CASE NO.

7678

APPLICATION,

TRANSCRIPTS,

SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
15 September 1982

EXAMINER HEARING

IN THE MATTER OF:

Application of Phillips Petroleum Company for a pressure maintenance project, Lea County, New Mexico. CASE 7678

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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

For the Applicant: W. Thomas Kellahin, Esq.
KELLAHIN & KELLAHIN
117 No. Guadalupe
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

E X H I B I T S

MR. NUTTER: We'll call now Case Number 7678.

MR. PEARCE: That is on the application of Phillips Petroleum Company for a pressure maintenance project, Lea County, New Mexico.

(Thereupon a recess was taken.)

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

I believe we're on Case Number 7678.

MR. PEARCE: This is on the application of Phillips Petroleum Company for a pressure maintenance project, Lea County, New Mexico.

MR. KELLAHIN: Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have two witnesses to be sworn.

(Witnesses sworn.)

DAVID B. HOWELL

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Howell, for the record would you please state your name and occupation?

A. My name is Dave B. Howell and I'm employed by Phillips Petroleum Company as a reservoir engineer.

Q. Mr. Howell, have you previously testified before the Division?

A. No, I have not.

Q. Would you identify for Mr. Nutter when and where you obtained your engineering degree?

A. I attended the University of Oklahoma in Norman, 1976 to 1980; obtained a BS in petroleum engineering from there.

I worked for Phillips since then in Oklahoma City as a drilling and production engineer, and in Odessa since June of last year.

I'm currently reservoir engineer for Lea County, New Mexico.

Q. Pursuant to your employment with Phillips Petroleum Company, Mr. Howell, have you made a study of the proposed project area for this application in this pressure maintenance project?

A. Yes, I have.

MR. KELLAHIN: We tender Mr. Howell as an expert petroleum engineer.

MR. NUTTER: Mr. Howell is so qualified.

Q. Mr. Howell, let me direct your attention to a map which we have marked as Exhibit Number One and have you, first of all, identify for us the two leases that would be the subject of this pressure maintenance order.

A. Okay. The attached map is a map of the project area. The two leases assigned to the project are the Phillips Mabel and the Phillips Hale leases. This map identifies all wells within the two mile area, with half mile injection -- half mile radius circles around the proposed injection wells, which are the open circles inside the Mabel and Hale leases.

There are eight injection wells with two empty circles in the middle of the Hale, 12 and 13 proposed production wells.

Q. What is the pool area to be subject to the pressure maintenance project?

A. This is the Vacuum Grayburg-San Andres Field.

Q. And it will be the injectio of water for pressure maintenance purposes into what specific formation?

A. Into the San Andres.

Q. Are there other pressure maintenance projects in the area, Mr. Howell?

A. You can tell by the color coding the boundaries of other water injection projects. There's the Texaco West Vacuum to the west; the Vacuum Grayburg-San Andres Unit to the south; the Central Vacuum Unit to the east; Mobil Bridges State Waterflood Area to the north, and the outlines in pink are the edges of the East Vacuum Grayburg-San Andres Unit operated by Phillips.

Q. This area, then, for the project is the remaining window within the pressure maintenance projects operated by other operators for this pool?

A. Yes, it is.

Q. All right, sir.

MR. NUTTER: Mr. Howell, at this point, is that Conoco lease directly north of your Hale lease part of one of those projects?

A. No, sir, it's not.

MR. NUTTER: Is there any injection going on in that?

A. No, it is not.

Q. Do you have a lease line agreement with offset operators for the conduct of your pressure maintenance

project, Mr. Howell?

A. Yes. We have later on in the exhibits scheduled the attached cooperative water injection agreement for cooperative water injection line wells.

Q. All right, sir. How do you propose to operate the project insofar as the two separate leases are concerned?

A Okay, we plan on operating them separately under one common name. We're going to have individual lease project area allowabl- for the Mabel and the Hale leases.

We want to call the project as a whole the Hale-Mabel Pressure Maintenance Project.

All accounting for production and injuction purposes will be done separately.

Q. Do you have proposed rules for this pressure maintenance project?

A. Yes, we do.

Q. And how are those rules being proposed?

A. Okay, we patterned our rules after some proposed regulations and rules on the East Vacuum Grayburg-San Andres Unit. They are almost identical. They are in an exhibit later on.

Q. All right, sir, let's turn then to Exhibit Number Two, and have you generally identify that packet of

exhibits.

A. Exhibit Number Two is the Proof of Notice. We've got all the offset lease operators. We sent a copy of everything.

We have an attached exhibit to that that has the wells, numbers, location, section, township, range, units, State lease numbers, and the type of well that we're planning on drilling.

Q. All right, let's turn to that for a moment. It's a legal size piece of paper with a tabulation of the eight injection wells and the two producing wells for the project, and those wells are also contained on your plat, Exhibit Number One, are they, Mr. Howell?

A. Yes.

Q. Have any of these wells been drilled yet?

A. No wells have been drilled.

Q. And then attached to that is just a map of the project area?

A. Yes.

Q. And copies of your return receipt notices.

A. Right.

Q. All right, sir.

Let's go on to Exhibit Number Three then and have you identify that for me.

A. Okay. This is a tabulation of wellbore penetrations penetrating the zone of interest. These are all wells inside those half-mile radius circles that have been drawn around the proposed injection wells on the Hale and Mabel leases.

The wells on this table are wells only on the Phillips' Mabel, Hale, and Conoco State H leases. We've left off all wells in currently existing projects.

Q. And why have you done that, Mr. Howell?

A. They were either -- in their order numbers when they were presented before the Commission they should have been presented then or at the time they went for their unitization, water injection area, or whatever you want to call it. They would have been included then.

Q. Later in the package of exhibits you can make reference to the adjoining projects and their order numbers that approved those projects and then contained within those files are going to be a tabulation of the other wells that are not included in your tabulation?

A. Yes, sir.

Q. All right, sir. In studying the wells indicated on your Exhibit Number Three, Mr. Howell, in your opinion are they adequately cemented across the injection formation?

A. All wells with the exception of a Conoco Well, State H-35 No. 11.

Q. And where is that one tabulated?

A. It's on the final page.

Q. And it's the third well up from the bottom?

A. Yes, sir.

Q. And what, if any, concern do you have about that well?

A. If there is a problem, it will be -- it is a currently plugged and abandoned well with the plug across the top of the San Andres and the bottom. There is nothing covering all the San Andres zone in between.

Q. Apart from that well, are there any other wells in your tabulation, Mr. Howell, that you think might be a problem well?

A. No, sir.

Q. All right, sir. Now in addition to the tabulation, Mr. Howell, have you compiled schematics of any plugged and abandoned wells within the area of investigation?

A. Yes, sir, we have three plugged wells on the Conoco State H Lease.

Q. All right, those are identified as Exhibits Four, Five, and Six?

A. Yes, sir.

Q. All right, sir, let's start with Exhibit Number Four. This is your plugged -- first plugged well?

A. Right.

Q. All right, sir, and this is the -- where is this well?

A. It is on the Conoco State H Lease No. 10X.

Q. In your opinion is that well adequately plugged and abandoned?

A. Yes.

Q. All right, sir, let's turn to Exhibit Number Five. This is the same well you picked up in your tabulation as a problem well?

A. Yes, sir.

Q. All right, sir, and it shows a plug at the top and the bottom of the San Andres?

A. Yes, sir, it does. The plug at the top is at 4430 and the plug at the bottom at 4760, with the zone open in between. It's a dry completion.

Q. All right, sir, let's go to Exhibit Number Six and have you identify that.

A. Okay. Another well on the Conoco State H Lease, Well No. 13.

Q. Is there any problem with this well?

A. No, sir, it has cement across the San

Andres.

Q. All right. Let's turn now to Exhibit Number Seven, Mr. Howell, and have you summarize for us your proposed operation under a pressure maintenance order.

A. Okay. We're more or less planning to follow the same proposed operations that we now operate the East Vacuum Grayburg-San Andres Unit under.

We plan on instituting a pressure maintenance project in Section 35 by injecting fresh water from two fresh water wells. Their location, permit, acre foot assignments are listed below.

One well is already drilled. It's on the Phillips' Hale Lease in Section 35.

The second fresh water well will be in Section 31.

We plan on injecting an average of about 1500 barrels of water per day per well. We plan on abiding by that .2 psi per foot surface pressure limitation.

We anticipate that all water used for injection purposes is compatible, since all surrounding floods in the Vacuum Grayburg-San Andres Unit have no problems.

Q. Would you identify Exhibit Number Eight for us?

A. Exhibit Number Eight is a proposed

stimulation program. We plan on more or less doing the same thing once again as we did in East Vacuum. We usually treat with 200 gallons per foot of NEHCL acid, approximately 50 feet of perforations.

If fracture job is necessary, we usually go with 1500 gallons per foot frac fluid.

Q. All right, sir, let's turn to Exhibit Number Nine and Exhibit Number Ten and have you identify those for us.

A. Okay. According to the C-108, you have to attach two fresh water samples within a mile.

This first one is the Texaco lease within three-quarters of a mile, and the second attachment, No. 10, is from the Hale water well that we will be using.

Both of them show total dissolved solids content of less than 1000.

Q. All right, sir, if you'll turn to Exhibit Number Eleven and identify that.

A. Okay, this is a typical data sheet. What we've done is, all the proposed injection wells, we have them more or less similar, so I made up one typical sheet for three. I listed the injection formation as the San Andres in the Vacuum Graybur-San Andres Field. The wells will be drilled for the purpose of injection. The gas -- oil and gas

zone overlying the Queen, underlying the Glorieta.

We propose to run a surface casing to a depth of 360 feet, circulating casing -- circulating cement.

Running first intermediate string, cementing 50 feet into the Rustler, which should protect the Santa Rosa water supply. We plan on circulating that to surface.

If necessary, sometimes in the Central Vacuum and the surrounding areas, they have a salt water flow problem. If we do, we're going to cementing a second string of intermediate casing at 3225. That will about 100 feet into the Seven Rivers and that will be cemented to surface.

Production string will be 5-1/2 inch casing to approximately 5000 feet. If the second string, second intermediate string is run, we'll cement the production string back into it. If it is not run, we'll circulate the production string.

It will be completed with 2-7/8ths plastic lined tubing set through a packer. Injection interval will be approximately 43 to 4700.

Q. All right, sir, Exhibit Number Twelve.

A. Okay, these are the schematics of those typical data sheets, pointing out more or less just the size casing that we'd run, the hole size, and sacks of cement required for adequate cement.

This first one is the injection well with that second intermediate string run.

Q. And Exhibit Thirteen?

A. Exhibit Thirteen is more or less the same example with a little bit more detail. Pay attention to the zones on the left and the packer detail on the right.

Q. Exhibit Fourteen?

A. Exhibit Fourteen is 5-1/2 injection well without that second string of intermediate.

Q. And Exhibit Fifteen?

A. That is also a schematic showing the zones and the packer information.

The packer we're proposing on using is identical to the one that we're currently using in the East Vacuum Unit.

Q. All right, sir, and Exhibit Sixteen?

A. Exhibit Sixteen is a salt water disposal well currently on the Hale, the Hale NO. 11. We plan on maintaining the current status. It was approved in 1966 under Order No. 3079. It's a salt water disposal well injecting below the oil/water contact. We want to maintain that as a salt water disposal well, and we plan on using that for the purpose that if something happens at the injection station we don't have to shut down the whole field. We'll use that

for emergency purposes only, but we'll go on maintaining the current status on that.

Q. Will this well be used in calculating the injection credit under the pressure maintenance order?

A. No, sir.

Q. All right, Exhibit Number Seventeen.

A. Seventeen is a schematic of the two production wells, two interior production wells. We're also proposing or accounting for a possible second intermediate string being run, which will be 10-3/4 inch casing set at 3225.

The only difference in the production and injection wells will be the 7-inch production string as opposed to the 5-1/2. All setting depths are the same.

Q. Exhibit Eighteen.

A. Exhibit Eighteen is the same exhibit without that second string of intermediate.

Q. All right, sir, now let me direct your attention to Exhibit Number Nineteen, Mr. Howell, and have you identify that for us.

A. Exhibit Number Nineteen is the cooperative water injection agreement which we plan to be able to drill these cooperative line wells and operate them.

We tried to point to your attention in

the exhibit about two-thirds of the way through, Exhibit A, we have the cooperative line wells pointed out and color coded according to operator. The yellow wells will be the Phillips operated injection wells.

This agreement is, I believe, currently been signed by Mobil and Phillips, Conoco has recommended to their Houston office and Texaco is waiting on everybody to send to them.

Q. Exhibit A to the cooperative water injection agreement shows a color code to indicate which of the lease line injection wells will be operated by which operator?

A. Yes, sir.

Q. All right, sir, let's go to Exhibit Twenty and have you identify that.

A. Exhibit Twenty are proposed rules and regulations for the Hale-Mabel Pressure Mainenance Project. It is patterned after the East Vacuum Grayburg-San Andres Project.

Q. Would you summarize for us how the allowable is calculated for the project area?

A. The allowables will be calculated the same way as they are for East Vacuum and Central Vacuum Unit. We'll have the water injection credit allowable calculation, which is Exhibit A to these rules and regulations. It has

already been established and is currently being used in East Vacuum and Central Vacuum.

Exhibit B are data used in that calculation, which are also currently accepted and used in the Central Vacuum and East Vacuum. Data used to compile Exhibit B came from the Hale No. 1 and Santa Fe No. 1 Wells.

Q. Are there any differences in the rules you propose for the Hale-Mabel Pressure Maintenance Project as opposed to the East Vacuum Project?

A. Nothing, with the exception of Rule No. 1. We have made the stipulation that we plan on operating both leases separately, so we've called them the individual lease project areas, the Mabel and the Hale, and we want to combine them under one common name. All accounting will be done separately.

Q. All right, sir, if you'll turn to Exhibit Number Twenty-one and identify that exhibit for us.

A. Exhibit Twenty-one is more or less a general information sheet, showing surrounding waterfloods, or water injection projects in the Vacuum Grayburg-San Andres Pools.

Phillips East Vacuum Unit is noted in green and all surrounding projects are in blue, with our proposed operations going on in the Hale and Mabel leases.

Q. Was Conoco invited to participate in the common pressure maintenance project for this section?

A. What do you mean by that?

Q. Were they invited to include their acreage in a pressure maintenance project?

A. They will -- they are currently not going to be in this. They don't have any water injection going to any wells on their property.

Q. Would you give Mr. Nutter the order numbers that approved these various pressure maintenance projects that adjoin your property?

A. Okay. I'll give you date of first injection order numbers for the Central Vacuum Unit. It's 5530. West Vacuum Unit is 3008.

Q. Just a minute, let me find it. West Vacuum is what?

A. Is to the west, 3008. Vacuum Grayburg-San Andres Unit, the unit to the south, if No. 4442, and Mobil Bridges State is to the north, is No. 1244.

Q. All right, Mr. Howell, let's turn to Exhibit Number 22 and have you identify that for us.

Q. Okay. This is the waterflood response curve for the Central Vacuum Unit. We've made notes of the date of unitization and water injection, first date of in-

jection.

As you can see from the curve, it shows that there is a significant increase due to water response and that it has not even reached peak production at the present time.

I have order numbers and the dates of unitization and first injection in the upper righthand corner.

Q. This is the project immediately to the south of your acreage?

A. The Central Vaccum Unit, the unit immediately to the east.

Q. To the east, all right. And Exhibit Number Twenty-three?

A. Exhibit Twenty-three is the same type of waterflood response curve for the Vacuum Grayburg-San Andres Unit to the south, outlined in lime green.

I've made notes of the date of first injection and you can once again see the water response statements for this unit, by almost a factor of 3-1/2.

Q. All right, sir, Exhibit Twenty-four.

A. Exhibit Twenty-four is our proposed performance forecast. We've patterned it after a computer program in Phillips that takes into account the Buckley-Leverett theory to two-phase flow. We've also tried to pattern it

after that second offset curve, the Vacuum Grayburg-San Andres Unit to account for our peak response there; we anticipate peak response of around 2400 barrels per day.

Q. Have you made any reservoir calculations, Mr. Howell, to determine your estimated secondary recovery numbers for this project?

A. Yes, sir, that's on Exhibit Number Twenty-five. We've done some volumetric calculations to determine original oil in place. The numbers are just a standard equation. The 190 feet is from an Isopach planimeter; 11.7 porosity, 240 acres; .79 and 1.288 are from reservoir fluid samples that are currently established and they're the numbers that were used in the Vacuum Grayburg-San Andres Unit, East Vacuum Unit, and Central Vacuum Unit.

We show original oil in place as in excess of 27 million barrels. We estimate ultimate final recovery at 25 percent, which is also an established number in the area. We estimate secondary at 15 percent, which does include 3.9 percent due to infill drilling in the Hale No. 12 and 13.

Q. Have you made forecasts of the project area, Mr. Howell, with and without pressure maintenance?

A. Yes, they're Exhibits Number Twenty-six and Twenty-seven. They are nothing more than just a tabulation of the numbers represented on the graph. They show oil

production with the project in excess of 5.6-million barrels; without the project, total oil recovery of 1.576-million barrels. The difference being due to the project is 4.116-million barrels of oil.

Q. All right, sir, and finally, Exhibit Twenty-eight.

A. Okay, this is just a general project economics to show you how good the project actually is. We plan on investing over $6,000,000 in the project, with drilling the wells, laying lines for fresh water supply, and setting up our injection.

We plan to break even in 1.7 years and our annual average rate of return is in excess of 100 percent.

Q. In making your study of this area for a pressure maintenance project, Mr. Howell, have you found any evidence of open faults or any other hydrologic connection between the injection formation and any underground sources of drinking water?

A. No, sir.

Q. Were Exhibits One through Twenty-eight prepared by you or compiled under your direction and supervision?

A. Yes, sir.

MR. KELLAHIN: That concludes our examin-

ation of Mr. Howell.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Howell, you mentioned that you wanted to keep SWD 11 --

A. Yes, sir.

Q. -- as is in the event that you had an injection system breakdown and you would dispose of water into that well.

A. Yes.

Q. Now, will the water that is produced be re-injected under normal circumstances?

A. Yes, sir.

Q. So SWD 11 won't be in use during normal injection.

A. Yes, we plan on currently using it for salt water disposal. We have a Glorieta well, the No. 7, which is also disposing into that well, and we have two wells on a couple of Santa Fe leases that are also disposing water into that well.

We want to maintain that at current status. We don't want to use it in any additional water caiculations or anything else.

Q. But you'd be using San Andres produced water for injection purposes into this pressure maintenance project?

A. Fresh and produced.

Q. You wouldn't use the Glorieta or the other water, though.

A. No.

Q. So SWD 11 would be used for salt water disposal --

A. Alone.

Q. -- from the other wells, as well as San Andres water when the injection breaks down.

A. Yes.

Q. Now it injects into the San Andres, does it not?

A. Lower San Andres, below the oil/water contact.

Q. Below the oil/water contact. And you don't anticipate including volumes of water that are injected into the San Andres formation through that well into the allowable calculations.

A. No, sir.

Q. And although this would be authorized as a single project, the Hale-Mabel --

A. Right.

Q. -- all accounting would be kept separately on the two leases.

A. Right, that way the Mabel doesn't get any water injection credit allowables that were earned on the Hale.

Q. Is there any difference in ownership between these two lease?

A. No, sir.

Q. No overrides?

A. There's a difference in overrides. Mabel Hale owns an 8-7/8ths on the Mabel and 1/16th on the Hale. That's the difference.

Q. Okay, now you do have an injection well that's in the extreme northwest corner of the Hale lease, is that correct?

A. No. 14.

Q. So it's right in the corner between the two leases and there shouldn't be, as a result of that well being there, there should be no migration of oil from one lease onto the other.

A. Correct.

Q. And the injection should split there.

A. Yes, sir.

Q. Now, in giving your estimates of recovery on Exhibit Number Twenty-Five, Mr. Howell --

A. Okay.

Q. You estimated that ultimate primary would be 6.8-million; that estimated secondary would be 4.1-million.

A. Yes, sir.

Q. But you mentioned that this includes 3.9 percent increase in recovery due to the infill drilling. Now that would have been some additional reserves on primary recovery with infill drilling, too, wouldn't it?

A. Not really. This percent was an established number used for Central Vacuum and East Vacuum, as far as that goes, due to going from 40 acre to 20 acre spacing, which is what Central Vacuum is on and East Vacuum also, and that's where the 3.9 percent was established.

So we're going from 40 acre to 20 acre and we dedicate 3.9 percent to those two infill wells, and that is in --

Q. And the infill drilling on those projects didn't occur until the secondary recovery was in effect.

A. Right.

Q. But all the increase resulting from infill drilling is attributed to secondary recovery.

A. Yes, sir.

Q. Although if you had had infill drilling during primary, you might have recovered some additional oil, also.

Normally, Mr. Howell, in issuing orders of this type where these factors going to the calculation of the formula as shown on Exhibit A of Exhibit Twenty --

A. Yes, sir.

Q. -- we include the Exhibit B in our order. Could you furnish us with a nice,clear drawing of Exhibit B --

A. Okay.

Q. -- without any coloring on it, because the coloring just, when we reproduce it, it would just become a thick, heavy, black line.

A. Okay, yes, sir, I will. Those are the same exhibits as are used currently in the East Vacuum.

Q. They're the same -- same factors for the reservoir?

A. Right, they're --

Q. Now what was the status of this cooperative injection agreement? It has been submitted to the three offset operators.

A. Yes, sir. Mobil has signed; Phillips has signed. Conoco has recommended signing to their Houston office, and Texaco is waiting for us.

Q. Texaco is what?

A. Texaco is waiting for us to -- to everybody to send the agreements to them. They have to go to offset -- to -- they have to go to working interest owners in their Central Unit.

Q. I see. NOw, that one well that you had some question about, that Conoco 10-X.

A. Yes, sir.

Q. Would you recommend that that well should be recemented before injection occurs --

A. Yes.

Q. -- in any nearby well that you're proposing?

A. Yes, especially since it's a dry completion. There's nothing to protect the sand in zones --

Q. Have you already talked to Conoco about reworking it?

A. I told them that it was going to be a problem, so I'm assuming that since they signed, or are anticipating signing this cooperative agreement, they will go ahead and workover any wells to --

Q. They'll either work it over or you'll go in and work it over.

A. Right.

MR. NUTTER: Okay. Are there any further questions for Mr. Howell? He may be excused.

GARY BROOKS

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name and occupation?

A. My name is Gary Brooks and I'm a development geologist for Phillips Petroleum Company.

Q. Mr. Brooks, would you explain to us when and where you obtained your degree in geology?

A. Yes, I graduated from Oklahoma State University in December of 1977, with a BS in geology.

I worked in Saudi Arabia for two years with Geophysical Services International. I worked for two years for Phillips Petroleum Company as a development geologist in the Odessa Office.

Q. Mr. Brooks, pursuant to your employment by Phillips, have you made a study of the geology in this Vacuum Grayburg-San Andres Pool?

250 to 400 feet. The San Andres formation consists of dense, medium crystalline, oolitic dolomite, white to gray in color with very little anhydrite.

The pay in the San Andres is a fine to medium crystalline, slightly fractured, oolitic dolomite with some solution cavities.

Q. Would you describe for us what, if any, fresh water aquifers you have discovered in the project area?

A. Yes. The major zone of potable drinking water in the Hale-Mabel Project Area is the Ogallala formation and this zone lies 30 to 50 feet below the surface and ranges from approximately 100 to 250 feet in thickness, and the deepest possible zone of fresh water in the Hale-Mabel Project Area is the Santa Rosa formation. And the Rustler formation, which is easily recognizable on logs, underlies the base of the Santa Rosa by approximately 150 feet. The top of the Rustler formation was encountered in existing wells in the project area between 1500 and 1535 feet below ground level, or between +2490 and +2525 adjusted to sea level.

Q. Did you find any potable water below the project injection unit?

A. No.

Q. In studying the geology of the area, Mr.

A. Yes, I have.

MR. KELLAHIN: I tender Mr. Brooks as an expert petroleum geologist.

MR. NUTTER: Mr. Brooks is qualified. Where are you located, Mr. Brooks?

A. Odessa, Texas, sir.

MR. NUTTER: Fine, thank you.

Q. Mr. Brooks, would you summarize for us what you have discovered with regards to the basic geology underlying the project area?

A. Yes. A brief description of the injection zone, the Vacuum Grayburg-San Andres Field is an east-west trending shelf of Permian age.

The San Andres reef is a dolomitized zone with excellent porosity and permeability, and in the northern part of the field the porosity and permeability is much less than in the main reef area,

The Hale-Mabel Project Area is located in the southern part of the Vacuum Field in the area of good reef quality rock. The top of the San Andres formation in the Hale-Mabel project area is encountered between 4300 and 4400 feet below ground level, or from a -300 to -450 feet sub-sea.

Gross productive thickness ranges from

Brooks, did you discover any open faulting?

A. No, no faulting.

Q. Did you find any evidence of geologic information that would cause you to believe that water introduced in the injection formation would migrate into fresh water aquifers?

A. No.

Q. All right, sir. Let's turn to Exhibit Number Thirty and have you identify that for us.

A. Okay, this is an east/west cross section across the -- starting in the Mabel lease and crossing the top of the M. E. Hale lease, and this just generally shows the structural aspect of the San Andres formation and it identifies the Lovington Sand and lower sand in this porosity formation, and it shows the oil/water contact at -700, which is the datum for this particular cross section.

Q. All right, sir, let's turn to cross section B-B'.

A. Okay, exhibit B' is a north/south cross section showing the same structural aspect and cuts primarily across the Continental H-35 lease and Phillips M. E. Hale lease.

Q. Have you mapped the San Andres structure?

A. I have these two maps, the structure con-

tour map on top of the San Andres formation.

Q. All right, that's Exhibit Thirty-two?

A. Yes.

Q. All right, sir.

A. And I have an Isopach map on the San Andres formation. It's Exhibit Thirty-three.

Q. All right, sir. In your opinion, Mr. Brooks, is the project area suitable for pressure maintenance purposes in the subject formation?

A. Yes.

Q. Were Exhibits Twenty-nine through Thirty-three prepared by you or compiled under your direction and supervision?

A. No, they were not. They were prepared by another Phillips' geologist but I have reviewed the information and found no reason to alter the interpretation.

MR. KELLAHIN: That concludes our examination of Mr. Brooks.

At this time we move the introduction of Phillips' Exhibits One through Thirty-three.

MR. NUTTER: Exhibits One through Thirty-three will be admitted in evidence.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Brooks, is there any Grayburg production in this area in the Vacuum Pool?

A. We don't have any perfs at this time, I believe.

Q Now on these cross sections --

A. Yes.

Q. -- you've shown in red all the porosity and permeability in the -- in the San Andres formation.

A. Yes.

Q. But none of these wells is perforated in the Grayburg, is that it?

A. I don't know offhand.

MR. NUTTER: Does Mr. Howell know, Mr. Kellahin?

MR. HOWELL: Yes, there are some open hole intervals that go through the Grayburg. All the proposed injection wells will be the San Andres.

Q. But some of the producing wells are open in both zones.

MR. HOWELL: In the open hole completions, yes, sir.

MR. NUTTER: This won't present any prob-

lem?

Are there any further questions of Mr. Brooks? He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: Nothing.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 7678?

We'll take that case under advisement.

(Hearing concluded.)

C E R T I F I C A T E

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

Sally W. Boyd CSR

I do hereby c[illegible] the foregoing is a complete [illegible]ings in the Examiner [illegible] 2678 heard by me on 9/15 19 82.

Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7[illegible]

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

July 13, 1984

Phillips Petroleum Company
4001 Penbrook
Odessa, Texas 79762

Attention: G. R. Smith, Authorized Agent

Re: Hale - Mable Polymerflood Project - NMOCD Order R-7103, Vacuum Grayburg-San Andres Pool

Dear Mr. Smith:

I have completed a review of your request for an increase in the injection wellhead pressure limitation for the subject tertiary recovery project. The step rate test data included with your request confirm an increase in reservoir fracture pressure within the tertiary recovery area. All step rate tests submitted exhibit definite fracture pressures with the exception of the M. E. Hale Coop Well No. 16.

I have interpreted the surface fracture pressure for this well to be 1650 psig. This is only 100 psig lower than your offsetting well to the west and therefore I consider it a reasonable figure. Because of the difference in our interpretations and in the interest of fairness, I will allow the submittal of additional data to determine a more precise fracture pressure suitable to both of us. I will accept one of the following two:

1) Conduct a step-rate test run with smaller steps and concentrated in the area of the suspected formation parting pressure.

2) Submit new injection pressure and volume data over a two month period. Data should include the subject and offsetting wells.

Pressure/Volume ratios will be compared to determine if your requested pressure limit of 1900 psig will be granted.

After receipt and evaluation of additional data a further increase in injection pressure allowable for M. E. Hale Coop Well No. 16 will be considered.

The attached table exhibits the maximum surface injection pressure limits granted for each well. A 50 psig standard safety factor has been subtracted from the formation parting pressures to compensate for pressure surges, meter error, and other unforeseeable circumstances.

Jurisdiction of this approval is retained by this Division for such further order or orders as may seem necessary or convenient for the prevention of waste and/or the protection of correlative rights. Should you fail to comply with the pressure requirements of this approval, authority granted by this letter may be terminated after notice and hearing in the interest of conservation.

Should you have any further questions concerning this approval, please contact me at 827-5807.

Sincerely,

Gilbert P. Quintana

GILBERT P. QUINTANA
Petroleum Engineer

GPQ/dp

cc: Joe D. Ramey, Division Director
Case File 7678
Hobbs District Office - Jerry Sexton

WELL NAME & NUMBER	SURFACE PARTING PRESSURE, PSIG	SAFETY FACTOR PSIG	MAXIMUM ALLOWABLE SURFACE INJECTION PRESSURE PSIG
M. E. Hale Coop #W14	2030	50	1980
M. E. Hale Coop #W15	1950	50	1900
M. E. Hale Coop #W16	1850	50	1800
M. E. Hale Coop #W17	2200	50	2150
M. E. Hale Coop #W18	2140	50	2090
M. E. Hale Coop #19	2475	50	2425
Mable Coop #W4	2380	50	2330
Mable Coop	2445	50	2395

* Note if you project injection system is limited to a common pressure throughout, the maximum allowable pressure is 1800 psig.

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

JUL 6 1984
RECEIVED

June 27, 1984

Hale-Mable Polymerflood Project
NMOCD Order No. R-7103
INJECTION WELLHEAD PRESSURE LIMITATION
Vacuum Grayburg-San Andres Field
Lea County, New Mexico

New Mexico Dept. of Energy & Minerals (2)
Oil Conservation Division
P. O. Box 2088
Sante Fe, New Mexico 87501

DRESSER TITAN
&
JOHN WEST (STEP RATES)

Attention: Mr. Joe D. Ramey

Gentlemen:

Phillips Petroleum Company, as operator of the subject project, requests administrative approval of an increase in the project injection wellhead pressure limitation to 1900 psi. This is in accordance with Special Rule No. 17 of the Pressure Maintenance Order No. R-7103, which states, "The Division Director should be authorized to administratively authorize a pressure limitation in excess of the above upon showing by the project operator that such higher pressure will not result in fracturing of the confining strata." The following exhibits substantiate the fact that the requested pressure limitation does not violate this rule.

In order to identify a minimum formation parting pressure, step-rate tests are attached on Phillips operated injection wells on the M. E. Hale and Mable leases. Exhibit 1 is a plat showing the location of these wells in the subject project area.

Exhibit 2 is a summary of the test results that are shown individually in Exhibits 3 through 10A. These tests were conducted with a recording pressure gauge at the surface and a bottom hole pressure bomb set at the top perforation. In each case, a turbine meter was used to measure the injection rate.

Note that in one case, Exhibit 5A, a plot of pressure versus rate failed to identify the formation parting pressure. The surface and bottom hole pressures obtained at 6.5 BPM both fell below the two pressure versus rate straight line trends previously established indicating a change in slope and a part in formation. Pressure readings at higher rates (7.5 - 8 BPM) could not be obtained to identify the exact point of change in slope or formation parting pressure because surface equipment pressure limitations of 3000 psi required that the test be terminated at 6.5 BPM. Nevertheless, the test did locate a formation parting pressure somewhere between the rates of 5.5 and 6.5 BPM which corresponded to surface wellhead injection pressures of 2250 - 2700 psig. This is well above the injection wellhead pressure limitation increase which is requested (1900 psig). Therefore, failure to locate the exact pressure of formation parting between 2250 - 2700 psig was not critical.

It is requested that the project injection wellhead pressure limitation be increased to 1900 psi. This is safely lower than the lowest recorded parting pressure (1950 psi) and would enable the more timely recovery of secondary and tertiary reserves in the project. Your early attention concerning this matter would be appreciated.

