CASE 7318: PHILLIPS PETROLEUM COMPANY
FOR SALT WATER DISPOSAL, ROOSEVELT
COUNTY, NEW MEXICO

Case No.

7318

Application

Transcripts

Small Exhibits

ETC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

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September 2, 1981

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

Re: CASE NO. 7318
ORDER NO. R-6767

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 ____
Artesia OCD x
Aztec OCD ____

Other William F. Carr

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. 7318
Order No. R-6767

APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR SALT WATER DISPOSAL, ROOSEVELT COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 29, 1981, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 2nd day of September, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Phillips Petroleum Company, is the owner and operator of the Peterson "H" Well No. 1, located in Unit M of Section 29, Township 5 South, Range 33 East, NMPM, South Peterson Field, Roosevelt County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Wolfcamp formation, with injection into the perforated interval from approximately 7332 feet to 7341 feet.

(4) That the offset operator to the West, Enserch Exploration, Inc., objected to utilization of the proposed disposal interval and well.

(5) That said objection was predicated upon the potential for hydrocarbon production from such interval in its Lambirth Well No. 7 located in Unit P of Section 30 and its Lambirth Well No. 3 located in Unit G of Section 31, both in Township 5

South, Range 33 East, and its Lambirth Well No. 11 located in Unit M of Section 1, Township 6 South, Range 33 East, NMPM, Lea County, New Mexico.

(6) That while the protestant presented evidence to demonstrate that the proposed disposal zone was productive of gas approximately five to six miles to the South, there were no drill stem tests nor any other definitive evidence presented from which a reasonable determination could be made that any of said wells could produce hydrocarbons from the proposed disposal zone.

(7) That the proposed disposal zone in said Peterson "H" Well No. 1 exhibits greater apparent permeability, porosity, and thickness than other wells in the area, including those listed in Finding No. (5) above, it is structurally lower than said wells, and is productive of water only.

(8) That while there is no substantial evidence of the same, hydrocarbons could conceivably be found up dip from said Peterson "H" Well No. 1 in the proposed disposal interval.

(9) That reasonable projections of disposal volumes and calculations of the radius of encroachment of the injected fluid in the zone indicate that the injected fluid will not move off applicant's lease for three years nor intercept protestant's closest well for approximately seven years.

(10) That these time periods will permit the protestant to more fully evaluate the disposal interval under its properties in said field and develop evidence as to the productive potential of the proposed disposal zone.

(11) That the protestant should be permitted to return and renew its objection to the use of the proposed disposal well at any time within the next seven years, when and if, substantial evidence of such hydrocarbon production potential is available.

(12) That the injection should be accomplished through 2 7/8-inch plastic lined tubing installed in a packer set at approximately 7300 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(13) That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1466 psi.

(14) That the Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the Wolfcamp formation.

(15) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(16) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(17) That approval of the subject application with the provision for permitting reopening of protestant's objection, will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company. is hereby authorized to utilize its Peterson "H" Well No. 1, located in Unit M of Section 29, Township 5 South, Range 33 East, NMPM, South Peterson Field, Roosevelt County, New Mexico, to dispose of produced salt water into the Wolfcamp formation, injection to be accomplished through 2 7/8-inch tubing installed in a packer set at approximately 7300 feet, with injection into the perforated interval from approximately 7332 feet to 7341 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1446 psi.

(3) That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Wolfcamp formation.

(4) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(5) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 706 and 1120 of the Division Rules and Regulations.

(7) That the Division may reopen this case at any time within the next seven years upon application and demonstration by the protestant of substantial evidence that there is hydrocarbon production potential in its wells from the Wolfcamp disposal zone which may be affected by the continued disposal of water into said Peterson "H" Well No. 1.

(8) 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

JOE D. RAMEY
Director

S E A L

fd/

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

EXAMINER HEARING

IN THE MATTER OF:

Application of Phillips Petroleum Company for salt water disposal, Roosevelt County, New Mexico. — CASE 7318

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:	Ernest L. Padilla, Esq. Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501
For the Applicant:	W. Thomas Kellahin, Esq. KELLAHIN & KELLAHIN 500 Don Gaspar Santa Fe, New Mexico 87501
For Enserch Exploration:	William F. Carr, Esq. CAMPBELL, BYRD, & BLACK P.A. Jefferson Place Santa Fe, New Mexico 87501

I N D E X

I N D E X

E X H I B I T S

I N D E X

MR. STAMETS: We'll call next Case 7318.

MR. PADILLA: Application of Phillips Petroleum Company for salt water disposal, Roosevelt County, New Mexico.

MR. STAMETS: Call for appearances.

MR. KELLAHIN: I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the law firm Campbell, Byrd, and Black, Santa Fe, New Mexico, appearing on behalf of Enserch Exploration, Inc.. I have two witnesses.

MR. STAMETS: I'd like to have all the witnesses stand and be sworn at this time, please.

(Witnesses sworn.)

JERRY L. BLEVINS

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Blevins, would you please state

your name and occupation?

A. My name is Jerry Lynn Blevins. I'm a petroleum engineer for Phillips Petroleum in Odessa, Texas.

Q. Mr. Blevins, have you previously testified before the Division as a petroleum engineer and had your qualifications accepted and made a matter of record?

A. Yes, sir, I have.

Q. Would you describe generally what you're seeking to accomplish by this application?

A. We're seeking to inject water in our Peterson "H" No. 1 Well in Section 29, Roosevelt County, New Mexico, Peterson South Field.

Q. This is the South Peterson Field?

A. Yes, sir.

Q. All right. And what formations are productive in the South Peterson Field?

A. The Fusselman and the Penn.

Q. Have you made a general study of the area with regards to the production out of the Pennsylvanian and Fusselman formations and the disposal of that produced water?

A. Yes, sir, I have.

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

MR. STAMETS: The witness is considered qualified.

Q. Let me direct your attention to what we've marked as Applicant Exhibit Number One and have you identify for us the proposed disposal well.

A. This is a plat showing our proposed disposal well marked by the green arrow with a half mile radius circle, the inner circle, and a two mile radius of the area on the outer circle, the blue indication of a Penn completion, the pink indication of a Fusselman completion well in South Peterson and part of the Peterson Field to the north of here.

Q. What's the current status of the proposed disposal well, the Peterson "H" Well No. 1?

A. It's shut in pending approval of the application to dispose of water.

Q. Was that well originally drilled as an attempted completion of a producing well?

A. Yes, sir, we drilled that well as a Fusselman completion. After testing several zones in the Fusselman we had to plug back. We tried to complete in the Penn. These attempts also proved futile and we plugged back to perforate and try to complete a Wolfcamp formation well. Logs indicated that we had possible production --

Q. In the Wolfcamp?

A. -- in the Wolfcamp.

Q. What happened when you perforated the Wolfcamp?

A. Test results after we perforated showed it produced 100 percent water.

Q. This was formation water out of the Wolfcamp?

A. Yes, sir.

Q. And it was void of any hydrocarbons?

A. Yes, sir.

Q. All right. Now it's the Wolfcamp formation in that proposed well that you intend -- request to be used as a disposal formation.

A. Yes, sir, it is.

Q. All right. Tell me how many wells there are in this South Peterson Field, Mr. Blevins.

A. Well, currently there's ten Fusselman completions and five Penn completions. There's also one well that's in Section 1 of Township 5 South, Range 33 East, the Enserch Lambirth No. 11, and it's uncompleted. We don't know where that's at right now.

Q. How is the operation of those ten wells divided among Phillips and Enserch?

A. Five Fusselman wells each for us, and two Penn wells each for us, and one Penn well belonging to Energy Reserves Group.

Q. Would you identify for us the location in Section 32 that was the subject of a previous Commission hearing with regards to Enserch's application for a disposal well in this area?

A. Their well was their Rader No. 2. I think it's about, oh, 500 to 600 foot from the west line and probably, oh, 1500 - 1600 foot from the north line of Section 32.

Q. It is that dry hole symbol in the south side of the half mile radius circle?

A. Yes, sir, sure is.

Q. And it says No. 2?

A. Yes, sir, that's the well.

Q. And that is the Enserch well that was the subject of that Division Case 7226?

A. Yes, sir.

Q. All right. And what did they propose to do with the water to be disposed of in that well?

A. Their well, they proposed to dispose of in the Montoya formation, which is below the Fusselman in the well.

Q. And while we're looking at Exhibit

Number One, Mr. Blevins, would you identify for us any other wells within the area that you have examined as possible disposal wells for water produced from the South Peterson Field?

A. We've examined all wells in Section 31, Section 36, the wells that are the Phillips Goldston "A" No. 2 and Goldston "A" No. 1 generally in the south side. We have attempted to get logs on the north side of the well in the Peterson Field but we didn't have the logs and weren't able to get them.

Q All right, let's look at Section 36 and you've identified the two Phillips Goldston "A" Wells in the southeast quarter of Section 36.

A. Yes, sir.

Q Describe for me why, in your opinion, those are not suitable disposal wells.

A. Well, Goldston "A" No. 1 was plugged and abandoned several years ago and the casing was pulled so it was not adequate.

The Goldston "A" No. 2 was completed as a Penn well, I believe, and also subsequently had been plugged. They had attempted to complete in several different intervals over there and ended up plugging the well. So we felt that we had a hole over here in Section 29 that we had drilled, we attempted to complete, and since we had it cased we knew it was good casing, good cement job, that we ought to try to make a disposal well while we had the chance.

Q. All right. What are you currently doing with the water produced from your Fusselman and Pennsylvanian wells in the South Peterson Field?

A. Currently we have -- again, we own some acreage in Peterson Field with Amoco, and part of our water, when Amoco's able to handle it, goes to the Peterson Field itself to be disposed of.

Q. Peterson Field lies north --

A. North of us, yes, sir.

Q. -- of this plat?

A. Yes. Well, the northern part of these Penn wells that you see colored in as Peterson Field.

Q. Those wells up in Section 20 and 19 would be in another -- in the Peterson Field?

A. Yes, sir.

Q. All right.

A. They are.

Q. And when Amoco is not able to take that produced water what do you do with it?

A. We truck it several miles to the south of us and have it disposed of thataway.

Q. Let's turn to Exhibit Number Two. Would you identify for me what Exhibit Number Two is?

A. Exhibit Number Two is Form C-108. It's an application to dispose of water by injection into a porous formation, that's turned into the State. It's the general form accepted up until the July 1st of this year. And we filed in the application, it just gives the minimum and maximum that we expect to inject, the closed system, and the anticipated pressure.

Q. All right, let's talk about those for a moment. What do you estimate to be the anticipated daily injection volume for the proposed disposal well?

A. Currently we produce about 300 barrels of water a day and that's what we anticipate the minimum. Within a 10-year period we expect that to go to 1000 barrels a day, which is what we're applying for.

Q. All right, sir. And explain to me the request for the pressure injection? What is meant by that?

A. Basically, that's the pump pressure that we've got to pump into the formation to inject the water. It will have to be pumped in under pressure. It wouldn't take it on gravity flow, and so we'll have to install a pump system to inject the water.

Q. Are you familiar with the Division memorandum with regards to injection pressures in disposal wells?

A. Yes, sir, I am.

Q And the criteria of 0.2 psi per foot of depth?

A. Yes, sir, I am.

Q In terms of that memorandum, Mr. Blevins, how would you relate this pressure?

A. The maximum pressure we could inject in is 1466.4 psi.

Q. Under the memorandum?

A. Under the memorandum, yes, sir.

Q All right, so you'd be injecting a lot less than the maximum allowed under that Division memorandum?

A. Yes, sir, I would.

Q All right. Let's go to Exhibit Number Three and have you tell me what that is.

A. Number Three is a revised Form C-108. This basic difference between this form and the previous exhibit has a contact party in who to get in touch in case something was to go wrong with the system or for any information needed.

Q During the course of having this application filed and processed the Division changed or modified its rules on disposal wells? And this is an amended application?

A. Yes, sir, it is.

Q In conformance with those rules?

A. Yes, sir, it is.

Q Now if you'll continue to look at Exhibit Number One for me, and in relation to some of the information on Exhibit Number Three that you're required to furnish, I want to direct your attention down to paragraph number twelve of the Exhibit Three, where it requests a statement from you with regards to your examination of information concerning open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

Where do you generally find the sources of drinking water in this area, Mr. Blevins?

A. There's remnants of the Ogallalah at approximately 300 to 350 feet. We set surface pipe below that zone and cement it to the surface to protect the fresh waters in the area.

Q At generally what depth do you encounter the fresh water sand?

A. 300 to 350 feet, somewhere in that neighborhood.

Q And you're injection depth will be approximately what depth?

A. 7332 feet.

Q All right. In your opinion is the method of completion in the disposal well such that the injection formation is going to be adequately cemented and protected between that formation and any fresh water sand?

A. Yes, sir, it will.

Q Let's go on then to Exhibit Number Four and have you tell me about that.

A. Exhibit Number Four is the wells that are shown on Exhibit Number One within that half mile radius of our Peterson"H" No. 1. We give the location of the Amoco Peterson "B" No. 1; it's the dry hole to the north of our well; the Enerch Lambirth No. 7, the direct western offset to our No. 1 Well; Enserch Rader No. 2, the dry hole in Section 32, which is south of our well; the Phillips Lambirth "A" No. 4 to the southwest of our No. 1 Well; and our well itself.

