable to produce that zone?

A. I believe that can be interpreted from that.

MR. RAMEY: Any other questions?

MR. ZEIS: I have -- I have one more question.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Now, Mr. Sentz, I want to direct your attention to the order and specific finding in paragraph (13) (E). Would you read that to us, please?

A. (13) (E). That any well drilled within the Washington Ranch Gas Storage Project Area as described in (12) (A) above, but outside the Active Area of the Washington Ranch Gas Storage Project, as described in (12) (B) above, would be located according to the General Rules of the Division; and would be cased and cemented in such a manner as to protect the Morrow gas storage zone.

Q. Thank you, sir.

MR. BURLESON: I have one additional question.

RECROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Sentz, would you say that it is common for an operator who is drilling a well to incur additional cost in the course of drilling that well to protect adjacent property or formations which may be encountered during the course of drilling that well?

A. I don't know what you mean by additional cost. Normally, if you have another zone interest, which is at a higher level that you know you want to look at later on, you would protect that to avoid contamination of drilling fluid upon it.

Q. What if you had a water-bearing zone which, let's say it was fresh water which was encountered during the course of drilling the well, would you incur any additional expense in protecting that fresh water source?

A. Normally if your geology is done properly, you've already had your program set up to protect that fresh water formation.

Q. But there would be some expense in doing so, would there not?

A. Yes, sir, that's normal.

Q. What if there were another formation which was encountered which was not commercial at the location at which you're drilling the well, and you did not choose, and you recognized you did not choose to attempt a completion in that well, yet the formation may be producing in adjacent properties, immediately adjacent properties, would it be necessary to make any expenditures to protect that source of hydrocarbons which has been penetrated and which you would not choose to complete but which is producing in adjacent properties?

A. This would depend on your drilling program and on site geology at the time that was encountered.

Q. But there is a cost entailed in protecting that property, though, is there not?

A. This may be a standard cost with the well program you already have made up, from which you may be expecting to encounter something there, so your drilling fluids would be set up to protect that from lost fluids in that formation, and when you cemented your production string you would cement across that particular formation.

Q. There is an expense even though you anticipate it, encountering this formation, however, is there not, in protecting -- taking measures to protect --

A. Yes, sir.

Q. -- the formation?

MR. BURLESON: No further questions.

MR. ZEIS: I have several questions.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. With respect to the expense, Mr. Sentz, is it -- is it common to have extra casing in a well like that which you were talking about? Where -- where only -- let me rephrase that.

Where you drill through other zones, is it common to set extra casing when you want to complete in the lower zone?

A. The question is not really clear. By extra casing, we're talking here about something that's being asked to be set. As you can see from my workup, we have an additional intermediate string of 4000 feet to protect formations above, which we may want to investigate at a later time.

Q. Okay.

A. That, under this program would not be an extra casing string; whereas, if you -- if you were to encounter something later on which required you to set a string to protect the formation, that would be additional casing.

Q. Well, let me -- let me ask it this way. If you drilled through a gas zone to a lower zone and the zone that you drilled through had naturally occurring gas in it, would you set -- would you normally set an extra string of casing?

A. No.

Q. Okay, now with respect to water, specifically ground water, would you set casing to protect ground water?

A. The Commission requires that.

Q. All right, that's naturally occurring

ground water, is it not?

A. That's correct.

Q. All right. And you also protect -- you also testified that when you drill through a zone you protect it by cementing, is that correct?

A. That's correct.

Q. All right. Do you do that to protect the zone as it occurs naturally? In other words, as you find it, or as you expect to find it.

A. We do it to protect that zone from contamination from zones around it so that you can complete later on that particular formation.

Q. Okay. Now, what requires that protection?

A. The proper completion of that formation requires it so that you're sure that your treatments go into that formation and not one above or below it.

Q. Okay. Mr. -- Mr. Sentz, can the -- in the east half of Section 32 can the Morrow be adequately protected with cement and not an extra string of casing?

A. Yes, I believe it can.

MR. ZEIS: No further questions.

RECROSS EXAMINATION

BY MR. RAMEY:

Q. Mr. Sentz, in drilling one of these wells, in the opinion here, Exhibits Four, Five, Six, or Seven, if you encountered a potential pay zone, say at 45 feet deep, how would you protect that?

A. It would depend on what you saw when drilling through it. You can protect that until you're ready to set production casing with your drilling fluids. Or if it's of a type of formation where it needs protection immediately, then you would have to drill deeper and set an additional string and cement across.

Q. Okay, say you went ahead and chose to drill, say, to 8000 feet and left this zone where it had been protected by drilling fluids, upon your completion, what would you do? Upon setting pipe? Would you run enough cement to cover --

A. Depending on the difference in depths of the formation, you would either bring cement back up far enough in your initial cementing job to protect it, or you would do a staging job where you protected that zone with an additional cement --

Q. But you would --

A. -- stage.

Q. But you would go to the extra expense to protect that zone.

A. Yes, sir.

Q. Thank you.

MR. RAMEY: Any other questions? This witness may be excused and we'll take a fifteen minute recess.

(Thereupon a recess was taken.)

MR. ZEIS: We'll call Steve Jobe.

STEVEN JOBE

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Jobe, how are you employed?

A. I'm a drilling and production engineer for Southern Union Exploration Company in Dallas.

Q. All right, sir. What are your duties?

A. I back up all reservoir engineering, drilling engineering, and production engineering with technical calculations and virtually the same duties as Mr. Sentz.

Q. What is your education?

A. I graduated in May, 1977, with a Bachelor

of Science in petroleum engineering from Texas Tech University.

Q. How were you employed after that time?

A. With Getty Oil Company for two years as drilling and production engineer; worked for AMCO Energy for about six months, same duties; worked for one year as a reservoir engineer for Lone Star Gas Company.

MR. ZEIS: I would ask that Mr. Jobe be admitted an expert witness.

MR. RAMEY: He's qualified.

Q. Mr. Jobe, I direct your attention to what has been marked SX Exhibit Eight. Was that -- was this exhibit prepared by you or at your direction?

A. Yes, it was.

Q. Would you describe this exhibit to the Commission?

A. This exhibit is a synopsis of the volumetric calculations with regard to the Washington Ranch Morrow formation.

Q. And what does -- what does it indicate?

A. It indicates initial gas in place of roughly 59 Bcf.

Q. All right, sir. Based on this and the other evidence you have seen, -- first of all, I -- let me direct your attention to SX -- what has been admitted into

evidence as Exhibit Number Three.

A. Yes, sir.

Q. Now based on the evidence you've seen, how would you describe the -- how would you describe the Washington Ranch Gas Pool?

A. I would describe it as a finite volume, single phase, expansion drive gas reservoir.

Q. All right, sir. Now, would you expand on that just a little bit?

A. Yes, sir. I did my calculations based on the Isopach which is marked Exhibit Three, prepared by our geologist, and I planimetered the area of each of the individual perforated sand thickness curves and approximated the volume, using Simpson's rule, which is an accepted method in the industry.

I used all the available data from completion cards to estimate the original bottom hole pressure; used Dwight's information for gas gravity; used log data for bottom hole temperatures; et cetera, including porosity, average porosity, and average initial water saturation.

Q. Okay, and do your calculations agree with the concept as depicted in Exhibit Three?

A. Almost identical.

Q. So in other words, Mr. Jobe, you're in-

dicating that -- that this gas pool is a closed pool, is that right?

A. That's right.

Q. Does not extend outside of the limits indicated on that --

A. No, I don't believe it does.

Q. -- that exhibit.

MR. ZEIS: No further questions.

MR. RAMEY: Any questions of the witness?

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Jobe, I assume that your Exhibit Number Eight is based on the exhibits which were presented by Mr. Davies, is this correct?

A. Exhibit Number Three, yes.

Q. And to the extent, of course, that those exhibits are incorrect, then there would be the same error of magnitude in your exhibit here, is this true?

A. That would be true, before the performance figures came in, yes.

MR. BURLESON: No further questions.

CROSS EXAMINATION

BY MR. RAMEY:

Q. Mr. Jobe, what's the normal recovery factor for a gas pool of this nature?

A. 90 percent is an accepted figure, yes, sir.

Q. And this figures out to be about 94 percent --

A. That's right.

Q. -- doing a rough calculation, and do you feel that that's in line?

A. I feel that possibly my gas in place figures are about 5 percent low.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: I would move the admission into evidence of Exhibit Number Eight.

MR. RAMEY: Exhibit Eight will be admitted.

MR. ZEIS: I have one further question.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Jobe, does performance of this re-

servoir agree with your figures?

A. Yes, sir, it does.

MR. ZEIS: No other questions.

MR. RAMEY: Any other questions? He may be excused.

MR. ZEIS: I would call Mr. Roy Sharrock at this time.

ROY SHARROCK

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Sharrock, how are you employed?

A. Southern Union Exploration Company as Chief Geologist.

Q. And what are your duties as Chief Geologist?

A. I -- my chief duties as Chief Geologist are to find commercial quantities of hydrocarbons for the company.

Q. All right, sir. Have you qualified as an expert witness --

A. Yes, I have.

Q. -- before the Commission?

MR. ZEIS: I'd ask that Mr. Sharrock be qualified as an expert witness.

MR. RAMEY: He is qualified.

Q. Mr. Sharrock, I direct your attention to the -- what's been marked SX Exhibit Number Three. Now could you indicate for us the areas which are covered by oil and gas leases which are owned by Southern Union Exploration Company?

A. Yes, sir. Southern Union Exploration Company owns the southeast quarter of Section 19, all of Section 30, all of Section 32, Township 25 South, Range 24 East; the northeast quarter of Section 6, Township 26 South, Range 24 East, Eddy County, New Mexico.

Q. All right, sir. Are you -- who is the lessor of those leases?

A. Lessor is State of New Mexico.

Q. All right, sir. Now, why did you -- directing your attention to the lease covering Section 30, why did you buy that lease? Why did you -- why did you direct that that lease be bought?

A. After getting electric logs in the immediate vicinity it was found that this particular well

drilled by Cities Service, No. 1 Government O, did not penetrate the Morrow section; therefor, this was a candidate for potential re-entry.

Q. All right, sir, and what about the other leases in the area?

A. Section 30, well, the quarter section of 19 was bought at the same time as Section 30. Approximately two years later Section 32 was purchased at a State sale, and it was bought because it was -- appeared to be in a Morrow general sand trend.

Q. All right, sir, now could you tell us if any formations deeper than the Morrow formation in those leases are possible targets?

A. Yes, sir, the Devonian has potential. The Montoya may have potential. The Ellenburger may have potential.

Q. To the best of your knowledge are there any zones deeper than 8000 feet?

A. Yes, sir, there are. The Devonian, I believe, would come in a little bit below 8000 feet; the Montoya should come in about 86 or 8700, and the Ellenburger somewhere around 92 to 9400, somewhere in that range.

MR. ZEIS: One minute, please.

Q. Mr. Sharrock, with reference to the

sand trend you referred to, what is the general -- the general feature that you're relying on in this area?

Let me rephrase that. What -- would there necessarily be any connection between a general sand trend in this area and the Washington Ranch Gas Pool shown in SX Exhibit Three?

A. Most of the time the general sand trend in this is on a monocline, going down dip towards the Deleware Basin. In this particular area it appears that the Washington Ranch Field is strictly a structural feature.

Q. All right, sir. Could it be described as -- could these areas be described as deltaic?

A. Yes, sir, the Morrow deposition from the base of the Morrow to the top of the Morrow is a delta-type deposition all the way through the complete interval.

Q. When you said you purchased this acreage on a trend, was that trend connected with the Washington Ranch Gas Pool?

A. No, sir, it sure wasn't.

MR. ZEIS: Pass the witness.

MR. RAMEY: Any questions?

MR. BURLESON: I have a few.

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Sharrock, you indicated that the Devonian, the Montoya, and the Ellenburger are formations of potential interest in this area. On what do you base this conclusion?

A. There was a well drilled in Section 28 of 25, 24, that penetrated to the Ellenburger formation. Also there's a well in Section 12 of 26, 24, that penetrated the Ellenburger formation. These particular wells seemed to have good reservoir characteristics, however they were non-productive at this particular point.

Q. Does there seem to be any structural feature on which these -- these wells were located, and how does it relate to the area that you have shown on -- have shown on Exhibit Number Three to the west of the Washington Ranch Gas Storage Project Area?

A. These particular wells were not mapped on top of the Devonian-Morrow -- I mean the Devonian or Montoya or Ellenburger. I can give you the relationship as noted here on the Morrow Isopach interval or the Morrow structure interval.

One is located on the northwest edge. The other one is located on the southeast edge.

Q. Have you made a -- have you made or have you had some cause to be made a geologic study with respect to these three formations which you say are prospectively productive?

MR. ZEIS: Well, I would object to any study -- the witness answering any questions about any studies that -- that won't relate to the Washington Ranch Pool. There will be -- there's considerable competition in the oil and gas business for maps, and the prospects are bought and sold on the maps, and any testimony at this time would be -- would hurt the -- any possible chances for those maps having any value, if they do.

MR. BURLESON: Mr. Chairman, if I might respond.

The witness has testified that he feels that these -- this area which he described as of geological interest, and I'm trying to establish a basis for his judgment, his assertion about this geologic area.

MR. ZEIS: Counsel asked him for the basis of this interest there.

MR. BURLESON: I'm further pursuing that.

MR. RAMEY: I think the witness can answer the question and if it's confidential, I think he can say so.

A. What's the end result of all this?

MR. RAMEY: Answer the question, please.

Q. The question was, have you conducted or have you had conducted a geologic study with respect to this area to the west of the Washington Ranch Gas Storage Project Area, with respect to the Devonian, Montoya, and Ellenburger formations?

A. The answer as far as concerned the Devonian, Montoya, and Ellenburger formations, I base my information on these two wells directly to reservoir characteristics. There has not been any prospect developed by us at this time in those particular formations, on our leases.

Q. Do you know if there were any tests run of these two wells which you cited?

A. Yes, sir, there were drill stem tests run.

Q. What were the results of those drill stem tests?

A. They recovered mud, water, and they had very good shut-in bottom -- bottom hole shut-in pressure tests.

Q. Apparently no measurable gas was tested, though.

A. I would have to go back and check. I

don't believe so. Are you referring to -- which formation, all the formations?

Q. Yes, sir, I was referring to all three formations.

A. Okay.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: One moment. No further questions.

MR. RAMEY: The witness may be excused.

MR. ZEIS: We call Mr. Oran Haseltine at this time.

ORAN L. HASELTINE

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q. State your name, please.

A. Oran L. Haseltine.

Q. And how are you employed, Mr. Haseltine?

A. Southern Union Exploration Company.

Q. What is your position there?

A. President.

Q. What are your duties as president?

A. Generally to protect the assets of the company and attempt to make money for the stockholders.

Q. How long have you been president of Southern Union Exploration Company?

A. As I recall, about two and a half years.

Q. All right, sir. Have you -- have you been qualified before this Commission as an expert witness?

A. Yes, I have.

MR. ZEIS: We'd ask to have him be admitted as a qualified expert witness.

MR. RAMEY: We've heard of him and he is.

A. Thank you, Mr. Chairman.

Q. Mr. Haseltine, do you supervise the presentation of prospects to prospective partners in well drilling ventures in connection with the business?

A. Well, I'm -- I'm aware of what is presented and generally have supervisory authority over that activity, although I don're preside at the presentations. I've seen many of them and I'm well aware of -- of the presentations we make and the information and the types of deals that we make with industry partners.

Q. Okay. Generally, how are they presented?

A. Well, of course, the basic data is worked up, including all the geologic information in the area, including all the land information, the projected economics, the projected costs, and then the kind of deal that we are attempting to make with outside industry parties.

Q. All right, sir. Have you examined Commission Order R-6175?

A. Yes, I have.

Q. All right, sir. And will you tell us briefly what -- what sort of deal could be constructed for a prospect involving the east half of Section 32, that's in question here?

A. Insofar as a deal to get partners into our drilling ventures, is that your question?

Q. Yes, sir.

A. Well, there are a couple of areas of confusion that bother me about the impact of the order, and I think that confusion has probably been apparent already this morning, but it seems as if the sense of the order would run to preventing us from producing a Morrow completion in the east half of 32.

The other area, it appears that whether or not we were allowed to complete in the Morrow, or in some

other horizon below the Morrow, that we would have the impact of the additional casing string, the extra string, as it's designated in the order.

So those two areas would impact and adversely affect our ability to bring partners into a drilling venture that might include as part of the deal this east half of Section 32. Of course, there's the other part, too, I'm just not sure what it means. Once they've drawn a line that incorporates the east half of our Section 32 lease, and called it a storage area, they've drawn a different line and called it an active area, and so there are those three kinds of things which simply burden a lease to whatever they mean, and harm our ability to promote this well out.

Q. With respect to that, have you -- has there been any agreement with Southern Union Exploration Company and El Paso concerning the sale and purchase of the east half of Section 32?

A. No.

Q. All right, sir. Now with respect to SX's Exhibit Number Three, I draw your attention to that. Now you've heard testimony here today that SX owns leases governing Section 32, or the east half of Section 32. To the best of your knowledge, would any prospect involving the east half of Section 32 also involved the Washington Ranch

Storage Pool?

A. No. The evidence that we've seen, including the testimony in the original case put on by El Paso, shows that the Washington Ranch Pool ends substantially to the east of our lease line.

Q. Is there any evidence that you're aware of that production from the east half of Section 32 will adversely affect the storage pool?

A. No, certainly not, and if and when we're allowed to drill Section 32, we may not have any Morrow Sand at all, so that being a possibility, suggests that harm would be done if Section 32 were totally excised from the project.

Second, if a Morrow sand presents itself in our well to be drilled in Section 32, there's been no evidence that I'm aware of, and none that I know about, that would suggest that that sand is is pressure continuity with the Morrow Ranch Pool. In fact, all the evidence that we've seen so far would suggest just exactly the opposite. It would not be in pressure continuance with the Washington Ranch Pool.

MR. ZEIS: No further questions.

MR. RAMEY: Any questions of Mr. Haseltine?

MR. BURLESON: I have one or two.

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Haseltine, are you familiar with a gas storage project which Southern Union had, known as the Las Milpas Storage Pool?

A. Yes.

MR. ZEIS: I'm going to object t o that question. There's no relevance to that project and this project.

There's no connection between the two that I know of.

MR. BURLESON: I think I can show the connection. I think there is a similarity in that in that area, that is with respect to that project on the application of Southern Union lands which were without question, which their own testimony showed was outside the bounds of the reservoir, were included within the bounds of the unit so designated, and I wanted to explore that subject with Mr. Haseltine.

MR. RAMEY: I'm going to overrule the objection and ask that you continue.

Q. Mr. Haseltine, you were a witness in that proceeding, were you not?

A. I probably was. I don't remember.

Q. Do you remember any of the geologic data that might have been presented in that proceeding?

A. In general terms, yes.

Q. Do you recall whether some of the lands which Southern Union requested to be included within the unit lay on the opposite side of a fault with some several hundred feet of throw from the only existing wells in the area and within the unit?

A. You're talking about to the east?

Q. Yes.

A. As I recall, we did have some of that in the unit. We -- we controlled all those leases to start with. There was never a question about who had the storage rights. We had the storage rights in all the lands included in that unit from the start before be came to this Commission.

Second, our geology in that area was not based on a long term history of producing gas wells. Since that case went before this Commission, and in fact since storage operations began up there, we've done additional drilling work in that area and we found that our geology was not at all perfect and in fact had some errors in it, based on best knowledge that we had at the time we came forth.

So I think to compare that faulted,

highly faulted aquifer, which had no history of production with a closed expansion-type dry gas reservoir, like the Morrow has, is comparing apples and oranges.

Yes, we did have some leases that based on our best geology were outside the pressure continuum. Again, we had those ourselves.

Q. But my question went to whether you asked that the unit embrace those lands which were outside of the area and would be in pressure continuum with those wells which then existed in the area.

A. We asked that the unit include all the leases that Southern Union had under control, and the answer is yes.

Q. Including some that were on the other side of the fault?

A. Well, including some on the other side of where we projected that fault, which, as I mentioned, we found was not exactly accurate after we did this drilling in the area.

I'm not sure to this day that that fault is competent.

Q. In your experience it isn't unusual, is it, where you lack control to perhaps make some geologis error with respect to the location of a fault or of a contour line?

A. Well, I think everyone is well aware that you will -- there is some margin of error. That margin is -- is one thing in one project or in one drilling venture, and it's something else in some other venture.

You're right that any time a geologist draws a contour there's got to be knowledge that that contour may be one side or the other of where he actually drew it. The question comes down to how accurate is his work, really, and on how accurate the evidence is upon which he based his work.

Q. And that particular -- that problem is particularly acute, is it not, where there are not a large number of wells drilled in the area which is being mapped?

A. Not necessarily. If you've got a glass bottle down there and it's 90 percent depleted, you've got an extremely good measure of how big that bottle is.

And that doesn't hinge on additional drilling in the area at all.

Q. Well, where the bottle is situated would -- would have to be determined, would it not, through efforts -- through drilling activities and must be determined from drilling activities which had theretofore occurred.

A. Well, I think that if there's doubt as to where that bubble really lies, there is at least one un-

drilled spacing unit between the last Morrow Ranch -- Washington Ranch Morrow Pool and our lease. There's still one spacing unit in there if anyone has any doubt about where that zero contour lies, and El Paso has control of that last spacing unit.

Q. And are you speaking of the west half of Section 33?

A. Yes.

Q. 25 South, 24 East?

A. Yes.

MR. BURLESON: No further questions.

MR. RAMEY: Any other questions?

MR. ZEIS: I'm sorry, sir, I have one more question.

MR. RAMEY: All right.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Haseltine, with respect to the Southern Union Storage Project, how did Southern Union acquire the leases that they acquired in that project?

A. You're talking about Las Milpas?

Q. Yes.

A. We went out and bought them.

Q. Okay, so you didn't get them by Commission order or by a condemnation.

A. That's my recollection, yes, sir. There was some problem on one of them and I've forgotten exactly what it was, but we ultimately bought all those leases.

As I recall, there was -- for the sake of an overabundance of caution we obtained storage rights from mineral rights owners as well as surface rights owners, and so there was -- there was a little time delay somehow in there in getting everybody signed up.

But basically, yes, we went out and bought those, the rights.

MR. ZEIS: No further questions.

QUESTIONS BY MR. STAMETS

Q. Mr. Haseltine, does Southern Union Exploration have any immediate plans to drill in the east half of Section 32?

A. No, sir, we don't have that as an approved drilling project at this time. Our leases still have some term to run.

Q. How long a term?

A. Seems like the first one goes out in about '83. That's my recollection.

Q. So it would be a couple years before you got around to it.

A. Yes.

Q. Is there any way that you, if you drilled this well, that you could during the drilling process test the equivalent zone in Section 32, the zone which is equivalent to the storage area, and make a determination if there is communication between the east half of Section 32 and the storage project, or the old Washington Ranch Morrow Pool?

A. Are you hypothesizing that we're drilling a well to the Morrow only or to some target below the Morrow?

Q. To the Morrow only.

A. Well, in the first instance, if you're drilling only to the Morrow, and depending on where we end up on this proceeding, we've either got rights to develop Morrow sands underlying our land or we don't have. We assume that we do have, and I like that assumption, then the first look would be logs. Of course you're going to be watching samples and you're going to have mud logs on location and all this kind of thing on the way down.

But the first indication would be logs and they might or might not correlate, and even if they did appear to correlate, they wouldn't necessarily tell you whether there's a permeability barrier between Section 32 and the

east half of 33.

I guess the real answer is ultimately when you attempt a completion, the best evidence would be -- of communication would be a semi-deleted Morrow reservoir.

Q. What about drill stem tests during drilling operations?

A. Well, drill stem tests would only be helpful in demonstrating that you were in the Morrow Ranch Pool, if the pressure derived from those drill stem tests substantially supported the same thing.

Q. Is that evidence which you could use to help make such determination?

A. Well, it's not the best evidence in the world, because drill stem tests have a high rate of failure. They're risky in the first place. They're bad news, generally, in the Morrow, and you've got to be very careful about running a drill stem test in the Morrow to start with, and you could get evidence that would -- that would not tell you, and that's most likely what you would get. That the evidence you'd get would not be conclusive.

Q. So in your opinion the only way you'd know for sure whether you were or were not in a zone which was connected to the Washington Ranch Morrow Pool would be through the utilization of logs and actual completion attempt

in that zone.

A. Well, I think it narrows down even more than that, Mr. Stamets. All that evidence is -- is somewhat indicative but again you could have, and most likely would have, in my opinion, some permeability barriers between the two locations. And so even though your log might look very much like a log over in the middle of the other field, a pressure interference type test would be about the only real, solid information that would prove that you were in communication.

Q. Wouldn't the pressure information be dependent upon what the current pressure in the Washington Ranch Morrow Pool was?

A. No, not in my opinion, because I don't think they'd be connected.

Q. Okay, let's go to that point. Let's suppose that El Paso had only brought the pressure back up to 50 percent of the original pressure in the pool by the time that this theoretical well is drilled, and you discovered pressures in your well which were equivalent to the original bottom hole pressure in the Washington Ranch. What would this tell you?

A. It would tell me that there was some sort of a permeability barrier, a hindrance of some sort, so that the pressure continuum was not complete across those

lease lines.

Q. Conversely, suppose you found pressures equivalent to current pressures in the Washington Ranch Morrow Pool or less than El Paso's current injection pressure, what would that tell you?

A. If we found substantially depleted pressure during that time, then again, depending on where we finally end up on who pays who for this reservoir, gas has moved out from under the lease that we have in conjunction with the State of New Mexico into some other person's well. That's what that would prove.

Q. The possibility is there to demonstrate that it is or is not connected?

A. The possibility is there to demonstrate that it is connected. Well, I guess I'd have to agree with what you said, yes.

Q. Okay, and it's technically feasible?

A. Oh, yes, to develop those pressures. Once you have the well completed, yes, those pressures can be obtained through a new well in the east half of Section 32.

Q. And going one step beyond and speaking only technically, not what's legally required, what should be required, is it possible to provide reasonable protection to the storage zone in drilling and production operations

which might occur on the east half of Section 32?

A. Well, not that requires me to make an assumption and speculate that there is a storage zone under 32.

Q. Right, and I'm asking you to make that assumption.

A. All right, any zone can be protected prudently that you drill through. You drill through them all the time. You can get back up in part of Lea County, as you know, you drill through depleted zones; you drill through abnormally pressured zones, and you do it -- prudent operators do it. The Commission sets out here and makes sure that you do it prudently through your casing and mud program, and that can be done.

Q. In your opinion could that be done even carrying a well down to a depth, say, 9400 feet to test the Ellenburger, and then completing that well with a single string of production pipe?

A. Yes, I believe it could be, Mr. Stamets, I don't think that -- and even if you make this assumption that you wanted me to make, that -- that the storage horizon extends over into the east half of 32, and that it's substantially depleted, so what is about where you get to. You carry a good mud program all the way through and you're simply not

going to lose much mud, I don't think, into that tight Morrow rock. Your mud cake's going to protect you; that's just standard operating practice. I certainly wouldn't see any need at that point of having set an extra string of casing.

Q. If you did lose a lot of mud in that zone, wouldn't that sort of serve to protect the storage zone in itself?

A. Well, mud is designed to do just that. As that filtrate moves into the interstices of the rock it's designed to build up a filter cake on the wall. That's why we pay fifty bucks a barrel for those fancy additives to go into the mud, so that if you do lose a little, why, you don't lose much. It seals itself as you go.

Q. Don't normal muds and fluids tend to cause the Morrow to seal itself off and be nonproductive?

A. It's been our experience that anything will cause that dadgummed Morrow to seal itself off.

MR. STAMETS: That's all the questions I have.

MR. RAMEY: Any other questions of Mr. Haseltine?

MR. ZEIS: One moment. We have no further questions.

MR. RAMEY: He may be excused.

MR. ZEIS: That concludes our witnesses.

MR. RAMEY: I'd like to have Mr. Sharrock come back and ask him some questions.

ROY SHARROCK

being recalled as a witness, testified as follows, to-wit:

CROSS EXAMINATION

BY MR. RAMEY:

Q. You mentioned that you had some good pressures in the Devonian and Ellenburger out of the two wells in the area?

A. Yes, sir.

Q. Do you recall what those were?

A. If you can bear with me a few minutes I can pick up the PI cards.

Q. All right.

MR. RAMEY: Tell you what let's do. Let's break for lunch and then you can give me those answers after lunch.

A. Thank you.

MR. RAMEY: We'll reconvene about, oh, 1:20 or 1:30.

(Thereupon the noon recess

was taken. Thereafter Mr. Sharrock's cross examination by Mr. RAmey continued, as follows:)

MR. RAMEY: The hearing will come to order. Mr. Sharrock, would you take the stand, please?

Q. I believe you stated that you had some pretty good pressures from the two wells from the Devonian and Ellenburger from drill stem tests, and I just wondered if you could give me those pressures?

A. Okay, do you want me to identify the well, too?

Q. Yes.

A. The first well would be The Superior Oil Company No. 1 Government 134, located 1980 from the north and 660 from the east, Section 12, Township 26 South, Range 24 East. This was set up as 11,000 foot Pennsylvanian test.

The tops of the Devonian were 8178; top of the MOntoya, 9140; top of the Ellenburger, 9635.

Drill stem tests were three in the Ellenburger. They were, number one, 9637 to 9805, open 1/2 hour; no flow; recovered 105 feet of drilling mud; no show; initial shut-in pressure 120 pounds; 30 minutes; final flow

120; final shut-in pressure 140 pounds in 30 minutes.

The second DST from 9804 to 9957, tool was open one hour; recovered 170 feet of drilling mud; initial shut-in pressure 120 pounds in 30 minutes; final flow pressure 90 to 140; final shut-in pressure 3845 pounds in 30 minutes.

The final drill stem test was from 9955 to 10,167, which was -- not that wasn't TD -- tool was open one hour and 15 minutes; recovered 1520 feet of fluid; 920 feet of mud-cut water; 600 feet of sulphur water; initial shut-in pressure 4195 in 30 minutes; flow pressure 170 to 760 pounds; final shut-in pressure 3880 pounds in 30 minutes.

On the second well that I gave you, this was the Cities Service Oil Company No. 1 Government M. It was located 660 feet from the south line and from the east line, Section 28, Township 25 South, Range 34 East. This was a 9700 foot Ellenburger test.

I was in error when I mentioned that this well tested the Ellenburger. It went to the Devonian. The top of the Devonian was 7737 feet. There were no DST's in the Devonian.

I have the south offset to this well that did test the Devonian and the Fusselman. I would like to give that to you. Would that be satisfactory?

MR. RAMEY: Yes.

A. This well is the Black River Corporation No. 2 Cities Federal. It's located 2310 feet from the south line and from the east line, Section 34, Township 25 South, Range 24 East. It's a 7800 foot rotary Devonian test.

The top of the Devonian was 7640. The top of the Fusselman was 7900.

The first drill stem test of the Devonian was from 7678 to 7758. The tool was open one hour 10 minutes; recovered 420 feet of mud; flow pressure 116 pounds to 186 pounds; initial shut-in pressure 3241 pounds in one hour; final shut-in pressure 3241 pounds in one and a half hours.

The next drill stem test was of the Fusselman. It occurred at 7865 to 7975 with the tool open 70 minutes; recovered 1365 feet of mud; 6400 feet of sulphur water; flow pressure was 2965 to 3334 pounds; initial shut-in pressure was 3334 pounds in one hour; final shut-in pressure was 3334 pounds in ninety minutes.

That's the information concerning the lower formations reservoir characteristics.

Q. Okay, thank you.

MR. ZEIS: I have one question.

MR. RAMEY: All right, go ahead.

MR. ZEIS: You referred to Range 34 East in one of those wells. These are all in Range 24 East, are

they not?

A. Yes, sir.

MR. RAMEY: I got 24 out of that.

MR. ZEIS: Okay. That's all.

MR. RAMEY: Any other questions? You may be excused.

A. Thank you.

MR. RAMEY: Do you have anything further, Mr. Zeis?

MR. ZEIS: That concludes our witnesses.

MR. RAMEY: Mr. Burleson?

MR. BURLESON: Mr. Chairman, I have a short opening statement I wish to make.

On June the 23rd, 1980, Mr. Ernest L. Padilla wrote a letter to Mr. Mark K. Adams informing him that in his opinion that Order R-6175 did not impair Southern Union Exploration ability to drill and produce its state leases located in Section 32, Township 25 South, Range 34 East, it should be Range 24 East.

I concur entirely in this and it's El Paso's position that -- that this position is valid.

And I would say further with respect to that, that we do not conceive that there's any inhibition that is created, or any prohibition created, by the order to Southern

Union's drilling to, completing in, or producing gas from the Morrow storage formation, if they otherwise have a contract and property right entitling them to do so.

And that of course would go whether the well is drilled initially to the Morrow formation or whether it's drilled deeper than the Morrow formation and plugged back up the hole, although, of course, we believe that the casing requirement is appropriate, which if they're drilling to a formation deeper than the Morrow formation, that they should be required to case the hole for the purpose of protecting the Morrow formation.

We further feel that with respect to order in paragraph number nine, that should an operator drill a well to a formation deeper than the Morrow storage zone, should not be taken to have application to a circumstance where Southern Union may be drilling to test the Morrow formation and may drill some negligible feet into a lower formation as in the course of setting the casing to complete in the Morrow formation. We do not feel that this provision should be applicable to that situation, and of course, we would have no objection to any appropriate clarifying language to express this intent.

We would be, of course, perfectly willing to stipulate to this on behalf of El Paso Natural Gas Company.

In addition to that, we would propose to incorporate the record from the previous hearing into this record and to offer three witnesses that appeared in that hearing for some additional supplementary testimony, although it should be fairly brief.

And I therefor move that the record of the prior proceeding be incorporated into this prodeeding and we will bring the witnesses on and identify them and offer some further supplemental testimony and then tender them for examination.

MR. RAMEY: Without objection, why, we will incorporate the record in Case 6703.

Did you say in your statement, Mr. Burleson, that you thought Southern Union had a right to drill to and produce from the storage zone?

MR. BURLESON: Yes, sir, I think so, if they otherwise have the property and have a contract right to do so, I don't think the Commission would have the power to prohibit them doing so in the first place, and I don't think that the order properly construed does that, accomplishes that, certainly we didn't seek that. We were not seeking to set a precedent for the acquisition of their leases through condemnation proceedings. We merely were seeking to inform the Commission as to what we proposed to do as we're required to

do under the New Mexico statutes.

MR. NUTTER: You said you would be willing to stipulate that the -- that you did not think that the order required the setting of the extra string of casing if Southern Union were to drill a little below the base of the Morrow in order to complete in the Morrow.

Now how far down below the base of the Morrow would you be willing to agree that they could drill without having to set that additional string of casing?

What's immediately below the Morrow, is it the Mississippian?

As long as they didn't drill below the Mississippian, would that be an agreeable stipulation?

MR. BURLESON: 100 or 150 feet, something on that order, we would not anticipate --

MR. NUTTER: 150 feet below the base of the Morrow?

MR. BURLESON: -- any problem, yes.

MR. NUTTER: Okay, I just wanted a clarification on how far down they could go.

MR. STAMETS: Mr. Ramey, as long as we're getting some clarification, I'd like a little on that, as well.

You've indicated El Paso has no objection

if Southern Union produces from this zone.

MR. BURLESON: Yes, sir.

MR. STAMETS: Why do you care whether they case it before they drill deeper or not? After all, it's on their property and you don't care whether they produce it, I don't see -- I'm wondering why you would care if they screwed up.

MR. BURLESON: That's a good question, but I think the answer is this: That we do not feel that a commercial well could be completed at that location, which would be in communication with the Washington Ranch Gas Storage Area. We're willing to -- to risk this, this possibility, and deal with that problem if we should be wrong. However, it's conceivable that insignificant, small stringers of sand could extend to this location such that gas might move from the Morrow storage horizon in very small quantities and seek a resting place in other strata, and consequently would, in addition to giving some difficulty with integrity of the storage unit, without anybody even being aware of the problem, would also constitute possibly some safety hazard to others who may be drilling in the area, and would constitute waste.

MR. STAMETS: I can certainly understand that. I'm still not certain why you want a particular string of casing set, and I presume you'll put on some evidence to

show that this has to be done because of unusual circumstances in the lower horizon which could cause the loss of the hole.

MR. BURLESON: I would defer the answer to that question to our experts. I might hazard an answer to that, but I'd better not.

MR. STAMETS: Thank you.

MR. RAMEY: You may proceed.

MR. BURLESON: Our first witness will be Mr. Richard Isaacks.

RICHARD B. ISAACKS

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

DIRECT EXAMINATION

BY MR. BURLESON:

Q. Would you please state your name and where you reside?

A. Richard Isaacks. I reside in El Paso, Texas.

Q. By whom are you employed and in what capacity?

A. I'm employed by El Paso Exploration Company as a staff landman.

Q. Have you previously testified before the Oil Conservation Division and had your credentials as a petroleum landman made a matter of record?

A. Yes, I have.

Q. Are you the same Richard B. Isaacks who testified on October 17, 1979, in Case Number 6703?

A. Yes, I am.

MR. BURLESON: I move that the credentials as an expert witness be accepted.

MR. RAMEY: The witness is considered qualified.

Q. Would you again review the general categories of land included in the Washington Gas Storage Project Area?

A. Okay. Of the 12,158 total acres in the storage area, approximately 1,082 acres, or 8.9 percent, are State owned; 8592 acres, or 70 percent, is Federal owned; 2483 acres, or approximately 20 percent is fee acreage.

Q. Is the plat which you previously submitted in Case 6703 before the Division still accurate?

A. Yes.

Q. I believe that was Exhibit Number One in the prior proceeding, is this correct?

A. As I recall it was.

Q. Since presenting your testimony on October 17, '79, has there been any change -- have there been changes in the status of your negotiations for the acquisition of interests?

A. Yes. At the time of the last hearing I was still negotiating with Inesco to buy 840 acres of Federal land. I was negotiating with Sterling Talley to buy 160 acres of Federal land. And since that time I've concluded those negotiations and we've purchased those leases.

We've also completed the acquisition of the remaining storage leases from the surface and the fee owners, so that all the acres that we do not own now is 5.74 acres surface tract, which -- and also we do not own a 320-acre lease which is the subject of this hearing in Section 32, owned by Southern Union.

Q. Being the east half of Section 32?

A. East half of Section 32.

Q. What's the status, the present status of the State of New Mexico lands?

A. 605 acres of state lands are leased; 476 acres of state lands are unleased.

Of the 605 acres that are leased, El Paso owns or controls 285 acres. Southern Union owns or controls 320 acres.

El Paso has acquired all of the state leases in the storage unit with the exception of the east half of Section 32. Since acquiring these leases and since the date of the last hearing, approximately 476 of those acres of state leases have expired.

Q. Which were owned by El Paso?

A. Which were owned by El Paso, but they have expired since the date of the last hearing.

Q. Now do you have any applications pending before the State for a storage easement?

A. Yes, on October 11th, 1979, El Paso made an application to the Commissioner of Public Lands for a gas storage easement that would include all of the 10,000 acres within the storage boundaries.

That storage easement has not been acted upon yet.

Q. So the sum of all this is that you --El Paso would control all of the state lands with the exception of the east half of Section 32.

A. That's correct.

Q. Either through an easement or some other contractual means.

A. That's correct.

MR. NUTTER: Was that October of '79 or

October of '80 when --

A. October of 1979, sir.

MR. NUTTER: Okay.

Q. Has there been any change since the date of the previous -- prior hearing in the number of state acres that are producing within the bounds of the unit?

A. No, there's still only one lease that's located on state lands, the Black River Alpha Twenty-One Miller No. 1 Well, located in the southwest quarter of Section 1. El Paso has the option to purchase this well from Alpha Twenty-One Corporation, so there's been no change.

Q. Would you review the current status of the Federal lands within the bounds of the unit?

A. Okay. All of the Federal lands in the unit have been acquired by El Paso, except the unleased federal lands, which are on the KGS.

El Paso has made an application to the Department of the Interior through the United States Geological Survey for a gas storage agreement. This gas storage agreement has been approved by the conservation manager of the I think it's the south central region of the USGS in Albuquerque, and has been forwarded to Reston, Virginia, where it now resides, and it's our understanding that the solicitor of the Department of Energy is reviewing this application at this

time.

Q. Did the recommendation go forward from the office in Albuquerque?

A. I understand the Albuquerque office did recommend -- did approve our application and recommend its approval.

Q. What's the current status of the fee lands within the unit?

A. As I said awhile ago, we have acquired or we've entered into gas storage lease agreements with substantially all of the fee owners, with the exception of the owner of a 5.47 acre tract, and we have an offer outstanding on that. That non-acquisition of that tract will not interfere with our storage operations.

Q. What is the overall control by El Paso of acreage within the storage unit?

A. Okay. After receiving final approval from the Commissioner of Public Lands to our storage easement; after receiving final approval of our gas storage agreement from the Department of the Interior, El Paso will control 70 percent of the State lands, 100 percent of the Federal lands, and about 99.77 percent of the fee lands. It's total overall control of 97 percent, over 97 percent of the total acreage within the storage boundaries. Now these percentages include

some Federal land that's presently unleased but which will be subject to the storage agreements.

Q. At the hearing on October the 17th, the Examiner, Mr. Nutter, was questioning you about the ownership of Fedral lands, and you were describing the status of ownership of Federal lands, and shortly thereafter, immediately thereafter, in fact, Mr. Nutter asked you these questions -- this question:

> QUESTION: So again, these are all edge leases that are not on the structure itself and will be part of that bumper zone that you previously mentioned.

And you replied:

> ANSWER: Yes, that's correct, but we anticipate acquiring those leases within the next thirty days.

Now, we gathered, and I think it's fairly explicit from Southern Union's petition for reconsideration, that they interpreted this to relate not solely to Federal lands but to all lands within the unit, and consequently indicated that there was a misrepresentation made.

Now would you indicate what you were trying to convey?

A. Yes. Under cross examination Mr. Nutter

was questioning me. His first questions pertained to the State of New Mexico leases and he asked me several questions about those, which I answered.

Then he went on and he asked questions about the Federal leases. I answered the questions about the Federal leases and he went on and began asking questions about the fee leases, which I answered.

The answer that I gave that Southern Union has questioned was in regard to Mr. Nutter's question pertaining to Federal leases only; not to the fee leases. He had already questioned me about -- about State leases. He'd already questioned me about State leases and he'd moved on to Federal leases.

His questions were very orderly. He went State leases, Federal leases, fee leases, and my questions were directed to his -- I mean my answers were directed to those questions.

Q. And when you said you anticipated that we would acquire all the additional leases, you were speaking of Federal leases?

A. That's correct, and we did acquire those. The leases that I was talking about were those Inexco leases that we acquired. It took us 63 days to acquire them rather than 30 days.

MR. BURIESON: I invite the Commission's attention to the transcript of proceeding or discussion of this dialogue, and it will be found at or around on pages 11, line 7, through page 12, line 6, and maybe some lines subsequent to that, of the transcript.

Q. Except as you have testified here today, your previous testimony before the Division is correct, is --

A. Yes.

Q. -- this right?

A. That's right.

MR. BURLESON: At this time I would like to move reception in this proceeding of the exhibits heretofore sponsored by Mr. Isaacks in the previous proceeding.

MR. RAMEY: I think those are part of the record which we incorporated.

MR. BURLESON: That's all I have of this witness and I tender him for examination by others.

MR. RAMEY: Any questions of Mr. Isaacks?

MR. ZEIS: Yes, sir, I have a couple.

CROSS EXAMINATION

BY MR. ZEIS:

Q. Referring to Exhibit Number One, which was incorporated by reference, what -- what sort of lease covers

Section 33?

A. Section 33, a Federal lease.

Q. Does that cover the whole section?

A. Yes.

Q. Okay. Did you acquire that lease by purchase?

A. By either purchase or an option to purchase.

Q. Okay. And when did you acquire it?

A. I think that is a lease that's owned by Cities Service and Black River Corporation and Arapahoe Gas, Limited, I believe. Or maybe several leases. I don't have it broken down here.

Q. All right. Now you've acquired an option to purchase, is that correct?

A. Yes, that's correct.

Q. Your testimony is that you've acquired an option to purchase. What did you base the purchase price on in your option to purchase?

A. Well, it was strictly through negotiations.

Q. Okay, did you use a reserve estimate?

A. Well, we had a reserve estimate but that didn't enter into our discussions on price.

Q. Did your reserve estimate indicate that there were reserves underlying Section 33?

A. I'm not an expert on that. You'll have to ask the reservoir engineer.

Q. Do you have available reserve figures to you for calculating and negotiation in --

A. No, I'm a landman. I don't have those. Or I -- I had a total value that we estimated that the total gas in the whole field was worth, but I don't know where it came from. I don't know.

Q. You didn't break that value down for negotiations in purchasing the leases in Section 33?

A. No. We bought -- we just bought the complete producing field, the equipment, the wells, everything.

Q. Well, when you said the complete producing field, did you -- did you buy -- are you talking just about Section 33 or are you talking about the whole area?

A. I'm talking about the whole area. We bought everything except Section 32, the east half of Section 32.

Q. Okay, and I'm wondering what you based the consideration on for the Section 33.

A. Okay, Section 33 I think is -- is there a producing well on Section 33?

MR. BURLESON: Excuse me, Mr. Zeis, may I make a copy of a map available to Mr. Isaacks so he can --

MR. ZEIS: Certainly.

MR. BURLESON: -- refer to it?

MR. ZEIS: Certainly.

A. Section 33, this is from memory, Section 33 is owned by Black River, Cities Service, and Arapahoe. They own all of the producing wells in the reservoir. When we bought their -- or got the option to buy their producing wells, we got all of their acreage whether it was producing or nonproducing.