Very truly yours,
Phillips Petroleum Company

G. R. Smith

G. R. Smith
Authorized Agent

MDH:mbf

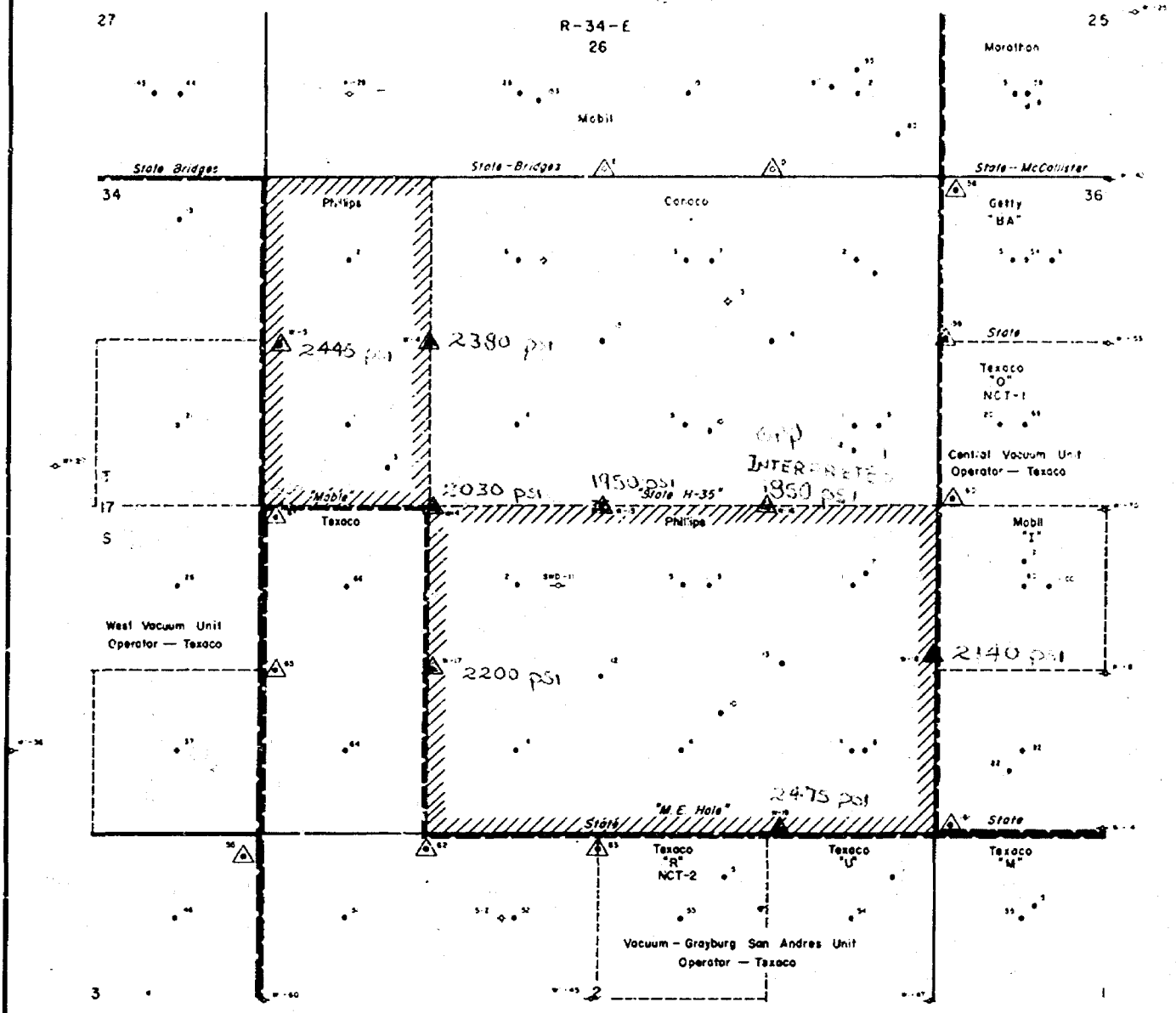
Attachments

cc: New Mexico Dept. of Energy and Minerals
Oil Conservation Division
Attn: Mr. Jerry Sexton
P. O. Box 1980
Hobbs, NM

Texaco, Inc.
Attn: Mr. R. D. Tomberlin
P. O. Box 3109
Midland, TX 79702

Conoco. Inc.
Attn: Mr. M. K. Mosley
P. O. Box 460
Hobbs, NM 88240

EXHIBIT 1



HALE-MABLE VACUUM G-SA
PRESSURE MAINTENANCE PROJECT
SECTION 35, T-17-S, R-34-E
VACUUM GRAYBURG—SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO
ORDER NO. R-7103

0' 500' 1000' 1500' 2000'

▲-------INJECTOR

•------PRODUCER

EXHIBIT 2

SUMMARY OF FORMATION
PARTING PRESSURE TEST RESULTS

Well Name & Number	Depth of Top Perforation	Surface Parting Pressure, PSIG	**Injection Rate at Parting Pressure, BPD
M. E. Hale Coop #W14	4457'	2030	4032
M. E. Hale Coop #W15	4430'	1950	7776
M. E. Hale Coop #W16	4389'	* 1850 psi	* 3035 psi
M. E. Hale Coop #W17	4410'	2200	6336
M. E. Hale Coop #W18	4320'	2140	9432
M. E. Hale Coop #W19	4367'	2475	7920
Mable Coop #W4	4506'	2380	2880
Mable Coop #W5	4546'	2445	3096

* No Precise Parting Pressure obtained, occurred between 2250 - 2700 psig at 7920 - 9360 BPD respectively.

** All wells equipped with 2-7/8" plastic coated TK69 tubing.

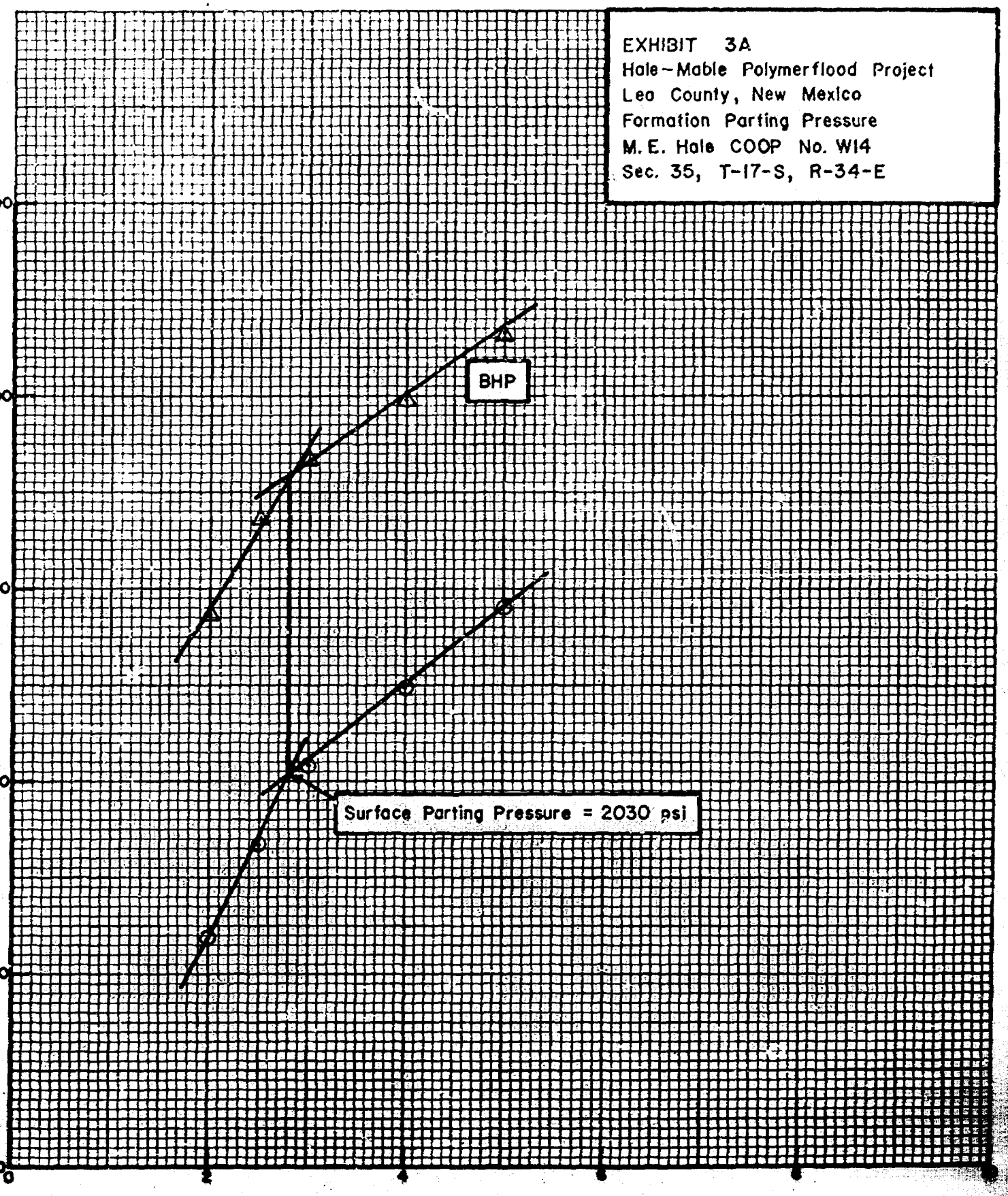
EXHIBIT 3

M.E. HALE COOP #W14

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
2.0	2,880	1,190	2,865
2.5	3,600	1,660	3,351
3.0	4,320	2,080	3,669
4.0	5,760	2,490	3,980
5.0	7,200	2,900	4,324

EXHIBIT 3A
Hale-Mable Polymerflood Project
Lea County, New Mexico
Formation Parting Pressure
M. E. Hale COOP No. W14
Sec. 35, T-17-S, R-34-E



NO. 31.555. 10 X 10 DIVISIONS PER ¼-INCH UNIT. 100 BY 100 DIVISIONS.
KEUFFEL & ESSER CO. IN STOCK DIRECT FROM CODEX BOOK CO. INC. NORWOOD, MASS. 02062
GRAPH PAPER
PRINTED IN U.S.A.

EXHIBIT 4

M.E. HALE COOP #W15

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
3.0	4,320	720	2,331
4.0	5,760	1,230	2,731
5.0	7,200	1,740	3,041
6.0	8,640	2,120	3,224
7.0	10,080	2,400	3,400

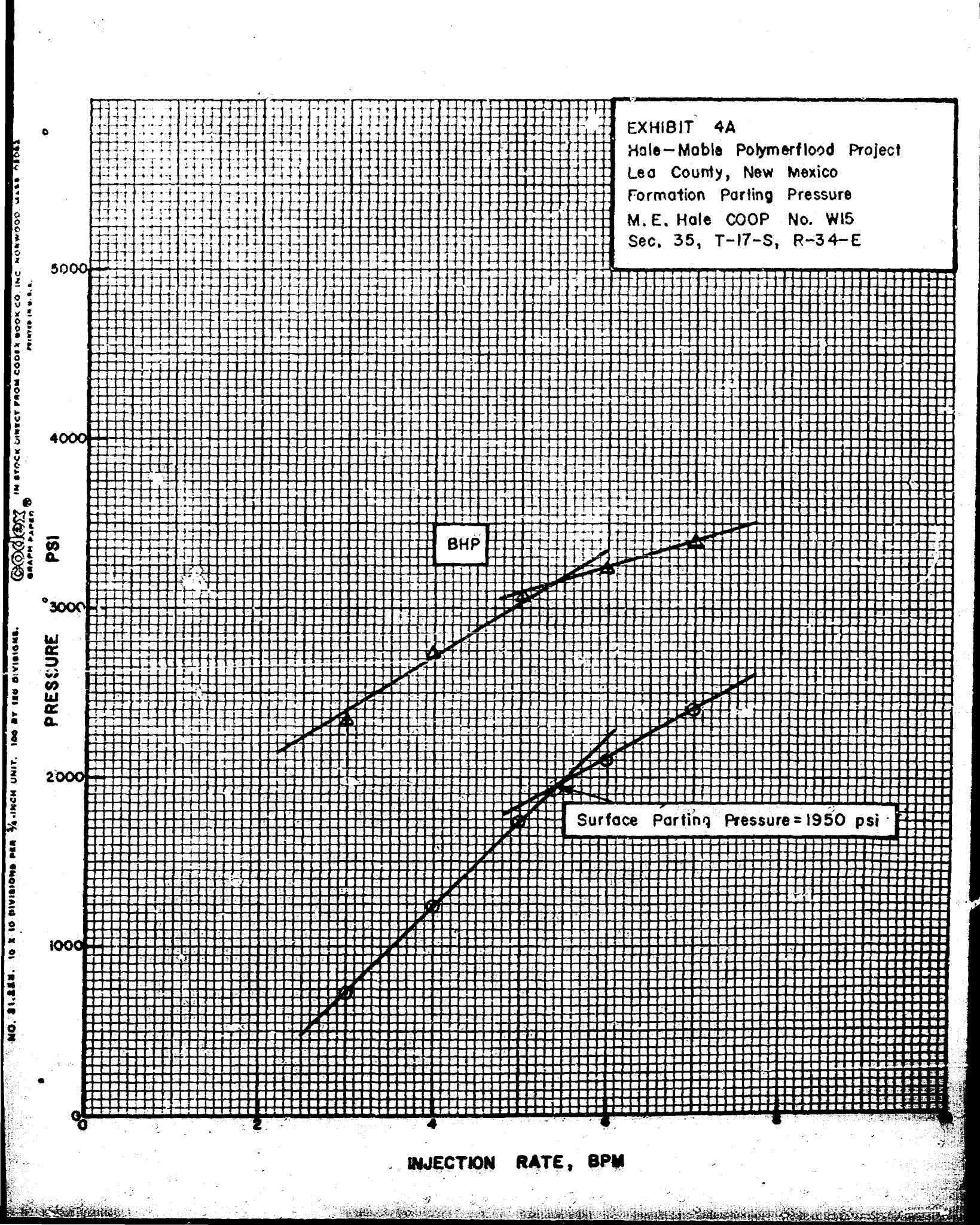


EXHIBIT 4A
Hale-Mable Polymerflood Project
Lea County, New Mexico
Formation Parting Pressure
M. E. Hale COOP No. W15
Sec. 35, T-17-S, R-34-E
BHP
Surface Parting Pressure = 1950 psi
PRESSURE PSI
INJECTION RATE, BPM
0
1000
2000
3000
4000
5000
2
4

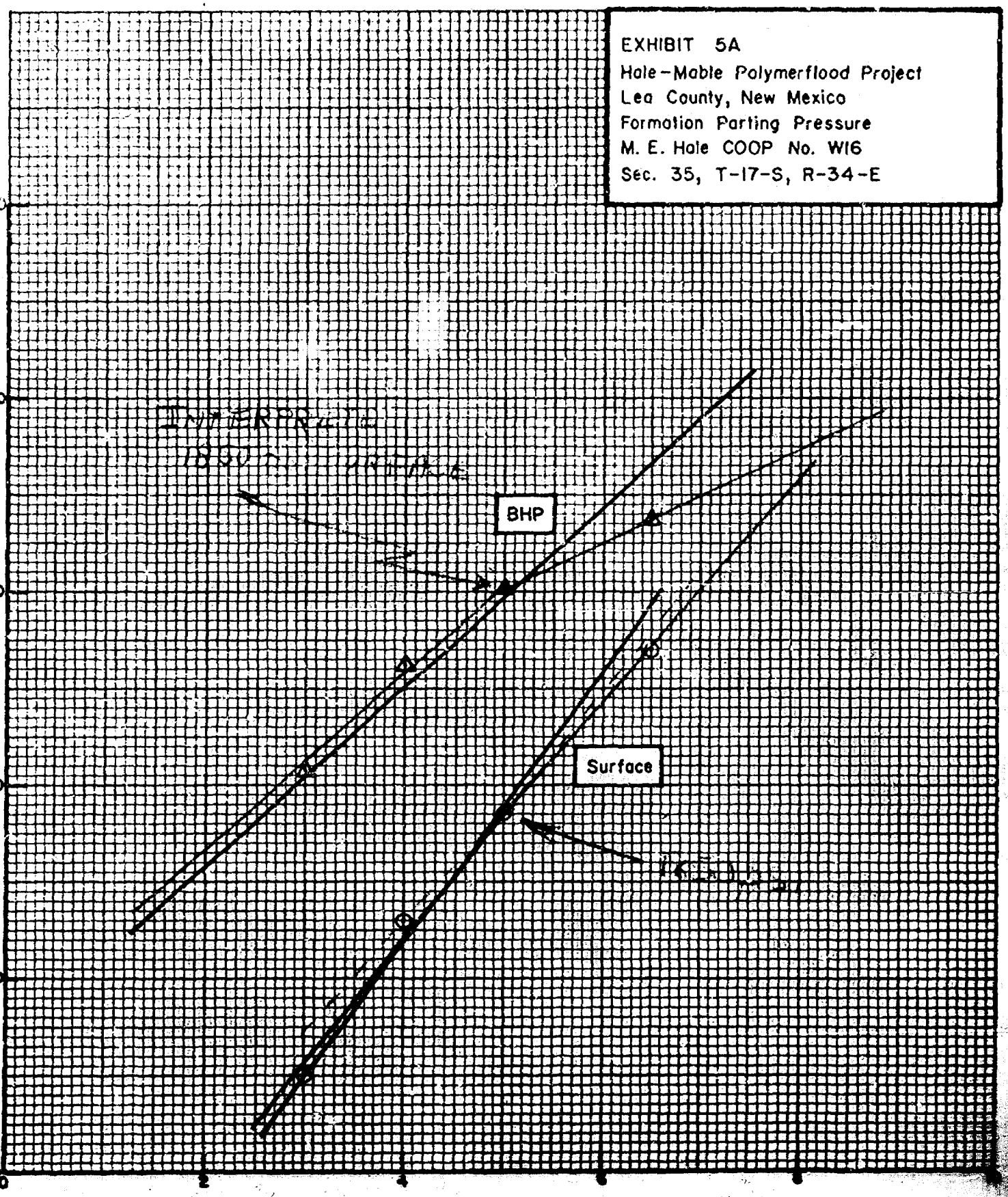
EXHIBIT 5

M.E. HALE COOP #W16

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
3.0	4,320	500	2,078
4.0	5,760	1,300	2,620
5.0	7,200	1,850	3,024
6.5	9,360	2,700	3,371

EXHIBIT 5A
Hale-Mable Polymerflood Project
Lea County, New Mexico
Formation Parting Pressure
M. E. Hale COOP No. WI6
Sec. 35, T-17-S, R-34-E



KEUFFEL & ESSER CO. NO. 31,222. 10 X 10 DIVISIONS PER ¼-INCH UNIT. 100 BY 150 DIVISIONS. IN STOCK DIRECT FROM COVER BOOK CO. INC. NORWOOD, MASS. PRINTED IN U.S.A.

EXHIBIT 6

M.E. HALE COOP #W17

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
1.5	2,160	500	2,401
2.0	2,880	800	2,681
3.0	4,320	1,400	3,168
4.0	5,760	1,975	3,530
5.0	7,200	2,250	3,741
6.0	8,640	2,450	3,819
7.0	10,080	2,550	3,836

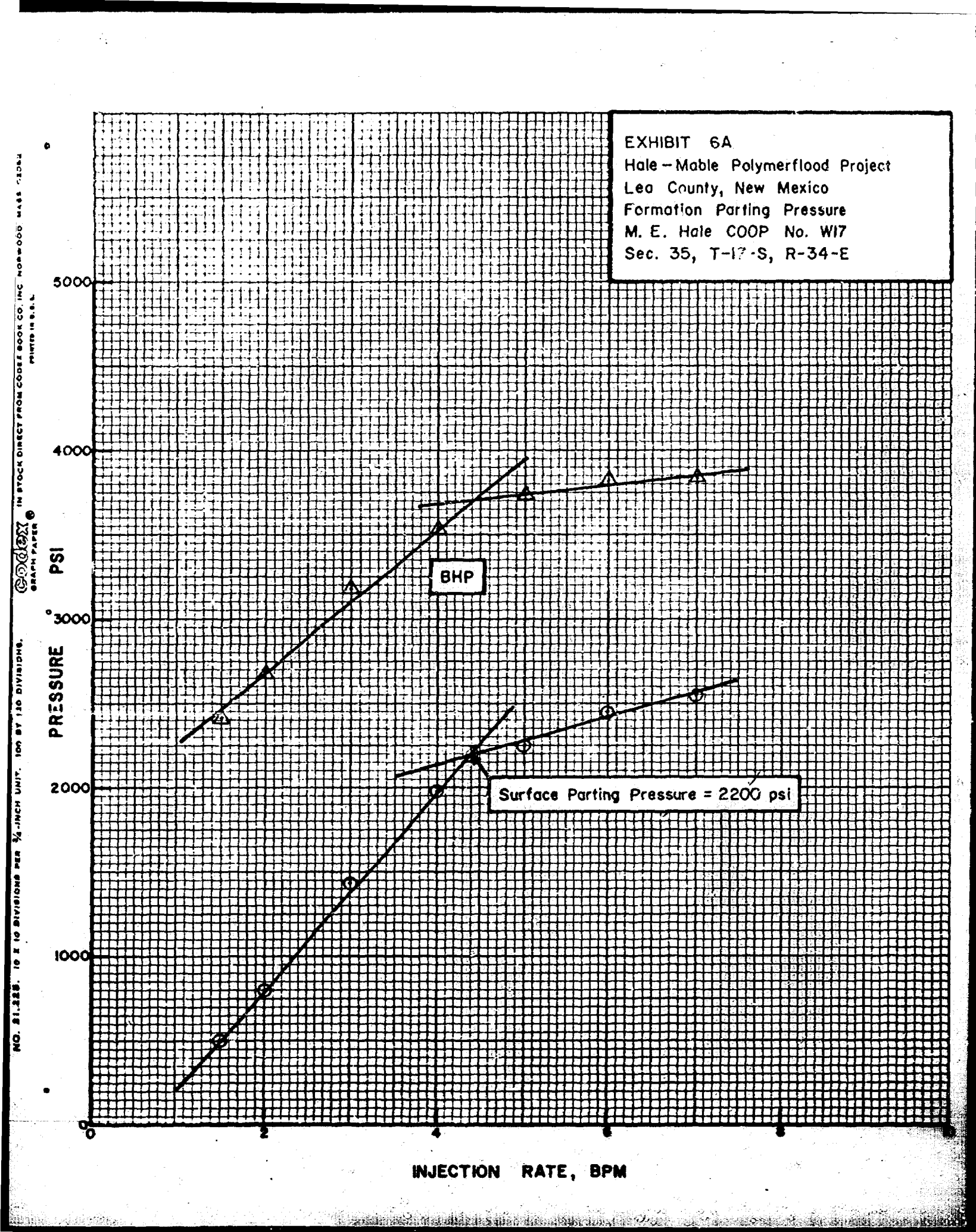


EXHIBIT 6A
Hale – Mable Polymerflood Project
Lea County, New Mexico
Formation Parting Pressure
M. E. Hale COOP No. WI7
Sec. 35, T-17-S, R-34-E
BHP
Surface Parting Pressure = 2200 psi
PRESSURE PSI
INJECTION RATE, BPM
0
1000
2000
3000
4000
5000
2
4
6
8

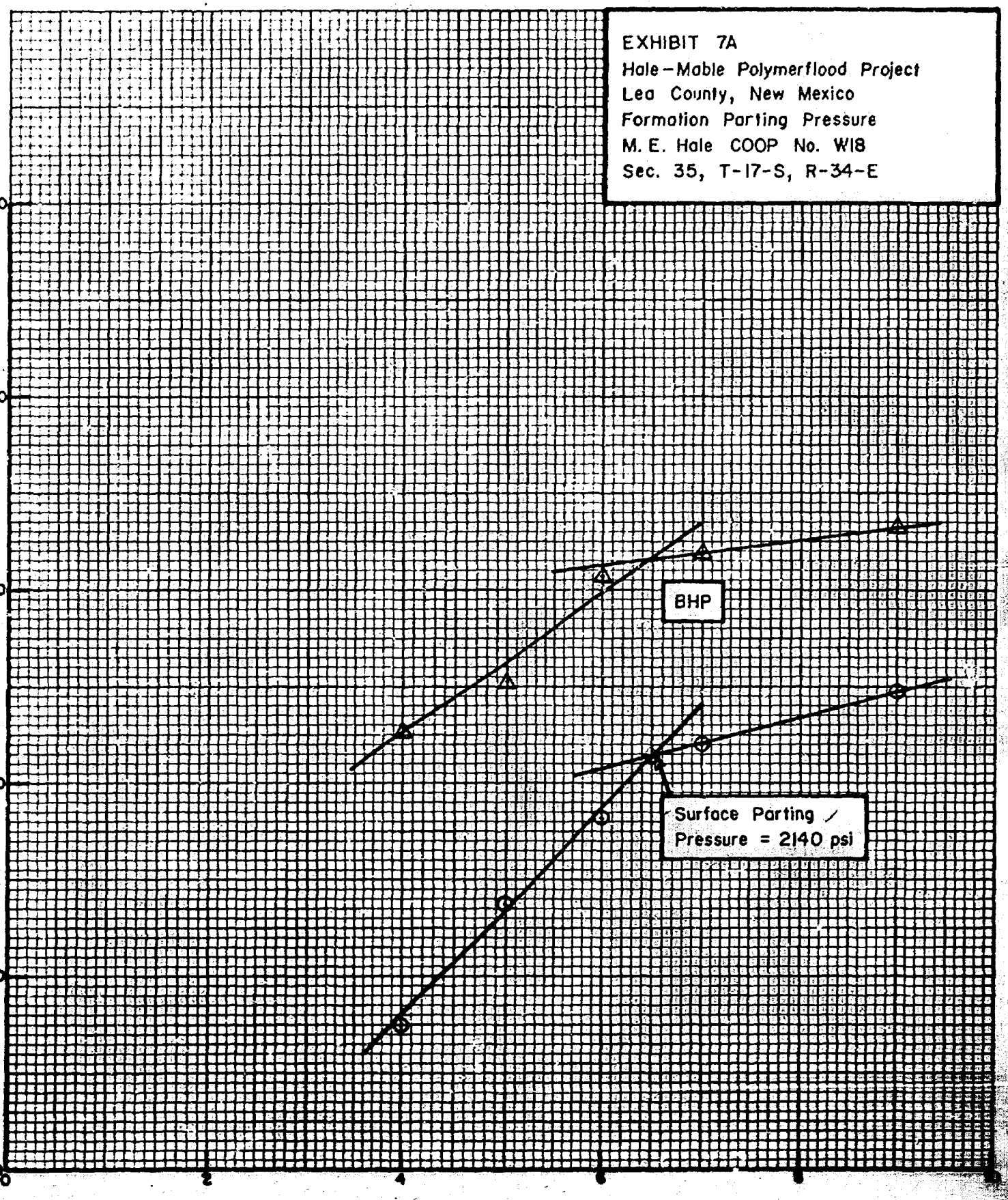
EXHIBIT 7

M.E. HALE COOP #W18

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
4.0	5,760	750	2,253
5.0	7,200	1,370	2,527
6.0	8,640	1,810	3,069
7.0	10,080	2,200	3,180
9.0	12,960	2,470	3,310

EXHIBIT 7A
Hale-Mable Polymerflood Project
Lea County, New Mexico
Formation Parting Pressure
M. E. Hale COOP No. W18
Sec. 35, T-17-S, R-34-E



NO. 81,888. 10 X 10 DIVISIONS PER ½-INCH UNIT. 100 BY 100 DIVISIONS. Codex IN STOCK DIRECT FROM CODEX BOOK CO. INC. NORWOOD, MASS. 02062 GRAPH PAPER PRINTED IN U.S.A.

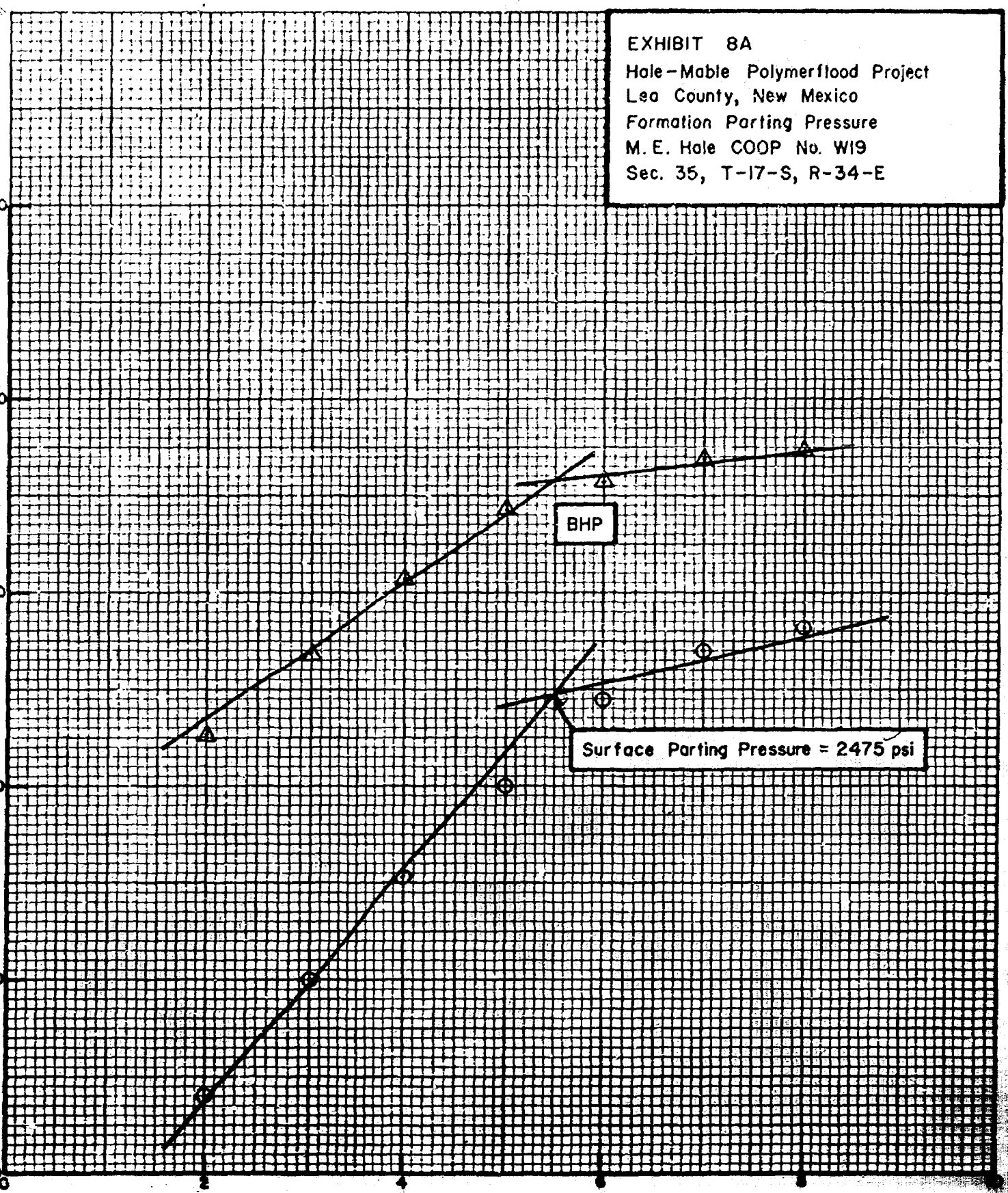
EXHIBIT 8

M.E. HALE COOP #W19

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
2.0	2,880	400	2,255
3.0	4,320	1,050	2,688
4.0	5,760	1,530	3,064
5.0	7,200	2,000	3,429
6.0	8,640	2,450	3,564
7.0	10,080	2,700	3,699
8.0	11,520	2,820	3,731

EXHIBIT 8A
Hale-Mable Polymerflood Project
Lea County, New Mexico
Formation Parting Pressure
M. E. Hale COOP No. W19
Sec. 35, T-17-S, R-34-E



NO. 21 EEE. 10 X 10 DIVISIONS PER ½-INCH UNIT. 100 BY 100 DIVISIONS.
CODEX IN STOCK DIRECT FROM CODEX BOOK CO. INC. NORWOOD MASS. 02062
GRAPH PAPER
PRINTED IN U.S.A.