We give the distances from our well to the other wells within a half mile radius. We show you the casing strings and setting depths; the sacks of cement used to -- behind the pipe on each string; where the cement tops were located; the total depth of the well; the current producing interval; the current producing formation; and the RKB elevation.

Q Would you identify for me the source of the information used to prepared this exhibit?

A. This information comes from the State records.

Q From the information you've examined, Mr. Blevins, is -- in your opinion are all of the wells found within the half mile radius sufficiently completed or cased or plugged and abandoned in such a way that fluids injected into the Wolfcamp will remain confined to the Wolfcamp?

A. Yes, sir.

Q Let's look at Exhibit Number Five and have you tell me what that is.

A. Exhibit Number Five is a listing of all the wells within the two mile radius of our well; the unit location; their section, township, and range; the distance from our Peterson "H" No. 1; and their current producing formation.

Q You indicate down here in the last entry on the second page the Phillips Peterson "H" No. 1. That is the disposal well, is it not?

A. Yes, sir.

Q And you've got down current producing formation. It has not produced from the Wolfcamp, has it?

A. Just water.

Q. Are there any wells within the two mile radius that have ever produced any hydrocarbons from the Wolfcamp formation?

A. Not that I could find.

Q. To the best of your knowledge is the Wolfcamp productive in this area?

A. No, sir.

Q. Apart from the attempt to complete and produce out of the Wolfcamp in the proposed disposal well, has Phillips ever attempted to complete the Wolfcamp in any of its other wells in the area?

A. No, sir. We -- the Fusselman and the Penn production was the basis of all the wells drilled out there and they're all producing right now.

The Goldston "A" No. 1 was drilled as a Fusselman completion. They had problems, they plugged that well. They drilled the No. 2 and attempted to complete it. It produced for a little while in the Penn and then plugged back. And then the rest of the wells were drilled subsequent to that.

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

A. Exhibit Number Six is a plat with the structure based on the top of the Wolfcamp. The green arrow indicates our Peterson "H" Well and where we set. This just shows what the formation would look like, based on the subsea depths.

Again, the pink color is Fusselman completion. The blue color is Penn completions.

Q What is -- what is the significance of Exhibit Number Six, Mr. Blevins?

A. It would show where we are structurally. You wouldn't want to inject water on the peak of a structure without risking a chance of watering out other wells that could have been productive. We're on the lower side. One well that is lower than ours is our No. 4-A Well. That's the only well structurally lower on this side of the field than ours, and our water, we would believe, would drain, gravity drainage or pumped in, and it would drain to the south and to the east, based on what we see on the structure.

Q So the only well that is structurally lower to the disposal formation is the Phillips 4-A Well?

A. Yes, sir, it is.

Q All right, let's go to Exhibit Number Seven. Mr. Blevins, let me ask you to identify Exhibit Number Seven and tell us what it is.

A. Exhibit Seven is a southwest/northeast cross section of the Peterson South Field. In the far righthand corner you will see the plat showing the wells connected by the line that are on the cross section. The yellow arrow indicating again our Peterson "H" No. 1 Well.

The coloring as far as the pink and the blue are still Fusselman and Penn, as in our previous exhibits.

Q. Why have you drawn this cross section or used the cross section for these wells across this field?

A. Basically it shows the zone that we're planning on injecting into continuous across the field and that's the basis of the cross section.

Q. The purpose is to demonstrate that there is some indication of the Wolfcamp formation across the field as identified in the cross section?

A. Yes, sir.

Q. Now would you identify for us the proposed disposal well?

A. All right, the proposed disposal well, Peterson "H" No. 1, is the log you see closest to the lease plat.

Q. It would be on the far right?

A. On the far right, next to A'.

Q. All right.

A. This is indication -- the yellow band going across there is part of the Wolfcamp where we have perforated and would propose to inject water.

Q That yellow band demonstrates your opinion with regards to the top and the bottom of the Wolfcamp?

A. No, sir.

Q As indicated on that log?

A. No, sir.

Q All right, what is it?

A. This is the -- the yellow band is just used to highlight the particular part of the Wolfcamp, the tight zone, throughout the -- continuation throughout South Peterson Field.

Q All right.

A. The top of the Wolfcamp is noted by the line just directly above it and it runs to the Penn, which is the next to the bottom line designated by the OCD.

Q With regards to the log indication identified in yellow for the disposal well, that represents the zone in the Wolfcamp that you tested for production?

A. Yes, sir. The log, you'll notice the high porosity over on the far righthand side, the kick to the left opposite to where we perforated, says we have 9/10 porosity throughout this zone, and that's the reason we perforated there to try to produce it.

Q Despite the fact that you found 9 or 10 percent porosity, in fact all you recovered was formation water, wasn't it?

A. Yes, sir, it was.

Q. All right, let's follow that yellow line across the cross section now, Mr. Blevins, and would you locate for me any of the wells on the cross section that show an indication of possible production greater than that tested in your disposal well?

A. Well, just on this one log you can't say that, but on the study I made of both logs run on each of these wells, there's none that has a greater potential than our Peterson "H" did.

Q. And despite that potential you couldn't get any hydrocarbons out of it?

A. True.

Q. All right. Now, Mr. Blevins, what separates the Wolfcamp formation from the producing formations in the Pennsylvanian wells?

A. Separates them as far as the cement behind their pipe or --

Q. No, sir. What would prevent water being disposed of in the Wolfcamp formation from going into --

A. From migrating?

Q. -- migrating into the Pennsylvanian?

A. Oh, the Wolfcamp itself has several tight zones in which the shale barriers would not permit the water to transmit across themselves. The extremely messed up part of the log where it's difficult to read anything, would be one such instance. The tightness in some of the zones have a tendency to -- the shales will affect your log. It will look good as far as porositywise but extremely bad for productionwise. They're very impermeable, and so the water won't migrate across there.

Q. In your opinion is that impermeable barrier between the Wolfcamp and the Pennsylvanian correlative across the pool?

A. Oh, yes, sir.

Q. All right.

MR. STAMETS: Mr. Blevins, for the record could you cite such an example by footage on one of these logs?

A. If you'll look approximately at 7400 foot on the Peterson "H", you'll notice the righthand side of the logs are very scattered and stuff. There are sand or I mean lime or dolomite type barriers intermixed with shale type zones in between, and the shales would not let the water transmit through them.

MR. STAMETS: And your testimony is that

these are -- these zones are essentially continuous across this area.

A. Yes, sir.

MR. STAMETS: And would provide an effective seal from -- against downward migration of the injected fluid.

A. Yes, sir.

MR. STAMETS: Okay.

Q Are you aware of any information that would tend to support a different conclusion, Mr. Blevins?

A. No, sir.

Q No doubt in your mind that these -- the Wolfcamp disposal water would be remaining confined in the Wolfcamp?

A. Yes, sir, it would.

Q. Let's go to Exhibit Number Eight. Describe that for us, will you, Mr. Blevins?

A. Exhibit Number Eight is a wellbore schematic of the Peterson "H" Well proposed to inject water. It shows the casing strings, the hole sizes, the cement, the sacks of cement we used to cement off the casing. Gives an indication of the top of cement at 5210. Our perforations are at 7332 to 7341.

We squeezed off the three lower sets of

perforations. There's a retainer above the Penn squeeze job at 7499 that would not permit fluid migration up through the wellbore. The cement job would not permit fluid migration outside of the wellbore and the shale zones themselves would not permit fluid outside of the radius of the wellbore.

On the lefthand side you'll see the tops of prospective formations as they occur in our wellbore and our tubing and packer set approximately 7300 foot for the packer, with one joint of tubing below it for the injection. It will be Salta-lined tubing (sic).

MR. STAMETS: What is Salta line?

A. It's a type of plastic. Our production people, though, tell me it's not called plastic. It's called Salta and that's what they wanted me to put on there.

MR. STAMETS: If an order authorized you to have plastic-lined tubing I assume you would consider Salta as a plastic lining.

A. Yes, sir.

MR. STAMETS: Very good.

Q Mr. Blevins, you've shown on this Exhibit Number Eight the disposal formation to be at 7332 to 7341?

A. Yes, sir.

Q And you've identified it as a Todd?

A. Yes, sir. Basically correlated across the fields, there's a field about ten miles away, it's the Todd Wolfcamp Field, and we called this, for a lack of anything else, the Todd zone of the Wolfcamp.

Q. All right. So this is a portion of the Wolfcamp.

A. Yes, sir. On the lefthand side you'll notice that we're in the Wolfcamp section over here.

Q What are you going to do at the surface?

A. There's two gauges that will be placed on the 5 -- in between the annulus of the 2-7/8ths and the 5-1/2 inch casing and also another pressure gauge on the -- between the annulus of the 5-1/2 inch casing and the 8-5/8ths inch casing, to monitor for tubing leaks or casing leaks that could be caused by the disposal of the water.

Q Let's go to Exhibit Number Nine. What is this exhibit, Mr. Blevins?

A. Exhibit Number Nine is our water injection calculations. Basically we -- the proposed injection zone where the perforations are, the net interval is 9-foot; corrected porosity is 15.6 percent; the formation volume factor of the water is 1.01. With our static fluid level we attempted to estimate the bottom hole pressure. You'll see a calculation number one to be about 2775 psi.

Our maximum allowable pressure with .2 psi per foot gradient and times the top perforation at 7332 would be 1466 psi.

Q. This is the number using the standard established by the Division?

A. Yes, sir. We don't plan to inject at 1466. We only plan to inject at 1400.

Q. All right, sir.

A. Number three is our reservoir volume that we calculate the encroachment of the water. Based on the constant injection of 300 barrels of water per day, after 10 years we would covered 101.5 acres, or a radius of 1186 feet. This is about .22 miles.

Based on what we anticipate, though, the 13 percent increase a year, we would run from 300 to 1000 barrels after 10 years, we will get out 1610 feet, or about .3 of a mile.

Q. What's the purpose of the exhibit, Mr. Blevins?

A. This was to show how far our water that we injected would move away from the wellbore itself.

Q. That water, regardless of where it goes, is not going to water out Wolfcamp production in the area, is it?

A. No, sir, that water won't.

Q It's not a hazard to any production, so far as you know, is it?

A. Since there's no production, no, sir.

Q All right. All right, let's go to Exhibit Number Ten and have you tell me about that.

A. Exhibit Number Ten is our injectivity test that we ran on the Peterson "H" No. 1. Basically this is to decide if the formation will, one, take water, and two, what size pump we will need to pump it in.

We see no breakover in our instantaneous wellhead shutdown pressures; therefor, we feel that we have not reached the parting pressure of the formation and it will stay confined in there and we will always have to inject at a particular pressure.

Q All right, let me see if I understand the exhibit. The second dotted line or dashed line from the bottom up is labeled instantaneous wellhead shutdown pressure?

A. Yes, sir.

Q All right, and if I look at the pressure which is the vertical column, --

A. Yes, sir.

Q -- and if I look at 1600 psig --

A. Uh-huh.

Q -- have I reached a point if I inject at that pressure in which I am fracturing or parting the formation?

A. No, sir, you haven't.

Q. What would happen to the graph if at that point you were fracturing the formation?

A. Okay. If you were fracturing or parting at 1600, you would see this line just break over and essentially you'd see at no matter what rate you injected at, that would be the constant pressure.

Q. It would become a horizontal line straight along the 1600-foot pressure line?

A. Essentially, yes, sir.

Q. All right. So if you should inject above and beyond the anticipated injection pressure, you still would not part the formation?

A. Yes, sir, that's true.

Q. All right, sir, so let's look back now at the pressure you propose to inject in, the 1400 psig --

A. Yes, sir.

Q. -- at that point your calculation demonstrates that you would not fracture the formation?

A. That's true.

Q. All right. Is there anything else about this exhibit that you want to direct our attention to?

A. No, sir.

Q. All right. Let's go on to Exhibit Number Eleven.

A. Exhibit Eleven is a gamma ray injector profile temperature log. We ran this to be sure that the water that we were injecting was not communicated behind the pipe or in the formation as far as we could see. There's different runs on here. The indication from the man that ran it, said that there is no sign of communications on there. It's down in the interpretation at the bottom of the log itself. We have --

Q. Your study of that log also confirms that opinion ?

A. Yes, sir, it does.

Q. All right, and again, what is the purpose of Exhibit Eleven?

A. This is to show that there is no communication behind the pipe of the water that we are injecting.

Q. And this test shows that there is none?

A. Yes, sir. That's true.

Q. Exhibit Number Twelve.

A. Exhibit Number Twelve is a temperature survey ran on our well, Peterson "H" No. 1, by John West Engineering out of Hobbs.

Q This is a temperature survey on the disposal well?

A. Yes, sir, it is.

Q All right.

A. This is to show the top of cement behind the 5-1/2 inch casing. Based on his calculation the top of cement is approximately 5210 feet, which is what we previously entered on a previous exhibit.

Q And why is this important?

A. To show that where we are perforated in at 7332 feet is covered with cement, with sufficient cement above us that we would not break out and go into unprotected pipe or formations.

Q Exhibit Number Thirteen, Mr. Blevins.

A. Exhibit Number Thirteen is a water analysis. The first one of the three is on the Todd zone of the Wolfcamp. It shows that general measurements of the water.

The second one is the Fusselman; the third is the Penn.

This is to show the compatibilities of the waters with each other and that there is no major differences between them.

Q You can't drink any of this water from any of the three of these formations, can you?