Q. Okay. It was a package deal, but did you -- you calculated the package based on -- on something.

A. Yes.

Q. What was that? What did you base it on?

A. Well, basically three things. The amount of gas that was left in the reservoir; the use of the reservoir for storage purposes; and the use of the wells for injection/withdrawal purposes, for observation purposes. There were quite a few factors.

Q. Okay. With respect to the amount of gas, how much gas did the Section 33 contribute to your figure, total figure?

A. I don't have any idea. We never -- when

I was discussing this purchase with Cities Service, Black River, and Arapahoe, we never discussed the amount of gas that was under those lands.

Q. And to your knowledge does anybody at El Paso have those figures?

A. Well, we've got reservoir studies to show what the remaining reserves are, I would think.

Q. Have you seen those reservoir studies?

A. No. I've seen the -- a recap of total dollars.

Q. Okay, in that recap of total dollars was there a volume figure?

A. Not that I can recall.

Q. Okay. Is there -- do you know specifically whether there were any reserves calculated for the west half of Section 33?

A. No, I do not know.

Q. Does El Paso have a witness here today who will testify as to --

MR. BURLESON: Mr. Zeis, we will be presenting a reservoir engineering witness and you might wish to refer most of your questions with respect to reserves to him.

Q. All right.

A. But we didn't negotiate on the value of the gas.

Q. Okay, now just one more time so I understand. When you negotiated with Cities Service, you testified it was a package deal. I'm just interested in what -- what part that Section 33 played in the package.

A. I don't know. It didn't play any more or any less than any of the rest of them. We had to acquire all of their acreage and that was just part of the acreage that they owned, and we were not going to acquire their acreage in Section 34 and not acquire it in 33. There wouldn't have been any reason not to. They didn't want it.

Q. Now with respect to your testimony as to the application before the State of New Mexico filed on October 11, 1979, for storage rights, did that -- in that application did you apply for storage rights underneath the east half of Section 32?

A. Yes.

Q. In the Morrow formation?

A. Yes.

Q. In your negotiations with Cities Service for the leases covering Section 33, was it your testimony that they did not want the west half of Section 33?

A. No, we were negotiating for all of their

acreage that was within the boundaries of the storage unit, plus the wells that they owned.

Q. To your knowledge did they -- what -- what value, if any -- well, strike that.

MR. ZEIS: I have no further questions.

MR. RAMEY: Any other questions?

MR. BURLESON: I have one question.

MR. RAMEY: Mr. Burleson.

REDIRECT EXAMINATION

BY MR. BURLESON:

Q. You mentioned in response to Mr. -- one of Mr. Zeis' questions that we had made an application for a storage lease covering the east half of Section 32. Of course we realize and recognize that any rights granted from the State would be subject to the existing oil and gas lease which is currently owned by Southern Union.

A. That's correct, and the storage easement so states.

MR. BURLESON: No further questions.

MR. RAMEY: Any further questions? You may be excused.

MR. BURLESON: El Paso now calls Mr. John Disch.

JOHN A. DISCH

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

DIRECT EXAMINATION

BY MR. BURLESON:

Q. Would you please state your name and where you reside?

A. I'm John A. Disch and I reside in El Paso, Texas.

Q. By whom are you employed and in what capacity?

A. Employed by El Paso Exploration Company, a wholly owned subsidiary of El Paso Natural Gas Company, and I'm Supervisory Drilling Engineer.

Q. Have you previously testified before the Oil Conservation Division at previous hearings as a petroleum engineer?

A. Yes, I have.

Q. Were your qualifications as a witness in the field of petroleum engineering accepted at that time?

A. They were.

MR. BURLESON: Mr. Chairman, we move that

the witness' qualifications as an expert petroleum engineer be accepted.

MR. RAMEY: They are accepted.

Q. Mr. Disch, with any exception that you wish to allude to, if you were asked the same questions that were previously asked you in Case Number 6703, would the answers be the same?

A. Yes, except for one item. We upgraded our production casing, which is 7-inch, from a K-55 to M-80 grade.

After obtaining enough storage history in this unit we may seek approval to over-pressure the reservoir and this change in casing grade will accommodate the pressure increase.

Q. Is there anything else that you would like to add to your testimony which you previously gave?

A. None.

Q. I'm aware that Mr. Stamets has a question of you and I'll defer to Mr. Stamets.

MR. BURLESON: And I tender the witness for examination.

MR. RAMEY: Any questions? Do you want to ask the question indicated, Mr. Stamets?

MR. STAMETS: If I can remember it.

QUESTIONS BY MR. STAMETS

Q. I believe I asked Mr. Burleson, and I hope you can answer it, why El Paso is concerned about this zone, concerned about protecting it during the course of any drilling that Southern Union Exploration might undertake.

A. You mean to a deeper horizon?

Q. Or to any horizon. Why are you concerned about them possibly screwing up when apparently it's not connected with your gas storage project?

A. Well, if by some quirk of nature there is a stringer or a finger of the Morrow reservoir that extends to the east half of 32, and Southern Exploration happened to drill through that, we would like to have it protected so that we would not be drained or damaged by drainage.

Q. Do you think that this could be done in the manner which Southern Union Exploration has proposed today with a single string of casing cemented for 1500 feet above the injection interval?

A. No, sir.

Q. Why not?

A. If, for example, they or any other operator within the unit would be drilling for a zone deeper than the Morrow and it was subnormal pressure, and with their mud

system lost circulation with the Morrow zone open to the hole, the loss of the mud into that formation would allow the pressured Morrow gas to come into the wellbore. It could go to that lost circulation zone and if the hydrostatic head fell low enough, the Morrow gas could blowout to the surface.

Q. You're speaking of a condition, I presume, where the Morrow zone was pressured up by the time the wells would be drilled on Southern Union's acreage?

A. Yes, sir.

Q. Would it be possible, practical, under those conditions for Southern Union Exploration to make a determination during the course of drilling a well under those conditions at the time that they struck the injection interval to see whether or not it was connected and whether they did have a pressure problem in the Morrow zone?

A. Yes, sir, it would be quite possible.

Q. And if that were required and the results were negative, would you then have any further concern about them drilling to any other horizon without setting a second string of casing?

A. I think the extra string of casing would be required.

Q. Why?

A. Because if some other operator would at-

tempt to do the same thing in the center of the field, then we could be damaged.

Q. I can certainly understand that. We're only talking about Section 32, Mr. Disch.

A. All right.

Q. So would you still be concerned in Section 32?

A. Yes, sir, if it's included in the unit.

Q. Why would you be concerned?

A. Like I said awhile ago, Mother Nature is kind of funny and it's very possible for them to drill into a stringer and it could hurt us.

Q. If they drilled into the zone and tested and there's no demonstration that it is connected, then what possible damage could result by them going ahead without setting the second casing string?

A. I would assume that if they could conclusively proof that there is no connection and everything, that possibly an extra string of casing may not be required.

Q. Do you think that this could perhaps be an alternative that this could be provided --

A. Yes, sir.

Q. -- that in Section 32 if they ever drilled in there, they would either set the extra string of

casing or would provide the Commission with --

A. Proof.

Q. -- proof in the form of a drill stem test that it was not connected?

A. I think that could be used as an alternative.

MR. STAMETS: Thank you.

MR. BURLESON: I have one clarifying question, if I might interject it now.

REDIRECT EXAMINATION

BY MR. BURLESON:

Q. Mr. Disch, is it conceivable that at the time the well is being drilled in Section 32 that the Washington Ranch Gas Storage Project Area may not be pressured up?

A. That's also true.

Q. Then if the test is made at this -- at this point in time and later the -- the project area is pressured up, would that then present a problem if the protecting casing had not been set?

A. That's correct. But he --

MR. STAMETS: Well, let's describe this problem now.

QUESTIONS BY MR. STAMETS

Q. We've talked about a problem where it was pressured up, and we haven't talked about the other problem, so if we're going to conceive of that, let's talk about it. What's the nature of that problem?

A. All right, that presents a big problem, also. If it was not cased and cemented through, as we requested, and if a well was nonproductive and properly plugged and abandoned, there wouldn't be any problem, when we pressured up.

Q. Okay, I didn't hear a problem.

MR. BURLESON: Was that the end of your answer, John?

A. Yes, sir.

MR. BURLESON: He may not have understood your question. You might want to rephrase it.

Q. Okay. We talked about potential problems if the storage project was pressured up and where you could expect problems.

In response to Mr. Burleson's question you seemed to indicate that if there was no pressure and no storage in the reservoir and Southern Union drilled through without this extra string of casing, that there could be some sort of a problem at that time down the road. So I'd like to

know what that problem is that you're talking about.

A Well, what I was trying to say was if the well was drilled while there is no storage and without the extra string of casing, if the well is nonproductive and it's properly plugged and abandoned, then there would not be any problem to us.

Q Okay. So what you're saying is that the only thing the Commission would have to do would be assure that that zone was properly plugged at the time it was completed and that would satisfy any concerns that you would have as to this well.

A Yes, sir.

Q And then do you have any reason to believe that that couldn't be done?

A No, sir.

MR. BURLESON: I've got a further follow-up question.

What if the well were drilled on down and completed in, say, the Devonian or Ellenburger formation, and this particular string is not set and then the storage area is pressured up. What would -- would that present a problem if the stringers do extend into this wellbore?

A Well, yes, it presents a problem. That's the reason why we requested the extra string of casing and

cementing.

MR. BURLESON: So what you're saying is there'd be no problem if the well is plugged and abandoned and the Morrow is properly cemented, but if it is not cased, it is not cemented, but rather completed at some deeper formation and left open, then there could be a problem.

A. There could be a problem, yes.

MR. STAMETS: Mr. Ramey, if I may.

MR. RAMEY: Yes, sir, Mr. Stamets.

QUESTIONS BY MR. STAMETS

Q. Let's for the sake of the argument here, assume that this well is drilled to 10,000 feet in the granite and you make a producer in the granite, and you cement the casing in this hole, the production casing, back up above your storage horizon 1500 feet. Would you anticipate a problem with those conditions?

A. No, sir, not as long as that extra string of casing was run and cemented.

Q. Why the extra string and why not just a single string of production casing?

A. Well, as I pointed out awhile ago, if we had gas stored and if we lost circulation, as an example, and the hydrostatic head fell far enough that our gas started

escaping --

Q. I thought we had that problem resolved awhile ago with the testing procedure.

A. Well --

Q. What I'm talking about is where you have no special pressure in the Morrow and you drilled on down to the deeper horizon and you've run one string of production casing and cemented that well above you storage interval. Can you conceive of any problem to El Paso under those conditions?

A. Let me have a moment, would you please?

Q. Fine.

A. It's our position that it's not unreasonable to request the extra string of casing and cement under any condition of no storage or storage; that as you referenced drilling to 10,000 feet and cementing back up, we do feel that there are potential problems that could be encountered, and we feel that we need the extra string of casing and cement.

Q. Okay. Potential problems, what's the nature of potential problems.

A. Yes, sir.

Q. What are they?

A. Poor cement job, for example, across the Morrow.

Q. How many Morrow wells have poor cementing

jobs? What percentage, in your experience?

A. Our experience in the Morrow in Eddy County, New Mexico, is we only have three wells. One of them has been plugged and abandoned. We have just recently completed one, or attempted to complete it, and we had three squeeze jobs on top of the liner.

So potentially it's a pretty high percentage that you'd have a poor cement job.

Q. You're talking about a poor cement job on a liner but not necessarily just a string of casing.

A. Well, it's basically cementing a liner and a string of casing is the same.

Q. You'd have a little bit of difficulty having quite as much cement on top of a liner, though, as you would on a string of casing, don't you?

A. I don't think so. It depends on how much contamination in the upper part of that cement that you had from wall cake, mud.

Q. In this instance we're talking about 1500 feet above the storage interval. You surely didn't have 1500 feet of cement above the top of that liner, did you?

A. No, but we had trouble bringing the cement to the top of the liner.

Q. It would seem that the -- what you're

attempting to achieve in cementing the liner and what you're attempting to achieve in cementing a long string of casing are substantially different. Surely you're not trying to get a great excess of cement above the top of that liner, is that correct?

A. We always calculate volumetrically how much -- how many sacks of cement, and depending on hole conditions, that type of thing, you always add excess.

Q. How much excess would you say?

A. On a liner job?

Q. Yes.

A. Personally I would go about 35 to 40 percent excess, if the hole condition is reasonably good.

Q. I'm not sure that I can pursue that any more. I think I'll quit.

MR. RAMEY: Any other questions of Mr. Disch?

MR. ZEIS: One more question.

MR. RAMEY: Mr. Zeis.

MR. ARNOLD: I want to ask him a question.

CROSS EXAMINATION

BY MR. ARNOLD:

Q Mr. Disch, do you think you'd have more difficulty in getting a successful cement job on a single string than on a liner that you object to the difference between the two?

A No, in my personal experience, we have had more difficulty cementing liners than you do a single string.

Q Well, I understood that you were stating a preference for the liner rather than --

A Oh, no, all I meant was that basically the procedure for cementing and placing the cement is the same.

Q When you do run a separate string across, isn't that a liner job?

A No, sir.

Q Then I was mistaken.

MR. STAMETS: Mr. Ramey, since I've had a second to think about this.

QUESTIONS BY MR. STAMETS

Q I'm trying to figure out now why the cement job on the extra string of casing would be intrinsically better than the cement job on a longer string of casing, which went below the base of the Morrow formation.

A Well, the higher the column of cement

that you bring up behind on a single stage, generally the upper portion of it is the one that you do not get as good a bond as you do in the lower portion of it, and I would think that there's probably several factors. I would say one of them would be the hydrostatic pressure that is exerted, not only by the fluid above but by the cement itself. There is also the upper portion of the cement is the one that is in first contact with your mudcake, certainly the fluid preceding it, so you have a much higher chance of having a poor cement job in the upper portion of the cement column.

Q If you were asked in your professional capacity by El Paso Natural Gas Company to design a cement job which would go to a depth of 10,000 feet in the east half of Section 32, and bring the cement 1500 feet above the injection interval, do you feel that you could do that and -- and feel that you could provide them a cement job which would protect that interval?

A Well, I could certainly design the -- along with professional service help -- a column of cement, and we could certainly place the cement in place; however, I could assure my management more protection to the Morrow zone if I designed the well to run an extra string of casing and cement.

Q So what you're saying is yes, you believe

you could, but you would rather do it the other way.

A. Yes, sir.

Q. Are there any tests that could be performed after a cement job in your mind which would demonstrate that it was a good cement job across the storage interval?

A. Yes, sir, there's several things that you can do. The first one would be run a temperature survey, and then you could run a bond log, and I have always myself personally questioned bond logs. I have seen them where they indicate good cement and they would still have microannular communication in it. So I would not rely 100 percent on a bond log.

MR. STAMETS: That's all.

MR. RAMEY: Mr. Zeis, do you have a question now?

MR. ZEIS: Just a minute, please. No. No questions.

MR. RAMEY: Any other questions of the witness? He may be excused.

MR. BURLESON: We now call Mr. Lester E. Ludwick.

MR. RAMEY: We'll take a brief recess at this time.

(Thereupon a recess was

taken.)

MR. RAMEY: The hearing will come to order.

LESTER E. LUDWICK

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

DIRECT EXAMINATION

BY MR. BURLESON:

Q. Please state your name and where you reside.

A. My name is Lester Ludwick. I reside in El Paso, Texas.

Q. By whom are you employed and in what capacity?

A. I'm employed by El Paso Natural Gas Company as Manager of Reservoir Geology in the REservoir Engineering Department.

Q. Have you previously testified before the Division and had your credentials accepted as a reservoir geologist?

A. Yes, I have.

Q. You are the same L. E. Ludwick that testified previously in Case 6703, are you not?

A. Yes, sir.

MR. BURLESON: Are the witness' credentials --

MR. RAMEY: He's qualified.

MR. BURLESON: Thank you.

Q. Mr. Ludwick, would you please elaborate a bit on why you believe that the bounds of the unit as determined to be appropriate by the Division should be retained?

A. Yes, sir. As I previously testified in this proceeding,I drew up the structure and Isopachous map for this field, and my zero line, as depicted on our exhibit that we presented at the previous -- previously, checks our performance, in other words, the volumetric acre feet derived from this Isopach map, checked by performance, and gas is contained within this zero limit. However, as I stated before, this zero line is the best interpretation that I can make at this time.

If you will look all around this field, you will notice that you get out to the zero line and there's just not a lot of control. Over on the west side you have a well in Section 5 of Township 26, 24, and then it's three miles up to the well to the north in Section 21 of 25, 24,

and as you can see, the zero line of the Isopach comes very close to 32, for instance, Section 32, and this zero line can vary. It could swing out at one end; it could come back in another; there's not that much control, I don't feel like, and this is why I feel like that we have to ask for acreage in excess of the acreage that's contained within the zero limit here.

If we were absolutely 100 percent sure, we could say, well, let's just get this acreage within the zero line; however, we feel like that we need this buffer zone for protection.

Q. Mr. Ludwick, is there any precedent of which you are aware for the inclusion of acreage outside the interpreted areal extent of the storage reservoir within the horizontal limits of a gas storage project area, as approved by the Division?

A. Yes, sir, there is. I think it was previously mentioned. In Case Number 5502 before the Commission, Order Number R-5079, application of Southern Union Gas Company for underground gas storage findings for the Las Milpas Field, acreage was asked for in excess of what was thought to be productive in this finding.

In finding five of this order it states that although preliminary investigation of the geological

structure being proposed for underground gas storage indicates that its areal extent may be somewhat less than the entire area described in finding three, all of the said lands should be included within the horizontal limits of the Las Milpas Gas Storage Project in order to protect the structure from drainage by non-project wells in the event the areal extent of the structure is larger than presently believed.

MR. BURLESON: I would ask that a copy of the order to which Mr. Ludwick is referring be included in the record as an exhibit sponsored by El Paso.

That concludes our direct examination of Mr. Ludwick.

MR. RAMEY: Any questions of Mr. Ludwick?

MR. ZEIS: Yes, sir.

CROSS EXAMINATION

BY MR. ZEIS:

Q. Mr. Ludwick, could you tell me which order in paragraph -- or which paragraph were you referring to?

A. Was I reading from in the order? I was reading from page two, finding number five there.

Q. Mr. Ludwick, do you know what type of geological control was available pertaining to the Las Milpas

Storage Project at the time of the application?

A. No, sir, I knew it was a structure that had a fault on the eastern edge of the thing but I don't know any of the details of the geology of this -- of this candidate, storage candidate, no, sir.

Q. Do you know what type of reservoir it was?

A. What type of reservoir it was?

Q. Yes, sir.

A. No, sir.

Q. All right. So your testimony is just the reading of paragraph five?

A. Yes, sir.

Q. Now, with reference to the structure map marked Exhibit Three, which is incorporated in this case, I want to refer you to Section 33. Do you have any opinion as to the reserves underlying Section 33, gas reserves?

A. I only thing I would have to say would be the volumetric calculation that could be made from this Isopachous map. It's just -- does this answer your question? I mean --

Q. No, sir, what I'm driving at is how are the reserves underlying Section 33 calculated for a basis of say purchasing them?

A. I can truthfully tell you, I was not involved in that particular part of the --

Q. Are you aware of anyone, or of any studies that were conducted to determine the reserves underlying Section 33?

A. Like I say, I was not involved. I would imagine that we did make some studies, yes, sir, of this -- of this section.

Q. You did make -- you did make some studies?

A. Well, I's say -- I would -- I'm not exactly sure, but I would imagine that we did and in my department, but I didn't.

Q. Have you heard of any studies being made?

A. Yes, sir, I think I've heard of them, yes, sir.

Q. And did those -- did those studies indicate the extent of the reserves underlying the east half of Section 33?

A. The east half of 33?

Q. Yes, sir.

A. I couldn't tell you what -- what --

Q. How about the west half of Section 33?

A. Well, it would -- I assume it would have been made using their performance to date, if this is something that we did recently, yes. It would have been this type of estimate, I would imagine.

Q. Let me ask you this. I notice that there are several wells located in the -- or there's one well located in the east half of Section 33 there, indicated to be a proposed injection/withdrawal well.

A. The one with the dark circling?

Q. Yes.

A. Yes, sir, there's two of them in there.

Q. Now what is -- how many acres is assigned to that well? How many spacing unit acres --

A. I couldn't tell you that, sir. This was the location of these wells that we felt like would achieve the best permeability, and this type. In other words, this would be the placement of these wells in this reservoir for injection/withdrawal purposes.

Q. Are you aware of the -- of the Commission's spacing rules for the Washington Ranch Storage Project? I mean not for the storage, for the Washington Ranch Pool?

A. What they were originally?

Q. Yes, sir.

A. Not really. I couldn't tell you whether

it was 1980 or what. I'm just not familiar, no, sir, I couldn't tell you that, without looking it up.

Q. Okay. Can you look it up?

A. I could, if I could have some assistance. Do you want me to do this now or --

Q. If you could. How long would that --

MR. BURLESON: Do you need some time off, Les, to go elsewhere to get this information?

A. Well, I'd have to check. I suppose the spacing rules in the field, get the order. I don't know what they were originally. I believe that's the question here.

MR. BURLESON: What it was originally?

A. Yes, sir.

MR. BURLESON: I was wondering if you could readily find it.

(There followed a discussion off the record.)

A. I thought you meant the specific --

Q. No, that's what I meant, was what the spacing -- how many acres --

A. 320.

Q. Those are 320's?

A. Yeah. I'm sorry, I thought he meant the exact 1980 or whatever out of --

Q. Okay, so that indicates that the Commission found, does it not, that one well would adequately drain 320 acres, is that correct?

A. This is the spacing that's set up for this field, and yes, sir, I --

Q. Okay. Now, could a well -- if that is correct, could a well drilled in the east half of Section 33 drain the east half of Section 32?

A. If that well, if the reservoir extended out into 32?

Q. Not --

A. And you depleted -- this is a --

Q. Not -- not if the well -- not if the reservoir extended out there necessarily, but could a well -- all right, let's -- all right, for the purpose of the question, assume that there is gas in the east half of Section 32 and there's 320 acre spacing for this Section 33, could a well drilled in a position such as this one shown on your map in the east half of Section 33 as a proposed injection/withdrawal well, could that well drain the east half of Section 32?

A. It would -- it would affect the gas out there, yes, sir, as the reservoir depletes, it would get that gas in time, yes.

Q. All right, in commercial time do you feel that that would happen?

A. I couldn't say that.

Q. How many years do you feel it would take to drain?

A. I haven't made that calculation. I couldn't tell you that.

Q. Now I notice also there are several wells in the -- in the area classified as observation wells, in the -- within the bounds of the Washington Ranch storage unit.

A. Yes, sir.

Q. Are those -- are any of those proposed to be drilled by El Paso?

A. If you would pardon me, if I could look at my other--

Q. That's fine.

A. I believe -- I believe that there are ten wells in the field right now, and it's my recollection, subject to further check, that we are going to make four of them into observation wells. This is a transcript. May I look at this, refer to this?

If I can read you from the transcript, page 22, line 19, there are presently ten wells producing at

Washington Ranch and El Paso intends to use six of these existing wells for injection/withdrawal purposes, utilizing the remaining four as observation wells.

Q. All right, so El Paso did not propose drilling any observation wells, is that correct? Any new wells.

A. I believe that is a correct statement. I do have, I did --

Q. All right, now let me ask you, if there was some doubt about the extent --

MR. BURLESON: One second, please, I think he's looking for an answer to your last question to make sure he gave you the correct response.

MR. ZEIS: Oh, I'm sorry.

A. That's correct, the observation wells, the four I mentioned, would be the ones we would propose to use as observation wells.

Q. All right, sir. Has El Paso ever considered a well, an observation well, in the west half of Section 33, to your knowledge?

A. At this point I don't believe we have. This could change, though, we could eventually put one out there if it could be deemed that one would be necessary to be put out there, I would think. But right now the four that

I mentioned are the observation wells we propose.

Q. All right. Would it be -- would it be reasonable to assume that there was some doubt about the geology and El Paso had the right to drill an observation well in Section 33, that one would be reasonable?

A. If we felt that we needed one, yes, sir, as this project is implemented and based on further happenings we, I think, could eventually put one out there, maybe.

MR. ZEIS: No further questions.

MR. RAMEY: Any other questions of Mr. Ludwick? Mr. Stamets.

MR. BURLESON: May I interject just one thing?

REDIRECT EXAMINATION

BY MR. BURLESON:

Q. You did indicate that you have no present plans to locate one in the west half of Section 32, did you not?

A. Correct, we have no plans.

Q. And so far as you know, there's no need to situate one there now?

A. Not now, no, sir.

MR. BURLESON: That's all.

QUESTIONS BY MR. STAMETS

Q. Mr. Burleson may wish to answer this instead of Mr. Ludwick, and it may have been answered in the original case and I hope this isn't repeat.

Could you tell me why El Paso chose not to use the provisions of the underground storage act, or whatever it's called, to seek condemnation of the east half of Section 32 and acquisition of it through the right of eminent domain?

MR. BURLESON: I can respond to that, I think. We had no desire to utilize the condemnation statute to acquire any interest within the unit. We felt secure that we could acquire all those that we required to implement the project. So as a consequence we found no need to seek those additional tract determinations, some of which might conceivably be questionable, I don't know.

But we did not anticipate the usage of condemnation to acquire an interest. We were not seeking to acquire any interest from -- through the Commission. We were seeking merely to inform the Commission of what we proposed to do and to seek an appropriate order from the Commission to protect to the extent necessary against waste and to protect correlative rights.

MR. STAMETS: Along those same lines, Mr. Burleson, it would appear as though, and I've got the 1968 compilation here -- the 1953 compilation, referring to 65-9-4, paragraph G, and in there the discussion goes on that the rights that would be acquired in this manner would not jeopardize the party's right to go in and complete other zones, but that in that case they would have to comply with orders, rules and regulations of the Division for the purpose of protecting underground storage strata or formations against pollution and escape of natural gas.

It certainly seems like here the vehicle for Division or Commission control of drilling within storage areas is clearly spelled out, and I'm not certain that I find that any place else.

MR. BURLESON: Mr. Stamets, I would refer you to the statute and specifically to 70-2-11, which gives the Division the power to prevent waste, prohibited by this Act, and to protect correlative rights, as in this Act provided.

In addition, under the enumeration of powers, which is contained in 70-2-12, are these additional relevant provisions.

70-2-12 (B) 2 says, it begins by saying the Division has the authority to prevent crude and petroleum oil and natural gas or water from escaping from strata in

which they are found into another stratum or other strata.

Number six says to prevent blowouts and caving in the sense that the conditions indicated by such terms are generally understood in the oil and gas business.

And seven says to require wells to be drilled, operated, and produced in such a manner as to prevent injury to neighboring leases or properties.

In addition, 70-2-3 (A), in defining underground waste, concludes by saying that the Commission shall have the power to insure that the use -- to preclude the use of inefficient underground storage of natural gas.

And in addition to that, there is a specific -- there is specific authority vested in the Commission again, this is 70-2-12, 13, the Division is given the power to regulate the methods and devices employed for storage in this State of oil or natural gas or of any product thereof, including subsurface storage.

So I find ample authority for everything that the Division purported to do, and I do not see that this -- that you must proceed under this to invoke this provision to obtain the relief which the Division granted.

MR. STAMETS: I appreciate your interpretations. Only a court will be able to tell us whether your interpretations were correct in every case; nevertheless,

they do apply.

MR. STAMETS: That's all.

MR. RAMEY: Any other questions? Mr. Padilla.

CROSS EXAMINATION

BY MR. PADILLA:

Q. Mr. Ludwick, can you tell us anything about this proposed injection well in the east half of Section 33? Is it now producing? What's its status now?

A. The well in Section 33? I think that's a, if you'll bear with me just a minute, I think that's -- there are six wells producing out there right now, Mr. Padilla. I'm very sorry, I have -- I have the meter numbers on those wells but I don't have them by -- by sites. I can't tell immediately just whether that well is producing. As I say, there's -- I could get that for you or have someone --

Yes, sir, it is producing.

Q. Now what's its rate of production?

A. According to my records, the October, 1980, volume for the month was 11,150 MM, 11-million cubic feet.

Q. In your opinion is that -- is that well draining the entire east half of Section 33?

A. The entire east half of 33?

Q. Yes, sir.

A. I think you -- I think it is draining it, yes, sir. It's -- I think you would -- it's reaching out to the boundary there, yes, sir, to the west.

MR. PADILLA: I have nothing further.

MR. ZEIS: I just have one more question.

RECROSS EXAMINATION

BY MR. ZEIS:

Q. Has the production since the hearing on October 17th tended to confirm your original opinion that this was a closed gas pool?

A. Yes, sir, I have no indication otherwise. We feel like this is a depletion drive field, yes.

MR. ZEIS: That's all.

MR. RAMEY: Any other questions? He may be excused.

Anything further, Mr. Burleson?

MR. BURLESON: No, sir.

MR. RAMEY: Any closing statements, or anything?

MR. ADAMS: May I make a brief closing statement? I was going to make a more lengthy one but I think

in view of developments this afternoon, I don't think I'll have to.

I think the issues in this case have been squeezed down to just about one, and that is whether El Paso can compel Southern Union to use a second string of casing in a well that is drilled on El Paso's State lease in the east half of Section 32 without -- Southern Union's lease -- without any significant evidence at all that operations in the east half of Section 32 would have an adverse affect on the Washington Ranch Gas Storage Project.

If I understand Mr. Burleson's statement at the beginning of El Paso's case, he conceded that the Commission has no jurisdiction to prevent Southern Union Exploration from completing a well in the east half of Section 32 in the Morrow or below the Morrow, and that is in complete agreement with Southern Union's position. We believe that Southern Union has the right to do that, and that neither El Paso nor the Commission can interfere with that right.

What puzzles me about this case is El Paso's purpose for requiring extra casing on wells drilled in the east half of Section 32. I made a few notes while Mr. Disch was testifying. He said that perhaps by a quirk of nature a stringer or finger of the Morrow sand in the Washington Ranch Morrow Gas Pool Area might run into the east half of

Section 32 and by another quirk of fate Southern Union's well in the east half of 32 might hit that stringer or finger and then perhaps by another quirk of fate, something bad would happen.

I think you can balance these unlikely events against the losses to Southern Union if they are required to use an extra string of casing in a well in the east half of Section 32.

Exhibits Four, Five, Six, and Seven portray well, I think, the additional cost Southern Union would incur if they were required to follow the program for drilling in the east half of Section 32 proposed by El Paso.

When you compare Exhibit Five, which is Morrow completion under the El Paso program, with Exhibit Four, which is a Morrow completion under normal program, the additional cost is almost $200,000.

If you do the same thing with Exhibits Six and Seven, Exhibit Seven is the -- shows the cost of a Devonian completion in the east half of Section 32 under the El Paso proposal; Exhibit Six shows the same kind of completion under normal drilling procedures. Again there's a difference of about $200,000.

So it seems to me what El Paso's trying to do is compel Southern Union to spend about $200,000 extra

for a well on the slight chance that by a quirk of nature, and by some quirk of drilling, something bad might happen.

Mr. Haseltine testified as to another adverse consequence of the El Paso program, and that is that it makes the prospect in the east half of Section 32 almost unmarketable. Nobody knows what can happen. Nobody knows if a well is feasible. Nobody knows how it can be drilled and that the costs and risks are substantially increased.

I think there are some constitutional issues involved here, involving "taking" and which I don't think we need to get into. I think it's clear that with the extra costs and decreased value to El Paso -- to Southern Union, El Paso's program, that the Commission does not have before it significant and substantial evidence to justify the imposition of rules requiring an extra string of casing.

So what Southern Union would respectfully request the Commission to do, is to eliminate the east half of Section 32 from the scope of the order which is under consideration here today, and simply provide that the order does not cover the east half of Section 32.

The Commission, of course, has continuing jurisdiction in New Mexico to regulate matters of oil and gas drilling and safety and correlative rights and other matters. I think the regulations and statutes Mr. Burleson referred to

establish that beyond doubt. Of course, Southern Union doesn't contest that.

If a problem should develop at some time in the future with respect to the east half of Section 32, then the Commission could use its clear powers to ameliorate that problem. I think it's a case of classic overkill at this point to require an extra string of casing to be set at substantial cost, because by a quirk of nature something might happen.

That's all I have. Thank you.

MR. RAMEY: Thank you, Mr. Adams.

MR. BURLESON: I might respond just briefly to Mr. Adams' closing statement.

I certainly do agree with Southern Union's interpretation of the order in that it does not preclude drilling by Southern Union of a well, and the completion of such well into the Morrow formation, so there is no issue between us in that respect.

As to whether the order as it currently stands constitutes any sort of a taking, I certainly submit that it does not constitute any taking at all. It imposes, merely imposes, reasonable restrictions upon an operator, should such operator be disposed to drill a well within the possible limits of the reservoir which is to constitute the

storage reservoir, and I wouldn't argue with him concerning the probability of that -- of that occurring; that is, of the stringer of sand extending out in the east half of Section 32. I think I would rely upon the evidence with respect to that.

Nevertheless, we think that this is a reasonable margin of error, and certainly a margin of error to which the Commission has accorded Southern Union, on at least one earlier occasion.

That concludes my --

MR. ADAMS: I just want -- I'm sorry I didn't make Southern Union's position clear. It's not that the order permits completion in the Morrow or below the Morrow. It's rather that the Commission -- the order is ambiguous at best as to that, and the Commission and El Paso don't have the power to prevent completions in the Morrow.

I think the order can certainly be read to prevent completions in the Morrow, and that's part of the problem.

MR. RAMEY: Anything further?

If not, the Commission will take the case under advisement, and the hearing is adjourned.

(Hearing concluded.)

C E R T I F I C A T E

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

Sally W. Boyd C.S.R.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

CASE NO. 7088
Order No. R-6175-A

APPLICATION OF SOUTHERN UNION EXPLORATION COMPANY FOR RECONSIDERATION OF ORDER NO. R-6175, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on November 18, 1980, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 19th day of January, 1981, the Commission, a quorum being present, having considered the testimony and the record in this case and in Case No. 6703 and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Southern Union Exploration Company, owns an oil and gas lease covering the E/2 of Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico.

(3) That said E/2 of Section 32 was declered to be within the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 of the New Mexico Oil Conservation Division in Case No. 6703.

(4) That the said Order No. R-6175 was not intended to prevent the applicant from drilling to or through and producing from the Morrow formation underlying the E/2 of Section 32.

(5) That the Morrow formation underlying the E/2 of Section 32, Township 25 South, Range 24 East, Eddy County, New Mexico,

is not within the Washington Ranch-Morrow Gas Pool created by Oil Conservation Commission Order No. R-4279, and thereafter expanded by Orders Nos. R-4377, R-4437, R-4734 and R-4782, and that there is no substantial evidence before the Commission to indicate that the E/2 of Section 32 is within said pool.

(6) That there is no substantial evidence before the Commission of pressure communication or pressure connection between the Morrow formation underlying the E/2 of Section 32 and the structural feature within which El Paso Natural Gas Company proposes to store gas in its Washington Ranch Gas Storage Project.

(7) That there is no substantial evidence before the Commission that completing and producing an oil and gas well in the Morrow or any other formation underlying the E/2 of Section 32 will cause or result in underground waste, the escape of gas from the Washington Ranch Gas Storage Project, or any other undesirable condition.

(8) That the special drilling and casing requirements imposed by Order No. R-6175 are not necessary to protect the Washington Ranch Gas Storage Project from any consequences of a well drilled, completed and produced in the E/2 of Section 32.

(9) That the E/2 of Section 32 is not needed for the Washington Ranch Gas Storage Project, and Order No. R-6175 should be amended to delete said lands from said project.

IT IS THEREFORE ORDERED:

(1) That Ordering Paragraph No. 1 of Oil Conservation Division Order No. R-6175 is hereby amended by deleting therefrom any reference therein to the E/2 of Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, and said Order shall have no force or effect with respect to said E/2 of Section 32.

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

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

ALEX J. ARMIJO, Member

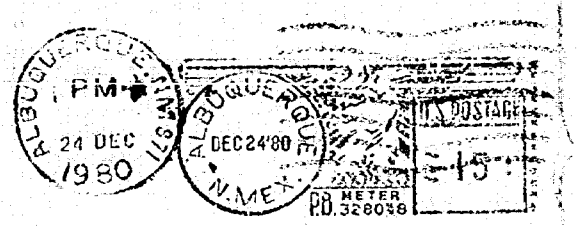
EMERY C. ARNOLD, Member

JOE D. RAMEY, Member & Secretary

S E A L

fd/

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

COMMISSION HEARING

IN THE MATTER OF:

Application of Southern Union Exploration Company for reconsideration of Division Order Number R-6175, Eddy County, New Mexico.

CASE 7088

BEFORE: Commissioner Ramey, Chairman
Commissioner Arnold

TRANSCRIPT OF HEARING

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MR. RAMEY: The hearing will come to order.

We have one case on the docket this morning, Case 7088.

MR. PADILLA: Application of Southern Union Exploration Company for reconsideration of Division Order Number R-6175, Eddy County, New Mexico.

MR. RAMEY: Ask for appearances at this time.

MR. ADAMS: Mark Adams with the Rodey Law Firm in Albuquerque, representing Southern Union Exploration Company.

I'm joined by Paul Zeis of Dallas, Texas, representing also Southern Union Exploration Company. Mr. Zeis will present the Zeis will present the case.

MR. RAMEY: Will you spell that, please?

MR. ADAMS: Z-E-I-S, Paul M.

MR. RAMEY: And how many witnesses do you have?

MR. ZEIS: Six witnesses.

MR. LOPEZ: Owen Lopez, with the law firm of Montgomery and Andrews of Santa Fe, New Mexico, appearing on behalf of El Paso Natural Gas Company, and Mr. David Burleson, house counsel with El Paso in El Paso, Texas,

will be associated with us and he will present the case.

MR. RAMEY: And how many witnesses do you have, Mr. Burleson?

MR. BURLESON: We will have three witnesses.

MR. RAMEY: We'd ask that all witnesses stand at this time and be sworn.

(Witnesses sworn.)

MR. RAMEY: All right, Mr. Zeis, you may proceed.

MR. ZEIS: Before I call a witness, I'd like to make a brief opening statement, if I may.

MR. RAMEY: You may.

MR. ZEIS: SX is here today respectfully requesting that the Division reconsider its Order R-6175, and one, set the order aside;or two, except from the terms of the order the east half of Section 32, Township 25 South, Range 24 East, Eddy County, New Mexico; or three, clarify the order to insure that it does not take, burden, or otherwise affect SX's property rights in the east half of Section 32.

Suggested changes to the order included in SX's petition for reconsideration filed in this case.

This request is made for the following reasons:

The Division failed to give SX effective notice of the hearing set on El Paso's application. Further, the Notice of Hearing which was published was insufficient under due process standards because it failed to include the east half of Section 32 in its description of El Paso's proposed project.

El Paso has not acquired SX's property through negotiations or condemnation. Any infringement upon SX's property right for the benefit of El Paso without compensation to SX denies SX, and the State of New Mexico as lessor, due process and equal protection of the law. Unless the Division reconsiders Order R-6175, El Paso will have circumvented the clear statutory requirements for acquisition of property for underground storage facilities.

SX's evidence will show that the Washington Ranch Gas Pool, in which El Paso proposed to store gas, is generally a closed stratigraphic and structural pool which does not include the east half of Section 32. El Paso's evidence has shown this.

The inclusion of the east half of Section 32 in Order R-6175 affects such property by preventing a completion attempt in the Morrow formation. We will also

show that even if the order were changed to allow SX to complete a well in the Morrow formation underlying the east half of Section 32, the requirements for additional casing would serve to inhibit the marketability of the east half of Section 32 as a prospect for joint operations with other oil and gas producers.

Further we will show that the inclusion of additional casing requirements in this order for the east half of Section 32 will significantly increase the cost and expense of drilling a well on the east half of Section 32. Such additional cost and expense will benefit El Paso; however, El Paso is not required -- has not been required to pay such benefits.

We feel our request is a simple one. We just want the east half of Section 32 deleted.

Thank you.

We'll call Steve Hanger.

STEVEN HANGER

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q Please state your name.

A. Steven Hanger.

Q Mr. Hanger, where are you from?

A. Dallas, Texas.

Q All right, and how are you employed?

A. I'm currently land manager for PetroCel Resources in Dallas.

Q Your office is in Dallas, Texas?

A. Yes.

Q And I call your attention to the year 1978. How were you employed at that time?

A. I was employed as landman for Southern Union Exploration.

Q Okay, and how long were you so employed, until what?

A. From February, 1978, through October of 1979.

Q And in the course of your employment did you have reason to hear about El Paso's Washington Ranch Gas Storage Project?

A. Yes.

Q And how did you -- how did you hear about it?

A. I was contacted by El Paso requesting

that we sell our acreage to them.

Q. Okay, and who contacted you from El Paso?

A. Richard Isaaks.

Q. And did you -- how did those negotiations proceed; not specifically, but they -- did they proceed over a period of time?

A. They went over, I would say, a six to seven month period from late 1978 through the summer of 1979.

Q. Okay.

MR. RAMEY: Could I interrupt just a minute? I wish both you gentlemen would speak up.

MR. ZEIS: All right, sir.

A. Okay.

MR. RAMEY: I think you're talking to us, not to each other, so be a little louder, if you would, please.

Q. I'm going to hand you a letter, Mr. Hanger, and would you identify that, please?

A. Yes. This is my letter I wrote to Dick Isaaks, dated June 15th, 1979.

Q. Okay, and with regard to the east half of Section 32, what does that letter say in substance?

A. El Paso had written us a letter on June

13th, making us an offer of $64,000 for the Morrow rights for the entire Section 32. They also asked in that letter that we consider selling just the east half of Section 32. I indicated in my letter of June 15th that Southern Union was not interested in selling Morrow rights for the entire section, nor were we interested in selling the east half of the section and I requested that they remove our acreage from their Washington Ranch Gas Storage Project.

Q Did you have any --

MR. ZEIS: I move this exhibit be accepted as Petitioner's Exhibit Number One.

MR. RAMEY: It will be admitted. I would like to see a copy of the exhibit.

It will be admitted.

Q Mr. Hanger, did you have any contact with El Paso either through Mr. Isaaks or anyone else after June 15, 1979?

A To the best of my recollection, I do not remember any further contact. We have no record of any written contact and I don't believe we had any oral conversations with them. To the best of my recollection we did not.

Q Okay.

MR. ZEIS: Pass the witness.

MR. RAMEY: Any questions of the witness?

MR. BURLESON: I have a question or so.

MR. RAMEY: Mr. Burleson.

CROSS EXAMINATION

BY MR. BURLESON:

Q Mr. Hanger, did -- were you aware of the impending hearing before the New Mexico Oil Conservation Division which resulted in the order that's the subject of this hearing?

A No, sir.

Q No one contacted you and mentioned this hearing to you?

A To the best of my recollection I was not contacted.

Q Do you know if your company received a copy of the docket which the Division customarily sends out to various companies?

A I do not recall seeing it, no, sir.

Q You didn't see it, but my question was, do you know if anyone within your company received it?

A I'm not aware of anyone receiving it, no, sir.

Q Who would customarily receive it? Had it been received?

A. It would either, depending on how it is routed, you could go to the land department or possibly to the operations department.

Q. All right. Where would it go to from the operations department, had it gone there?

A. To one of the engineers, staff engineers.

Q. Have you looked in your file and the staff engineers' file to determine if there is a copy of this docket in those files?

A. I have researched Southern Union's files and have not found any evidence of that instrument.

Q. When did you determine that the order had been issued that resulted from that hearing?

A. I'm not aware of that information. I left Southern Union in the fall of 1979.

Q. You left Southern Union prior to the time the order issued?

A. I'm not even aware of the date the order was issued.

MR. ZEIS: If I may say so, I believe he testified that he left in October, 1979.

Q. Who took your place, Mr. Hanger?

A. What's Craig's last name?

MR. ZEIS: We will stipulate that Mr.

Craig Neilson --

A. Craig Neilson is the new land manager.

MR. ZEIS: -- is the new land manager, concerning that question.

MR. BURLESON: If I might inquire of counsel, will Mr. Neilson be a witness in this proceeding?

MR. ZEIS: He will not.

A. He came on board, what, in February or March of '80?

MR. ZEIS: Yes.

A. Something like that.

MR. BURLESON: That's all we have.

MR. ZEIS: I have one additional question.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Hanger, you testified you researched Southern Union's files. Did you research all of Southern Union's files or just your own?

A. I researched Southern Union's land files, to clarify your question. I did not get into engineering files.

MR. BURLESON: I have one additional

question.

RECROSS EXAMINATION

BY MR. BURLESON:

Q Have you had occasion to communicate with the Oil Conservation Division to determine which companies are on the distribution list for the dockets which are mailed out by the Division?

A No.

Q Are you aware of whether Southern Union Exploration Company is on that distribution list?

A I believe they are.

MR. BURLESON: No further questions.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: I have no other questions. I would ask that the witness be excused. He has other business and I request that he be excused at this time.

MR. BURLESON: We have no objection.

MR. RAMEY: The witness may be excused.

MR. ZEIS: We'd call Mike Davies.

MICHAEL DAVIES

being called as a witness and being duly sworn upon his oath,

testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Davies, will you state your name, please?

A. Michael Davies.

Q. And how are you employed, sir?

A. I am employed at Southern Union Exploration Company.

Q. And what are your duties for Southern Union Exploration Company?

A. I'm the staff geologist.

Q. All right, sir, and would you briefly describe your education?

A. I was educated at the University of New Mexico; graduated in 1978 with a Bachelor of Science in geology.

Q. Did you receive any honors?

A. I graduated cum laude.

Q. Did you -- have you been employed in the oil and gas business since this time?

A. Yes, I have, sir. I was employed in Farmington, New Mexico, with a consulting firm.

Q What was that consulting firm?