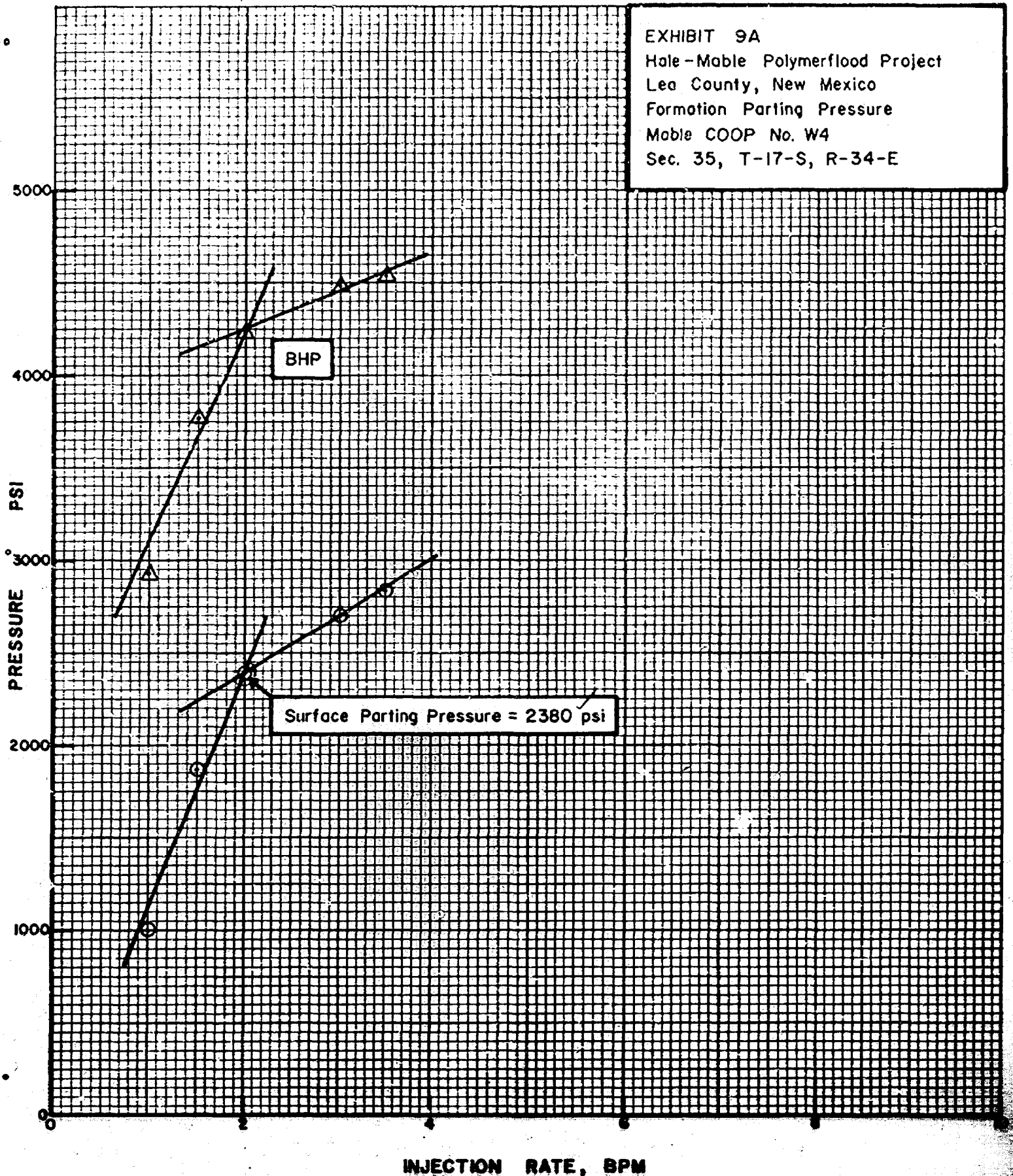
EXHIBIT 9

MABLE COOP #W4

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
1.0	1,440	1,000	2,926
1.5	2,160	1,860	3,762
2.0	2,880	2,390	4,245
3.0	4,320	2,700	4,486
3.5	5,040	2,830	4,535

EXHIBIT 9A
Hale-Mable Polymerflood Project
Lea County, New Mexico
Formation Parting Pressure
Mable COOP No. W4
Sec. 35, T-17-S, R-34-E



NO. 31,222. 10 X 10 DIVISIONS PER ¼-INCH UNIT. TED BY THE DIVISIONS. IN STOCK DIRECT FROM CODEX BOOK CO., INC. NORWOOD, MASS. U.S.A. PRINTED IN U.S.A. GRAPH PAPER

EXHIBIT 10

MABLE COOP #W5

FORMATION PARTING PRESSURE
TEST DATA

INJECTION RATE		PRESSURE, PSI	
BPM	BPD	Surface	BHP
1.0	1,440	1,200	3,037
1.5	2,160	1,925	3,645
2.0	2,880	2,275	3,943
3.0	4,320	2,600	4,134
3.75	5,400	2,700	4,182
4.5	6,480	2,850	4,255

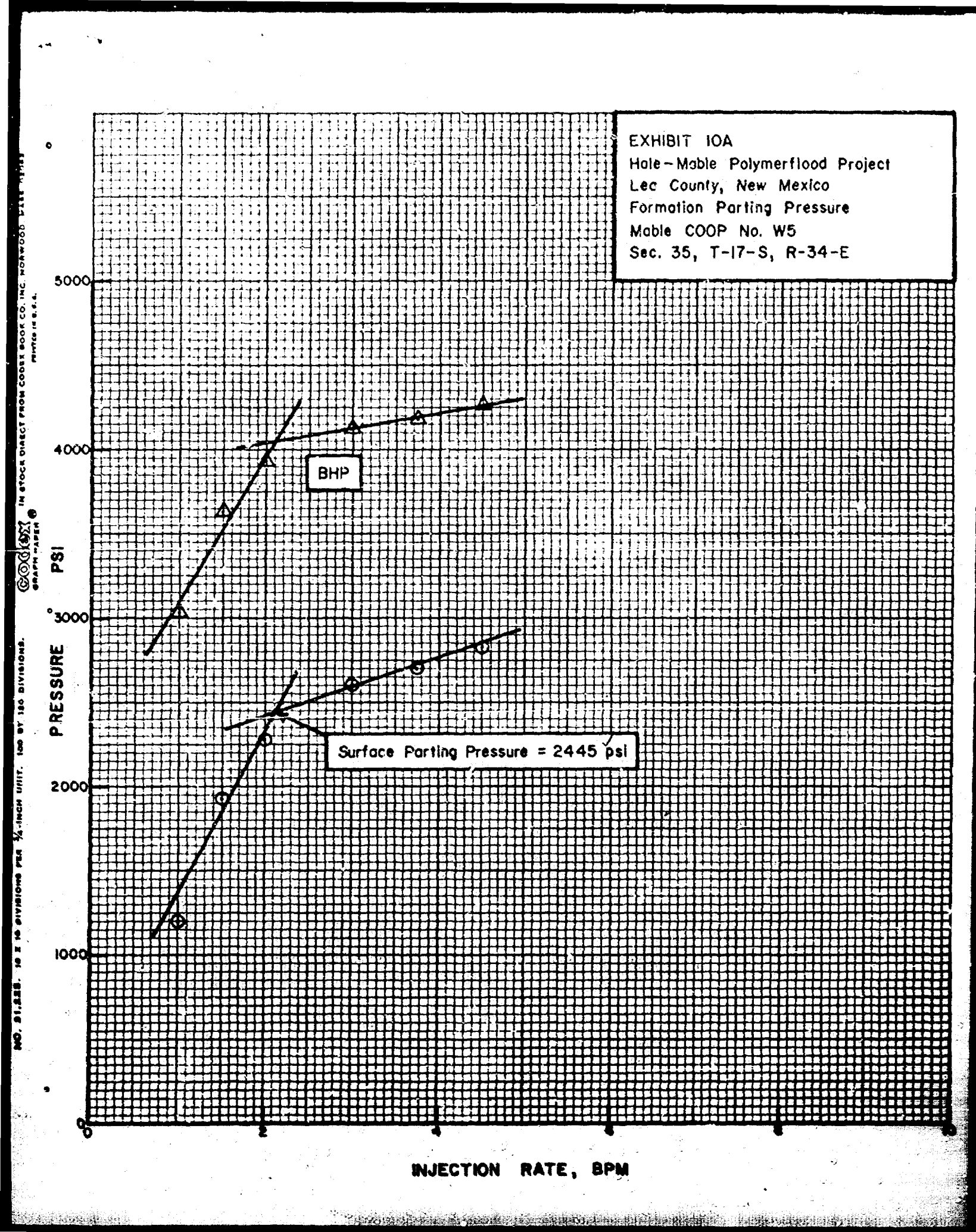


EXHIBIT 10A
Hale-Mable Polymerflood Project
Lec County, New Mexico
Formation Parting Pressure
Mable COOP No. W5
Sec. 35, T-17-S, R-34-E
BHP
Surface Parting Pressure = 2445 psi
PRESSURE PSI
INJECTION RATE, BPM
0
1000
2000
3000
4000
5000
2
4
6
8

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

October 12, 1982

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

Re: CASE NO. 7678
ORDER NO. R-7103

Applicant:

~~Phillips Petroleum Company~~

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD ____x____
Artesia OCD ____x____
Aztec OCD _____

Other _____

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. 7678
Order No. R-7103

APPLICATION OF PHILLIPS PETROLEUM
COMPANY FOR A PRESSURE MAINTENANCE
PROJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 15, 1982, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 12th day of October, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Phillips Petroleum Company, seeks authority to institute a pressure maintenance project in the Vacuum Grayburg-San Andres Pool by the injection of water into the Grayburg-San Andres formation through two wells on its Mable Lease to be drilled at unorthodox locations as follows:

WELL NO.	UNIT LETTER	LOCATION
4	E	1330' FNL and 1310' FWL
5	E	1330' FNL and 10' FWL

and also through six wells on its M. E. Hall Lease to be drilled at unorthodox locations as follows:

WELL NO.	UNIT LETTER	LOCATION
14	K	2630' FSL and 1330' FWL
15	K	2630' FSL and 2630' FWL
16	J	2630' FSL and 1330' FEL
17	N	1310' FSL and 1330' FWL
18	P	1310' FSL and 10' FEL
19	P	10' FSL and 1310' FEL

all of the above wells being in Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That the applicant also proposes to complete two new producing wells in said Section 35, to be drilled at unorthodox locations as follows:

WELL NO.	UNIT LETTER	LOCATION
12	O	1310' FSL and 2630' FEL
13	P	1310' FSL and 1310' FEL

(4) That the wells described in Findings Nos. (2) and (3) above, together with the presently existing wells on the aforesaid Mable and M. E. Hale leases, and the offsetting injection wells which are to be drilled by other operators in accordance with certain lease-line agreements between applicant and said offsetting operators, will provide a thorough and efficient sweep of the hydrocarbons underlying the entire project and will result in the recovery of otherwise unrecoverable oil and gas, thereby preventing waste.

(5) That the above described injection wells, some of which will be at unorthodox locations along the outer boundaries of the Hale and Mable Leases in accordance with the aforemetioned lease-line agreements, will not impair but will protect correlative rights.

(6) That the applicant seeks to have the entire Hale Lease and the entire Mable Lease designated as the Phillips Hale-Mable Pressure Maintenance Project with the project area to be congruent to the leases upon active injection into all the proposed injection wells.

(7) That the project area should comprise all of the Hale and Mable leases upon active injection into each of the proposed injection wells inasmuch as each 40-acre tract within said leases has been developed by having at least one well completed in the Vacuum Grayburg-San Andres Pool thereon.

(8) That each lease in the project area should receive its own project area allowable, and each lease's project area allowable should be equal to the sum of the individual lease's basic project allowable plus the individual lease's water injection credit allowable.

(9) That the individual lease basic project area allowable should be equal to 80 barrels of oil per day times the number of developed 40-acre proration units on the lease.

(10) That the individual lease water injection credit allowable should be based on the following formula:

$$\text{Water Injection Credit Allowable} = \left[\frac{\text{net water injected}}{\text{basic lease allowable}}\right] - 1 \times \text{basic allowable}$$

and should be calculated in accordance with the formula and parameters set forth in Exhibits "A" and "B" attached hereto.

(11) That a weighted average project area reservoir pressure should be determined prior to commencement of water injection and at least annually thereafter.

(12) That each lease's project allowable should be permitted to be produced from the wells on that lease in any proportion.

(13) That the Division Director should have the authority to approve, without notice and hearing, the drilling of production and injection wells at unorthodox locations anywhere within the project area, provided however, that no unorthodox location should be closer than 10 feet to any quarter-quarter section line, and provided further, that no such unorthodox location should be closer than 330 feet to the outer boundary of the project unless such location is covered by a lease-line agreement with the operator of the lands offsetting such location.

(14) No well should be placed on water injection in the Hale-Mable Pressure Maintenance Area unless the Division Director has approved such well for injection. Applications for injection approval should be filed in accordance with Rule 701 of the Division Rules and Regulations.

(15) Each newly drilled injection or producing well should be equipped with surface casing (minimum 350 feet) and "production" casing run to total depth (approximately 5000 feet). All casing strings should be cemented to the surface except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and

cemented to the surface, the production string could be cemented back into the base of the intermediate casing.

(16) Injection should be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing should be corrosion protected by a non-reactive internal lining or coating and the casing-tubing annulus in each injection well should be filled with an inert fluid and a surface pressure gauge or approved leak detection device shall be attached to the annulus.

(17) The injection wells or system should be equipped with a pressure control device or other acceptable device which will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost perforation. The Division Director should be authorized to administratively authorize a pressure limitation in excess of the above upon showing by the project operator that such higher pressure will not result in fracturing of the confining strata.

(18) All wells within the individual lease project area should be equipped with risers or in some other acceptable manner as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

(19) The project operator should immediately notify the Supervisor of the Hobbs District Office of the Division of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the individual lease project area, or any other evidence of fluid migration from the injection zone, and should take such timely steps as may be necessary or required to correct such failure or leakage.

(20) Each month the project operator should submit to the Division a Pressure Maintenance Project Operator's Report, on a form prescribed by the Division, outlining thereon the data required and requesting allowables for each of the several wells in the Project as well as the total individual lease project area allowable.

(21) The Division should, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells on each lease in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated should be assigned to each lease in the Project and, as provided in Finding No. (12) above, could be produced from the wells on that lease in any proportion.

(22) That the applicant, Phillips Petroleum Company, should consult with the Supervisor of the Hobbs District Office of the Division and other affected party and determine the course of action necessary to render the Conoco Inc. State H-35 Well No. 11, located 660 feet from the North line and 2180 feet from the West line of Section 35, Township 17 South, Range 34 East, NMPM, safe for nearby water injection into the San Andres formation.

(23) That an order embodying the above findings and authorizing the proposed pressure maintenance project is in the interest of conservation, will prevent waste and protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to institute a Vacuum Grayburg-San Andres pressure maintenance project on its Mable Lease, comprising the W/2 NW/4 of Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, and on its M. E. Hale Lease, comprising the E/2 SW/4 and SE/4 of said Section 35, by the injection of water into the Grayburg and San Andres formations through eight injection wells to be drilled at unorthodox locations (also hereby approved) as follows:

LEASE	WELL NO.	UNIT	LOCATION
Mable	4	E	1330' FNL and 1310' FWL
Mable	5	E	1330' FNL and 10' FWL
M.E. Hale	14	K	2630' FSL and 1330' FWL
M.E. Hale	15	K	2630' FSL and 2630' FWL
M.E. Hale	16	J	2630' FSL and 1330' FEL
M.E. Hale	17	N	1310' FSL and 1330' FWL
M.E. Hale	18	P	1310' FSL and 10' FEL
M.E. Hale	19	P	10' FSL and 1310' FEL

all in Section 35, Township 17 South, Range 34 East, NMPM.

(2) That the applicant is hereby authorized to drill two producing wells at the following unorthodox locations in Section 35, Township 17 South, Range 34 East, NMPM:

LEASE	WELL NO.	UNIT	LOCATION
M.E. Hale	12	O	1310' FSL and 2630' FEL
M.E. Hale	13	P	1310' FSL and 1310' FEL

(3) That the project herein authorized shall be known as the Phillips Hale-Mable Vacuum G-SA Pressure Maintenance Project

and shall be governed by special rules and regulations hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
PHILLIPS HALE-MABLE VACUUM G-SA
PRESSURE MAINTENANCE PROJECT

RULE 1. The Phillips Hale-Mable Vacuum G-SA Pressure Maintenance Project shall, in the absence of unitization, actually be considered two separate and distinct pressure maintenance projects, one on the Mable Lease comprising the W/2 NW/4 of Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, and the other on the M. E. Hale Lease comprising the E/2 SW/4 and SE/4 of said Section 35. Allowables and Water Injection Credits, as well as production accounting, shall be on an individual lease basis.

RULE 2. The overall Project Area of the Hale-Mable Vacuum G-SA Pressure Maintenance Project shall consist of those proration units within the M. E. Hale and Mable leases, upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

RULE 3. The individual lease project area shall receive a project area allowable, and said project area allowable shall be the sum of the individual lease basic project area allowable plus the individual lease water injection credit allowable.

RULE 4. The individual lease basic project area allowable shall be equal to 80 barrels of oil per day times the number of developed 40-acre proration units in the lease project area.

RULE 5. The individual lease water injection credit allowable shall be contingent upon full reservoir voidage replacement of all produced fluids and shall be based upon the following formula:

$$\text{Water Injection Credit Allowable} = \left[\frac{\text{net water injected}}{\text{basic project area reservoir voidage}}\right] - 1 \times \text{basic project area allowable}$$

The water injection credit allowable shall be calculated in accordance with the procedures and parameters depicted on Exhibits "A" and "B".

In no event shall the individual lease water injection credit allowable be less than zero, i.e., negative numbers derived from application of the above formula shall be ignored.

RULE 6. The weighted average project area reservoir pressure shall be determined prior to commencement of injection of water into the reservoir and at least annually thereafter. The weighted average project area pressure shall be determined from the pressures in representative wells selected by the project operator and the Supervisor of the Hobbs District Office of the Division.

RULE 7. The individual lease project area allowable may be produced from the wells within the individual lease project area in any proportion, provided however, that any proration unit outside the individual lease project area shall not be permitted to produce in excess of 80 barrels of oil per day.

RULE 8. Those wells within the Hale-Mable Leases that are not included within the project area as defined above, shall be prorated in accordance with the Rules and Regulations of the Division.

RULE 9. The Division Director shall have the authority to approve, without notice and hearing, the drilling of wells at unorthodox locations anywhere within the project boundary, provided that no such unorthodox location shall be closer than 330 feet to the outer boundary of the project, unless such well is covered by a lease-line agreement with the operator of the lands offsetting such well, and a copy of the lease-line agreement accompanies the application for such unorthodox location, or unless such offset operator has waived objection to the proposed unorthodox location in writing, and his waiver accompanies the application.

RULE 10. No well other than those originally authorized for injection shall be placed on water injection in the Hale-Mable Vacuum G-SA Pressure Maintenance Project unless the Division Director has approved such well for injection. Applications for injection approval shall be filed in accordance with Rule 701 of the Division Rules and Regulations.

RULE 11. Each newly drilled injection or producing well shall be equipped with surface casing (minimum 350 feet) and "production" casing run to total depth (approximately 5000 feet). All casing strings shall be cemented to the surface except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and

cemented to the surface, the production string may be cemented back into the base of the intermediate casing.

RULE 12. Injection shall be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing shall be corrosion protected by a non-reactive internal lining or coating. The casing-tubing annulus in each injection well shall be filled with an inert fluid and a surface pressure gauge or approved leak detection device shall be attached to the annulus.

RULE 13. The injection wells or system shall be equipped with a pressure control device or other acceptable device which will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost perforation. The Division Director may administratively authorize a pressure limitation in excess of the above upon showing by Phillips Petroleum Company that such higher pressure will not result in fracturing of the confining strata.

RULE 14. All wells within the individual lease project area shall be equipped with risers or in some other acceptable manner as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

RULE 15. The project operator shall immediately notify the Supervisor of the Hobbs District Office of the Division of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the individual lease project area, or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

RULE 16. Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report, on a form prescribed by the Division, outlining thereon the data required and requesting allowables for each of the several wells in the Project as well as the total individual lease project area allowable.

RULE 17. The Division shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells on each lease in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to each lease in the Project and, as provided under Rule 7 above, may be produced from the wells on that lease in any proportion.

(4) That the applicant, Phillips Petroleum Company, shall consult with the Supervisor of the Hobbs District Office of the Division and with any other affected party and determine the course of action necessary to ensure the integrity of the Conoco Inc. State H-35 Well No. 11, located 660 feet from the North line and 2180 feet from the West line of Section 35, Township 17 South, Range 34 East, NMPM, prior to placing Mable Wells Nos. 4 or 5, or M. E. Hale Wells Nos. 14 or 15, on active water injection.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

S

HALE - MABLE
PRESSURE MAINTENANCE PROJECT

VACUUM GRAYBURG-SAN ANDRES POOL, LEA COUNTY, NEW MEXICO

_____ LEASE

WATER INJECTION CREDIT ALLOWABLE CALCULATION DATA

ATTACHMENT TO_____, 19__, REPORT

$$\text{Water Injection Credit Allowable} = \left[\frac{W_i - W_p}{BPAA \left\{ \beta_o + \frac{(R_p - R_s)}{(1{,}000)} \beta_g \right\}} - 1 \right] BPAA$$

W_i = _____ = Average daily water injection, barrels per day, project area only.

W_p = _____ = Average daily water produced, barrels per day, project area only.

BPAA = _____ = Basic project area allowable, 80 bopd X _____ (number of developed 40-acre tracts in project area).

_____ = Weighted average project area reservoir pressure, psig, from_____, 19__, survey data.

β_o _____ = Oil formation volume factor, reservoir barrels per stock tank barrel (Exhibit B).

R_p _____ = Producing gas-oil ratio, cubic feet per barrel, project area only.

R_s _____ = Solution gas-oil ratio, cubic feet per barrel, (Exhibit B).

β_g _____ = Gas formation volume factor, reservoir barrels per Mcf (Exhibit B).

Water injection credit allowable for_____, 19__. = _____ barrels of oil per day.

EXHIBIT "A"
ORDER NO. R-7103

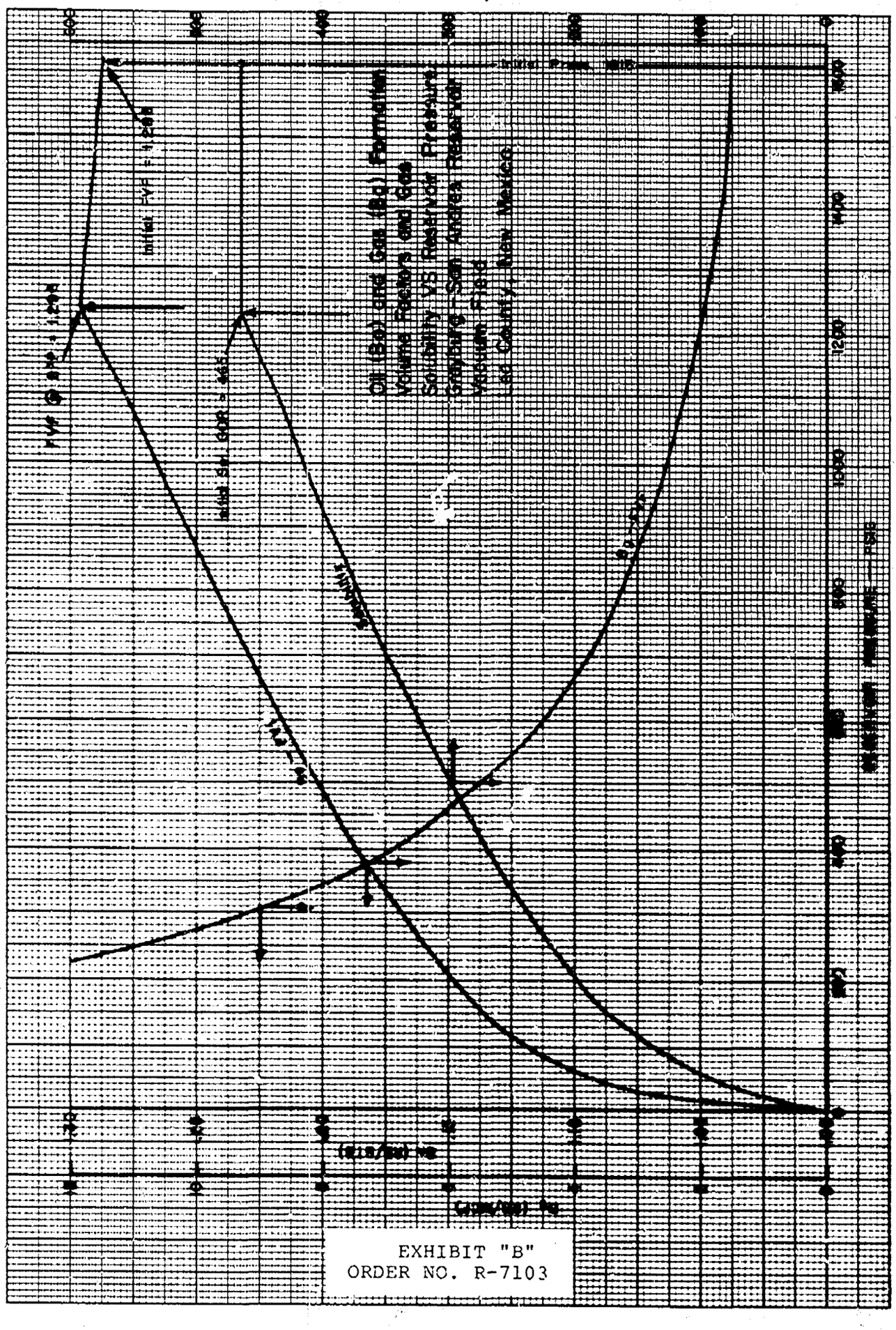


EXHIBIT "B"
ORDER NO. R-7103

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

September 20, 1982

N.M.O.C.D.
Docket No. 29-82
Case No. 7678

W. T. Kellahin
El Patio - 117 N. Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87501

Dear Tom:

Please find attached, the clear, concise, film of the Exhibit "B" attachment to the Proposed Rules and Regulations, Exhibit No. 20, requested by Daniel S. Nutter in case number 7678. The hearing took place in Santa Fe, New Mexico, on September 15, 1982 and addressed the application of Phillips Petroleum Company for a pressure maintenance project in Lea County, New Mexico. Would you please see that the requested document be placed in the correct file for Mr. Nutter's review. If any further information is necessary, contact me at (915) 367-1342 in Odessa, Texas.

Sincerely,

David B. Howell

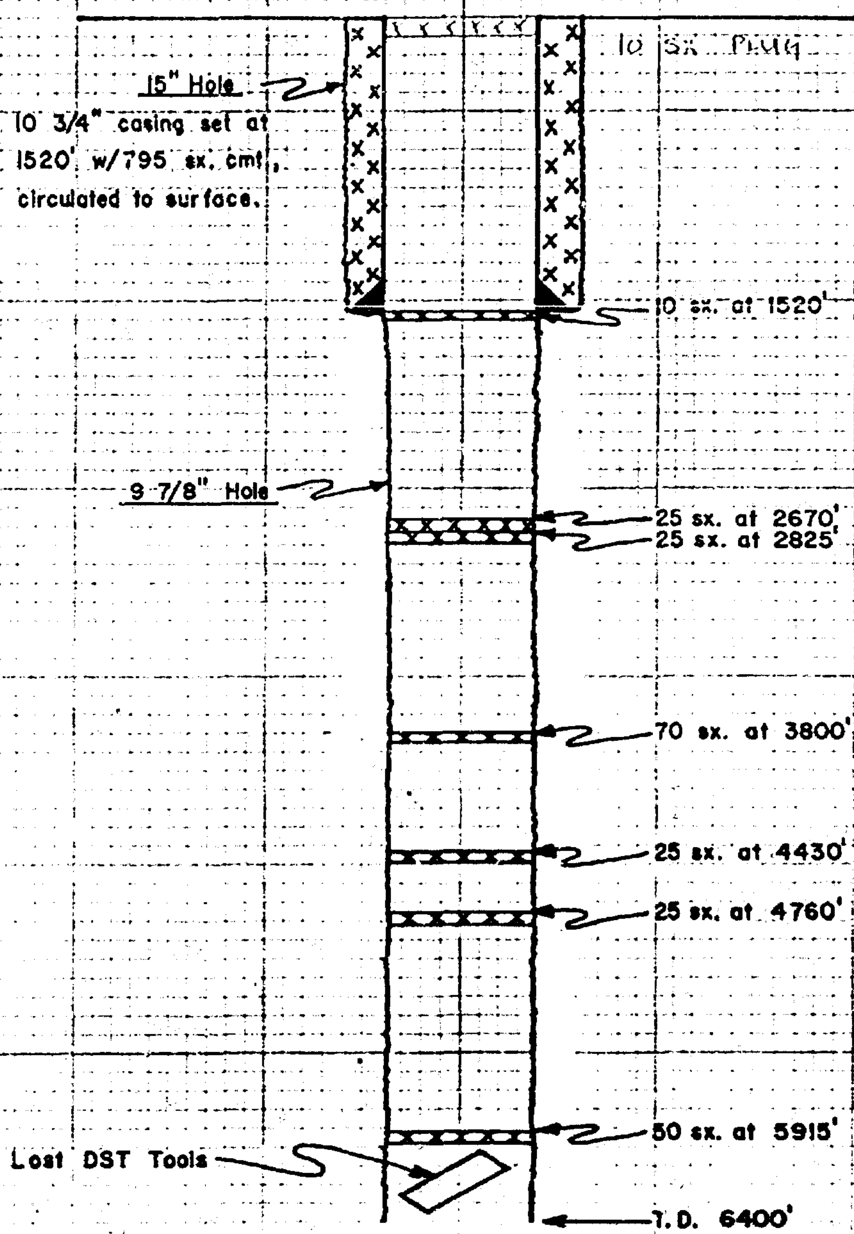
David B. Howell
Reservoir Engineer

DBH:lbb
Attachment

Contains master copy of
Exhibit A
and
Exhibit B
Order No. R-
Case 7678

CONOCO INC.
VACUUM GRAYBURG-SAN ANDRES FIELD
SEC. 35, T-17-S, R-34-E
LEA COUNTY, NEW MEXICO
STATE H-35 NO. 11
660' FNL 2180' FWL

PLUGGING DETAIL



Howard at PPCo questions this well's P&A job - there is no cmt plug approximate the San Andres

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Commissioner of Public Lands
State of New Mexico
P. O. Box 1148
Santa Fe, NM 87501

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at ±900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith
Director, Reservoir Engineering

GRS:clk

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 2
CASE NO. 7678

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Marathon
Attn: Mr. G. A. Naert
P. O. Box 552
Midland, TX 79702

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at ±900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith
Director, Reservoir Engineering

GRS:clk

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Arco Oil and Gas Company
Attn: Mr. J. Schmidt
P. O. Box 1710
Hobbs, NM 88240

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at ±900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith

G. R. Smith
Director, Reservoir Engineering

GRS:clk

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Shell
Attn: Mid-Continent Division
P. O. Box 991
Houston, TX 77001

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at ±900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith
Director, Reservoir Engineering

GRS:clk

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Amerack
Attn: Mr. R. W. Mullins
P. O. Box 2040
Tulsa, OK 74102

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at ±900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith
Director, Reservoir Engineering

GRS:clk

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Getty Oil Company
Attn: Mr. J. R. Avent
P. O. Box 1231
Midland, TX 79702

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at 900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith
Director, Reservoir Engineering

GRS:clk

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Texaco, Inc.
Attn: Mr. R. D. Tomberlin
P. O. Box 3109
Midland, TX 79702

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at ±900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith
Director, Reservoir Engineering

GRS:clk

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Mobil Producing - Texas-New Mexico
Attn: Mr. H. C. Patton
Nine Greenway Plaza
Houston, TX 77046

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at +900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith

G. R. Smith
Director, Reservoir Engineering

GRS:clk

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

August 27, 1982

Hale-Mable Pressure Maintenance
NMOCD Hearing, Vacuum Grayburg-
San Andres Field, Lea County,
New Mexico

Conoco, Inc.
Attn: Mr. Mark K. Mosley
P. O. Box 460
Hobbs, NM 88240

Gentlemen:

This is to confirm that Phillips Petroleum Company's application for approval of the Hale-Mable Pressure Maintenance Project has been set for hearing on September 15, 1982 in Santa Fe, New Mexico. Phillips plans to drill eight cooperative line injection wells and two infill producing wells at unorthodox locations on the Hale and Mable leases in Section 35, Township 17-South, Range 34-East, in the Vacuum Grayburg-San Andres Field, Lea County, New Mexico. Fresh and produced water will be injected into the San Andres formation at approximately 4500 feet, at an anticipated rate of 1500 BWPD/well at ±900 psi. The fresh water is available from Phillips' rights in the area.

Please note that any objections must be filed with the Oil Conservation Division in Santa Fe, New Mexico, within 15 days. If you have any questions or wish further information, please contact W. J. Mueller at the Odessa office, (915) 367-1313.

Sincerely,

G. R. Smith
Director, Reservoir Engineering

GRS:clk

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT VACUUM GRAYBURG/SAN ANDRES POOL

I. Purpose: ☐ Secondary Recovery ☒ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no

II. Operator: PHILLIPS PETROLEUM COMPANY

Address: 4001 Penbrook Street, Odessa, Texas 79762

Contact party: W. J. Mueller Phone: (915) 367-1313

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
See attached listing for wells to be used for injection purposes.

IV. Is this an expansion of an existing project? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: W. J. Mueller Title Senior Engineering Specialist

Signature: W. J. Mueller Date: August 27, 1982

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. _____

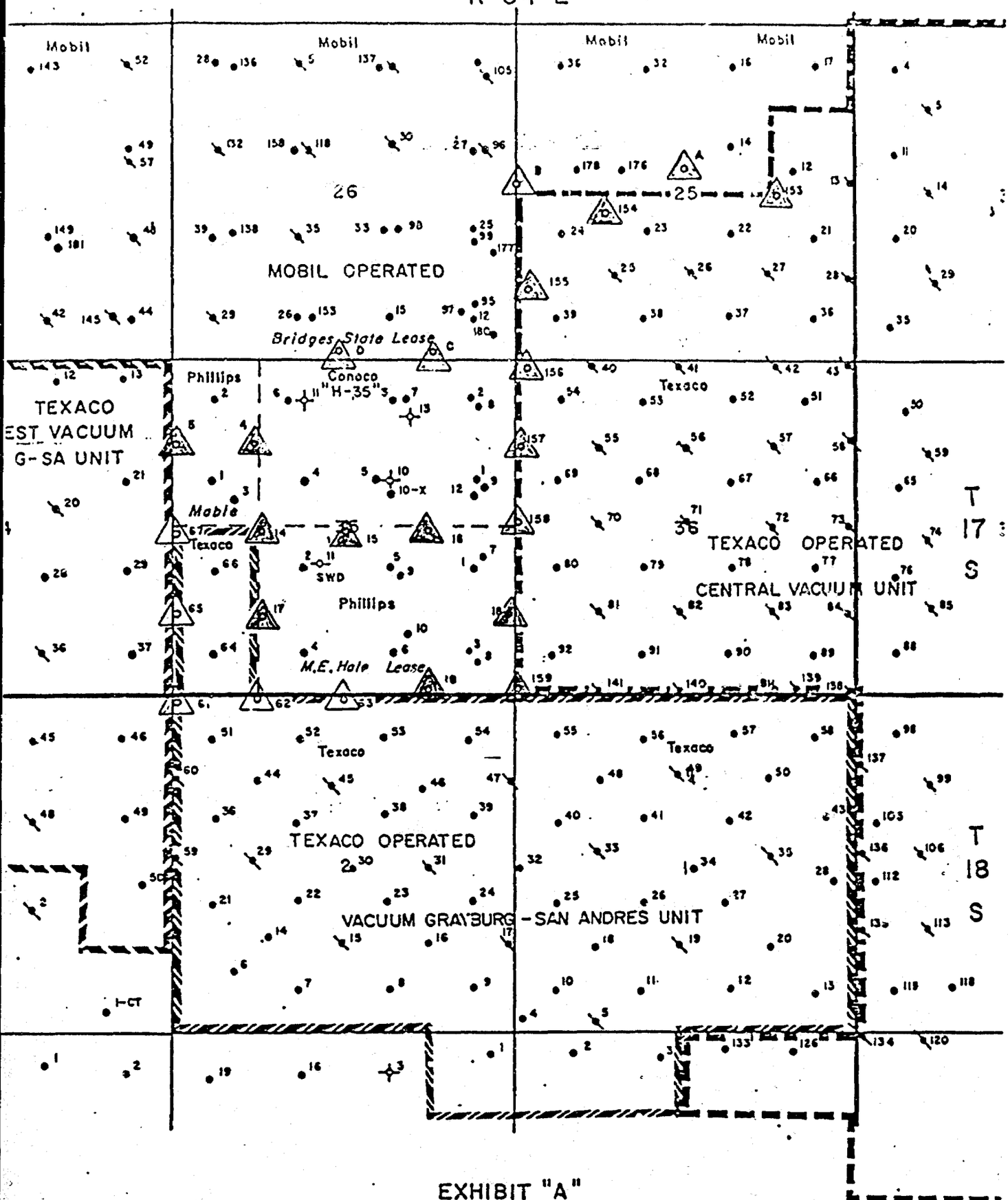


EXHIBIT "A"

COOPERATIVE WATER INJECTION AGREEMENT

VACUUM GRAYBURG - SAN ANDRES FIELD

LEA COUNTY, NEW MEXICO

PROPOSED INJECTOR TO BE DRILLED AND OPERATED BY

- PHILLIPS - HALE & MABLE LEASES
- TEXACO - CENTRAL VACUUM UNIT
- TEXACO - VACUUM GRAYBURG-SAN ANDRES UNIT
- MOBIL - BRIDGES STATE LEASE

HALE-MABLE PRESSURE MAINTENANCE PROJECT

(Proposed Wells)

Proposed Well Names & Numbers	Location	Sec.	Twn.	Rng.	Unit	State Lease Number	Well Type
M. E. Hale #14	2630' FSL & 1330' FWL	35	17S	34E	J	B-2317	Injection
M. E. Hale #15	2630' FSL & 2630' FWL	35	17S	34E	J	B-2317	Injection
M. E. Hale #16	2630' FSL & 1330' FEL	35	17S	34E	K	B-2317	Injection
M. E. Hale #17	1310' FSL & 1330' FWL	35	17S	34E	N	B-2317	Injection
M. E. Hale #18	1310' FSL & 10' FEL	35	17S	34E	P	B-2317	Injection
M. E. Hale #19	10' FSL & 1310' FEL	35	17S	34E	P	B-2317	Injection
Mable # 4	1330' FNL & 1310' FWL	35	17S	34E	E	B-2317	Injection
Mable # 5	1330' FNL & 10' FWL	35	17S	34E	E	B-2317	Injection
M. E. Hale #12	1310' FSL & 2630' FEL	35	17S	34E	O	B-2317	Production
M. E. Hale #13	1310' FSL & 1310' FEL	35	17S	34E	P	B-2317	Production

new inj wells

new prod wells

P 204 644 083

CEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

NT TO
Marathon
REET AND NO.
P.O. Box 552
O., STATE AND ZIP CODE
Midland, Texas 79702