A. No, sir.

Q. All right. You're not damaging or endangering any drinking water sources, are you?

A. No, sir, I'm not.

Q. Exhibit Number Fourteen.

A. Exhibit Number Fourteen is in compliance with the rules set up by the OCD to show that all plugged and abandoned wells within a half mile radius are sufficiently cemented off so as not to contaminate any formation.

Q. This is the P&A well to the north of the half mile radius circle on Exhibit Number One?

A. Yes, sir, this is the Amoco Peterson "B" No. 1.

Q. Okay, and in your opinion is it properly cemented and plugged so there wouldn't be fluids migrating out of the Wolfcamp?

A. Yes, sir, it is.

Q. I notice that you've not included a schematic of Enserch's P&A Well, the No. 2, in Section 32.

A. At the time we were preparing they had not P&A'd. They proposed for a Montoya completion -- injection disposal well, and we did not consider that plugged and abandoned at the time.

Q. All right. So apart from the Enserch

well in the south of the circle and the Amoco well in the north of the circle, there are no other plugged and abandoned wells except the disposal well?

A. True.

Q. All right. Exhibit Number Fifteen, Mr. Blevins, tell us about that.

A. Fifteen is a history of the Peterson "H" No. 1 Well. It was to show the tests and procedures of the different zones that we tried, and that they were unsuccessful. It's just for Commission information.

Q. All right. Exhibit Number Sixteen.

A. Exhibit Sixteen is the Easy Drill Squeeze packer, which is set below the Wolfcamp at 7499 on the well-bore schematic of the Peterson "H". This was requested by the Commission in our application to show what type of retainer that we had above our Penn perforations to insure that it is adequate to squeeze off all the possible communication in the wellbore.

Q. In your opinion is this an adequate squeeze packer to use for this purpose?

A. Oh, yes, sir, it is.

Q. Exhibit Number Seventeen.

A. Seventeen is just a compensated neutron formation density log of the Peterson "H". Again, this is just for the Examiner's convenience.

Q. Okay. Tell me something about the economics of this project, Mr. Blevins. What does it currently cost you in terms of barrels of water per day to truck this stuff away?

A. Oh, it's about $1.14 on the average for 1980 is what it cost us to truck the water away, and that includes the water that we disposed of in the Amoco well, which is cheaper than the trucking to the south of us. But on the average it's $1.14 a barrel.

Q. If the Division approves the -- this well for disposal in the Wolfcamp of the water produced from the Pennsylvanian and Fusselman wells, in your opinion would it lengthen the economic life of this project?

A. Yes, sir, it would.

Q. And why?

A. Basically it would reduce maintenance costs. You can produce the well at a lower rate economically and therefor it would recover more reserves.

Q. How long have you been working in this area, Mr. Blevins?

A. Approximately fourteen months.

Q. In your opinion is the proposed disposal formation in the proposed well the optimum well and formation to use of disposal of water produced in the South Peterson Field?

A. Yes, sir, it would be.

Q. Based upon your studies are you able to find or locate any other well or formation that could serve as a disposal formation or well for this disposed water?

A. We haven't been able to yet.

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

A. Yes, sir, it will.

Q. Were Exhibits One through Seventeen prepared by you directly or tabulated and compiled under your direction and supervision?

A. Yes, sir, they were.

MR. KELLAHIN: Let me take just a moment here. That concludes my examination of Mr. Blevins. We move the introduction of Phillips' Exhibits One through Seventeen.

MR. STAMETS: Without objection -- I believe there are eighteen, Tom.

MR. KELLAHIN: Eighteen?

A. Oh, the other log.

MR. STAMETS: There are two logs.

MR. KELLAHIN: I'm sorry, there are two

logs. Eighteen.

MR. STAMETS: Without objection these exhibits will be admitted.

Are there questions of this witness, Mr. Carr?

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Blevins, I would like to direct your attention to what I think is your Exhibit Number Two. It's a copy of Form C-108 which was filed with the Commission.

A. Yes, sir.

Q. Was this form previously submitted to Enserch?

A. Yes, sir.

Q. Have you amended it since the original time that -- I'm not trying to lead you into anything, but the figure that we had on the form that we saw was a minimum injection -- minimum injection volume of 400. Has that recently been changed? Is 300 correct?

A. 300 is correct, yes, sir, and we -- that was the amendment that we made on the form --

Q. Okay.

A. -- when we resent it in.

Q. Did you testify that 300 barrels a day was the water that you're currently producing from your operations in this area?

A. Yes, sir, that's basically what we've seen out there.

Q. Is the Amoco well actually taking any water or are you planning to dispose of all of your water into this disposal well?

A. This one, if we're granted the Peterson "H" No. 1, we would dispose of all the water that we could. It would have to be tested first. We're not for sure how far out this would go before pressure might exceed what we could inject at.

After the testing we would dispose of all our water into the well itself.

Q. And a maximum of 1000 barrels a day would meet your foreseeable needs.

A. Yes, projected on what I have now.

Q. I'd like you to now look at your structure map. I don't know what number it is.

Exhibit Number Six. I believe you stated and correct me if I'm wrong, that this is offered to show that you are -- would be injecting at a structural position whereby you would not be watering out any gas wells, if there are such in the Wolfcamp formation.

A. No, sir, I didn't say anything about gas wells.

Q What was the purpose of this exhibit?

A. This is to show that our well is structurally lower than the wells in the field on that side except for our No. 4-A Well, the only well which is lower than our well structurally.

Q If there was gas in the Wolfcamp, it would be above any water zone, is that correct?

A. It should be above it, yes, sir.

Q And so this injection zone is structurally low in the Wolfcamp, is that correct?

A. Yes, sir.

Q I believe you stated that you anticipated that the injection -- injection of fluids, the waters would generally drain to the south and east.

A. Based on what we can see here that's what we would anticipate.

Q And what are you basing that conclusion on?

A. Well, the well being injected, there's no pressure drainage in the Wolfcamp;since there's no pressure drainage it would drain due to gravity. We're structurally low. We anticipate the structure goes south is lower than us and we anticipate to the east is lower than what we are, and so that's why it would not drain toward No. 7, your No. 7 Well, because you're structurally higher than what we are.

Q Do you have any control to the east of the proposed injection well that would confirm your interpretation?

A. No, sir.

Q Now I'd like to have you look at Exhibit Number Seven, which is the long cross section. Does this exhibit show that the Wolfcamp injecting interval is continuous across this entire area?

A. Yes, sir.

Q And as such, do you still believe that the injection waters would drain off to the east and not across the interval which you've shown?

A. No, sir, it would be hard for them to run uphill and when you're injecting under pressure it will move -- migrate downward.

Q But -- and you do not think that it would be running to the west across the structure which you have shown on this cross section?

A. No, sir, not without a pressure drainage.

Q Does this show -- this does show, does it not, that the zone correlates over a wide area?

A. Yes, sir, it does.

Q. And the characteristics appear to be relatively the same in the Well Peterson "H" No. 1 at A' and also all the way in the Goldston Well, which is at "A" on the cross section?

A. Yes, sir, for the gamma ray it would.

Q. So you -- so the real purpose here is to show a high degree of correlation.

A. Yes, sir.

Q. Now, if we look at your water injection calculations, which is your Exhibit Number Nine, I believe you indicated that if you inject water at 300 barrels per day at a constant rate, you would anticipate at the end of 10 years that you would drain an area with a radius of 1186 feet.

A. Not drain, I would inject.

Q. I mean you would inject and you would --

A. Have a radius of 1186 feet for my injected water.

Q. And you'd have produced water within that radius in a circle.

A. I'm not following that.

Q. The injected water would reach 1186 feet from the wellbore.

A. Yes, sir.

Q. All right. How close is the Lambirth No. 3 Well to the proposed injection well?

A. Which No. 3, yours or ours?

Q. Ours.

A. Okay, you're 7700 feet from it. Your No. 7 Well is the closest well and it's 1400 feet from it.

Q. If you -- do you anticipate an increase in the volumes of water you will have to inject?

A. Yes, sir, I do. That's why we asked for 1000 barrels maximum.

Q. And if you go to 1000 barrel maximum, what is the radius that you feel there would be water encroachment?

A. 1610 feet.

Q. So it would reach the Lambirth No. 7 Well, which is 1400 feet away.

A. Yes, sir.

Q. If there were hydrocarbons --

A. If there was hydrocarbons present.

Q. Now, let me direct your attention to the well history, and I'm trying to read this and having trouble doing so.

I'm interested in the testing done in the Wolfcamp zone, which I believe is the last paragraph on page two of this exhibit. And I note in there it says no oil produced.

A. Yes, sir.

Q. Did you make any gas in the well?

A. No, sir.

Q. Now, it looks to me like you acidized this, is that correct?

A. Yes, sir.

Q. Do you know when this well was acidized?

A. Just prior to the time we ran our injectivity test. Let me think.

Q. Well --

A. Sometime last August.

Q. It says at the top August 1, 1980. Would it have been before that date or after that date?

A. No, this is after. This is chronological so we're after -- after we had tested this -- at August 1st we were testing the Penn and then after the Penn didn't prove productive we squeezed that off and we tested the Wolfcamp to try to find hydrocarbons and all we recovered was water, and then we acidized it and ran an injectivity test in it.

Q. Would that have been in close proximity with it? Do you think it would have been in August or would it have been later?

A. Probably in August that -- that year.

Q. All right. So your water analysis is actually a sample that you tock after you acidized, is that correct?

That's Exhibit Thirteen.

A. Yes, sir, much after we acidized.

Q. Now, Mr. Blevins, this question may sound familiar to you, but suppose there were hydrocarbons in the Wolfcamp underneath the Enserch lease that might be watered out in the No. 7 Well by injection.

Do you know of any way to monitor this situation and be certain that your injection water would not affect the hydrocarbons under the Enerch lease prior to any damage being done?

A. If by some remote possibility there were hydrocarbons there, no, it would be too expensive to monitor. You're talking $40,000 to set up a system to monitor.

MR. CARR: I have no further questions of Mr. Blevins.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Blevins, do you know what zone the

Amoco disposal well is utilizing?

A. Yes, sir.

Q. Is it the Wolfcamp zone?

A. No, sir, it's --

Q. Well, I think that's -- that's basically what I was trying to determine, Mr. Blevins.

A. I believe it is a Fusselman completion. The last testimony would have it in there. It just slips my mind now.

Q. Is that the only other disposal well which has been approved in this area?

A. As far as I know, sir.

MR. STAMETS: Are there any other questions of this witness? He may be excused.

MR. KELLAHIN: That concludes our direct case, Mr. Stamets.

MR. STAMETS: I believe we need to swear this witness. He was out of the room when we were swearing witnesses.

If you'd like to stand and be sworn, please.

(Mr. Renoult sworn.)

DANIEL C. RENOULT

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Daniel C. Renoult. I am employed by Enserch Exploration, Inc., in Midland, Texas.

Q. And, Mr. Renoult, in what capacity are you employed?

A. As a District Petroleum Engineer.

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

A. Yes, sir.

Q. Are you familiar with the application filed by Phillips in this case?

A. Yes, sir.

Q. Are you familiar with the subject area?

A. Yes, sir, I am.

MR. CARR: Are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q Mr. Renoult, have you prepared certain exhibits for introduction in this case?

A. Yes, sir, I have.

Q Will you please refer to what has been marked Enserch Exhibit Number One and explain what it is and what it shows?

A. Exhibit Number One is a map showing Enserch Exploration's acreage in part of Roosevelt County, New Mexico. Enserch Exploration acreage is shaded in gray on this map. Enserch Exploration has six wells currently producing in the subject area. These wells are located in the South Peterson Field.

This field was discovered by Enserch Exploration with the drilling of the Lambirth Well No. 1.

These six wells are evidenced by the red dot on this map. All these wells are currently producing from the Fusselman and/or Pennsylvanian formations. These two geological formations which are currently producing in the field are located below the Wolfcamp formation.

Phillips Petroleum proposed salt water disposal well, the Peterson "H" Well No. 1 is evidenced by the black arrow on this exhibit. The Phillips Petroleum

Peterson "H" Well No. 1 is located only 510 feet from Enserch acreage to the west. The Phillips Petroleum proposed salt water disposal well is located only 1170 feet from the Enserch Lambirth Well No. 7 to the west. The Enserch Exploration Well No. 7 is currently completed through and producing from the Fusselman formation. The Enserch Lambirth Well No. 7 exhibits up-hole recompletion possibilities through the Pennsylvanian formation and Wolfcamp formation. The Phillips Petroleum "H" Well No. 1 is located approximately 3600 feet from the Enserch Exploration Lambirth Well No. 3, located to the southwest. This well, the Enserch Exploration Lambirth Well No. 3 was tested through the Fusselman formation and is currently producing from the Pennsylvanian formation. The Lambirth Well No. 3 exhibits additional up-hole recompletion possibilities through the Three Brothers formation and the Wolfcamp formation.

Also indicated on this exhibit in Section 11 -- I'm sorry, in Section 1 of Range 33 East, Township 6 South, is the Enserch Exploration Lambirth Well No. 11. This well was drilled as a Fusselman test in early 1981. The Fusselman and the Pennsylvanian formation didn't prove to be productive in this Lambirth Well No. 11. Enserch Exploration, Inc., and its partners are planning to test in the near future the Wolfcamp and San Andres formations for hydrocarbon production in this well.