A Atterbury Geological Services, Incorporated.

Q One minute. How long have you been employed with SX?

A I was employed at SX on October the 1st, 1980.

MR. ZEIS: I would move that Mr. Davies be admitted as an expert witness in geology.

MR. RAMEY: I think Mr. Davies is qualified as a geologist.

Q Mr. Davies, handing you an exhibit, has not been marked, was that exhibit prepared by you?

A Yes, sir, it was.

Q Would you briefly describe what this exhibit shows?

A This exhibit is a structure map of the Washington Ranch area. The structure contours are drawn on the top of the Pennsylvanian Lower Morrow formation and generally represents the outlines of the Washington Ranch area.

Q I'm sorry, would you repeat your last sentence?

A It generally represents the outlines of the Washington Ranch area.

Q All right. And what practical -- well, let me show you what -- let me mark this at this time. This will be marked SX Exhibit Number Two.

I would move that it be admitted into evidence.

MR. RAMEY: Exhibit Two will be admitted.

Q What -- now, Mr. Davies, I'm going to hand you what has been marked SX Exhibit Number Three. Would you briefly describe what SX Exhibit Number Three shows?

A The Exhibit Number Three is an Isopachous map of what we call the successfully perforated intervals within the Morrow formation. The contour lines represent thicknesses of the Morrow that were perforated. This depicts what we feel is the dimensions of the Washington Ranch producing field.

Q All right, sir, was this -- was this exhibit prepared by you?

A Yes, sir, it was.

Q Would you explain the relationship between these two exhibits?

A Well, the Isopachous map is shown to be on the structural high that is associated with the Washington Ranch Field.

Q All right, sir, what -- what practical

affect does this show?

A. This shows the dimensions of the -- of the Washington Ranch Field that has certainly contained gas.

MR. ZEIS: Your Honor, I move the admission of Exhibit Number Three at this time.

MR. RAMEY: Mr. Zeis, why don't you wait until you, you know, complete all your testimony and exhibits and then present all your exhibits at one time? I think that would go a lot smoother.

MR. ZEIS: All right, sir, these are all the exhibits that we'll have of this witness.

MR. RAMEY: Okay, then we'll admit Exhibit Number Three at this time.

Q. Mr. Davies, do you have any information that would show that the Washington Ranch Gas Pool extends beyond the limits you've shown here?

A. There is no evidence that it does extend beyond the geo-Isopach of this map. No wells were completed outside that area.

MR. ZEIS: I pass the witness at this time.

MR. RAMEY: Any questions?

MR. BURLESON: I have just a couple questions.

MR. RAMEY: Mr. Burleson.

CROSS EXAMINATION

BY MR. BURLESON:

Q Mr. Davies, I believe your map, which represents Exhibit Number Two, shows the existence of a well over in Section 30 of 25 South and 24 East, I believe.

A Yes, sir.

Q I find on that exhibit a notation of -3333.

A Yes, sir.

Q Would you tell me what that means, please?

A Okay, that well was not drilled to the Morrow but we needed something to use some structural control over there, so we estimated the average thickness of the interval from where this well has penetrated to the top of the Morrow and used that as a thickness and estimated the top.

Q Do you know the total depth of that well?

A Not right off from memory, but I have the log here.

Q Would you determine that for me, please, Mr. Witness?

A The total depth, as recorded by this borehole compensated sonic gamma ray log from Schlumberger

indicates that the total depth logger was 4001 feet.

Q. I'm sorry, are you saying the total depth to which this well was drilled was 4000 feet?

A. That is correct, 4001 feet.

Q. Could you tell me if that well penetrated the Strawn formation?

A. Yes, it did, sir.

Q. Could you give me what you take to be the depth at which the top of the Strawn formation was encountered?

A. Let's see, no, excuse me, sir, I am sorry, that was the run number one.

On the run number two the total depth reached was 7059 feet and not 4000, excuse me.

Q. All right, and would you answer my question, please?

A. Yes, I estimate the Strawn comes in at about 4100 feet.

Q. And that's the top of the Strawn?

A. Yes, as close as I could figure it now. I don't have any correlation on the Strawn here, but that looks like about the top.

MR. RAMEY: You said 4100 feet?

A. Yes, sir.

Q Mr. Davies, have you looked at a PI card for that well?

A Yes, sir, I have.

Q Do you recall that the Strawn -- the top of the Strawn formation was indicated on that PI card?

A No, I do not.

MR. BURLESON: I'd like to hand the witness a card which I have here and have him identify that, if I might.

MR. ZEIS: We have no objection.

Q Would you look at that card, please, Mr. Davies, and tell us what is indicated with respect to the occurrence of the Strawn formation?

A The Strawn is indicated on the card as 6579.

Q Now that's for -- that is for the well in Section 30, 25 South, Range 24 East, is that correct?

A That is correct.

Q If I might have this back, please.

A Yes, sir.

Q Have you looked at any of the other logs for wells in this general area, Mr. Davies?

A Yes, sir, I have.

Q Have you looked at a log for a well which

is located in the northeast quarter of Section 5?

A. Yes, sir, I have.

Q. That would be 26 south, I believe, and 24 east?

A. That's correct. I have.

Q. Would you tell us the name of that well, please?

A. I don't know the name of it right offhand.

Q. Could you tell us where the top of the Strawn formation occurred in that well?

A. Not without taking a look at the log. I never correlated the Strawn across any of these wells.

MR. BURLESON: Mr. Zeis, will you have another witness who has correlated the Strawn formation across this area?

MR. ZEIS: No. No, we won't. Our testimony is mainly directed at the Morrow formation.

Q. Mr. Davies, could I then ask you to get the log which you have available to you and tell us where you pick the top of the Strawn formation in that well?

MR. ZEIS: Well, I would -- I would object to the introduction of any evidence as to the Strawn until counsel can show some relevance.

MR. BURLESON: Mr. Chairman, the relevance, of course, is that the Strawn formation is in a certain

position relative to the Morrow formation, which is the subject of this hearing. So as a consequence, I think it's highly relevant as to where the Strawn formation occurs in these two wells to which I'm directing my examination.

MR. RAMEY: Well, it seems to me, Mr. Burleson, this well in Section5 penetrated the -- did it not penetrate the Morrow?

MR. BURLESON: Yes, sir, it did, but the well in Section 30 did not penetrate the Morrow, so that's why it was necessary to determine where the Strawn is in the two locations.

MR. RAMEY: And your questions are relevant to the well in 30, which only penetrated the Strawn but not the Morrow --

MR. BURLESON: Yes, sir, which --

MR. RAMEY: -- which he interpreted down to the Morrow.

MR. BURLESON: We're trying to establish where the Morrow formation should likely be found in the well in Section 30, had it been penetrated.

MR. ZEIS: Well, what relevance does that have to the storage project?

MR. BURLESON: Well, it has relevance to the map that you presented, Mr. Zeis.

MR. ZEIS: Well, we just testified as to the storage project.

MR. BURLESON: Well, your map also covers lands without the storage project. It extends over into Section 32, 31, 36 of the township and range to the west.

MR. ZEIS: But that still is not relevant to the storage project.

MR. RAMEY: I think since the witness did -- did interpret a top for the well in 30, and that is part of the exhibit, I think the question is relevant and I'll overrule the objection.

A. Could you repeat your last question?

Q. Yes. Mr. Davies, I'll ask you if you have had access to a log, and I will ask you if you will take that log and determine where the top of the Strawn formation occurred in the well in the northeast quarter of Section 5 of 26 South, and 24 east?

A. Yes.

MR. ZEIS: Would counsel mind if we show the witness some additional information?

MR. BURLESON: Well, I prefer him to take the information off the log.

MR. ZEIS: That will be fine.

A. Well, on the card they indicate the top

of the Strawn as being about 6559, and that correlates to the log in Section 5, the northeast of Section 5, Township 26 North, 24 East, to a depth of about 6709.

Q. Now that 6709 is the depth of the zone to which it correlates to the well in Section 30? Is that your answer?

A. Yes, that's correct.

Q. Let me ask you to also look at the log in the well in Section 5, which I just referenced you to.

A. Uh-huh.

Q. And tell me where you find the top of the Morrow formation?

A. The top of the Morrow formation in that well is,what we call the top of the Morrow Clastics,is at 7328.

Q. All right. Now from the top of the Strawn formation to the top of the Morrow formation is a difference of how many feet, Mr. Davies?

A. It's about 590 feet.

Q. All right. Now in light of that, do you still feel that your correlation -- that your data which is contained on Exhibit Number Two with respect to the occurrence of the Morrow formation, projected occurrence of the Morrow formation is correct?

A. Yes, sir, I do.

Q I think you gave me as the top of the Strawn in the well in Section 5 a depth of 6559, is this correct?

A I believe that's what the card said.

Q Well, were you merely taking the information that's on the card? You were not making correlations?

A Right.

Q You were not making a pick from --

A Right.

Q -- the log which you have?

A I did not have the Strawn correlated on any of the logs.

Q Okay, so you can't pick the top of the Strawn?

A No, I said I'd estimate it to be at 4000 feet, but that was obviously incorrect.

Q The depth -- the card which I gave you a moment ago, Mr. Davies, was a card for the well in Section 30. It was not a card for the well in Section 5.

A Uh-huh.

Q Now, my question is where do you get the top of the -- where do you get the depth of the top of the Strawn formation of 6559 for the well in Section 5, which you just gave me?

A. I correlated from the depth that you gave me on the card from this well, from the well in Section 30 to the well in Section 5.

Q. And you think that it's located at 6559. In other words, approximately -- that the structure would be approximately flat.

A. No.

Q. With respect to those two wells.

A. It was 6559 in the well in Section 30 and at -- if I remember correctly that's what the card said, and that corresponds to a depth of about 6709 in the well in Section 5.

Q. All right. Mr. Davies, I notice on your Exhibit Number Two that you show a high extending from the south up into Sections 31 and 32 of 25 South and 24 East. Would you tell me the basis for extension of this high into this area?

A. Into Section 32?

Q. Yes, sir.

A. We have several structure points there, including the one in -- that we were previously talking about in Section 5, the northeast of Section 5, 26 South, 24 East, and then the well in the southwest quarter of Section 21, 25 south, 24 East, and those indicate that the structure contours

do curve around in there.

Q Well, I don't, I really don't see how based on those wells that you've just cited me, that that necessarily indicates a high there. It seems to me you could bring the contours directly around, could you not?

A Well, I had no direct evidence that says that I should bring them around.

Q My point is you don't have any direct evidence that says that there should be a high extending up into the Section 32 and 31.

A Excuse me, I didn't hear your statement.

Q I see no direct evidence that you've presented that indicates why the high should be extended into 31 and 32, such as you have done.

MR. ZEIS: I'd like to point out that this is -- that this is -- he's giving his opinion as to what these formations do.

MR. BURLESON: I'm not quarreling with his opinion. I'm trying to determine the basis of his opinion, really, so I --

A The basis --

MR. BURLESON: If I appear to be arguing with the opinion, I don't intend to do that. I'm really trying to determine the basis.

A. The basis for the opinion was those two wells right there that showed the structure contours curving around.

MR. BURLESON: No further questions.

MR. RAMEY: Any other questions of this witness? Mr. Zeis?

MR. ZEIS: Could we have just a minute? I have one further question of the witness; maybe several questions.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Davies, your map has to do with the Morrow formation, does it not?

A. Yes, sir, it does.

Q. All right, and how did you determine the top of the Morrow in Section 30?

A. I correlated with several markers that I used in the formations above the Morrow, and I correlated these markers all the way across the field.

Q. Okay. Did you -- did you use the top of the Strawn?

A. No, I did not.

MR. ZEIS: No questions.

QUESTIONS BY MR. STAMETS

Q Mr. Davies, what parameters did you use in determining the zero Isopach line on your Exhibit Number Three?

A That was an area that outlined the perforated intervals. In other words, outside of that area there were no successful perforations.

Q So you don't have any specific set of parameters as to feet of zone or porosity or water saturation or anything like that in this determination?

A That is not implied in that Isopach, no, sir.

Q Okay. I see a well in what appears to be the southwest quarter -- southeast quarter of the southwest quarter of Section 33 that you have a zero footage mark on. Will you give us the name of that well?

The point is I was looking at one of the El Paso exhibits from the original hearing and I don't see that well on there.

A Just a moment, let me look. The name of that well is the No. 2 Federal "BR".

Q Who is the operator of the well, please?

A. Black River Corporation.

Q. Does it give a location?

A. Yes, it does. It's 660 from the south and 2310 from the west line.

Q. Okay. Thank you. Now getting back to the zero Isopach line, if you based that strictly on the fact the wells were not completed beyond that line, does that mean that the formation is not potentially productive, at least at noncommercial rates, beyond that line?

A. I would say that it's not potentially productive within -- within the Washington Ranch Field area, but I think that there are possibilities of production --

Q. Well, now why do you say it's nonproductive? Just simply because nobody perforated and completed it?

A. No, sir. The -- the Isopach indicates wells that were successfully perforated and conforms to the performance of the wells.

Q. But you've made no analysis of the formation yourself to demonstrate that it does or does not contain gas in producing quantities, have you?

A. Inside the --

Q. Well, on the zero Isopach line?

A. There is indications that there -- the wells that are drilled on the zero line did not produce.

Q. I think that's obvious but I believe from your own testimony you said that you had made no analysis of why the zero line should be there except for the fact that wells aren't completed beyond that line.

A. That is correct.

Q. So on that basis is there any reason that this Commission should consider that that's not potentially productive, at least even in noncommercial amounts?

A. Could you repeat that?

Q. Okay. Do you have any solid evidence to show that there is no producible gas beyond the zero line? Do you have any information relative to thickness, porosity, water saturations, any -- any solid evidence which would show that that line should be where it's located?

A. No, sir, I do not.

MR. STAMETS: I'm through.

MR. BURLESON: I have one other question.

MR. RAMEY: Mr. Burleson.

RECROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Davies, you, in response to Mr. Stamets, indicated that the well in Section -- there was a well in Section 33, 25 South, 24 East, do you know the total depth

of that well?

A. Yes, sir, I do. That well was not penetrated to the Morrow.

Q. Okay, what -- do you know the total depth to which that well was penetrated?

A. I can't seem to find the card right now but if -- I remember looking at it just a second ago, it was about 1400 feet, but I'm --

Q. In view of that, I'd like to ask you what this symbol right beside that well means on your Exhibit Number Three? It appears to be a zero feet.

A. Yeah, I believe it's a typographic error.

Q. In other words, you think that sould be excised from this?

A. Right, yes, sir.

MR. BURLESON: That's all I have.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: One minute, please. No further questions.

MR. RAMEY: The witness may be excused.

MR. ZEIS: One minute, please, sir. We would call Mr. Ron Sehtz at this time.

RON SENTZ

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q Mr. Sentz, since you've said your name, how are you employed?

A I'm employed with Southern Union Exploration as a drilling and production engineer.

Q And what is your education?

A I have a Bachelor of Science in mechanical engineering from the University of Colorado.

Q And how long -- when did you get that degree?

A In December of '74.

Q And how have you been employed since that time?

A After graduation I was employed with Halliburton Services as a field engineer. I worked there almost two years; went to work as a consultant for an independent in Colorado, Apsco, Incorporated (sic) by name. I worked there until coming to work for Southern Union Exploration on

July 5th of '78.

Q What are your duties at Southern Union Exploration Company?

A I handle all drilling contracts; line up consultants to do the work on the wells; purchase materials; prepare AFE's; drilling prognoses; oversee the completion operations on wells; purchase production equipment; oversee production thereafter.

Q All right.

MR. ZEIS: I would move that Mr. Sentz be admitted as an expert witness.

MR. RAMEY: So qualified.

Q Mr. Sentz, have you read Order Number R-6175 in Case Number 6703?

A Yes, I have.

Q And in particular have you read -- or in paragraph (9) requiring extra -- extra casing in the Morrow formation?

A Yes, I have.

Q All right, sir. Now, I'm going to ask you if you prepared a well cost estimate for an exploration well in search of gas drilled to the primary target of the Morrow formation in Section 32. Have you prepared such an estimate?

A Yes, I have.

Q Okay. Mr. Sentz, I'm handing you an unmarked -- excuse me a minute.

I'll mark this SX's Exhibit Number Four. Handing you what's been marked SX's Exhibit Number Four, was that prepared by you or at your direction?

A Yes, it was.

Q Would you describe for the Commission what that depicts?

A This shows the amount of time it would take to drill the well, the casing program projected for that well, the overall cost of a dry hole, and the overall cost to drill and complete that particular well.

Q Okay. What -- how deep is this well projected to be drilled?

A A projection of 7600 feet.

Q Why have you picked that depth?

A This is based on data from geology giving the average depth of the Morrow formation in that area, and projecting 100 feet below it, giving a sufficient amount of rathole for operation.

Q Okay. Is it normal practice to drill below a target formation?

A Normally yes.

Q. All right, sir. This Exhibit Number Four indicates that the total estimated cost for a dry hole is $444,150. The additional cost for a producer would be $279,050, for a total actual cost of $723,200. And then I noticed down at the bottom a total estimated cost for the dry hole is added to a plug and abandoning cost, P&A'd cost. Is that plugged and abandoned?

A. That's correct.

Q. Of $20,000, less salvage value, for a net dry hole cost of $444,445.

All right, Mr. Sentz, on the second page of Exhibit Number Four I notice a schematic diagram. Is that a diagram of this well you've estimated cost for?

A. That is correct.

Q. Mr. Sentz, I'm handing you an exhibit marked as Exhibit Number Five. Would you describe what this exhibit shows, please?

A. This exhibit was made up because of confusion in interprting the order that was given. This shows a Morrow well to the same depth with what would be interpreted as an extra casing string to protect the Morrow, which would be the 5-inch liner which is shown here. 1200 foot of it. The extra string, in fact, would be the 5-inch liner, using a 7-5/8ths string as an additional intermediate to get down to the area above the top of the Morrow would not normally

be run for an exploratory well.

Q. All right, sir, is page two a diagram, schematic diagram of this well?

A. That is correct.

Q. And I note your dry hole cost is $694,950; additional cost for a producer of $215,000, for a total of $909,950. And I also note down at the bottom, using the same procedure used on Exhibit Four, the net dry hole cost is $636,012.

Mr. Sentz, I'm handing you what has been marked SX's EXhibit Number Six. Would you identify that for the Commission, please?

A. This is my projected cost to drill a Devonian test and allow myself working room below formation of interest. This is in conjunction with Order Nine to where interpretation is that we would protect the Morrow and produce below it, not allowing us entrance into the Morrow formation.

Q. Mr. Sentz, would you -- will you read the first line of the -- of the exhibit, please?

A. Washington Ranch Area standard well.

Q. All right, sir. Your testimony is that this does contain the extra string of casing?

A. No, I did not say it contained --

Q. All right.

A. -- the extra string of casing. This is the standard procedure for that well.

Q. Okay. Is this --

A. And if you completed in the Devonian formation, this would still allow the Morrow to be protected as you would cement through the Morrow formation.

Q. All right, sir. On the second page of this, is this your schematic diagram of this well?

A. That's correct.

Q. All right. And I note this -- the total dry hole cost of this well is $461,750; additional cost if it's a producer of $284,650; for an actual cost of $746,400. And also I note the net dry hole cost for this well is $462,045.

Mr. Sentz, I'm handing you what has been marked SX Exhibit Number Seven. Would you describe this exhibit for us, please?

A. This AFE was prepared on a basis of an interpretation of Order Nine to show the difference in cost to drill a Devonian test and complete it, following that order as interpreted, as compared to the standard Devonian test, which was Exhibit Number Six.

This contains the extra casing string to protect the Morrow, which would be the 7-5/8ths set to 7600 feet with a liner set to total depth of 8000 feet, through

which we could perforate and test the Devonian formation.

Q. All right, sir, and I ask on page two of that exhibit is a schematic diagram of your well design, is that correct?

A. That's correct.

Q. I note on your -- on your exhibit that the total estimated dry hole cost is $723,050; $216,000 if it's a producer; for a total actual cost of $939,050.

Again I note the net dry hole cost of $664,112.

Mr. Sentz, on Exhibits -- on Exhibit Five and Exhibit Seven, what was the reason for the extra string of casing on those exhibits?

A. The reason for the additional string of casing on that was in interpretation of Order Nine, indicating that an extra casing string would be set through the Morrow formation to a depth 100 feet below the bottom of the Morrow formation.

MR. ZEIS: Pass the witness.

MR. RAMEY: Any questions of Mr. Sentz?

MR. BURLESON: I have a few.

MR. ZEIS: I'm sorry, sir, I forgot to move the introduction of these exhibits into evidence.

MR. RAMEY: You move the introduction of

Exhibits Four, Five, Six, and Seven?

MR. ZEIS: Yes, sir.

MR. RAMEY: They will be admitted.

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Sentz, with respect to your Exhibit Number Five, I would like to know how you are reading paragraph nine of the Commission order. Specifically, I note that the -- your Exhibit Number Five refers to the primary target as being the Morrow formation.

A. Yes, sir.

Q. And I also note that paragraph nine of the Commission order provides that should any operator drill a well to a formation deeper than the Morrow storage zone, do you consider that this well, which is -- the AFE for which is shown as Exhibit Number Five, is a well drilled to a formation deeper than the Morrow storage zone?

A. We have penetrated, according to the AFE I worked up, 100 feet below the Morrow formation, and I have a difficult time interpreting the order from the standpoint of whether we are going to be allowed to test the Morrow formation or whether we are to look at a formation below that and not be allowed to test the Morrow formation. This is why

the different number of exhibits I prepared.

Q. In other words, you conceive that paragraph nine of this order is triggered one inch into a formation deeper than the Morrow formation.

A. That, I believe, could be interpreted from that.

Q. And you would anticipate that a normal completion in the Morrow formation would entail and require the penetration of the formation below the Morrow formation?

A. I would, yes.

Q. All right. With respect to Exhibits Six and Seven, which relate to AFE's for wells projected to formations below the Morrow formation, specifically the Devonian formation, I might ask, does Southern Union propose to drill a well to a formation -- to the Devonian formation?

A. I don't know at this time if they propose to drill it, but it was inquired of me what the drilling costs would be to do this, and normally that's set forth to me on the basis that they are looking at drilling a well in that area.

Q. This is -- this was just an academic inquiry, then, as to what the additional cost would be of complying with Order Number 6175?

A. Yes, sir.

Q There is no proposal by Southern Union, so far as you know, to drill a well to any formation deeper than the Morrow.

A I'd honestly have to say I don't know at this time.

Q With respect to Exhibits Four and Five, Mr. Sentz, is this the only prudent method, as far as you know, to drill a well to test the Morrow formation? Is there any other method which you would think would be in accordance with standard operating procedures in this area?

A There have also been a number of wells in this area drilled with an 8-5/8ths surface casing with a 5-1/2 production casing set through the Morrow.

Q So you're not excluding some additional method; this is just one method and presumably the method that you would recommend?

A Yes, sir, that's correct.

MR. BURLESON: Pass the witness.

MR. RAMEY: Any other questions of Mr. Sentz?

QUESTIONS BY MR. STAMETS

Q Mr. Sentz, in the case of, say, a lower

Morrow completion interval that Southern Union might have in the east half of Section 32, could you propose a different type of casing and cementing program which would protect the -- El Paso's injection interval?

A. I'm not sure I understand your question. When you refer to a lower Morrow, as I understand the order, we're to protect all the Morrow.

Q. Oh, I'm not talking about the order, now. Let's just say that El Paso has a storage project and Southern Union is out there, or Southern Union Exploration, and you drill through their storage interval all the way to the base of the Morrow, could you recommend to this Commission a casing and cementing program for your well that would not only allow you to produce but also assure the protection of El Paso's storage project?

A. The Exhibit Number Four -- let me withdraw that statement.

Exhibit Number Six would be, if I were drilling to the deeper formation, would be my recommended drilling and completion procedure for the deeper test, and in my opinion it would protect the Morrow formation as cement would be brought back up across the Morrow and a height above it, and without perforating the pipe, based on bond logs, it would protect that Morrow formation.

Q How far above the storage zone would you bring your cement?

A. 1500 feet, I believe is what was asked for, and that is common in that area.

Q And I presume, then, your -- your answer would be the same to any well which was drilled to a depth of 8000 feet in this area?

A. As far as how far back to bring the cement? I would base that on service company recommendations, as well as other zones which needed to be protected.

Q All right. Are there zones which could be explored at depths greater than 8000 feet in the east half of Section 32?

A. I'm not an expert on the geology there, sir.

Q That's perhaps a question which ought to be answered here today, and also what is the maximum depth below the proposed storage zone that casing could be safely run and still provide protection for that zone.

MR. STAMETS: That's all the questions I have.

MR. ZEIS: I have just a few more for this witness.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Sentz, you testified that Exhibit Number Six would be your recommendation for drilling to a formation -- to the Devonian and protecting the Morrow.

A. That's correct.

Q. Now, you assume in your answer, or did you assume that in your answer -- let me rephrase that.

Could you perforate that well in the Morrow formation?

A. With this casing program?

Q. Yes.

A. Yes, you could.

Q. Okay, would that protect the Morrow formation?

A. If you perforated the Morrow formation with this casing program you would not protect the formation.

Q. Okay. Does Exhibit Number Six call for an extra string of casing?

A. No, it does not.

Q. Okay. Now you said that -- that if you perforated in the Morrow, it would not protect the Morrow. In other words, could that well be dually completed?

A. Yes, it could.

Q. All right. If you completed it in the Morrow and another formation, would that protect the Morrow?

A. If you completed in the Morrow formation, the Morrow would not be protected.

Q. Okay.

MR. ZEIS: One minute, please, sir.

QUESTIONS BY MR. STAMETS

Q. While he's conferring, let me clarify Mr. Sentz response to that question.

When you say that the Morrow formation is perforated and the Morrow is not protected, are you talking about that individual zone in the Morrow, or are you talking about that zone plus the storage interval? In other words, will any perforations in the Morrow cause lost integrity to the storage interval?

A. Based on my knowledge of the formation itself, it could, if that formation were open to you from the storage zone.

In other words, if you didn't have a break between the El Paso storage area and your well, then you could enter the storage project.

Q. Well, you're talking about a break verti-

cally, such as a shale zone, some sort of a permeability barrier between the storage zone and the zone which was completed?

A. Yes, sir, some permeability barrier.

Q. And this is the sort of thing which could be demonstrated by logs, cores, sample analysis, is that correct?

A. I believe so.

MR. ZEIS: No other questions.

MR. RAMEY: Any other questions?

MR. BURLESON: I think I might have a question to clarify a matter that Mr. Sentz has raised.

RECROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Sentz, in your response to your counsel's questions you were speaking or responding as to what would be required to protect the Morrow formation, and specifically he asked you, as I recall, whether if you went back and perforated into the Morrow formation, whether the Morrow formation would be protected. Was that the way you understood his question?

A. Yes, that's correct.

Q. And when you said no, what you intended to convey, I suppose, was that -- that gas could flow then and

thereafter from the Morrow formation. You did not intend to suggest that there would be an incursion of water or some damage to the formation, other than just opening the formation to produce it?

A. That is also correct.

Q. Are you saying there would be some problem with the water where you --

A. No. I'm talking from the standpoint of if the Morrow was perforated and you could produce gas from it, if the gas was there in the formation.

Q. Right, so what you're saying is that the integrity of the Morrow formation would not thereafter be protected once you perforated that formation, the Morrow formation.

A. That's correct. As I understand the order, you could interpret it to mean that we're not allowed to perforate the Morrow formation.

Q. Would you point to the provision in the order that you think is subject to that interpretation?

A. Okay. In Article (9), Section (B), a separate or extra casing string shall be set at a point 100 feet below the base of the Morrow Clastics, as found at a log depth of 6864 feet on the Schlumberger Gamma Ray-Sonic log of the Black River-Cities Federal Well No. 1, located in Unit F of Section 34, Township 25 South, Range 24 East, Eddy County,

New Mexico.

Q But of course, with respect to both of your -- your Exhibits Six and Seven, you would have set such -- such a casing, is that correct?

A Exhibit Number Six shows a standard Devonian completion with no extra casing string in the program.

Exhibit Number Seven shows that Devonian completion with the extra string in, to comply with an interpretation of this order.

Q So it does comply, your Exhibit Number Seven does comply with -- with the order in paragraph (9) (B), is that correct?

A Under one interpretation, yes, sir.

Q Now do you find anything further in here that precludes you from perforating that casing which you have then set consistently with order in paragraph (9) (B)?

A I don't understand your question. Do you mean anything in this order that says I cannot complete in the Morrow?

Q Yes, that you can't then, after having set this casing, then perforate this casing. Do you see anything in here that suggests that you can't do that?

A Under the interpretation of protecting the integrity of the Morrow formation --

Q Well, where are those words found, Mr. Sentz?

A I don't find at this time explicit wording to that effect. It may have been an interpretation on my part, as I don't understand why you would set the extra casing string through the Morrow if you were going to be allowed to complete in that Morrow formation.

It would be a waste of money.

Q Mr. Sentz, would it be a waste of money in that upon drilling on down to the Devonian formation you might choose to complete in a deeper formation; In that event, would you not need some protecting device to protect the Morrow formation from the migration of gas from some -- from that formation into some other formation, or from some other formation into that formation?

A A proper cement job would avoid that contamination of your Morrow formation.

Q Then you do not think that the additional string of casing is required?

A I don't feel it's necessary.

Q And that's your problem, at least as to -- in that respect, with the order?

A Yes, sir.

Q Would you -- could you have a potential

problem if you were to encounter trouble in attempting to complete the well in the Devonian formation and consequently lose the hole, perhaps?

In that event, what would protect the Morrow formation?

A. If you were to have a problem completing that -- or drilling the lower formation where it got away from you, then you would have to proceed to regain control of that well, and you would continue your completion, or you would have to plug and abandon that well to protect the Morrow formation with cemnt.

MR. BURLESON: No further questions.

CROSS EXAMINATION

BY MR. RAMEY:

Q. Mr. Sentz, are you implying from the order that if you drilled a Morrow well and found a separate and distinct zone that wasn't connected to the storage area, that you would be unable to produce that zone?

A. I believe that can be interpreted from that.

MR. RAMEY: Any other questions?

MR. ZEIS: I have -- I have one more question.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q Now, Mr. Sentz, I want to direct your attention to the order and specific finding in paragraph (13) (E). Would you read that to us, please?

A (13) (E). That any well drilled within the Washington Ranch Gas Storage Project Area as described in (12) (A) above, but outside the Active Area of the Washington Ranch Gas Storage Project, as described in (12) (B) above, would be located according to the General Rules of the Division; and would be cased and cemented in such a manner as to protect the Morrow gas storage zone.

Q Thank you, sir.

MR. BURLESON: I have one additional question.

RECROSS EXAMINATION

BY MR. BURLESON:

Q Mr. Sentz, would you say that it is common for an operator who is drilling a well to incur additional cost in the course of drilling that well to protect adjacent property or formations which may be encountered during the course of drilling that well?

A. I don't know what you mean by additional cost. Normally, if you have another zone interest, which is at a higher level that you know you want to look at later on, you would protect that to avoid contamination of drilling fluid upon it.

Q. What if you had a water-bearing zone which, let's say it was fresh water which was encountered during the course of drilling the well, would you incur any additional expense in protecting that fresh water source?

A. Normally if your geology is done properly, you've already had your program set up to protect that fresh water formation.

Q. But there would be some expense in doing so, would there not?

A. Yes, sir, that's normal.

Q. What if there were another formation which was encountered which was not commercial at the location at which you're drilling the well, and you did not choose, and you recognized you did not choose to attempt a completion in that well, yet the formation may be producing in adjacent properties, immediately adjacent properties, would it be necessary to make any expenditures to protect that source of hydrocarbons which has been penetrated and which you would not choose to complete but which is producing in adjacent properties?

A. This would depend on your drilling program and on site geology at the time that was encountered.

Q. But there is a cost entailed in protecting that property, though, is there not?

A. This may be a standard cost with the well program you already have made up, from which you may be expecting to encounter something there, so your drilling fluids would be set up to protect that from lost fluids in that formation, and when you cemented your production string you would cement across that particular formation.

Q. There is an expense even though you anticipate it, encountering this formation, however, is there not, in protecting -- taking measures to protect --

A. Yes, sir.

Q. -- the formation?

MR. BURLESON: No further questions.

MR. ZEIS: I have several questions.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q. With respect to the expense, Mr. Sentz, is it -- is it common to have extra casing in a well like that which you were talking about? Where -- where only -- let me rephrase that.

Where you drill through other zones, is it common to set extra casing when you want to complete in the lower zone?

A. The question is not really clear. By extra casing, we're talking here about something that's being asked to be set. As you can see from my workup, we have an additional intermediate string of 4000 feet to protect formations above, which we may want to investigate at a later time.

Q. Okay.

A. That, under this program would not be an extra casing string; whereas, if you -- if you were to encounter something later on which required you to set a string to protect the formation, that would be additional casing.

Q. Well, let me -- let me ask it this way. If you drilled through a gas zone to a lower zone and the zone that you drilled through had naturally occurring gas in it, would you set -- would you normally set an extra string of casing?

A. No.

Q. Okay, now with respect to water, specifically ground water, would you set casing to protect ground water?

A. The Commission requires that.

Q. All right, that's naturally occurring

ground water, is it not?

A That's correct.

Q All right. And you also protect -- you also testified that when you drill through a zone you protect it by cementing, is that correct?

A That's correct.

Q All right. Do you do that to protect the zone as it occurs naturally? In other words, as you find it, or as you expect to find it.

A We do it to protect that zone from contamination from zones around it so that you can complete later on that particular formation.

Q Okay. Now, what requires that protection?

A The proper completion of that formation requires it so that you're sure that your treatments go into that formation and not one above or below it.

Q Okay. Mr. -- Mr. Sentz, can the -- in the east half of Section 32 can the Morrow be adequately protected with cement and not an extra string of casing?

A Yes, I believe it can.

MR. ZEIS: No further questions.

RECROSS EXAMINATION

BY MR. RAMEY:

Q Mr. Sentz, in drilling one of these wells, in the opinion here, Exhibits Four, Five, Six, or Seven, if you encountered a potential pay zone, say at 45 feet deep, how would you protect that?

A It would depend on what you saw when drilling through it. You can protect that until you're ready to set production casing with your drilling fluids. Or if it's of a type of formation where it needs protection immediately, then you would have to drill deeper and set an additional string and cement across.

Q Okay, say you went ahead and chose to drill, say, to 8000 feet and left this zone where it had been protected by drilling fluids, upon your completion, what would you do? Upon setting pipe? Would you run enough cement to cover --

A Depending on the difference in depths of the formation, you would either bring cement back up far enough in your initial cementing job to protect it, or you would do a staging job where you protected that zone with an additional cement --

Q But you would --

A -- stage.

Q But you would go to the extra expense to protect that zone.

A. Yes, sir.

Q. Thank you.

MR. RAMEY: Any other questions? This witness may be excused and we'll take a fifteen minute recess.

(Thereupon a recess was taken.)

MR. ZEIS: We'll call Steve Jobe.

STEVEN JOBE

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Jobe, how are you employed?

A. I'm a drilling and production engineer for Southern Union Exploration Company in Dallas.

Q. All right, sir. What are your duties?

A. I back up all reservoir engineering, drilling engineering, and production engineering with technical calculations and virtually the same duties as Mr. Sentz.

Q. What is your education?

A. I graduated in May, 1977, with a Bachelor

of Science in petroleum engineering from Texas Tech University.

Q How were you employed after that time?

A With Getty Oil Company for two years as drilling and production engineer; worked for AMCO Energy for about six months, same duties; worked for one year as a reservoir engineer for Lone Star Gas Company.

MR. ZEIS: I would ask that Mr. Jobe be admitted an expert witness.

MR. RAMEY: He's qualified.

Q Mr. Jobe, I direct your attention to what has been marked SX Exhibit Eight. Was that -- was this exhibit prepared by you or at your direction?

A Yes, it was.

Q Would you describe this exhibit to the Commission?

A This exhibit is a synopsis of the volumetric calculations with regard to the Washington Ranch Morrow formation.

Q And what does -- what does it indicate?

A It indicates initial gas in place of roughly 59 Bcf.

Q All right, sir. Based on this and the other evidence you have seen, -- first of all, I -- let me direct your attention to SX -- what has been admitted into

evidence as Exhibit Number Three.

A. Yes, sir.

Q. Now based on the evidence you've seen, how would you describe the -- how would you describe the Washington Ranch Gas Pool?

A. I would describe it as a finite volume, single phase, expansion drive gas reservoir.

Q. All right, sir. Now, would you expand on that just a little bit?

A. Yes, sir. I did my calculations based on the Isopach which is marked Exhibit Three, prepared by our geologist, and I planimetered the area of each of the individual perforated sand thickness curves and approximated the volume, using Simpson's rule, which is an accepted method in the industry.

I used all the available data from completion cards to estimate the original bottom hole pressure; used Dwight's information for gas gravity; used log data for bottom hole temperatures; et cetera, including porosity, average porosity, and average initial water saturation.

Q. Okay, and do your calculations agree with the concept as depicted in Exhibit Three?

A. Almost identical.

Q. So in other words, Mr. Jobe, you're in-

dicating that -- that this gas pool is a closed pool, is that right?

A. That's right.

Q. Does not extend outside of the limits indicated on that --

A. No, I don't believe it does.

Q. -- that exhibit.

MR. ZEIS: No further questions.

MR. RAMEY: Any questions of the witness?

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Jobe, I assume that your Exhibit Number Eight is based on the exhibits which were presented by Mr. Davies, is this correct?

A. Exhibit Number Three, yes.

Q. And to the extent, of course, that those exhibits are incorrect, then there would be the same error of magnitude in your exhibit here, is this true?

A. That would be true, before the performance figures came in, yes.

MR. BURLESON: No further questions.

CROSS EXAMINATION

BY MR. RAMEY:

Q Mr. Jobe, what's the normal recovery factor for a gas pool of this nature?

A 90 percent is an accepted figure, yes, sir.

Q And this figures out to be about 94 percent --

A That's right.

Q -- doing a rough calculation, and do you feel that that's in line?

A I feel that possibly my gas in place figures are about 5 percent low.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: I would move the admission into evidence of Exhibit Number Eight.

MR. RAMEY: Exhibit Eight will be admitted.

MR. ZEIS: I have one further question.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q Mr. Jobe, does performance of this re-

servoir agree with your figures?

A. Yes, sir, it does.

MR. ZEIS: No other questions.

MR. RAMEY: Any other questions? He may be excused.

MR. ZEIS: I would call Mr. Roy Sharrock at this time.

ROY SHARROCK

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q. Mr. Sharrock, how are you employed?

A. Southern Union Exploration Company as Chief Geologist.

Q. And what are your duties as Chief Geologist?

A. I -- my chief duties as Chief Geologist are to find commercial quantities of hydrocarbons for the company.

Q. All right, sir. Have you qualified as an expert witness --

A. Yes, I have.

Q. -- before the Commission?

MR. ZEIS: I'd ask that Mr. Sharrock be qualified as an expert witness.

MR. RAMEY: He is qualified.

Q. Mr. Sharrock, I direct your attention to the -- what's been marked SX Exhibit Number Three. Now could you indicate for us the areas which are covered by oil and gas leases which are owned by Southern Union Exploration Company?

A. Yes, sir. Southern Union Exploration Company owns the southeast quarter of Section 19, all of Section 30, all of Section 32, Township 25 South, Range 24 East; the northeast quarter of Section 6, Township 26 South, Range 24 East, Eddy County, New Mexico.

Q. All right, sir. Are you -- who is the lessor of those leases?

A. Lessor is State of New Mexico.

Q. All right, sir. Now, why did you -- directing your attention to the lease covering Section 30, why did you buy that lease? Why did you -- why did you direct that that lease be bought?

A. After getting electric logs in the immediate vicinity it was found that this particular well

drilled by Cities Service, No. 1 Government O, did not penetrate the Morrow section; therefor, this was a candidate for potential re-entry.

Q All right, sir, and what about the other leases in the area?

A Section 30, well, the quarter section of 19 was bought at the same time as Section 30. Approximately two years later Section 32 was purchased at a State sale, and it was bought because it was -- appeared to be in a Morrow general sand trend.

Q All right, sir, now could you tell us if any formations deeper than the Morrow formation in these leases are possible targets?

A Yes, sir, the Devonian has potential. The Montoya may have potential. The Ellenburger may have potential.

Q To the best of your knowledge are there any zones deeper than 8000 feet?

A Yes, sir, there are. The Devonian, I believe, would come in a little bit below 8000 feet; the Montoya should come in about 86 or 8700, and the Ellenburger somewhere around 92 to 9400, somewhere in that range.

MR. ZEIS: One minute, please.

Q Mr. Sharrock, with reference to the

sand trend you referred to, what is the general -- the general feature that you're relying on in this area?

Let me rephrase that. What -- would there necessarily be any connection between a general sand trend in this area and the Washington Ranch Gas Pool shown in SX Exhibit Three?

A. Most of the time the general sand trend in this is on a monocline, going down dip towards the Deleware Basin. In this particular area it appears that the Washington Ranch Field is strictly a structural feature.

Q. All right, sir. Could it be described as -- could these areas be described as deltaic?

A. Yes, sir, the Morrow deposition from the base of the Morrow to the top of the Morrow is a delta-type deposition all the way through the complete interval.

Q. When you said you purchased this acreage on a trend, was that trend connected with the Washington Ranch Gas Pool?

A. No, sir, it sure wasn't.

MR. ZEIS: Pass the witness.

MR. RAMEY: Any questions?

MR. BURLESON: I have a few.

CROSS EXAMINATION

BY MR. BURLESON:

Q. Mr. Sharrock, you indicated that the Devonian, the Montoya, and the Ellenburger are formations of potential interest in this area. On what do you base this conclusion?

A. There was a well drilled in Section 28 of 25, 24, that penetrated to the Ellenburger formation. Also there's a well in Section 12 of 26, 24, that penetrated the Ellenburger formation. These particular wells seemed to have good reservoir characteristics, however they were non-productive at this particular point.

Q. Does there seem to be any structural feature on which these -- these wells were located, and how does it relate to the area that you have shown on -- have shown on Exhibit Number Three to the west of the Washington Ranch Gas Storage Project Area?

A. These particular wells were not mapped on top of the Devonian-Morrow -- I mean the Devonian or Montoya or Ellenburger. I can give you the relationship as noted here on the Morrow Isopach interval or the Morrow structure interval.

One is located on the northwest edge. The other one is located on the southeast edge.

Q Have you made a -- have you made or have you had some cause to be made a geologic study with respect to these three formations which you say are prospectively productive?

MR. ZEIS: Well, I would object to any study -- the witness answering any questions about any studies that -- that won't relate to the Washington Ranch Pool. There will be -- there's considerable competition in the oil and gas business for maps, and the prospects are bought and sold on the maps, and any testimony at this time would be -- would hurt the -- any possible chances for those maps having any value, if they do.

MR. BURLESON: Mr. Chairman, if I might respond.

The witness has testified that he feels that these -- this area which he described as of geological interest, and I'm trying to establish a basis for his judgment, his assertion about this geologic area.

MR. ZEIS: Counsel asked him for the basis of this interest there.

MR. BURLESON: I'm further pursuing that.

MR. RAMEY: I think the witness can answer the question and if it's confidential, I think he can say so.

A. What's the end result of all this?

MR. RAMEY: Answer the question, please.

Q. The question was, have you conducted or have you had conducted a geologic study with respect to this area to the west of the Washington Ranch Gas Storage Project Area, with respect to the Devonian, Montoya, and Ellenburger formations?

A. The answer as far as concerned the Devonian, Montoya, and Ellenburger formations, I base my information on these two wells directly to reservoir characteristics. There has not been any prospect developed by us at this time in those particular formations, on our leases.

Q. Do you know if there were any tests run of these two wells which you cited?

A. Yes, sir, there were drill stem tests run.

Q. What were the results of those drill stem tests?

A. They recovered mud, water, and they had very good shut-in bottom -- bottom hole shut-in pressure tests.

Q. Apparently no measurable gas was tested, though.

A. I would have to go back and check. I

don't believe so. Are you referring to -- which formation, all the formations?

Q Yes, sir, I was referring to all three formations.

A Okay.

MR. RAMEY: Any other questions of the witness?

MR. ZEIS: One moment. No further questions.

MR. RAMEY: The witness may be excused.

MR. ZEIS: We call Mr. Oran Haseltine at this time.

ORAN L. HASELTINE

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

DIRECT EXAMINATION

BY MR. ZEIS:

Q State your name, please.

A. Oran L. Haseltine.

Q. And how are you employed, Mr. Haseltine?

A. Southern Union Exploration Company.

Q. What is your position there?

A. President.

Q. What are your duties as president?

A. Generally to protect the assets of the company and attempt to make money for the stockholders.

Q. How long have you been president of Southern Union Exploration Company?

A. As I recall, about two and a half years.

Q. All right, sir. Have you -- have you been qualified before this Commission as an expert witness?

A. Yes, I have.

MR. ZEIS: We'd ask to have him be admitted as a qualified expert witness.

MR. RAMEY: We've heard of him and he is.

A. Thank you, Mr. Chairman.

Q. Mr. Haseltine, do you supervise the presentation of prospects to prospective partners in well drilling ventures in connection with the business?

A. Well, I'm -- I'm aware of what is presented and generally have supervisory authority over that activity, although I don're preside at the presentations. I've seen many of them and I'm well aware of -- of the presentations we make and the information and the types of deals that we make with industry partners.

Q Okay. Generally, how are they presented?

A Well, of course, the basic data is worked up, including all the geologic information in the area, including all the land information, the projected economics, the projected costs, and then the kind of deal that we are attempting to make with outside industry parties.