STAGE	$
CERTIFIED FEE	¢
OPTIONAL SERVICES: SPECIAL DELIVERY	¢
OPTIONAL SERVICES: RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TAL POSTAGE AND FEES	$

STMARK OR DATE

P 204 644 082

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Commission of Public Lands
STREET AND NO.
State of New Mexico
P.O. Box 1148
P.O., STATE AND ZIP CODE
Santa Fe, N.M. 87501

POSTAGE	$
CERTIFIED FEE	¢
CONSULT POSTMASTER FOR FEES	
OPTIONAL SERVICES: SPECIAL DELIVERY	¢
OPTIONAL SERVICES: RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$

POSTMARK OR DATE

PS Form 3800, Apr. 1976

P 204 644 080

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Arco Oil & Gas Co.
STREET AND NO. attn: M. J. Schmidt
P.O. Box 910
P.O., STATE AND ZIP CODE
Hobbs, N.M. 88240

POSTAGE	$
CERTIFIED FEE	¢
CONSULT POSTMASTER FOR FEES	
OPTIONAL SERVICES: SPECIAL DELIVERY	¢
OPTIONAL SERVICES: RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$

POSTMARK OR DATE

PS Form 3800, Apr. 1976

P 204 644 081

CEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

ENT TO
Shell
REET AND NO. attn: Mid-Continent Div.
O. Box 991
O., STATE AND ZIP CODE
Houston, TX 77001

OSTAGE	$
CERTIFIED FEE	¢
OPTIONAL SERVICES: SPECIAL DELIVERY	¢
OPTIONAL SERVICES: RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TAL POSTAGE AND FEES	$

STMARK OR DATE

P 204 644 079

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Amerada
STREET AND NO. attn: P.W. Mullins
P.O. Box 2040
P.O., STATE AND ZIP CODE
Tulsa, Okla. 74102

POSTAGE	$
CERTIFIED FEE	¢
CONSULT POSTMASTER FOR FEES	
OPTIONAL SERVICES: SPECIAL DELIVERY	¢
OPTIONAL SERVICES: RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$

POSTMARK OR DATE

PS Form 3800, Apr. 1976

P 204 644 078

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Getty Oil Company
STREET AND NO. J. R. Alvord
P.O. Box 1231
P.O., STATE AND ZIP CODE
Midland, TX 79702

POSTAGE	$
CERTIFIED FEE	¢
CONSULT POSTMASTER FOR FEES	
OPTIONAL SERVICES: SPECIAL DELIVERY	¢
OPTIONAL SERVICES: RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
RETURN RECEIPT SERVICE: SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$

POSTMARK OR DATE

PS Form 3800, Apr. 1976

P 204 644 084

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Texaco Inc.
STREET AND NO. P.O. Combustion
P.O. Box 3109
P.O., STATE AND ZIP CODE
Midland, TX 79702

POSTAGE	$
CERTIFIED FEE	¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$
POSTMARK OR DATE	

OPTIONAL SERVICES — RETURN RECEIPT SERVICE

P 204 644 085

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Mobil Producing Tex. + NM
STREET AND NO. Attn: C. Potter
Nine Greenway Plaza
P.O., STATE AND ZIP CODE
Houston, TX 77046

POSTAGE	$
CERTIFIED FEE	¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$
POSTMARK OR DATE	

CONSULT POSTMASTER FOR FEES — OPTIONAL SERVICES — RETURN RECEIPT SERVICE

PS Form 3800, Apr. 1976

P 204 644 086

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO
Conoca, Inc.
STREET AND NO. Mark R. Hanley
P.O. Box 460
P.O., STATE AND ZIP CODE
Hobbs, N.M. 88240

POSTAGE	$
CERTIFIED FEE	¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED	¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$
POSTMARK OR DATE	

CONSULT POSTMASTER FOR FEES — OPTIONAL SERVICES — RETURN RECEIPT SERVICE

PS Form 3800, Apr. 1976

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
☒ Show to whom and date delivered............ ¢
☐ Show to whom, date and address of delivery...... ¢
☐ RESTRICTED DELIVERY
Show to whom and date delivered............ ¢
☐ RESTRICTED DELIVERY.
Show to whom, date, and address of delivery.$ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
[..]noco, Inc.
[At]tn: Mr. Mark K. Mosley
[P.]O. Box 460
[Ho]bbs, N.M. 88240

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P204644086	

(Always obtain signature of addressee or agent)

[I h]ave received the article described above.
[SIG]NATURE ☒Addressee ☐Authorized agent

4. DATE OF DELIVERY — POSTMARK: AUG 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

☆GPO : 1979 288-848

PS Form 3811, Jan. 1979 — RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
☒ Show to whom and date delivered............ ¢
☐ Show to whom, date and address of delivery...... ¢
☐ RESTRICTED DELIVERY
Show to whom and date delivered............ ¢
☐ RESTRICTED DELIVERY.
Show to whom, date, and address of delivery.$ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Circo Oil & Gas Company
Attn: Mr. J. Schmidt
P.O. Box 1710
Hobbs, N.M. 88240

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P204644080	

(Always obtain signature of addressee or agent)

I have received the article described above
SIGNATURE ☐Addressee ☐Authorized agent

4. DATE OF DELIVERY — POSTMARK: AUG 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

☆GPO : 1979-288-848

PS Form 3811, Jan. 1979 — RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
☒ Show to whom and date delivered............ ¢
☐ Show to whom, date and address of delivery...... ¢
☐ RESTRICTED DELIVERY
Show to whom and date delivered............ ¢
☐ RESTRICTED DELIVERY.
Show to whom, date, and address of delivery.$ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO
Texaco, Inc.
Attn: Mr. R.D. Tomberlin
P.O. Box 3109
Midland, Texas 79702

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P204644077	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent

4. DATE OF DELIVERY — POSTMARK: MIDLAND SEP 7 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

☆GPO : 1979 288-848

PS Form 3811, Jan. 1979 — RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
☒ Show to whom and date delivered............ ¢
☐ Show to whom, date and address of delivery...... ¢
☐ RESTRICTED DELIVERY
Show to whom and date delivered............ ¢
☐ RESTRICTED DELIVERY.
Show to whom, date, and address of delivery.$ ____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Mobil Producing - Texas - New Mexico
Attn: Mr. H. Patton
Nine Greenway Plaza
Houston, TX 77046

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P204644085	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent

4. DATE OF DELIVERY: 8/30/82 — POSTMARK: HOUSTON USPO AUG 30 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

☆ 79-288-848

PS Form 3811, Jan. 1979

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☑ Show to whom and date delivered..... ___ ¢
- ☐ Show to whom, date and address of delivery..... ___ ¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered..... ___ ¢
- ☐ RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery.$ ___

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Commissioner of Public Lands
State of New Mexico
P.O. Box 1148
Santa Fe, N.M. 87501

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P 304 644 082	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent
Horacio Mascarenas

4. DATE OF DELIVERY | POSTMARK
1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: | CLERK'S INITIALS

☆GPO : 1979

PS Form 3811, Jan. 1979

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☑ Show to whom and date delivered..... ___ ¢
- ☐ Show to whom, date and address of delivery..... ___ ¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered..... ___ ¢
- ☐ RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery.$ ___

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Shell
attn: Mid-Continent Division
P.O. Box 991
Houston, TX 77001

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P 304 644 081	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

4. DATE OF DELIVERY AUG 3 1982 | POSTMARK AUG 31 1982

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: | CLERK'S INITIALS

☆GPO : 1979 288 848

PS Form 3811, Jan. 1979

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

● SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☑ Show to whom and date delivered..... ___ ¢
- ☐ Show to whom, date and address of delivery..... ___ ¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered..... ___ ¢
- ☐ RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery.$ ___

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Amerada
attn: Mr. R.W. Mullins
P.O. Box 2040
Tulsa, OK 74102

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	P 304 644 079	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent

4. DATE OF DELIVERY AUG 30 1982 | POSTMARK

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: | CLERK'S INITIALS

☆GPO : 1979 288 848

HALE-HABLE PRESSURE MAINTENANCE AREA

LEA COUNTY, NEW MEXICO

TABULATION OF GRAYBURG-SAN ANDRES WELLBORE PENETRATIONS

T.S.--TEMPERATURE SURVEY; CIRC.--CIRCULATED; C--CALCULATED; P--PLUG

OPERATOR / LEASE & WELL NO.	LOCATION U S T R	PROD. INJ.	SURFACE CASING SIZE	SURFACE CASING DEPTH SET	SURFACE CASING SX CEMENT	SURFACE CASING TOP CEMENT	INTERMEDIATE CASING SIZE	INTERMEDIATE CASING DEPTH SET	INTERMEDIATE CASING SX CEMENT	INTERMEDIATE CASING TOP CEMENT	PRODUCTION CASING CSG SIZE	PRODUCTION CASING DEPTH SET	PRODUCTION CASING SX CEMENT	PRODUCTION CASING TOP CEMENT	TOTAL DEPTH	PRODUCING DEPTH	PRODUCING ZONE	REMARKS	DATE DRILLED
Phillips Petroleum Company																			
M. E. Hale #1	I 35 17 34	P	13-3/8"	251'	200	Circ.					7"	4290'	400	1362'C	4500'	4290-4500'	GB-SA	Covered	12/37
											4-1/2"L	4648'	125	Circ.	4650'	4137-4648'		Liner	
																4482-4596'	GB-SA	Open	
M. E. Hale #2	K 35 17 34	P	9-5/8"	1536'	875	Circ.					7"	4170'	400	1243'C	4655'	4170-4655'	GB-SA	Covered	10/38
											4-1/2"L	4778'	160	Circ.	4780'	4091-4778'		Liner	
																4652-4664'	GB-SA	7# P @ 4630'	
																4586-4602'	GB-SA	BP @ 4466'	
																4412-4456'	GB-SA	Open	
M. E. Hale #3	P 35 17 34	P	9-5/8"	1491'	400	Circ.					7"	4099'	400	1172'C.	4552'	4099-4552'	GB-SA	O.H.(T/A)	10/38
M. E. Hale #4	N 35 17 34	P	9-5/8"	1597'	900	Circ.					7"	4145'	400	1218'C	4678'	4145-4678'	GB-SA	Covered	6/39
											4-1/2"L	4744'	160	Circ.	4774'	3990-4774'		Liner	
																4458-4651'	GB-SA	Open	
M. E. Hale #5	J 35 17 34	P	9-5/8"	1544'	900	Circ.					7"	4098'	400	1171'C.	4699'	4098-4699'	GB-SA	O.H. Open	4/39
M. E. Hale #6	O 35 17 34	P	9-5/8"	1523'	633	Circ.					7"	4089'	400	1162'C.	4721'	4089-4721'	GB-SA	O.H. Open	11/39
M. E. Hale #7	I 35 17 34	P	9-5/8"	1596'	642	Circ.					4-1/2"	6900'	1133	2550'TS	6900'	5928-5946'	GLOR.	Open	6/64
M. E. Hale #8	P 35 17 34	P	13-3/8"	320'	360	Circ.	9-5/8"	3250'	485	2500'T.S.	4-1/2"	10359'	712	2200'TS	10400'	10034-10044'	WLFCP.	BP @ 9995'	1/64
																9932-9945'	WLFCP.	BP @ 9910'	
																9546-9872'	WLFCP.	CMT. Rt. @ 9289' Sqz. 200 Sxs.	
																5896-5964'	GLOR.	BP @ 5100'	
																4542-4574'	GB-SA	Open	
											2-7/8"	6428'	485	2200'TS		6100-6110'	GLOR.	CMT. RT. @ 6085' Sqz. 50 Sxs.	
																6069-6079'	GLOR.	CMT. RT. @ 5110' Sqz. 50 Sx.	
																4639-4670'	GB-SA	Open	

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
EXHIBIT NO. 3
CASE NO. 9629

HALE-MABLE PRESSURE MAINTENANCE AREA

LEA COUNTY, NEW MEXICO

TABULATION OF GRAYBURG-SAN ANDRES WELLBORE PENETRATIONS

T.S.--TEMPERATURE SURVEY; CIRC.--CIRCULATED; C--CALCULATED; P--PLUG

OPERATOR LEASE & WELL NO.	LOCATION U S T R	PROD. INJ.	SURFACE CASING: CASING SIZE	SURFACE CASING: DEPTH SET	SURFACE CASING: SX CEMENT	SURFACE CASING: TOP CEMENT	INTERMEDIATE CASING: CASING SIZE	INTERMEDIATE CASING: DEPTH SET	INTERMEDIATE CASING: SX CEMENT	INTERMEDIATE CASING: TOP CEMENT	PRODUCTION CASING: CSG SIZE	PRODUCTION CASING: DEPTH SET	PRODUCTION CASING: SX CEMENT	PRODUCTION CASING: TOP CEMENT	TOTAL DEPTH	PRODUCING: DEPTH	PRODUCING: ZONE	REMARKS	DATE DRILLED
M. E. Hale #9	J 35 17 34	P	13-3/8"	323'	350	Circ.	9-5/8"	3400'	400	2500'TS	7"	10497'	1090	2700'TS	10700'	9572-10134'	WLFCP.	Sqz. 190 Sxs.	4/64
																9236-9258'	ABO	Sqz. 100 Sxs.	
																9071-9294'	ABO	Sqz. 100 Sxs.	
																8984-9167'	ABO	P-30 Sxs.	
																8626-8860'	ABO	P-50 Sxs.	
																7600-8600'	ABO	P-200 Sxs.	
																5508-6050'	GLOR	P-100 Sxs.	
																4800-5014'	GB-SA	P-25 Sxs.	
																4610-4654'	GB-SA	Open	
M. E. Hale #10	O 35 17 34	P	8-5/8"	1603'	600	Circ.					4-1/2"	6200'	800	3150'TS	6200'	6080-6091'	GLOR	Sqz. 100 Sxs.	6/64
																5944-5958'	GLOR	BP @ 5840'	
																6110-6148'	GLOR	BP @ 5840'	
																3004-3090'	YATES	Sqz. 160 Sxs.	
																4385-4672'	GB-SA	Open	
M. E. Hale #11	K 35 17 34	I	8-5/8"	1594'	750	Circ.					4-1/2"	6225'	800	2500'TS	6225'	6060-6083'	GLOR	Sqz. 75 Sxs.	7/64
																6060-6065'	GLOR	BP @ 5995'	
																2997-3100'	YATES	Sqz. 200 Sxs.	
																1650'	SALADO	Sqz. WTR. (1000 Sxs)	
																5014-5235'	GB-SA	Open (SWD)	
Mable #1	E 35 17 34	P	9-5/8"	1546'	890	Circ.					7"	4172'	400	1350'C.	4716'	4172-4716'	GB-SA	O.H. Open	10/38
Mable #2	D 35 17 34	P	9-5/8"	1573'	900	Circ.					7"	4166'	400	1239'C.	4655'	4600-4655'	GB-SA	P(Hydromite)	7/39
																4166-4600'	GB-SA	O.H. Open	
Mable #3	E 35 17 34	P	8-5/8"	367'	300	Circ.					4-1/2"	4758'	575	2625'TS	4760'	4484-4688'	GB-SA	Open	2/69

HALE-MABLE PRESSURE MAINTENANCE AREA

LEA COUNTY, NEW MEXICO

TABULATION OF GRAYBURG-SAN ANDRES WELLBORE PENETRATIONS

T.S.--TEMPERATURE SURVEY; CIRC.--CIRCULATED; C--CALCULATED; P--PLUG

OPERATOR / LEASE & WELL NO.	LOCATION U	S	T	R	PROD. INJ.	SURFACE CASING: CASING SIZE	DEPTH SET	SX CEMENT	TOP CEMENT	INTERMEDIATE CASING: CASING SIZE	DEPTH SET	SX CEMENT	TOP CEMENT	PRODUCTION CASING: CSG SIZE	DEPTH SET	SX CEMENT	TOP CEMENT	TOTAL DEPTH	PRODUCING DEPTH	PRODUCING ZONE	REMARKS	DATE DRILLED
Conoco Inc.																						
State H-35 #1	H	35	17	34	P	10-3/4"	299'	250	Circ.	7-5/8"	1522'	425	Circ.	5-1/2"	4131'	425	1770'C	4700'	4131-4700'	GB-SA	O.H. Open	3/38
State H-35 #2	A	35	17	34	P	10-3/4"	286'	225	Circ.	7-5/8"	1564'	425	Circ.	5-1/2"	4130'	425	1770'C	4744'	4696-4744'	GB-SA	P(Hydromite)	9/38
																			4130-4696'	GB-SA	O.H. Open	
State H-35 #3	B	35	17	34	P	10-3/4"	289'	250	Circ.	7-5/8"	1561'	425	Circ.	5-1/2"	4146'	425	1775'C	4700'	1620-1621'	SALADO	WTR. FLOW; SQZ. 343 Sxs.	11/38
																			4146-4700'	GB-SA	O.H. Open	
State H-35 #4	F	35	17	34	P	10-3/4"	300'	250	Circ.	7-5/8"	1554'	425	Circ.	5-1/2"	4153'	425	1777'C	4735'	4153-4735'	GB-SA	BP @ 4106' (S.I.)	12/38
State H-35 #5	G	35	17	34	P	10-3/4"	286'	225	Circ.	7-5/8"	1561'	425	Circ.	5-1/2"	4149'	425	1775'C	4695'	4149-4695'	GB-SA	O.H. Open	2/39
State H-35 #6	C	35	17	34	P	10-3/4"	288'	225	Circ.	7-5/8"	1555'	425	Circ.	5-1/2"	4168'	425	1728'C	4753'	4745-4753'	GB-SA	P(Lead Wool)	4/39
																			4168-4745'	GB-SA	O.H. Open	
State H-35 #7	B	35	17	34	P	13-3/8"	375'	375	Circ.	9-5/8"	4950'	300	3800'C	7"	12413'	1750	5780'C	12413'	12254-12275'	WLFCP	BP @ 12252'	2/63
																			12226-12250'	WLFCP	BP @ 12173'	
															(Csg. cut off @ 4900'; retrieved 4886')				11136-11145'	WLFCP	BP @ 11135'	
																			11026-11086'	WLFCP	BP @ 10550'	
																			9223-10066'	WLFCP	Open	
																			9281-9314'	WLFCP	SQZ. 100 Sxs.	
																			9156-9253'	ABO	SQZ. 100 Sxs.	
																			8312-8452'	ABO	Open	
																			5966-6010'	CLOR	SQZ. 100 Sxs.	
																			4900'	GB-SA	SQZ. WTR. (1000 Sxs.)	
																			1200'	REDBD	SQZ. WTR. (1000 SXs.)	

HALE-MABLE PRESSURE MAINTENANCE AREA

LEA COUNTY, NEW MEXICO

TABULATION OF GRAYBURG-SAN ANDRES WELLBORE PENETRATIONS

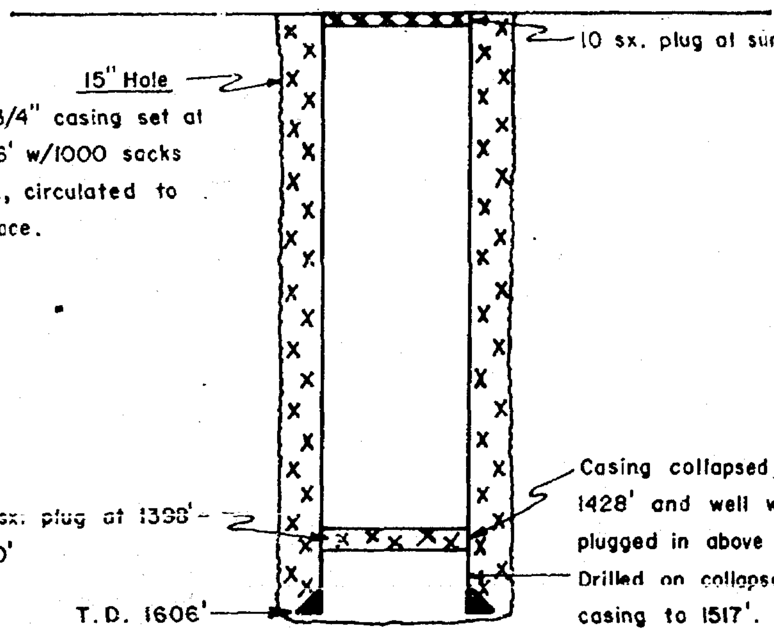
T.S.--TEMPERATURE SURVEY; CIRC.--CIRCULATED; C- CALCULATED; P--PLUG

OPERATOR / LEASE & WELL NO.	LOCATION U	S	T	R	PROD. INJ.	SURFACE CASING SIZE	SURFACE CASING DEPTH SET	SURFACE CASING SX CEMENT	SURFACE CASING TOP CEMENT	INTERMEDIATE CASING SIZE	INTERMEDIATE CASING DEPTH SET	INTERMEDIATE CASING SX CEMENT	INTERMEDIATE CASING TOP CEMENT	PRODUCTION CASING CSG SIZE	PRODUCTION CASING DEPTH SET	PRODUCTION CASING SX CEMENT	PRODUCTION CASING TOP CEMENT	TOTAL DEPTH	PRODUCING DEPTH	PRODUCING ZONE	REMARKS	DATE DRILLED
State H-35 #8	A	35	17	34	P	8-5/8"	1579'	600	Circ.					5-1/2"	6750'	750	2600'TS	6750'	6380-6704'	BLIN	SQZ. 150 Sxs. BP @ 6230'	3/63
																			5964-6143'	GLOR	Open	
State H-35 #9	H	35	17	34	P	11-3/4"	366'	450	Circ.	8-5/8"	4940'	600	3500'C	5-1/2"	10094'	450	5810'TS	10094'	9604-10074'	WLFCP	Perm. Packer @ 9550'	10/63
State H-35 #10	G	35	17	34	P	10-3/4"	1596'	730	Circ.										9052-9232'	ABO	Open	
														4-1/2"	6750'	1725	2700'TS	6750'	5963-6002'	GLOR	SQZ. 150 Sxs.	12/63
														2-7/8"	6750'	1725	2700'TS	6750'	6393-6640'	BLIN	BP @ 6050'	
																			4756-4767'	GB-SA	SQZ. 92 Sxs.	
																			4671-4716'	GB-SA	Open	
State H-35 #10X	G	35	17	34	P	10-3/4"	1606'	1000	Circ.									1506'	1398-1450'	RUSTLER	P-25 Sxs	12/63
																			Surface		P-10 Sxs	
																					Well P/A	
State H-35 #11	C	35	17	34	P	10-3/4"	1520'	795	Circ.									6400'	5915'	GLOR	P-50 Sxs.	1/64
																			4760'	GB-SA	P-25 Sxs.	
																			4430'	GB-SA	P-25 Sxs.	
																			3800'	QUEEN	P-70 Sxs.	
																			2825'	YATES	P-25 Sxs.	
																			2670'	YATES	P-25 Sxs.	
																			1520'	RUSTLER	P-10 Sxs.	
																					Well P/A	
State H-35 #12	H	35	17	34	P	7-5/8"	1516	525	Circ.					4-1/2"	624[illegible]	900	2500'TS	6250'	5934-6128'	GLOR	Open	3/64
State H-35 #13	B	35	17	34	P	8-5/8"	1525	700	Circ.									6033'	5885-6033'	GLOR	P-50 Sxs.	10/66
																			4360-4800'	GB-SA	P-150 Sxs.	
																			2820-2970'	YATES	P-50 Sxs.	
																			2455-2680'	YATES	P-50 Sxs.	
																			1480'	RUSTLER	Cmt. Ret.	
																			1112-1480'	RUSTLER	P-90 Sxs.	
																			1070'		BP	
																			Surface		P-10 Sxs.	

we can't across San Andres

CONOCO INC.
VACUUM GRAYBURG-SAN ANDRES FIELD
SEC. 35, T-17-S, R-34-E
LEA COUNTY, NEW MEXICO
STATE H-35 NO. 10x
1980' FNL 1780' FEL

PLUGGING DETAIL



Shallow

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 4
CASE NO. 7678

CONOCO INC.

VACUUM GRAYBURG-SAN ANDRES FIELD

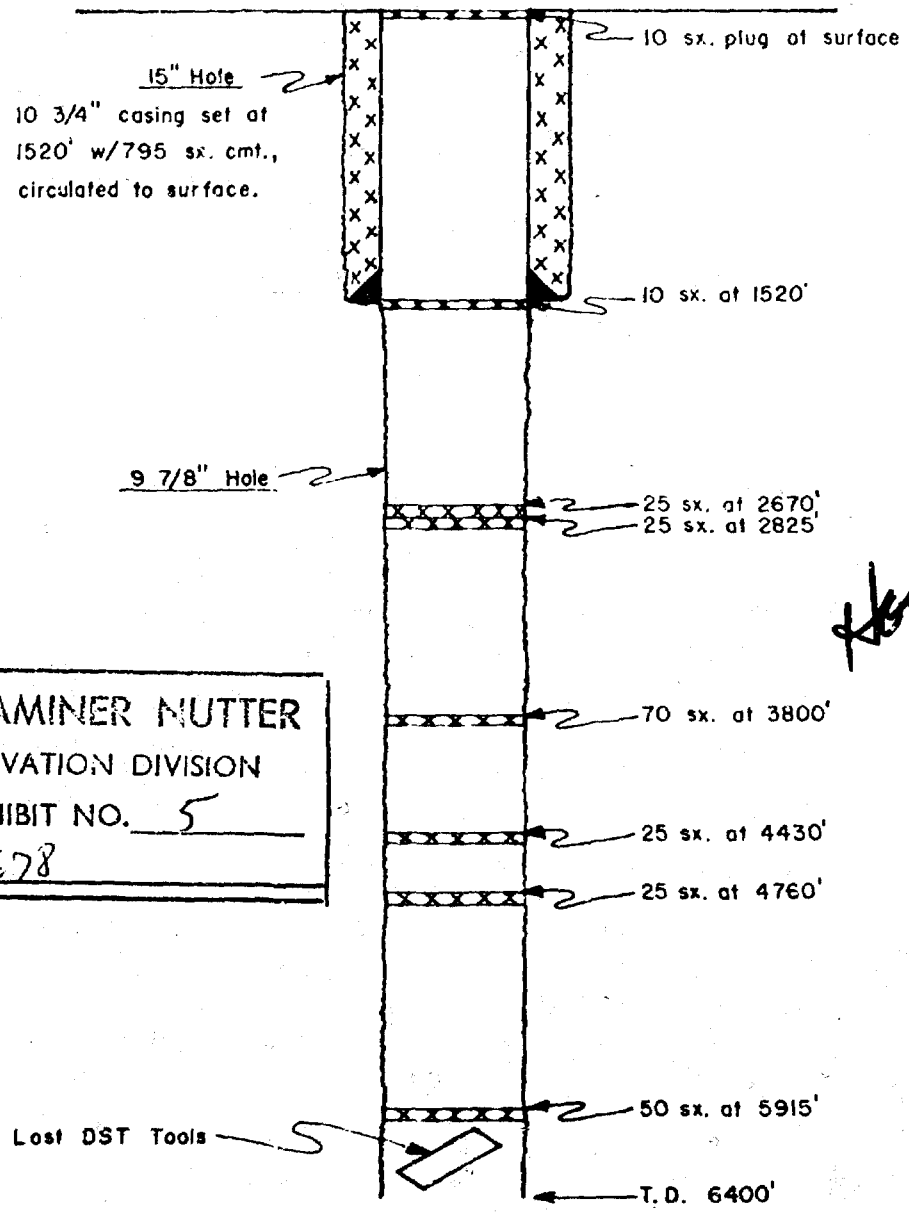
SEC. 35, T-17-S, R-34-E

LEA COUNTY, NEW MEXICO

STATE H-35 NO. 11

660' FNL 2180' FWL

PLUGGING DETAIL

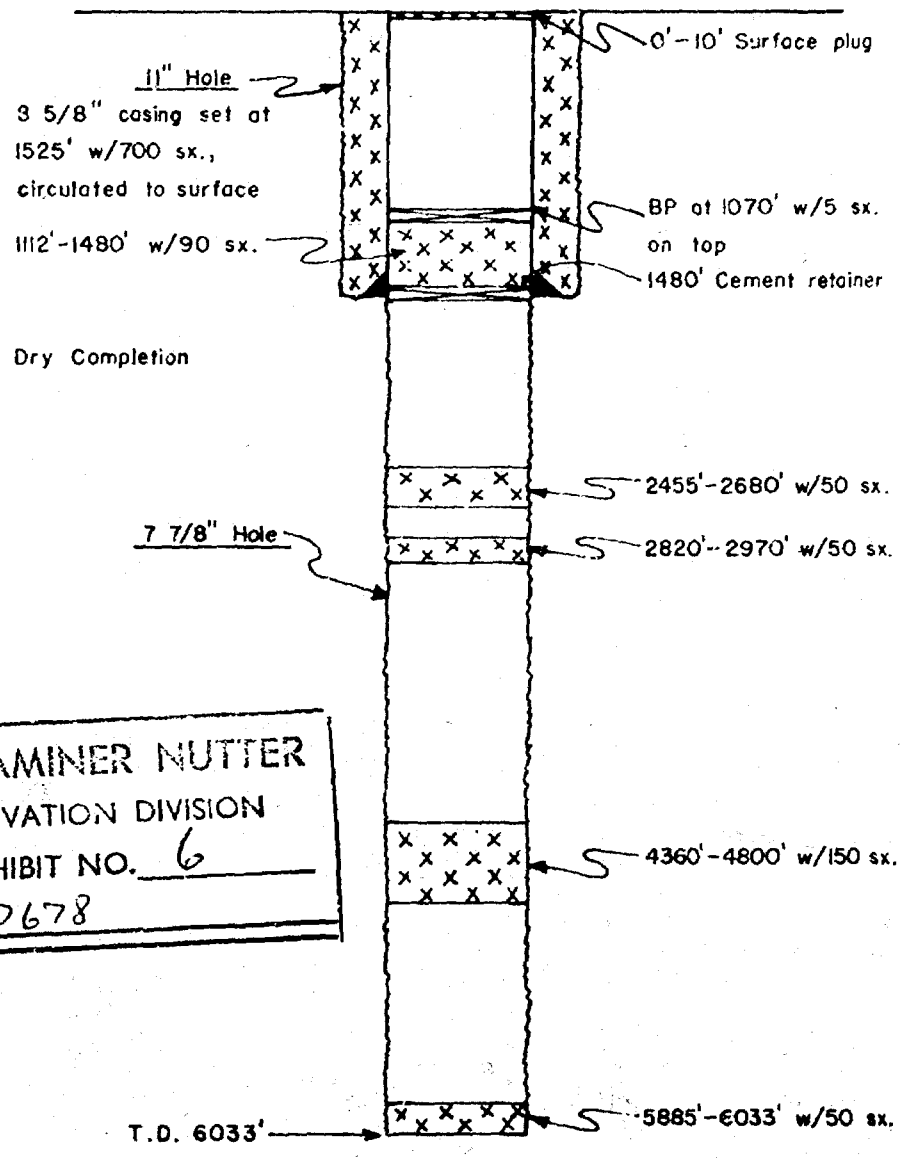


BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 5
CASE NO. 7678

Howell - questions on P&A
no cmt on SA

CONOCO INC.
VACUUM GRAYBURG-SAN ANDRES FIELD
SEC. 35, T-17-S, R-34-E
LEA COUNTY, NEW MEXICO
STATE H-35 NO. 13
990' FNL 1650' FEL

PLUGGING DETAIL



Howard - OK

Cmt on SA

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 6
CASE NO. 7678

Hale-Mable Pressure Maintenance Project

Vacuum Grayburg-San Andres Field

Lea County, New Mexico

Proposed Operations

Phillips Petroleum Company plans to institute a Pressure Maintenance Project in Section 35 by injecting water into the San Andres formation. The water is available from the following Phillips' fresh water rights:

Location S T R	Permit	Acre-Ft. Assignment	BWPD
35 17S 34E	L-7860	182 Ac.-Ft.	3868
31 16S 34E	L-7685	366 Ac.-Ft.	7779

The water from these rights, along with produced water, will be injected into eight wells through a closed system at an average rate of 1500 BWPD/well. The maximum injection pressure will be calculated similar to surrounding floods, .2 psi/ft. to the top of the perforations, which should not exceed 920 psi.

All water used for injection will be compatible with the formation, since projects surrounding Section 35 use similar water for San Andres waterflooding.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 7
CASE NO. 7678

Hale-Mable Pressure Maintenance Project

Lea County, New Mexico

Proposed Stimulation Program

The reservoir parameters used to design the stimulation program are as follows:

Depth	±4500 Ft.
Formation Type	Dolomite
BHT	101 degrees F
BHP	500 psig
Net Pay	180 Ft.
Porosity	11.7%
Permeability	17.7 md.

Expected stimulation treatments are to consist of approximately 200 gallons of NeHCl acid per foot of perforations. Each well should have ±50 feet of perforations. If any wells need to be fracture treated, the volume will be ±1500 gallons of frac fluid per foot of perforations with approximately 30,000 pounds of 20/40 mesh sand staged through the treatment.