MR. KELLAHIN: In which well?

A. Lambirth Well NO. 11.

This map also shows that directly to the south and east of the proposed Phillips Petroleum salt water disposal well Enserch Exploration, Inc., owns a substantial acreage which has not yet been tested as far as Wolfcamp hydrocarbon production is concerned.

Also evidenced on this exhibit by a yellow dot is the H. L. Brown, Junior, Mary Martin Well No. 1. This well is producing from the Wolfcamp formation where Phillips Petroleum is planning to dispose of salt water. As of December 31st, 1980, the cumulative production from this well was equal to 1,613,901 standard cubic feet of gas and 10,500 barrels of condensate.

MR. STAMETS: Excuse me, that's the well colored in yellow in Section 29.

MR. CARR: That's right.

MR. STAMETS: And that is a Wolfcamp gas well.

MR. CARR: That's correct.

A. Yes, sir.

Additional hydrocarbon Wolfcamp production is present in the Todd Field located southeast of the Peterson "H" Well No. 1, where Phillips Petroleum is considering disposing of salt water. This field is off the map, located to the right. In 1980 7 oil wells were producing from the Wolfcamp formation in the Todd Field.

Q. All right, Mr. Renoult, now if I -- I'd like to direct your attention to the No. 11 Well in Section 1, Township 6 South, Range 32 East. There's a dry hole symbol there. Does that symbol apply only to the Fusselman and the Penn?

A. Yes, sir, it does.

Q. Now, in the normal course of events when you test a well, do you generally start and test the deepest formations first?

A. Yes, sir, we start at the bottom and work our way up.

Q. Have you contacted your partners concering testing the Wolfcamp in this well?

A. Yes, sir, we have.

Q. And I believe your testimony is that there are three wells that you consider to have possible Wolfcamp production in them, is that right?

A. Yes, sir.

Q. And which wells are those?

A. There is the Enserch Lambirth Well No. 7, Enserch Lambirth Well No. 3, and Enserch Lambirth Well No. 11.

Q. Will you now refer to Enserch Exhibit Number Two and review this for Mr. Stamets?

A. Exhibit Number Two gives a gas and condensate production history of the H. L. Brown, Junior, Mary Martin Well NO. 1.

This well was indicated by a yellow dot in the previous exhibit, Exhibit Number One.

This well was initially drilled by Magnolia Petroleum in November, 1955. The well was abandoned and re-entered by H. L. Brown, Junior, in May, 1969.

This well is perforated through the Wolfcamp formation from 7381 feet to 7401 feet. The well was eventually connected to a gas line in early 1970. As of December 31st, 1980, this well produced approximately 1.6 Bcf of gas and 10,500 barrels of condensate from the Wolfcamp formation where Phillips Petroleum is considering disposing of salt water.

Q. Now this is the nearest Wolfcamp production to the injection well, is that correct?

A. Yes, sir.

Q. It's still some distance from the Lambirth No. 2 -- No. 3 and No. 7 Wells.

A. Yes, sir. This well is located approximately 29,000 feet south from the Phillips Petroleum Peterson "H" Well No. 1.

Q. Will you now refer to Enserch Exhibit Three and review this for the Examiner?

A. Exhibit Number Three gives the production history and forecast for the Enserch Exploration Lambirth Well No. 7. This well is located only 1170 feet from the proposed Phillips Petroleum salt water disposal well.

Extrapolating the previously established decline rate down to an economic limit of 30 barrels of oil per month indicated the Enserch Exploration Lambirth Well No. 7 will produce until December, 1983.

The remaining producing life of the Fusselman formation in the Enserch Exploration Lambirth Well No. 7 is approximately equal to 2-1/2 years.

Q. And then at the time the Fusselman reaches its economic limit what plans would you have for the well?

A. This well will be recompleted up-hole through the Pennsylvanian formation and Wolfcamp formation.

Q. Will you refer to Exhibit Number Four and review that for the Examiner?

A. Yes, sir. Exhibit Number Four is composed of the open hole logs from the Enserch Exploration Lambirth Well No. 7. The first page is a compensated formation density compensated neutron porosity log. The second page is a dual laterolog sperically forecast log.

The Enserch Lambirth Well No. 7 is currently producing from a 3-foot interval in the Fusselman formation. This well is perforated from 7824 feet to 7827 feet. It's cumulative production as December 31st, 1980, was equal to 75,069 barrels of oil.

The remaining producing life of the Fusselman formation is estimated at 2-1/2 years.

Up-hole recompletion possibilities are present in the subject well. The Pennsylvanian formation offers 16 feet of pay from 7704 feet to 7720 feet. Based on the production history in the subject South Peterson Field, the producing life of the Penn formation in the Enserch Lambirth Well No. 7 was estimated at approximately five years.

Q Will you now review Exhibit Number Five?

A. Exhibit Number Five is a suite of open hole logs through the Wolfcamp formation in the Enserch Exploration Lambirth Well No. 7.

The Enserch Exploration Lambirth Well No. 7 is located only 1170 feet west of the Peterson "H" Well No. 1, where Phillips Petroleum is planning of disposing salt water.

The Enserch Exploration Lambirth Well

No. 7 has 14 feet of potential hydrocarbon pay in the Wolfcamp formation from 7332 feet to 7346 feet. This potential hydrocarbon pay through the Wolfcamp formation in the Enserch Exploration Lambirth Well No. 7 runs 7 feet high to the Phillips Petroleum Peterson "H" Well No. 1.

Since the Lambirth Well No. 7 is currently completed through the Fusselman formation and since this well has some excellent up-hole recompletion possibilities through the Pennsylvanian formation, Enserch Exploration has not yet had a chance and the opportunity to test and deplete the Wolfcamp formation in this well.

Q. Mr. Renoult, is it your testimony then that the potential Wolfcamp zone in the No. 7 Well is structurally higher than the zone that was perforated in the Phillips Well?

A. Yes, sir, it's 7 feet high to the Phillips Petroleum Peterson "H" Well NO. 1.

Q. How soon do you anticipate being able to test the Wolfcamp?

A. Going to take at least 7-1/2 years, the time to deplete the Fusselman formation, recomplete the well in the Pennsylvanian formation, and deplete the Pennsylvanian formation.

Q. Will you now refer to Enserch Exhibit

Number Six and review this for the Examiner?

A. Exhibit Number Six gives the production history and forecast of the offset Enserch Exploration Lambirth Well NO. 3.

This well was initially tested and completed through the Fusselman formation where it produced from in August and September, 1978. Because of a limited deliverability from the Fusselman the Lambirth Well No. 3 was recompleted up-hole through the Peterson Pennsylvanian formation.

Extrapolating a previously established decline rate down to 1000 Mcf per month indicated that the Enserch Exploration Lambirth Well No. 3 will produce until December, 1988. The remaining producing life of the Pennsylvanian formation in the Enserch Exploration Lambirth Well No. 3 is approximately equal to 7-1/2 years.

Q. Will you now refer to Enserch Exhibit Number Eight, or Number Seven.

A. Exhibit Number Seven is composed of the open hole logs in the Enserch Exploration Lambirth Well No. 3.

The Enserch Exploration Lambirth Well No. 3 was initially tested and completed through the Fusselman formation from 7840 feet to 7849 feet. After less than two months of production in August and September, 1978, the Fusselman formation was temporarily abandoned because of its low rate.

The Enserch Exploration Lambirth Well No. 3 then was recompleted up-hole through the most prolific Pennsylvanian formation. The remaining life of the Pennsylvanian formation is estimated at approximately 7-1/2 years in this well.

After depletion of the Pennsylvanian formation Enserch will recomplete the Lambirth Well No. 3 down to the Fusselman horizon from 7840 to 7849. After complete depletion of the Fusselman zone, the Lambirth Well No. 3 will be recompleted up-hole through the Three Brothers interval from 7653 to 7660.

After depletion of the Three Brothers interval the well will be recompleted up-hole through the Wolfcamp potential pay.

Q. Will you now refer to Enserch Exhibit Number Eight?

A. Exhibit Number Eight is composed of the open hole logs from the Enserch Exploration Lambirth Well No. 3 through the Wolfcamp horizon.

The Enserch Exploration Well No. 3 has 10 feet of potential hydrocarbon pay in the Wolfcamp formation from 7334 feet to 7344 feet. This potential hydrocarbon pay in the Wolfcamp formation in the Enserch Exploration

Lambirth Well NO. 3, runs 21 feet high to the Phillips Petroleum Peterson "H" Well No. 1.

Since the Lambirth Well No. 3 currently is producing from the Pennsylvanian formation and since this well has some recompletion possibilities in the Fusselman and Three Brothers formations, Enserch Exploration has not yet had the opportunity to test and deplete the Wolfcamp formation in the Lambirth Well No. 3.

Q Mr. Renoult, will you now review the data contained on Exhibit Number Nine?

A. Exhibit Number Nine is composed of a suite of logs from the Peterson "H" Well No. 1, where Phillips Petroleum is considering disposing of salt water. This exhibit is composed of three pages.

The first page is a Schlumberger Computer Processed Coriband Log used to analyze the Wolfcamp formation. Indicated on this exhibit are the perforations through the Wolfcamp zone in the Phillips Petroleum Peterson "H" Well No. 1. This well is perforated through a 9-foot section from 7332 feet to 7341 feet. This corresponds to a subsea depth of -2948 feet to -2957 feet.

The Wolfcamp perforations in the Phillips Petroleum Peterson "H" Well No. 1 are running 7 feet low to the offset Enserch Exploration Lambirth Well No. 7 and 21 feet low to the offset Enserch Lambirth Well No. 3.

The second page of this exhibit is a Compensated Formation Density Compensated Neutron Log for the Wolfcamp.

The third page of the exhibit is a Dual Laterolog Spherically Forecast Log through the Wolfcamp formation in the Peterson "H" Well No. 1.

Q Will you now review your Exhibit Number Ten for the Examiner?

A. Exhibit Number Ten is a Schlumberger Coriband Computer listing pertaining to the Phillips Petroleum Peterson "H" Well No. 1.

The Peterson "H" No. 1 is perforated through the Wolfcamp formation from 7332 feet to 7341 feet. This 9-foot injection zone has an average water saturation of 36.8 percent, an average porosity of 13.4 percent, and an average permeability of 4.1 millidarcies, as indicated by the Schlumberger Computer Processed Coriband Log.

Q Will you now go to your Exhibit Number Eleven?

A Exhibit Number Eleven provides water encroachment calculations based on average daily injection rate of 700 barrels per day proposed for Phillips Petroleum Peterson "H" No. 1. This volume was derived from a minimum volume of 400 barrels per day and a maximum volume of 1000 barrels per day, as indicated by Phillips Petroleum in April, 1981.

9 feet with an average porosity of 13.4 percent were perforated in the Phillips Petroleum Peterson "H" Well No. 1. Water encroachment calculations were conducted based on radial front propogation.

The Phillips Petroleum Peterson "H" No. 1 is located only 510 feet from Enserch Lambirth lease. This exhibit indicates that based on an average daily injection volume of 700 barrels per day water will encroach on Enserch Exploration acreage in less than 12 months.

The Enserch Exploration Lambirth Well No. 7 is located only 1170 feet west of the Phillips Petroleum Peterson "H" Well No. 1. Water injected in the Phillips Petroleum well will reach the wellbore of the Enserch Exploration Lambirth Well No. 7 in approximately 3-1/2 years. This will be before Enserch Exploration had time to test and deplete the Wolfcamp formation in its Lambirth Well No. 7.

Q Will you now go to Enserch Exhibit Number Twelve?

A. Exhibit Number Twelve is a stratigraphic cross section between the Phillips Petroleum Peterson "H" Well NO. 1 on the right and the Enserch Exploration Lambirth

Well No. 7. The Enserch Lambirth Well No. 7 is located 1170 feet west of the proposed salt water disposal well.

The interval where Phillips Petroleum is considering disposing of salt water is indicated in blue on this stratigraphic cross section. The Wolfcamp hydrocarbon potential pay in the Enserch Exploration Lambirth Well No. 7 is indicated in red on this exhibit.

The Lambirth Well No. 7 is running 7 feet high to the Phillips Petroleum Peterson "H" Well No. 1. This stratigraphic cross section shows a correlation between the Enserch Lambirth Well No. 7 and the Phillips Petroleum Peterson "H" Well No. 1 is outstanding through the Wolfcamp formation where Phillips is considering disposing of salt water.

Based on an average injection volume of 700 barrels per day water will encroach on the Enserch Lambirth lease in less than 12 months and will reach the wellbore of the Lambirth Well No. 7 in approximately 3-1/2 years.

Q Now, Mr. Renoult, this is a stratigraphic cross section, is that correct?

A. Yes, sir.

Q And these wells are not -- these wells are not hung at their true subsea depth, is that right?

A. That's correct.

Q If they were at their true depth would that affect what this exhibit depicts?

A. No, sir.

Q. Will you now go to Enserch Exhibit Number Thirteen?

A. Exhibit Number Thirteen is a stratigraphic cross section running from the Phillips Petroleum Peterson "H" Well No. 1, located on the right, to Enserch Exploration Lambirth Well No. 3, located on the left.

The interval where Phillips Petroleum is considering disposing of salt water is indicated in blue on this exhibit. The Enserch Exploration Lambirth Well No. 3 is running 21 feet high to the proposed salt water disposal well.