Q All right, sir. Have you examined Commission Order R-6175?

A Yes, I have.

Q All right, sir. And will you tell us briefly what -- what sort of deal could be constructed for a prospect involving the east half of Section 32, that's in question here?

A Insofar as a deal to get partners into our drilling ventures, is that your question?

Q Yes, sir.

A Well, there are a couple of areas of confusion that bother me about the impact of the order, and I think that confusion has probably been apparent already this morning, but it seems as if the sense of the order would run to preventing us from producing a Morrow completion in the east half of 32.

The other area, it appears that whether or not we were allowed to complete in the Morrow, or in some

other horizon below the Morrow, that we would have the impact of the additional casing string, the extra string, as it's designated in the order.

So those two areas would impact and adversely affect our ability to bring partners into a drilling venture that might include as part of the deal this east half of Section 32. Of course, there's the other part, too, I'm just not sure what it means. Once they've drawn a line that incorporates the east half of our Section 32 lease, and called it a storage area, they've drawn a different line and called it an active area, and so there are those three kinds of things which simply burden a lease to whatever they mean, and harm our ability to promote this well out.

Q With respect to that, have you -- has there been any agreement with Southern Union Exploration Company and El Paso concerning the sale and purchase of the east half of Section 32?

A. No.

Q All right, sir. Now with respect to SX's Exhibit Number Three, I draw your attention to that. Now you've heard testimony here today that SX owns leases governing Section 32, or the east half of Section 32. To the best of your knowledge, would any prospect involving the east half of Section 32 also involved the Washington Ranch

Storage Pool?

A. No. The evidence that we've seen, including the testimony in the original case put on by El Paso, shows that the Washington Ranch Pool ends substantially to the east of our lease line.

Q. Is there any evidence that you're aware of that production from the east half of Section 32 will adversely affect the storage pool?

A. No, certainly not, and if and when we're allowed to drill Section 32, we may not have any Morrow sand at all, so that being a possibility, suggests that harm would be done if Section 32 were totally excised from the project.

Second, if a Morrow sand presents itself in our well to be drilled in Section 32, there's been no evidence that I'm aware of, and none that I know about, that would suggest that that sand is is pressure continuity with the Morrow Ranch Pool. In fact, all the evidence that we've seen so far would suggest just exactly the opposite. It would not be in pressure continuance with the Washington Ranch Pool.

MR. ZEIS: No further questions.

MR. RAMEY: Any questions of Mr. Haseltine?

MR. BURLESON: I have one or two.

CROSS EXAMINATION

BY MR. BURLESON:

Q Mr. Haseltine, are you familiar with a gas storage project which Southern Union had, known as the Las Milpas Storage Pool?

A Yes.

MR. ZEIS: I'm going to object t o that question. There's no relevance to that project and this project.

There's no connection between the two that I know of.

MR. BURLESON: I think I can show the connection. I think there is a similarity in that in that area, that is with respect to that project on the application of Southern Union lands which were without question, which their own testimony showed was outside the bounds of the reservoir, were included within the bounds of the unit so designated, and I wanted to explore that subject with Mr. Haseltine.

MR. RAMEY: I'm going to overrule the objection and ask that you continue.

Q Mr. Haseltine, you were a witness in that proceeding, were you not?

A. I probably was. I don't remember.

Q. Do you remember any of the geologic data that might have been presented in that proceeding?

A. In general terms, yes.

Q. Do you recall whether some of the lands which Southern Union requested to be included within the unit lay on the opposite side of a fault with some several hundred feet of throw from the only existing wells in the area and within the unit?

A. You're talking about to the east?

Q. Yes.

A. As I recall, we did have some of that in the unit. We -- we controlled all those leases to start with. There was never a question about who had the storage rights. We had the storage rights in all the lands included in that unit from the start before he came to this Commission.

Second, our geology in that area was not based on a long term history of producing gas wells. Since that case went before this Commission, and in fact since storage operations began up there, we've done additional drilling work in that area and we found that our geology was not at all perfect and in fact had some errors in it, based on best knowledge that we had at the time we came forth.

So I think to compare that faulted,

highly faulted aquifer, which had no history of production with a closed expansion-type dry gas reservoir, like the Morrow has, is comparing apples and oranges.

Yes, we did have some leases that based on our best geology were outside the pressure continuum. Again, we had those ourselves.

Q But my question went to whether you asked that the unit embrace those lands which were outside of the area and would be in pressure continuum with those wells which then existed in the area.

A. We asked that the unit include all the leases that Southern Union had under control, and the answer is yes.

Q Including some that were on the other side of the fault?

A. Well, including some on the other side of where we projected that fault, which, as I mentioned, we found was not exactly accurate after we did this drilling in the area.

I'm not sure to this day that that fault is competent.

Q In your experience it isn't unusual, is it, where you lack control to perhaps make some geologic error with respect to the location of a fault or of a contour line?

A. Well, I think everyone is well aware that you will -- there is some margin of error. That margin is -- is one thing in one project or in one drilling venture, and it's something else in some other venture.

You're right that any time a geologist draws a contour there's got to be knowledge that that contour may be one side or the other of where he actually drew it. The question comes down to how accurate is his work, really, and on how accurate the evidence is upon which he based his work.

Q. And that particular -- that problem is particularly acute, is it not, where there are not a large number of wells drilled in the area which is being mapped?

A. Not necessarily. If you've got a glass bottle down there and it's 90 percent depleted, you've got an extremely good measure of how big that bottle is.

And that doesn't hinge on additional drilling in the area at all.

Q. Well, where the bottle is situated would -- would have to be determined, would it not, through efforts -- through drilling activities and must be determined from drilling activities which had theretofore occurred.

A. Well, I think that if there's doubt as to where that bubble really lies, there is at least one un-

drilled spacing unit between the last Morrow Ranch -- Washington Ranch Morrow Pool and our lease. There's still one spacing unit in there if anyone has any doubt about where that zero contour lies, and El Paso has control of that last spacing unit.

Q And are you speaking of the west half of Section 33?

A Yes.

Q 25 South, 24 East?

A Yes.

MR. BURLESON: No further questions.

MR. RAMEY: Any other questions?

MR. ZEIS: I'm sorry, sir, I have one more question.

MR. RAMEY: All right.

REDIRECT EXAMINATION

BY MR. ZEIS:

Q Mr. Haseltine, with respect to the Southern Union Storage Project, how did Southern Union acquire the leases that they acquired in that project?

A You're talking about Las Milpas?

Q Yes.

A We went out and bought them.

Q Okay, so you didn't get them by Commission order or by a condemnation.

A That's my recollection, yes, sir. There was some problem on one of them and I've forgotten exactly what it was, but we ultimately bought all those leases.

As I recall, there was -- for the sake of an overabundance of caution we obtained storage rights from mineral rights owners as well as surface rights owners, and so there was -- there was a little time delay somehow in there in getting everybody signed up.

But basically, yes, we went out and bought those, the rights.

MR. ZEIS: No further questions.

QUESTIONS BY MR. STAMETS

Q Mr. Haseltine, does Southern Union Exploration have any immediate plans to drill in the east half of Section 32?

A No, sir, we don't have that as an approved drilling project at this time. Our leases still have some term to run.

Q How long a term?

A Seems like the first one goes out in about '83. That's my recollection.

Q. So it would be a couple years before you got around to it.

A. Yes.

Q. Is there any way that you, if you drilled this well, that you could during the drilling process test the equivalent zone in Section 32, the zone which is equivalent to the storage area, and make a determination if there is communication between the east half of Section 32 and the storage project, or the old Washington Ranch Morrow Pool?

A. Are you hypothesizing that we're drilling a well to the Morrow only or to some target below the Morrow?

Q. To the Morrow only.

A. Well, in the first instance, if you're drilling only to the Morrow, and depending on where we end up on this proceeding, we've either got rights to develop Morrow sands underlying our land or we don't have. We assume that we do have, and I like that assumption, then the first look would be logs. Of course you're going to be watching samples and you're going to have mud logs on location and all this kind of thing on the way down.

But the first indication would be logs and they might or might not correlate, and even if they did appear to correlate, they wouldn't necessarily tell you whether there's a permeability barrier between Section 32 and the

east half of 33.

I guess the real answer is ultimately when you attempt a completion, the best evidence would be -- of communication would be a semi-deleted Morrow reservoir.

Q. What about drill stem tests during drilling operations?

A. Well, drill stem tests would only be helpful in demonstrating that you were in the Morrow Ranch Pool, if the pressure derived from those drill stem tests substantially supported the same thing.

Q. Is that evidence which you could use to help make such determination?

A. Well, it's not the best evidence in the world, because drill stem tests have a high rate of failure. They're risky in the first place. They're bad news, generally, in the Morrow, and you've got to be very careful about running a drill stem test in the Morrow to start with, and you could get evidence that would -- that would not tell you, and that's most likely what you would get. That the evidence you'd get would not be conclusive.

Q. So in your opinion the only way you'd know for sure whether you were or were not in a zone which was connected to the Washington Ranch Morrow Pool would be through the utilization of logs and actual completion attempt

in that zone.

A. Well, I think it narrows down even more than that, Mr. Stamets. All that evidence is -- is somewhat indicative but again you could have, and most likely would have, in my opinion, some permeability barriers between the two locations. And so even though your log might look very much like a log over in the middle of the other field, a pressure interference type test would be about the only real, solid information that would prove that you were in communication.

Q. Wouldn't the pressure information be dependent upon what the current pressure in the Washington Ranch Morrow Pool was?

A. No, not in my opinion, because I don't think they'd be connected.

Q. Okay, let's go to that point. Let's suppose that El Paso had only brought the pressure back up to 50 percent of the original pressure in the pool by the time that this theoretical well is drilled, and you discovered pressures in your well which were equivalent to the original bottom hole pressure in the Washington Ranch. What would this tell you?

A. It would tell me that there was some sort of a permeability barrier, a hindrance of some sort, so that the pressure continuum was not complete across those

lease lines.

Q. Conversely, suppose you found pressures equivalent to current pressures in the Washington Ranch Morrow Pool or less than El Paso's current injection pressure, what would that tell you?

A. If we found substantially depleted pressure during that time, then again, depending on where we finally end up on who pays who for this reservoir, gas has moved out from under the lease that we have in conjunction with the State of New Mexico into some other person's well. That's what that would prove.

Q. The possibility is there to demonstrate that it is or is not connected?

A. The possibility is there to demonstrate that it is connected. Well, I guess I'd have to agree with what you said, yes.

Q. Okay, and it's technically feasible?

A. Oh, yes, to develop those pressures. Once you have the well completed, yes, those pressures can be obtained through a new well in the east half of Section 32.

Q. And going one step beyond and speaking only technically, not what's legally required, what should be required, is it possible to provide reasonable protection to the storage zone in drilling and production operations

which might occur on the east half of Section 32?

A. Well, not that requires me to make an assumption and speculate that there is a storage zone under 32.

Q. Right, and I'm asking you to make that assumption.

A. All right, any zone can be protected prudently that you drill through. You drill through them all the time. You can get back up in part of Lea County, as you know, you drill through depleted zones; you drill through abnormally pressured zones, and you do it -- prudent operators do it. The Commission sets out here and makes sure that you do it prudently through your casing and mud program, and that can be done.

Q. In your opinion could that be done even carrying a well down to a depth, say, 9400 feet to test the Ellenburger, and then completing that well with a single string of production pipe?

A. Yes, I believe it could be, Mr. Stamets. I don't think that -- and even if you make this assumption that you wanted me to make, that -- that the storage horizon extends over into the east half of 32, and that it's substantially depleted, so what is about where you get to. You carry a good mud program all the way through and you're simply not

going to lose much mud, I don't think, into that tight Morrow rock. Your mud cake's going to protect you; that's just standard operating practice. I certainly wouldn't see any need at that point of having set an extra string of casing.

Q If you did lose a lot of mud in that zone, wouldn't that sort of serve to protect the storage zone in itself?

A Well, mud is designed to do just that. As that filtrate moves into the interstices of the rock it's designed to build up a filter cake on the wall. That's why we pay fifty bucks a barrel for those fancy additives to go into the mud, so that if you do lose a little, why, you don't lose much. It seals itself as you go.

Q Don't normal muds and fluids tend to cause the Morrow to seal itself off and be nonproductive?

A It's been our experience that anything will cause that dadgummed Morrow to seal itself off.

MR. STAMETS: That's all the questions I have.

MR. RAMEY: Any other questions of Mr. Haseltine?

MR. ZEIS: One moment. We have no further questions.

MR. RAMEY: He may be excused.

MR. ZEIS: That concludes our witnesses.

MR. RAMEY: I'd like to have Mr. Sharrock come back and ask him some questions.

ROY SHARROCK

being recalled as a witness, testified as follows, to-wit:

CROSS EXAMINATION

BY MR. RAMEY:

Q You mentioned that you had some good pressures in the Devonian and Ellenburger out of the two wells in the area?

A Yes, sir.

Q Do you recall what those were?

A If you can bear with me a few minutes I can pick up the PI cards.

Q All right.

MR. RAMEY: Tell you what let's do. Let's break for lunch and then you can give me those answers after lunch.

A Thank you.

MR. RAMEY: We'll reconvene about, oh, 1:20 or 1:30.

(Thereupon the noon recess

was taken. Thereafter Mr. Sharrock's cross examination by Mr. RAmey continued, as follows:)

MR. RAMEY: The hearing will come to order. Mr. Sharrock, would you take the stand, please?

Q I believe you stated that you had some pretty good pressures from the two wells from the Devonian and Ellenburger from drill stem tests, and I just wondered if you could give me those pressures?

A Okay, do you want me to identify the well, too?

Q Yes.

A The first well would be The Superior Oil Company No. 1 Government 134, located 1980 from the north and 660 from the east, Section 12, Township 26 South, Range 24 East. This was set up as 11,000 foot Pennsylvanian test.

The tops of the Devonian were 8178; top of the MOntoya, 9140; top of the Ellenburger, 9635.

Drill stem tests were three in the Ellenburger. They were, number one, 9637 to 9805; open 1/2 hour; no flow; recovered 105 feet of drilling mud; no show; initial shut-in pressure 120 pounds; 30 minutes; final flow

120; final shut-in pressure 140 pounds in 30 minutes.

The second DST from 9804 to 9957, tool was open one hour; recovered 170 feet of drilling mud; initial shut-in pressure 120 pounds in 30 minutes; final flow pressure 90 to 140; final shut-in pressure 3845 pounds in 30 minutes.

The final drill stem test was from 9955 to 10,167, which was -- not that wasn't TD -- tool was open one hour and 15 minutes; recovered 1520 feet of fluid; 920 feet of mud-cut water; 600 feet of sulphur water; initial shut-in pressure 4195 in 30 minutes; flow pressure 170 to 760 pounds; final shut-in pressure 3880 pounds in 30 minutes.

On the second well that I gave you, this was the Cities Service Oil Company No. 1 Government M. It was located 660 feet from the south line and from the east line, Section 28, Township 25 South, Range 34 East. This was a 9700 foot Ellenburger test.

I was in error when I mentioned that this well tested the Ellenburger. It went to the Devonian. The top of the Devonian was 7737 feet. There were no DST's in the Devonian.

I have the south offset to this well that did test the Devonian and the Fusselman. I would like to give that to you. Would that be satisfactory?

MR. RAMEY: Yes.

A. This well is the Black River Corporation No. 2 Cities Federal. It's located 2310 feet from the south line and from the east line, Section 34, Township 25 South, Range 24 East. It's a 7800 foot rotary Devonian test.

The top of the Devonian was 7640. The top of the Fusselman was 7900.

The first drill stem test of the Devonian was from 7678 to 7758. The tool was open one hour 10 minutes; recovered 420 feet of mud; flow pressure 116 pounds to 136 pounds; initial shut-in pressure 3241 pounds in one hour; final shut-in pressure 3241 pounds in one and a half hours.

The next drill stem test was of the Fusselman. It occurred at 7865 to 7975 with the tool open 70 minutes; recovered 1365 feet of mud; 6400 feet of sulphur water; flow pressure was 2965 to 3334 pounds; initial shut-in pressure was 3334 pounds in one hour; final shut-in pressure was 3334 pounds in ninety minutes.

That's the information concerning the lower formations reservoir characteristics.

Q. Okay, thank you.

MR. ZEIS: I have one question.

MR. RAMEY: All right, go ahead.

MR. ZEIS: You referred to Range 34 East in one of those wells. These are all in Range 24 East, are

they not?

A. Yes, sir.

MR. RAMEY: I got 24 out of that.

MR. ZEIS: Okay. That's all.

MR. RAMEY: Any other questions? You may be excused.

A. Thank you.

MR. RAMEY: Do you have anything further, Mr. Zeis?

MR. ZEIS: That concludes our witnesses.

MR. RAMEY: Mr. Burleson?

MR. BURLESON: Mr. Chairman, I have a short opening statement I wish to make.

On June the 23rd, 1980, Mr. Ernest L. Padilla wrote a letter to Mr. Mark K. Adams informing him that in his opinion that Order R-6175 did not impair Southern Union Exploration ability to drill and produce its state leases located in Section 32, Township 25 South, Range 34 East, it should be Range 24 East.

I concur entirely in this and it's El Paso's position that -- that this position is valid.

And I would say further with respect to that, that we do not conceive that there's any inhibition that is created, or any prohibition created, by the order to Southern

Union's drilling to, completing in, or producing gas from the Morrow storage formation, if they otherwise have a contract and property right entitling them to do so.

And that of course would go whether the well is drilled initially to the Morrow formation or whether it's drilled deeper than the Morrow formation and plugged back up the hole, although, of course, we believe that the casing requirement is appropriate, which if they're drilling to a formation deeper than the Morrow formation, that they should be required to case the hole for the purpose of protecting the Morrow formation.

We further feel that with respect to order in paragraph number nine, that should an operator drill a well to a formation deeper than the Morrow storage zone, should not be taken to have application to a circumstance where Southern Union may be drilling to test the Morrow formation and may drill some negligible feet into a lower formation as in the course of setting the casing to complete in the Morrow formation. We do not feel that this provision should be applicable to that situation, and of course, we would have no objection to any appropriate clarifying language to express this intent.

We would be, of course, perfectly willing to stipulate to this on behalf of El Paso Natural Gas Company.

In addition to that, we would propose to incorporate the record from the previous hearing into this record and to offer three witnesses that appeared in that hearing for some additional supplementary testimony, although it should be fairly brief.

And I therefor move that the record of the prior proceeding be incorporated into this proceeding and we will bring the witnesses on and identify them and offer some further supplemental testimony and then tender them for examination.

MR. RAMEY: Without objection, why, we will incorporate the record in Case 6703.

Did you say in your statement, Mr. Burleson, that you thought Southern Union had a right to drill to and produce from the storage zone?

MR. BURLESON: Yes, sir, I think so, if they otherwise have the property and have a contract right to do so, I don't think the Commission would have the power to prohibit them doing so in the first place, and I don't think that the order properly construed does that, accomplishes that, certainly we didn't seek that. We were not seeking to set a precedent for the acquisition of their leases through condemnation proceedings. We merely were seeking to inform the Commission as to what we proposed to do as we're required to

do under the New Mexico statutes.

MR. NUTTER: You said you would be willing to stipulate that the -- that you did not think that the order required the setting of the extra string of casing if Southern Union were to drill a little below the base of the Morrow in order to complete in the Morrow.

Now how far down below the base of the Morrow would you be willing to agree that they could drill without having to set that additional string of casing?

What's immediately below the Morrow, is it the Mississippian?

As long as they didn't drill below the Mississippian, would that be an agreeable stipulation?

MR. BURLESON: 100 or 150 feet, something on that order, we would not anticipate --

MR. NUTTER: 150 feet below the base of the Morrow?

MR. BURLESON: -- any problem, yes.

MR. NUTTER: Okay, I just wanted a clarification on how far down they could go.

MR. STAMETS: Mr. Ramey, as long as we're getting some clarification, I'd like a little on that, as well.

You've indicated El Paso has no objection

if Southern Union produces from this zone.

MR. BURLESON: Yes, sir.

MR. STAMETS: Why do you care whether they case it before they drill deeper or not? After all, it's on their property and you don't care whether they produce it, I don't see -- I'm wondering why you would care if they screwed up.

MR. BURLESON: That's a good question, but I think the answer is this: That we do not feel that a commercial well could be completed at that location, which would be in communication with the Washington Ranch Gas Storage Area. We're willing to -- to risk this, this possibility, and deal with that problem if we should be wrong. However, it's conceivable that insignificant, small stringers of sand could extend to this location such that gas might move from the Morrow storage horizon in very small quantities and seek a resting place in other strata, and consequently would, in addition to giving some difficulty with integrity of the storage unit, without anybody even being aware of the problem, would also constitute possibly some safety hazard to others who may be drilling in the area, and would constitute waste.

MR. STAMETS: I can certainly understand that. I'm still not certain why you want a particular string of casing set, and I presume you'll put on some evidence to

show that this has to be done because of unusual circumstances in the lower horizon which could cause the loss of the hole.

MR. BURLESON: I would defer the answer to that question to our experts. I might hazard an answer to that, but I'd better not.

MR. STAMETS: Thank you.

MR. RAMEY: You may proceed.

MR. BURLESON: Our first witness will be Mr. Richard Isaacks.

RICHARD B. ISAACKS

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

DIRECT EXAMINATION

BY MR. BURLESON:

Q Would you please state your name and where you reside?

A Richard Isaacks. I reside in El Paso, Texas.

Q By whom are you employed and in what capacity?

A I'm employed by El Paso Exploration Company as a staff landman.

Q Have you previously testified before the Oil Conservation Division and had your credentials as a petroleum landman made a matter of record?

A Yes, I have.

Q Are you the same Richard B. Isaacks who testified on October 17, 1979, in Case Number 6703?

A Yes, I am.

MR. BURLESON: I move that the credentials as an expert witness be accepted.

MR. RAMEY: The witness is considered qualified.

Q Would you again review the general categories of land included in the Washington Gas Storage Project Area?

A Okay. Of the 12,158 total acres in the storage area, approximately 1,082 acres, or 8.9 percent, are State owned; 8592 acres, or 70 percent, is Federal owned; 2483 acres, or approximately 20 percent is fee acreage.

Q Is the plat which you previously submitted in Case 6703 before the Division still accurate?

A Yes.

Q I believe that was Exhibit Number One in the prior proceeding, is this correct?

A As I recall it was.

Q. Since presenting your testimony on October 17, '79, has there been any change -- have there been changes in the status of your negotiations for the acquisition of interests?

A. Yes. At the time of the last hearing I was still negotiating with Inesco to buy 840 acres of Federal land. I was negotiating with Sterling Talley to buy 160 acres of Federal land. And since that time I've concluded those negotiations and we've purchased those leases.

We've also completed the acquisition of the remaining storage leases from the surface and the fee owners, so that all the acres that we do not own now is 5.74 acres surface tract, which -- and also we do not own a 320-acre lease which is the subject of this hearing in Section 32, owned by Southern Union.

Q. Being the east half of Section 32?

A. East half of Section 32.

Q. What's the status, the present status of the State of New Mexico lands?

A. 605 acres of state lands are leased; 476 acres of state lands are unleased.

Of the 605 acres that are leased, El Paso owns or controls 285 acres. Southern Union owns or controls 320 acres.

El Paso has acquired all of the state leases in the storage unit with the exception of the east half of Section 32. Since acquiring these leases and since the date of the last hearing, approximately 476 of those acres of state leases have expired.

Q. Which were owned by El Paso?

A. Which were owned by El Paso, but they have expired since the date of the last hearing.

Q. Now do you have any applications pending before the State for a storage easement?

A. Yes, on October 11th, 1979, El Paso made an application to the Commissioner of Public Lands for a gas storage easement that would include all of the 10,000 acres within the storage boundaries.

That storage easement has not been acted upon yet.

Q. So the sum of all this is that you --El Paso would control all of the state lands with the exception of the east half of Section 32.

A. That's correct.

Q. Either through an easement or some other contractual means.

A. That's correct.

MR. NUTTER: Was that October of '79 or

October of '80 when --

A. October of 1979, sir.

MR. NUTTER: Okay.

Q. Has there been any change since the date of the previous -- prior hearing in the number of state acres that are producing within the bounds of the unit?

A. No, there's still only one lease that's located on state lands, the Black River Alpha Twenty-One Miller No. 1 Well, located in the southwest quarter of Section 1. El Paso has the option to purchase this well from Alpha Twenty-One Corporation, so there's been no change.

Q. Would you review the current status of the Federal lands within the bounds of the unit?

A. Okay. All of the Federal lands in the unit have been acquired by El Paso, except the unleased federal lands, which are on the KGS.

El Paso has made an application to the Department of the Interior through the United States Geological Survey for a gas storage agreement. This gas storage agreement has been approved by the conservation manager of the -- I think it's the south central region of the USGS in Albuquerque, and has been forwarded to Reston, Virginia, where it now resides, and it's our understanding that the solicitor of the Department of Energy is reviewing this application at this

time.

Q. Did the recommendation go forward from the office in Albuquerque?

A. I understand the Albuquerque office did recommend -- did approve our application and recommend its approval.

Q. What's the current status of the fee lands within the unit?

A. As I said awhile ago, we have acquired or we've entered into gas storage lease agreements with substantially all of the fee owners, with the exception of the owner of a 5.47 acre tract, and we have an offer outstanding on that. That non-acquisition of that tract will not interfere with our storage operations.

Q. What is the overall control by El Paso of acreage within the storage unit?

A. Okay. After receiving final approval from the Commissioner of Public Lands to our storage easement; after receiving final approval of our gas storage agreement from the Department of the Interior, El Paso will control 70 percent of the State lands, 100 percent of the Federal lands, and about 99.77 percent of the fee lands. It's total overall control of 97 percent, over 97 percent of the total acreage within the storage boundaries. Now these percentages include

some Federal land that's presently unleased but which will be subject to the storage agreements.

Q At the hearing on October the 17th, the Examiner, Mr. Nutter, was questioning you about the ownership of Fedral lands, and you were describing the status of ownership of Federal lands, and shortly thereafter, immediately thereafter, in fact, Mr. Nutter asked you these questions -- this question:

> QUESTION: So again, these are all edge leases that are not on the structure itself and will be part of that bumper zone that you previously mentioned?

And you replied:

> ANSWER: Yes, that's correct, but we anticipate acquiring those leases within the next thirty days.

Now, we gathered, and I think it's fairly explicit from Southern Union's petition for reconsideration, that they interpreted this to relate not solely to Federal lands but to all lands within the unit, and consequently indicated that there was a misrepresentation made.

Now would you indicate what you were trying to convey?

A Yes. Under cross examination Mr. Nutter

was questioning me. His first questions pertained to the State of New Mexico leases and he asked me several questions about those, which I answered.

Then he went on and he asked questions about the Federal leases. I answered the questions about the Federal leases and he went on and began asking questions about the fee leases, which I answered.

The answer that I gave that Southern Union has questioned was in regard to Mr. Nutter's question pertaining to Federal leases only; not to the fee leases. He had already questioned me about -- about State leases. He'd already questioned me about State leases and he'd moved on to Federal leases.

His questions were very orderly. He went State leases, Federal leases, fee leases, and my questions were directed to his -- I mean my answers were directed to those questions.

Q And when you said you anticipated that we would acquire all the additional leases, you were speaking of Federal leases?

A That's correct, and we did acquire those. The leases that I was talking about were those Inexco leases that we acquired. It took us 63 days to acquire them rather than 30 days.

MR. BURLESON: I invite the Commission's attention to the transcript of proceeding or discussion of this dialogue, and it will be found at or around on pages 11, line 7, through page 12, line 6, and maybe some lines subsequent to that, of the transcript.

Q Except as you have testified here today, your previous testimony before the Division is correct, is --

A Yes.

Q -- this right?

A That's right.

MR. BURLESON: At this time I would like to move reception in this proceeding of the exhibits heretofore sponsored by Mr. Isaacks in the previous proceeding.

MR. RAMEY: I think those are part of the record which we incorporated.

MR. BURLESON: That's all I have of this witness and I tender him for examination by others.

MR. RAMEY: Any questions of Mr. Isaacks?

MR. ZEIS: Yes, sir, I have a couple.

CROSS EXAMINATION

BY MR. ZEIS:

Q Referring to Exhibit Number One, which was incorporated by reference, what -- what sort of lease covers

Section 33?

A. Section 33, a Federal lease.

Q. Does that cover the whole section?

A. Yes.

Q. Okay. Did you acquire that lease by purchase?

A. By either purchase or an option to purchase.

Q. Okay. And when did you acquire it?

A. I think that is a lease that's owned by Cities Service and Black River Corporation and Arapahoe Gas, Limited, I believe. Or maybe several leases. I don't have it broken down here.

Q. All right. Now you've acquired an option to purchase, is that correct?

A. Yes, that's correct.

Q. Your testimony is that you've acquired an option to purchase. What did you base the purchase price on in your option to purchase?

A. Well, it was strictly through negotiations.

Q. Okay, did you use a reserve estimate?

A. Well, we had a reserve estimate but that didn't enter into our discussions on price.

Q Did your reserve estimate indicate that there were reserves underlying Section 33?

A I'm not an expert on that. You'll have to ask the reservoir engineer.

Q Do you have available reserve figures to you for calculating and negotiation in --

A No, I'm a landman. I don't have those. Or I -- I had a total value that we estimated that the total gas in the whole field was worth, but I don't know where it came from. I don't know.

Q You didn't break that value down for negotiations in purchasing the leases in Section 33?

A No. We bought -- we just bought the complete producing field, the equipment, the wells, everything.

Q Well, when you said the complete producing field, did you -- did you buy -- are you talking just about Section 33 or are you talking about the whole area?

A I'm talking about the whole area. We bought everything except Section 32, the east half of Section 32.

Q Okay, and I'm wondering what you based the consideration on for the Section 33.

A Okay, Section 33 I think is -- is there a producing well on Section 33?

MR. BURLESON: Excuse me, Mr. Zeis, may I make a copy of a map available to Mr. Isaacks so he can --

MR. ZEIS: Certainly.

MR. BURLESON: -- refer to it?

MR. ZEIS: Certainly.

A. Section 33, this is from memory, Section 33 is owned by Black River, Cities Service, and Arapahoe. They own all of the producing wells in the reservoir. When we bought their -- or got the option to buy their producing wells, we got all of their acreage whether it was producing or nonproducing.

Q. Okay. It was a package deal, but did you -- you calculated the package based on -- on something.

A. Yes.

Q. What was that? What did you base it on?

A. Well, basically three things. The amount of gas that was left in the reservoir; the use of the reservoir for storage purposes; and the use of the wells for injection/withdrawal purposes, for observation purposes. There were quite a few factors.

Q. Okay. With respect to the amount of gas, how much gas did the Section 33 contribute to your figure, total figure?

A. I don't have any idea. We never -- when

I was discussing this purchase with Cities Service, Black River, and Arapahoe, we never discussed the amount of gas that was under those lands.

Q And to your knowledge does anybody at El Paso have those figures?

A Well, we've got reservoir studies to show what the remaining reserves are, I would think.

Q Have you seen those reservoir studies?

A No. I've seen the -- a recap of total dollars.

Q Okay, in that recap of total dollars was there a volume figure?

A Not that I can recall.

Q Okay. Is there -- do you know specifically whether there were any reserves calculated for the west half of Section 33?

A No, I do not know.

Q Does El Paso have a witness here today who will testify as to --

MR. BURLESON: Mr. Zeis, we will be producing a reservoir engineering witness and you might wish to refer most of your questions with respect to reserves to

Q All right.

A. But we didn't negotiate on the value of the gas.

Q. Okay, now just one more time so I understand. When you negotiated with Cities Service, you testified it was a package deal. I'm just interested in what -- what part that Section 33 played in the package.

A. I don't know. It didn't play any more or any less than any of the rest of them. We had to acquire all of their acreage and that was just part of the acreage that they owned, and we were not going to acquire their acreage in Section 34 and not acquire it in 33. There wouldn't have been any reason not to. They didn't want it.

Q. Now with respect to your testimony as to the application before the State of New Mexico filed on October 11, 1979, for storage rights, did that -- in that application did you apply for storage rights underneath the east half of Section 32?

A. Yes.

Q. In the Morrow formation?

A. Yes.

Q. In your negotiations with Cities Service for the leases covering Section 33, was it your testimony that they did not want the west half of Section 33?

A. No, we were negotiating for all of their

acreage that was within the boundaries of the storage unit, plus the wells that they owned.

Q To your knowledge did they -- what -- what value, if any -- well, strike that.

MR. ZEIS: I have no further questions.

MR. RAMEY: Any other questions?

MR. BURLESON: I have one question.

MR. RAMEY: Mr. Burleson.

REDIRECT EXAMINATION

BY MR. BURLESON:

Q You mentioned in response to Mr. -- one of Mr. Zeis' questions that we had made an application for a storage lease covering the east half of Section 32. Of course we realize and recognize that any rights granted from the State would be subject to the existing oil and gas lease which is currently owned by Southern Union.

A That's correct, and the storage easement so states.

MR. BURLESON: No further questions.

MR. RAMEY: Any further questions? You may be excused.

MR. BURLESON: El Paso now calls Mr. John Disch.

JOHN A. DISCH

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

DIRECT EXAMINATION

BY MR. BURLESON:

Q Would you please state your name and where you reside?

A I'm John A. Disch and I reside in El Paso, Texas.

Q By whom are you employed and in what capacity?

A Employed by El Paso Exploration Company, a wholly owned subsidiary of El Paso Natural Gas Company, and I'm Supervisory Drilling Engineer.

Q Have you previously testified before the Oil Conservation Division at previous hearings as a petroleum engineer?

A Yes, I have.

Q Were your qualifications as a witness in the field of petroleum engineering accepted at that time?

A They were.

MR. BURLESON: Mr. Chairman, we move that

the witness' qualifications as an expert petroleum engineer be accepted.

MR. RAMEY: They are accepted.

Q. Mr. Disch, with any exception that you wish to allude to, if you were asked the same questions that were previously asked you in Case Number 6703, would the answers be the same?

A. Yes, except for one item. We upgraded our production casing, which is 7-inch, from a K-55 to M-80 grade.

After obtaining enough storage history in this unit we may seek approval to over-pressure the reservoir and this change in casing grade will accommodate the pressure increase.

Q. Is there anything else that you would like to add to your testimony which you previously gave?

A. None.

Q. I'm aware that Mr. Stamets has a question of you and I'll defer to Mr. Stamets.

MR. BURLESON: And I tender the witness for examination.

MR. RAMEY: Any questions? Do you want to ask the question indicated, Mr. Stamets?

MR. STAMETS: If I can remember it.

QUESTIONS BY MR. STAMETS

Q. I believe I asked Mr. Burleson, and I hope you can answer it, why El Paso is concerned about this zone, concerned about protecting it during the course of any drilling that Southern Union Exploration might undertake.

A. You mean to a deeper horizon?

Q. Or to any horizon. Why are you concerned about them possibly screwing up when apparently it's not connected with your gas storage project?

A. Well, if by some quirk of nature there is a stringer or a finger of the Morrow reservoir that extends to the east half of 32, and Southern Exploration happened to drill through that, we would like to have it protected so that we would not be drained or damaged by drainage.

Q. Do you think that this could be done in the manner which Southern Union Exploration has proposed today with a single string of casing cemented for 1500 feet above the injection interval?

A. No, sir.

Q. Why not?

A. If, for example, they or any other operator within the unit would be drilling for a zone deeper than the Morrow and it was subnormal pressure, and with their mud

system lost circulation with the Morrow zone open to the hole, the loss of the mud into that formation would allow the pressured Morrow gas to come into the wellbore. It could go to that lost circulation zone and if the hydrostatic head fell low enough, the Morrow gas could blowout to the surface.

Q. You're speaking of a condition, I presume, where the Morrow zone was pressured up by the time the wells would be drilled on Southern Union's acreage?

A. Yes, sir.

Q. Would it be possible, practical, under those conditions for Southern Union Exploration to make a determination during the course of drilling a well under those conditions at the time that they struck the injection interval to see whether or not it was connected and whether they did have a pressure problem in the Morrow zone?

A. Yes, sir, it would be quite possible.

Q. And if that were required and the results were negative, would you then have any further concern about them drilling to any other horizon without setting a second string of casing?

A. I think the extra string of casing would be required.

Q. Why?

A. Because if some other operator would at-

tempt to do the same thing in the center of the field, then we could be damaged.

Q I can certainly understand that. We're only talking about Section 32, Mr. Disch.

A All right.

Q So would you still be concerned in Section 32?

A Yes, sir, if it's included in the unit.

Q Why would you be concerned?

A Like I said awhile ago, Mother Nature is kind of funny and it's very possible for them to drill into a stringer and it could hurt us.

Q If they drilled into the zone and tested and there's no demonstration that it is connected, then what possible damage could result by them going ahead without setting the second casing string?

A I would assume that if they could conclusively proof that there is no connection and everything, that possibly an extra string of casing may not be required.

Q Do you think that this could perhaps be an alternative that this could be provided --

A Yes, sir.

Q -- that in Section 32 if they ever drilled in there, they would either set the extra string of

casing or would provide the Commission with --

A. Proof.

Q. -- proof in the form of a drill stem test that it was not connected?

A. I think that could be used as an alternative.

MR. STAMETS: Thank you.

MR. BURLESON: I have one clarifying question, if I might interject it now.

REDIRECT EXAMINATION

BY MR. BURLESON:

Q. Mr. Disch, is it conceivable that at the time the well is being drilled in Section 32 that the Washington Ranch Gas Storage Project Area may not be pressured up?

A. That's also true.

Q. Then if the test is made at this -- at this point in time and later the -- the project area is pressured up, would that then present a problem if the protecting casing had not been set?

A. That's correct. But he --

MR. STAMETS: Well, let's describe this problem now.

QUESTIONS BY MR. STAMETS

Q We've talked about a problem where it was pressured up, and we haven't talked about the other problem, so if we're going to conceive of that, let's talk about it. What's the nature of that problem?

A All right, that presents a big problem, also. If it was not cased and cemented through, as we requested, and if a well was nonproductive and properly plugged and abandoned, there wouldn't be any problem, when we pressured up.

Q Okay. I didn't hear a problem.

MR. BURLESON: Was that the end of your answer, John?

A Yes, sir.

MR. BURLESON: He may not have understood your question. You might want to rephrase it.

Q Okay. We talked about potential problems if the storage project was pressured up and where you could expect problems.

In response to Mr. Burleson's question you seemed to indicate that if there was no pressure and no storage in the reservoir and Southern Union drilled through without this extra string of casing, that there could be some sort of a problem at that time down the road. So I'd like to

know what that problem is that you're talking about.

A. Well, what I was trying to say was if the well was drilled while there is no storage and without the extra string of casing, if the well is nonproductive and it's properly plugged and abandoned, then there would not be any problem to us.

Q. Okay. So what you're saying is that the only thing the Commission would have to do would be assure that that zone was properly plugged at the time it was completed and that would satisfy any concerns that you would have as to this well.

A. Yes, sir.

Q. And then do you have any reason to believe that that couldn't be done?

A. No, sir.

MR. BURLESON: I've got a further follow-up question.

What if the well were drilled on down and completed in, say, the Devonian or Ellenburger formation, and this particular string is not set and then the storage area is pressured up. What would -- would that present a problem if the stringers do extend into this wellbore?

A. Well, yes, it presents a problem. That's the reason why we requested the extra string of casing and

cementing.

MR. BURLESON: So what you're saying is there'd be no problem if the well is plugged and abandoned and the Morrow is properly cemented, but if it is not cased, it is not cemented, but rather completed at some deeper formation and left open, then there could be a problem.

A. There could be a problem, yes.

MR. STAMETS: Mr. Ramey, if I may.

MR. RAMEY: Yes, sir, Mr. Stamets.

QUESTIONS BY MR. STAMETS

Q. Let's for the sake of the argument here, assume that this well is drilled to 10,000 feet in the granite and you make a producer in the granite, and you cement the casing in this hole, the production casing, back up above your storage horizon 1500 feet. Would you anticipate a problem with those conditions?

A. No, sir, not as long as that extra string of casing was run and cemented.

Q. Why the extra string and why not just a single string of production casing?

A. Well, as I pointed out awhile ago, if we had gas stored and if we lost circulation, as an example, and the hydrostatic head fell far enough that our gas started

escaping --

Q I thought we had that problem resolved awhile ago with the testing procedure.

A Well --

Q What I'm talking about is where you have no special pressure in the Morrow and you drilled on down to the deeper horizon and you've run one string of production casing and cemented that well above you storage interval. Can you conceive of any problem to El Paso under those conditions?

A Let me have a moment, would you please?

Q Fine.

A It's our position that it's not unreasonable to request the extra string of casing and cement under any condition of no storage or storage; that as you referenced drilling to 10,000 feet and cementing back up, we do feel that there are potential problems that could be encountered, and we feel that we need the extra string of casing and cement.

Q Okay. Potential problems, what's the nature of potential problems.

A Yes, sir.

Q What are they?

A Poor cement job, for example, across the Morrow.

Q How many Morrow wells have poor cementing

jobs? What percentage, in your experience?

A. Our experience in the Morrow in Eddy County, New Mexico, is we only have three wells. One of them has been plugged and abandoned. We have just recently completed one, or attempted to complete it, and we had three squeeze jobs on top of the liner.

So potentially it's a pretty high percentage that you'd have a poor cement job.

Q. You're talking about a poor cement job on a liner but not necessarily just a string of casing.

A. Well, it's basically cementing a liner and a string of casing is the same.

Q. You'd have a little bit of difficulty having quite as much cement on top of a liner, though, as you would on a string of casing, don't you?

A. I don't think so. It depends on how much contamination in the upper part of that cement that you had from wall cake, mud.

Q. In this instance we're talking about 1500 feet above the storage interval. You surely didn't have 1500 feet of cement above the top of that liner, did you?

A. No, but we had trouble bringing the cement to the top of the liner.

Q. It would seem that the -- what you're

attempting to achieve in cementing the liner and what you're attempting to achieve in cementing a long string of casing are substantially different. Surely you're not trying to get a great excess of cement above the top of that liner, is that correct?

A. We always calculate volumetrically how much -- how many sacks of cement, and depending on hole conditions, that type of thing, you always add excess.

Q How much excess would you say?

A On a liner job?

Q Yes.

A Personally I would go about 35 to 40 percent excess, if the hole condition is reasonably good.

Q I'm not sure that I can pursue that any more. I think I'll quit.

MR. RAMEY: Any other questions of Mr. Disch?

MR. ZEIS: One more question.

MR. RAMEY: Mr. Zeis.

MR. ARNOLD: I want to ask him a question.

CROSS EXAMINATION

BY MR. ARNOLD:

Q. Mr. Disch, do you think you'd have more difficulty in getting a successful cement job on a single string than on a liner that you object to the difference between the two?

A. No, in my personal experience, we have had more difficulty cementing liners than you do a single string.

Q. Well, I understood that you were stating a preference for the liner rather than --

A. Oh, no, all I meant was that basically the procedure for cementing and placing the cement is the same.

Q. When you do run a separate string across, isn't that a liner job?

A. No, sir.

Q. Thc.. I was mistaken.

MR. STAMETS: Mr. Ramey, since I've had a second to think about this.

QUESTIONS BY MR. STAMETS

Q. I'm trying to figure out now why the cement job on the extra string of casing would be intrinsically better than the cement job on a longer string of casing, which went below the base of the Morrow formation.

A. Well, the higher the column of cement

that you bring up behind on a single stage, generally the upper portion of it is the one that you do not get as good a bond as you do in the lower portion of it, and I would think that there's probably several factors. I would say one of them would be the hydrostatic pressure that is exerted, not only by the fluid above but by the cement itself. There is also the upper portion of the cement is the one that is in first contact with your mudcake, certainly the fluid preceding it, so you have a much higher chance of having a poor cement job in the upper portion of the cement column.

Q If you were asked in your professional capacity by El Paso Natural Gas Company to design a cement job which would go to a depth of 10,000 feet in the east half of Section 32, and bring the cement 1500 feet above the injection interval, do you feel that you could do that and -- and feel that you could provide them a cement job which would protect that interval?

A Well, I could certainly design the -- along with professional service help -- a column of cement, and we could certainly place the cement in place; however, I could assure my management more protection to the Morrow zone if I designed the well to run an extra string of casing and cement.

Q So what you're saying is yes, you believe

you could, but you would rather do it the other way.

A. Yes, sir.

Q. Are there any tests that could be performed after a cement job in your mind which would demonstrate that it was a good cement job across the storage interval?

A. Yes, sir, there's several things that you can do. The first one would be run a temperature survey, and then you could run a bond log, and I have always myself personally questioned bond logs. I have seen them where they indicate good cement and they would still have microannular communication in it. So I would not rely 100 percent on a bond log.

MR. STAMETS: That's all.

MR. RAMEY: Mr. Zeis, do you have a question now?

MR. ZEIS: Just a minute, please. No. No questions.

MR. RAMEY: Any other questions of the witness? He may be excused.

MR. BURLESON: We now call Mr. Lester E. Ludwick.

MR. RAMEY: We'll take a brief recess at this time.

(Thereupon a recess was

taken.)

MR. RAMEY: The hearing will come to order.

LESTER E. LUDWICK

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

DIRECT EXAMINATION

BY MR. BURLESON:

Q Please state your name and where you reside.

A My name is Lester Ludwick. I reside in El Paso, Texas.

Q By whom are you employed and in what capacity?

A I'm employed by El Paso Natural Gas Company as Manager of Reservoir Geology in the REservoir Engineering Department.

Q Have you previously testified before the Division and had your credentials accepted as a reservoir geologist?

A Yes, I have.

Q You are the same L. E. Ludwick that testified previously in Case 6703, are you not?