DBH:clk

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 8
CASE NO. 5678

UNICHEM INTERNATIONAL

601 NORTH LEECH P.O.BOX1499

HOBBS, NEW MEXICO 88240

OMPANY : PHILLIPS PETROLEUM
ATE : 8-25-82
IELD,LEASE&WELL : 3/4 MILE SOUTHEAST OF M.E. HALE WATER WELL
AMPLING POINT:
ATE SAMPLED : 8-23-82

PECIFIC GRAVITY = 1
OTAL DISSOLVED SOLIDS = 715
H = 7.6

		ME/L	MG/L
CATIONS			
ALCIUM	(CA)+2	5	100.
AGNESIUM	(MG)+2	5	60.7
ODIUM	(NA).CALC.	1.0	25.0
ANIONS			
ICARBONATE	(HCO3)-1	4.4	268.
ARBONATE	(CO3)-2	0	0
YDROXIDE	(OH)-1	0	0
ULFATE	(SO4)-2	1.8	91
HLORIDES	(CL)-1	4.7	169.
DISSOLVED GASES			
ARBON DIOXIDE	(CO2)	NOT RUN	
YDROGEN SULFIDE	(H2S)	NOT RUN	
XYGEN	(O2)	NOT RUN	
RON(TOTAL)	(FE)		.5
ARIUM	(BA)+2		.2
ANGANESE	(MN)	NOT RUN	

SCALING INDEX	TEMP
	30C 86F
ARBONATE INDEX	3.27
ALCIUM CARBONATE SCALING	LIKELY
ULFATE INDEX	-8.7
ALCIUM SULFATE SCALING	UNLIKELY

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 9
CASE NO. 7678

UNICHEM INTERNATIONAL

601 NORTH LEECH P.O.BOX1499

HOBBS, NEW MEXICO 88240

OMPANY : PHILLIPS PETROLEUM
ATE : 8-25-82
IELD,LEASE&WELL : HALE WATER WELL
AMPLING POINT:
ATE SAMPLED : 8-23-82

PECIFIC GRAVITY = 1
OTAL DISSOLVED SOLIDS = 519
H = 7.88

		ME/L	MG/L
CATIONS			
ALCIUM	(CA)+2	4.2	85.1
AGNESIUM	(MG)+2	3	36.4
ODIUM	(NA),CALC.	.43	10.0
ANIONS			
JCARBONATE	(HCO3)-1	4.2	256.
ARBONATE	(CO3)-2	0	0
YDROXIDE	(OH)-1	0	0
ULFATE	(SO4)-2	.66	32
HLORIDES	(CL)-1	2.8	99.9
DISSOLVED CASES			
ARBON DIOXIDE	(CO2)	NOT RUN	
YDROGEN SULFIDE	(H2S)	NOT RUN	
XYGEN	(O2)	NOT RUN	
			2
RON(TOTAL)	(FE)		.3
RIUM	(BA)+2	NOT RUN	
ANGANESE	(MN)		

SCALING INDEX		TEMP
		30C
		86F
ARBONATE INDEX		3.94
ALCIUM CARBONATE SCALING		LIKELY
		.26
ULFATE INDEX		UNLIKELY
ALCIUM SULFATE SCALING		

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 10
CASE NO. 7678

PHILLIPS PETROLEUM COMPANY

HALE-MABLE PRESSURE MAINTENANCE PROJECT

VACUUM GRAYBURG-SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO

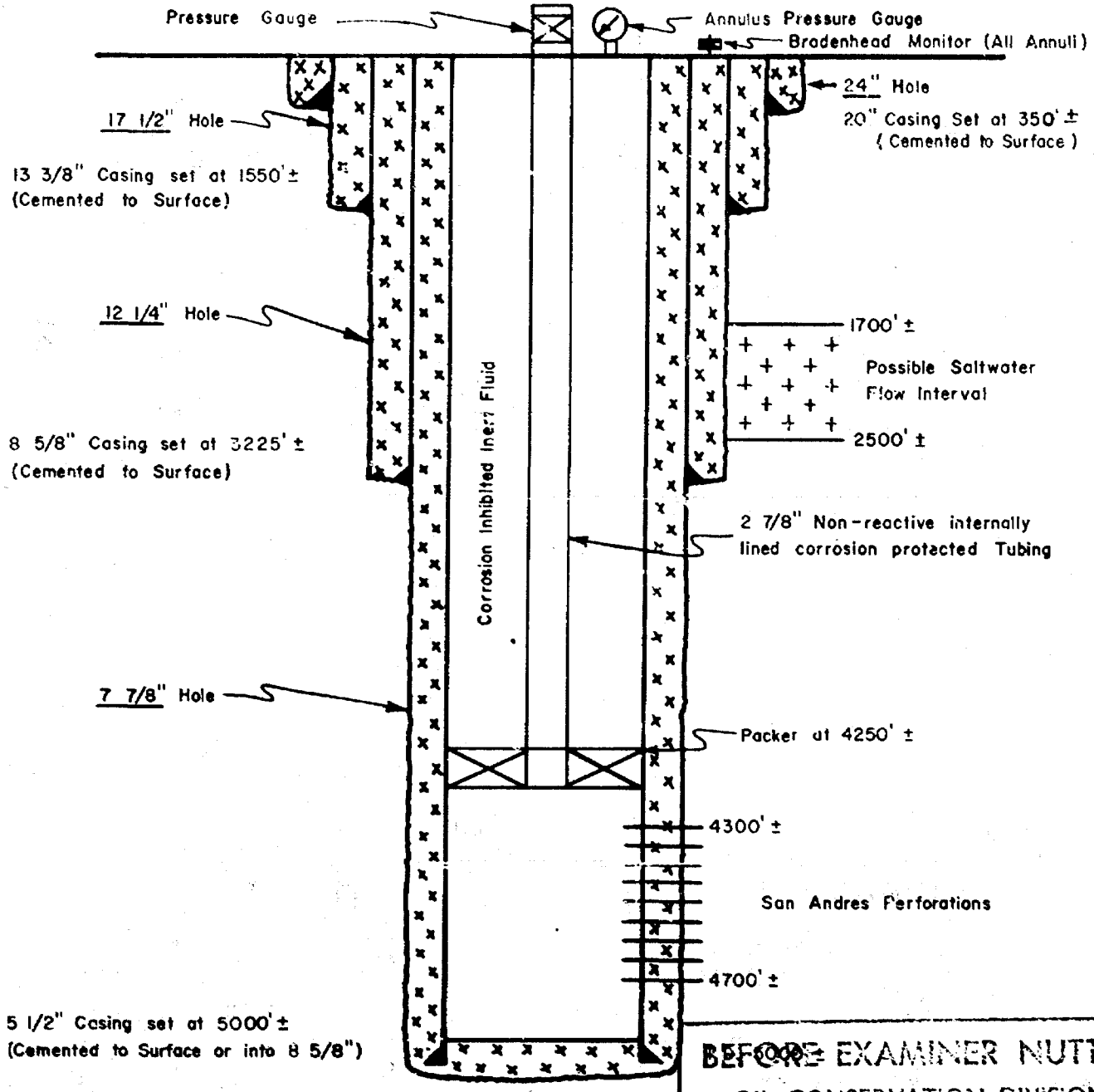
TYPICAL DATA SHEET

Name of Injection Formation:		San Andres
Name of Field:		Vacuum Grayburg-San Andres
New Well Drilled for Injection:		Yes
Oil/Gas Zone Overlying:		Queen
Oil/Gas Zone Underlying:		Glorieta
Surface Casing:	Csg. Size:	20"
	Hole Size:	24"
	Setting Depth:	350'
	Sxs. Cmt.:	400
	T.O.C.:	Circulated
1st Intermediate Casing:	Csg. Size:	13-3/8"
	Hole Size:	17-1/2"
	Setting Depth:	1550'
	Sxs. Cmt.:	1270
	T.O.C.:	Circulated
2nd Intermediate Casing: (If necessary)	Csg. Size:	8-5/8"
	Hole Size:	12-1/4"
	Setting Depth:	3225'
	Sxs. Cmt.:	960
	T.O.C.:	Circulated
Production String:	Csg. Size:	5-1/2"
	Hole Size:	7-7/8"
	Setting Depth:	5000'
	Sxs. Cmt.:	1460
	T.O.C.:	Circulated or into 2nd Intermediate
Tubing:	Tbg. Size:	2-7/8"
	Lining:	Plastic
	Setting Depth:	4250'
	Packer Brand:	Brown Oil Tools
	Packer Model:	Husky M-1, Nickel-Plated
Injection Interval:		4300'-4700' (Perforated)
Total Depth:		~~5000'~~

] if salt bulk flow is encountered

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 11
CASE NO. 2628

PHILLIPS PETROLEUM COMPANY
VACUUM GRAYBURG – SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO
HALE – MABLE PRESSURE MAINTENANCE PROJECT



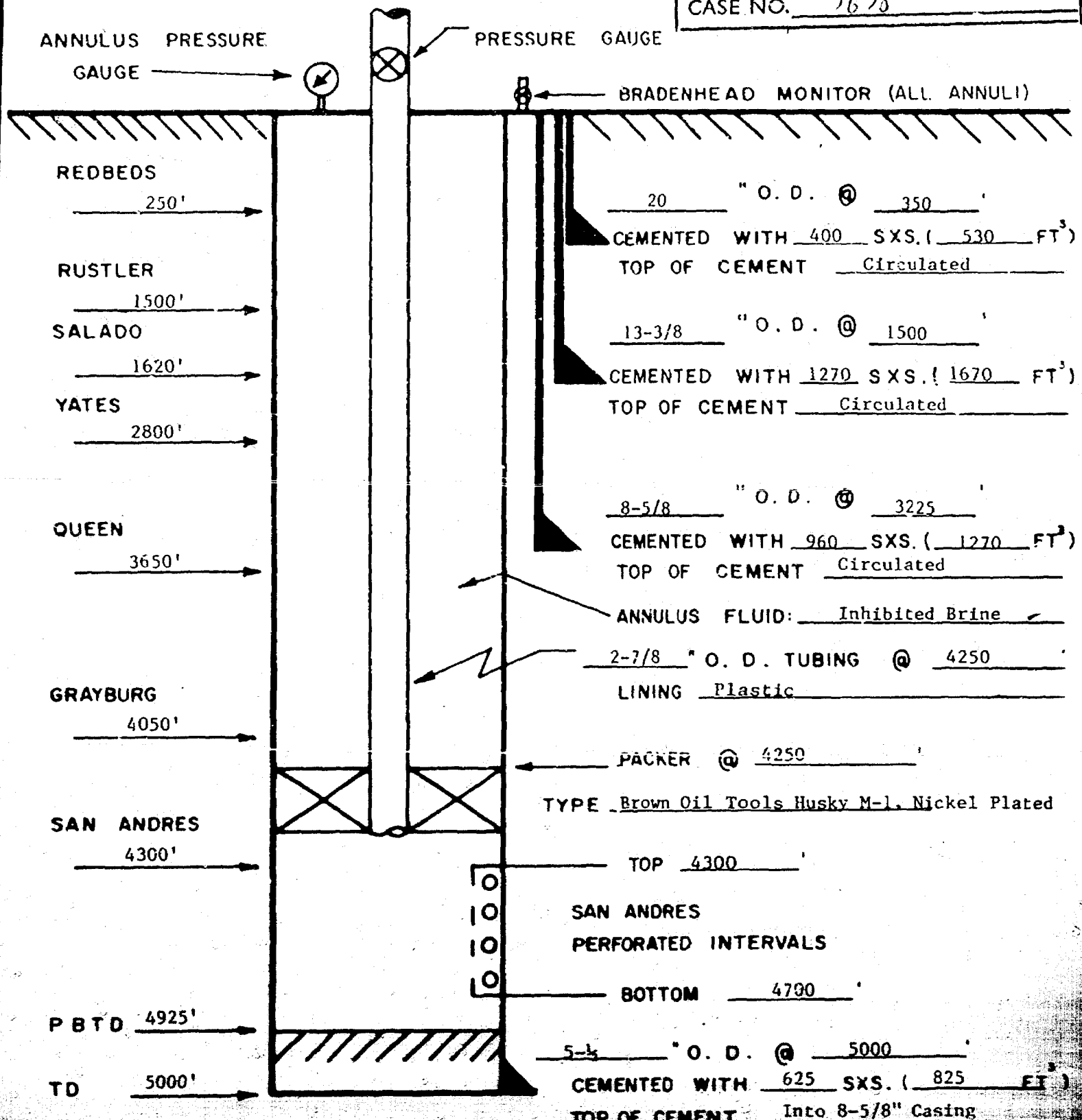
BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 12
CASE NO. 7628

SCHEMATIC COMPLETION DIAGRAM

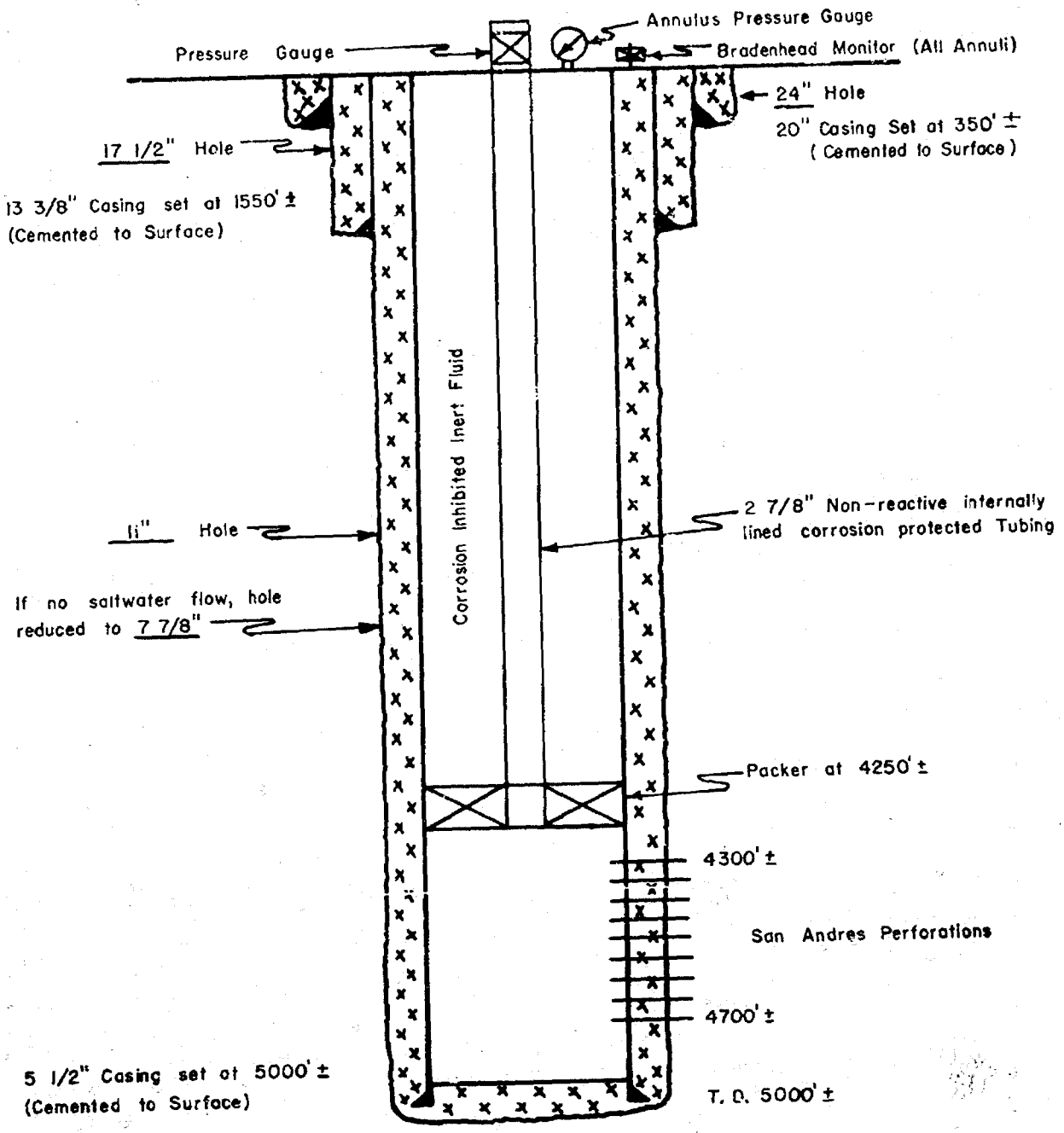
5 1/2" Injection Well With 8 5/8" Intermediate Casing

PHILLIPS PETROLEUM COMPANY
VACUUM GRAYBURG – SAN ANDRES FIELD
HALE – MABLE PRESSURE MAINTENANCE PROJECT
LEA COUNTY, NEW MEXICO
PROPOSED WATER INJECTION WELL

BEFORE EXAMINER HUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 13
CASE NO. 7678



PHILLIPS PETROLEUM COMPANY
VACUUM GRAYBURG - SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO
HALE - MABLE PRESSURE MAINTENANCE PROJECT



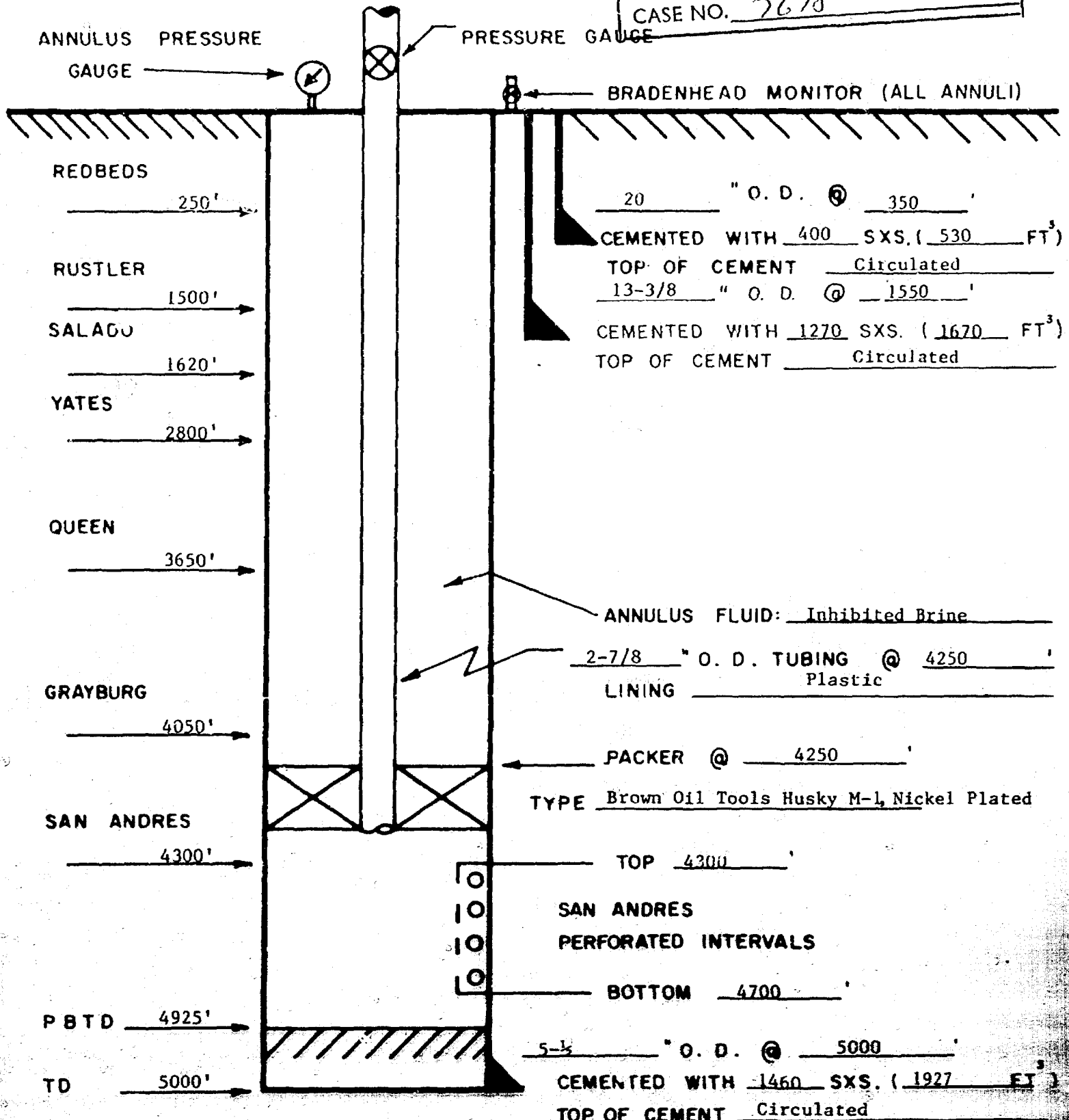
SCHEMATIC COMPLETION DIAGRAM

5 1/2" Injection Well

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 14
CASE NO. 7628

PHILLIPS PETROLEUM COMPANY
VACUUM GRAYBURG – SAN ANDRES FIELD
HALE – MABLE PRESSURE MAINTENANCE PROJECT
LEA COUNTY, NEW MEXICO
PROPOSED WATER INJECTION WELL

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 15
CASE NO. 7628



PHILLIPS PETROLEUM COMPANY
VACUUM GRAYBURG - SAN ANDRES FIELD
HALE - MABLE PRESSURE MAINTENANCE PROJECT
LEA COUNTY, NEW MEXICO

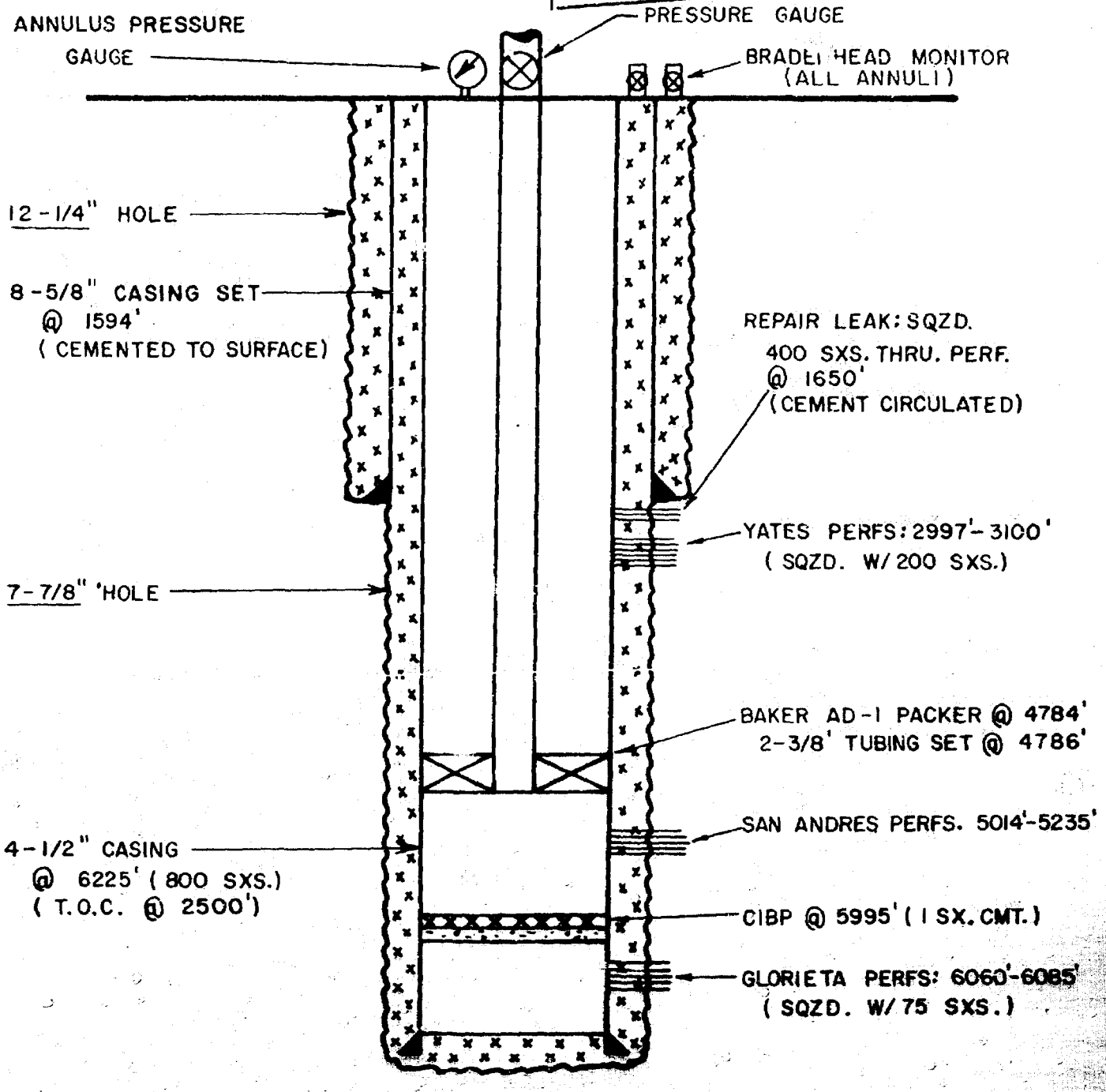
M. E. HALE II

SALT-WATER DISPOSAL WELL

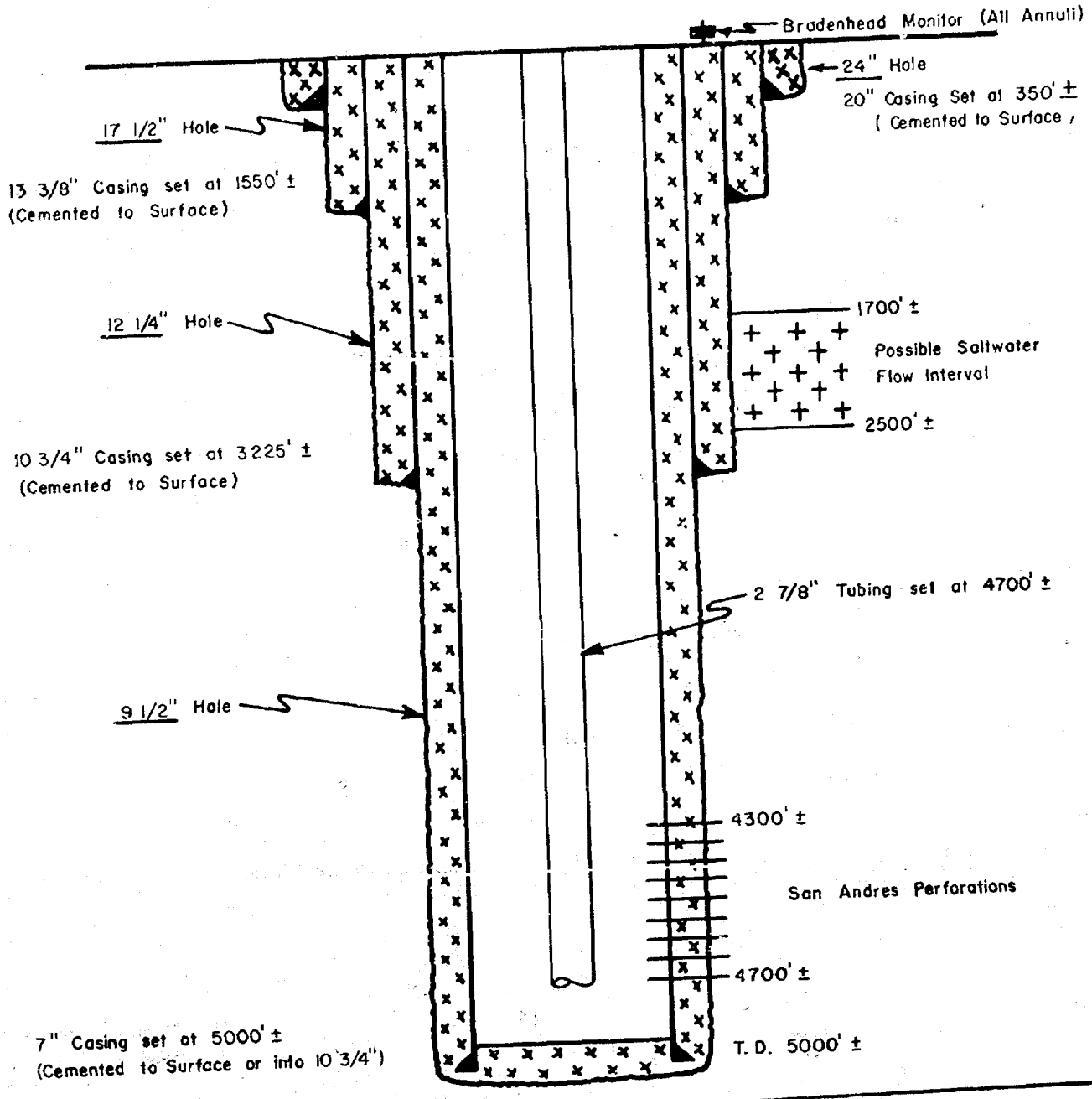
1980' FSL & 2310' FWL

SEC. 35, T-17-S, R-34-E

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 16
CASE NO. 7628



PHILLIPS PETROLEUM COMPANY
VACUUM GRAYBURG - SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO
HALE - MABLE PRESSURE MAINTENANCE PROJECT

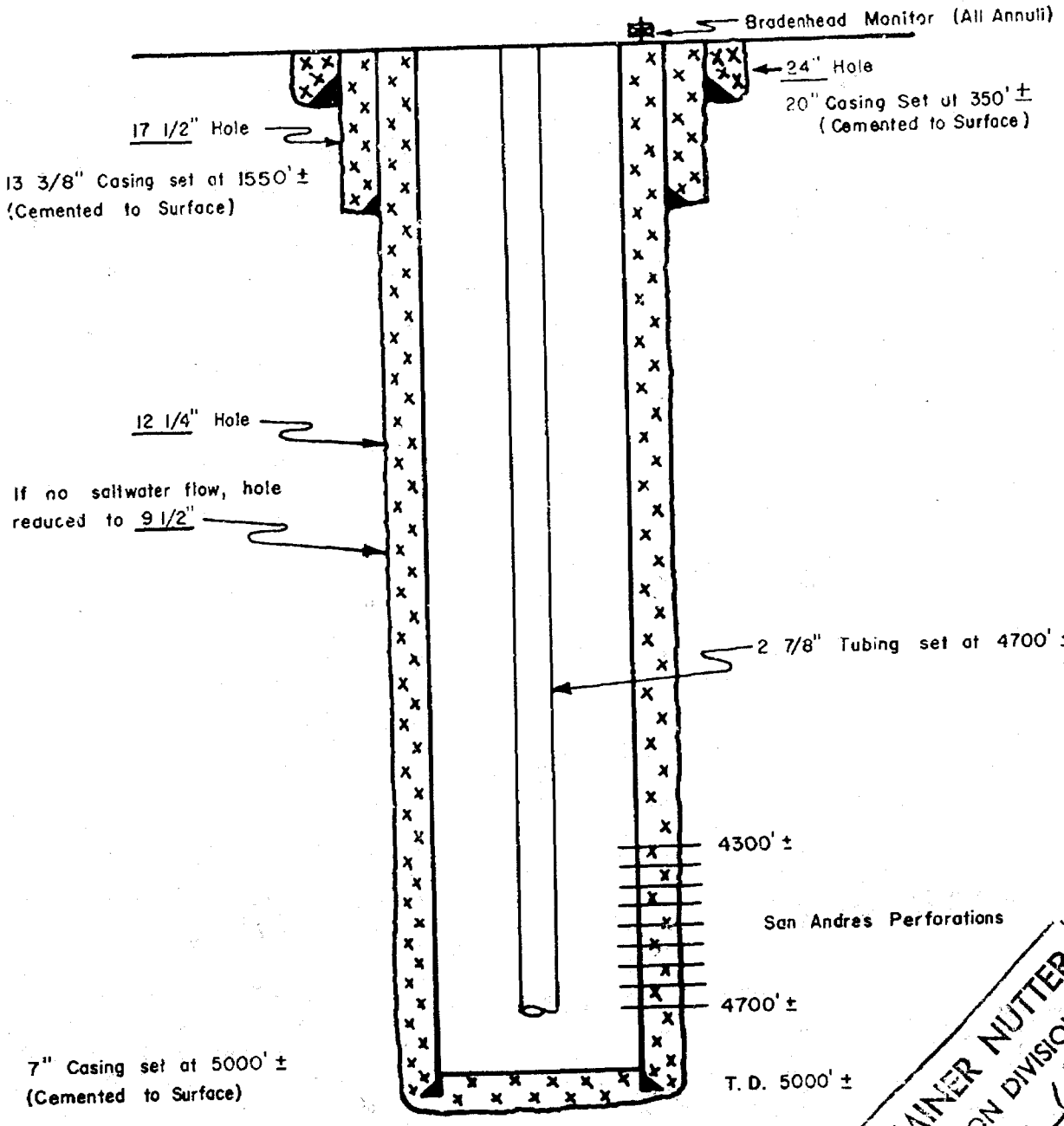


SCHEMATIC COMPLETION DIAGRAM

7" Producing Well With 10 3/4" Intermediate Casing

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 12
CASE NO. 7628

PHILLIPS PETROLEUM COMPANY
VACUUM GRAYBURG – SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO
HALE-MABLE PRESSURE MAINTENANCE PROJECT



SCHEMATIC COMPLETION DIAGRAM

7" Producing Well

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 13
CASE NO. 7678

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 19
CASE NO. 7625

COOPERATIVE WATER INJECTION AGREEMENT

THIS AGREEMENT, entered into effective as of the date of execution, to be known as the Vacuum (Grayburg-San Andres) Cooperative Water Injection Agreement, by and between the Central Vacuum Unit, operated by Texaco Inc.; the "Bridges" State Lease, operated by Mobil Oil Corporation; the State H-35 Lease, operated by Conoco Inc.; the M. E. Hale Lease, operated by Phillips Petroleum Company; the Vacuum Grayburg-San Andres Unit, operated by Texaco Inc.; the Mable Lease, operated by Phillips Petroleum Company; and the West Vacuum Unit, operated by Texaco Inc.

W I T N E S S E T H:

WHEREAS, all parties above operate crude oil producing projects, leases and lands, located in Sections 25, 26, 35 and 36, Township 17 South, Range 34 East and Section 2, Township 18 South, Range 34 East, Lea County, New Mexico.

WHEREAS, all parties above desire to provide for the operation of water injection wells on or near the common boundary of their respective leases or projects, and to provide for the injection of water into the underlying Grayburg-San Andres formation through said injection wells so that the leases and lands mentioned above will be benefited by an increase in the production of crude oil.

NOW, THEREFORE, in consideration of the premises it is agreed as follows:

1a. All Parties, as soon as practical following the effective date of this agreement, agree to drill, complete and equip water injection wells in the Grayburg-San Andres formation at the approximate locations shown on the plat attached hereto as Exhibit "A", and with location descriptions, Working Interest Ownership percentages, and the party by whom the wells are to be drilled and operated, all tabulated on Exhibit "B", also attached and made a part hereof for all purposes. The completion intervals will be mutually acceptable to all parties.

1b. The term "injection wells" shall mean any and all injection wells described and identified herein. Each party or well operator shall operate its water injection wells and furnish suitable water as required for injection into the wells it operates. In the event that an operator's water supply system cannot furnish the maximum desired water volumes, such operator will provide an equally proportionate share of injection water to each injection well connected to that operator's supply system. In no way is any operator responsible for making up shortages of water supply in another operator's system. Injection of water into any of the injection wells covered by this agreement in the Grayburg-San Andres formation shall be at such rates and at such pressures that will comply with the rules and regulations of the Oil Conservation Division of the Department of Energy and Minerals of the State of New Mexico. Also, within the boundary of these rules and regulations, the injection rates and pressures shall be mutually agreeable between the parties hereto. In the event of channeling or other damage to any well, on any Unit, where the cause can be clearly traced to an injection well listed on Exhibit "B" hereto, injection will be ceased into the offending well, by mutual agreement, pending remedial work.