Again the stratigraphic cross section shows that correlation between Enserch Exploration Lambirth Well No. 3 and the Peterson "H" Well No. 1 is outstanding through the Wolfcamp formation where Phillips Petroleum is considering disposing of salt water.

Q. Mr. Renoult, what conclusions can you reach from your study of this particular area and the proposed disposal project?

A. Enserch Exploration's study has shown that hydrocarbon production in the Wolfcamp formation does exist in the subject area. This study has shown that Enserch

Exploration is going to test the Wolfcamp formation in the Lambirth Well No. 11 in the very near future.

This study has shown thatthe offset Lambirth Wells No. 7 and No. 3 are currently producing from the Fusselman and Pennsylvanian formations. After depletion of these producing horizons up-hole recompletion through the Wolfcamp formation will eventually be performed by Enserch Exploration.

Enserch Exploration's study has shown that outstanding well-to-well correlation does exist through the Wolfcamp formation in the subject area.

Q In your opinion would granting the application of Phillips impair the correlative rights of Enserch?

A Yes, sir, it would.

Q Why is that?

A Disposing of salt water in the Phillips Petroleum Peterson "H" Well No. 1 is a real threat considering all the potential of the Enserch wells and offsetting Enserch acreage. Premature water breaks through and water encroachment will result in the loss of hydrocarbon production and hydrocarbon reserves.

Q In your opinion will granting the application of Phillips result in waste?

A Yes, sir, it would.

Q And why is that?

A Disposing of salt water in the Phillips Petroleum Peterson "H" Well No. 1 would increase the risk in the Enserch wells and would decrease the recoverable reserves.

Q In your opinion would reserves be left in the ground that otherwise could be produced?

A Yes, sir.

Q Do you have a recommendation to make to the Examiner concerning the application of Phillips?

A I recommend that Phillips Petroleum's application be denied.

Q Mr. Renoult, were Enserch Exhibits One through Thirteen prepared by you or under your direction and supervision?

A Yes, sir, they were.

MR. CARR: At this time, Mr. Stamets, we would offer Enserch Exhibits One through Thirteen.

MR. STAMETS: Without objection they will be admitted.

MR. CARR: I have nothing further on direct.

MR. STAMETS: Any questions of this witness?

MR. KELLAHIN: Yes, sir.

MR. STAMETS: Mr. Kellahin.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Renoult, let me see if I understand why you're here.

You don't have any problem with the disposal of water into the Wolfcamp formation insofar as your Pennsylvanian and Fusselman production is concerned, do you? In other words, you don't consider the disposal into the Wolfcamp as a potential risk to the Pennsylvanian and Fusselman production, do you?

A No, sir.

Q Your concern is with regards to what you identify as a potential that the Wolfcamp might at some point in the future be productive in some of your wells in the South Peterson Field, is that not true?

A That's correct.

Q And you've made a study of all the logs, I assume, for all the wells that Enserch operates in this field, have you not?

A I looked at the nearby wells which would be directly concerned by -- and primarily concerned by the application of Phillips Petroleum.

Q All right, and in that examination you have identified a concern for the potential for Wolfcamp production in the No. 7 Well in Section 30; the No. 3 Well in Section 31; and if I understood you correctly, this No. 11 Well in Section 1, which is this short section to the south.

A Yes, sir, and also our untested acreage to the south and southeast of the proposed Phillips Petroleum Peterson "E" Well No. 1.

Q Well now you've already tested the acreage to the south in Section 32, have you not, for the Wolfcamp?

A No, sir.

Q The Enserch Rader No. 2 Well, the proposed disposal well that you wanted to use several months ago, you don't have a log of the Wolfcamp in that well?

A I do have a log.

Q All right, do you have that log with you?

A No, sir.

Q You're not concerned about this well some six miles to the south in Section 29, are you?

A This well doesn't belong to Enserch so I'm not directly concerned by this well.

Q All right. The only reason to bring that up is that it is some six miles away from the disposal well before you encounter any Wolfcamp production, is that not true?

A. No. The reason for bringing this was to show that there is some Wolfcamp production in this area.

Q. That's right, and the nearest Wolfcamp production is some six miles away.

A. For the time being, yes, sir.

Q. All right. You don't have a log for the Rader Enserch No. 2 Well?

A. No, sir, I don't have it here.

Q. I guess we'd better get it. May I have a minute to go get it?

MR. STAMETS: Sure.

MR. KELLAHIN: All right, sir, thank you. I'm ready.

MR. STAMETS: All right, we'll go back on the record then. Resume the hearing.

Q. Now, Mr. Renoult, I direct your attention to your Exhibit Number Ten which is an analysis on the Phillips proposed disposal well and direct your attention to the second page and it shows an average porosity of 13.4 percent?

A. Yes, sir.

Q. And that's the porosity for the Wolfcamp?

A. Yes, sir.

Q In the disposal well?

A. Yes, sir.

Q All right. And despite that average porosity of 13.4 percent, Mr. Renoult, when Phillips did test that zone they encountered nothing but formation water, is that not true?

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

Q All right, sir. Now let's go to your log on the Enserch No. 7 Well, which I think is Number Five. Do you have that exhibit, Mr. Renoult?

A. Yes, sir.

Q Now this log is a compensated formation density log, is it not, that will show an indication of porosity, will it not?

A. Yes, sir, it does.

Q All right, sir. Would you look at what you've identified as this Wolfcamp potential pay at -- I believe you've indicated it in yellow, and would you tell me what in your opinion is the porosity for that zone?

A. The maximum porosity is around 7 percent and the average porosity would be around 4 or 5 percent, I guess.

Q All right, sir. Would you look for the information on the No. 3 Well, which I think is Exhibit Number

Eight. Let me make sure. Yes, sir, Exhibit Number Eight.

A. Yes, sir.

Q. Now, this is the density log for the Lambirth No. 3 Well. This was one of the other wells you were concerned about having potential Wolfcamp production.

A. Yes, sir.

Q. Would you identify for us what you believe to be the porosity for the Wolfcamp potential pay indicated in the yellow?

A. The maximum porosity is around 9 percent in the middle part of the Wolfcamp pay, and around 14 percent in the top part of the Wolfcamp pay, and the average porosity for the entire zone should be around 10 percent, more or less.

Q. All right, sir. Let's go to the information -- did you supply us any information on this No. 11 Well in Section 1? There's a log on that one, isn't there, somewhere?

A. No, sir.

Q. No? You didn't supply any information with regards to your opinion that there was potential Wolfcamp production in that No. 11 Well?

A. No, I didn't submit any log from the Lambirth Well No. 11.

Q. Okay. So with regards to the No. 3 Well and the No. 7 Well your entire opinion about the potential Wolfcamp production is based upon the analysis of the logs we've just talked about?

A. It's based on the log illustration and also based on the structural pay, structural position of the pay.

Q. The structural position insofar as that you anticipate water disposed of in the disposal well would migrate in that general direction.

A. Structural position depicts that we're higher to the well which made water, which definitely leaves the possibility of producing oil or gas from the Wolfcamp formation in the Lambirth Well No. 7 and Lambirth Well No. 3.

Q. And that in turn is based upon your estimates of what this porosity is for each of these wells?

A. No, sir, the structural position has nothing to do with the magnitude of the porosity.

Q. No, I understand, but in order to evaluate and reach the opinion that there is potential Wolfcamp production in the No. 7 and No. 3 Well you've relied, have you not, on this porosity number that you've just given me?

A. Yes, sir.

Q. All right. Now the Rader Enserch No. 2 Well in Section 32, that was your disposal well?

A. The proposed Enserch salt water disposal well.

Q. Yes, sir, and you had proposed to dispose of produced water from the Pennsylvanian and Fusselman into the Montoya formation?

A. Yes, sir.

Q. All right. You never tested the Wolfcamp in that Enserch Rader No. 2 Well, did you, Mr. --

A. No.

Q. -- Renoult?

A. No, the Wolfcamp was not tested in the Rader Well No. 2.

Q. All right, and it wasn't tested and you were going to use that wellbore for disposal purposes because the Wolfcamp permeability and porosity figures were just too low, weren't they?

A. No, sir.

Q. They weren't?

A. I don't say that we are going to dispose of water in the Montoya because the Wolfcamp had lower porosity. Enserch Exploration --

Q. No, sir, you misunderstood my question. Maybe I didn't make myself clear.

You did not attempt to test for hydrocarbon production in the Wolfcamp in that disposal well, did you?

A. No, sir, we don't attempt to test the Wolfcamp.

Q. All right. You had attempted to test production out of the Pennsylvanian and Fusselman, I think, in that well.

A. Yes, sir.

Q. And you found that you couldn't get production out of either of those formations, and that you were going to go ahead and use this as a disposal well in the Montoya. That's right?

A. Yes, sir.

Q. And you were going to go ahead and do that without ever testing the potential for Wolfcamp production in that well.

A. Enserch Exploration needed to have a salt water disposal well in the South Peterson Field. It's an operating necessity.

Q. All right, sir.

A. We are spending over $35,000 a month to dispose of water. Based on a 10-year life, this would represent after tax savings of $4.3-million if we could dispose of water in the Rader Well No. 2.

Q My point is that you thought so little of the log indications in the Wolfcamp for that disposal well that you've never bothered to test it, that you were going to use the well for disposal purposes and never test that Wolfcamp, weren't you?

A. It has not been tested.

Q No, sir, and the reason you haven't is because it represents too high a risk.

A. No, sir.

Q All right, but as a matter of fact, you haven't done it yet, have you?

A. Not yet.

Q And that is not any of the wells you've indicated as ones of concern for you in your direct testimony, was it?

A. That's correct, because we are going to dispose water in the Montoya formation.

Q All right. Mr. Renoult, let me show you what was introduced in Commission Case 7226 as Phillips Petroleum Company's Exhibit Number Two, and direct your attention to Enserch Exploration Company's Gladys Rader No. 2, which is the disposal well.

I'd like to direct your attention to that log and to the Wolfcamp as picked in the log and have you identify for me what, in your opinion, is the porosity of the Wolfcamp in the disposal well?

A. It's kind of hard to measure the porosity in a log where the vertical lines are not all present, but I guess -- the maximum porosity seems to be around 2, 2.5 percent. I would like to underline that I'm dealing with a reduced scale log with no vertical lines and not too many horizontal lines. My evaluation is approximate.

Q. What would you characterize the possible success of a Wolfcamp completion in the No. 7 Well for us? In terms of a percentage? Is this 100 percent sure thing for the Wolfcamp if you test that formation or is it 10 percent, how would you characterize the risk of getting a commercial Wolfcamp production at that location?

A. Approximately 50 percent.

Q. Does that take into consideration the fact that the offsetting location of Phillips to the east had porosity of 13.4 percent and produced nothing but water?

A. Yes, sir.

Q. Okay. Is your management going to make the decision on perforating the Wolfcamp based upon your decision, Mr. Renoult, or is that decision to be made by others?

A. In which well, sir?

Q. Well, your testimony has been that at some point in the future, prior to abandonment, Enserch is going to test the Wolfcamp in the No. 7 and the No. 3 Well. Is that a correct restatement of what you have said?

A. Yes, sir.

Q All right, upon whose recommendation are they going to do that?

A. Management will review the engineering recommendation submitted by the district and will decide or not to go along with the recommendation from the district.

Q I'm trying to understand where your recommendation lies in terms of the final decision by your company to test the Wolfcamp.

Are you simply giving us your recommendation on whether the Wolfcamp ought to be tested or is this in fact something that Enserch has already committed itself to do?

A. As indicated in my testimony, before we test the Wolfcamp we need to deplete the lowermost horizon. We need to deplete the Fusselman formation. We need to deplete the Pennsylvanian formation. We need to deplete the Three Brothers formation. So we are looking at a substantial amount of time before the Wolfcamp is tested and I cannot commit Enserch top management for a decision they might take ten years from now.

Q. So what you're telling us, that you may have some potential Wolfcamp production that you're going to test 7, 8, 10 years from now.

A. Yes, sir.

Q. And that this application ought to be denied based upon that.

A. Yes, sir.

Q. Isn't the real purpose in your objection here today, Mr. Renoult, because Phillips objected to your disposal well in the Montoya in Section 32?

A. No, sir.

Q. Let's look at some of the other wells in Exhibit Number One. Let me direct your attention to Section 31, to Well No. 6 up in the northwest corner. Do I understand correctly that Well No. 10 is a replacement well for Well No. 6?

A. That's correct.

Q. And Well No. 6 was originally drilled and penetrated through the Wolfcamp and attempted a completion in the Pennsylvanian?

A. That's correct.

Q. And that the No. 6 Well is now plugged and abandoned?

A. I think that's correct, also.

Q. And that you subsequently drilled No. 10 as a replacement well for the No. 6 Well?

A. That's correct.

Q. All right. You didn't bother to test the Wolfcamp formation in the No. 6 Well, did you, Mr. Renoult?

A. I don't believe the Wolfcamp was tested in the Enserch Lambirth No. -- Well No. 6 because when Enserch was running pipe in this well, Enserch dropped the casing. The casing is broken, corkscrewed, and we don't have any good cement bond between the casing and the formation.

That's the reason why this well was abandoned through the Fusselman.

Q. Let me direct your attention to the No. 5 Well in the little, short section, No. 1, to the south of -- in the Peterson Field.

That's a dry hole symbol, is it?