A. Yes, sir.

MR. BURLESON: Are the witness' credentials --

MR. RAMEY: He's qualified.

MR. BURLESON: Thank you.

Q Mr. Ludwick, would you please elaborate a bit on why you believe that the bounds of the unit as determined to be appropriate by the Division should be retained?

A. Yes, sir. As I previously testified in this proceeding, I drew up the structure and Isopachous map for this field, and my zero line, as depicted on our exhibit that we presented at the previous -- previously, checks our performance, in other words, the volumetric acre feet derived from this Isopach map, checked by performance, and gas is contained within this zero limit. However, as I stated before, this zero line is the best interpretation that I can make at this time.

If you will look all around this field, you will notice that you get out to the zero line and there's just not a lot of control. Over on the west side you have a well in Section 5 of Township 26, 24, and then it's three miles up to the well to the north in Section 21 of 25, 24,

and as you can see, the zero line of the Isopach comes very close to 32, for instance, Section 32, and this zero line can vary. It could swing out at one end; it could come back in another; there's not that much control, I don't feel like, and this is why I feel like that we have to ask for acreage in excess of the acreage that's contained within the zero limit here.

If we were absolutely 100 percent sure, we could say, well, let's just get this acreage within the zero line; however, we feel like that we need this buffer zone for protection.

Q Mr. Ludwick, is there any precedent of which you are aware for the inclusion of acreage outside the interpreted areal extent of the storage reservoir within the horizontal limits of a gas storage project area, as approved by the Division?

A Yes, sir, there is. I think it was previously mentioned. In Case Number 5502 before the Commission, Order Number R-5079, application of Southern Union Gas Company for underground gas storage findings for the Las Milpas Field, acreage was asked for in excess of what was thought to be productive in this finding.

In finding five of this order it states that although preliminary investigation of the geological

structure being proposed for underground gas storage indicates that its areal extent may be somewhat less than the entire area described in finding three, all of the said lands should be included within the horizontal limits of the Las Milpas Gas Storage Project in order to protect the structure from drainage by non-project wells in the event the areal extent of the structure is larger than presently believed.

MR. BURLESON: I would ask that a copy of the order to which Mr. Ludwick is referring be included in the record as an exhibit sponsored by El Paso.

That concludes our direct examination of Mr. Ludwick.

MR. RAMEY: Any questions of Mr. Ludwick?

MR. ZEIS: Yes, sir.

CROSS EXAMINATION

BY MR. ZEIS:

Q Mr. Ludwick, could you tell me which order in paragraph -- or which paragraph were you referring to?

A Was I reading from in the order? I was reading from page two, finding number five there.

Q Mr. Ludwick, do you know what type of geological control was available pertaining to the Las Milpas

Storage Project at the time of the application?

A. No, sir, I knew it was a structure that had a fault on the eastern edge of the thing but I don't know any of the details of the geology of this -- of this candidate, storage candidate, no, sir.

Q Do you know what type of reservoir it was?

A. What type of reservoir it was?

Q Yes, sir.

A. No, sir.

Q All right. So your testimony is just the reading of paragraph five?

A. Yes, sir.

Q Now, with reference to the structure map marked Exhibit Three, which is incorporated in this case, I want to refer you to Section 33. Do you have any opinion as to the reserves underlying Section 33, gas reserves?

A. I only thing I would have to say would be the volumetric calculation that could be made from this Isopachous map. It's just -- does this answer your question? I mean --

Q No, sir, what I'm driving at is how are the reserves underlying Section 33 calculated for a basis of say purchasing them?

A I can truthfully tell you, I was not involved in that particular part of the --

Q Are you aware of anyone, or of any studies that were conducted to determine the reserves underlying Section 33?

A Like I say, I was not involved. I would imagine that we did make some studies, yes, sir, of this -- of this section.

Q You did make -- you did make some studies?

A Well, I's say -- I would -- I'm not exactly sure, but I would imagine that we did and in my department, but I didn't.

Q Have you heard of any studies being made?

A Yes, sir, I think I've heard of them, yes, sir.

Q And did those -- did those studies indicate the extent of the reserves underlying the east half of Section 33?

A The east half of 33?

Q Yes, sir.

A I couldn't tell you what -- what --

Q How about the west half of Section 33?

A. Well, it would -- I assume it would have been made using their performance to date, if this is something that we did recently, yes. It would have been this type of estimate, I would imagine.

Q. Let me ask you this. I notice that there are several wells located in the -- or there's one well located in the east half of Section 33 there, indicated to be a proposed injection/withdrawal well.

A. The one with the dark circling?

Q. Yes.

A. Yes, sir, there's two of them in there.

Q. Now what is -- how many acres is assigned to that well? How many spacing unit acres --

A. I couldn't tell you that, sir. This was the location of these wells that we felt like would achieve the best permeability, and this type. In other words, this would be the placement of these wells in this reservoir for injection/withdrawal purposes.

Q. Are you aware of the -- of the Commission's spacing rules for the Washington Ranch Storage Project? I mean not for the storage, for the Washington Ranch Pool?

A. What they were originally?

Q. Yes, sir.

A. Not really. I couldn't tell you whether

it was 1980 or what. I'm just not familiar, no, sir, I couldn't tell you that, without looking it up.

Q Okay. Can you look it up?

A I could, if I could have some assistance. Do you want me to do this now or --

Q If you could. How long would that --

MR. BURLESON: Do you need some time off, Les, to go elsewhere to get this information?

A Well, I'd have to check. I suppose the spacing rules in the field, get the order. I don't know what they were originally. I believe that's the question here.

MR. BURLESON: What it was originally?

A Yes, sir.

MR. BURLESON: I was wondering if you could readily find it.

(There followed a discussion off the record.)

A I thought you meant the specific --

Q No, that's what I meant, was what the spacing -- how many acres --

A 320.

Q Those are 320's?

A Yeah. I'm sorry, I thought he meant the exact 1980 or whatever out of --

Q Okay, so that indicates that the Commission found, does it not, that one well would adequately drain 320 acres, is that correct?

A This is the spacing that's set up for this field, and yes, sir, I --

Q Okay. Now, could a well -- if that is correct, could a well drilled in the east half of Section 33 drain the east half of Section 32?

A If that well, if the reservoir extended out into 32?

Q Not --

A And you depleted -- this is a --

Q Not -- not if the well -- not if the reservoir extended out there necessarily, but could a well -- all right, let's -- all right, for the purpose of the question, assume that there is gas in the east half of Section 32 and there's 320 acre spacing for this Section 33, could a well drilled in a position such as this one shown on your map in the east half of Section 33 as a proposed injection/withdrawal well, could that well drain the east half of Section 32?

A It would -- it would affect the gas out there, yes, sir, as the reservoir depletes, it would get that gas in time, yes.

Q All right, in commercial time do you feel that that would happen?

A. I couldn't say that.

Q How many years do you feel it would take to drain?

A. I haven't made that calculation. I couldn't tell you that.

Q Now I notice also there are several wells in the -- in the area classified as observation wells, in the -- within the bounds of the Washington Ranch storage unit.

A. Yes, sir.

Q Are those -- are any of those proposed to be drilled by El Paso?

A. If you would pardon me, if I could look at my other--

Q. That's fine.

A. I believe -- I believe that there are ten wells in the field right now, and it's my recollection, subject to further check, that we are going to make four of them into observation wells. This is a transcript. May I look at this, refer to this?

If I can read you from the transcript, page 22, line 19, there are presently ten wells producing at

Washington Ranch and El Paso intends to use six of these existing wells for injection/withdrawal purposes, utilizing the remaining four as observation wells.

Q All right, so El Paso did not propose drilling any observation wells, is that correct? Any new wells.

A. I believe that is a correct statement. I do have, I did --

Q All right, now let me ask you, if there was some doubt about the extent --

MR. BURLESON: One second, please, I think he's looking for an answer to your last question to make sure he gave you the correct response.

MR. ZEIS: Oh, I'm sorry.

A That's correct, the observation wells, the four I mentioned, would be the ones we would propose to use as observation wells.

Q All right, sir. Has El Paso ever considered a well, an observation well, in the west half of Section 33, to your knowledge?

A At this point I don't believe we have. This could change, though, we could eventually put one out there if it could be deemed that one would be necessary to be put out there, I would think. But right now the four that

I mentioned are the observation wells we propose.

Q All right. Would it be -- would it be reasonable to assume that there was some doubt about the geology and El Paso had the right to drill an observation well in Section 33, that one would be reasonable?

A If we felt that we needed one, yes, sir, as this project is implemented and based on further happenings, we, I think, could eventually put one out there, maybe.

MR. ZEIS: No further questions.

MR. RAMEY: Any other questions of Mr. Ludwick? Mr. Stamets.

MR. BURLESON: May I interject just one thing?

REDIRECT EXAMINATION

BY MR. BURLESON:

Q You did indicate that you have no present plans to locate one in the west half of Section 32, did you not?

A Correct, we have no plans.

Q And so far as you know, there's no need to situate one there now?

A Not now, no, sir.

MR. BURLESON: That's all.

QUESTIONS BY MR. STAMETS

Q. Mr. Burleson may wish to answer this instead of Mr. Ludwick, and it may have been answered in the original case and I hope this isn't repeat.

Could you tell me why El Paso chose not to use the provisions of the underground storage act, or whatever it's called, to seek condemnation of the east half of Section 32 and acquisition of it through the right of eminent domain?

MR. BURLESON: I can respond to that, I think. We had no desire to utilize the condemnation statute to acquire any interest within the unit. We felt secure that we could acquire all those that we required to implement the project. So as a consequence we found no need to seek those additional tract determinations, some of which might conceivably be questionable, I don't know.

But we did not anticipate the usage of condemnation to acquire an interest. We were not seeking to acquire any interest from -- through the Commission. We were seeking merely to inform the Commission of what we proposed to do and to seek an appropriate order from the Commission to protect to the extent necessary against waste and to protect correlative rights.

MR. STAMETS: Along those same lines, Mr. Burleson, it would appear as though, and I've got the 1968 compilation here -- the 1953 compilation, referring to 65-9-4, paragraph G, and in there the discussion goes on that the rights that would be acquired in this manner would not jeopardize the party's right to go in and complete other zones, but that in that case they would have to comply with orders, rules and regulations of the Division for the purpose of protecting underground storage strata or formations against pollution and escape of natural gas.

It certainly seems like here the vehicle for Division or Commission control of drilling within storage areas is clearly spelled out, and I'm not certain that I find that any place else.

MR. BURLESON: Mr. Stamets, I would refer you to the statute and specifically to 70-2-11, which gives the Division the power to prevent waste, prohibited by this Act, and to protect correlative rights, as in this Act provided.

In addition, under the enumeration of powers, which is contained in 70-2-12, are these additional relevant provisions.

70-2-12 (B) 2 says, it begins by saying the Division has the authority to prevent crude and petroleum oil and natural gas or water from escaping from strata in

which they are found into another stratum or other strata.

Number six says to prevent blowouts and caving in the sense that the conditions indicated by such terms are generally understood in the oil and gas business.

And seven says to require wells to be drilled, operated, and produced in such a manner as to prevent injury to neighboring leases or properties.

In addition, 70-2-3 (A), in defining underground waste, concludes by saying that the Commission shall have the power to insure that the use -- to preclude the use of inefficient underground storage of natural gas.

And in addition to that, there is a specific -- there is specific authority vested in the Commission again, this is 70-2-12, 13, the Division is given the power to regulate the methods and devices employed for storage in this State of oil or natural gas or of any product thereof, including subsurface storage.

So I find ample authority for everything that the Division purported to do, and I do not see that this -- that you must proceed under this to invoke this provision to obtain the relief which the Division granted.

MR. STAMETS: I appreciate your interpretations. Only a court will be able to tell us whether your interpretations were correct in every case; nevertheless,

they do apply.

MR. STAMETS: That's all.

MR. RAMEY: Any other questions? Mr. Padilla.

CROSS EXAMINATION

BY MR. PADILLA:

Q. Mr. Ludwick, can you tell us anything about this proposed injection well in the east half of Section 33? Is it now producing? What's its status now?

A. The well in Section 33? I think that's a, if you'll bear with me just a minute, I think that's -- there are six wells producing out there right now, Mr. Padilla. I'm very sorry, I have -- I have the meter numbers on those wells but I don't have them by -- by sites. I can't tell immediately just whether that well is producing. As I say, there's -- I could get that for you or have someone --

Yes, sir, it is producing.

Q. Now what's its rate of production?

A. According to my records, the October, 1980, volume for the month was 11,150 MM, 11-million cubic feet.

Q. In your opinion is that -- is that well draining the entire east half of Section 33?

A. The entire east half of 33?

Q. Yes, sir.

A. I think you -- I think it is draining it, yes, sir. It's -- I think you would -- it's reaching out to the boundary there, yes, sir, to the west.

MR. PADILLA: I have nothing further.

MR. ZEIS: I just have one more question.

RECROSS EXAMINATION

BY MR. ZEIS:

Q. Has the production since the hearing on October 17th tended to confirm your original opinion that this was a closed gas pool?

A. Yes, sir, I have no indication otherwise. We feel like this is a depletion drive field, yes.

MR. ZEIS: That's all.

MR. RAMEY: Any other questions? He may be excused.

Anything further, Mr. Burleson?

MR. BURLESON: No, sir.

MR. RAMEY: Any closing statements, or anything?

MR. ADAMS: May I make a brief closing statement? I was going to make a more lengthy one but I think

in view of developments this afternoon, I don't think I'll have to.

I think the issues in this case have been squeezed down to just about one, and that is whether El Paso can compel Southern Union to use a second string of casing in a well that is drilled on El Paso's State lease in the east half of Section 32 without -- Southern Union's lease -- without any significant evidence at all that operations in the east half of Section 32 would have an adverse affect on the Washington Ranch Gas Storage Project.

If I understand Mr. Burleson's statement at the beginning of El Paso's case, he conceded that the Commission has no jurisdiction to prevent Southern Union Exploration from completing a well in the east half of Section 32 in the Morrow or below the Morrow, and that is in complete agreement with Southern Union's position. We believe that Southern Union has the right to do that, and that neither El Paso nor the Commission can interfere with that right.

What puzzles me about this case is El Paso's purpose for requiring extra casing on wells drilled in the east half of Section 32. I made a few notes while Mr. Disch was testifying. He said that perhaps by a quirk of nature a stringer or finger of the Morrow sand in the Washington Ranch Morrow Gas Pool Area might run into the east half of

Section 32 and by another quirk of fate Southern Union's well in the east half of 32 might hit that stringer or finger and then perhaps by another quirk of fate, something bad would happen.

I think you can balance these unlikely events against the losses to Southern Union if they are required to use an extra string of casing in a well in the east half of Section 32.

Exhibits Four, Five, Six, and Seven portray well, I think, the additional cost Southern Union would incur if they were required to follow the program for drilling in the east half of Section 32 proposed by El Paso.

When you compare Exhibit Five, which is Morrow completion under the El Paso program, with Exhibit Four, which is a Morrow completion under normal program, the additional cost is almost $200,000.

If you do the same thing with Exhibits Six and Seven, Exhibit Seven is the -- shows the cost of a Devonian completion in the east half of Section 32 under the El Paso proposal; Exhibit Six shows the same kind of completion under normal drilling procedures. Again there's a difference of about $200,000.

So it seems to me what El Paso's trying to do is compel Southern Union to spend about $200,000 extra

for a well on the slight chance that by a quirk of nature, and by some quirk of drilling, something bad might happen.

Mr. Haseltine testified as to another adverse consequence of the El Paso program, and that is that it makes the prospect in the east half of Section 32 almost unmarketable. Nobody knows what can happen. Nobody knows if a well is feasible. Nobody knows how it can be drilled and that the costs and risks are substantially increased.

I think there are some constitutional issues involved here, involving "taking", and which I don't think we need to get into. I think it's clear that with the extra costs and decreased value to El Paso -- to Southern Union, El Paso's program, that the Commission does not have before it significant and substantial evidence to justify the imposition of rules requiring an extra string of casing.

So what Southern Union would respectfully request the Commission to do, is to eliminate the east half of Section 32 from the scope of the order which is under consideration here today, and simply provide that the order does not cover the east half of Section 32.

The Commission, of course, has continuing jurisdiction in New Mexico to regulate matters of oil and gas drilling and safety and correlative rights and other matters. I think the regulations and statutes Mr. Burleson referred to

establish that beyond doubt. Of course, Southern Union doesn't contest that.

If a problem should develop at some time in the future with respect to the east half of Section 32, then the Commission could use its clear powers to ameliorate that problem. I think it's a case of classic overkill at this point to require an extra string of casing to be set at substantial cost, because by a quirk of nature something might happen.

That's all I have. Thank you.

MR. RAMEY: Thank you, Mr. Adams.

MR. BURLESON: I might respond just briefly to Mr. Adams' closing statement.

I certainly do agree with Southern Union's interpretation of the order in that it does not preclude drilling by Southern Union of a well, and the completion of such well into the Morrow formation, so there is no issue between us in that respect.

As to whether the order as it currently stands constitutes any sort of a taking, I certainly submit that it does not constitute any taking at all. It imposes, merely imposes, reasonable restrictions upon an operator, should such operator be disposed to drill a well within the possible limits of the reservoir which is to constitute the

storage reservoir, and I wouldn't argue with him concerning the probability of that -- of that occurring; that is, of the stringer of sand extending out in the east half of Section 32. I think I would rely upon the evidence with respect to that.

Nevertheless, we think that this is a reasonable margin of error, and certainly a margin of error to which the Commission has accorded Southern Union, on at least one earlier occasion.

That concludes my --

MR. ADAMS: I just want -- I'm sorry I didn't make Southern Union's position clear. It's not that the order permits completion in the Morrow or below the Morrow. It's rather that the Commission -- the order is ambiguous at best as to that, and the Commission and El Paso don't have the power to prevent completions in the Morrow.

I think the order can certainly be read to prevent completions in the Morrow, and that's part of the problem.

MR. RAMEY: Anything further?

If not, the Commission will take the case under advisement, and the hearing is adjourned.

(Hearing concluded.)

C E R T I F I C A T E

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

SWB

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JACKSON G. AKIN
JOHN D. ROBB
CHARLES B. LARRABEE
JAMES C. RITCHIE
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OIL CONSERVATION DIVISION
SANTA FE

HAND DELIVERED

December 19, 1980

Mr. Joe D. Ramey, Director
Oil Conservation Division
Energy and Minerals Department
State Land Office Building
Santa Fe, New Mexico 87501

Re: Oil Conservation Commission Case No. 7088

Dear Mr. Ramey:

Please find enclosed five copies of Southern Union Exploration Company's ("SX") proposed Order.

SX believes there is no substantial evidence in the record to indicate that any special well drilling or completion requirements are necessary for E/2 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, and that, consequently, the Commission should delete E/2 Section 32 from the Washington Ranch Gas Storage Project and from the effects of its Order No. R-6175. SX's proposed Order was prepared on this basis. If the Commission deletes E/2 Section 32, SX would not object to the addition to the Order of the following paragraphs:

"That should any well be drilled in E/2 Section 32, Township 25 South, Range 24 East, NMPM, penetrating (partially or totally) the Morrow Formation, the following special field rules shall apply:

A. In the event casing is set through the Morrow Formation, a volume of cement adequate to cover the Morrow Formation and to extend at least 1,500 feet above the Morrow Formation shall be placed behind the casing.

B. In the event casing is not set through the Morrow Formation, the uncased hole through the Morrow Formation shall be filled with cement with a volume adequate to completely cover the exposed Morrow Formation and to extend at least 100 feet above the top of the Morrow Formation.

C. In the event a completion in the Morrow Formation is attempted, it shall be a cased hole completion attempt with the casing cemented as in Paragraph "A" above. At the time of completion, a continuous bottom hole pressure buildup test of at least 72 hours duration shall

be run with a wireline retrievable pressure recording device set as near to the Morrow Formation perforation as practical. All pressure information from such buildup, along with copies of any logs, drillstem tests, core information and other data, shall be supplied to the Division and, insofar as such data pertains to the Morrow Formation, to the Operator of the Washington Ranch Storage Project.

(D) If there is a conflict between the provisions of this Order and the General Rules and Regulations of the New Mexico Oil Conservation Division, then this Order shall prevail. In all other respects, the General Rules and Regulations of the Division shall apply to wells drilled in E/2 Section 32, Township 25 South, Range 24 East, NMPM."

Please let me know if you have questions.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

BY Mark K. Adams
MARK K. ADAMS

MKA:jf
Enclosures

cc: Ernest L. Padilla, Esquire
General Counsel

Paul M. Zeis, Esquire
Assistant General Attorney, SX

David T. Burleson, Esquire
El Paso Natural Gas Company

RECEIVED
DEC 22 1980
OIL CONSERVATION DIVISION
SANTA FE

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 7088
R-

APPLICATION OF SOUTHERN UNION
EXPLORATION COMPANY FOR
RECONSIDERATION OF ORDER NO. R-6175.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 A.M. on November 18, 1980, at Santa Fe, New Mexico, before Commissioners Joe D.Ramey and Emery C. Arnold.

NOW, on this ____day of December, 1980, the Commission, a quorum being present, having considered the testimony and the record in this Case and in Case No. 6703 and being fully advised in the premises,

FIND:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Southern Union Exploration Company ("SX"), owns State of New Mexico Oil and Gas Lease No. LG-5340, covering inter alia, NE 1/4 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, and State of New Mexico Oil and

Gas Lease No. V-150, covering SE 1/4 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico. (E/2 Section 32, Township 25 South, Range 24 East, is hereinafter called "E/2 Section 32").

(3) That E/2 Section 32 was declared to be within the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 of the New Mexico Oil Conservation Division in Case No. 6703.

(4) That the said Order No. R-6175 was not intended to prevent SX from drilling to or through and producing from the Morrow Formation underlying E/2 Section 32.

(5) That the Morrow Formation underlying E/2 Section 32 and W/2 Section 33, Township 25 South, Range 24 East, Eddy County, New Mexico, is not within the Washington Ranch-Morrow Gas Pool created by Oil Conservation Commission Order No. R-4279, and thereafter expanded by Orders No. R-4377, R-4437, R-4734 and R-4782, and that there is no substantial evidence before the Commission to indicate that E/2 Section 32 is within said Pool.

(6) That there is no substantial evidence before the Commission of pressure communication or pressure connection between the Morrow Foramtion underlying E/2 Section 32 and the structural feature within which El Paso Natural Gas Company proposes to store gas in its Washington Ranch Gas Storage Project.

(7) That W/2 Section 33, Township 25 South, Range 24 East, is located between E/2 Section 32 and the structural feature in which El Paso proposes to store gas, that there has been no well drilled to

the Morrow Formation underlying W/2 Section 33, that El Paso controls W/2 Section 33, and that El Paso could drill an observation well or wells on W/2 Section 33.

(8) That there is no substantial evidence before the Commission that completing and producing an oil and gas well in the Morrow or any other formation underlying E/2 Section 32 will cause or result in underground waste, pollution, the escape of gas from the Washington Ranch Gas Storage Project, or any other undesirable condition.

(9) That the special drilling and casing requirements imposed by Ordering Paragraph (9) of Order No. R-6175 are not required to protect the Washington Ranch Gas Storage Project from any consequences of a well drilled, completed and produced in E/2 Section 32.

(10) That including E/2 Section 32 in the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 and the imposition of special drilling and casing requirements by Ordering Paragraph (9) of such Order would significantly increase the cost of drilling a well to or through the Morrow Formation underlying E/2 Section 32, would adversely affect the marketability of the oil and gas leases covering E/2 Section 32 for joint operations, and would adversely affect correlative rights.

(11) That E/2 of Section 32 is not needed for the Washington Ranch Gas Storage Project.

IT IS THEREFORE ORDERED:

(1) That E/2 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, shall be excepted and excluded from Order

No. R-6175 of the New Mexico Oil Conservation Division, and said Order shall have no force or effect with respect to E/2 Section 32.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOE D. RAMEY, Member

S E A L

WILLIAM A. SLOAN
JACKSON G. AKIN
JOHN D. ROBB
CHARLES B. LARRABEE
JAMES C. RITCHIE
JOHN P. EASTHAM
WILLIAM C. SCHAAB
RAY H. RODEY
ROBERT O. TAICHERT
ROBERT M. ST. JOHN
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DANIEL J. HERNANDEZ
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RODEY, DICKASON, SLOAN, AKIN & ROBB, P. A.
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OF COUNSEL
DON L. DICKASON

PEARCE C. RODEY
1889-1958

TELECOPIER 765-5003

TELEX 660401

TELEPHONE 765-5900
AREA CODE 505

December 23, 1980

Mr. Joe D. Ramey, Director
Oil Conservation Division
Energy and Minerals Department
State Land Office Building
Santa Fe, New Mexico 87501

Re: Oil Conservation Commission Case No. 7088

Dear Mr. Ramey:

Today we received copies of El Paso Natural Gas Company's December 12 letter and proposed order. We believe that we should re-emphasize one important point made in our December 19 letter to you and in the order proposed by Southern Union Exploration Company ("SX") which accompanied that letter.

There is no substantial evidence before the Commission that SX would in any way adversely affect the Washington Ranch Gas Storage Project by drilling a well in E/2 Section 32, Township 25 South, Range 24 East. Of course, El Paso Natural Gas Company, as the proponent of the Washington Ranch Gas Storage Project, has the burden of proving that such drilling would adversely affect the Project. International Min. & Chem. Corp. v. Public Serv. Comm'n, 81 NM 280, 283, 466 P2d 557 (1970). Although El Paso has speculated, most recently in the last paragraph on the second page of its December 12 letter to you, that reasons may exist for including E/2 Section 32 within the Project, its speculations are not supported by substantial evidence. Therefore, El Paso has not satisfied its burden of proving that E/2 Section 32 should be included within the Project. Consequently, it may not be. Of course, should El Paso develop substantial evidence by drilling an observation well in W/2 Section 33, Township 25 South, Range 24 East, or otherwise, that drilling in E/2 Section 32 would have an adverse effect upon the Project, El Paso can initiate appropriate action.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

BY Mark K. Adams
MARK K. ADAMS

MKA:jf
cc: Paul M. Zeis, Esquire
Ernest L. Padilla, Esquire
David T. Burleson, Esquire

El Paso NATURAL GAS COMPANY

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-543-2600

December 12, 1980

RECEIVED
DEC 19 1980
OIL CONSERVATION DIVISION
SANTA FE

New Mexico Oil Conservation Commission
P. O. Box 2088
State Land Office Building
Old Santa Fe Trail
Santa Fe, New Mexico 87501

Re: Washington Ranch Gas Storage Project: Reconsideration of New Mexico Oil Conservation Division Order No. R-6175; Case No. 7088

Gentlemen:

Enclosed please find El Paso Natural Gas Company's ("El Paso") Proposed Order in the above-referenced case.

The basic controversy between El Paso and Southern Union Exploration Company ("SX") in this case concerns the requirement in ordering paragraph (9) of Order No. R-6175 that a separate, or extra, casing string be set when an operator drills through the Morrow storage zone to a deeper formation. (SX Statement of Counsel, Transcript at page 147.) El Paso's position has been that the extra casing string is the best way to protect the integrity of the Morrow storage zone when an operator drills through said zone. (Transcript at pages 128-129.) SX's objection to this casing requirement has been that the extra casing is unnecessary and that the additional expense inhibits the marketability of the E/2 of Section 32, Township 25 South, Range 24 East, Eddy County, New Mexico. (Transcript at pages 54, 76-77.)

El Paso's Proposed Order addresses both El Paso's concern for the protection of the Morrow storage zone and SX's concern that restrictions applicable to the E/2 of Section 32 not be so burdensome that the property becomes unmarketable. El Paso proposes that the Commission give an operator drilling through the Inactive Area of the Project the option of either setting the extra casing string required in Order No. R-6175 or complying with an alternate drilling and casing program designed to insure the integrity of the storage zone. The alternate drilling and casing program would require the utilization of a DV tool, centralizers, a cement bond log and a temperature survey (see attached diagram) and is described in detail in El Paso's Proposed Order. The additional cost of complying with this alternate plan would be in the $10,000 range. El Paso believes

that the alternate plan is the minimum which should be required by the Commission to effectively seal off and isolate the storage formation.

Two additional points need to be made concerning El Paso's proposed alternate drilling and casing program: (i) The proposal applies only to the Inactive Area of the Project. It is vital to the feasibility of the Project that operators be required to set an extra string of casing while drilling through the Active Area of the Project. The Active Area contains the gas-bearing portion of the storage formation. This portion of the formation must be protected from the extensive formation damage that could occur should drilling fluids being circulated by an operator while drilling through the storage zone escape into said zone. (ii) The requirement to either run an extra casing string or to comply with the alternate program would have application only to wells drilled deeper than 150 feet below the base of the Morrow formation. Both of these points are contained in the Proposed Order.

El Paso believes that the proposed alternate drilling and casing program may be adopted based on the Commission's own expertise in such matters. However, should the Commission deem it necessary or desirable to receive additional evidence on this limited subject, El Paso would invite the Commission to set this matter for hearing.

Apart from its concern for the cost of complying with the drilling and casing program contained in Order No. R-6175, SX has also expressed its belief that the Order constitutes an attempt by El Paso to prohibit SX from exercising its right to drill and produce the Morrow formation. (Transcript at page 76.) At the hearing of this case, El Paso stated that it was not its intent to institute such a prohibition. (El Paso Statement of Counsel, Transcript at pages 95-96.) The addition of a new Ordering paragraph (13) and the revision of former Finding paragraph (13)(E) and former Ordering paragraph (9) as contained in El Paso's Proposed Order make it clear that the Order does not prohibit the exercise of SX's right to explore for and produce oil and gas from its property.

El Paso would emphasize to the Commission the importance of including the E/2 of Section 32 within the Inactive Area of the Project. The E/2 of Section 32 was included within the boundaries of the Project as part of a "buffer zone" to insure the protection of the storage formation. There are substantial conservation reasons for creating such a "buffer zone" and for including the E/2 of Section 32 within said zone: (i) The "zero sand line" shown on El Paso's Exhibit No. 4 in Case No. 6703 may not be identical to the actual geologic structure of the reservoir. Even the most thorough engineering and geologic estimates of the extent of a reservoir may subsequently prove to be at variance with the actual reservoir limits. In order to insure that the horizontal extent of displaced or injected gas will be entirely within the boundaries of the Project, it is only prudent that some protection acreage be included in the Project. (Transcript at pages 131-132.) (ii) The "zero sand line" shown on El Paso's Exhibit No. 4 in Case No. 6703 is extremely close to

the eastern border of the E/2 of Section 32. A variance between El Paso's estimate of the "zero sand line" and the actual geological structure could result in the migration of injected gas into the E/2 of Section 32. (iii) A geological "stringer" could exist resulting in pressure communication between the Active and Inactive Areas of the Project. If such pressure communication should exist, upon pressuring up of the storage reservoir, a loss of gas into the well bore of a well which had been drilled into the E/2 of Section 32 could result unless the Morrow formation in such well bore had been appropriately sealed off and isolated. (Transcript at pages 122-123.) It should be noted that both SX and the Commission have previously recognized the necessity of creating a "buffer zone" for a gas storage project. In Order No. R-5079, issued April 27, 1976, the Commission authorized SX's Las Milpas Gas Storage Project and made the following finding:

> (5) That although preliminary investigation of the geologic structure being proposed for underground gas storage indicates that its areal extent may be somewhat less than the entire area described in Finding No. (3) above, all of said lands should be included within the horizontal limits of the Las Milpas Gas Storage Project in order to protect the structure from drainage by non-project wells in the event the areal extent of the structure is larger than presently believed.

It is El Paso's position in this case that the inclusion of the E/2 of Section 32 within the Washington Ranch Gas Storage Project and the requirement of a drilling and casing program as outlined in El Paso's Proposed Order are reasonable conservation measures fully within the Commission's statutory power to prevent the migration of gas into other strata, to prevent waste and to protect correlative rights. NMSA 1978, Sections 70-2-2, 70-2-3(A), 70-2-6 (1980 Supp.), 70-2-11, 70-2-12(B)(2), (6), (7) and (13) (1980 Supp.). El Paso therefore urges the Commission to adopt the Proposed Order submitted by El Paso in this case.

Very truly yours,

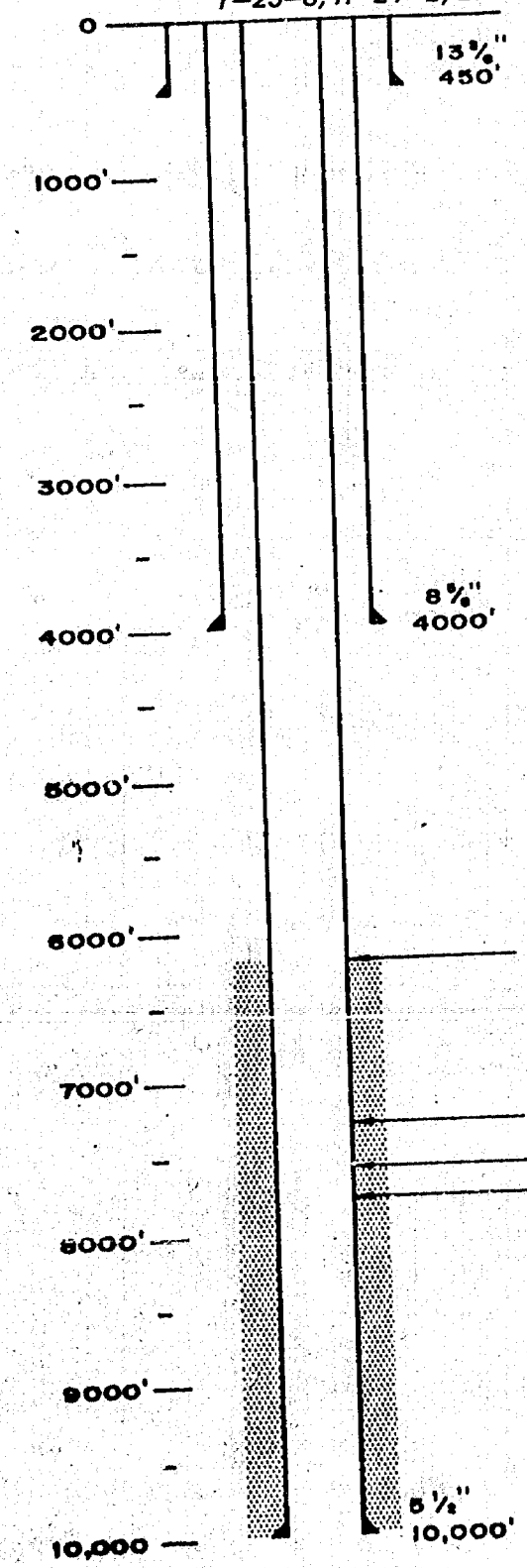
David T. Burleson

David T. Burleson
Principal Counsel

DTB/rs

ALTERNATE WASHINGTON RANCH WELL
FOR ZONES DEEPER THAN THE MORROW

(THIS SCHEMATIC APPLICABLE ONLY FOR EAST HALF SECTION 32,
T–25–S, R–24–E, EDDY CO. NEW MEXICO)



SURFACE CASING OF $13^{3}/_{8}$" SET AT 450' TAKEN FROM SX EXHIBITS NOS. 4, 5, 6, AND 7. CASE NO. 7088.

INTERMEDIATE CASING OF $8^{5}/_{8}$" SET AT 4000' TAKEN FROM SX EXHIBITS NOS. 4 AND 6. CASE NO. 7088.

CEMENT :

1st stage cement from production casing shoe to above DV Tool. Open DV and circulate out cement above DV Tool. Cement second stage with enough cement to bring top of cement to 6170'. Centralize DV Tool and every third joint for a total of 11 centralizers.

$5^{1}/_{2}$" PRODUCTION CASING SET AT 10,000'.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 7088
Order No. R-_____

APPLICATION OF SOUTHERN UNION
EXPLORATION CO. FOR RECONSIDERATION
OF ORDER NO. R-6175

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9:00 a.m. on November 18, 1980, at Santa Fe, New Mexico, before Commission Members Emery C. Arnold and Joe D. Ramey.

NOW, on this ____ day of December, 1980, the Commission, a quorum being present, having considered the testimony and the record, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That Southern Union Exploration Company has challenged the adequacy of the notice of hearing given by the Oil Conservation Division in Case No. 6703, which hearing resulted in the issuance of Order No. R-6175 on November 2, 1979. This challenge is moot, in view of the fact that Southern Union Exploration Company was given notice of the hearing in this case, appeared before the Commission, presented evidence, and was given the opportunity to cross examine all witnesses who appeared in Case No. 6703.

(3) That all of the Finding and Ordering paragraphs of Order No. R-6175, issued by the Oil Conservation Division on November 2, 1979 in Case No. 6703, should be adopted by the Commission, except that Finding paragraph (13)(E) and Ordering paragraph (9) should be deleted, Ordering paragraph (13) should be redesignated as Ordering paragraph (14), the word "Commission" should be substituted for the word "Division" in redesignated Ordering paragraph (14) and the Commission makes no finding with respect to the subject of Finding paragraph (1) for the reasons expressed in paragraph (2), hereinabove.

(4) That any well drilled within the Inactive Area of the Washington Ranch Gas Storage Project should be located according to the General Rules and Regulations of the Division.

(5) That in order to seal off, isolate and thus protect the Morrow storage zone, any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Active Area of the Washington Ranch Gas Storage Project should be subject to special drilling and casing requirements, including the setting of a separate, or extra, string of casing.

(6) That in order to seal off, isolate and thus protect the Morrow storage zone, any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Inactive Area of the Washington Ranch Gas Storage Project should be subject to (i) special drilling and casing requirements, including the setting of a separate, or extra, string of casing; or (ii) a casing and cementing program utilizing a DV tool, centralizers, a cement bond log and a temperature survey.

(7) That the inclusion of the E/2 of Section 32, T-25-S, R-24-E, Eddy County, New Mexico, within the Inactive Area of the Washington Ranch Gas Storage Project and the applicability of special drilling, casing and cementing requirements to wells drilled deeper than 150 feet below the base of the Morrow Clastics are reasonable conservation measures necessary to protect the integrity of the Morrow storage zone and are measures fully within the Commission's statutory power to prevent the migration of gas into other strata, to prevent waste and to protect correlative rights. NMSA 1978, Sections 70-2-2, 70-2-3(A), 70-2-6 (1980 Supp.), 70-2-11, 70-2-12(B)(2), (6), (7) and (13) (1980 Supp.).

(8) That nothing herein should be construed as extending, diminishing or creating new rights to explore for and produce oil and gas nor should anything herein affect a transfer of any right or rights from any party to any other party.

IT IS THEREFORE ORDERED:

(1) That all of the Finding and Ordering paragraphs of Order No. R-6175, issued by the Oil Conservation Division on November 2, 1979 in Case No. 6703, are hereby adopted by the Commission, except that Finding paragraph (13)(E) and Ordering paragraph (9) shall be deleted, Ordering paragraph (13) shall be redesignated as Ordering paragraph (14), the word "Commission" shall be substituted for the word "Division" in redesignated Ordering paragraph (14) and the Commission makes no finding with respect to the subject of Finding paragraph (1).

(2) That a Finding paragraph (13)(C) shall be added to Order No. R-6175 as follows:

(4) That any well drilled within the Inactive Area of the Washington Ranch Gas Storage Project should be located according to the General Rules and Regulations of the Division.

(5) That in order to seal off, isolate and thus protect the Morrow storage zone, any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Active Area of the Washington Ranch Gas Storage Project should be subject to special drilling and casing requirements, including the setting of a separate, or extra, string of casing.

(6) That in order to seal off, isolate and thus protect the Morrow storage zone, any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Inactive Area of the Washington Ranch Gas Storage Project should be subject to (i) special drilling and casing requirements, including the setting of a separate, or extra, string of casing; or (ii) a casing and cementing program utilizing a DV tool, centralizers, a cement bond log and a temperature survey.

(7) That the inclusion of the E/2 of Section 32, T-25-S, R-24-E, Eddy County, New Mexico, within the Inactive Area of the Washington Ranch Gas Storage Project and the applicability of special drilling, casing and cementing requirements to wells drilled deeper than 150 feet below the base of the Morrow Clastics are reasonable conservation measures necessary to protect the integrity of the Morrow storage zone and are measures fully within the Commission's statutory power to prevent the migration of gas into other strata, to prevent waste and to protect correlative rights. NMSA 1978, Sections 70-2-2, 70-2-3(A), 70-2-6 (1980 Supp.), 70-2-11, 70-2-12(B)(2), (6), (7) and (13) (1980 Supp.).

(8) That nothing herein should be construed as extending, diminishing or creating new rights to explore for and produce oil and gas nor should anything herein affect a transfer of any right or rights from any party to any other party.

IT IS THEREFORE ORDERED:

(1) That all of the Finding and Ordering paragraphs of Order No. R-6175, issued by the Oil Conservation Division on November 2, 1979 in Case No. 6703, are hereby adopted by the Commission, except that Finding paragraph (13)(E) and Ordering paragraph (9) shall be deleted, Ordering paragraph (13) shall be redesignated as Ordering paragraph (14), the word "Commission" shall be substituted for the word "Division" in redesignated Ordering paragraph (14) and the Commission makes no finding with respect to the subject of Finding paragraph (1).

(2) That a Finding paragraph (13)(G) shall be added to Order No. R-6175 as follows:

"That any well drilled within the Washington Ranch Gas Storage Project Area as described in (13)(A) above but outside the Active Area of the Washington Ranch Gas Storage Project as described in (13)(B) above would be located according to the General Rules and Regulations of the Division."

(3) That the following Finding paragraph (13)(E) shall replace the Finding paragraph (13)(E) deleted in Ordering paragraph (1) above:

(E)((1)) That any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Active Area of the Washington Ranch Gas Storage Project as described in (13)(B) above would be subject to the following special drilling and casing requirements:

(a) Either water or drilling mud would be utilized as the circulating medium while drilling through the Morrow formation;

(b) A separate, or extra, casing string would be set at a point one hundred (100) feet below the base of the Morrow Clastics as found at a log depth of 6864 feet on the Schlumberger Gamma Ray-Sonic log of the Black River Cities Federal Well No. 1 located in Unit F of Section 34, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico;

(c) The casing would be cemented with enough cement to cause cement to be placed behind the pipe from the casing shoe to a point 1,500 feet above the casing shoe.

((2)) That any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Washington Ranch Gas Storage Project Area as described in (13)(A) above but outside the Active Area of the Washington Ranch Gas Storage Project as described in (13)(B) above would be drilled and cased in the manner described in (13)(E)((1)) above, or, at the option of the operator, would be cased and cemented in the following manner:

The operator would run the production casing to the desired depth with a DV Tool set approximately 200 feet below the base of the Morrow Clastics interval.

Before cementing, the DV Tool would be centralized and casing centralizers would be used on at least every third casing joint above the DV Tool until a minimum of 1000 feet of pipe above the DV Tool is centralized.

The first stage of cementing would be through the casing shoe with enough cement to bring cement behind the pipe to a level above the DV Tool. The DV Tool would then be opened and the cement above the tool circulated out of the hole. The second stage of cementing would be effected through the DV Tool with enough cement to bring the top of the cement to a minimum of 1600 feet above the DV Tool.

A temperature survey and a cement bond log would be run to give a definite indication that the cement top is as required hereinabove and that a proper seal is in effect. The survey and log would be filed with the Division.

(4) That the following Ordering paragraph (9) shall replace the Ordering paragraph (9) deleted in Ordering paragraph (1) above:

"(9)(A) That any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Active Area of the Washington Ranch Gas Storage Project as described in Ordering paragraph (10) below shall be subject to the following special drilling and casing requirements:

(a) Either water or drilling mud shall be utilized as the circulating medium while drilling through the Morrow formation;

(b) A separate, or extra, casing string shall be set at a point one hundred (100) feet below the base of the Morrow Clastics as found at a log depth of 6864 feet on the Schlumberger Gamma Ray-Sonic log of the Black River Cities Federal Well No. 1 located in Unit F of Section 34, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico;

(c) The casing shall be cemented with enough cement to cause cement to be placed behind the pipe from the casing shoe to a point 1,500 feet above the casing shoe.

(B) That any well drilled deeper than 150 feet below the base of the Morrow Clastics within the Washington Ranch Gas Storage Project Area as described in Ordering paragraph (1) above but outside the Active Area of the Washington Ranch Gas Storage Project as described in Ordering paragraph (10) below shall be drilled and cased in the manner described in Ordering paragraph (9)(A) above, or, at the option of the operator, shall be cased and cemented in the following manner:

The operator shall run the production casing to the desired depth with a DV Tool set approximately 200 feet below the base of the Morrow Clastics interval.

Before cementing, the DV Tool shall be centralized and casing centralizers shall be used on at least every third casing joint above the DV Tool until a minimum of 1000 feet of pipe above the DV Tool is centralized.

The first stage of cementing shall be through the casing shoe with enough cement to bring cement behind the pipe to a level above the DV Tool. The DV Tool shall then be opened and the cement above the tool circulated out of the hole. The second stage of cementing shall be effected through the DV Tool with enough cement to bring the top of the cement to a minimum of 1600 feet above the DV Tool.

A temperature survey and a cement bond log shall be run to give a definite indication that the cement top is as required hereinabove and that a proper seal is in effect. The survey and log shall be filed with the Division.

(5) That the following Ordering paragraph (13) shall replace the Ordering paragraph (13) which was redesignated in Ordering paragraph (1) above:

"That nothing herein shall be construed as extending, diminishing or creating new rights to explore for and produce oil and gas nor shall anything herein affect a transfer of any right or rights from any party to any other party."