1c. The parties hereto agree with each other that the creation, or attempted creation, of an artificial water drive by the injection of water through the said input wells into the Grayburg-San Andres formation in accordance with the terms and provisions hereof is a reasonable and prudent engineering practice.

2. Each Operator agrees to advance all costs and expenses incurred in connection with drilling, completing and equipping the wells which each shall drill hereunder and shall charge non-operators with the ownership percentage shown for each well in Exhibit "B" of all such costs and expenses on the basis provided for herein and in accordance with the Accounting Procedure attached hereto as Exhibit "C".

3. Upon drilling, completing and equipping the wells provided for above, each injection well will be operated by the designated Operator with non-operator, or non-operators, to be charged the percentage of all operating costs and expenses in accordance with the ownership percentage shown in Exhibit "B" for each well on the basis provided for herein and in accordance with the Accounting Procedure attached hereto as Exhibit "C".

4. For proration purposes, each party will be entitled to receive credit for all water injected, through the injection wells in accordance with their ownership in each of the individual injection wells covered by this agreement.

5. It is agreed by the parties hereto that the payments to be made for water delivered by each operator to the injection wells are intended to reimburse the operators as nearly as possible for the parties' proportionate share as shown for each well in Exhibit "B" of its costs and expenses actually incurred by the operators in acquiring, transporting, and delivering such water to the injection well sites at sufficient pressure to achieve injection into the formation, it being intended that the operators shall not make a profit from the operations conducted hereunder, aside from any resultant production from producing wells on their respective properties. The rate of $0.02 per barrel shall be used as an initial estimate in determining charges for injection water for the first year of operation. The first year of operation shall commence the first day of the month in which injection is initiated.

At the end of the first 12-month year of operation, the operators' costs and expenses of acquiring, transporting, and delivering said water under the terms of this agreement shall be computed for the first year to determine the actual cost or rate per barrel, and the parties in the injection wells covered by this agreement shall, by mutual agreement, have their share of such costs retroactively adjusted so as to be based on the actual costs and expenses for such year. If the parties' share of the actual costs and expenses is less than the estimated charge

provided for the first year, then appropriate reimbursement shall be made by the operators for the overpayment. But if the parties' share exceeds the estimated charge provided for the first year, then the parties agree to reimburse the operators for their applicable share of such costs and expenses as actually accrued for the first year. The actual rate per barrel determined in the manner provided then shall be the rate for the next ensuing year, provided that the operators may make use of the experience base developed hereunder to project costs and expenses and set a reasonable rate per barrel for the ensuing year or period.

It is further understood that any operator may at any time recalculate its actual cost of acquiring, transporting, and delivering water to the injection well sites at sufficient pressure to achieve injection into the formation, for any subsequent year or twelve (12) month period in the manner provided for the first year, and if it should occur that the rate for charges again should be adjusted, then the operator shall so notify the parties hereto of such adjustment. Any new rate based upon the recalculation by the operator shall become effective as of the first day of the calendar month following the date that the parties hereto are notified thereof, and there shall be a retroactive adjustment for such prior period as is covered by the recalculation. This same procedure shall be followed during the term of this agreement.

6a. The term of this agreement shall commence as of the date of execution and shall continue for so long as oil and gas are produced from the leases which cover the above described lands. At any time that an operator shall be of the opinion that the water injection operation being conducted in any or all wells covered by this agreement is no longer economically profitable to said operator and the non-operating working interest owners which said operator may represent, then said operator shall, upon the concurrence of the said represented non-operating working interest owners, have the right to terminate its operation and participation in the

water injection operations of such well or wells upon giving thirty (30) days advance written notice to the other operators who are party to this agreement of this intention to terminate operation and participation in such well or wells covered by this agreement.

6b. Any one of the other operators then shall have the option at the sole risk and expense of itself and the non-operating working interest owners it may represent, to take over and operate the said well or wells in 6a. above. In such event, the operator taking over the said water injection wells is to be granted the right of ingress and egress to said injection wells, together with rights-of-way and easements necessary to continue operation of the said water injection wells, but this grant is to be made without representation and any warranty whatsoever and only insofar as the terminating party then can legally make such a grant. The operator taking over operations of the said water injection wells shall pay the former operator for the equipment therein on the basis of the current net salvage value thereof in place. The former operator who accepts payment of said current net salvage value will credit said payment to all working interest owners it may represent in the property in which the said injection well or wells was formerly operated. When such operator wishes to discontinue the water injection operations, such operator shall plug and abandon the said water injection wells in compliance with all contractual obligations and rules and regulations of each governmental body having jurisdiction, at the sole cost, risk and expense of itself and the non-operating working interest owners which such operator may represent. The current net salvage value is defined as the value of all recoverable equipment at the time of abandonment less cost to recover and abandon said well. The operator taking over said wells hereby shall indemnify and hold the former operator harmless from and against any and all claims, charges, suits and any liabilities arising out of or in any way associated with subsequent operations. The parties hereto agree to execute and deliver, each to the other, such instruments or assurances as may be required to accomplish the intents and purposes of this article.

7. Each operator will perform periodic injection surveys as deemed necessary for prudent operations. Special requests for additional injection surveys may be made by any working interest owner in a given well. However, such special requests for additional injection surveys by non-operating working interest owners in a given well should be for specifically identified reasons and will not ordinarily be made more than once in any given 12-month period. Monthly injection reports on a per well basis will be furnished by the operators to non-operators for all the wells covered by this agreement.

8. In the event that any party hereto is rendered unable, wholly or in part, by force majeure to carry out its obligations under this agreement, upon such party's giving notice and reasonably full particulars of such force majeure in writing or by telegraph to the other party or parties hereto within a reasonable time after the occurrence of the cause relied upon, the obligations of the party giving said notice, insofar as they are affected by such force majeure, shall be suspended during the continuance of any inability so caused, but for no longer period; and the cause of the force majeure so far as possible shall be remedied with all reasonable dispatch.

The term "force majeure" as employed herein shall mean an act of God, strike, lockout or other industrial disturbance, act of the public enemy, war, blockage, riot, lightning, fire, storm, flood, explosion, governmental restraint, failure of water supply, and any other cause, whether of the kind herein enumerated or otherwise, not reasonably within the control of the party claiming suspension.

The settlement of strikes, lockouts, and other labor difficulties shall be entirely within the discretion of the party having the difficulty. The above requirement that any force majeure shall be remedied with all reasonable dispatch shall not require the settlement of strikes, lockouts or other labor difficulty by acceding to the demands of opponents therein when such

course is inadvisable in the discretion of the party having the difficulty.

9. The rights, duties, obligations and liabilities of the parties hereto shall be several, and not joint or collective, and nothing herein contained shall ever be construed as creating a partnership of any kind, joint venture, an association or a trust or as imposing upon any or all of the parties hereto a partnership duty, obligation or liability. Each party hereto shall be individually responsible only for its obligations, as set out in this agreement.

10. Each party hereby elects to be excluded from the application of Sub-chapter "K" of Chapter 1 of Subtitle "A" of the Internal Revenue Code of 1954, insofar as such Sub-chapter or any portion or portions thereof may be applicable to the parties in respect to the operations covered by this agreement. Operator is hereby authorized and directed to execute on behalf of each of the parties hereto such additional or further evidence of such election as may be required by regulations issued under such Sub-chapter "K", or should said regulations require each party to execute such further evidence, each party agrees to execute such evidence or to join in the execution thereof.

11. Each party hereto agrees to indemnify and hold the other party hereto harmless from all liability, claims and demands resulting from each such party's operations conducted pursuant to this agreement. Each party warrants that it has full right and authority to enter into this agreement, both on behalf of itself and every person, firm, or corporation having any working interest rights in the oil and gas leases operated by it who has not ratified and confirmed this agreement, and each party shall indemnify and hold the other party harmless from any and all liabilities, claims and demands asserted by such working interest owners.

12. The terms and provisions hereof shall be binding upon and shall inure to the benefit of the parties hereto and their respective successors, legal representations and assigns.

13. A party may become a party to this Agreement by signing the original of this instrument, a counterpart thereof, or other instrument agreeing to be bound by the provisions hereof. The signing of any such instrument shall have the same effect as if all the parties had signed the same instrument.

IN WITNESS WHEREOF, the parties hereto have executed this agreement this _____ day of _____, 1981

TEXACO INC.
as Operator of the
Central Vacuum Unit, the West Vacuum Unit, and the Vacuum Grayburg-San Andres Unit.

By _____
Attorney-in-Fact

PHILLIPS PETROLEUM COMPANY
as Operator of the
M. E. Hale Lease, and the Mable Lease

By _____
Attorney-in-Fact

MOBIL OIL CORPORATION
as Operator of the
"Bridges" State Lease

By _____
Attorney-in-Fact

CONOCO INC.
as Operator of the
State H-35 Lease

By _____
Attorney-in-Fact

STATE OF NEW MEXICO

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 19____, by _____, _____, a _____ corporation, on behalf of said corporation.

_____
Notary Public in and for
_____ County, New Mexico

My Commission Expires:

_____

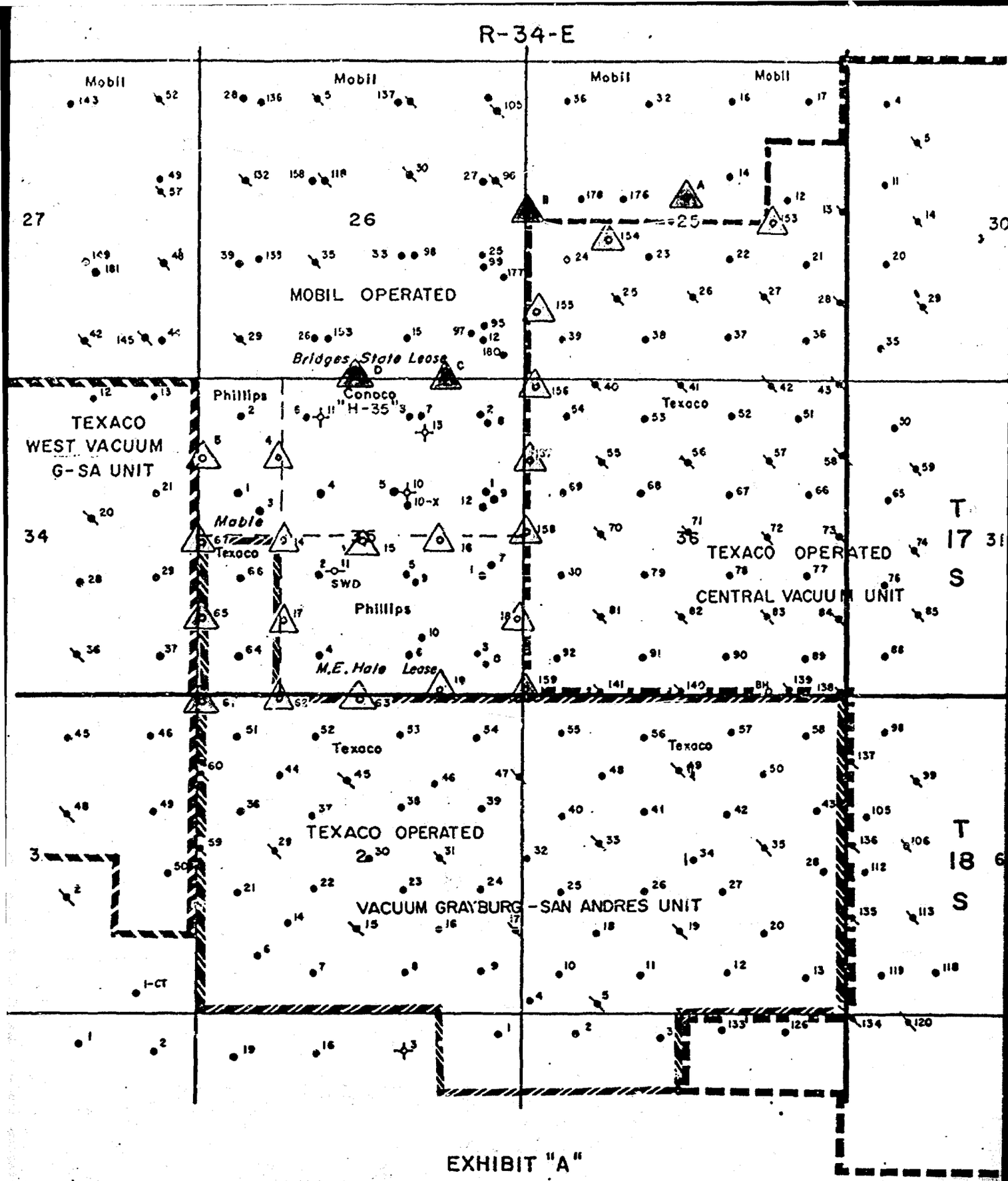


EXHIBIT "A"

COOPERATIVE WATER INJECTION AGREEMENT

VACUUM GRAYBURG - SAN ANDRES FIELD

LEA COUNTY, NEW MEXICO

PROPOSED INJECTOR TO BE DRILLED AND OPERATED BY

- PHILLIPS - HALE & MABLE LEASES
- TEXACO - CENTRAL VACUUM UNIT
- TEXACO - VACUUM GRAYBURG-SAN ANDRES UNIT
- MOBIL - BRIDGES STATE LEASE

WORKING INTEREST PERCENTAGE FOR LEASELINE WELLS IN THE VACUUM G-SA FIELD

OPERATOR — Recommended Locations and Well Numbers	Central Vacuum Unit	West Vacuum Unit	Mobil	Conoco	Phillips	Vacuum Grayburg San Andres
Leaseline Well Participation Working Interest %						
TEXACO - Central Vacuum Unit						
153 - 2630' FSL & 1310' FEL Sec. 25, T-17-S, R-34-E	75		25			
154 - 2340' FSL & 1330' FWL Sec. 25, T-17-S, R-34-E	50		50			
155 - 1150' FSL & 150' FWL Sec. 25, T-17-S, R-34-E	50		50			
156 - 100' FNL & 150' FWL Sec. 36, T-17-S, R-34-E	50		25	25		
157 - 1330' FNL & 10' FWL Sec. 36, T-17-S, R-34-E	50			50		
158 - 2630' FNL & 10' FWL Sec. 36, T-17-S, R-34-E	50			25	25	
159 - 10' FSL & 10' FWL Sec. 36, T-17-S, R-34-E	25				25	50
- Vacuum Grayburg San Andres						
61 - 10' FNL & 10' FWL Sec. 2, T-18-S, R-34-E		50				50
62 - 10' FNL & 1330' FWL Sec. 2, T-18-S, R-34-E					25	75
63 - 10' FNL & 2630' FEL Sec. 2, T-18-S, R-34-E					50	50
65 - 1310' FSL & 10' FWL Sec. 35, T-17-S, R-34-E		50				50
67 - 2630' FSL & 10' FWL Sec. 35, T-17-S, R-34-E		50			25	25
MOBIL - Bridges State						
C - 10' FSL & 1250' FEL Sec. 26, T-17-S, R-34-E			50	50		
A - 2340' FNL & 2630' FWL Sec. 25, T-17-S, R-34-E	50		50			
B - 2630' FNL & 10' FEL Sec. 26, T-17-S, R-34-E	25		75			
D - 10' FSL & 2630' FEL Sec. 26, T-17-S, R-34-E			50	50		
PHILLIPS - M. E. Hale						
14 - 2630' FSL & 1330' FWL Sec. 35, T-17-S, R-34-E				25	50	25
15 - 2630' FSL & 2630' FWL Sec. 35, T-17-S, R-34-E				50	50	
16 - 2630' FSL & 1330' FEL Sec. 35, T-17-S, R-34-E				50	50	
17 - 1310' FSL & 1330' FWL Sec. 35, T-17-S, R-34-E					50	50
18 - 1310' FSL & 10' FEL Sec. 35, T-17-S, R-34-E	50				50	
19 - 10' FSL & 1310' FEL Sec. 35, T-17-S, R-34-E					50	50
- Mable Lease						
4 - 1330' FNL & 1310' FWL Sec. 35, T-17-S, R-34-E				50	50	
5 - 1330' FNL & 10' FWL Sec. 35, T-17-S, R-34-E		50			50	

COPAS — 1974
Recommended by the Council of Petroleum Accountants Societies of North America

COPAS-

EXHIBIT "C"

Attached to and made a part of the Cooperative Water Injection Agreement.

ACCOUNTING PROCEDURE
JOINT OPERATIONS

I. GENERAL PROVISIONS

1. Definitions

"Joint Property" shall mean the real and personal property subject to the agreement to which this Accounting Procedure is attached.

"Joint Operations" shall mean all operations necessary or proper for the development, operation, protection and maintenance of the Joint Property.

"Joint Account" shall mean the account showing the charges paid and credits received in the conduct of the Joint Operations and which are to be shared by the Parties.

"Operator" shall mean the party designated to conduct the Joint Operations.

"Non-Operators" shall mean the parties to this agreement other than the Operator.

"Parties" shall mean Operator and Non-Operators.

"First Level Supervisors" shall mean those employees whose primary function in Joint Operations is the direct supervision of other employees and/or contract labor directly employed on the Joint Property in a field operating capacity.

"Technical Employees" shall mean those employees having special and specific engineering, geological or other professional skills, and whose primary function in Joint Operations is the handling of specific operating conditions and problems for the benefit of the Joint Property.

"Personal Expenses" shall mean travel and other reasonable reimbursable expenses of Operator's employees.

"Material" shall mean personal property, equipment or supplies acquired or held for use on the Joint Property.

"Controllable Material" shall mean Material which at the time is so classified in the Material Classification Manual as most recently recommended by the Council of Petroleum Accountants Societies of North America.

2. Statement and Billings

Operator shall bill Non-Operators on or before the last day of each month for their proportionate share of the Joint Account for the preceding month. Such bills will be accompanied by statements which identify the authority for expenditure, lease or facility, and all charges and credits, summarized by appropriate classifications of investment and expense except that items of Controllable Material and unusual charges and credits shall be separately identified and fully described in detail.

3. Advances and Payments by Non-Operators

Unless otherwise provided for in the agreement, the Operator may require the Non-Operators to advance their share of estimated cash outlay for the succeeding month's operation. Operator shall adjust each monthly billing to reflect advances received from the Non-Operators.

Each Non-Operator shall pay its proportion of all bills within fifteen (15) days after receipt. If payment is not made within such time, the unpaid balance shall bear interest monthly at the rate of twelve percent (12%) per annum or the maximum contract rate permitted by the applicable usury laws in the state in which the Joint Property is located, whichever is the lesser, plus attorney's fees, court costs, and other costs in connection with the collection of unpaid amounts.

4. Adjustments

Payment of any such bills shall not prejudice the right of any Non-Operator to protest or question the correctness thereof; provided, however, all bills and statements rendered to Non-Operators by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of any such calendar year, unless within the said twenty-four (24) month period a Non-Operator takes written exception thereto and makes claim on Operator for adjustment. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. The provisions of this paragraph shall not prevent adjustments resulting from a physical inventory of Controllable Material as provided for in Section V.

5. Audits

A. Non-Operator, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records relating to the Joint Account for any calendar year within the twenty-four (24) month period following the end of such calendar year; provided, however, the making of an audit shall not extend the time for the taking of written exception to and the adjustments of accounts as provided for in Paragraph 4 of this Section I. Where there are two or more Non-Operators, the Non-Operators shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to the Operator. Operator shall bear no portion of the Non-Operators' audit cost incurred under this paragraph unless agreed to by the Operator.

6. Approval by Non-Operators

Where an approval or other agreement of the Parties or Non-Operators is expressly required under other sections of this Accounting Procedure and if the agreement to which this Accounting Procedure is attached contains no contrary provisions in regard thereto, Operator shall notify all Non-Operators of the Operator's proposal, and the agreement or approval of a majority in interest of the Non-Operators shall be controlling on all Non-Operators.

COPAS

II. DIRECT CHARGES

Operator shall charge the Joint Account with the following items:

1. **Rentals and Royalties**

   Lease rentals and royalties paid by Operator for the Joint Operations.

2. **Labor**

   A. (1) Salaries and wages of Operator's field employees directly employed on the Joint Property in the conduct of Joint Operations.

   (2) Salaries of First Level Supervisors in the field.

   (3) Salaries and wages of Technical Employees directly employed on the Joint Property if such charges are excluded from the Overhead rates.

   B. Operator's cost of holiday, vacation, sickness and disability benefits and other customary allowances paid to employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II. Such costs under this Paragraph 2B may be charged on a "when and as paid basis" or by "percentage assessment" on the amount of salaries and wages chargeable to the Joint Account under Paragraph 2A of this Section II. If percentage assessment is used, the rate shall be based on the Operator's cost experience.

   C. Expenditures or contributions made pursuant to assessments imposed by governmental authority which are applicable to Operator's costs chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II.

   D. Personal Expenses of those employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II.

3. **Employee Benefits**

   Operator's current costs of established plans for employees' group life insurance, hospitalization, pension, retirement, stock purchase, thrift, bonus, and other benefit plans of a like nature, applicable to Operator's labor cost chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II shall be Operator's actual cost not to exceed twenty per cent (20%), or percent most recently recommended by the Council of Petroleum Accountants Societies.

4. **Material**

   Material purchased or furnished by Operator for use on the Joint Property as provided under Section IV. Only such Material shall be purchased for or transferred to the Joint Property as may be required for immediate use and is reasonably practical and consistent with efficient and economical operations. The accumulation of surplus stocks shall be avoided.

5. **Transportation**

   Transportation of employees and Material necessary for the Joint Operations but subject to the following limitations:

   A. If Material is moved to the Joint Property from the Operator's warehouse or other properties, no charge shall be made to the Joint Account for a distance greater than the distance from the nearest reliable supply store, recognized barge terminal, or railway receiving point where like material is normally available, unless agreed to by the Parties.

   B. If surplus Material is moved to Operator's warehouse or other storage point, no charge shall be made to the Joint Account for a distance greater than the distance to the nearest reliable supply store, recognized barge terminal, or railway receiving point unless agreed to by the Parties. No charge shall be made to the Joint Account for moving Material to other properties belonging to Operator, unless agreed to by the Parties.

   C. In the application of Subparagraphs A and B above, there shall be no equalization of actual gross trucking cost of $200 or less excluding accessorial charges.

6. **Services**

   The cost of contract services, equipment and utilities provided by outside sources, except services excluded by Paragraph 9 of Section II and Paragraph 1. ii of Section III. The cost of professional consultant services and contract services of technical personnel directly engaged on the Joint Property if such charges are excluded from the Overhead rates. The cost of professional consultant services or contract services of technical personnel not directly engaged on the Joint Property shall not be charged to the Joint Account unless previously agreed to by the Parties.

7. **Equipment and Facilities Furnished by Operator**

   A. Operator shall charge the Joint Account for use of Operator owned equipment and facilities at rates commensurate with costs of ownership and operation. Such rates shall include costs of maintenance, repairs, other operating expense, insurance, taxes, depreciation, and interest on investment not to exceed eight per cent (8%) per annum. Such rates shall not exceed average commercial rates currently prevailing in the immediate area of the Joint Property.

   B. In lieu of charges in Paragraph 7A above, Operator may elect to use average commercial rates prevailing in the immediate area of the Joint Property less 20%. For automotive equipment, Operator may elect to use rates published by the Petroleum Motor Transport Association.

8. **Damages and Losses to Joint Property**

   All costs or expenses necessary for the repair or replacement of Joint Property made necessary because of damages or losses incurred by fire, flood, storm, theft, accident, or other cause, except those resulting from Operator's gross negligence or willful misconduct. Operator shall furnish Non-Operator written notice of damages or losses incurred as soon as practicable after a report thereof has been received by Operator.

9. **Legal Expense**

   Expense of handling, investigating and settling litigation or claims, discharging of liens, payment of judgments and amounts paid for settlement of claims incurred in or resulting from operations under the agreement or necessary to protect or recover the Joint Property, except that no charge for services of Operator's legal staff or fees or expense of outside attorneys shall be made unless previously agreed to by the Parties. All other legal expense is considered to be covered by the overhead provisions of Section III unless otherwise agreed to by the Parties, except as provided in Section I, Paragraph 3.

10. Taxes

All taxes of every kind and nature assessed or levied upon or in connection with the Joint Property, the operation thereof, or the production therefrom, and which taxes have been paid by the Operator for the benefit of the Parties.

11. Insurance

Net premiums paid for insurance required to be carried for the Joint Operations for the protection of the Parties. In the event Joint Operations are conducted in a state in which Operator may act as self-insurer for Workmen's Compensation and or Employers Liability under the respective state's laws, Operator may, at its election, include the risk under its self-insurance program and in that event, Operator shall include a charge at Operator's cost not to exceed manual rates.

12. Other Expenditures

Any other expenditure not covered or dealt with in the foregoing provisions of this Section II, or in Section III, and which is incurred by the Operator in the necessary and proper conduct of the Joint Operations.

III. OVERHEAD

1. Overhead - Drilling and Producing Operations

i. As compensation for administrative, supervision, office services and warehousing costs, Operator shall charge drilling and producing operations on either:

(X) Fixed Rate Basis, Paragraph 1A, or
( ) Percentage Basis, Paragraph 1B.

Unless otherwise agreed to by the Parties, such charge shall be in lieu of costs and expenses of all offices and salaries or wages plus applicable burdens and expenses of all personnel, except those directly chargeable under Paragraph 2A, Section II. The cost and expense of services from outside sources in connection with matters of taxation, traffic, accounting or matters before or involving governmental agencies shall be considered as included in the Overhead rates provided for in the above selected Paragraph of this Section III unless such cost and expense are agreed to by the Parties as a direct charge to the Joint Account.

ii. The salaries, wages and Personal Expenses of Technical Employees and/or the cost of professional consultant services and contract services of technical personnel directly employed on the Joint Property shall ( ) shall not (X) be covered by the Overhead rates.

A. Overhead - Fixed Rate Basis

(1) Operator shall charge the Joint Account at the following rates per well per month:

Drilling Well Rate $ 2,590
Producing Well Rate $ 259

(2) Application of Overhead - Fixed Rate Basis shall be as follows:

(a) Drilling Well Rate

[1] Charges for onshore drilling wells shall begin on the date the well is spudded and terminate on the date the drilling or completion rig is released, whichever is later, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days.

[2] Charges for offshore drilling wells shall begin on the date when drilling or completion equipment arrives on location and terminate on the date the drilling or completion equipment moves off location or rig is released, whichever occurs first, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days

[3] Charges for wells undergoing any type of workover or recompletion for a period of five (5) consecutive days or more shall be made at the drilling well rate. Such charges shall be applied for the period from date workover operations, with rig, commence through date of rig release, except that no charge shall be made during suspension of operations for fifteen (15) or more consecutive days.

(b) Producing Well Rates

[1] An active well either produced or injected into for any portion of the month shall be considered as a one-well charge for the entire month.

[2] Each active completion in a multi-completed well in which production is not commingled down hole shall be considered as a one-well charge providing each completion is considered a separate well by the governing regulatory authority.

[3] An inactive gas well shut in because of overproduction or failure of purchaser to take the production shall be considered as a one-well charge providing the gas well is directly connected to a permanent sales outlet.

[4] A one-well charge may be made for the month in which plugging and abandonment operations are completed on any well.

[5] All other inactive wells (including but not limited to inactive wells covered by unit allowable, lease allowable, transferred allowable, etc.) shall not qualify for an overhead charge.

(3) The well rates shall be adjusted as of the first day of April each year following the effective date of the agreement to which this Accounting Procedure is attached. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly earnings of Crude Petroleum and Gas Production Workers for the last calendar year compared to the calendar year preceding as shown by the index of average weekly earnings of Crude Petroleum and Gas Fields Production Workers as published by the United States Department of Labor, Bureau of Labor Statistics, or the equivalent Canadian index as published by Statistics Canada, as applicable. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment.

B Overhead - Percentage Basis

(1) Operator shall charge the Joint Account at the following rates:

(a) Development

_____ Percent (%) of the cost of Development of the Joint Property exclusive of costs provided under Paragraph 9 of Section II and all salvage credits.

(b) Operating

_____ Percent (%) of the cost of Operating the Joint Property exclusive of costs provided under Paragraphs 1 and 9 of Section II, all salvage credits, the value of injected substances purchased for secondary recovery and all taxes and assessments which are levied, assessed and paid upon the mineral interest in and to the Joint Property.

(2) Application of Overhead - Percentage Basis shall be as follows:
For the purpose of determining charges on a percentage basis under Paragraph 1B of this Section III, development shall include all costs in connection with drilling, redrilling, deepening or any remedial operations on any or all wells involving the use of drilling crew and equipment; also, preliminary expenditures necessary in preparation for drilling and expenditures incurred in abandoning when the well is not completed as a producer, and original cost of construction or installation of fixed assets, the expansion of fixed assets and any other project clearly discernible as a fixed asset, except Major Construction as defined in Paragraph 2 of this Section III. All other costs shall be considered as Operating.

2. **Overhead - Major Construction**

To compensate Operator for overhead costs incurred in the construction and installation of fixed assets, the expansion of fixed assets, and any other project clearly discernible as a fixed asset required for the development and operation of the Joint Property, Operator shall either negotiate a rate prior to the beginning of construction, or shall charge the Joint Account for Overhead based on the following rates for any Major Construction project in excess of $ 25,000 :

A. 5 % of total costs if such costs are more than $ 25,000 but less than $ 100,000 ; plus
B. 3 % of total costs in excess of $ 100,000 but less than $1,000,000; plus
C. 2 % of total costs in excess of $1,000,000.

Total cost shall mean the gross cost of any one project. For the purpose of this paragraph, the component parts of a single project shall not be treated separately and the cost of drilling and workover wells shall be excluded.

3. **Amendment of Rates**

The Overhead rates provided for in this Section III may be amended from time to time only by mutual agreement between the Parties hereto if, in practice, the rates are found to be insufficient or excessive.

IV. PRICING OF JOINT ACCOUNT MATERIAL PURCHASES, TRANSFERS AND DISPOSITIONS

Operator is responsible for Joint Account Material and shall make proper and timely charges and credits for all material movements affecting the Joint Property. Operator shall provide all Material for use on the Joint Property; however, at Operator's option, such Material may be supplied by the Non-Operator. Operator shall make timely disposition of idle and/or surplus Material, such disposal being made either through sale to Operator or Non-Operator, division in kind, or sale to outsiders. Operator may purchase, but shall be under no obligation to purchase, interest of Non-Operators in surplus condition A or B Material. The disposal of surplus Controllable Material not purchased by the Operator shall be agreed to by the Parties.

1. **Purchases**

Material purchased shall be charged at the price paid by Operator after deduction of all discounts received. In case of Material found to be defective or returned to vendor for any other reason, credit shall be passed to the Joint Account when adjustment has been received by the Operator.

2. **Transfers and Dispositions**

Material furnished to the Joint Property and Material transferred from the Joint Property or disposed of by the Operator, unless otherwise agreed to by the Parties, shall be priced on the following bases exclusive of cash discounts:

A. New Material (Condition A)

(1) Tubular goods, except line pipe, shall be priced at the current new price in effect on date of movement on a maximum carload or barge load weight basis, regardless of quantity transferred, equalized to the lowest published price f.o.b. railway receiving point or recognized barge terminal nearest the Joint Property where such Material is normally available.

(2) Line Pipe

(a) Movement of less than 30,000 pounds shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store nearest the Joint Property where such Material is normally available.

(b) Movement of 30,000 pounds or more shall be priced under provisions of tubular goods pricing in Paragraph 2A (1) of this Section IV.

(3) Other Material shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store or f.o.b. railway receiving point nearest the Joint Property where such Material is normally available.

B. Good Used Material (Condition B)

Material in sound and serviceable condition and suitable for reuse without reconditioning:

(1) Material moved to the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV.

(2) Material moved from the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as new Material, or

(b) at sixty-five percent (65%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as good used Material at seventy-five percent (75%) of current new price.

The cost of reconditioning, if any, shall be absorbed by the transferring property.

C. Other Used Material (Condition C and D)

(1) Condition C

Material which is not in sound and serviceable condition and not suitable for its original function until after reconditioning shall be priced at fifty percent (50%) of current new price as determined by Paragraph 2A of this Section IV. The cost of reconditioning shall be charged to the receiving property, provided *Condition C value plus cost of reconditioning does not exceed Condition B value.*

(2) Condition D

All other Material, including junk, shall be priced at a value commensurate with its use or at prevailing prices. Material no longer suitable for its original purpose but usable for some other purpose, shall be priced on a basis comparable with that of items normally used for such other purpose. Operator may dispose of Condition D Material under procedures normally utilized by the Operator without prior approval of Non-Operators.

D. Obsolete Material

Material which is serviceable and usable for its original function but condition and/or value of such Material is not equivalent to that which would justify a price as provided above may be specially priced as agreed to by the Parties. Such price should result in the Joint Account being charged with the value of the service rendered by such Material.

E. Pricing Conditions

(1) Loading and unloading costs may be charged to the Joint Account at the rate of fifteen cents (15¢) per hundred weight on all tubular goods movements, in lieu of loading and unloading costs sustained, when actual hauling cost of such tubular goods are equalized under provisions of Paragraph 5 of Section II.

(2) Material involving erection costs shall be charged at applicable percentage of the current knocked-down price of new Material.

3. Premium Prices

Whenever Material is not readily obtainable at published or listed prices because of national emergencies, strikes or other unusual causes over which the Operator has no control, the Operator may charge the Joint Account for the required Material at the Operator's actual cost incurred in providing such Material, in making it suitable for use, and in moving it to the Joint Property; provided notice in writing is furnished to Non-Operators of the proposed charge prior to billing Non-Operators for such Material. Each Non-Operator shall have the right, by so electing and notifying Operator within ten days after receiving notice from Operator, to furnish in kind all or part of his share of such Material suitable for use and acceptable to Operator.

4. Warranty of Material Furnished by Operator

Operator does not warrant the Material furnished. In case of defective Material, credit shall not be passed to the Joint Account until adjustment has been received by Operator from the manufacturers or their agents.

V. INVENTORIES

The Operator shall maintain detailed records of Controllable Material.

1. Periodic Inventories, Notice and Representation

At reasonable intervals, Inventories shall be taken by Operator of the Joint Account Controllable Material. Written notice of intention to take inventory shall be given by Operator at least thirty (30) days before any inventory is to begin so that Non-Operators may be represented when any inventory is taken. Failure of Non-Operators to be represented at an inventory shall bind Non-Operators to accept the inventory taken by Operator.