A. Yes, sir.

Q. All right, has that well been plugged and abandoned?

A. Yes, sir.

Q. And that well was drilled to test the Pennsylvanian and the Fusselman?

A. Yes, sir.

Q. All right. You didn't test the Wolfcamp in that well, did you?

A. The Wolfcamp was not tested in this well.

Q. It was tested?

A. Was not tested.

Q. Was not tested?

A. To the best of my knowledge.

Q. All right, and that well's been plugged and abandoned now.

A. Yes, sir --

Q. Excuse me, and that's the immediate east offset to this No. 11 Well that you think is going to have some Wolfcamp that you're going to test?

A. Yes, sir.

Q. Why in the world didn't you test it in the No. 5 Well?

A. Because in the Lambirth Well No. 11 we had some indication of hydrocarbons and I don't know if we had indication of hydrocarbons in the Lambirth Well No. 5.

Q. There's the Enserch Rader No. 1 Well?

A. Yes, sir.

Q. That well's been plugged and abandoned, has it not?

A. Yes, sir.

Q. And that well was drilled through the

Wolfcamp and tested the Pennsylvanian and the Fusselman?

A. I think so.

Q. All right, sir, and you plugged and abandoned that well without testing the Wolfcamp, didn't you?

A. We just renewed the lease to test the remaining up-hole formations in the Rader Well No. 1.

Q. And when are you going to do that?

A. The lease would expire in May 11th or 13th of 1982.

Q. 1982, and you haven't plugged and abandoned this well? I thought you told me you had.

A. Yes, we are going to re-enter this well.

Q. You're going to re-enter the well?

A. Yes.

Q. All right.

A. And we renewed the lease for this purpose.

Q. All right. Do you have the logs of that well available with you today?

A. No, sir.

Q. Do you have the log of No. 5 in Section 1 available with you today?

A. No, sir.

Q. How about the logs on the No. 11 Well in Section 1?

A. I don't have the open hole logs from Lambirth Well No. 11.

Q. Let me ask you one more series of questions, Mr. Renoult.

For the Enserch Well No. 7 and the No. 3 you've given us some calculations of -- or an opinion that you thought there was hydrocarbons present in the Wolfcamp in those wells.

Now in your Exhibit Number Ten, which is the calculations on the porosity in the disposal well, you've used a water saturation of 36.8 percent, and yet we know that well produced water. What have you used for a water saturation in your calculations for the No. 3 and the No. 7 Well?

Or have you made a similar calculation as you've done here?

A. No, sir. On Exhibit Number Ten the calculations were performed by Schlumberger. I don't believe I have the same type of data for the Enserch Lambirth Well No. 7 and Well No. 3.

Q. Oh, I'm sorry. I thought you had had that information. You haven't done a similar thing for your two wells as you've done for the -- this well?

A. I don't believe we have this type of computation from Schlumberger.

Q Okay.

MR. KELLAHIN: Thank you. I have nothing further.

MR. STAMETS: Do you have something on redirect, Mr. Carr?

MR. CARR: Yes, I do, just a couple of short questions.

MR. STAMETS: Okay.

REDIRECT EXAMINATION

BY MR. CARR:

Q Mr. Renoult, I believe you testified that you -- that Enserch did not test the Wolfcamp in the Rader No. 2, is that correct?

A. Yes, sir, to the best of my knowledge.

Q Looking at the overall effort of Enserch to develop this area, would a disposal well be of greater value to you than the Wolfcamp production in the Rader No. 2?

A. Yes, sir. As indicated in the two previous hearings we had regarding the Rader Well No. 2, Enserch is spending approximately $36,000 per month to dispose of salt water from the field.

Multiplied by 12 months and multiplied by 10 years, this would represent a net after tax savings of

$4.3-million.

We don't expect that the after tax net of income which could be generated from the Wolfcamp would be so high.

Q I believe you stated that you've just renewed the lease on the Rader No. 1, is that correct?

A. Yes, sir.

Q And when did you do that?

A. This was done around April, 1981. I don't recall the exact date.

Q Was this a one year extension at the end of the --

A. Yes, sir.

Q -- former lease?

A. Yes.

MR. CARR: I have no further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Renoult, Enserch would like to have a salt water disposal well out here and Phillips opposes it; and Phillips would like to have a salt water disposal well out here and Enserch opposes it.

Is there any zone out there that you

feel that could be used as a disposal zone by Phillips that you wouldn't be opposed to and which would be available to Enserch for disposal purposes?

A. Enserch is willing to dispose the water --

Q. I want -- I want your recommendation if there is a zone out there that you think both of you could agree to and would accept water.

A. I know one zone where we could dispose water. I don't think Phillips and Enserch could agree about it.

Q. No, that's not the question I asked. I'm asking you if you recognize any zone which could be used in this area to dispose of this water safely, without the potential for damaging hydrocarbon resources?

A. I don't know of any zone where Enserch and Phillips would --

Q. So in other words --

A. -- agree at this point.

Q. -- you feel that -- that you're going to have to spend this $4-1/2 million over the next few years to dispose of water.

A. If our application is denied by the Commission, Enserch would have no choice but to have this expense.

Q. It certainly seems like there is an awful lot of vertical section exposed out there to -- for there not to be some zone somewhere which would accept salt water.

A. Well, many zones don't have any porosity or permeability to inject the volumes of water we are considering and some zones were not tested, either.

Q. Would it be your recommendation that -- that if this zone is not an acceptable zone for disposal purposes and your zone is not an acceptable zone for disposal purposes, that the Division authorize no salt water disposal wells in this area?

A. I would not commit the -- the Division of New Mexico.

Q. I'm asking you your professional recommendation. Is that what you're indicating to me, that if we can't use the Montoya, if we can't use the Wolfcamp, there -- are you saying that there are no other zones out there which we could use for salt water disposal, and we shouldn't approve any other wells for salt water disposal?

A. No, that's not what I said, no. I -- we committed to have the water disposed of in the Montoya formation and not in the Wolfcamp. I didn't -- I have not made any extensive study of the remaining intervals above the Wolfcamp formation.

Q. Suppose your management requested you to work with Phillips to try and find a disposal zone which would be satisfactory with both companies, do you think that could be done?

A. I hope so.

Q. Okay. We've hit on the nub of the problem here.

On Exhibit Number Nine opposite the Wolfcamp zone in the column marked porosity and fluids analysis by volume, in the central part of that column opposite the blue perforated interval, there is what appears to be a dark shaded area. What is that supposed to represent?

A. This is supposed to represent a moved hydrocarbon volume, a volume of hydrocarbon just pushed by the drilling fluids when the well was being drilled, which indicates that the Wolfcamp has permeability, since the drilling fluids were able to push these hydrocarbons away from the wellbore.

Q. Why didn't Phillips see any of these hydrocarbons when they tested this zone?

MR. KELLAHIN: I've got a copy you can read. Here's the original.

MR. STAMETS: Good, I'd like to see that. Maybe that will help resolve some of this.

Anyhow, the question remains the same.

If there are moved hydrocarbons that have moved through the action of drilling fluid, why didn't they move back into the wellbore when it was perforated?

A. Different reasons are possible. One could be that we don't have the hydrocarbons represented by the log. Or the other reason is they were pushed too far from the wellbore and were not produced during the testing operations performed by Phillips Petroleum.

If you look at the water analysis from Phillips Petroleum, the Ph of the water is only 4.7, which might indicate that all the acid injected in the formation was not recovered and consequently, the testing performed by Phillips Petroleum was not long enough to produce the hydrocarbons which are within the Wolfcamp.

MR. STAMETS: Are there other questions of this witness? He may be excused.

MR. CARR: At this time I'd call Tom Brown.

THOMAS E. BROWN

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

DIRECT EXAMINATION

BY MR. CARR:

Q Will you state your name and place of residence?

A. Thomas E. Brown, Midland, Texas.

Q By whom are you employed and in what capacity?

A. I'm employed as an Area Staff Geologist by Enserch Exploration, Incorporated.

Q Have you previously testified before this Commission or one of its Examiners and had your credentials accepted and made a matter of record?

A. Yes, I have.

Q Are you familiar with the application that Phillips filed in this case?

A. Yes.

Q Are you familiar with the area which immediately surrounds the well which is the subject of the application?

A. Yes.

MR. CARR: Are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q Will you please refer to what has been marked for identification as Enserch Exhibit Number Fourteen and explain what it is and what it shows?

A. Exhibit Fourteen is a stratigraphic cross section that goes from New Hope East Field in Section 29, Township 6 South, Range 34 East, it goes northward through Peterson South Penn, Fusselman, continues on through Peterson Field, and goes up north to a recently completed Mississippian well, Enserch No. 1 Finley, yet undesignated field.

This cross section is hung on a datum of the Three Brothers regional marker, which is this line right here.

The purpose of this cross section is to show that in the shallow part of the section the correlations are fairly easy. All the units can be correlated through; only the deeper portion is -- are the correlations real difficult.

So a pay that's identified here in the Sonny Brown No. 1 Martin, which was completed in the Wolfcamp formation, can be correlated across northward from some 12 miles.

This pay, which is marked in red here, corresponds roughly with -- which is hard to do here with this one inch to 100 foot scale -- but this roughly corresponds to what was marked on the Phillips exhibit as the Todd interval and it was colored yellow on that exhibit.

Partof this cross section shows that the interval that had the Wolfcamp pay in the Sonny Brown-Martin Well can be correlated across into the South Peterson Field and is present, in fact, in the three Enserch Wells that are up here, the Enserch No. 4 Lambirth, the discovery well, Enserch No. 1 Lambirth, and Enserch No. 3 Lambirth.

And from a geologic point of view there's very little difference in the sedimentation across there, as can be determined by both samples and logs.

Q Do you have anything further to add to your testimony?

A. No.

Q Was Exhibit Fourteen prepared by you?

A. Yes, it was.

MR. CARR: At this time, Mr. Stamets, we would offer Enserch Exhibit Fourteen.

MR. STAMETS: Without objection this exhibit will be admitted.

MR. CARR: I have nothing further of Mr. Brown on direct.

MR. STAMETS: Any questions of this witness?

MR. KELLAHIN: Just a minute, let me look at something.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Brown, apart from the Magnolia No. 1 Martin Well in Section 29, some six miles to the southeast of the proposed disposal well, do any of the other wells on your cross section produce from the Wolfcamp?

A None of the other wells produce from the Wolfcamp, that's correct.

MR. KELLAHIN: I have nothing further. Thank you.

MR. STAMETS: Mr. Carr?

REDIRECT EXAMINATION

BY MR. CARR:

Q Mr. Brown, to your knowledge do any wells other than that -- the Brown Mary Martin No. 1, have any of those other wells, are they perforated and completed in the Wolfcamp?

A Aside from the Phillips well I don't know of any other one that's been perforated and completed in that.

MR. STAMETS: The witness may be excused.

Mr. Kellahin, do you intend to offer any rebuttal testimony?

MR. KELLAHIN: Let me find out. I've got one witness, Mr. Luck.

Mr. Luck has not been sworn.

(Mr. Luck sworn.)

B. J. LUCK

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Luck, would you please state your occupation for us?

A. Yes. My name is B. J. Luck. I'm the Geological Development Director for Phillips Petroleum for the Permian Basin Region, which includes, among others, 11 counties in southeast New Mexico.

Q Mr. Philip Drisko has testified on several occasions for Phillips here before the Division. What is his working relationship with you, Mr. Luck?

A. He works for me. He is my Field Supervisor.

Q Have you previously testified before the New Mexico Division?

A. No, I have not.

Q Would you tell the Examiner when and where you obtained your degree in geology?

A. I have a degree, a BA degree in geology from Texas Christian University in 1950. I subsequently worked as a mud logger. I started to work for Phillips Petroleum in Midland, Texas, 1953. Spent approximately 12 to 13 years in West Texas-Southeast New Mexico; approximately 10 years working the Four Corners area in northwest New Mexico.

I have worked as a qualified log analyst after a great many intensive courses in log analysis. I have worked a number of places around the world.

Q Have you had an opportunity to study some of the logs in the South Peterson Field with regards to the Wolfcamp formation?

A. I have.

MR. KELLAHIN: We tender Mr. Luck as an expert geologist and log analyst.

MR. STAMETS: He is considered qualified.

Q Mr. Luck, I'd like to direct your attention to Enserch's last exhibit, it's a cross section that was placed on the wall.

Mr. Brown has correlated the Wolfcamp across a rather extensive area and shown that the Magnolia Well in A' on the cross section is a producing Wolfcamp well.

Based upon your experience and study of this area, Mr. Luck, do you have an opinion as to whether or not the Wolfcamp as encountered in the South Peterson Field would be potentially productive from the Wolfcamp as found in the Magnolia well?

A. I would like to go on record as saying that the South Peterson Field is a separate geological feature, to the best of my knowledge and examination, a separate feature from the Todd Field, and a separate feature from the well on the extreme right under A'.

I do not feel that simply because a formation or a correlation as good as the red zone there, or the yellow zone on our own exhibit, can easily be followed and agreed on, doesn't necessarily make it a pay across 300 miles of New Mexico.

You must have a geological feature.

Q. All right, sir. Have you found a -- what you called a geological feature for the Wolfcamp in the South Peterson Field area?

A. I personally have not mapped this on a structural basis. It would appear that the Fusselman and Pennsylvanian are of a sufficient geological feature substance that the Wolfcamp probably does reflect them. I personally have not mapped it but I feel that it would reflect and be a part of the feature called South Peterson.