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOE D. RAMEY, CHAIRMAN

EMERY C. ARNOLD

CERTIFICATE OF MAILING

I hereby certify that I caused to be mailed a true and correct copy of the foregoing documents to Mr. Paul M. Zeis at Southern Union Exploration Company, Suite 400, Texas Federal Building, 1217 Main Street, Dallas, Texas 75202, on this 18th day of November, 1980.

David T. Burleson
Principal Counsel

WILLIAM A. SLOAN
JACKSON G. AKIN
JOHN D. ROBB
CHARLES B. LARRABEE
JAMES C. RITCHIE
JOHN P. EASTHAM
WILLIAM C. SCHAAB
RAY H. RODEY
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HAND DELIVERED

December 19, 1980

RECEIVED
DEC 19 1980
OIL CONSERVATION DIVISION
SANTA FE

Mr. Joe D. Ramey, Director
Oil Conservation Division
Energy and Minerals Department
State Land Office Building
Santa Fe, New Mexico 87501

Re: Oil Conservation Commission Case No. 7088

Dear Mr. Ramey:

Please find enclosed five copies of Southern Union Exploration Company's ("SX") proposed Order.

SX believes there is no substantial evidence in the record to indicate that any special well drilling or completion requirements are necessary for E/2 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, and that, consequently, the Commission should delete E/2 Section 32 from the Washington Ranch Gas Storage Project and from the effects of its Order No. R-6175. SX's proposed Order was prepared on this basis. If the Commission deletes E/2 Section 32, SX would not object to the addition to the Order of the following paragraphs:

"That should any well be drilled in E/2 Section 32, Township 25 South, Range 24 East, NMPM, penetrating (partially or totally) the Morrow Formation, the following special field rules shall apply:

A. In the event casing is set through the Morrow Formation, a volume of cement adequate to cover the Morrow Formation and to extend at least 1,500 feet above the Morrow Formation shall be placed behind the casing.

B. In the event casing is not set through the Morrow Formation, the uncased hole through the Morrow Formation shall be filled with cement with a volume adequate to completely cover the exposed Morrow Formation and to extend at least 100 feet above the top of the Morrow Formation.

C. In the event a completion in the Morrow Formation is attempted, it shall be a cased hole completion attempt with the casing cemented as in Paragraph "A" above. At the time of completion, a continuous bottom hole pressure buildup test of at least 72 hours duration shall

be run with a wireline retrievable pressure recording device set as near to the Morrow Formation perforation as practical. All pressure information from such buildup, along with copies of any logs, drillstem tests, core information and other data, shall be supplied to the Division and, insofar as such data pertains to the Morrow Formation, to the Operator of the Washington Ranch Storage Project.

(D) If there is a conflict between the provisions of this Order and the General Rules and Regulations of the New Mexico Oil Conservation Division, then this Order shall prevail. In all other respects, the General Rules and Regulations of the Division shall apply to wells drilled in E/2 Section 32, Township 25 South, Range 24 East, NMPM."

Please let me know if you have questions.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

BY Mark K. Adams
MARK K. ADAMS

MKA:jf
Enclosures

cc: Ernest L. Padilla, Esquire
General Counsel

Paul M. Zeis, Esquire
Assistant General Attorney, SX

David T. Burleson, Esquire
El Paso Natural Gas Company

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

RECEIVED
DEC 19 1980
OIL CONSERVATION DIVISION
SANTA FE

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 7088
R-

APPLICATION OF SOUTHERN UNION
EXPLORATION COMPANY FOR
RECONSIDERATION OF ORDER NO. R-6175.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 A.M. on November 18, 1980, at Santa Fe, New Mexico, before Commissioners Joe D.Ramey and Emery C. Arnold.

NOW, on this ____day of December, 1980, the Commission, a quorum being present, having considered the testimony and the record in this Case and in Case No. 6703 and being fully advised in the premises,

FIND:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Southern Union Exploration Company ("SX"), owns State of New Mexico Oil and Gas Lease No. LG-5340, covering inter alia, NE 1/4 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, and State of New Mexico Oil and

Gas Lease No. V-150, covering SE 1/4 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico. (E/2 Section 32, Township 25 South, Range 24 East, is hereinafter called "E/2 Section 32").

(3) That E/2 Section 32 was declared to be within the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 of the New Mexico Oil Conservation Division in Case No. 6703.

(4) That the said Order No. R-6175 was not intended to prevent SX from drilling to or through and producing from the Morrow Formation underlying E/2 Section 32.

(5) That the Morrow Formation underlying E/2 Section 32 and W/2 Section 33, Township 25 South, Range 24 East, Eddy County, New Mexico, is not within the Washington Ranch-Morrow Gas Pool created by Oil Conservation Commission Order No. R-4279, and thereafter expanded by Orders No. R-4377, R-4437, R-4734 and R-4782, and that there is no substantial evidence before the Commission to indicate that E/2 Section 32 is within said Pool.

(6) That there is no substantial evidence before the Commission of pressure communication or pressure connection between the Morrow Foramtion underlying E/2 Section 32 and the structural feature within which El Paso Natural Gas Company proposes to store gas in its Washington Ranch Gas Storage Project.

(7) That W/2 Section 33, Township 25 South, Range 24 East, is located between E/2 Section 32 and the structural feature in which El Paso proposes to store gas, that there has been no well drilled to

the Morrow Formation underlying W/2 Section 33, that El Paso controls W/2 Section 33, and that El Paso could drill an observation well or wells on W/2 Section 33.

(8) That there is no substantial evidence before the Commission that completing and producing an oil and gas well in the Morrow or any other formation underlying E/2 Section 32 will cause or result in underground waste, pollution, the escape of gas from the Washington Ranch Gas Storage Project, or any other undesirable condition.

(9) That the special drilling and casing requirements imposed by Ordering Paragraph (9) of Order No. R-6175 are not required to protect the Washington Ranch Gas Storage Project from any consequences of a well drilled, completed and produced in E/2 Section 32.

(10) That including E/2 Section 32 in the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 and the imposition of special drilling and casing requirements by Ordering Paragraph (9) of such Order would significantly increase the cost of drilling a well to or through the Morrow Formation underlying E/2 Section 32, would adversely affect the marketability of the oil and gas leases covering E/2 Section 32 for joint operations, and would adversely affect correlative rights.

(11) That E/2 of Section 32 is not needed for the Washington Ranch Gas Storage Project.

IT IS THEREFORE ORDERED:

(1) That E/2 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, shall be excepted and excluded from Order

No. R-6175 of the New Mexico Oil Conservation Division, and said Order shall have no force or effect with respect to E/2 Section 32.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOE D. RAMEY, Member

S E A L

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

RECEIVED
DEC 19 1980
OIL CONSERVATION DIVISION
SANTA FE

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 7088
R-

APPLICATION OF SOUTHERN UNION
EXPLORATION COMPANY FOR
RECONSIDERATION OF ORDER NO. R-6175.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 A.M. on November 18, 1980, at Santa Fe, New Mexico, before Commissioners Joe D.Ramey and Emery C. Arnold.

NOW, on this ____day of December, 1980, the Commission, a quorum being present, having considered the testimony and the record in this Case and in Case No. 6703 and being fully advised in the premises,

FIND:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Southern Union Exploration Company ("SX"), owns State of New Mexico Oil and Gas Lease No. LG-5340, covering inter alia, NE 1/4 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, and State of New Mexico Oil and

Gas Lease No. V-150, covering SE 1/4 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico. (E/2 Section 32, Township 25 South, Range 24 East, is hereinafter called "E/2 Section 32").

(3) That E/2 Section 32 was declared to be within the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 of the New Mexico Oil Conservation Division in Case No. 6703.

(4) That the said Order No. R-6175 was not intended to prevent SX from drilling to or through and producing from the Morrow Formation underlying E/2 Section 32.

(5) That the Morrow Formation underlying E/2 Section 32 and W/2 Section 33, Township 25 South, Range 24 East, Eddy County, New Mexico, is not within the Washington Ranch-Morrow Gas Pool created by Oil Conservation Commission Order No. R-4279, and thereafter expanded by Orders No. R-4377, R-4437, R-4734 and R-4782, and that there is no substantial evidence before the Commission to indicate that E/2 Section 32 is within said Pool.

(6) That there is no substantial evidence before the Commission of pressure communication or pressure connection between the Morrow Foramtion underlying E/2 Section 32 and the structural feature within which El Paso Natural Gas Company proposes to store gas in its Washington Ranch Gas Storage Project.

(7) That W/2 Section 33, Township 25 South, Range 24 East, is located between E/2 Section 32 and the structural feature in which El Paso proposes to store gas, that there has been no well drilled to

the Morrow Formation underlying W/2 Section 33, that El Paso controls W/2 Section 33, and that El Paso could drill an observation well or wells on W/2 Section 33.

(8) That there is no substantial evidence before the Commission that completing and producing an oil and gas well in the Morrow or any other formation underlying E/2 Section 32 will cause or result in underground waste, pollution, the escape of gas from the Washington Ranch Gas Storage Project, or any other undesirable condition.

(9) That the special drilling and casing requirements imposed by Ordering Paragraph (9) of Order No. R-6175 are not required to protect the Washington Ranch Gas Storage Project from any consequences of a well drilled, completed and produced in E/2 Section 32.

(10) That including E/2 Section 32 in the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 and the imposition of special drilling and casing requirements by Ordering Paragraph (9) of such Order would significantly increase the cost of drilling a well to or through the Morrow Formation underlying E/2 Section 32, would adversely affect the marketability of the oil and gas leases covering E/2 Section 32 for joint operations, and would adversely affect correlative rights.

(11) That E/2 of Section 32 is not needed for the Washington Ranch Gas Storage Project.

IT IS THEREFORE ORDERED:

(1) That E/2 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, shall be excepted and excluded from Order

No. R-6175 of the New Mexico Oil Conservation Division, and said Order shall have no force or effect with respect to E/2 Section 32.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOE D. RAMEY, Member

S E A L

WILLIAM A. SLOAN
JACKSON G. AKIN
JOHN O. ROBB
CHARLES B. LARRABEE
JAMES C. RITCHIE
JOHN P. EASTHAM
WILLIAM C. SCHAAB
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TRAVIS R. COLLIER
ROBERT O. PARK

RODEY, DICKASON, SLOAN, AKIN & ROBB, P. A.
COUNSELLORS AND ATTORNEYS AT LAW
20 FIRST PLAZA, SUITE 700
P. O. BOX 1888
ALBUQUERQUE, NEW MEXICO 87103

OF COUNSEL
DON L. DICKASON

PEARCE C. RODEY
1889-1956

TELECOPIER 765-5903

TELEPHONE 765-5900
AREA CODE 505

2635

May 14, 1980

Ernest L. Padilla, Esq.
General Counsel
Oil Conservation Commission
P.O. Box 2088
Santa Fe, NM 87501

Re: Southern Union Exploration Company - Washington Ranch Gas Storage Project

Dear Ernie:

I am sorry that you did not receive my April 22 letter and the materials which accompanied it. Enclosed are copies of my April 22 letter and the accompanying materials.

Please let me know if you have questions.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

By: Mark
Mark K. Adams

MKA:ks

RECEIVED
MAY 15 1980
OIL CONSERVATION DIVISION
SANTA FE

WILLIAM A. SLOAN
JACKSON G. AKIN
JOHN D. ROBB
CHARLES B. LARRABEE
JAMES C. RITCHIE
JOHN P. EASTHAM
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1889-1958

TELECOPIER 765-5903

TELEPHONE 765-5900
AREA CODE 505

RECEIVED
MAY 15 1980
OIL CONSERVATION DIVISION
SANTA FE

April 22, 1980

Ernest L. Padilla, Esq.
General Counsel
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Southern Union Exploration Company - Washington Ranch Gas Storage Project

Dear Ernie:

Enclosed are copies of materials sent on March 18, 1980 by Southern Union Exploration Company to El Paso Natural Gas Company in an attempt to reach a reasonable agreement which would permit Southern Union to exercise its and the State's rights in Sec. 32, T25S, R24E, under State of New Mexico Oil Gas Leases LG-5340 and V-150. Also enclosed is a copy of El Paso's recent response.

Southern Union's position is summarized in the second paragraph on page 2 of its March 18 proposed letter agreement with El Paso. El Paso's April 11 response indicates that it does not agree with Southern Union's position.

Southern Union would prefer to avoid formal administrative and/or judicial proceedings, and hopes that it and El Paso can reach an agreement which will recognize its and the State's rights without such proceedings. However, if El Paso continues to refuse to enter into a reasonable agreement with Southern Union, Southern Union will have to initiate proceedings in order to protect its and the State's rights.

Please let me know if you have any questions or would like to discuss this matter.

Yours very truly,
RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

By:
Mark K. Adams

MKA:ks

cc: Mr. Ray Graham
Mr. Wallace Sutherland
Mr. Richard B. Isaacks
Mr. Paul M. Zeis
Mr. Duane C. Gilkey

El Paso EXPLORATION COMPANY

P. O. BOX 1492
EL PASO, TEXAS 79978
PHONE: 915-543-2600

April 11, 1980

Southern Union Exploration Company
First International Building
Dallas, Texas 75270

Attention: Mr. Paul M. Zeis

Re: Washington Ranch Gas Storage Area
Eddy County, New Mexico

Dear Mr. Zeis:

We have reviewed the proposed letter agreement and clarifying order transmitted by your March 18, 1980 letter and see no need for either.

It is El Paso's position that Oil Conservation Division Order No. R-6175 does not prohibit or hinder you from exploring and developing your leases in Section 32-25S-24E. We also feel that the rules established in the order are necessary to protect the integrity of our storage project.

Very truly yours,

Richard B. Isaacks
Staff Landman
Land Department

DI:ee

cc: Mark Adams
Duane Gilkey

Southern Union Exploration Company

March 18, 1980

El Paso Natural Gas Company
P.O. Box 1492
El Paso, Texas 79978

Attention: Mr. Dick Issacks

Re: Washington Ranch Storage Project
New Mexico Oil Conservation Division Order No. R-6175

Dear Mr. Issacks:

Pursuant to our telephone conversation, please find enclosed a proposed letter agreement intended to settle any ambiguity or disagreement with regard to the referenced Order. If the letter agreement is acceptable to El Paso, please let me know and I will forward execution copies to you.

An early response will be appreciated. In the event El Paso and SX are unable to reach an agreement within a reasonable length of time, SX will pursue all other legal remedies to protect its rights.

Yours very truly,

Paul M. Zeis,
Attorney

PMZ:fr
Enc.

cc: Charles F. Hawkins
Oran L. Haseltine

FILE COPY

Southern Union Exploration Company

March 18, 1980

El Paso Natural Gas Company
P.O. Box 1492
El Paso, Texas 79978

Re: Washington Ranch Storage Project

Gentlemen:

This letter sets out the agreement between El Paso Natural Gas Company, hereinafter referred to as "El Paso," and Southern Union Exploration Company, hereinafter referred to as "SX," concerning Order No. R-6175, hereinafter referred to as the "Order," entered November 2, 1979, by the State of New Mexico, Energy and Minerals Department, Oil Conservation Division, on the Application of El Paso for Underground Gas Storage, Eddy County, New Mexico, in Case No. 6703.

SX is the owner of Oil and Gas Leases from the State of New Mexico, as Lessor, Numbered V-150 and LG-5340, covering, inter alia, the E/2 of Section 32, T25S, R24E, Eddy County, New Mexico, hereinafter referred to as the "Leased Premises." Since the Order purports to cover and affect the said Leased Premises in an ambiguous manner which may adversely affect SX's rights in the said Leased Premises; SX and El Paso desire to hereby settle any dispute as to the intent of the Order and to hereby agree on remedial steps to insure the preservation of the rights of the parties in the said Leases Premises.

The Order provides, in part, as follows -

Paragraph 12 (E) of the findings section of the Order provides:

"(E) That any well drilled within the Washington Gas Storage Project Area as described in (12)(A) above but outside the Active Area of the Washington Ranch Storage Project as described in (12)(B) above

(1) Would be located according to the General Rules of the Division, and

(2) Would be cased and cemented in such a manner as to protect the Morrow Gas Storage Zone."

Further Paragraph (9) of the ordering section of the Order provides:

"(9) That should any Operator drill a well to a formation deeper than the Morrow Storage Zone within the boundary of the Washington Ranch Gas Storage Project as described in Order No. (1) above, the following special drilling and casing requirement shall be observed:

(A) Either water or drilling mud shall be utilized as the circulating medium while drilling through the Morrow formation;

(B) A separate, or extra, casing string shall be set at a point one hundred (100) feet below the base of the Morrow Clastics as found at a log depth of 6864 feet on the Schlumberger Gamma Ray-Sonic log of the Black River Cities Federal Well No. 1 located in Unit F of Section 34, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico;

(C) The casing shall be cemented with enough cement to cause cement to be placed behind the pipe from the casing shoe to a point 1,500 feet above the casing shoe."

For and in consideration of the forebearance of court action by SX to set aside the Order and to settle all disputes between the parties hereto, it is agreed that the Order, in particular but not limited to the foregoing cited Paragraphs "12(E)" and "(9)," was not intended to govern or limit the activities of SX, its successors or assigns, in exploring and developing its leases. It is specifically agreed that SX is not precluded from drilling to, in or through the Morrow Formation underlying the Leased Premises and attempting a completion or completing a well in said Morrow Formation or any other formation. In the event SX drills to, in or through the Morrow Formation, SX shall not be required to set a separate or extra casing string, cement behind the pipe or utilize any other special drilling or completing techniques except those normally ordered by the Division. It is further agreed that the Order was not intended to grant El Paso any storage or other rights in, to or under the Leased Premises.

Pursuant to the foregoing stipulation and agreement of intent, the parties hereby further agree to the entry of the Order Clarifying Order No. R-6175 in Case No. 6703, attached hereto as Exhibit A and incorporated herein, and this agreement is conditioned upon the approval and entry of the attached Order clarifying Order No. R-6175 by the Oil Conservation Division.

If the foregoing correctly sets out the agreement, please execute this agreement in the space provided below and return one fully executed copy to SX.

Yours very truly,

SOUTHERN UNION EXPLORATION COMPANY

By _____
Oran L. Haseltine, President

OLH:fr
Enc.

AGREED:

EL PASO NATURAL GAS COMPANY

By _____

Date: _____

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 6703
Order No. _____

APPLICATION OF SOUTHERN UNION EXPLORATION
COMPANY AND EL PASO NATURAL GAS COMPANY

ORDER CLARIFYING ORDER NO. R-6175

BY THE DIVISION:

This cause came on for hearing at _____ on _____, at Santa Fe, New Mexico, before _____.

NOW, on this _____ day of _____, 1980, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premise,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicants, Southern Union Exploration Company and El Paso Natural Gas Company, propose the clarification of the Division's previous Order No. R-6175, entered on November 2, 1979, in this case.

(3) That the Applicants have entered into an agreement and stipulation as to the intent and effect of the said Order No. R-6175, a copy of which has been made a part of the record in this case.

(4) That clarification of the said Order R-6175 is necessary as follows:

(A) That paragraph 12(E) of the findings section should be clarified by excluding the E/2 of Section 32, T25S, R24E, Eddy County, New Mexico.

(B) That paragraph (9) of the ordering section should be clarified by excluding the E/2 of Section 32, T25S, R24E, Eddy County, New Mexico.

(5) That the foregoing clarification is necessary to prevent waste.

IT IS THEREFORE ORDERED:

(1) That Order No. R-6175 entered by this Division on November 2, 1979, in this case be amended as follows:

(A) By deleting paragraph 12(E) of the findings section and inserting the following in lieu thereof:

"(E) That any well drilled within the Washington Ranch Gas Storage Project Area as described in (12) (A) above but outside the Active Area of the Washington Ranch Gas Storage Project as described in (12 (B) above, except wells drilled in the E/2 of Section 32, T25S, R24E,

((1)) Would be located according to the General Rules of the Division, and

((2)) Would be cased and cemented in such a manner as to protect the Morrow gas storage zone."

(B) By deleting paragraph (9) of the ordering section and inserting the following in lieu thereof:

"(9) That should any operator drill a well to a formation deeper than the Morrow storage zone within the boundary of the Washington Ranch Gas Storage Project as described in Order No. (1) above, the following special drilling and casing requirements shall be observed, except for wells drilled in the E/2 of Section 32, T25S, R24E:

(A) Either water or drilling mud shall be utilized as the circulating medium while drilling through the Morrow formation;

Either water or drilling mud shall be utilized as the circulating medium while drilling through the Morrow formation;

(B) A separate, or extra, casing string shall be set at a point one hundred (100) feet below the base of the Morrow Clastics as found at a log depth of 6864 feet on the Schlumberger Gamma Ray-Sonic log of the Black River Cities Federal Well No. 1 located in Unit F of Section 34, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico;

(C) The casing shall be cemented with enough cement to cause cement to be placed behind the pipe from the casing shoe to a point 1,500 feet above the casing shoe."

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

SEAL

WILLIAM A. SLOAN
JACKSON G. AKIN
JOHN D. ROBB
CHARLES B. LARRABEE
JAMES C. RITCHIE
JOHN P. EASTHAM
WILLIAM C. SCHAAB
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BEN M. ALLEN

RODEY, DICKASON, SLOAN, AKIN & ROBB, P. A.
COUNSELLORS AND ATTORNEYS AT LAW
20 FIRST PLAZA, SUITE 700
P. O. BOX 1888
ALBUQUERQUE, NEW MEXICO 87103

OF COUNSEL
DON L. DICKASON

PEARCE C. RODEY
1889-1958

TELECOPIER 765-5903

TELEX 660401

TELEPHONE 765-5900
AREA CODE 505

November 19, 1980

Ernest L. Padilla, General Counsel
State of New Mexico Energy and Minerals Department
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

RECEIVED
NOV 24 1980
OIL CONSERVATION DIVISION
SANTA FE

Re: Southern Union Exploration Company
Washington Ranch Gas Storage Project
Order No. R-6175

Dear Ernie:

I was glad to see you looking so well. I was concerned about you.

Enclosed are copies of SX's Exhibits 1 and 4-8 and of EP's Exhibit 1. SX's Exhibits 2 and 3 are maps which I do not have, but I am by a copy of this letter asking Paul Zeis to send them to you.

Please let me know if you have questions.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

Mark

BY
MARK K. ADAMS

MKA:jf
Enclosures

cc: Paul M. Zeis, Esquire

Southern Union Exploration Company
First International Building
Dallas, Texas 75270
(214) 748-8511

June 15, 1979

El Paso Natural Gas Company
P. O. Box 1492
El Paso, Texas 79978

Attn: Mr. Richard B. Isaacks

Re: SX Lse. 1269 & 1270
State of New Mexico V-150 & LG-5340
All in Sec. 32, T25S, R24E
Eddy County, New Mexico

Gentlemen:

In regard to your letter of June 13, 1979, whereby you offered Southern Union Exploration Company (SX) $64,000 for the Morrow rights in the captioned lands, SX is not interested in selling this acreage at that price. SX is also not interested in selling just the E/2 of Section 32-25S-24E.

SX hereby requests that El Paso Natural Gas Company remove the captioned acreage from their Washington Ranch Gas Storage Project.

Yours very truly,

Stephen P. Hanger,
Landman

SPH:hw

BEFORE THE
OIL CONSERVATION COMMISSION
Case No. 2088 Exhibit No. 1
Submitted by: SX
Hearing Date 11/18/80

OIL CONSERVATION DIVISION
Case No. 7088 Exhibit No. 4
Submitted by SX
Hearing Date 11/16/80

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

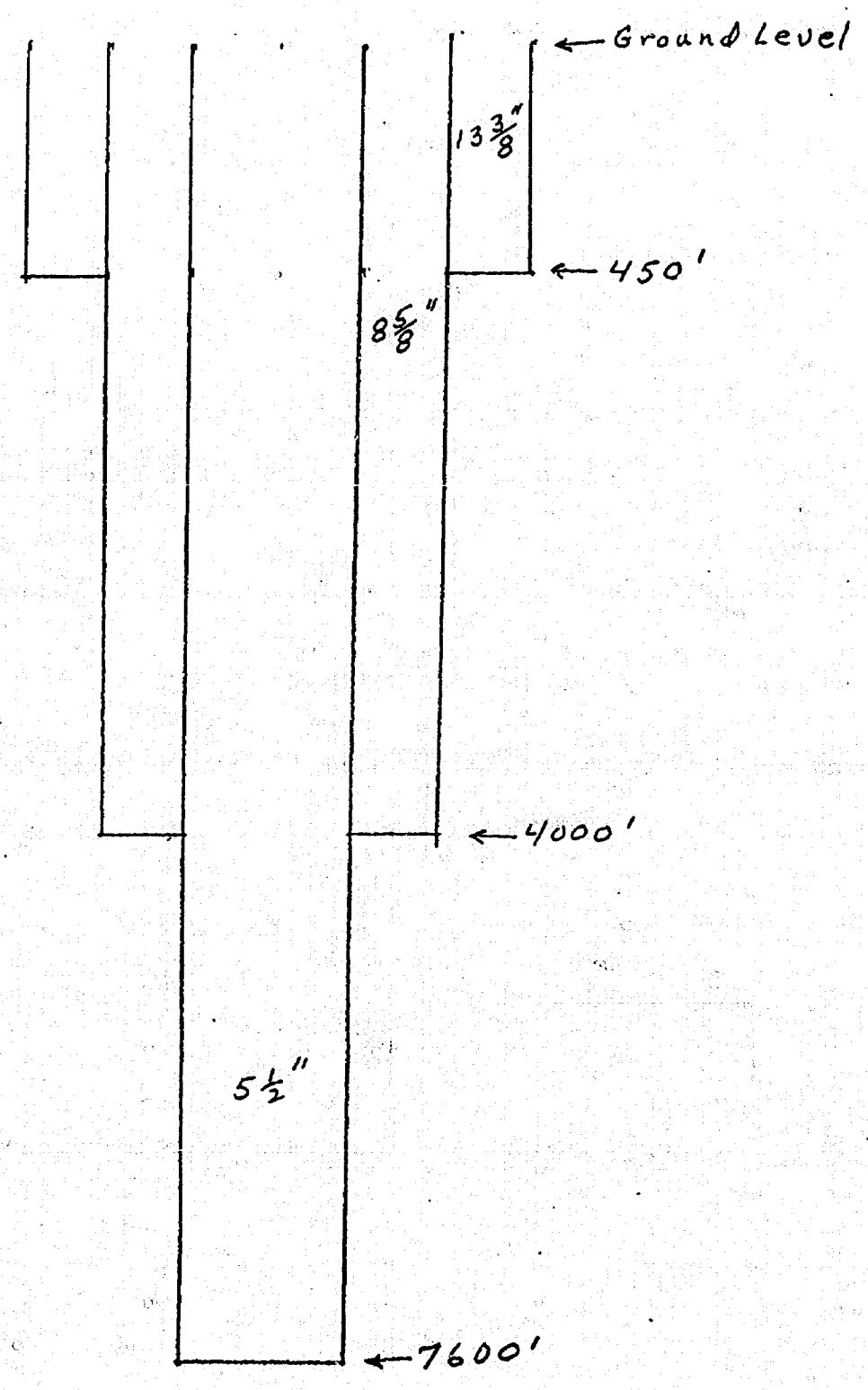
Lease and Well No. Washington Ranch Area (Standard Well)
Location Sec 32, T25S, R24E
Field
Primary Target (WC) (D) (SO) (OWDD) Morrow
County Eddy
State New Mexico
Depth 7600
Estimated Days 43

EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actual
450			Casing: 13 3/8", H40, 48#, ST&C	9,800		
4000			8 5/8" (2200', 24# K-55 ST&C	48,300		
			(500' 24# S80 1300# 28# S80)			
	7600		5 1/2" (6400' 15.5# K-55		54,700	
			1200' 17# K-55 ST&C			
	7600		Tubing: 2 7/8" N80, 6.4# EUE		43,400	
			Other Equipment: Well Head			
			Wellhead & Valves	4,000		
			Xmas Tree		25,000	
			Packer		2,900	
			TOTAL TANGIBLES	62,100	126,000	

INTANGIBLE COST DESCRIPTION

Drilling Contract: Footage ft. @ $ /ft.				
Daywork, w/D.P. 30 days @ $ 6000 /day	180,000			
Daywork, w/o D.P. 3 days @ $ 6000 /day	18,000			
Completion Rig Costs 10 days @ $ 1200 /day		12,000		
Other Rig Costs MI, RU, RD, MO	15,000			
Drill Pipe Rental				
Tool and Equipment Rentals	5,000	5,000		
Casing Crews, Tools and Tongs	4,800	3,500		
Fuel and Water Fuel included in rig cost only for MGF	3,500	2,500		
Bits and Coreheads	14,000	850		
Drilling Mud and Chemicals	35,000			
Primary Casing Cementing Services and Materials	14,200	16,500		
Squeeze Cementing Services and Materials				
Acidizing, and Fracturing		33,000		
Open Hole Logging	10,000			
Cased Hole Logging and Perforating		7,500		
Coring, Core Analysis and Paleo.				
Mud Logger	4,250			
Drill Stem Tests	5,000			
Transportation	3,700	5,100		
Location Costs	20,000	5,000		
Supervision	11,600	3,500		
Geologist	3,500			
Miscellaneous Contingencies 15%	34,500	38,600		
Production Facilities Hook Up		20,000		
TOTAL INTANGIBLES	382,050	153,050		
TOTAL ESTIMATED COST	444,150	279,050	723,200	

Total Estimated Cost-Dry Hole	$444,150	
Add: P&A Cost	20,000	$464,150
Less: Salvage Value		19,705
Net Dry Hole Cost		$444,445


Ground Level
13 3/8"
450'
8 5/8"
4000'
5 1/2"
7600'

BEFORE THE
OIL CONSERVATION COMMISSION
Case No. 7088
Exhibit No. 5
Submitted by SX
Hearing Date 11/18/80

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

Lease and Well No. Washington Ranch Area (Modified Well)
Location Sec.32, T25S, R24E
Field
County Eddy State New Mexico
Primary Target Morrow Depth 7600 Estimated Days 46
(WC) (D) (SO) (OWDD)

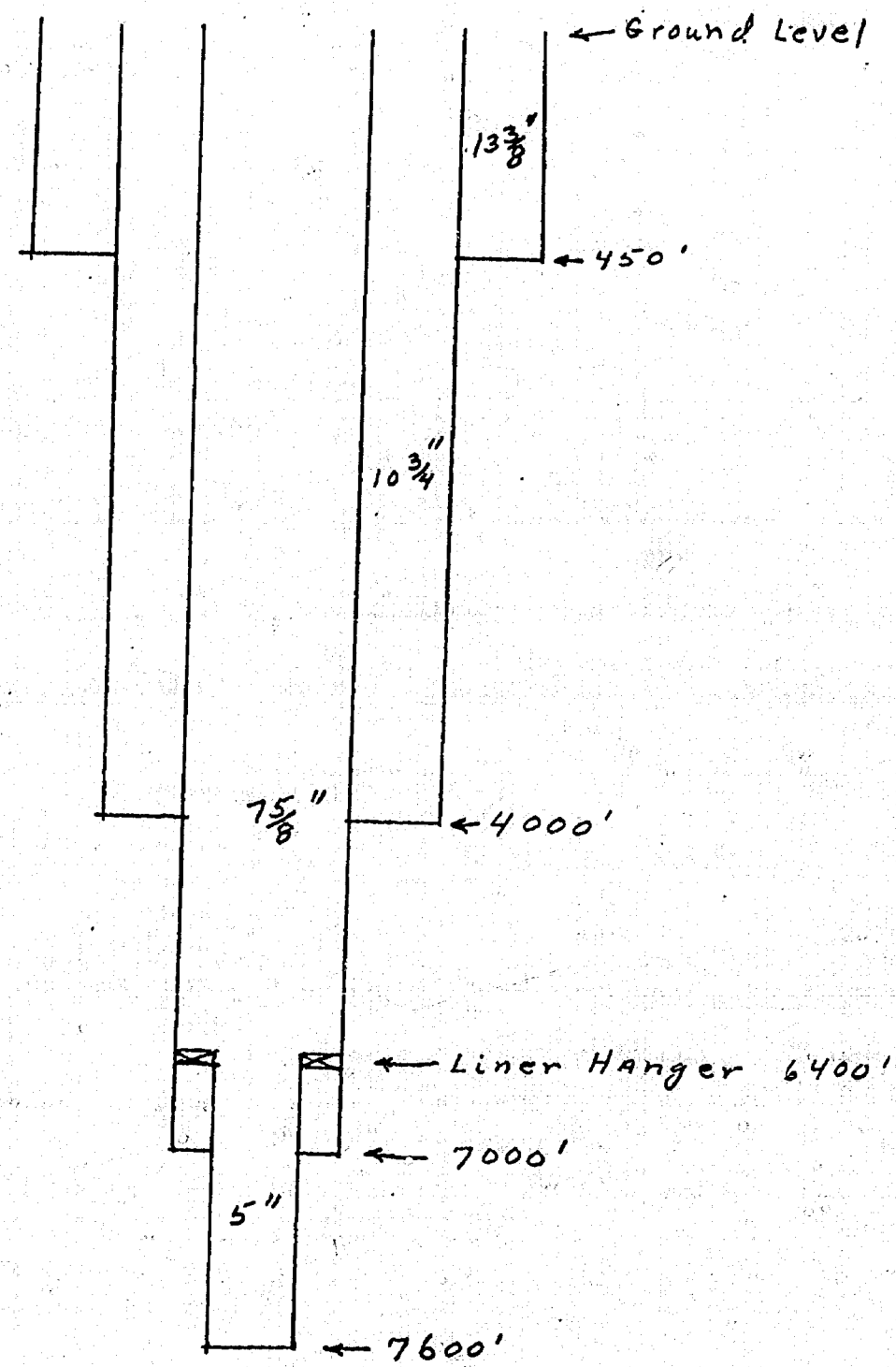
EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actual
450			Casing:13 3/8", H40,48#,ST&C	$9,800		
4000			10 3/4"(2600',40.5#,K-55)			
			800',40.5#,S80)(600',45.5#			
			S80) ST&C	74,400		
7000			7 5/8" (5300',26.4#,N80)			
			(1700',26.4#,S95) ST&C	120,200		
			TUBING:			
	1200		5",15#,K-55, ST&C		$8,400	
	7600		TUBING: 2 7/8", N80, 6.5#,			
			EUE		43,400	
			Other Equipment:			
			Well Head and valves	4,000		
			Xmas Tree		25,000	
			Packer		4,900	
			Liner Hanger		6,500	
			TOTAL TANGIBLES	$208,400	$88,200	

INTANGIBLE COST DESCRIPTION

Drilling Contract:			
Footage ____ ft. @ $ ____ /ft.			
Daywork, w/D.P. 32 days @ $ 6000 /day	$192,000		
Daywork, w/o D.P. 4 days @ $ 6000 /day	24,000		
Completion Rig Costs 10 days @ $ 1200 /day		$12,000	
Other Rig Costs MI, RU, RD, MO	15,000		
Drill Pipe Rental			
Tool and Equipment Rentals	5,500	5,000	
Casing Crews, Tools and Tongs	9,600	2,500	
Fuel and Water Fuel included in rig cost,only for MGF	3,500	2,500	
Bits and Coreheads	22,500	700	
Drilling Mud and Chemicals	42,400		
Primary Casing Cementing Services and Materials	26,600	3,500	
Squeeze Cementing Services and Materials			
Acidizing and Fracturing		34,000	
Open Hole Logging	20,500		
Cased Hole Logging and Perforating		7,500	
Coring, Core Analysis and Paleo.			
Mud Logger	5,950		
Drill Stem Tests	5,000		
Transportation	11,500	2,600	
Location Costs	20,000	5,000	
Supervision	12,600	3,500	
Geologist	4,900		
Miscellaneous Contingencies 15%	65,000	28,000	
Production Facilities Hook Up		20,000	
TOTAL INTANGIBLES	$486,550	$126,800	
TOTAL ESTIMATED COST	$694,950	$215,000	$909,950

Total Estimated Cost-Dry Hole	$694,950	
Add: P&A	30,000	$724,950
Less: Salvage value		88,938
Net Dry Hole Cost		$636,012

Date Spudded ____
Date Completed ____
Total Depth ____


Ground Level
13 3/8"
450'
10 3/4"
7 5/8"
4000'
Liner Hanger 6400'
7000'
5"
7600'

OIL CO[illegible] DIVISION

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

7080 — 6
Submitted by: SX
Drilling Date: 11/18/80

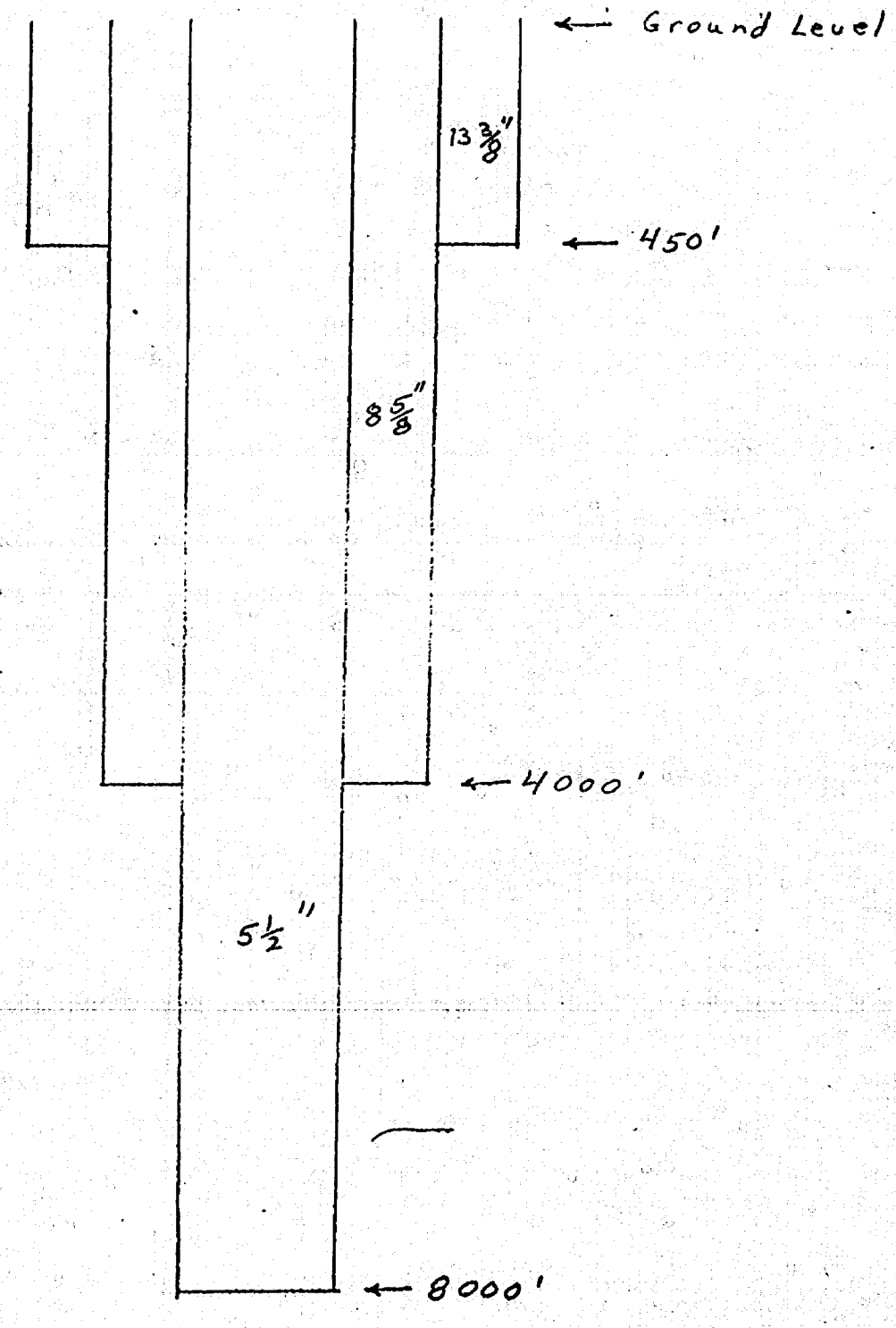
Lease and Well No. Washington Ranch Area (Standard Well)
Location Sec.32, T25S, R24E
Field _____ County Eddy State New Mexico
Primary Target Devonian Depth 8,000 Estimated Days 45
(WC) (D) (SO) (OWDD)

EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actua
450			Casing: 13 3/8", H40,48# ST&C	$9,800		
4000			8 5/8(2200',24#, K55)(500' 24#, S80)(1300',28#,S80)ST&C	48,000		
	8000		5 1/2" (6,400', 15.5#,K-55) (1600',17#,K55) ST&C		$57,600	
	8000		Tubing: 2 7/8",N80,6.4# EUE		45,700	
			Other Equipment: Well Head and valves	4,000		
			Xmas Tree		25,000	
			Packer		2,900	
			TOTAL TANGIBLES	$62,100	$131,200	

INTANGIBLE COST DESCRIPTION	Estimated Dry Hole	Estimated Producer	Actua
Drilling Contract:			
Footage _____ ft. @ $ _____ /ft.			
Daywork, w/D.P. 32 days @ $6,000 /day	$192,000		
Daywork, w/o D.P. 3 days @ $6,000 /day	18,000		
Completion Rig Costs 10 days @ $1,200 /day		$12,000	
Other Rig Costs MI, RU, RD, MO	15,000		
Drill Pipe Rental			
Tool and Equipment Rentals	5,000	5,000	
Casing Crews, Tools and Tongs	4,800	3,500	
Fuel and Water Fuel included in rig cost only for MGF	3,500	2,500	
Bits and Coreheads	14,000	850	
Drilling Mud and Chemicals	37,000		
Primary Casing Cementing Services and Materials	14,200	16,500	
Squeeze Cementing Services and Materials			
Acidizing and Fracturing		33,000	
Open Hole Logging	10,000		
Cased Hole Logging and Perforating		7,500	
Coring, Core Analysis and Paleo.	4		
Mud Logger	4,250		
Drill Stem Tests	5,000		
Transportation	3,900	5,100	
Location Costs	20,000	5,000	
Supervision	12,300	3,500	
Geologist	4,200		
Miscellaneous Contingencies 15%	36,500	39,000	
Production Facilities Hook Up		20,000	
TOTAL INTANGIBLES	$399,650	$153,450	
TOTAL ESTIMATED COST	$461,750	$284,650	$746,400

Total Estimated Cost-Dry Hole	$461,750	
Add: P&A Cost	20,000	$481,750
Less: Salvage Value		19,705
Net Dry Hole Cost		$462,045

Date Spudded _____
Date Completed _____
Total Depth _____


Ground Level
13 3/8"
450'
8 5/8"
4000'
5 1/2"
8000'

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Submitted by SX
Hearing Date 11/16/88

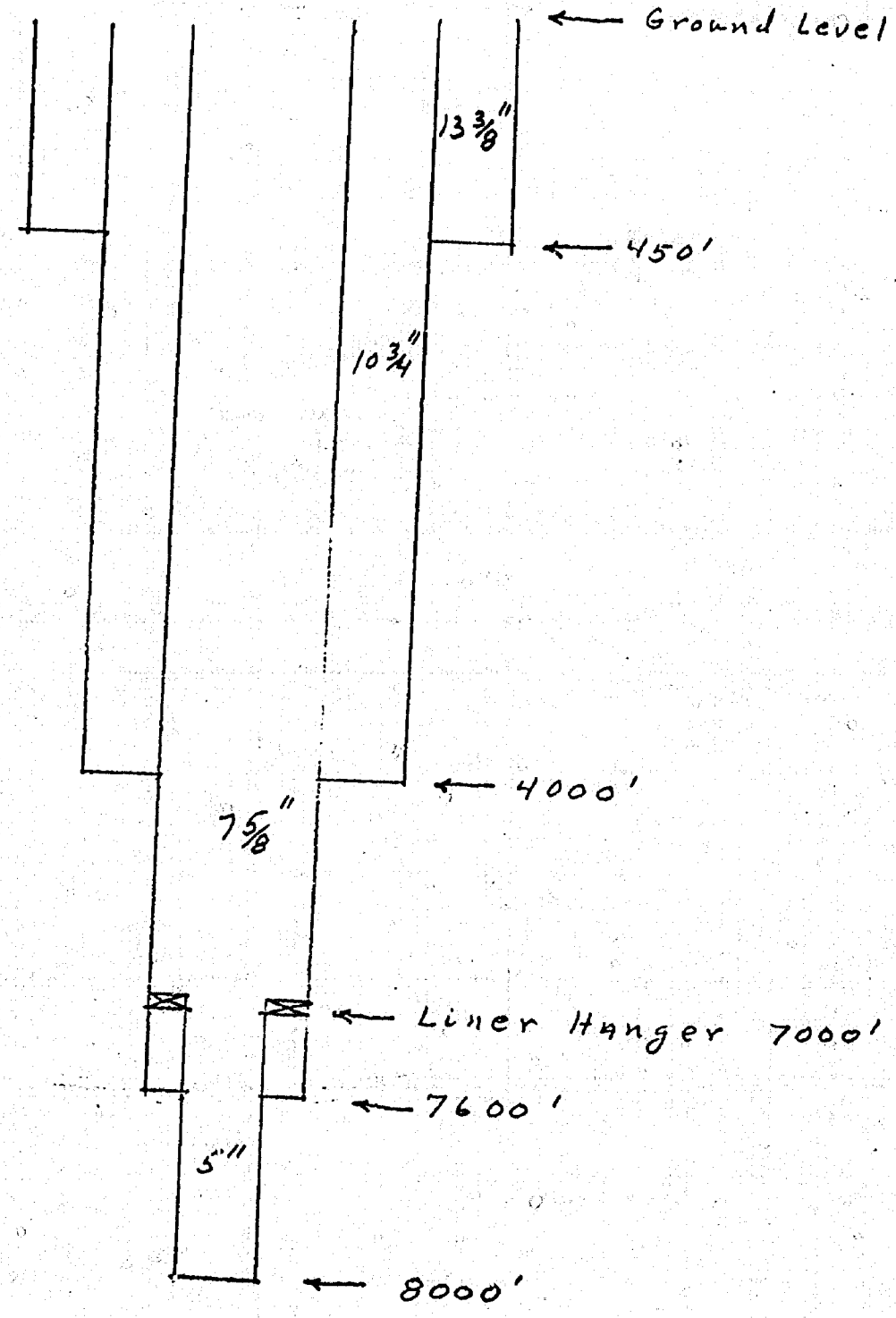
Lease and Well No. Washington Ranch Area (Modified Well) 7088 7
Location Sec 32, T25S, R24E
Field
Primary Target Devonian
(WC) (D) (SO) (OWDD)
County Eddy
Depth 8000
State New Mexico
Estimated Days 48

EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actual
450			Casing: 13 3/8", H40, 48#, ST&C	9,800		
4000			10 3/4" (2600' 40.5# K-55)	74,400		
			800' 40.5# S80 (600' 45.5# S80) ST&C			
7600			7 5/8" (5300', 26.4#, N-80)	130,500		
	1000'		Liner: (2300' 26.4# S95 ST&C 5", 15#, K-55 ST&C		7,000	
	8000'		Tbg - 2 7/8" N80, 6.5# EUE		45,700	
			Other Equipment: Well Head			
			Wellhead & valves	4,000		
			Xmas Tree		25,000	
			Packer		4,900	
			Liner Hanger		6,500	
			TOTAL TANGIBLES	218,700	89,100	

INTANGIBLE COST DESCRIPTION

Drilling Contract:			
Footage ____ ft. @ $ ____ /ft.			
Daywork, w/D.P. 34 days @ $ 6000 /day	204,000		
Daywork, w/o D.P. 4 days @ $ 6000 /day	24,000		
Completion Rig Costs 10 days @ $ 1200 /day		12,000	
Other Rig Costs MI, RU, RD, MO	15,000		
Drill Pipe Rental			
Tool and Equipment Rentals	5,500	5,000	
Casing Crews, Tools and Tongs	9,600	2,500	
Fuel and Water Fuel included in rig cost only for MGF	3,500	2,500	
Bits and Coreheads	22,500	700	
Drilling Mud and Chemicals	45,000		
Primary Casing Cementing Services and Materials	26,600	3,500	
Squeeze Cementing Services and Materials			
Acidizing and Fracturing		34,000	
Open Hole Logging	20,500		
Cased Hole Logging and Perforating		7,500	
Coring, Core Analysis and Paleo.			
Mud Logger	5,950		
Drill Stem Tests	5,000		
Transportation	12,000	2,500	
Location Costs	20,000	5,000	
Supervision	13,300	3,500	
Geologist	4,900		
Miscellaneous Contingencies 15%	67,000	28,200	
Production Facilities Hook Up		20,000	
TOTAL INTANGIBLES	504,350	126,900	
Total Estimated Cost	723,050	216,000	939,050

Total Estimated Cost-Dry Hole $723,050
Add: P&A Cost 30,000 $753,050
Less: Salvage Value 88,938
Net Dry Hole Cost $664,112


Ground Level
13 3/8"
450'
10 3/4"
4000'
7 5/8"
Liner Hanger 7000'
7600'
5"
8000'

INITIAL GAS IN PLACE CALCULATIONS
WASHINGTON RANCH (MORROW) FIELD
EDDY COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7888 Exhibit No. 8
Submitted by SX
Hearing Date 11/18/80

The estimated initial gas in place was obtained by the following formula:

$$GIP\ (MCF) = \frac{1546\ Ah\ \emptyset\ (1-SW)\ Pf}{Tfz}$$

where A = Drainage Area, Acres
h = Reservoir thickness, ft
$\emptyset$ = Porosity, % of Bulk Volume (7%)
Sw = Water saturation, % of Pore Space (25%)
Pf = Static Reservoir Pressure, PSIA
Tf = Static Reservoir Temperature, ^{o}R

Static reservoir pressure was obtained using the following parameters:

Static wellhead pressure	=	2950 psia
Static reservoir temperature	=	$130^{o}F$ ($590^{o}R$)
Gas gravity	=	.57
Pseudo - critical pressure	=	675 psia
Pseudo - critical temperature	=	$345^{o}R$
Average wellhead temperature	=	$75^{o}F$ ($535^{o}R$)
Average depth	=	6925'

The reservoir volume in acre-feet was obtained by planimetering an isopach map of the Morrow Sand structure and approximating the volume using Simpson's Approximation as follows:

Thickness	Identification	Area
0'	A_o	5539 Acres
10'	A_1	3944 Acres
20'	A_2	2304 Acres
30'	A_3	987 Acres
40'	A_4	98 Acres

Simpson's Approximation:

$$V = 1/3\ H\ (A_o + 4A_1 + 2A_2 + 4A_3 + A_4) + TnA_4,$$

Where H is the contour interval and Tn = 1/2 H.