2. Reconciliation and Adjustment of Inventories

Reconciliation of a physical inventory with the Joint Account shall be made, and a list of overages and shortages shall be furnished to the Non-Operators within six months following the taking of the inventory. Inventory adjustments shall be made by Operator with the Joint Account for overages and shortages, but Operator shall be held accountable only for shortages due to lack of reasonable diligence.

3. Special Inventories

Special Inventories may be taken whenever there is any sale or change of interest in the Joint Property. It shall be the duty of the party selling to notify all other Parties as quickly as possible after the transfer of interest takes place. In such cases, both the seller and the purchaser shall be governed by such inventory.

4. Expense of Conducting Periodic Inventories

The expense of conducting periodic Inventories shall not be charged to the Joint Account unless agreed to by the Parties.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 20
CASE NO. 5628

PROPOSED

RULES AND REGULATIONS

FOR THE

HALE-MABLE PRESSURE MAINTENANCE PROJECT

RULE 1. Phillips Petroleum Company is authorized to institute water injection pressure maintenance projects on the M. E. Hale and Mable leases in the Vacuum Grayburg - San Andres Field, Lea County, New Mexico. The projects shall be called the Hale-Mable Pressure Maintenance Project, with production and injection accounting on an individual lease basis.

RULE 2. The lease project area of the Hale-Mable Pressure Maintenance Project shall consist of those proration units within the M. E. Hale and Mable leases, upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

RULE 3. The individual lease project area shall receive a project area allowable, and said project area allowable shall be the sum of the individual lease basic project area allowable plus the individual lease water injection credit allowable.

RULE 4. The individual lease basic project area allowable shall be equal to 80 barrels of oil per day times the number of developed 40-acre proration units in the project area.

RULE 5. The individual lease water injection credit allowable shall be contingent upon full reservoir voidage replacement of all produced fluids and shall be based upon the following formula:

$$\text{Water Injection Credit Allowable} = \left[\frac{\text{Net Water Injected}}{\text{Basic Project Area Allowable}} - \frac{\text{Reservoir Voidage}}{1}\right] \times \text{Basic Project Area Allowable}$$

The water injection credit allowable shall be calculated in accordance with the procedures and parameters depicted on Exhibits "A" and "B".

In no event shall the individual lease water injection credit allowable be less than zero, i.e., negative numbers derived from application of the above formula shall be ignored.

RULE 6. The weighted average project area reservoir pressure shall be determined prior to commencement of injection of water into the reservoir and at least annually thereafter. The weighted average project area pressure shall be determined from the pressures in representative wells selected by Phillips Petroleum Company and the Supervisor of the Hobbs District Office of the Division.

RULE 7. The individual lease project area allowable may be produced from the wells within the individual lease project area in any proportion, provided however, that any proration unit outside the individual lease project area shall not be permitted to produce in excess of 80 barrels of oil per day.

RULE 8. Those wells within the Hale-Mable leases that are not included within the project area as defined above, shall be prorated in accordance with the Rules and Regulations of the Division.

RULE 9. The Division Director shall have the authority to approve, without notice and hearing, the drilling of wells at unorthodox locations anywhere within the project boundary, provided that no such unorthodox location shall be closer than 330 feet to the outer boundary of the project, unless such well is covered by a lease-line agreement with the operator of the lands offsetting such well, and a copy of the lease-line agreement accompanies the application for such unorthodox location, or unless such offset operator has waived objection to the proposed unorthodox location in writing, and his waiver accompanies the application.

RULE 10. No well shall be placed on water injection in the Hale-Mable Pressure Maintenance Area unless the Division Director has approved such well for injection. Applications for injection approval shall be filed in accordance with Rule 701 of the Division Rules and Regulations.

RULE 11. Each newly drilled injection or producing well shall be equipped with surface casing (minimum 350 feet) and "production" casing run to total depth (approximately 5000 feet). All casing strings shall be cemented to the surface except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and cemented to the surface, the "production" string may be cemented back into the base of the intermediate casing.

RULE 12. Injection shall be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing shall be corrosion protected by a non-reactive internal lining or coating. The casing-tubing annulus in each injection well shall be filled with an inert fluid and a surface pressure gauge or approved leak detection device shall be attached to the annulus.

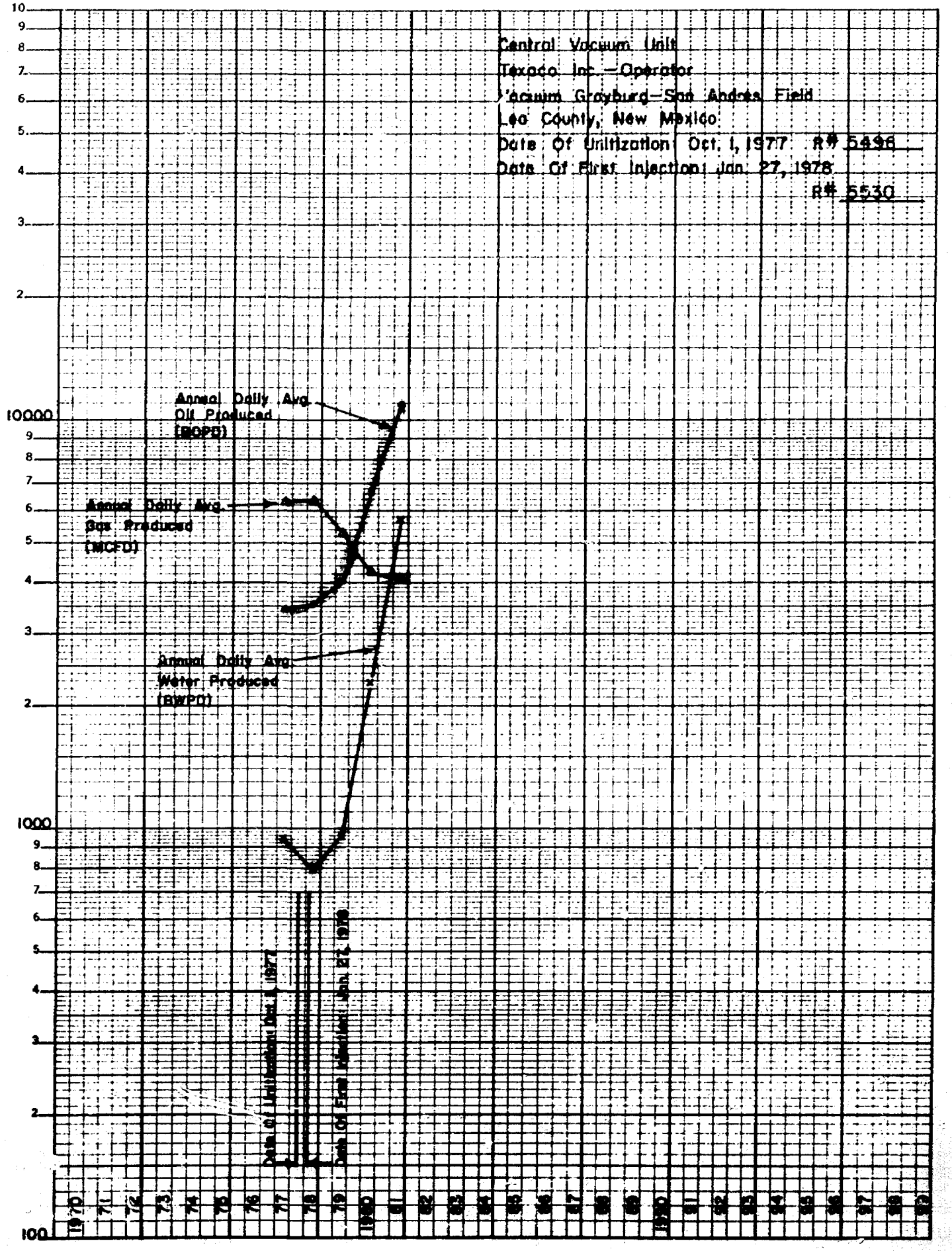
RULE 13. The injection wells or system shall be equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost perforation. The Division Director may administratively authorize a pressure limitation in excess of the above upon showing by Phillips Petroleum Company that such higher pressure will not result in fracturing of the confining strata.

RULE 14. All wells within the individual lease project area shall be equipped with risers or in some other acceptable manner as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

RULE 15. Phillips Petroleum Company shall immediately notify the Supervisor of the Hobbs District Office of the Division of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the individual lease project area, or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

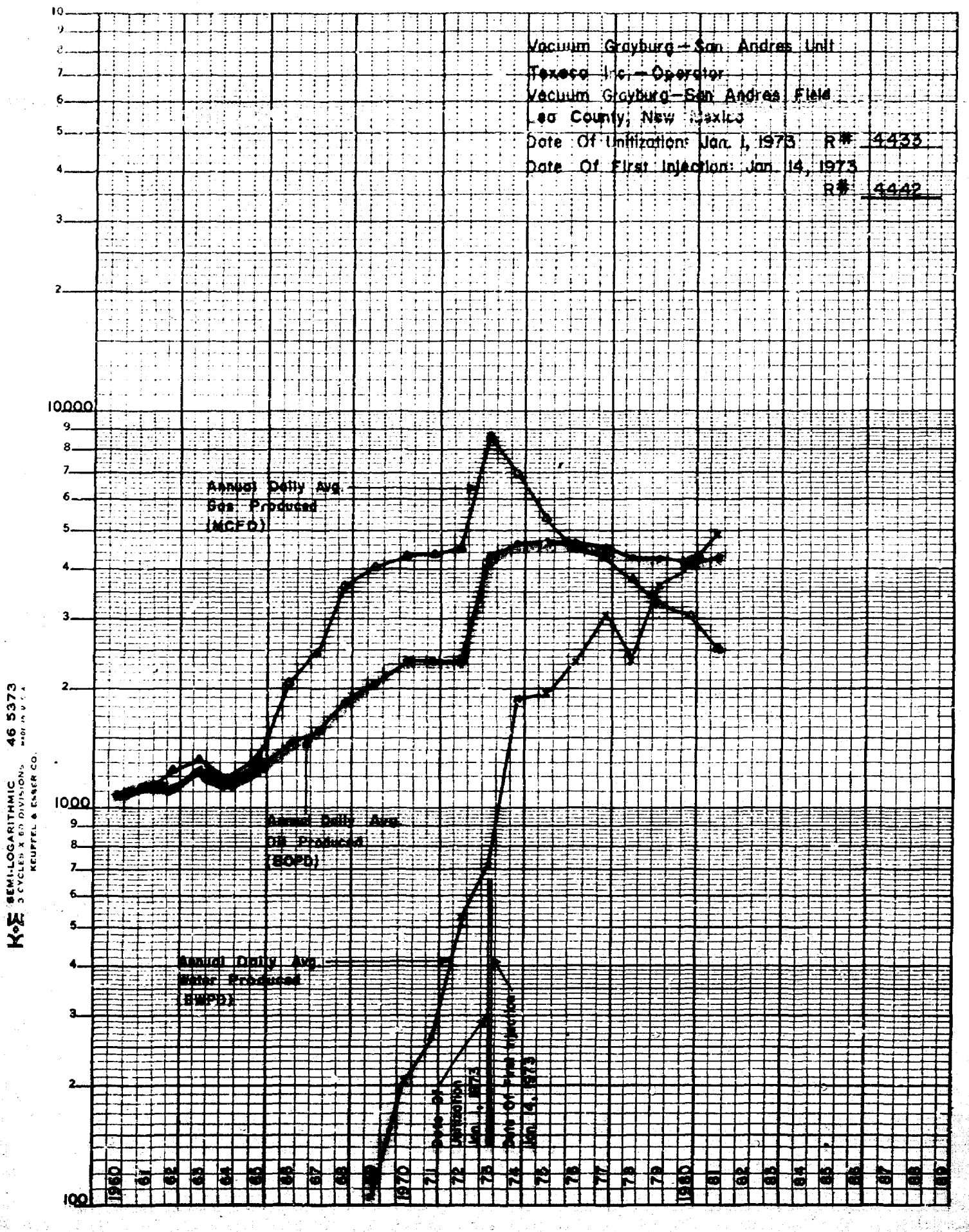
RULE 16. Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report, on a form prescribed by the Division, outlining thereon the data required and requesting allowables for each of the several wells in the Project as well as the total individual lease project area allowable.

RULE 17. The Division shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and, except as provided under Rule 6 above, may be produced from the wells in the Project in any proportion.

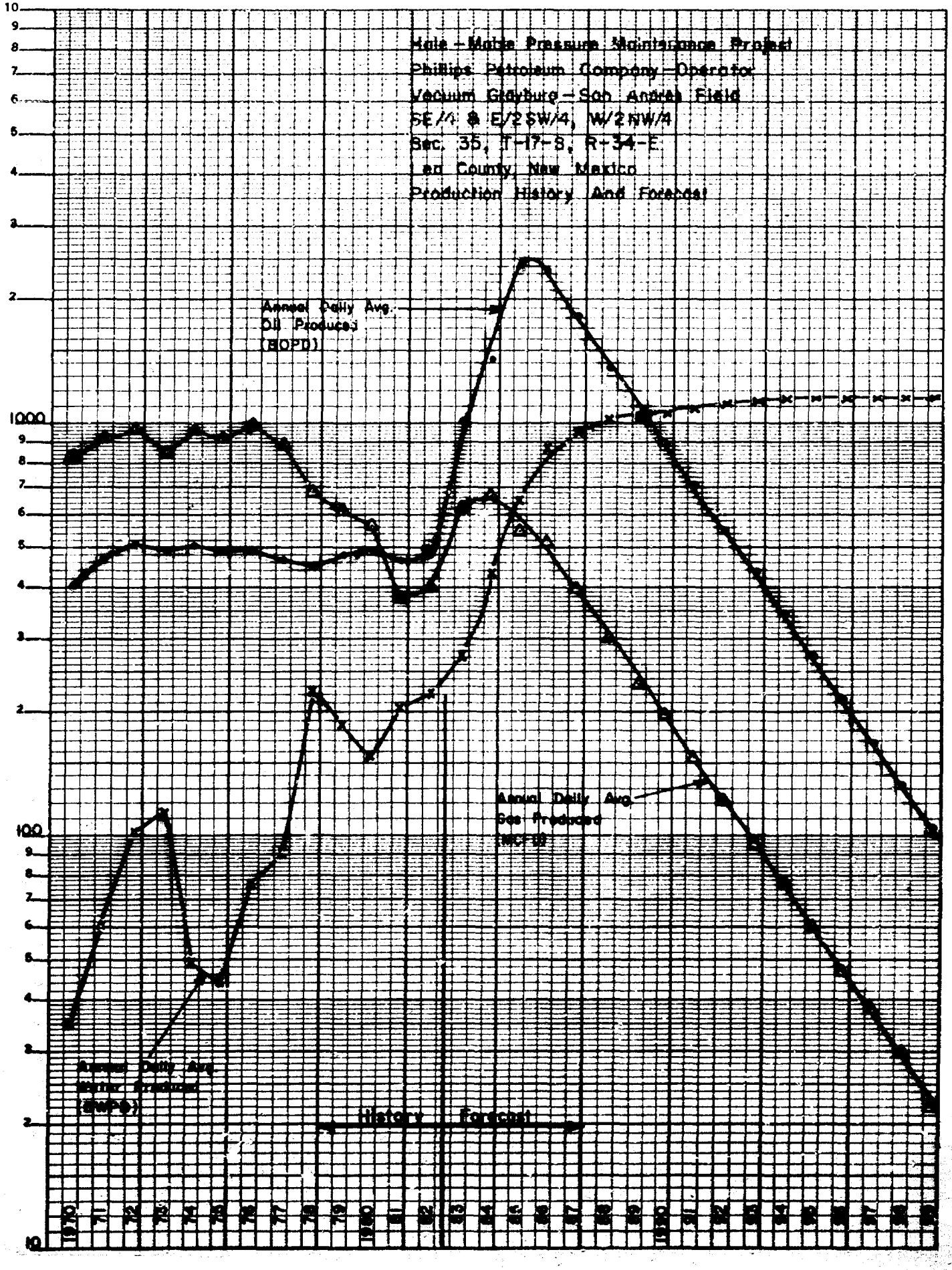


K·E SEMI-LOGARITHMIC 46 5373
3 CYCLES X 60 DIVISIONS
KEUFFEL & ESSER CO.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 22
CASE NO. 7678


Vacuum Grayburg - San Andres Unit
Texaco Inc. - Operator
Vacuum Grayburg-San Andres Field
Lea County, New Mexico
Date Of Unitization: Jan. 1, 1973 R# 4435
Date Of First Injection: Jan. 14, 1973
R# 4442
Annual Daily Avg. Gas Produced (MCFD)
Annual Daily Avg. Oil Produced (BOPD)
Annual Daily Avg. Water Produced (BWPD)
Date of Unitization Jan. 1, 1973
Date Of First Injection Jan. 14, 1973
10
9
8
7
6
5
4
3
2
10000
9
8
7
6
5
4
3
2
1000
9
8
7
6
5
4
3
2
100
1960
61
62
63
64
65
66
67
68
1970
71
72
73
74
75
76
77
78
79
1980
81
82
83
84
85
86
87
88
89
K&E SEMI-LOGARITHMIC 46 5373
3 CYCLES X 60 DIVISIONS
KEUFFEL & ESSER CO.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 23
CASE NO. 3628



K&E SEMI-LOGARITHMIC 46 5373
3 CYCLES X 60 DIVISIONS
KEUFFEL & ESSER CO.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 24
CASE NO. 7678

RESERVOIR CALCULATIONS

OOIP = $7758 H \phi A S_{oi} / B_{oi}$

Hale OOIP = (7758 x 190 ft x .117 x 240 ac. x .79)/1.288
= 25.387 MM bbls.

Mable OOIP = (7758 x 90 ft x .06 x 80 ac. x .79)/1.288
= 2.056 MM bbls.

Total OOIP = (25.387 + 2.056) MM bbls.
= 27.443 MM bbls.

Ultimate Primary - (.25) (27.443 MM bbls.) - 6.861 MM bbls.

*Estimated Secondary - (.15) (27.443 MM bbls.) - 4.116 MM bbls. → (includes 3.9% increase in recovery due to infill drlg)

Cumm. Prod. to Date = 5.285 MM bbls.

Remaining Recoverable Reserves = (10.977 - 5.285) MM bbls.
= 5.692 MM bbls.

*This includes 3.9% OOIP due to infill drilling.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 25
CASE NO. 3678

PHILLIPS PETROLEUM COMPANY

VACUUM GRAYBURG - SAN ANDRES FIELD

SECTION 35, T-17-S, R-34-E

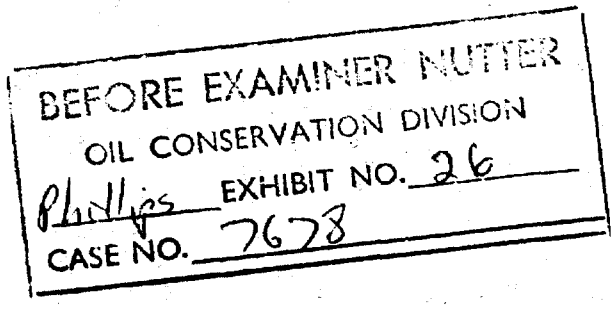
LEA COUNTY, NEW MEXICO

HALE-MABLE PRESSURE MAINTENANCE PROJECT

FORECAST WITH PRESSURE MAINTENANCE

Year	Oil Production (Annual Average BOPD)	Water Production (Annual Average BWPD)	Gas Production (Annual Average MCFD)
1983	1007	271	625
1984	1429	431	671
1985	2487	644	548
1986	2352	863	518
1987	1815	957	400
1988	1366	1010	301
1989	1064	1057	233
1990	891	1079	197
1991	703	1094	156
1992	554	1107	121
1993	437	1118	96
1994	345	1126	77
1995	272	1133	60
1996	217	1139	47
1997	169	1144	38
1998	133	1149	30
1999	105	1154	22
2000	83	1159	19
2001	66	1164	14
2002	52	1169	11
2003	42	1174	9
TOTAL	15,589 BOPD		4193 MCFD

Oil Production: (15,589 BOPD) x 365 days/yr.) = 5.69 MMBO
Gas Production: (4193 MCFD) x (365 days/yr.) = 1.53MMMCF



PHILLIPS PETROLEUM COMPANY

VACUUM GRAYBURG - SAN ANDRES FIELD

SECTION 35, T-17-S, R-34-E

LEA COUNTY, NEW MEXICO

HALE-MABLE PRESSURE MAINTENANCE PROJECT

FORECAST WITHOUT PRESSURE MAINTENANCE

Year	Oil Production (Annual Average BOPD)	Gas Production (Annual Average MCFD)
1983	480	324
1984	480	243
1985	480	113
1986	480	112
1987	480	111
1988	464	111
1989	368	110
1990	294	76
1991	237	58
1992	192	45
1993	138	34
1994	111	26
1995	65	20
1996	49	15
TOTAL	4318 BOPD	1398 MCFD

Oil Production: (4318 BOPD) x (365 days/yr.) = 1.576 MMBO
Gas Production: (1398 MCFD) x (365 days/yr.) = 510,270 MCF

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 20
CASE NO. 2628

PROJECT ECONOMICS

The initial project investment is anticipated to be $6,730,000, with an additional investment in 1987 of $700,000 for lifting equipment. The project will breakeven in 1.73 years and will return the original investment 9.56 times. The average annual rate of return (AARR) is 100.52%, and the present value at 20% is $18,620,400.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 28
CASE NO. 7628

GEOLOGY

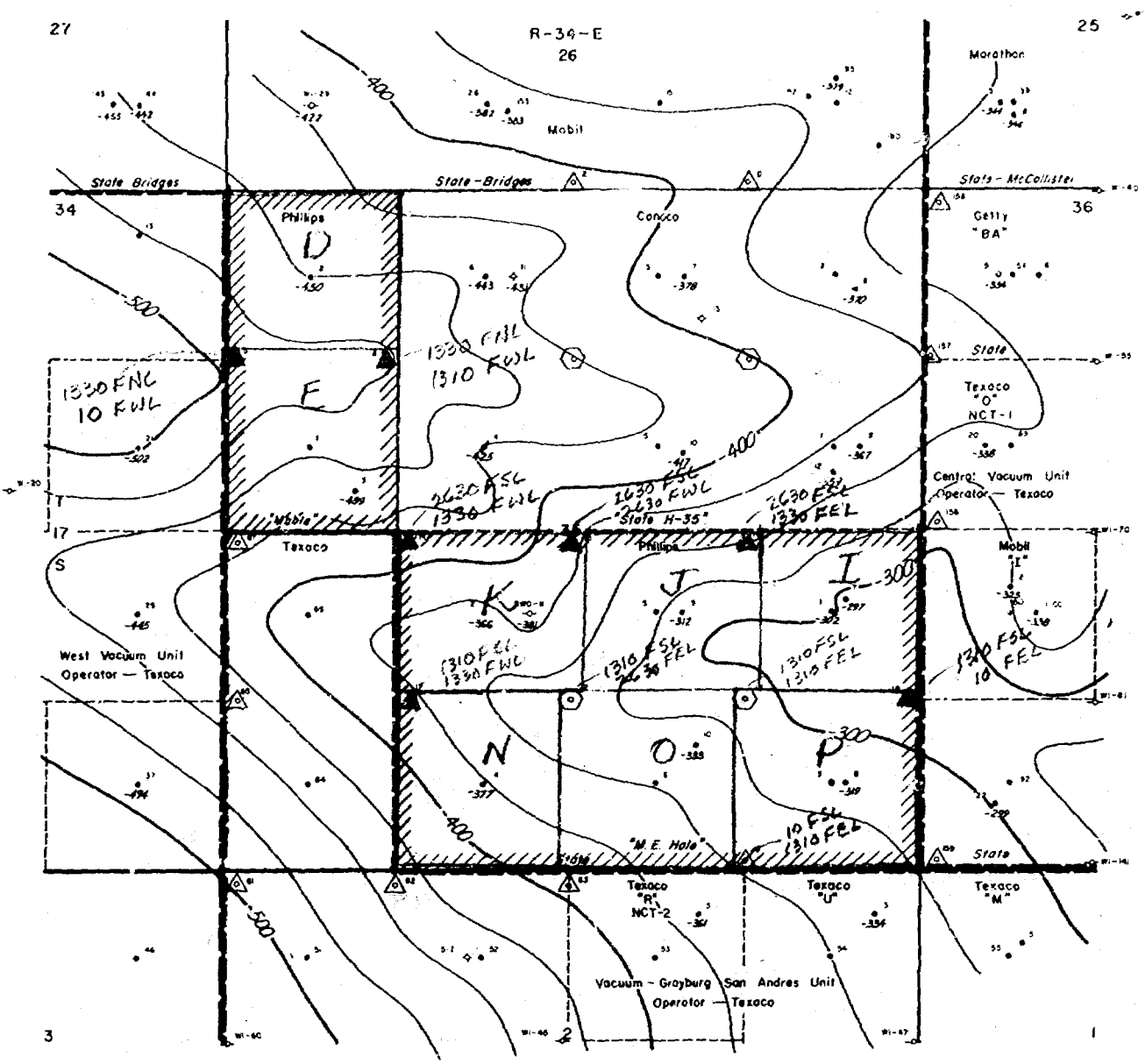
The Vacuum Grayburg-San Andres Field is an east-west trending shelf (Artesia-Lovington Uplift) of Permian Age. The San Andres reef is a dolomitized zone with excelient porosity and permeability. North of the reef (in the back-reef, lagoonal facies) the porosity and permeability is much less than in the main reef. The Hale-Mable Project Area is located in the southern part of the field in the area of good reef quality rock. The top of the San Andres Formation in the Hale-Mable Project Area is encountered between 4300 and 4400 feet below ground level or from -300 to -450 feet subsea. Gross productive thickness ranges from 250 to 400 feet. The San Andres Formation consists of dense-medium crystalline, oolitic dolomite, white to gray in color, with very little anhydrite. The pay in the San Andres is a fine to medium crystalline, slightly fractured, oolitic dolomite with some solution cavities.

The Grayburg Formation overlies the San Andres and consists of dense gray dolomite, slightly shaley and anhydritic, interbedded with dolomitic sand stringers. The top of the Grayburg Formation in the Hale-Mable Project Area is encountered between 4000 and 4100 feet below ground level or 0 to -100 feet subsea, with an average gross thickness of approximately 300 feet. Log and core data indicate that this zone has a very small reserve when compared to the San Andres.

AQUIFERS

The major zone of potable drinking water in the Hale-Mable Project Area is the Ogallala Formation. This zone lies 30 to 50 feet below surface and ranges from approximately 100 to 250 feet in thickness. The deepest possible zone of fresh water in the Hale-Mable Project Area is the Santa Rosa Formation. The Rustler Formation, which is easily recognizable on logs, underlies the base of the Santa Rosa by approximately 150 feet. The top of the Rustler Formation was encountered in existing wells between 1500 and 1535 feet below ground level or between +2490 and +2525 adjusted to sea level. Therefore, the deepest possible fresh water zone would be approximately 1400 feet below ground level or +2675 feet adjusted to sea level.

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 29
CASE NO. 7628



STRUCTURE - TOP SAN ANDRES
HALE - MABLE PRESSURE
MAINTENANCE PROJECT
SECTION 35, T-17-S, R-34-E
VACUUM GRAYBURG - SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO

SCALE

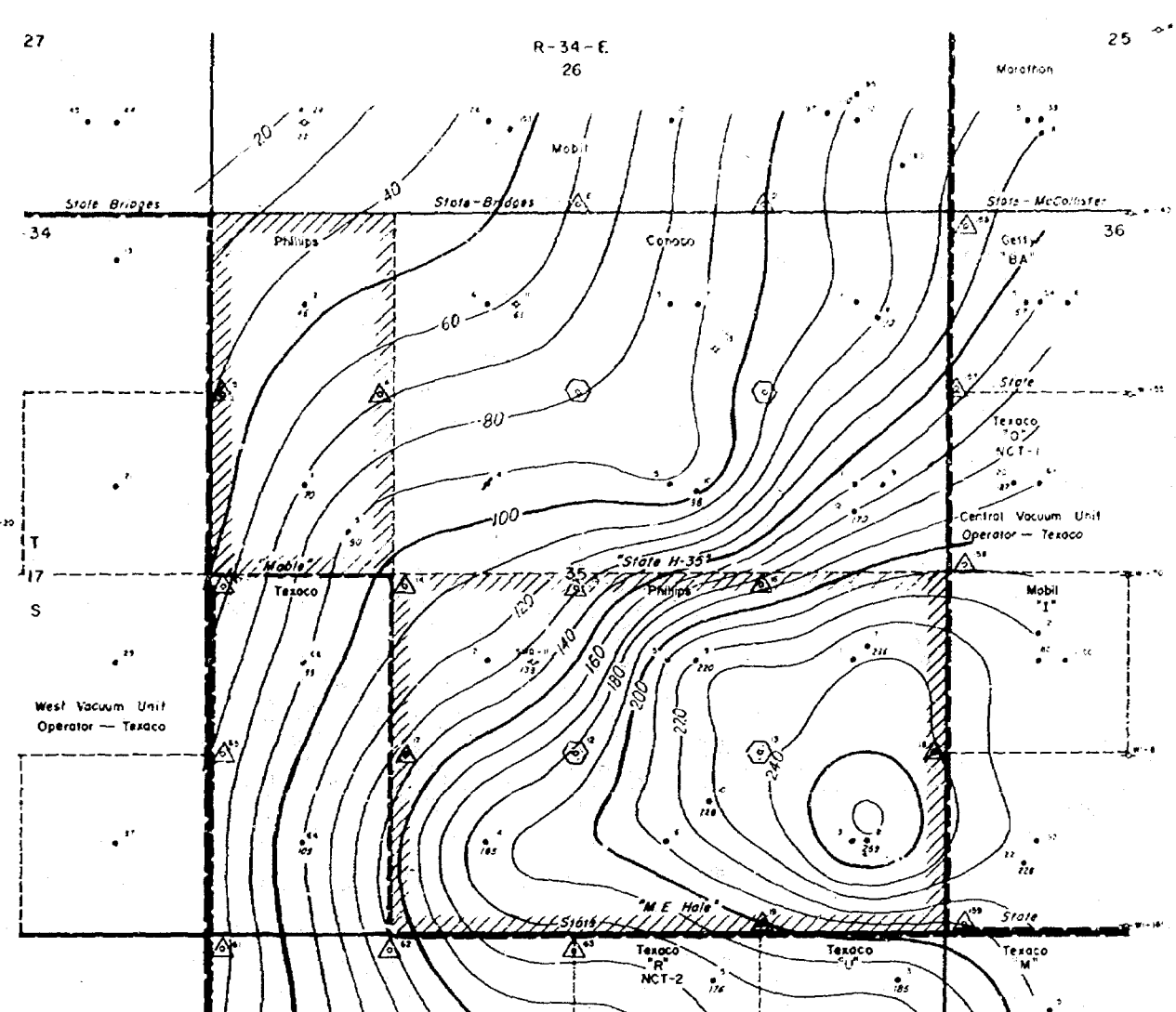
0' 500' 1000' 1500' 2000'

Horizon Mapped	Top San Andres
Contour Interval	25'
Type Information	Subsurface
Interpretation	J. Delong
Date	September, 1982

▲ Proposed Injector

⬡ Proposed Injector Or Producer

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 32
CASE NO. 2628



ISOPACH - NET PAY
HALE-MABLE PRESSURE MAINTENANCE PROJECT
SECTION 35, T-17-S, R-34-E
VACUUM GRAYBURG-SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO

SCALE

0' 500' 1000' 1500' 2000'

Horizon Mapped _____ Isopach - Net Pay
Top San Andres To - 700'
Type Information _____ Acoustical Logs
Interpretation _____ Computor
Contour Interval _____ 10'
Date _____ September, 1982

▲ Proposed Injector
⬢ Proposed Injector Or Producer

BEFORE EXAMINER NUTTER
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 33
CASE NO. 7628

Dockets Nos. 31-82 and 32-82 are tentatively set for September 29 and October 13, 1982. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING WEDNESDAY-SEPTEMBER 15, 1982

9 A.M. - MORGAN HALL, STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

ALLOWABLE: (1) Consideration of the allowable production of gas for October, 1982, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for October, 1982, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 7638: (Continued and Readvertised)

In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Cibola Energy Corporation, American Employers Insurance Company and all other interested parties to appear and show cause why the Simms Ranch Well No. 1, located in Unit N, Section 9, the Clyde Berlier Well No. 1, located in Unit K and the Clyde Berlier Well No. 2, located in Unit F, both in Section 21, the Mora Ranch Well No. 3 located in Unit M and the Mora Ranch Well No. 4, located in Unit M, both in Section 5, all in Township 21 North, Range 21 East, Mora County, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7637: (Continued from August 18, 1982, Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Division on its own motion to permit R.A.F. Enterprises, Fireman's Fund Insurance Company and all other interested parties to appear and show cause why the Shaw Well No. 1, located in Unit M, Section 18, Township 4 North, Range 8 East, Torrance County, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7635: (Continued from September 1, 1982, Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Division on its own motion to permit CO_2-In-Action, Travelers Indemnity and all other interested parties to appear and show cause why the Trigg Well No. 3 located in Unit J, Section 25, Township 15 North, Range 28 East, San Miguel County, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7636: (Continued from September 1, 1982, Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Division on its own motion to permit CO_2-In-Action, Travelers Indemnity and all other interested parties to appear and show cause why the Amistad No. 1 located in Unit E of Section 18, and the Amistad No. 2 located in Unit D of Section 7, both in Township 19 North, Range 36 East, Union County, should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7673: Application of Yates Petroleum Corporation for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Almost Texas Unit Area, comprising 3,840 acres, more or less, of State and Federal lands in Township 26 South, Range 31 East.

CASE 7664: (Continued from September 1, 1982, Examiner Hearing)

Application of Yates Petroleum Corporation for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Little Cuevo Unit Area, comprising 13,407 acres, more or less, of State and Fee lands in Township 17 South, Range 18 East.

CASE 7674: Application of Trican Energy, Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Javalina Basin Unit Area, comprising 2,840 acres, more or less, of State and Federal lands in Township 25 South, Range 34 East.

CASE 7675: Application of Texaco Inc. for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Justis Blinebry, Justis Tubb-Drinkard, and Justis Devonian production in the wellbore of its G. L. Erwin "A" Federal Well No. 2 located in Unit K, Section 33, Township 24 South, Range 37 East.

CASE 7676: Application of Tenneco Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Delaware formation in the perforated interval from 4970 feet to 4982 feet in its Jennings Fed. Well No. 3 located In Unit B of Section 14, Township 24 South, Range 32 East.

CASE 7677: Application of Anadarko Production Company for a waterflood expansion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its Teas Yates Waterflood Project by converting two wells located in Unit F of Sections 13 and 14, Township 27 South, Range 33 East and drilling three new injection wells at unorthodox locations in Units M of Section 11 and Unit L of Section 13, Township 20 South, Range 33 East, and Unit E of Section 18, Township 20 South, Range 34 East.