Q All right, would you -- let me ask you this, then. You've heard the testimony this afternoon by all the witnesses with regards to the opinions of the various individuals as to the potential porosity to be encountered in particularly the Enserch No. 7 Well and the No. 3 Well.

Based upon your opinion as a geologist and log analyst, would you recommend that the Wolfcamp be perforated and tested in those two wells?

A No, sir, I would not. I have found in my experience that a carbonate zone, dolomite or lime, of this thin nature usually requires fracturing to be commercially productive and I have also found -- I'm speaking in generalities here -- that a 4 percent porosity without fracturing is seldom ever a commercial reservoir.

There are exceptions, of course, but I'm speaking of the general nature and one particularly of this type. And I have seen this type of reservoir in many places.

Q In your opinion, Mr. Luck, would approval of Phillips' application to use the Wolfcamp as a disposal formation in the Peterson "H" 1 Well constitute a risk to Enserch in their offsetting wells or leases?

A. I do not feel it would.

Q. In your opinion is the Wolfcamp encountered in the Enserch acreage capable of production in paying quantities, based upon your analysis?

A. I have not examined every well but the majority of the wells, and I believe we have a list of probably all the wells done by a previous witness for Phillips, would indicate that most of these wells by Enserch have less than 5 percent porosity, and I do not think that the criteria here are indicative of a commercial reservoir.

I do not personally know, also, I may further state, I do not know of any shows of hydrocarbon in our well. We tested primarily on a log analysis.

Q. In what ways would that log analysis differ from the testimony Enserch has given us based upon their logs?

A. Only insofar as the analysis that was done by Schlumberger is concerned. I think perhaps most everyone is aware of the disclaimer that are given by the various wireline log companies when they do a log analysis, saying this interpretation is based on the best physical measurement parameters, et cetera, that could be written in the record, if necessary. But my point is this: Schlumberger, who did the analysis in their Coriband system, computer analysis, used a formation water resistivity of their own choice, showing the well to be less than 50 percent water saturation, or that zone to be calculated less than the water saturation.

By virtue of our perforating and testing of that well, which we have read in the record, being conclusive evidence of the formation fluid therein, this Schlumberger analysis of 30-some odd percent, as read into the record by Mr. Renoult, is probably in gross error, because Schlumberger used an RW, meaning formation resistivity, that was less than correct.

MR. KELLAHIN: That concludes my examination of Mr. Luck.

MR. STAMETS: Are there questions of Mr. Luck?

CROSS EXAMINATION

BY MR. CARR:

Q Mr. Luck, just so I understand your testimony, even if there is a high degree of correlation across a large area like this, was it your testimony that for there to be commercial production you need to have a geologic structure. Is that what you said?

A. Yes, of some type, a feature, a trap.

MR. CARR: I have no further questions of Mr. Luck.

MR. STAMETS: Any other questions of Mr. Luck? He may be excused.

MR. CARR: I would like to recall Mr. Brown.

MR. STAMETS: Mr. Brown may be recalled.

THOMAS E. BROWN RECALLED

and being previously sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Brown, have you mapped the Wolfcamp in this area?

A. Yes, I have.

Q. The area governing -- or covered by Exhibit Number Fourteen?

A. Yes.

Q. What conclusions can you reach about the geologic structure across this area?

A. That it is a structure at Wolfcamp level and by Wolfcamp level I'm referring to the Wolfcamp B line that's used up there as the Wolfcamp.

In fact, seismically,the reason I had to make it is to get the tops for seismic. Seismically our exploration in the area, we are mapping at the Wolfcamp seismically, and it is structure at that level in South Peterson Field.

While it's a different structure than the structure down at New Hope East Field, it is a very similar structure seismically and geologically.

MR. CARR: I have nothing further of Mr. Brown.

MR. STAMETS: Any questions for Mr. Brown?

MR. KELLAHIN: No, sir.

MR. STAMETS: He may be excused.

Any further testimony in this case?

Mr. Carr, do you have a closing statement?

MR. CARR: Yes, I do.

I think the central issue in this case is the question of correlative rights, the protection of correlative rights in the area.

I think if you look at the evidence certain things are clear.

One, if water is injected as Phillips is proposing, that water will migrate and will in a relatively short period of time reach the offsetting Enserch wells. I believe the evidence presented here today shows that there is a high possibility for commercial production from the Wolfcamp.

There is structure. There is a high correlation geologically with these other known producing wells in the area.

Enserch, in the wells that offset the proposed injection well, is encountering the Wolfcamp at a shallower horizon.

They also have plans to test the No. 11 Well in the immediate future and thereby be able to -- could establish that there is the real potential for Wolfcamp production.

So I think as you look at this case, it is important for you, when you look at the evidence, to recognize that the burden must be on the applicant. The applicant has to show that they're not going to impair someone's correlative rights. They have failed to do this.

They have failed to show that they are not going to be watering out offset Enserch property in the Wolfcamp.

If you grant Phillips' application in this case you will be permitting watering out certain Enserch property, and the testimony here today is there is no possible way to monitor the effect of this until the damage has already been done, no economically feasible way to do this.

You will by granting the application, therefor deny Enserch the opportunity to produce its just and fair share of the reserves underlying its property, and I submit by granting the application you will have failed to carry out your statutory duty to protect the correlative rights of the owner -- of each property owner in a common source of supply.

We also submit that when this watering out occurs, that hydrocarbons will be lost that cannot be recovered and you therefor would be condoning waste.

We submit that when you review the evidence, there is only one possible conclusion that you can reach and that is that Phillips has failed to meet their burden of proof and the application, therefor, must be denied.

MR. KELLAHIN: Mr. Stamets, we'd waive our right for a closing statement. I don't think there is any reason to make a closing statement when the record here today is replete with evidence that warrant this application being granted.

We're going to waive our closing statement because the evidence here presented today is substantially different from that made by Enserch in their case. You'll note that in Phillips' application we're talking about Wolfcamp that does not produce in this area; that has never produced in this area; that only produces some six miles to the southeast.

We feel that a closing statement is not necessary insofar as Enserch has failed to establish any reason why this application ought not to be granted.

You can see by their own course of action that they drilled wells thorugh the Wolfcamp, subsequently plugged and abandoned those wells without ever testing the Wolfcamp. We've attempted to elicit from Mr. Renoult testimony with regards to his opinion as to why he thinks there is Wolfcamp. We find from Mr. Luck's testimony that Mr. Renoult's basises for porosity are based upon an erroneous calculation as to the degree of water saturation.

We can see that in this area the Wolfcamp, as tested by the Phillips well, had a log analysis of porosity of 13.4 percent, and yet when they test that well, they get nothing but water.

There is not a well in the area with porosity that exceeds that or approaches that. That reason alone is sufficient reason to grant Phillips' application.

They're asking us to sit idly by for some seven to ten years while Enserch waits. We maintain that the only reason that they've introduced an objection to this application is because they're upset with our opposition to their application for salt water disposal.

But the facts are clearly different. In that case, or Enserch's request, it was water to be disposed of in an area where there was not isolation between the disposal formation and formations being produced by some twelve other wells, actively being produced.

That is not the situation here.

Mr. Renoult tells us that their objection is not to the question of whether the water will remain confined to the Wolfcamp, but it's speculated testimony that they'll somehow encroach upon the Wolfcamp in the No. 7 and the No. 3 Well.

For those reasons we believe that a closing statment is not necessary and therefor we waive ours.

MR. STAMETS: If there is nothing further, the hearing is adjourned.

(Hearing concluded.)

CERTIFICATE

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

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. ______, heard by me on _______________ 19____.

__________________________, Examiner
Oil Conservation Division

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

EXAMINER HEARING

IN THE MATTER OF:

Application of Phillips Petroleum Company for salt water disposal, Roosevelt County, New Mexico.

CASE 7318

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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EXHIBITS

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MR. STAMETS: We'll call next Case 7318.

MR. PADILLA: Application of Phillips Petroleum Company for salt water disposal, Roosevelt County, New Mexico.

MR. STAMETS: Call for appearances.

MR. KELLAHIN: I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant, and I have one witness.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the law firm Campbell, Byrd, and Black, Santa Fe, New Mexico, appearing on behalf of Enserch Exploration, Inc.. I have two witnesses.

MR. STAMETS: I'd like to have all the witnesses stand and be sworn at this time, please.

(Witnesses sworn.)

JERRY L. BLEVINS

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Blevins, would you please state

your name and occupation?

A. My name is Jerry Lynn Blevins. I'm a petroleum engineer for Phillips Petroleum in Odessa, Texas.

Q. Mr. Blevins, have you previously testified before the Division as a petroleum engineer and had your qualifications accepted and made a matter of record?

A. Yes, sir, I have.

Q. Would you describe generally what you're seeking to accomplish by this application?

A. We're seeking to inject water in our Peterson "H" No. 1 Well in Section 29, Roosevelt County, New Mexico, Peterson South Field.

Q. This is the South Peterson Field?

A. Yes, sir.

Q. All right. And what formations are productive in the South Peterson Field?

A. The Fusselman and the Penn.

Q. Have you made a general study of the area with regards to the production out of the Pennsylvanian and Fusselman formations and the disposal of that produced water?

A. Yes, sir, I have.

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

MR. STAMETS: The witness is considered qualified.

Q. Let me direct your attention to what we've marked as Applicant Exhibit Number One and have you identify for us the proposed disposal well.

A. This is a plat showing our proposed disposal well marked by the green arrow with a half mile radius circle, the inner circle, and a two mile radius of the area on the outer circle, the blue indication of a Penn completion, the pink indication of a Füsselman completion well in South Peterson and part of the Peterson Field to the north of here.

Q. What's the current status of the proposed disposal well, the Peterson "H" Well No. 1?

A. It's shut in pending approval of the application to dispose of water.

Q. Was that well originally drilled as an attempted completion of a producing well?

A. Yes, sir, we drilled that well as a Fusselman completion. After testing several zones in the Fusselman we had to plug back. We tried to complete in the Penn. These attempts also proved futile and we plugged back to perforate and try to complete a Wolfcamp formation well. Logs indicated that we had possible production --

Q. In the Wolfcamp?

A. -- in the Wolfcamp.

Q. What happened when you perforated the Wolfcamp?

A. Test results after we perforated showed it produced 100 percent water.

Q. This was formation water out of the Wolfcamp?

A. Yes, sir.

Q. And it was void of any hydrocarbons?

A. Yes, sir.

Q. All right. Now it's the Wolfcamp formation in that proposed well that you intend -- request to be used as a disposal formation.

A. Yes, sir, it is.

Q. All right. Tell me how many wells there are in this South Peterson Field, Mr. Blevins.

A. Well, currently there's ten Fusselman completions and five Penn completions. There's also one well that's in Section 1 of Township 5 South, Range 33 East, the Enserch Lambirth No. 11, and it's uncompleted. We don't know where that's at right now.

Q. How is the operation of those ten wells divided among Phillips and Enserch?

A. Five Fusselman wells each for us, and two Penn wells each for us, and one Penn well belonging to Energy Reserves Group.

Q. Would you identify for us the location in Section 32 that was the subject of a previous Commission hearing with regards to Enserch's application for a disposal well in this area?

A. Their well was their Rader No. 2. I think it's about, oh, 500 to 600 foot from the west line and probably, oh, 1500 - 1600 foot from the north line of Section 32.

Q. It is that dry hole symbol in the south side of the half mile radius circle?

A. Yes, sir, sure is.

Q. And it says No. 2?

A. Yes, sir, that's the well.

Q. And that is the Enserch well that was the subject of that Division Case 7226?

A. Yes, sir.

Q. All right. And what did they propose to do with the water to be disposed of in that well?

A. Their well, they proposed to dispose of in the Montoya formation, which is below the Fusselman in the well.

Q. And while we're looking at Exhibit

Number One, Mr. Blevins, would you identify for us any other wells within the area that you have examined as possible disposal wells for water produced from the South Peterson Field?

A. We've examined all wells in Section 31, Section 36, the wells that are the Phillips Goldston "A" No. 2 and Goldston "A" No. 1 generally in the south side. We have attempted to get logs on the north side of the well in the Peterson Field but we didn't have the logs and weren't able to get them.

Q. All right, let's look at Section 36 and you've identified the two Phillips Goldston "A" Wells in the southeast quarter of Section 36.

A. Yes, sir.

Q. Describe for me why, in your opinion, those are not suitable disposal wells.

A. Well, Goldston "A" No. 1 was plugged and abandoned several years ago and the casing was pulled so it was not adequate.

The Goldston "A" No. 2 was completed as a Penn well, I believe, and also subsequently had been plugged. They had attempted to complete in several different intervals over there and ended up plugging the well. So we felt that we had a hole over here in Section 29 that we had drilled, we attempted to complete, and since we had it cased we knew it was good casing, good cement job, that we ought to try to make a disposal well while we had the chance.

Q. All right. What are you currently doing with the water produced from your Fusselman and Pennsylvanian wells in the South Peterson Field?

A. Currently we have -- again, we own some acreage in Peterson Field with Amoco, and part of our water, when Amoco's able to handle it, goes to the Peterson Field itself to be disposed of.