In the case of the Washington Ranch (Morrow Sand),

$$V = 1/3(10)\ (5539 + 4(3944) + 2(2304) + 4(987) + 98) + 5(98)$$
$$= 100,386\ \text{Acre-feet.}$$

Then, $GIP = \frac{1546\ (100,386)\ (.07)\ (1-.25)\ (3500)}{590\ (.82)}$

= 58,944,613 MCF
≈ 59 BCF

The actual cumulative field production to 8/31/80 was 55,333,349 MCF. The projected total field production should be 55,509,349 MCF.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

Case 1088 1
Spacing EPNG
Hearing Date NOV. 18, 1980

CASE NO. 5502
R-5079

APPLICATION OF SOUTHERN UNION GAS COMPANY FOR UNDERGROUND GAS STORAGE FINDINGS, SANDOVAL COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 10, 1975, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 27th day of April, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant in the subject case, Southern Union Gas Company, is in the process of developing an underground natural gas storage project in Sandoval County, New Mexico, to be known as the Las Milpas Gas Storage Project.

(3) That the applicant has conducted geological and engineering studies to confirm the existence of a geological structure underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32 of Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36 of Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and to determine the suitability of said geological structure for the underground storage of natural gas.

(4) That the applicant has determined that the above-described geological structure does exist, and that the Aqua Zarca formation within said structure, being a permeable sandstone overlain by an impermeable shale layer, should constitute a satisfactory bed for the storage of gas.

(5) That although preliminary investigation of the geological structure being proposed for underground gas storage indicates that its areal extent may be somewhat less than the entire area described in Finding No. (3) above, all of said lands should be included within the horizontal limits of the Las Milpas Gas Storage Project in order to protect the structure from drainage by non-project wells in the event the areal extent of the structure is larger than presently believed.

(6) That the Poleo formation, which overlays the impermeable shale described in Finding No. (4) above, should be included within the vertical limits of the Las Milpas Gas Storage Project in order that pressure observation wells may be drilled into the Poleo formation to verify the integrity of the shale bed and to assure that gas in storage in the Agua Zarca formation is not migrating upward and escaping from the Agua Zarca formation.

(7) That the applicant has attempted to acquire gas storage rights in the interval from the top of the Poleo formation to the base of the Agua Zarca formation underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32, Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36, Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and has indeed acquired such rights underlying more than 80 percent of said lands, and is in the process of acquiring such rights underlying portions of the remaining lands.

(8) That despite the efforts of the applicant, it appears that gas storage rights underlying certain portions of the lands described in Finding No. (7) above may remain outstanding.

(9) That it appears that to obtain gas storage rights underlying all of the lands described in Finding No. (7) above, the applicant may find it necessary to resort to eminent domain proceedings as provided by Sections 65-9-1 through 65-9-8, NMSA 1953 Comp.

(10) That pursuant to Section 65-9-5 NMSA, 1953 Comp., the instant case was called to consider the propriety of utilization for underground storage of natural gas of the sub-surface strata from the top of the Poleo formation to the base of the Agua Zarca formation underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32, Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36, Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and consequently thereto, the Commission finds:

A. That the above-described sub-surface interval underlying the above described lands is suitable for the underground storage of natural gas and should be designated as the Las Milpas Gas Storage Project.

B. That the Las Milpas Gas Storage Project is incapable of producing oil in paying quantities through any known recovery method.

C. That the Las Milpas Gas Storage Project does not underlie any known commercial deposits of potash.

D. That storage of natural gas in the Las Milpas Gas Storage Project will not cause injury to surface or underground water resources.

E. That the Las Milpas Gas Storage Project does not, or has not been known, to contain native gas capable of production in paying quantities.

F. That the horizontal extent of the displaced or injected gas in the above-described subsurface interval will be within the outer boundaries of the above-described lands.

G. That no portion of the above-described subsurface interval underlying the above-described lands has been appropriated or is being utilized for the injection, storage and withdrawal of natural gas by any other than the applicant, Southern Union Gas Company.

(11) That jurisdiction of this cause is retained for the entry of such further findings as may be necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Member

JOE D. RAMEY, Member & Secretary

S E A L

dr/

WILLIAM A. SLOAN
JACKSON G. AKIN
JOHN D. ROBB
CHARLES B. LARRABEE
JAMES C. RITCHIE
JOHN P. EASTHAM
WILLIAM C. SCHAAB
RAY H. RODEY
ROBERT D. TAICHERT
ROBERT M. ST. JOHN
JOSEPH J. MULLINS
DUANE C. GILKEY
MARK K. ADAMS
ROBERT O. MCCORKLE
PETER C. PRINA
BRUCE HALL
JOHN P. SALAZAR
WILLIAM S. DIXON
JOHN P. BURTON
REX D. THROCKMORTON
JONATHAN W. HEWES
GENE C. WALTON
RICHARD C. MININER
W. ROBERT LASATER, JR.
RICHARD K. BARLOW
CHARLES L. SAUNDERS
MARK C. MEIERING
VICTOR R. MARSHALL
CARL M. EBBECK
PAUL O. BARBER
JOE L. MCCLAUGHERTY
JAMES S. STARZYNSKI
CATHERINE T. GOLDBERG
KENNETH J. FERGUSON
STANLEY N. HATCH
STEVEN P. BAILEY
DIANE FISHER
M. RICHARD BEITLER, JR.
CLAUDIA F. INGRAM
DONALD B. MONNHEIMER
TRAVIS R. COLLIER
ROBERT D. PARK
BEN M. ALLEN

RODEY, DICKASON, SLOAN, AKIN & ROBB, P. A.
COUNSELLORS AND ATTORNEYS AT LAW
20 FIRST PLAZA, SUITE 700
P. O. BOX 1888
ALBUQUERQUE, NEW MEXICO 87103

OF COUNSEL
DON L. DICKASON

PEARCE C. RODEY
1889-1956

TELECOPIER 765-5903

TELEX 660401

TELEPHONE 765-5900
AREA CODE 505

November 26, 1980

RECEIVED
DEC 01 1980
OIL CONSERVATION DIVISION
SANTA FE

Ernest L. Padilla, General Counsel
State of New Mexico Energy and
Minerals Department
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Re: Southern Union Exploration Company
Washington Ranch Gas Storage Project
Order No. R-6175

Dear Ernie:

Enclosed are copies of Southern Union Exploration Company's Exhibits 2 and 3. Exhibit 2 is titled "Structure Map on the Lower Morrow Sandstone", and Exhibit 3 is titled "Isopach Map of Morrow Successfully Perforated Intervals."

Please let me know if you have questions.

Yours very truly,

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

Mark

BY
MARK K. ADAMS

MKA:jf
Enclosures

cc: Paul M. Zeis, Esquire

Southern Union Exploration Company
First International Building
Dallas, Texas 75270
(214) 748-8511

June 15, 1979

El Paso Natural Gas Company
P. O. Box 1492
El Paso, Texas 79978

Attn: Mr. Richard B. Isaacks

Re: SX Lse. 1269 & 1270
State of New Mexico V-150 & LG-5340
All in Sec. 32, T25S, R24E
Eddy County, New Mexico

Gentlemen:

In regard to your letter of June 13, 1979, whereby you offered Southern Union Exploration Company (SX) $64,000 for the Morrow rights in the captioned lands, SX is not interested in selling this acreage at that price. SX is also not interested in selling just the E/2 of Section 32-25S-24E.

SX hereby requests that El Paso Natural Gas Company remove the captioned acreage from their Washington Ranch Gas Storage Project.

Yours very truly,

Stephen P. Hanger,
Landman

SPH:hw

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7088 Exhibit No. 1
Submitted by SX
Hearing Date 11/18/80

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

OIL CONSERVATION COMMISSION
Case No. 7088 Exhibit No. 4
Submitted by SX
Hearing Date 11/18/80

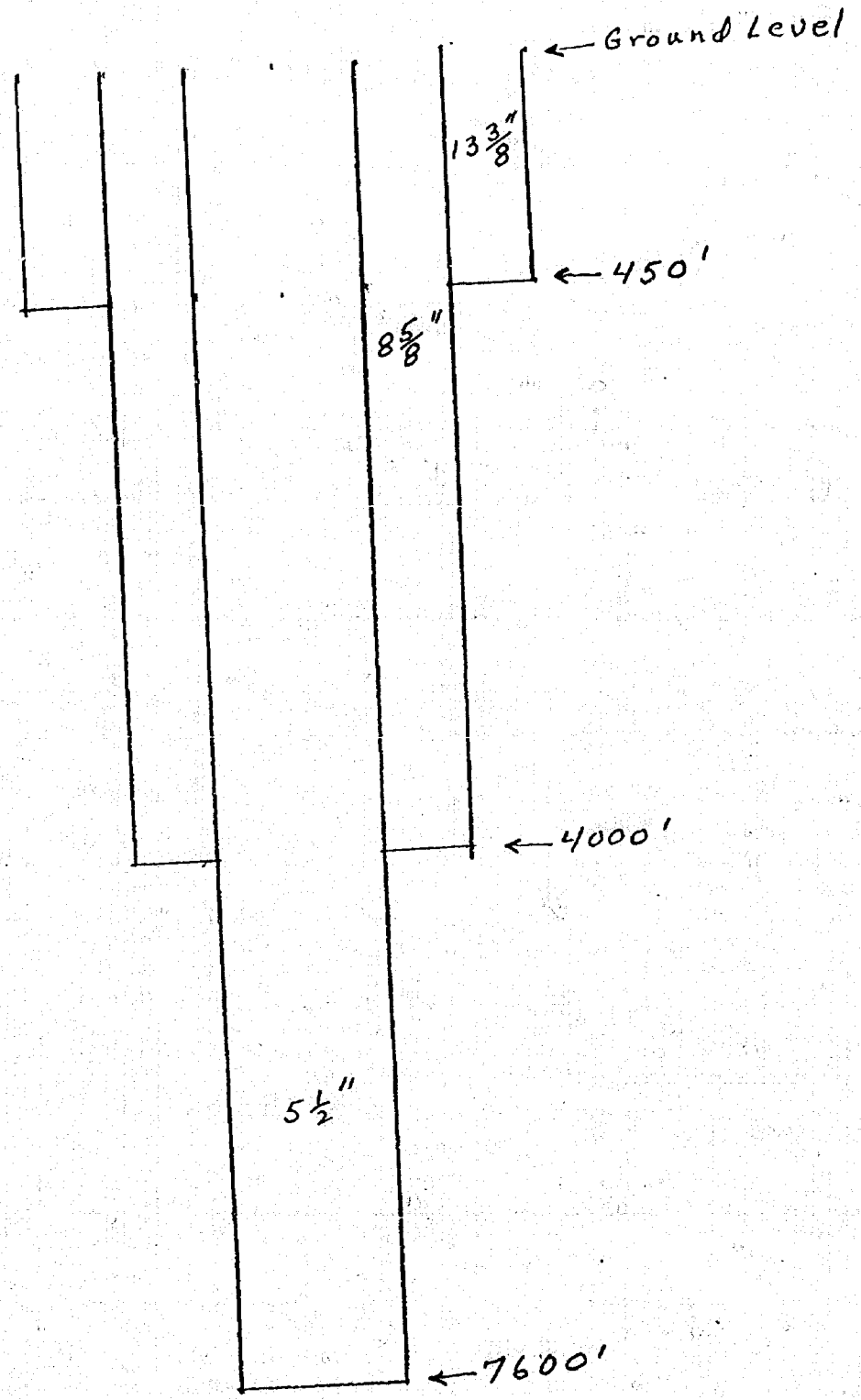
Lease and Well No. Washington Ranch Area (Standard Well)
Location Sec 32, T25S, R24E
Field
County Eddy State New Mexico
Primary Target Morrow Depth 7600 Estimated Days 43
(WC) (D) (SO) (OWDD)

EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actual
450			Casing: 13 3/8", H40, 48#, ST&C	9,800		
4000			8 5/8" (2200', 24# K-55 ST&C	48,300		
			(500' 24# S80 1300# 28# S80)			
	7600		5 1/2" (6400' 15.5# K-55		54,700	
			1200' 17# K-55 ST&C			
	7600		Tubing: 2 7/8" N80, 6.4# EUE		43,400	
			Other Equipment: Well Head			
			Wellhead & Valves	4,000		
			Xmas Tree		25,000	
			Packer		2,900	
			TOTAL TANGIBLES	62,100	126,000	

INTANGIBLE COST DESCRIPTION

Drilling Contract:				
Footage	ft. @ $ /ft.			
Daywork, w/D.P.	30 days @ $ 6000 /day	180,000		
Daywork, w/o D.P.	3 days @ $ 6000 /day	18,000		
Completion Rig Costs	10 days @ $ 1200 /day		12,000	
Other Rig Costs	MI, RU, RD, MO	15,000		
Drill Pipe Rental				
Tool and Equipment Rentals		5,000	5,000	
Casing Crews, Tools and Tongs		4,800	3,500	
Fuel and Water	Fuel included in rig cost only for MGF	3,500	2,500	
Bits and Coreheads		14,000	850	
Drilling Mud and Chemicals		35,000		
Primary Casing Cementing Services and Materials		14,200	16,500	
Squeeze Cementing Services and Materials				
Acidizing and Fracturing			33,000	
Open Hole Logging		10,000		
Cased Hole Logging and Perforating			7,500	
Coring, Core Analysis and Paleo.				
Mud Logger		4,250		
Drill Stem Tests		5,000		
Transportation		3,700	5,100	
Location Costs		20,000	5,000	
Supervision		11,600	3,500	
Geologist		3,500		
Miscellaneous	Contingencies 15%	34,500	38,600	
Production Facilities Hook Up			20,000	
	TOTAL INTANGIBLES	382,050	153,050	
	TOTAL ESTIMATED COST	444,150	279,050	723,200

Total Estimated Cost-Dry Hole $444,150
Add: P&A Cost 20,000 $464,150
Less: Salvage Value 19,705
Net Dry Hole Cost $444,445


Ground Level
13 3/8"
450'
8 5/8"
4000'
5 1/2"
7600'

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

7088 JX 11/18/80

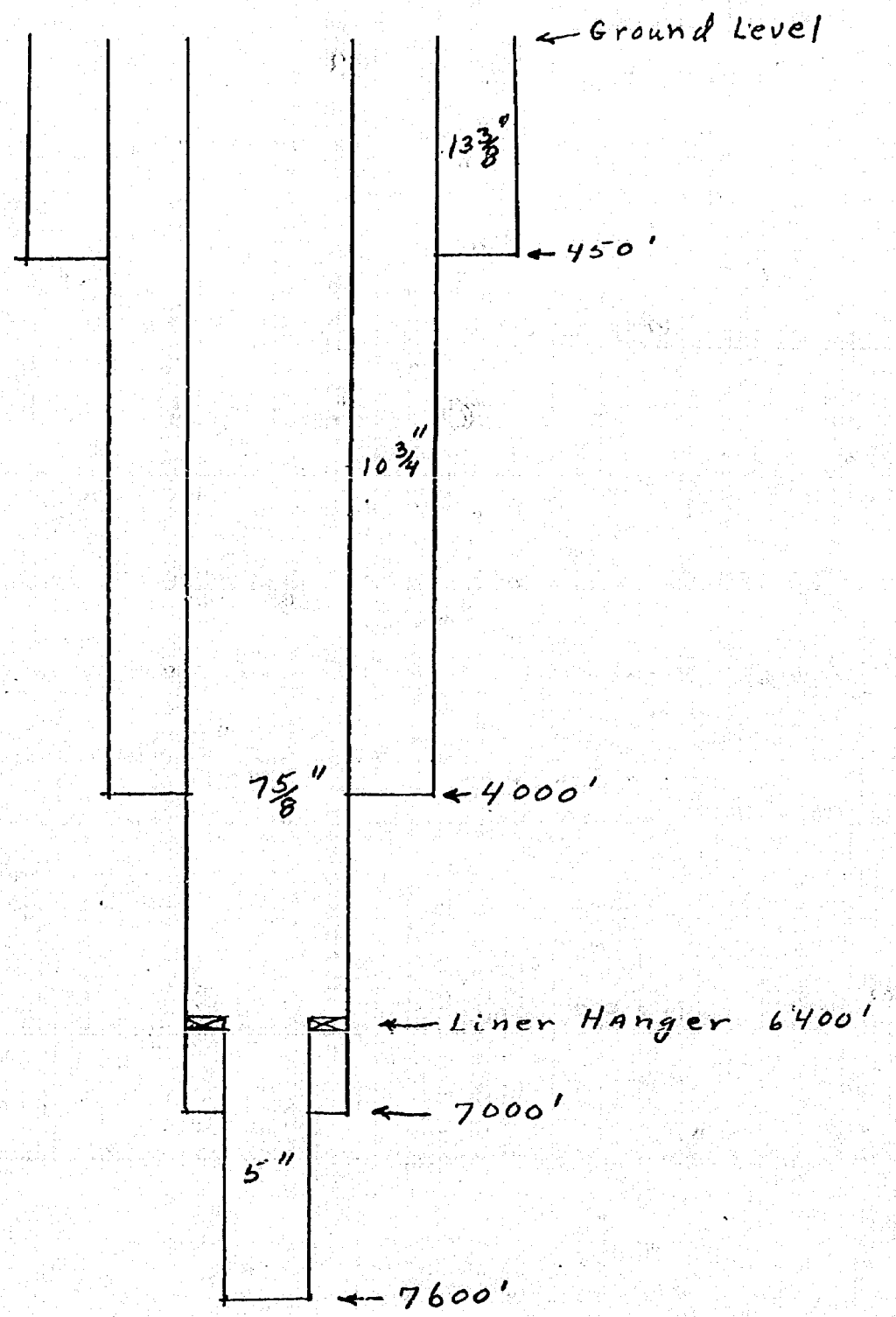
Lease and Well No. Washington Ranch Area (Modified Well)
Location Sec.32, T25S, R24E
Field _____ County Eddy State New Mexico
Primary Target Morrow Depth 7600 Estimated Days 46
(WC) (D) (SO) (OWDD)

EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actual
450			Casing:13 3/8", H40,48#,ST&C	$9,800		
4000			10 3/4"(2600',40.5#,K-55)			
			800',40.5#,S80)(600',45.5#			
			S80) ST&C	74,400		
			7 5/8" (5300',26.4#,N80)			
7000			(1700',26.4#,S95) ST&C	120,200		
			~~Casing~~			
	1200		5",15#,K-55, ST&C		$8,400	
	7600		TUBING: 2 7/8", N80, 6.5#,			
			EUE		43,400	
			Other Equipment:			
			Well Head and valves	4,000		
			Xmas Tree		25,000	
			Packer		4,900	
			Liner Hanger		6,500	
			TOTAL TANGIBLES	$208,400	$88,200	

INTANGIBLE COST DESCRIPTION				
Drilling Contract:				
Footage	ft. @ $ /ft.			
Daywork, w/D.P. 32	days @ $ 6000 /day	$192,000		
Daywork, w/o D.P. 4	days @ $ 6000 /day	24,000		
Completion Rig Costs 10	days @ $ 1200 /day		$12,000	
Other Rig Costs MI, RU, RD, MO		15,000		
Drill Pipe Rental		5,500	5,000	
Tool and Equipment Rentals		9,600	2,500	
Casing Crews, Tools and Tongs		3,500	2,500	
Fuel and Water Fuel included in rig cost,only for MGF		22,500	700	
Bits and Coreheads		42,400		
Drilling Mud and Chemicals		26,600	3,500	
Primary Casing Cementing Services and Materials			34,000	
Squeeze Cementing Services and Materials		20,500		
Acidizing and Fracturing			7,500	
Open Hole Logging		[illegible]		
Cased Hole Logging and Perforating		5,950		
Coring, Core Analysis and Paleo.		5,000		
Mud Logger		11,500	2,600	
Drill Stem Tests		20,000	5,000	
Transportation		12,600	3,500	
Location Costs		4,900		
Supervision		65,000	28,000	
Geologist			20,000	
Miscellaneous Contingencies 15%				
Production Facilities Hook Up				
		$486,550	$126,800	
TOTAL INTANGIBLES		$694,950	$215,000	$909,950
TOTAL ESTIMATED COST				

Total Estimated Cost-Dry Hole $694,950
Add: P&A 30,000 $724,950
Less: Salvage value 88,938
Net Dry Hole Cost $636,012

Date Spudded _____
Date Completed _____
Total Depth _____


Ground Level
13 3/8"
450'
10 3/4"
7 5/8"
4000'
Liner Hanger 6400'
7000'
5"
7600'

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7088 Exhibit No. 6
Submitted by SX
Hearing Date 11/18/80

Lease and Well No. Washington Ranch Area (Standard Well)
Location Sec. 32, T25S, R24E
Field _____ County Eddy
Primary Target Devonian Depth 8,000 Estimated Days ~~45~~
(WC) (D) (SO) (OWDD)

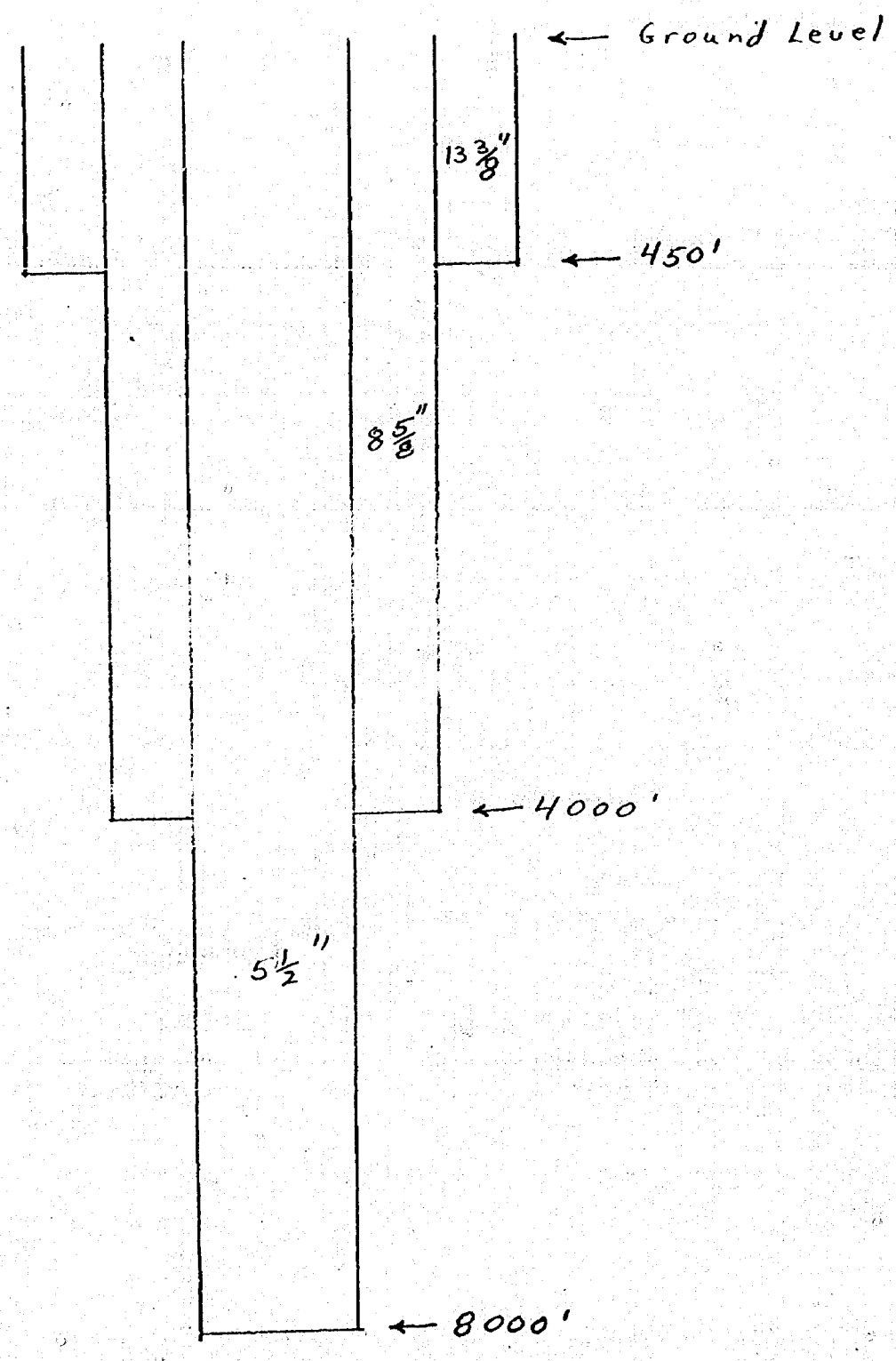
EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actual
450			Casing: 13 3/8", H40,48# ST&C	$9,800		
4000			8 5/8(2200',24#, K55)(500' 24#, S80)(1300',28#,S80)ST&C	48,000		
	8000		5 1/2" (6,400', 15.5#,K-55) (1600',17#,K55) ST&C		$57,600	
	8000		Tubing: 2 7/8",N80,6.4# EUE		45,700	
			Other Equipment: Well Head and valves	4,000		
			Xmas Tree		25,000	
			Packer		2,900	
			TOTAL TANGIBLES	$62,100	$131,200	

INTANGIBLE COST DESCRIPTION

Drilling Contract:			
Footage _____ ft. @ $ _____ /ft.			
Daywork, w/D.P. 32 days @ $6,000 /day	$192,000		
Daywork, w/o D.P. 3 days @ $6,000 /day	18,000		
Completion Rig Costs 10 days @ $1,200 /day		$12,000	
Other Rig Costs MI, RU, RD, MO	15,000		
Drill Pipe Rental			
Tool and Equipment Rentals	5,000	5,000	
Casing Crews, Tools and Tongs	4,800	3,500	
Fuel and Water Fuel included in rig cost only for MGF	3,500	2,500	
Bits and Coreheads	14,000	850	
Drilling Mud and Chemicals	37,000		
Primary Casing Cementing Services and Materials	14,200	16,500	
Squeeze Cementing Services and Materials			
Acidizing and Fracturing		33,000	
Open Hole Logging	10,000		
Cased Hole Logging and Perforating		7,500	
Coring, Core Analysis and Paleo.			
Mud Logger	4,250		
Drill Stem Tests	5,000		
Transportation	3,900	5,100	
Location Costs	20,000	5,000	
Supervision	12,300	3,500	
Geologist	4,200		
Miscellaneous Contingencies 15%	36,500	39,000	
Production Facilities Hook Up		20,000	
TOTAL INTANGIBLES	$399,650	$153,450	
TOTAL ESTIMATED COST	$461,750	$284,650	$746,400

Total Estimated Cost-Dry Hole	$461,750	
Add: P&A Cost	20,000	$481,750
Less: Salvage Value		19,705
Net Dry Hole Cost		$462,045

Date Spudded _____
Date Completed _____
Total Depth _____


Ground Level
13 3/8"
450'
8 5/8"
4000'
5 1/2"
8000'

SOUTHERN UNION EXPLORATION COMPANY
WELL COST ESTIMATE

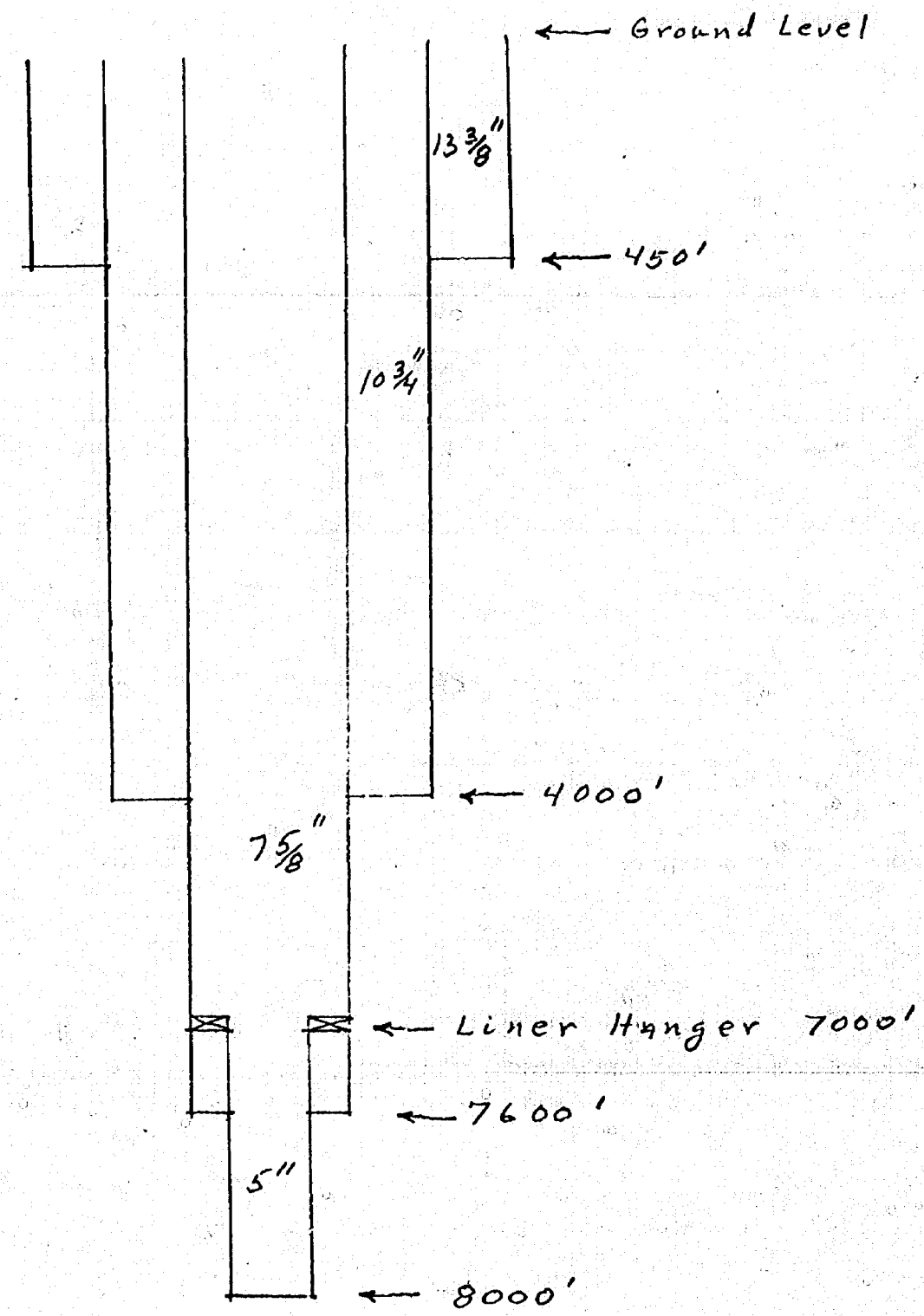
BEFORE THE OIL CONSERVATION COMMISSION
Case No. 7088 Exhibit No. 7
Submitted by: SX
Hearing Date: 11/18/80

Lease and Well No. Washington Ranch Area (Modified Well)
Location Sec 32, T25S, R24E
Field _____ County Eddy State New Mexico
Primary Target Devonian Depth 8000 Estimated Days 48
(WC) (D) (SO) (OWDD)

EQUIPMENT QUANTITY Estimated Dry Hole	EQUIPMENT QUANTITY Estimated Producer	EQUIPMENT QUANTITY Actual	TANGIBLE EQUIPMENT DESCRIPTION	EXPENDITURE COST Estimated Dry Hole	EXPENDITURE COST Estimated Producer	EXPENDITURE COST Actual
450			Casing: 13 3/8", H40, 48#, ST&C	9,800		
4000			10 3/4" (2600' 40.5# K-55)	74,400		
			800' 40.5# S80 (600' 45.5# S80) ST&C			
7600			7 5/8" (5300', 26.4#, N-80)	130,500		
	1000'		~~Tubing~~: (2300' 26.4# S95 ST&C 5", 15#, K-55 ST&C		7,000	
	8000'		Tbg - 2 7/8" N80, 6.5# EUE		45,700	
			Other Equipment: Well Head			
			Wellhead & valves	4,000		
			Xmas Tree		25,000	
			Packer		4,900	
			Liner Hanger		6,500	
			TOTAL TANGIBLES	218,700	89,100	

INTANGIBLE COST DESCRIPTION	Estimated Dry Hole	Estimated Producer	Actual
Drilling Contract: Footage ____ ft. @ $ ____ /ft.			
Daywork, w/D.P. 34 days @ $ 6000 /day	204,000		
Daywork, w/o D.P. 4 days @ $ 6000 /day	24,000		
Completion Rig Costs 10 days @ $ 1200 /day		12,000	
Other Rig Costs MI, RU, RD, MO	15,000		
Drill Pipe Rental			
Tool and Equipment Rentals	5,500	5,000	
Casing Crews, Tools and Tongs	9,600	2,500	
Fuel and Water Fuel included in rig cost only for MGF	3,500	2,500	
Bits and Coreheads	22,500	700	
Drilling Mud and Chemicals	45,000		
Primary Casing Cementing Services and Materials	26,600	3,500	
Squeeze Cementing Services and Materials			
Acidizing and Fracturing		34,000	
Open Hole Logging	20,500		
Cased Hole Logging and Perforating		7,500	
Coring, Core Analysis and Paleo.			
Mud Logger	5,950		
Drill Stem Tests	5,000		
Transportation	12,000	2,500	
Location Costs	20,000	5,000	
Supervision	13,300	3,500	
Geologist	4,900		
Miscellaneous Contingencies 15%	67,000	28,200	
Production Facilities Hook Up		20,000	
TOTAL INTANGIBLES	504,350	126,900	
Total Estimated Cost	723,050	216,000	939,050

Total Estimated Cost-Dry Hole $723,050
Add: P&A Cost 30,000 $753,050
Less: Salvage Value 88,938
Net Dry Hole Cost $664,112


Ground Level
13 3/8"
450'
10 3/4"
4000'
7 5/8"
Liner Hanger 7000'
7600'
5"
8000'

INITIAL GAS IN PLACE CALCULATIONS
WASHINGTON RANCH (MORROW) FIELD
EDDY COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7088 Exhibit No. 8
Submitted by X
Hearing Date 11/18/80

The estimated initial gas in place was obtained by the following formula:

$$GIP\ (MCF) = \frac{1546\ Ah\ \emptyset\ (1-SW)\ Pf}{TfZ}$$

where A = Drainage Area, Acres
h = Reservoir thickness, ft
$\emptyset$ = Porosity, % of Bulk Volume (7%)
Sw = Water saturation, % of Pore Space (25%)
Pf = Static Reservoir Pressure, PSIA
Tf = Static Reservoir Temperature, ^{o}R

Static reservoir pressure was obtained using the following parameters:

Static wellhead pressure	=	2950 psia
Static reservoir temperature	=	$130^{o}F$ ($590^{o}R$)
Gas gravity	=	.57
Pseudo - critical pressure	=	675 psia
Pseudo - critical temperature	=	$345^{o}R$
Average wellhead temperature	=	$75^{o}F$ ($535^{o}R$)
Average depth	=	6925'

The reservoir volume in acre-feet was obtained by planimetering an isopach map of the Morrow Sand structure and approximating the volume using Simpson's Approximation as follows:

Thickness	Identification	Area
0'	A_o	5539 Acres
10'	A_1	3944 Acres
20'	A_2	2304 Acres
30'	A_3	987 Acres
40'	A_4	98 Acres

Simpson's Approximation:

$$V = 1/3\ H\ (A_o + 4A_1 + 2A_2 + 4A_3 + A_4) + TnA_4,$$

Where H is the contour interval and Tn = 1/2 H.

In the case of the Washington Ranch (Morrow Sand),

$$V = 1/3(10)\ (5539 + 4(3944) + 2(2304) + 4(987) + 98) + 5(98)$$
$$= 100,386 \text{ Acre-feet.}$$

$$\text{Then, GIP} = \frac{1546\ (100,386)\ (.07)\ (1-.25)\ (3500)}{590\ (.82)}$$

$$= 58,944,613 \text{ MCF}$$
$$\approx 59 \text{ BCF}$$

The actual cumulative field production to 8/31/80 was 55,333,349 MCF. The projected total field production should be 55,509,349 MCF.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7088 Exhibit No. 1
Submitted by: El Paso Natural Gas Co.
Hearing Date: 11/18/80

CASE NO. 5502
R-5079

APPLICATION OF SOUTHERN UNION GAS COMPANY FOR UNDERGROUND GAS STORAGE FINDINGS, SANDOVAL COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 10, 1975, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 27th day of April, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant in the subject case, Southern Union Gas Company, is in the process of developing an underground natural gas storage project in Sandoval County, New Mexico, to be known as the Las Milpas Gas Storage Project.

(3) That the applicant has conducted geological and engineering studies to confirm the existence of a geological structure underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32 of Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36 of Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and to determine the suitability of said geological structure for the underground storage of natural gas.

(4) That the applicant has determined that the above-described geological structure does exist, and that the Aqua Zarca formation within said structure, being a permeable sandstone overlain by an impermeable shale layer, should constitute a satisfactory bed for the storage of gas.

(5) That although preliminary investigation of the geological structure being proposed for underground gas storage indicates that its areal extent may be somewhat less than the entire area described in Finding No. (3) above, all of said lands should be included within the horizontal limits of the Las Milpas Gas Storage Project in order to protect the structure from drainage by non-project wells in the event the areal extent of the structure is larger than presently believed.

(6) That the Poleo formation, which overlays the impermeable shale described in Finding No. (4) above, should be included within the vertical limits of the Las Milpas Gas Storage Project in order that pressure observation wells may be drilled into the Poleo formation to verify the integrity of the shale bed and to assure that gas in storage in the Agua Zarca formation is not migrating upward and escaping from the Agua Zarca formation.

(7) That the applicant has attempted to acquire gas storage rights in the interval from the top of the Poleo formation to the base of the Agua Zarca formation underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32, Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36, Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and has indeed acquired such rights underlying more than 80 percent of said lands, and is in the process of acquiring such rights underlying portions of the remaining lands.

(8) That despite the efforts of the applicant, it appears that gas storage rights underlying certain portions of the lands described in Finding No. (7) above may remain outstanding.

(9) That it appears that to obtain gas storage rights underlying all of the lands described in Finding No. (7) above, the applicant may find it necessary to resort to eminent domain proceedings as provided by Sections 65-9-1 through 65-9-8, NMSA 1953 Comp.

(10) That pursuant to Section 65-9-5 NMSA, 1953 Comp., the instant case was called to consider the propriety of utilization for underground storage of natural gas of the sub-surface strata from the top of the Poleo formation to the base of the Agua Zarca formation underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32, Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36, Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and consequently thereto, the Commission finds:

A. That the above-described sub-surface interval underlying the above described lands is suitable for the underground storage of natural gas and should be designated as the Las Milpas Gas Storage Project.

B. That the Las Milpas Gas Storage Project is incapable of producing oil in paying quantities through any known recovery method.

C. That the Las Milpas Gas Storage Project does not underlie any known commercial deposits of potash.

D. That storage of natural gas in the Las Milpas Gas Storage Project will not cause injury to surface or underground water resources.

E. That the Las Milpas Gas Storage Project does not, or has not been known, to contain native gas capable of production in paying quantities.

F. That the horizontal extent of the displaced or injected gas in the above-described subsurface interval will be within the outer boundaries of the above-described lands.

G. That no portion of the above-described subsurface interval underlying the above-described lands has been appropriated or is being utilized for the injection, storage and withdrawal of natural gas by any other than the applicant, Southern Union Gas Company.

(11) That jurisdiction of this cause is retained for the entry of such further findings as may be necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Member

JOE D. RAMEY, Member & Secretary

S E A L

dr/

Southern Union Exploration Company
First International Building
Dallas, Texas 75270
(214) 748-8511

June 15, 1979

El Paso Natural Gas Company
P. O. Box 1492
El Paso, Texas 79978

Attn: Mr. Richard B. Isaacks

Re: SX Lse. 1269 & 1270
State of New Mexico V-150 & LG-5340
All in Sec. 32, T25S, R24E
Eddy County, New Mexico

Gentlemen:

In regard to your letter of June 13, 1979, whereby you offered Southern Union Exploration Company (SX) $64,000 for the Morrow rights in the captioned lands, SX is not interested in selling this acreage at that price. SX is also not interested in selling just the E/2 of Section 32-25S-24E.

SX hereby requests that El Paso Natural Gas Company remove the captioned acreage from their Washington Ranch Gas Storage Project.