CASE 7678: Application of Phillips Petroleum Company for a pressure maintenance project, Lea County, New Mexico. Applicant in the above-styled cause, seeks authority to institute a pressure maintenance project in the Vacuum Grayburg-San Andres Pool by the injection of water into the Grayburg San Andres formation through eight injection wells to be drilled at unorthodox locations in Section 35, Township 17 South, Range 34 East, as follows: 2630 feet from the South line and 1330 feet from the West line; 2630 feet from the South and West lines; 2630 feet from the South line and 1330 feet from the East line; 1310 feet from the South line and 1330 feet from the West line; 1310 feet from the South line and 10 feet from the East line; 10 feet from the South line and 1310 feet from the East line; 1330 feet from the North line and 1310 feet from the West line; and 1330 feet from the North line and 10 feet from the West line. Applicant also proposes two production wells at unorthodox locations in said Section 35 as follows: 1310 feet from the South line and 2630 feet from the East line and 1310 feet from the South and East lines.

CASE 7630: (Continued from September 1, 1982, Examiner Hearing - This Case will be Dismissed)

Application of Ralph Nix for an oil treating plant permit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority for the construction and operation of an oil treating plant for the purpose of treating and reclaiming sediment oil at a site in the SW/4 NE/4 of Section 18, Township 19 South, Range 26 East.

CASE 7671: (Continued from September 1, 1982, Examiner Hearing)

Application of Texas Eastern Developments, Inc. for an exception to Rule 307, San Juan County, New Mexico. Applicant in the above-styled cause, seeks an exception to Rule 307 of the Division Rules and Regulations to permit it to draw a vacuum on the Shiprock Gallup Oil Pool reservoir through 16 wells in Sections 16 and 17, Township 29 North, Range 18 West. Applicant further seeks an administrative procedure whereby it could extend the proposed vacuum system to include additional wells in the same reservoir.

CASE 7679: Application of C & K Petroleum, Inc. for the amendment of Order No. R-4857-A and for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Division Order No. R-4857-A to provide that the lands pooled by said order shall be the W/2 SE/4 of Section 27, Township 16 South, Range 37 East, dedicated to its Ship 27 Well No. 2 located in Unit O in said Section 27. Applicant further seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the E/2 SE/4 of the aforesaid Section 27, to be dedicated to a well to be drilled in Unit P of said Section 27. 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 7680: Application of Unichem International, Inc. for an exception to Order No. R-3221, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221 to permit the commercial disposal of produced brine into several unlined surface pits located in Section 11, Township 23 South, Range 29 East.

CASE 7681: Application of Cibola Energy Corporation for an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of an Ordovician gas well to be drilled 330 feet from the North line and 990 feet from the East line of Section 13, Township 9 South, Range 27 East, the E/2 of said Section 13 to be dedicated to the well.

CASE 7682: Application of Cibola Energy Corporation for an unorthodox gas well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Mississippian gas well drilled 330 feet from the North line and 330 feet from the West line of Section 34, Township 11 South, Range 28 East, the W/2 of said Section 34 to be dedicated to the well.

CASE 7683: Application of S & I Oil Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Gallup formation underlying the E/2 SE/4 of Section 12, Township 29 North, Range 15 West, to be dedicated to a well 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 7684: Application of R. E. Lauritsen for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Gallup and Dakota formations underlying the W/2 of Section 11, Township 29 North, Range 15 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 7685: Application of Cimarron Energy Corporation for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Pennsylvanian test to be drilled 1980 feet from the South line and 660 feet from the West line of Section 34, Township 22 South, Range 28 East, the S/2 of said Section 34 to be dedicated to the well.

CASES 7528 and 7529: (Continued and Readvertised)

Application of Jack J. Grynberg for compulsory pooling, Chaves County, New Mexico. Applicant, in each of the following two cases, seeks an order pooling all mineral interests down through the Abo formation underlying the lands specified in each case, each to form a standard 160-acre gas spacing and proration unit to be dedicated to a well to be drilled at a standard location thereon. Also to be considered in each case will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells and a charge for risk involved in drilling said wells:

CASE 7528: NW/4 Section 4, Township 5 South, Range 24 East

CASE 7529: NE/4 Section 4, Township 5 South, Range 24 East

(Continued from September 1, 1982, Examiner Hearing)

CASES 7666, 7667, 7668, and 7669: Application of Yates Petroleum Corporation for compulsory pooling, Chaves County, New Mexico. Applicant, in each of the four following cases, seeks an order pooling all mineral interests down through the Abo formation underlying the lands specified in each case, each to form a standard 160-acre gas spacing and proration unit to be dedicated to a well to be drilled at a standard location thereon. Also to be considered in each case will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells and a charge for risk involved in drilling said wells:

CASE 7666: SW/4 Section 3;

CASE 7667: NW/4 Section 4;

CASE 7668: NW/4 Section 14;

All of the above being in Township 5 South, Range 24 East and

CASE 7669: NW/4 Section 2, Township 9 South, Range 25 East.

CASE 7670: (Continued from September 1, 1982, Examiner Hearing)

Application of Yates Petroleum Corporation for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying the N/2 of Section 26, Township 14 South, Range 27 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.

Docket No. 29-82

CASE 7652: (Continued from August 18, 1982, Examiner Hearing)

Application of Conoco Inc. for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Cisco formation underlying all of partial Sections 34 and 35, Township 20 1/2 South, Range 23 East, underlying a previously approved 688-acre non-standard proration unit, to be dedicated to a well at a previously approved unorthodox location which is to be re-entered. Also to be considered will be the cost of re-entering 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 re-entering said well.

CASE 7672: (Continued from September 1, 1982, Examiner Hearing)

In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, assigning discovery allowable, contracting, and extending certain pools in Chaves, Eddy, Lea and Roosevelt Counties, New Mexico:

(a) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Brushy Canyon production and designated as the Brushy Draw-Brushy Canyon Pool. Further, to assign approximately 25,410 barrels of discovery allowable to the discovery well, the J. C. Williamson UCBHWW Federal Well No. 1 located in Unit M of Section 25, Township 26 South, Range 29 East, NMPM. Said pool would comprise:

TOWNSHIP 26 SOUTH, RANGE 29 EAST, NMPM
Section 25: SW/4

(b) CREATE a new pool in Lea County, New Mexico classified as an oil pool for San Andres production and designated as the Hobbs Channel-San Andres Pool. The discovery well is the Bass Enterprises Production Company Humble City Unit Well No. 1 located in Unit D of Section 36, Township 17 South, Range 37 East, NMPM. Said pool would comprise:

TOWNSHIP 17 SOUTH, RANGE 37 EAST, NMPM
Section 36: NW/4

(c) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Morrow production and designated as the Humphreys Mill-Morrow Gas Pool. The discovery well is the Florida Exploration Company Reno Com Well No. 1 located in Unit D of Section 11, Township 25 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 25 SOUTH, RANGE 35 EAST, NMPM
Section 11: N/2

(d) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Abo production and designated as the Justis-Abo Pool. The discovery well is the Santa Fe Energy Company Carlson B-25 Federal Well No. 3 located in Unit O of Section 25, Township 25 South, Range 37 East, NMPM. Said pool would comprise:

TOWNSHIP 25 SOUTH, RANGE 37 EAST, NMPM
Section 25: SE/4

(e) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Upper Pennsylvanian production and designated as the McMillan-Upper Pennsylvanian Gas Pool. The discovery well is the Southland Royalty Company Pecos River Federal 20 Com Well No. 1 located in Unit J of Section 20, Township 19 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 27 EAST, NMPM
Section 20: E/2

(f) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Strawn production and designated as the Mosley Canyon-Strawn Gas Pool. The discovery well is W. A. Moncrief, Jr., Jurnegan State Well No. 1 located in Unit C of Section 8, Township 24 South, Range 25 East, NMPM. Said pool would comprise:

TOWNSHIP 24 SOUTH, RANGE 25 EAST, NMPM
Section 8: N/2

(g) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Tubb production and designated as the West Nadine-Tubb Pool. The discovery well is the Tamarack Petroleum Company, Inc. Kornegay A Well No. 1 located in Unit F of Section 9, Township 20 South, Range 38 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM
Section 9: NW/4

(h) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Morrow production and designated as the Pitchfork Ranch-Morrow Gas Pool. The discovery well is the HNG Oil Company Madera 32 State Com Well No. 1 located in Unit C of Section 32, Township 24 South, Range 34 East, NMPM. Said pool would comprise:

TOWNSHIP 24 SOUTH, RANGE 34 EAST, NMPM
Section 32: N/2

(i) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Yeso production and designated as the Seven Rivers-Yeso Pool. The discovery well is Chama Petroleum Corporation Irami Federal Well No. 1 located in Unit N of Section 34, Township 19 South, Range 25 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 25 EAST, NMPM
Section 34: SW/4

(j) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Abo production and designated as the East Skaggs-Abo Pool. The discovery well is the Texaco Inc. Ch. H. Weir A Well No. 12 located in Unit G of Section 12, Township 20 South, Range 37 East, NMPM. Said pool would comprise:

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM
Section 12: NE/4

(k) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Tubb production and designated as the Teague-Tubb Pool. The discovery well is the Alpha Twenty-One Production Company Lea Well No. 2 located in Unit A of Section 17, Township 23 South, Range 37 East, NMPM. Said pool would comprise:

TOWNSHIP 23 SOUTH, RANGE 37 EAST, NMPM
Section 17: NE/4

(l) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Devonian production and designated as the Townsend-Devonian Pool. The discovery well is the Kimbark Oil and Gas Company New Mexico 1-4 State Com Well No. 1 located in Unit N of Section 4, Township 16 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM
Section 4: Lots 11, 12, 13, and 14

(m) CREATE a new pool in Eddy County, New Mexico, classified as an oil pool for Bone Spring production and designated as the Welch-Bone Spring Pool. The discovery well is the Quanah Petroleum, Inc. Hay B Federal Com Well No. 1 located in Unit K of Section 9, Township 26 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 26 SOUTH, RANGE 27 EAST, NMPM
Section 9: SW/4

(n) CONTRACT the horizontal limits of the Buckeye-Abo Pool in Lea County, New Mexico, by the deletion of the following described area:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
Section 3: W/2 NW/4

(o) CONTRACT the horizontal limits of the Vacuum-Abo Reef Pool in Lea County, New Mexico, by the deletion of the following described area:

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
Section 3: E/2 NW/4

(p) EXTEND the Antelope Sink-Upper Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 23 EAST, NMPM
Section 13: N/2
Section 14: N/2

(q) 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: NW/4

(r) EXTEND the Atoka-Yeso Pool in Eddy County, New Mexico, to include therein:

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

(s) EXTEND the Bilbrey-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 32 EAST, NMPM
Section 5: NW/4
Section 6: E/2

(t) EXTEND the Bunker Hill-Penrose Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM
Section 14: N/2 S/2 and NE/4

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

TOWNSHIP 20 SOUTH, RANGE 25 EAST, NMPM
Section 3: S/2
Section 4: All

(v) EXTEND the Comanche Stateline Tansill-Yates-Seven Rivers-Queen Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 26 SOUTH, RANGE 35 EAST, NMPM
Section 26: NW/4
Section 27: NE/4 and E/2 NW/4

(w) EXTEND the South Empire-Morrow Gas Pool in Eddy County, New Mexico to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 35: S/2
Section 36: W/2

(x) EXTEND the South Empire-Wolfcamp Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM
Section 36: E/2 NE/4

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM
Section 31: NW/4 and S/2 NE/4

(y) EXTEND the Forty Niner Ridge-Bone Spring Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 30 EAST, NMPM
Section 16: SE/4

(z) EXTEND the Hardy-Tubb Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM
Section 2: Lots 11, 12, 13, 14, and S/2
Section 11: NW/4

(aa) EXTEND the Northeast Lovington-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 37 EAST, NMPM
Section 20: NW/4

(bb) EXTEND the West Milnesand-Pennsylvanian Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 34 EAST, NMPM
Section 19: W/2

(cc) EXTEND the South Peterson-Pennsylvanian Associated Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 5 SOUTH, RANGE 33 EAST, NMPM
Section 30: SE/4
Section 31: N/2 NE/4

TOWNSHIP 6 SOUTH, RANGE 33 EAST, NMPM
Section 15: S/2

(dd) EXTEND the Race Track-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 10 SOUTH, RANGE 28 EAST, NMPM
Section 18: NE/4 and S/2 SE/4

(ee) EXTEND the Ross Draw-Wolfcamp Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 26 SOUTH, RANGE 30 EAST, NMPM
Section 23: S/2
Section 26: N/2

(ff) EXTEND the West Sand Dunes-Atoka Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 31 EAST, NMPM
Section 17: S/2
Section 20: All

(gg) EXTEND the Saunders Permo-Upper Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 33 EAST, NMPM
Section 21: NE/4

DOCKET: COMMISSION HEARING - WEDNESDAY - SEPTEMBER 22, 1982

OIL CONSERVATION COMMISSION-MORGAN HALL - 9 A.M.
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases were continued from the August 26, 1982, Commission Hearing:

CASE 7656: Application of Cities Service Company for determination of reasonable well costs, Lea County, New Mexico. Applicant, in the above-styled cause, pursuant to the provisions of Section 70-2-17 C, NMSA, 1978 Comp., and Paragraph (5) of Division Order No. R-6781, seeks a determination of reasonable well costs for two wells drilled under the provisions of said Order No. R-6781 by Doyle Hartman on lands pooled by said order.

CASE 7657: Application of Harvey E. Yates Company for non-rescission of Order No. R-6873, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks the non-rescission of Order No. R-6873, which order pooled certain lands to be dedicated to a proposed Ordovician test well to be drilled thereon, being the W/2 of Section 18, Township 9 South, Range 27 East. Said order provided that should the unit well not be drilled to completion, or abandonment, within 120 days after commencement thereof, operator shall appear and show cause why the pooling order should not be rescinded.

CASE 7658: (Readvertised)

Application of Harvey E. Yates Company for a dual completion and downhole commingling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its Seymour State No. 1 located in Section 18, Township 9 South, Range 27 East, in such a manner that Abo perforations from 4912 feet to 4929 feet would be commingled with Upper Atoka peforations from 5926 feet to 5952 feet and the aforesaid intervals dually completed with Lower Atoka perforations from 6008 feet to 6048 feet and produced through parallel strings of tubing.

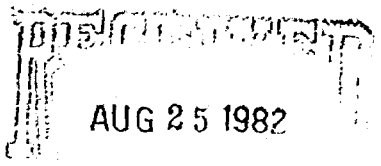
KELLAHIN AND KELLAHIN
Attorneys at Law
El Patio - 117 North Guadalupe
Post Office Box 2265
Santa Fe, New Mexico 87501

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey
James B. Grant

Telephone 982-4285
Area Code 505

August 17, 1982

Mr. Joe D. Ramey
OIL CONSERVATION DIVISION
P. O. Box 2088
Santa Fe, New Mexico 87501



Re: Phillips Petroleum Company
Hale-Mable Pressure Maintenance Project
NMOCD Hearing September 15, 1982

Case 7678

Dear Mr. Ramey:

Please find enclosed our application on behalf of Phillips Petroleum Company for initial approval of a pressure maintenance project to be called the Hale-Mable Pressure Maintenance Project.

We would appreciate having this application set for hearing on the September 15, 1982 Examiner Docket.

The project area is described as follows:

Township 17 South, Range 34 East, NMPM

Section 35: ALL

East Vacuum Grayberg-San Andres Pool, Lea County, N.M.

The eight injection wells and the two production wells are located on Exhibit 2 attached to the application. I will file the balance of the exhibits upon receipt from Phillips.

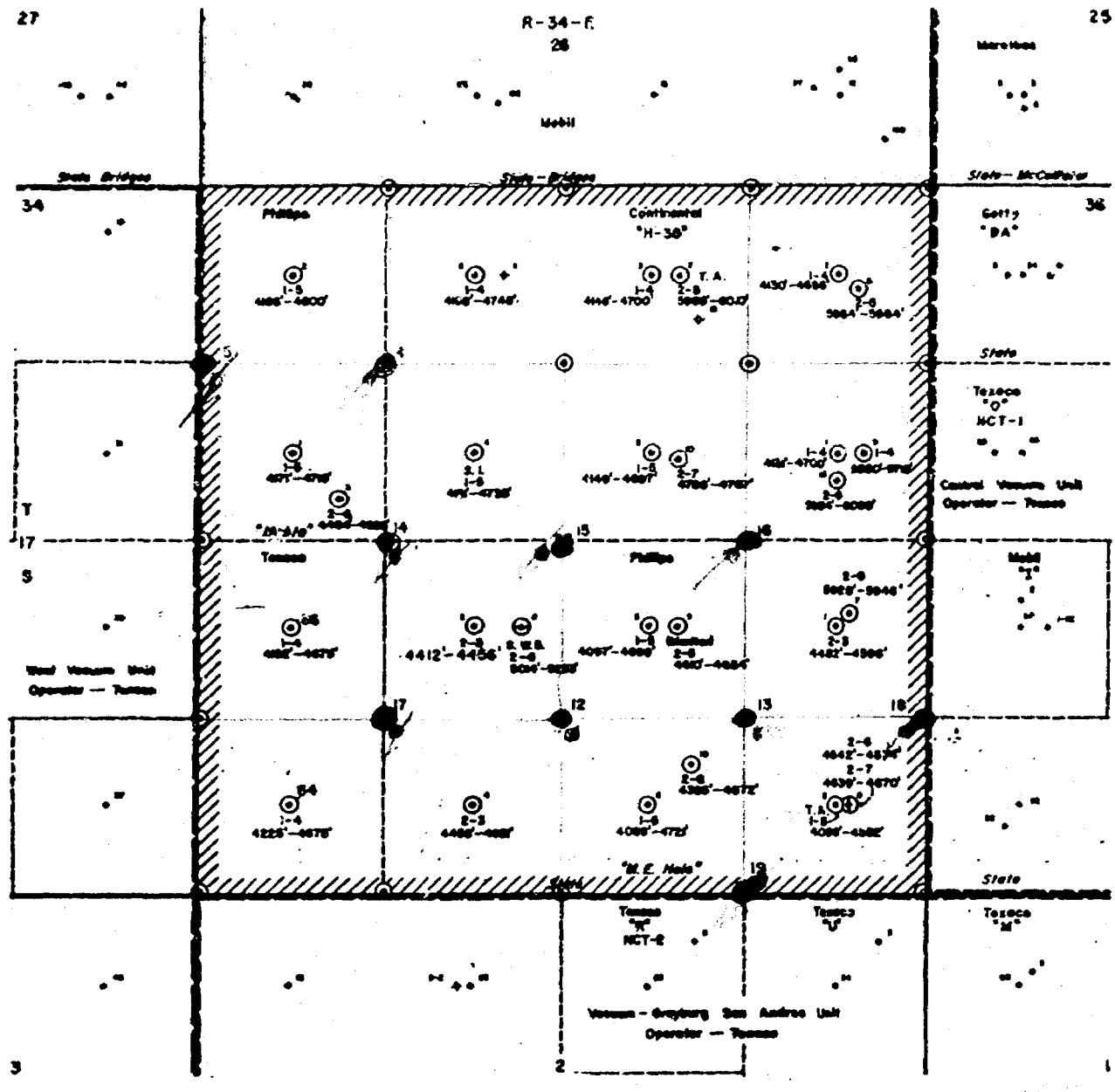
Please call me if you have any questions.

Very truly yours,

W. Thomas Kellahin

WTK:rb
Enclosure
cc: George W. Terry, Esq.,
Phillips Petroleum

VACUUM 35 WELL COMPLETION INFORMATION



VACUUM 35 GRAYBURG SAN ANDRES

UNIT PROPOSED

LEA COUNTY, NEW MEXICO

SCALE

LEGEND

- Grayburg - San Andres
- Blinbry
- Abo
- Proposed Injector
- Proposed Injector Or Producer

1 Open Hole Completion
2 Perforated Completion
3 4 1/2" Liner
4 5 1/2" Casing
5 7" Casing
6 4 1/2" Casing
7 2 3/8" Casing

HALE-MABLE PRESSURE MAINTENANCE PROJECT

(Proposed Wells)

Proposed Well Names & Numbers	Location	Sec.	Twn.	Rng.	Unit	State Lease Number	Well Type
M. E. Hale #14	2630' FSL & 1330' FWL	35	17S	34E	J	B-2317	Injection
M. E. Hale #15	2630' FSL & 2630' FWL	35	17S	34E	J	B-2317	Injection
M. E. Hale #16	2630' FSL & 1330' FEL	35	17S	34E	K	B-2317	Injection
M. E. Hale #17	1310' FSL & 1330' FWL	35	17S	34E	N	B-2317	Injection
M. E. Hale #18	1310' FSL & 10' FEL	35	17S	34E	P	B-2317	Injection
M. E. Hale #19	10' FSL & 1310' FEL	35	17S	34E	P	B-2317	Injection
Mable # 4	1330' FNL & 1310' FWL	35	17S	34E	E	B-2317	Injection
Mable # 5	1330' FNL & 10' FWL	35	17S	34E	E	B-2317	Injection
M. E. Hale #12	1310' FSL & 2630' FEL	35	17S	34E	O	B-2317	Production
M. E. Hale #13	1310' FSL & 1310' FEL	35	17S	34E	P	B-2317	Production

DAN NUTTER

Florence —
Pls see me
for insertion &
brackets and
for Exhibits A and
B when order
has been
finalized

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. 7678

Order No. R-7103

APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR A PRESSURE MAINTENANCE PROJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 15, 1982, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this_____day of October, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Phillips Petroleum Company, seeks authority to institute a pressure maintenance project in the Vacuum Grayburg-San Andres Pool by the injection of water into the Grayburg-San Andres formation through two wells on its Mable Lease to be drilled at unorthodox locations as follows:

WELL NO.	UNIT LETTER	LOCATION
4	E	1330' FNL and 1310' FWL
5	E	1330' FNL and 10' FWL

and also through six wells on its M. E. Hall Lease to be drilled at unorthodox locations as follows:

WELL NO.	UNIT LETTER	LOCATION
14	K	2630' FSL and 1330' FWL
15	K	2630' FSL and 2630' FWL
16	J	2630' FSL and 1330' FEL
17	N	1310' FSL and 1330' FWL
18	P	1310' FSL and 10' FEL
19	P	10' FSL and 1310' FEL

all of the above wells being in Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico.

(3) That the applicant also proposes to complete two new producing wells in said Section 35, to be drilled at unorthodox locations as follows:

WELL NO.	UNIT LETTER	LOCATION
12	O	1310' FSL and 2630' FEL

13 P 1310' FSL and 1310' FEL

(4) That the wells described in Findings Nos. (2) and (3) above, together with the presently existing wells on the aforesaid Mable and M. E. Hale leases, and the offsetting injection wells which are to be drilled by other operators in accordance with certain lease-line agreements between applicant and said offsetting operators, will provide a thorough and efficient sweep of the hydrocarbons underlying the entire project and will result in the recovery of otherwise unrecoverable oil and gas, thereby preventing waste.

(5) That the above described injection wells, some of which will be at unorthodox locations along the outer boundaries of the Hale and Mable Leases in accordance with the aforemetioned lease-line agreements, will not impair but will protect correlative rights.

(6) That the applicant seeks to have the entire Hale Lease and the entire Mabee Lease designated as the Phillips Hale-Mabee Pressure Maintenance Project with the project area to be congruent to the leases upon active injection into all the proposed injection wells.

(7) That the project area should comprise all of the Hale and Mabee leases upon active injection into each of the proposed injection wells inasmuch as each 40-acre tract within said leases has been developed by having at least one well completed in the Vacuum Grayburg-San Andres Pool thereon.

(8) That each lease in the project area should receive its own project area allowable, and each lease's project area allowable should be equal to the sum of the individual lease's

basic project allowable plus the individual lease's water injection credit allowable.

(9) That the individual lease basic project area allowable should be equal to 80 barrels of oil per day times the number of developed 40-acre proration units on the lease.

(10) That the individual lease water injection credit allowable should be based on the following formula:

$$\text{Water Injection Credit Allowable} = \left[\frac{\text{Net Water Injected}}{\text{Basic Lease Allowable}}\right] - 1 \times \text{Basic Lease Allowable}$$

and should be calculated in accordance with the formula and parameters set forth in Exhibits "A" and "B" attached hereto.

(11) That a weighted average project area reservoir pressure should be determined prior to commencement of water injection and at least annually thereafter.

(12) That each lease's project allowable should be permitted to be produced from the wells on that lease in any proportion.

(13) That the Division Director should have the authority to approve, without notice and hearing, the drilling of production and injection wells at unorthodox locations anywhere within the project area, provided however, that no unorthodox location should be closer than 10 feet to any quarter-quarter section line, and provided further, that no such unorthodox location should be closer than 330 feet to the outer boundary of the project unless such location is covered by a lease-line

basic project allowable plus the individual lease's water injection credit allowable.

(9) That the individual lease basic project area allowable should be equal to 80 barrels of oil per day times the number of developed 40-acre proration units on the lease.

(10) That the individual lease water injection credit allowable should be based on the following formula:

$$\text{Water Injection Credit Allowable} = \left[\frac{\text{Net Water Injected}}{\text{Basic Lease Allowable}}\right]^{-1} \times \text{Basic Lease Allowable}$$

and should be calculated in accordance with the formula and parameters set forth in Exhibits "A" and "B" attached hereto.

(11) That a weighted average project area reservoir pressure should be determined prior to commencement of water injection and at least annually thereafter.

(12) That each lease's project allowable should be permitted to be produced from the wells on that lease in any proportion.

(13) That the Division Director should have the authority to approve, without notice and hearing, the drilling of production and injection wells at unorthodox locations anywhere within the project area, provided however, that no unorthodox location should be closer than 10 feet to any quarter-quarter section line, and provided further, that no such unorthodox location should be closer than 330 feet to the outer boundary of the project unless such location is covered by a lease-line

agreement with the operator of the lands offsetting such location.

(14) No well should be placed on water injection in the Hale-Mable Pressure Maintenance Area unless the Division Director has approved such well for injection. Applications for injection approval should be filed in accordance with Rule 701 of the Division Rules and Regulations.

(15) Each newly drilled injection or producing well should be equipped with surface casing (minimum 350 feet) and "production" casing run to total depth (approximately 5000 feet). All casing strings should be cemented to the surface except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and cemented to the surface, the ~~"~~production~~"~~ string could be cemented back into the base of the intermediate casing.

(16) Injection should be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing should be corrosion protected by a non-reactive internal lining or coating and the casing-tubing annulus in each injection well should be filled with an inert fluid and a surface pressure gauge or approved leak detection device shall be attached to the annulus.

(17) The injection wells or system should be equipped with a pressure control device or other acceptable device ~~substitute~~ which will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost perforation. The Division Director should be authorized to administratively authorize a pressure limitation in excess of the above upon showing by the

project operator that such higher pressure will not result in fracturing of the confining strata.

(18) All wells within the individual lease project area should be equipped with risers or in some other acceptable manner as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

(19) The project operator should immediately notify the Supervisor of the Hobbs District Office of the Division of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the individual lease project area, or any other evidence of fluid migration from the injection zone, and should take such timely steps as may be necessary or required to correct such failure or leakage.

(20) Each month the project operator should submit to the Division a Pressure Maintenance Project Operator's Report, on a form prescribed by the Division, outlining thereon the data required and requesting allowables for each of the several wells in the Project as well as the total individual lease project area allowable.

(21) The Division should, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells on each lease in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated should be assigned to each lease in the Project and, ~~except~~ as provided in Finding No. (12) ~~under Rule 6~~ above, could be produced from the wells ~~in~~ on that lease in ~~the Project in~~ any proportion.

(22) That the applicant, Phillips Petroleum Company, should consult with the Supervisor of the Hobbs District Office of the Division and other affected party and determine the course of action necessary to render the Conoco Inc. State H-35 Well No. 11, located 660 feet from the North line and 2180 feet from the West line of Section 35, Township 17 South, Range 34 East, NMPM, safe for nearby water injection into the San Andres formation.

(23) That an order embodying the above findings and authorizing the proposed pressure maintenance project is in the interest of conservation, will prevent waste and protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to institute a Vacuum Grayburg-San Andres pressure maintenance project on its Mable Lease, comprising the W/2 NW/4 of Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, and on its M. E. Hale Lease, comprising the E/2 SW/4 and SE/4 of said Section 35, by the injection of water into the Grayburg and San Andres formations through eight injection wells to be drilled at unorthodox locations (also hereby approved) as follows:

LEASE	WELL NO.	UNIT	LOCATION
Mable	4	E	1330' FNL and 1310' FWL
Mable	5	E	1330' FNL and 10' FWL
M.E. Hale	14	K	2630' FSL and 1330' FWL
M.E. Hale	15	K	2630' FSL and 2630' FWL
M.E. Hale	16	J	2630' FSL and 1330' FEL
M.E. Hale	17	N	1310' FSL and 1330' FWL

M.E. Hale	18	P	1310' FSL and 10' FEL
M.E. Hale	19	P	10' FSL and 1310' FEL

all in Section 35, Township 17 South, Range 34 East, NMPM.

(2) That the applicant is hereby authorized to drill two producing wells at the following unorthodox locations in Section 35, Township 17 South, Range 34 East, NMPM:

LEASE	WELL NO.	UNIT	LOCATION
M.E. Hale	12	O	1310' FSL and 2630' FEL
M.E. Hale	13	P	1310' FSL and 1310' FEL

(3) That the project herein authorized shall be known as the Phillips Hale-Mable Vacuum G-SA Pressure Maintenance Project and shall be governed by special rules and regulations hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS

FOR THE

PHILLIPS HALE-MABLE VACUUM G-SA

PRESSURE MAINTENANCE PROJECT

RULE 1. The Phillips Hale-Mable Vacuum G-SA Pressure Maintenance Project shall, in the absence of unitization, actually be considered two separate and distinct pressure maintenance projects, one on the Mable Lease comprising the W/2 NW/4 of Section 35, Township 17 South, Range 34 East, NMPM, Lea County, New Mexico, and the other on the M. E. Hale Lease comprising the E/2 SW/4 and SE/4 of said Section 35. Allowables and Water Injection Credits, as well as production accounting, shall be on an individual lease basis.

RULE 2. The overall Project Area of the Hale-Mable Vacuum G-SA Pressure Maintenance Project shall consist of those proration units within the M. E. Hale and Mable leases, upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

RULE 3. The individual lease project area shall receive a project area allowable, and said project area allowable shall be the sum of the individual lease basic project area allowable plus the individual lease water injection credit allowable.

RULE 4. The individual lease basic project area allowable shall be equal to 80 barrels of oil per day times the number of developed 40-acre proration units in the lease project area.

RULE 5. The individual lease water injection credit allowable shall be contingent upon full reservoir voidage replacement of all produced fluids and shall be based upon the following formula:

$$\text{Water Injection Credit Allowable} = \left[\frac{\text{Net Water Injected}}{\text{Basic Project Area Allowable} \times \text{Reservoir Voidage}}\right] - 1 \times \text{Basic Project Area Allowable}$$

The water injection credit allowable shall be calculated in accordance with the procedures and parameters depicted on Exhibits "A" and "B".

In no event shall the individual lease water injection credit allowable be less than zero, i.e., negative

numbers derived from application of the above formula shall be ignored.

RULE 6. The weighted average project area reservoir pressure shall be determined prior to commencement of injection of water into the reservoir and at least annually thereafter. The weighted average project area pressure shall be determined from the pressures in representative wells selected by ~~Phillips Petroleum Company~~ the project operator and the Supervisor of the Hobbs District Office of the Division.

RULE 7. The individual lease project area allowable may be produced from the wells within the individual lease project area in any proportion, provided however, that any proration unit outside the individual lease project area shall not be permitted to produce in excess of 80 barrels of oil per day.

RULE 8. Those wells within the Hale-Mable Leases that are not included within the project area as defined above, shall be prorated in accordance with the Rules and Regulations of the Division.

RULE 9. The Division Director shall have the authority to approve, without notice and hearing, the drilling of wells at unorthodox locations anywhere within the project boundary, provided that no such unorthodox location shall be closer than 330 feet to the outer boundary of the project, unless such well is covered by a lease-line agreement with the operator of the lands offsetting such well, and a copy of the lease-line agreement accompanies the application for such unorthodox location, or unless such offset operator has waived objection to the proposed unorthodox location in writing, and his waiver accompanies the application.

RULE 10. No well other than those originally authorized for injection shall be placed on water injection in the Hale-Mable Vacuum G-SA Pressure Maintenance Project unless the Division Director has approved such well for injection. Applications for injection approval shall be filed in accordance with Rule 701 of the Division Rules and Regulations.

RULE 11. Each newly drilled injection or producing well shall be equipped with surface casing (minimum 350 feet) and ~~production~~ OK ~~casing~~ OK run to total depth (approximately 5000 feet). All casing strings shall be cemented to the surface except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and cemented to the surface, the ~~production~~ string may be cemented back into the base of the intermediate casing.

RULE 12. Injection shall be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing shall be corrosion protected by a non-reactive internal lining or coating. The casing-tubing annulus in each injection well shall be filled with an inert fluid and a surface pressure gauge or approved leak detection device shall be attached to the annulus.

RULE 13. The injection wells or system shall be equipped with a pressure control device or other acceptable device which will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost perforation. The Division Director may administratively authorize a pressure limitation in excess of the above upon showing by Phillips Petroleum Company that such higher pressure will not result in fracturing of the confining strata.

RULE 14. All wells within the individual lease project area shall be equipped with risers or in some other acceptable manner as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

RULE 15. The project operator shall immediately notify the Supervisor of the Hobbs District Office of the Division of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the individual lease project area, or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

RULE 16. Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report, on a form prescribed by the Division, outlining thereon the data required and requesting allowables for each of the several wells in the Project as well as the total individual lease project area allowable.

RULE 17. The Division shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells on each lease in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to each lease in the Project and, ~~except~~ as provided under Rule ~~6~~ 7 above, may be produced from the wells ~~in~~ on ~~the Project~~ that lease in any proportion.

(4) That the applicant, Phillips Petroleum Company, shall consult with the Supervisor of the Hobbs District Office of the Division and with any other affected party and determine the

course of action necessary to ensure the integrity of the Conoco Inc. State H-35 Well No. 11, located in 660 feet from the North line and 2180 feet from the West line of Section 35, Township 17 South, Range 34 East, NMPM, prior to placing Mable Wells Nos. 4 or 5, or M. E. Hale Wells Nos. 14 or 15, on active water injection.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY,
Director

S E A L

Cont to
9/29

DOCKET MAILED

Date 9/3/82

9/20/82

(Texaco and Enserch)