Yours very truly,

Stephen P. Hanger,
Landman

SPH:hw

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 7088 Exhibit No. 1
Submitted by: SX
Hearing Date 11/18/80

INITIAL GAS IN PLACE CALCULATIONS
WASHINGTON RANCH (MORROW) FIELD
EDDY COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico
Exhibit No. 8
Case No. 7088
Submitted by the following
Hearing Date 11/18/80

The estimated initial gas in place was obtained by the following formula:

$$GIP\ (MCF) = \frac{1546\ Ah\ \emptyset\ (1-SW)\ Pf}{Tfz},$$

where A = Drainage Area, Acres
h = Reservoir thickness, ft
$\emptyset$ = Porosity, % of Bulk Volume (7%)
Sw = Water saturation, % of Pore Space (25%)
Pf = Static Reservoir Pressure, PSIA
Tf = Static Reservoir Temperature, ^{o}R

Static reservoir pressure was obtained using the following parameters:

Static wellhead pressure	=	2950 psia
Static reservoir temperature	=	130°F (590°R)
Gas gravity	=	.57
Pseudo - critical pressure	=	675 psia
Pseudo - critical temperature	=	345°R
Average wellhead temperature	=	75°F (535°R)
Average depth	=	6925'

The reservoir volume in acre-feet was obtained by planimetering an isopach map of the Morrow Sand structure and approximating the volume using Simpson's Approximation as follows:

Thickness	Identification	Area
0'	A_o	5539 Acres
10'	A_1	3944 Acres
20'	A_2	2304 Acres
30'	A_3	987 Acres
40'	A_4	98 Acres

.94%
8
59 | 555
531
240

Simpson's Approximation:

$$V = 1/3\ H\ (A_o + 4A_1 + 2A_2 + 4A_3 + A_4) + TnA_4,$$

Where H is the contour interval and Tn = 1/2 H.

In the case of the Washington Ranch (Morrow Sand),

$$V = 1/3(10)\ (5539 + 4(3944) + 2(2304) + 4(987) + 98) + 5(98)$$
$$= 100,386\ \text{Acre-feet.}$$

39.1
47.N

$$\text{Then, GIP} = \frac{1546\ (100,386)\ (.07)\ (1-.25)\ (3500)}{590\ (.82)}$$

$$= 58,944,613\ \text{MCF}$$
$$\approx 59\ \text{BCF}$$

The actual cumulative field production to 8/31/80 was 55,333,349 MCF. The projected total field production should be 55,509,349 MCF.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5502
R-5079

APPLICATION OF SOUTHERN UNION
GAS COMPANY FOR UNDERGROUND GAS
STORAGE FINDINGS, SANDOVAL COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 10, 1975, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 27th day of April, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant in the subject case, Southern Union Gas Company, is in the process of developing an underground natural gas storage project in Sandoval County, New Mexico, to be known as the Las Milpas Gas Storage Project.

(3) That the applicant has conducted geological and engineering studies to confirm the existence of a geological structure underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32 of Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36 of Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and to determine the suitability of said geological structure for the underground storage of natural gas.

(4) That the applicant has determined that the above-described geological structure does exist, and that the Aqua Zarca formation within said structure, being a permeable sandstone overlain by an impermeable shale layer, should constitute a satisfactory bed for the storage of gas.

Case No. 7088
EXHIBIT 1
EL PASO
11/18/80

(5) That although preliminary investigation of the geological structure being proposed for underground gas storage indicates that its areal extent may be somewhat less than the entire area described in Finding No. (3) above, all of said lands should be included within the horizontal limits of the Las Milpas Gas Storage Project in order to protect the structure from drainage by non-project wells in the event the areal extent of the structure is larger than presently believed.

(6) That the Poleo formation, which overlays the impermeable shale described in Finding No. (4) above, should be included within the vertical limits of the Las Milpas Gas Storage Project in order that pressure observation wells may be drilled into the Poleo formation to verify the integrity of the shale bed and to assure that gas in storage in the Agua Zarca formation is not migrating upward and escaping from the Agua Zarca formation.

(7) That the applicant has attempted to acquire gas storage rights in the interval from the top of the Poleo formation to the base of the Agua Zarca formation underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32, Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36, Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and has indeed acquired such rights underlying more than 80 percent of said lands, and is in the process of acquiring such rights underlying portions of the remaining lands.

(8) That despite the efforts of the applicant, it appears that gas storage rights underlying certain portions of the lands described in Finding No. (7) above may remain outstanding.

(9) That it appears that to obtain gas storage rights underlying all of the lands described in Finding No. (7) above, the applicant may find it necessary to resort to eminent domain proceedings as provided by Sections 65-9-1 through 65-9-8, NMSA 1953 Comp.

(10) That pursuant to Section 65-9-5 NMSA, 1953 Comp., the instant case was called to consider the propriety of utilization for underground storage of natural gas of the sub-surface strata from the top of the Poleo formation to the base of the Agua Zarca formation underlying Sections 17, 18, 19, 20, 29, 30, 31, and 32, Township 15 North, Range 1 East, NMPM, and Sections 13, 24, 25, and 36, Township 15 North, Range 1 West, NMPM, Sandoval County, New Mexico, and consequently thereto, the Commission finds:

A. That the above-described sub-surface interval underlying the above described lands is suitable for the underground storage of natural gas and should be designated as the Las Milpas Gas Storage Project.

B. That the Las Milpas Gas Storage Project is incapable of producing oil in paying quantities through any known recovery method.

C. That the Las Milpas Gas Storage Project does not underlie any known commercial deposits of potash.

D. That storage of natural gas in the Las Milpas Gas Storage Project will not cause injury to surface or underground water resources.

E. That the Las Milpas Gas Storage Project does not, or has not been known, to contain native gas capable of production in paying quantities.

F. That the horizontal extent of the displaced or injected gas in the above-described subsurface interval will be within the outer boundaries of the above-described lands.

G. That no portion of the above-described subsurface interval underlying the above-described lands has been appropriated or is being utilized for the injection, storage and withdrawal of natural gas by any other than the applicant, Southern Union Gas Company.

(11) That jurisdiction of this cause is retained for the entry of such further findings as may be necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Member

JOE D. RAMEY, Member & Secretary

S E A L

dr/

Docket No. 37-80

Dockets Nos. 40-80 and 41-80 are tentatively set for December 10 and 30, 1980. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - NOVEMBER 18, 1980

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

CASE 7088: Application of Southern Union Exploration Co. for reconsideration of Division Order No. R-6175, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks (a) that Order No. R-6175 be set aside, or (b) to except the E/2 of Section 32, Township 25 South, Range 24 East, Eddy County, New Mexico, from the terms of said order, or (c) clarify said order with respect to the E/2 of Section 32, Township 25 South, Range 24 East.

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Docket No. 38-80

DOCKET: COMMISSION HEARING - MONDAY - NOVEMBER 24, 1980

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

CASE 7075: (Continued and Readvertised)

Application of Benson-Montin-Greer Drilling Corporation for the amendment of pool rules, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of the Special Rules and Regulations for the West Puerto Chiquito-Mancos Oil Pool as promulgated by Order No. R-2565-B and amended by Order No. R-6469, to require that wells completed or recompleted on standard units in said pool be located in the west half of the section at least 1650 feet from the outer boundary of the spacing and proration unit, and that the drilling of wells be controlled so as to allow no more than a 330-foot horizontal deviation from the surface location. Further, that the location of wells on certain specified non-standard proration units approved by Order No. R-6469 should be no closer than 660 feet to the outer boundary of the non-standard unit nor closer than 330 feet to a quarter section line or 10 feet to a quarter-quarter section line. Said specified non-standard units are the two 640-acre units in Township 24 North, Range 1 West; the two 480-acre units in Township 24 North, Range 1 East; the four 640-acre units in Township 26 North, Range 1 West; the 640-acre unit in Township 26 North, Range 1 East; and the two 640-acre units, the three 600-acre units, and the 400-acre unit, all in Township 27 North, Range 1 West. Applicant further seeks an administrative procedure whereby unorthodox locations could be approved upon receipt of written waivers from all offsetting operators being "crowded" by the unorthodox location.

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Docket No. 39-80

DOCKET: EXAMINER HEARING - TUESDAY - NOVEMBER 25, 1980

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

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

CASE 7055: (Continued from October 29, 1980, Examiner Hearing)

Application of Union Oil Company of California for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Eaves-Lea Unit Area, comprising 2209 acres, more or less, of State and Federal lands in Township 21 South, Ranges 32 and 33 East.

CASE 7077: (Continued from November 12, 1980, Examiner Hearing)

Application of Threshold Development Company for a dual completion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Conoco "10" State Com Well No. 1 located in Unit I of Section 10, Township 19 South, Range 29 East, Turkey Track Field, to produce oil from the Wolfcamp formation and gas from the Atoka formation through parallel strings of tubing.

CASE 7089: Application of Summit Energy, Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Blinebry formation through its Gulf Bunin Well No. 2 located in Unit C of Section 13, Township 21 South, Range 37 East.

CASE 7090: Application of Dorchester Exploration, Inc. for directional drilling and an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to re-enter the old Union Hill Well No. 1, the surface location of which is 2310 feet from the North and West lines of Section 27, Township 12 South, Range 28 East, and to directionally drill in an indeterminate direction from a kick-off point at 7300 feet, bottoming said well at an approximate depth of 8100 feet in the Mississippian formation less than 330 feet away from the surface location. The W/2 of said Section 27 would be dedicated to the well.

CASE 7091: Application of Layton Enterprises, Inc. for a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for an 80-acre non-standard oil proration unit comprising the N/2 NW/4 of Section 14, Township 9 South, Range 34 East, Vada-Pennsylvanian Pool, to be dedicated to an old well to be re-entered 660 feet from the North line and 1830 feet from the West line of said Section 14.

CASE 7051: (Continued from October 15, 1980, Examiner Hearing)

Application of Petro Lewis Corporation for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Blinebry and Drinkard production in the wellbore of its L. G. Warlick "B" Well No. 2 located in Unit G of Section 19, Township 21 South, Range 37 East.

CASE 6940: (Continued from October 1, 1980, Examiner Hearing)

Application of Adobe Oil Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests down through the Wolfcamp formation underlying the NW/4 SE/4 for oil and the SE/4 for gas, Section 23, Township 20 South, Range 38 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 6996: (Continued from October 1, 1980, Examiner Hearing) (To be continued to December 10, 1980, Examiner Hearing)

Application of John E. Schalk for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Blanco Mesaverde Pool underlying the NE/4 of Section 8, Township 25 North, Range 3 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 6668: (Continued and Readvertised)

In the matter of Case 6668 being reopened pursuant to the provisions of Order No. R-6139 which order promulgated temporary special rules and regulations for the South Culebra Bluff-Bone Spring Pool in Eddy County, New Mexico, including a provision for 80-acre spacing units. Operators in said pool may appear and show cause why the pool should not be developed on 40-acre spacing units.

CASE 7092: Application of Delta Drilling Company for pool extension, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the extension of the South Culebra Bluff-Bone Spring Pool to include all of Sections 2, 11, 13, 14, 23, and 24, Township 23 South, Range 28 East.

CASE 7093: Application of Mesa Petroleum Company and Yates Petroleum Corporation for designation of a tight formation, Torrance, Guadalupe, DeBaca, Lincoln, and Chaves Counties, New Mexico. Pursuant to Section 107 of the Natural Gas Policy Act of 1978 and 18 CFR Section 271.701-705, applicants, in the above-styled cause, seek the designation as a tight formation of the Abo formation underlying the following described lands in the above-named counties:
all of Townships 1 North thru 4 North, Ranges 14 East thru 27 East; all of Townships 5 North thru 7 North, Ranges 14 East thru 26 East; all of Townships 1 South thru 5 South, Ranges 14 East thru 27 East; all of Township 6 South, Ranges 14 thru 28 East; N/2 only of Township 7 South, Ranges 14 East thru 17 East; all of Townships 7 South and 8 South, Ranges 18 East thru 28 East; all of Townships 9 South and 10 South, Ranges 18 East thru 27 East; all of Township 11 South, Ranges 18 East thru 25 East; all of Township 12 South, Ranges 18 East thru 24 East; all of Township 13 South, Ranges 18 East thru 23 East; and all of Township 14 South, Ranges 18 East thru 22 East; also all of Township 9 1/2 South, Range 24 East.

CASE 7094: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, assigning a discovery allowable, contracting, and extending certain pools in Chaves, Eddy, and Lea Counties, New Mexico:

(a) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Yates production and designated as the Northeast Lusk-Yates Pool. Further, to assign approximately 14,790 barrels of discovery allowable to the discovery well, Sun Oil Company Jennings B Federal Well No. 1 located in Unit K of Section 15, Township 19 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 32 EAST, NMPM
Section 15: SW/4

(b) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Yates production and designated as the North Querecho Plains-Yates Gas Pool. The discovery well is Lewis B. Burleson, Inc. Berry Federal Well No. 1 located in Unit E of Section 35, Township 18 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM
Section 35: NW/4

(c) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Atoka production and designated as the Triple X-Atoka Gas Pool. The discovery well is Getty Oil Company HNG 4F State Well No. 1 located in Unit F of Section 4, Township 24 South, Range 33 East, NMPM. Said pool would comprise:

TOWNSHIP 24 SOUTH, RANGE 33 EAST, NMPM
Section 4: W/2

(d) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Devonian production and designated as the Tulk-Devonian Pool. The discovery well is Santa Fe Energy Company State NM3 Well No. 1 located in Unit P of Section 3, Township 15 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 15 SOUTH, RANGE 32 EAST, NMPM
Section 3: SE/4

(e) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Morrow production and designated as the Vaca Draw-Morrow Gas Pool. The discovery well is HNG Oil Company Bell Lake 11 Federal Well No. 1 located in Unit B of Section 11, Township 25 South, Range 33 East, NMPM. Said pool would comprise:

TOWNSHIP 25 SOUTH, RANGE 33 EAST, NMPM
Section 11: N/2

(f) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Bone Spring production and designated as the North Young-Bone Spring Pool. The discovery well is Harvey E. Yates Company Young Deep Unit Well No. 1 located in Unit D of Section 10, Township 18 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM
Section 10: NW/4

(g) CONTRACT the Anderson Ranch-Wolfcamp Pool in Lea County, New Mexico, by the deletion of the following described area:

TOWNSHIP 16 SOUTH, RANGE 32 EAST, NMPM
Section 3: Lots 9, 10, 15, and 16

(h) CONTRACT the Querecho Plains-Yates Pool in Lea County, New Mexico, by the deletion of the following described area:

TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM
Section 35: NW/4

(i) CONTRACT the South Red Lake-Seven Rivers Pool in Eddy County, New Mexico, by the deletion of the following described area:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 15: W/2 SW/4
Section 22: NW/4

(j) EXTEND the Airstrip-Lower Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM
Section 23: SE/4

(k) EXTEND the North Anderson Ranch-Wolfcamp Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 32 EAST, NMPM
Section 2: Lots 11, 12, 13, and 14
Section 3: Lots 9, 10, 15, and 16

(l) EXTEND the Antelope Ridge-Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM
Section 24: SW/4
Section 25: NW/4

(m) EXTEND the West Arkansas Junction-San Andres Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 36 EAST, NMPM
Section 20: SW/4
Section 29: NW/4

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

TOWNSHIP 21 SOUTH, RANGE 28 EAST, NMPM
Section 21: E/2
Section 28: All

(o) EXTEND the Bell Lake-Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM
Section 29: N/2
Section 30: E/2
Section 31: NE/4

(p) EXTEND the Blinebry Oil and Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM
Section 22: SE/4

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM
Section 8: NW/4

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

TOWNSHIP 8 SOUTH, RANGE 29 EAST, NMPM
Section 6: E/2 SW/4
Section 7: E/2 NW/4

(r) EXTEND the Denton-Wolfcamp Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 37 EAST, NMPM
Section 22: SE/4

(s) EXTEND the Diamond Mound-Morrow Gas Pool in Chaves and Eddy Counties, New Mexico, to include therein:

TOWNSHIP 15 SOUTH, RANGE 27 EAST, NMPM
Section 35: S/2

TOWNSHIP 15 SOUTH, RANGE 28 EAST, NMPM
Section 31: E/2

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
Section 3: Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16
Section 4: Lots 1, 2, 7, 8, 9, 10, 15, and 16

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

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM
Section 28: All
Section 29: N/2

(u) EXTEND the Eagle Creek Permo-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 24 EAST, NMPM
Section 36: E/2

(v) EXTEND the South Empire-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 18: All

(w) EXTEND the East Empire Yates-Seven Rivers Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 22: NW/4

(x) EXTEND the East Grama Ridge-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 34 EAST, NMPM
Section 2: SE/4

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

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
Section 1: S/2

(z) EXTEND the Hardy-Drinkard Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
Section 1: S/2

(aa) EXTEND the Leamex-Wolfcamp Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM
Section 21: S/2 NW/4

(bb) EXTEND the Loco Hills Queen-Grayburg-San Andres Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 30 EAST, NMPM
Section 2: SW/4 SW/4
Section 3: All
Section 4: E/2
Section 11: NW/4 NW/4

(cc) EXTEND the South Loco Hills Queen-Grayburg-San Andres Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 29 EAST, NMPM
Section 31: NE/4 NE/4

(dd) EXTEND the Northeast Lovington-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 37 EAST, NMPM
Section 29: NW/4

(ee) EXTEND the Penasco Draw Permo-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 24 EAST, NMPM
Section 25: S/2
Section 36: All

TOWNSHIP 19 SOUTH, RANGE 24 EAST, NMPM
Section 1: N/2

(ff) EXTEND the Saunders Permo-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 33 EAST, NMPM
Section 28: NW/4

(gg) EXTEND the Scharb-Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 35 EAST, NMPM
Section 4: SW/4
Section 5: SE/4

(hh) EXTEND the Tom-Tom San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 7 SOUTH, RANGE 31 EAST, NMPM
Section 29: SE/4

(ii) EXTEND the Twin Lakes-San Andres Associated Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 29 EAST, NMPM
Section 19: W/2 NE/4 and NW/4 SE/4
Section 31: E/2

(jj) EXTEND the Vacuum-Abo Reef Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
Section 9: SW/4

Comm. Hearing

Application ~~for~~ of Southern Union Exploration Co. for Reconsideration of ~~Order No.~~ Division Order No. R-6175. Applicant in the above styled cause seeks (a) that Order R-6175 be set aside, or (b) to except the E½ Section 32, T 25 S, R 24 E, Eddy County, New Mexico from the terms of ~~Order~~ said Order, or (c) clarify said Order with respect to the E½ of Section 32, T 25 S, R 24 E, Eddy County, New Mexico.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

RECEIVED
SEP 05 1980
OIL CONSERVATION DIVISION
SANTA FE

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

APPLICATION OF SOUTHERN UNION EXPLORATION CO. FOR RECONSIDERATION OF ORDER NO. R-6175.

CASE NO. 7088

PETITION FOR RECONSIDERATION OF ORDER NO. R-6175

INTRODUCTION

Southern Union Exploration Co. (SX) respectfully requests the Division to reconsider its Order No. R-6175 (the Order) and

(a) to set aside the Order, or

(b) to except from the terms of the Order E/2 Sec. 32, T25S, R24E, Eddy County, New Mexico ("E/2 Sec. 32") and wells to be drilled thereon, or

(c) to clarify the Order, insuring that it does not take, burden or otherwise impermissibly affect SX's property rights in E/2 Sec. 32, by making the following changes thereto:

(1) By deleting "to confirm" from the Finding paragraph (3) on page 1 of the Order and inserting "for the purpose of confirming" in lieu thereof.

(2) By adding "Finding" paragraph (13)(G) on page 5 as follows:

"(G) That nothing herein shall be construed as removing, extending, deleting, or creating rights between Lessor and Lessee of any mineral estate on lands within the Washington Ranch Gas Storage Project Area as defined in (A) above."

(3) By deleting of Finding paragraph (13)(E)(2) on page 5.

(4) By deleting from Ordering paragraph (1) on page 5 of the Order "Section 32: E/2".

(5) By deleting all of Ordering paragraph (9) on pages7 and 8 before the colon and addition in lieu thereof the following:

"(9) That should any operator drill a well to a formation deeper than the Morrow storage zone within the boundary of the Active Area of the Washington Ranch Gas Storage Project as described in Order No. (1) above, the following special drilling and casing requirement shall be observed."

(6) By deleting of Ordering paragraph (12) on page 8 and addition in lieu thereof the following:

"Any well to be drilled within the Washington Ranch Gas Storage Project Area as described in Order No. (1) above but at a location not included in the Active Area of the Washington Ranch Gas Storage Project as described in Order No. (10) shall be located, drilled, completed, operated and/or plugged according to the General Rules and Regulations of the Division.

(7) By changing Ordering paragraph (13) on page 9 to paragraph (14) and adding new paragraph (13) as follows:

"That nothing shall be construed as extending, diminishing or creating new rights to explore for and produce oil and gas or affecting such rights as they exist."

SX makes its request because the Order, which implements the Washington Ranch Gas Storage Project proposed by El Paso Natural Gas Company (El Paso), contravenes state and federal constitutional provisions and state statutory authority, insofar as it applies to E/2 Sec. 32, upon which SX holds State of New Mexico Oil and Gas Leases LG-5340 and V-150.

It is SX's position that:

1. By allowing El Paso to include in its storage project property leased to SX without acquiring such property from SX either through negotiation or condemnation as required by law, the Order operates to deny SX due process and equal protection of the law, and it effects a taking of SX's property by El Paso without compensation.
2. The Order improperly allows El Paso to circumvent the clear statutory requirements for the acquisition by negotiation or condemnation of property for underground gas storage facilities.
3. The Division failed to give SX effective notice of the hearing it had set on El Paso's application by failing to select a mode of service reasonably calculated to provide SX with actual information of the proceedings, thereby denying SX its right to due process of law.
4. The notice of hearing which the Division published was insufficient under due process standards, because it failed to include E/2 Sec. 32 in its description of El Paso's proposed project area and thus could not possibly have informed SX that its property might be taken by El Paso.

Before taking a closer look at each of the SX positions, a brief recitation of the pertinent facts is in order.

FACTUAL BACKGROUND

SX acquired State of New Mexico Oil and Gas Leases LG-5340 and V-150 at a regular lease sale of the New Mexico Commissioner of Public Lands in April 1978. It paid a bonus andfirst year's rental of $14,400 for Lease LG-5340, which covers N/2 and SW/4 Sec. 32, and a bonus and first year's rental of $4800 for Lease V-150, which covers SE/4 Sec. 32. SX has determined on the basis of geological studies that the prospect for producing natural gas in paying quantities from E/2 Sec. 32 is good.

Later in 1978, El Paso decided that it wanted to use the land subject to SX's leases for a gas storage project, and it attempted, pursuant to Sec. 70-6-3 (NMSA 1978), to acquire the leases by negotiations with SX. The negotiations were unsuccessful and ended in June 1979. Although Secs. 70-6-3 to -5 and 70-6-7 require the proponent of a gas storage project who is unable to acquire property for the project by negotiation to acquire the property by condemnation and payment of compensation to the property owner, El Paso has failed to do so. Instead it has used the Order to avoid both condemnation and payment of compensation to SX.

On September 13, 1979, after its negotiations with SX had ended unsuccessfully, El Paso applied to the Oil Conservation Division for permission to establish a gas storage project to be known as the Washington Ranch Gas Storage Project. As described in the application, the project area encompassed some 12,158.25 acres in Eddy County, including E/2 Sec. 32. In addition to seeking Division approval of a storage project and a designated

storage project area, El Paso sought the adoption of certain rules to govern well drilling and completions in the project area. Significantly, El Paso did not seek the findings required by Sec. 70-6-5 to permit it to acquire SX's property by condemnation, and it has to date failed to start condemnation proceedings or to pay compensation to SX.

A hearing was held on El Paso's application on October 17, 1979. SX was not represented. Counsel to the Oil Conservation Division was present, however, as were two attorneys for El Paso. At the conclusion of testimony from El Paso's three witnesses (including Richard B. Isaacks, who testified that El Paso anticipated acquiring the SX property "within the next thirty days" even though he had conducted the acquisition negotiations with SX which had ended unsuccessfully more than four months earlier and which were not thereafter resumed), the Division's hearing examiner requested El Paso to prepare proposed rules for operation of the project and for the drilling and casing of wells within it, and took the case under advisement.

On November 2, 1979, the Division issued the Order establishing the Washington Ranch Gas Storage Project. Included within the Order's so-called "Project Area", though outside the so-called "Active Area", was E/2 Sec. 32. By virtue of its inclusion in the project, SX's property was made subject to a number of special rules incorporated into the Order. Among other things, these rules purported to impose special drilling and casing requirements upon SX for wells located outside the "Active Area" but within the "Project Area" and for all wells drilled to a certain depth, regardless of where located in the "Project Area" (Para. (13)(E) of findings section of Order No. R-6175;

Para. (9) of ordering section of Order R-6175). Such requirements make it impossible for SX economically to drill for and produce the natural gas which it believes could otherwise be profitably recovered from E/2 Sec. 32, thereby depriving it of valuable property without condemnation or payment of compensation and without due process of law.

LEGAL AUTHORITIES

POINT I

ORDER NO. R-6175 OPERATES TO DENY SX DUE PROCESS AND THE EQUAL PROTECTION OF THE LAW, AND IT IMPERMISSIBLY EFFECTS A TAKING OF SX'S PRIVATE PROPERTY BY EL PASO WITHOUT JUST COMPENSATION

The Fourteenth Amendment to the United States Constitution and Article II, Section 18 of the New Mexico Constitution prohibit the state from depriving anyone of property without due process of law and from denying to anyone the equal protection of the laws. The state and federal constitutions further prohibit the taking or damaging of private property without just compensation. U.S. Const. Amend. V; N.M. Const. Art. II, §20. These constitutional provisions operate to limit state agencies when they seek to restrict or interfere with the uses of private property.

The leading case of Allen v. McClellan, 75 N.M. 400, 405 P.2d 405 (1965) illustrates the point. In Allen, plaintiffs sought to enjoin further application of restrictions upon the use of their private property by the New Mexico state game commission. The commission had without statutory authority and due process of law taken plaintiffs' property by restricting and interfering with its use without just compensation and thereby denied plaintiffs the equal protection of the laws. Plaintiffs'

claims arose out of the inclusion of twelve acres of their property in a game management area without their consent and without payment of compensation to them. The commission had taken such action, closing all roads to the twelve acres and forbidding any hunting or firearms thereon, under a claim that it was exercising its statutory authority to provide resting grounds for migratory birds. The commission tried to effect its action by administrative order alone; it made no attempt to use its statutory authority to acquire private lands by purchase, gift, bequest, lease or eminent domain.

In analyzing the respective positions of the parties, the New Mexico Supreme Court reasoned that "the legislature may provide by law for the conservation of game animals and birds, but only so long as such laws do not deny to one having rights in privately owned land the due process or equal protection of the laws that our Constitution guarantees to all persons." 75 N.M. at 402; 405 P.2d at 407. The Court went on to hold:

> It is our view that the commission may not create a game refuge or migratory bird resting ground on private land without consent, or without acquiring the necessary interest in the land by eminent domain or in such other manner as is authorized by law. Were it otherwise, the owner would be deprived of the right, enjoyed by others in the vicinity but outside the refuge, to hunt game on his own property and thereby be in violation of the due process and equal protection clauses of the Constitution. It is also our view that the inclusion of private land within such a game management area for the purpose of providing a place for migratory birds "to rest and feed unmolested" may result in consequential damage to the owner of private land included therein, contrary to Art. II, section 20 of the Constitution, even though there was no actual taking of any part of the land itself. Board of County Com'rs of Lincoln County v. Harris, 69 N.M. 315, 366 P.2d 710.

75 N.M. at 404; 405 P.2d at 409. Thus, Allen recognized that the state cannot take private property by restricting or interfering with its use without consent or condemnation.

The parallels between Allen and the case at hand are striking. Here, SX's claims arise out of the inclusion of its private property within the Washington Ranch Gas Storage Project, and the concomitant rendering of its property as essentially worthless by special well drilling and casing rules. In Allen, private property was included within a game management area and also subjected to special rules which restricted its use and diminished its value. As explained more fully at Point II in this Petition, the Division failed to adhere to applicable, Constitutionally acceptable statutory authority requiring El Paso to acquire SX's property in the project area either through negotiation* or eminent domain. Sec. 70-6-3 (1978). Instead, like the commission in Allen, the Division attempted in the Order to establish the project and permit El Paso to take SX's property therefor without either SX's consent or condemnation. As a consequence, under the

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* At the hearing of October 17, 1979, El Paso witness Richard B. Issacks testified that El Paso anticipated acquiring all the so-called "edge leases", that is, those, like SX's, in the project's "'buffer zone' within the next thirty days" (Case 6703, Transcript of Hearing of October 17, 1979, at page 12). In fact, El Paso had attempted to acquire SX's property in order to establish a "buffer zone" for its future storage project. These negotiations came to an end, however, on June 15, 1979, when SX notified El Paso by letter that it was uninterested in the price El Paso had offered and that it wished El Paso to remove Sec. 32, T25S, R24E from its Washington Ranch Gas Storage Project. Thus, negotiations between SX and El Paso had permanently ended four months before El Paso testified that it anticipated acquiring SX's property by negotiation "within the next thirty days."

rule established in Allen, SX was denied due process of law, and its property was impermissibly taken for El Paso without just compensation. Further, under Allen, SX was denied the equal protection of the laws insofar as it was deprived of the right enjoyed by others in the vicinity but outside the "Project Area" to produce their leases without complying with special drilling and casing rules designed to protect El Paso.

POINT II

IN GRANTING EL PASO'S APPLICATION TO ESTABLISH A STORAGE PROJECT, THE DIVISION FAILED TO REQUIRE EL PASO TO COMPLY WITH APPLICABLE STATUTORY PROCEDURES FOR APPROPRIATING SUCH FACILITIES, AND, THEREFORE, THE DIVISION'S IMPLEMENTING ORDER IS INVALID AS TO SX

An administrative body, being a creature of statute, has only such power and authority as are granted to it by statute. Maxwell Land Grant Co. v. Jones, 28 N.M. 427, 429-30, 213 P. 1034, 1035 (1923). And where a statute prescribes a specific mode for accomplishing any action by an administrative body or by those whom it regulates, resort must be made to the procedure prescribed; action taken in disregard of applicable statutory procedure is invalid. Maxwell Land Grant Co. v. Jones, 28 N.M. at 431-33, 213 P. at 1035-1036; see Morton v. Ruiz, 415 U.S. 199, 235 (1974); Lewis v. Weinberger, 415 F.Supp. 652, 661 (D. N.M. 1976).

Secs. 70-6-1 through 70-6-8 of the New Mexico statutes prescribe the procedures to be followed by a company desiring to establish an underground gas storage facility. Under Sec. 70-6-3, such a company is required to acquire all lands necessary for the maintenance and operation of the proposed facility, preferably, by negotiation. If any part of the necessary property cannot be

acquired by negotiation, the company must acquire it by judicial condemnation and payment of compensation. Secs. 70-6-3 and 70-6-4. The only properties which may be condemned for a gas storage project are (with certain limited exceptions) (1) "any subsurface stratum or formation in any land which the commission shall have found to be suitable for the underground storage of natural gas" and (2) "such other interests in . . . the land [i.e., the land "suitable for the underground storage of natural gas"] as may be required to maintain and operate facilities for . . . underground storage" (emphasis added). Thus, only land "suitable for the underground storage of natural gas" may be taken without the consent of its owner. And before a company can begin judicial proceedings to take such lands, it must obtain from the Division a decision making the seven specific findings prescribed at Sec. 70-6-5. Finally, the Company must pay for the land it takes. El Paso did none of these.

Despite its testimony to the contrary, El Paso failed to negotiate the acquisition of E/2 Sec. 32 from SX. Yet, El Paso neither deleted E/2 Sec. 32 from its "Project Area" nor took steps to acquire it by condemnation and payment of compensation. Instead, it simply applied to the Division for permission to establish and operate its proposed facility in an area which included SX's property. Thus, El Paso violated Secs. 70-6-3 and -4.

Moreover, the Division's inclusion of SX's property in the project was not based upon its "suitabil[ity] for the underground storage of natural gas" as required by Sec. 70-6-4. Indeed, El Paso admits that it does not intend to use E/2 Sec. 32 for underground gas storage. Instead, E/2 Sec. 32 is part of El Paso's so-called "buffer zone" (Transcript of hearing of October 17,

1979 at pages 7, 12), outside the "Active Area", i.e., the area to be used for underground gas storage (Para. (13) of the findings section of Order No. R-6175; paras. (1), (10) of the ordering section of Order No. R-6175). Of course, there was no evidence at the hearing, nor did the Division find, that E/2 of Sec. 32 was land "suitable for underground gas storage": El Paso admits that it does not intend to use E/2 Sec. 32 for gas storage. Thus, there was no foundation for the appropriation of SX's property by El Paso and the Division.

Now, the Division is attempting to justify its actions permitting El Paso, in effect, to take SX's property without either judicial condemnation and payment of compensation or compliance with other required statutory procedures by saying that it acted pursuant to its general statutory power, set forth at Sec. 70-2-12 B(13), to regulate the "methods and devices" employed for gas storage (Letter dated June 23, 1980 from Ernest L. Padilla to Mark K. Adams; Transcript of hearing of October 17, 1979, at page 4).

However, the Divsion's attempt to interfere with SX's use of E/2 Sec. 32 is not the regulation of "methods and devices" employed for gas storage. Instead, it clearly is an attempt to regulate the way in which SX may drill and complete oil and gas production wells. SX has no right to and does not intend to use E/2 Sec. 32 for gas storage. Any attempt by the Division to interfere with its activities in E/2 Sec. 32, then, is not a regulation of "methods and devices" for gas storage, but instead an attempt to regulate "methods and devices" for drilling and completing production wells. Sec. 70-2-12B(13) does not justify the taking of SX's property without its consent for El Paso's gas

storage project. Such a taking may be accomplished only by judicial condemnation and payment of compensation.

By including E/2 Sec. 32 in the "Project Area", the Division in effect allowed El Paso to take SX's property for its own use, in utter disregard of the statutory requirement that such property be acquired either by negotiation or condemnation or be deleted from the project. The Division's general regulatory power under Sec. 70-2-12 B(13) is clearly intended to regulate the "methods and devices" employed for gas storage, not to permit the proponent of a gas storage project to take property without consent or payment of compensation and without due process of law. See Maxwell Land Grant Co. v. Jones, 28 N.M. at 431-33, 213 P. at 1035-1036. Secs. 70-6-3 and 70-6-4 specifically require negotiation or condemnation and payment of condemnation. As a consequence, the Order is invalid as applied to E/2 Sec. 32. Id. And, SX is entitled to restrain any interference with its property rights under color of the Order through proceedings in either the courts of New Mexico, Allen v. McClellan, 75 N.M. 400, 405 P.2d 405 (1965); see Allen v. McClellen, 77 N.M. 801, 427 P.2d 677 (1967); 6A P. Nichols, Law of Eminent Domain §28.22, at 28-53, 28-55, n. 68, or of the United States. 6A P. Nichols, supra §27.8, at 27-154 & n. 99.

POINT III

THE DIVISION FAILED TO SERVE NOTICE OF ITS HEARING IN A MANNER REASONABLY CALCULATED TO PROVIDE SX WITH ACTUAL INFORMATION OF THE PROCEEDINGS

The Due Process Clauses of the state and federal Constitutions require that deprivation of property be preceded by notice and opportunity for hearing. Mullane v. Central Hanover Bank & Trust Company, 339 U.S. 306, 313 (1950). The notice required by the Due Process Clauses is "notice reasonably calculated, under all the circumstances, to apprise interested parties of the pendency of the action and afford them an opportunity to present their objections." Mullane v. Central Hanover Bank & Trust

Company, 339 U.S. at 314. The general rule that has emerged from Mullane and its progeny is that personal service or a specific notice of hearing is required with respect to a person whose interests are directly affected by the proceedings in question and whose name and address are known or easily ascertainable. Schroeder v. City of New York, 371 U.S. 208, 211 (1962); Mullane v. Central Hanover Bank & Trust Company, 339 U.S. at 315-20; Olansen v. Texaco Inc., 587 P.2d 976, 982-83 (Okla. 1978); In Re Estate of Engbrock, 90 N.M. 492, 565 P.2d 662 (1977); Mutz v. Le Sage, 61 N.M. 219, 221, 297 P.2d 876, 878 (1956).

Sec. 70-2-23 of New Mexico's Oil and Gas Act satisfies the state and federal Due Process Clauses by providing that before making any order, the Division must hold a public hearing at which any person with an interest may be heard. Such a hearing is to take place upon reasonable notice. Sec. 70-2-23. According to Sec. 70-2-7, any notice required to be given by the Division "shall be by personal service on the person affected, or by publication once in a newspaper of general circulation published at Santa Fe, New Mexico, and once in a newspaper of general circulation published in the county ... in which any land, oil or gas or other property which may be affected shall be situated (emphasis added)". In selecting whether to make personal service or to publish, the Division must heed the constitutionally rooted principles of due process identified in the preceding paragraphs by making personal service when feasible. See Dunlop v. Hertzler Enterprises, Inc., 418 F.Supp. 627, 633-34 (D. N.M. 1976).

By virtue of its oil and gas leases on E/2 Sec. 32, SX had a legally protected interest directly affected by the proceedings on El Paso's application. SX's interest was obviously well known

to both El Paso and the Division. By checking the records of the State Land Office, which are housed in the same building as the Division and on the floor immediately below it, SX's interest, identity and address could have been confirmed. Yet, the Division failed to make any effort to serve SX personally. Consequently, the Division did not satisfy the Constitutional and statutory requirements of "apprising" SX "of the pendancy of" El Paso's attempt to take its property "and [of] affording" SX "an opportunity to present [its] objections." As a result, SX did not appear at the hearing at which El Paso and the Division purported to take its property.

Given that SX's interest in this Case was known to El Paso and the Division, actual personal service was a Constitutional and statutory necessity. Of the statutory alternatives available to the Division under Sec. 70-2-7, notice by personal service rather than by publication was required. Because the Division's published notice was neither reasonably calculated to provide nor, in fact, did provide actual information of the proceedings to SX, the Order is invalid as to it.

POINT IV

THE NOTICE OF HEARING PUBLISHED BY THE DIVISION FAILED TO DESCRIBE E/2 SEC. 32 AND, THUS, COULD NOT HAVE INFORMED SX THAT ITS PROPERTY WAS AT STAKE IN THIS CASE

A notice of a legal proceeding relating to real property is ineffective unless it would fairly apprise a reasonable person of a proposed action affecting his property. If property is not sufficiently described to alert an interested person of the pendency of proceedings affecting it, any subsequent action taken with respect to such property is void. United States v. Chatham, 323 F.2d 95, 99-100 (4th Cir. 1963); Nesbit v. City of Albuquerque, 91 N.M. 455, 458-59, 575 P.2d 1340, 1342-43 (1977).

Absence of personal service upon SX was not the only deficiency in the Division's discharge of its Constitutional and statutory notice obligations in these proceedings. The notice the Division published was wholly inadequate to inform SX that its property was at stake. The Division's notice was as follows, in pertinent part:

> "CASE 6073:
>
> Application of El Paso Natural Gas Company for underground gas storage, Eddy County, New Mexico.
>
> Applicant, in the above-styled cause, seeks authority to institute a gas storage project in the Morrow formation underlying its Washington Ranch Morrow Unit Area in Townships 25 and 26 South, Ranges 24 and 25 East, Washington Ranch Morrow Gas Pool." (Emphasis added.)

No part of Sec. 32 underlies the Washington Ranch Morrow Gas Pool identified in the published notice. Oil Conservation Case No. 4675, Order No. R-4279 (Mar. 17, 1972); Case No. 4806, Order No. R-4377 (Aug. 30, 1972); Case No. 4864, Order No. R-4437 (Nov. 16, 1972); Case No. 5172, Order No. R-4734 (Feb. 21, 1974); Case No. 5239, Order No. R-4782 (May 21, 1974). Thus, even if SX had been personally served with the Division's notice, it would not have learned that E/2 Sec. 32 was included within the gas storage project proposed by El Paso. Because the Division's notice failed to describe E/2 Sec. 32, then, that portion of the Order purporting to operate upon E/2 Sec. 32 is void.

CONCLUSION

For the reasons set forth above, SX respectfully requests the Division to reconsider its Order No. R-6175 in Case No. 6703 and

(a) to set aside the Order, or

(b) to except from the terms of the Order E/2 Sec. 32 and wells to be drilled thereon, or

(c) to clarify the Order, insuring that it does not take, burden or otherwise impermissibly affect SX's property rights in E/2 Sec. 32, by making the following changes thereto:

(1) By deleting "to confirm" from the Finding paragraph (3) on page 1 of the Order and inserting "for the purpose of confirming" in lieu thereof.

(2) By adding "Finding" paragraph (13)(G) on page 5 as follows:

"(G) That nothing herein shall be construed as removing, extending, deleting, or creating rights between Lessor and Lessee of any mineral estate on lands within the Washington Ranch Gas Storage Project Area as defined in (A) above."

(3) By deleting Finding paragraph (13)(E)(2) on page 5.

(4) By deleting from Ordering paragraph (1) on page 5 of the Order "Section 32: E/2".

(5) By deleting all of Ordering paragraph (9) on pages7 and 8 before the colon and addition in lieu thereof the following:

"(9) That should any operator drill a well to a formation deeper than the Morrow storage zone within the boundary of the Active Area of the Washington Ranch Gas Storage Project as described in Order No. (1) above, the following special drilling and casing requirement shall be observed."

(6) By deleting Ordering paragraph (12) on page 8 and addition in lieu thereof the following:

"Any well to be drilled within the Washington Ranch Gas Storage Project Area as described in Order No. (1) above but at a location not included in the Active Area of the Washington Ranch Gas Storage Project as described in Order No. (10) shall be located, drilled, completed, operated and/or plugged according to the General Rules and Regulations of the Division.

(7) By changing Ordering paragraph (13) on page 9 to paragraph (14) and adding new paragraph (13) as follows: "That nothing shall be construed as extending, diminishing or creating new rights to explore for and produce oil and gas or affecting such rights as they exist."

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.

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BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

RECEIVED
DEC 19 1980
OIL CONSERVATION DIVISION
SANTA FE

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 7088
R- 6175-A

APPLICATION OF SOUTHERN UNION
EXPLORATION COMPANY FOR
RECONSIDERATION OF ORDER NO. R-6175.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 A.M. on November 18, 1980, at Santa Fe, New Mexico, before Commission~~s~~ ~~Joe D. Ramey and Emery C. Arnold~~ the Oil Conservation of New Mexico hereinafter referred to as the "Commission".

NOW, on this ____ day of ~~December~~ January, 1981, the Commission, a quorum being present, having considered the testimony and the record in this Case and in Case No. 6703 and being fully advised in the premises,

FIND:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Southern Union Exploration Company (~~Union~~), owns ~~State of New Mexico Oil and Gas Lease No. LG-5340,~~ an oil & gas lease covering ~~inter alia, NE 1/4~~ the E/2 of Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, ~~and State of New Mexico Oil and~~

~~Gas Lease No. V-150, covering SE 1/4 Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico. (E/2 Section 32, Township 25 South, Range 24 East, is hereinafter called "E/2 Section 32").~~

(3) That said E/2 Section 32 was declared to be within the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 of the New Mexico Oil Conservation Division in Case No. 6703.

(4) That the said Order No. R-6175 was not intended to prevent ~~SK~~ the applicant from drilling to or through and producing from the Morrow Formation underlying E/2 Section 32.

(5) That the Morrow Formation underlying E/2 Section 32 ~~and W/2 Section 33~~, Township 25 South, Range 24 East, Eddy County, New Mexico, is not within the Washington Ranch-Morrow Gas Pool created by Oil Conservation Commission Order No. R-4279, and thereafter expanded by Orders No. R-4377, R-4437, R-4734 and R-4782, and that there is no substantial evidence before the Commission to indicate that E/2 Section 32 is within said Pool.

(6) That there is no substantial evidence before the Commission of pressure communication or pressure connection between the Morrow Formation underlying E/2 Section 32 and the structural feature within which El Paso Natural Gas Company proposes to store gas in its Washington Ranch Gas Storage Project.

~~(7) That W/2 Section 33, Township 25 South, Range 24 East, is located between E/2 Section 32 and the structural feature in which El Paso proposes to store gas, that there has been no well drilled to~~

~~the Morrow Formation underlying W/2 Section 33, that El Paso controls W/2 Section 33, and that El Paso could drill an observation well or wells on W/2 Section 33.~~

7 (~~8~~) That there is no substantial evidence before the Commission that completing and producing an oil and gas well in the Morrow or any other formation underlying E/2 Section 32 will cause or result in underground waste, ~~pollution~~, the escape of gas from the Washington Ranch Gas Storage Project, or any other undesirable condition.

8 (~~9~~) That the special drilling and casing requirements imposed by ~~Ordering Paragraph (9) of~~ Order No. R-6175 are not ~~required~~ necessary to protect the Washington Ranch Gas Storage Project from any consequences of a well drilled, completed and produced in E/2 Section 32.

(~~10~~) That including E/2 Section 32 in the El Paso Natural Gas Company Washington Ranch Gas Storage Project by Order No. R-6175 and the imposition of special drilling and casing requirements by Ordering Paragraph (9) of such Order would significantly increase the cost of drilling a well to or through the Morrow Formation underlying E/2 Section 32, would adversely affect the marketability of the oil and gas leases covering E/2 Section 32 for joint operations, and would adversely affect correlative rights.

9 (~~11~~) That E/2 of Section 32 is not needed for the Washington Ranch Gas Storage Project, and Order No. R-6175 should be amended to delete said lands from said project.

IT IS THEREFORE ORDERED:

(1) That ~~, and~~ ordering Paragraph No. 1 of Oil Conservation Division Order No R-6175 is hereby amended by deleting therefrom any reference therein to the E/2 of Section 32, Township 25 South, Range 24 East, NMPM, Eddy County, New Mexico, and said Order shall have no force or effect with respect to said E/2 of Section 32.

No. R-6175 of the New Mexico Oil Conservation Division, and said Order shall have no force or effect with respect to E/2 Section 32.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOE D. RAMEY, Member

SEAL

E C Arnold

Alex Armijo