Q. Peterson Field lies north --

A. North of us, yes, sir.

Q. -- of this plat?

A. Yes. Well, the northern part of these Penn wells that you see colored in as Peterson Field.

Q. Those wells up in Section 20 and 19 would be in another -- in the Peterson Field?

A. Yes, sir.

Q. All right.

A. They are.

Q. And when Amoco is not able to take that produced water what do you do with it?

A. We truck it several miles to the south of us and have it disposed of thataway.

Q. Let's turn to Exhibit Number Two. Would you identify for me what Exhibit Number Two is?

A. Exhibit Number Two is Form C-108. It's an application to dispose of water by injection into a porous formation, that's turned into the State. It's the general form accepted up until the July 1st of this year. And we filed in the application, it just gives the minimum and maximum that we expect to inject, the closed system, and the anticipated pressure.

Q. All right, let's talk about those for a moment. What do you estimate to be the anticipated daily injection volume for the proposed disposal well?

A. Currently we produce about 300 barrels of water a day and that's what we anticipate the minimum. Within a 10-year period we expect that to go to 1000 barrels a day, which is what we're applying for.

Q. All right, sir. And explain to me the request for the pressure injection? What is meant by that?

A. Basically, that's the pump pressure that we've got to pump into the formation to inject the water. It will have to be pumped in under pressure. It wouldn't take it on gravity flow, and so we'll have to install a pump system to inject the water.

Q. Are you familiar with the Division memorandum with regards to injection pressures in disposal wells?

A. Yes, sir, I am.

Q. And the criteria of 0.2 psi per foot of depth?

A. Yes, sir, I am.

Q. In terms of that memorandum, Mr. Blevins, how would you relate this pressure?

A. The maximum pressure we could inject in is 1466.4 psi.

Q. Under the memorandum?

A. Under the memorandum, yes, sir.

Q. All right, so you'd be injecting a lot less than the maximum allowed under that Division memorandum?

A. Yes, sir, I would.

Q. All right. Let's go to Exhibit Number Three and have you tell me what that is.

A. Number Three is a revised Form C-108. This basic difference between this form and the previous exhibit has a contact party in who to get in touch in case something was to go wrong with the system or for any information needed.

Q. During the course of having this application filed and processed the Division changed or modified its rules on disposal wells? And this is an amended application?

A. Yes, sir, it is.

Q. In conformance with those rules?

A. Yes, sir, it is.

Q. Now if you'll continue to look at Exhibit Number One for me, and in relation to some of the information on Exhibit Number Three that you're required to furnish, I want to direct your attention down to paragraph number twelve of the Exhibit Three, where it requests a statement from you with regards to your examination of information concerning open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

Where do you generally find the sources of drinking water in this area, Mr. Blevins?

A. There's remnants of the Ogallalah at approximately 300 to 350 feet. We set surface pipe below that zone and cement it to the surface to protect the fresh waters in the area.

Q. At generally what depth do you encounter the fresh water sand?

A. 300 to 350 feet, somewhere in that neighborhood.

Q. And you're injection depth will be approximately what depth?

A. 7332 feet.

Q. All right. In your opinion is the method of completion in the disposal well such that the injection formation is going to be adequately cemented and protected between that formation and any fresh water sand?

A. Yes, sir, it will.

Q. Let's go on then to Exhibit Number Four and have you tell me about that.

A. Exhibit Number Four is the wells that are shown on Exhibit Number One within that half mile radius of our Peterson"H" No. 1. We give the location of the Amoco Peterson "B" No. 1; it's the dry hole to the north of our well; the Enerch Lambirth No. 7, the direct western offset to our No. 1 Well; Enserch Rader No. 2, the dry hole in Section 32, which is south of our well; the Phillips Lambirth "A" No. 4 to the southwest of our No. 1 Well; and our well itself.

We give the distances from our well to the other wells within a half mile radius. We show you the casing strings and setting depths; the sacks of cement used to -- behind the pipe on each string; where the cement tops were located; the total depth of the well; the current producing interval; the current producing formation; and the RKB elevation.

Q. Would you identify for me the source of the information used to prepared this exhibit?

A. This information comes from the State records.

Q. From the information you've examined, Mr. Blevins, is -- in your opinion are all of the wells found within the half mile radius sufficiently completed or cased or plugged and abandoned in such a way that fluids injected into the Wolfcamp will remain confined to the Wolfcamp?

A. Yes, sir.

Q. Let's look at Exhibit Number Five and have you tell me what that is.

A. Exhibit Number Five is a listing of all the wells within the two mile radius of our well; the unit location; their section, township, and range; the distance from our Peterson "H" No. 1; and their current producing formation.

Q. You indicate down here in the last entry on the second page the Phillips Peterson "H" No. 1. That is the disposal well, is it not?

A. Yes, sir.

Q. And you've got down current producing formation. It has not produced from the Wolfcamp, has it?

A. Just water.

Q. Are there any wells within the two mile radius that have ever produced any hydrocarbons from the Wolfcamp formation?

A. Not that I could find.

Q. To the best of your knowledge is the Wolfcamp productive in this area?

A. No, sir.

Q. Apart from the attempt to complete and produce out of the Wolfcamp in the proposed disposal well, has Phillips ever attempted to complete the Wolfcamp in any of its other wells in the area?

A. No, sir. We -- the Fusselman and the Penn production was the basis of all the wells drilled out there and they're all producing right now.

The Goldston "A" No. 1 was drilled as a Fusselman completion. They had problems, they plugged that well. They drilled the No. 2 and attempted to complete it. It produced for a little while in the Penn and then plugged back. And then the rest of the wells were drilled subsequent to that.

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

A. Exhibit Number Six is a plat with the structure based on the top of the Wolfcamp. The green arrow indicates our Peterson "H" Well and where we set. This just shows what the formation would look like, based on the subsea depths.

Again, the pink color is Fusselman completion. The blue color is Penn completions.

Q. What is -- what is the significance of Exhibit Number Six, Mr. Blevins?

A. It would show where we are structurally. You wouldn't want to inject water on the peak of a structure without risking a chance of watering out other wells that could have been productive. We're on the lower side. One well that is lower than ours is our No. 4-A Well. That's the only well structurally lower on this side of the field than ours, and our water, we would believe, would drain, gravity drainage or pumped in, and it would drain to the south and to the east, based on what we see on the structure.

Q. So the only well that is structurally lower to the disposal formation is the Phillips 4-A Well?

A. Yes, sir, it is.

Q. All right, let's go to Exhibit Number Seven. Mr. Blevins, let me ask you to identify Exhibit Number Seven and tell us what it is.

A. Exhibit Seven is a southwest/northeast cross section of the Peterson South Field. In the far righthand corner you will see the plat showing the wells connected by the line that are on the cross section. The yellow arrow indicating again our Peterson "H" No. 1 Well.

The coloring as far as the pink and the blue are still Fusselman and Penn, as in our previous exhibits.

Q. Why have you drawn this cross section or used the cross section for these wells across this field?

A. Basically it shows the zone that we're planning on injecting into continuous across the field and that's the basis of the cross section.

Q. The purpose is to demonstrate that there is some indication of the Wolfcamp formation across the field as identified in the cross section?

A. Yes, sir.

Q. Now would you identify for us the proposed disposal well?

A. All right, the proposed disposal well, Peterson "H" No. 1, is the log you see closest to the lease plat.

Q. It would be on the far right?

A. On the far right, next to A'.

Q. All right.

A. This is indication -- the yellow band going across there is part of the Wolfcamp where we have perforated and would propose to inject water.

Q. That yellow band demonstrates your opinion with regards to the top and the bottom of the Wolfcamp?

A. No, sir.

Q. As indicated on that log?

A. No, sir.

Q. All right, what is it?

A. This is the -- the yellow band is just used to highlight the particular part of the Wolfcamp, the tight zone, throughout the -- continuation throughout South Peterson Field.

Q. All right.

A. The top of the Wolfcamp is noted by the line just directly above it and it runs to the Penn, which is the next to the bottom line designated by the OCD.

Q. With regards to the log indication identified in yellow for the disposal well, that represents the zone in the Wolfcamp that you tested for production?

A. Yes, sir. The log, you'll notice the high porosity over on the far righthand side, the kick to the left opposite to where we perforated, says we have 9/10 porosity throughout this zone, and that's the reason we perforated there to try to produce it.

Q. Despite the fact that you found 9 or 10 percent porosity, in fact all you recovered was formation water, wasn't it?

A. Yes, sir, it was.

Q. All right, let's follow that yellow line across the cross section now, Mr. Blevins, and would you locate for me any of the wells on the cross section that show an indication of possible production greater than that tested in your disposal well?

A. Well, just on this one log you can't say that, but on the study I made of both logs run on each of these wells, there's none that has a greater potential than our Peterson "H" did.

Q. And despite that potential you couldn't get any hydrocarbons out of it?

A. True.

Q. All right. Now, Mr. Blevins, what separates the Wolfcamp formation from the producing formations in the Pennsylvanian wells?

A. Separates them as far as the cement behind their pipe or --

Q. No, sir. What would prevent water being disposed of in the Wolfcamp formation from going into --

A. From migrating?

Q. -- migrating into the Pennsylvanian?

A. Oh, the Wolfcamp itself has several tight zones in which the shale barriers would not permit the water to transmit across themselves. The extremely messed up part of the log where it's difficult to read anything, would be one such instance. The tightness in some of the zones have a tendency to -- the shales will affect your log. It will look good as far as porositywise but extremely bad for productionwise. They're very impermeable, and so the water won't migrate across there.

Q. In your opinion is that impermeable barrier between the Wolfcamp and the Pennsylvanian correlative across the pool?

A. Oh, yes, sir.

Q. All right.

MR. STAMETS: Mr. Blevins, for the record could you cite such an example by footage on one of these logs?

A. If you'll look approximately at 7400 foot on the Peterson "H", you'll notice the righthand side of the logs are very scattered and stuff. There are sand or I mean lime or dolomite type barriers intermixed with shale type zones in between, and the shales would not let the water transmit through them.

MR. STAMETS: And your testimony is that

these are -- these zones are essentially continuous across this area.

A. Yes, sir.

MR. STAMETS: And would provide an effective seal from -- against downward migration of the injected fluid.

A. Yes, sir.

MR. STAMETS: Okay.

Q Are you aware of any information that would tend to support a different conclusion, Mr. Blevins?

A. No, sir.

Q No doubt in your mind that these -- the Wolfcamp disposal water would be remaining confined in the Wolfcamp?

A. Yes, sir, it would.

Q Let's go to Exhibit Number Eight. Describe that for us, will you, Mr. Blevins?

A. Exhibit Number Eight is a wellbore schematic of the Peterson "H" Well proposed to inject water. It shows the casing strings, the hole sizes, the cement, the sacks of cement we used to cement off the casing. Gives an indication of the top of cement at 5210. Our perforations are at 7332 to 7341.

We squeezed off the three lower sets of

perforations. There's a retainer above the Penn squeeze job at 7499 that would not permit fluid migration up through the wellbore. The cement job would not permit fluid migration outside of the wellbore and the shale zones themselves would not permit fluid outside of the radius of the wellbore.

On the lefthand side you'll see the tops of prospective formations as they occur in our wellbore and our tubing and packer set approximately 7300 foot for the packer, with one joint of tubing below it for the injection. It will be Salta-lined tubing (sic).

MR. STAMETS: What is Salta line?

A. It's a type of plastic. Our production people, though, tell me it's not called plastic. It's called Salta and that's what they wanted me to put on there.

MR. STAMETS: If an order authorized you to have plastic-lined tubing I assume you would consider Salta as a plastic lining.

A. Yes, sir.

MR. STAMETS: Very good.

Q. Mr. Blevins, you've shown on this Exhibit Number Eight the disposal formation to be at 7332 to 7341?

A. Yes, sir.

Q. And you've identified it as a Todd?

A. Yes, sir. Basically correlated across the fields, there's a field about ten miles away, it's the Todd Wolfcamp Field, and we called this, for a lack of anything else, the Todd zone of the Wolfcamp.

Q. All right. So this is a portion of the Wolfcamp.

A. Yes, sir. On the lefthand side you'll notice that we're in the Wolfcamp section over here.

Q. What are you going to do at the surface?

A. There's two gauges that will be placed on the 5 -- in between the annulus of the 2-7/8ths and the 5-1/2 inch casing and also another pressure gauge on the -- between the annulus of the 5-1/2 inch casing and the 8-5/8ths inch casing, to monitor for tubing leaks or casing leaks that could be caused by the disposal of the water.

Q. Let's go to Exhibit Number Nine. What is this exhibit, Mr. Blevins?

A. Exhibit Number Nine is our water injection calculations. Basically we -- the proposed injection zone where the perforations are, the net interval is 9-foot; corrected porosity is 15.6 percent; the formation volume factor of the water is 1.01. With our static fluid level we attempted to estimate the bottom hole pressure. You'll see a calculation number one to be about 2775 psi.

Our maximum allowable pressure with .2 psi per foot gradient and times the top perforation at 7332 would be 1466 psi.

Q. This is the number using the standard ertablished by the Division?

A. Yes, sir. We don't plan to inject at 1466. We only plan to inject at 1400.

Q. All right, sir.

A. Number three is our reservoir volume that we calculate the encroachment of the water. Based on the constant injection of 300 barrels of water per day, after 10 years we would covered 101.5 acres, or a radius of 1186 feet. This is about .22 miles.

Based on what we anticipate, though, the 13 percent increase a year, we would run from 300 to 1000 barrels after 10 years, we will get out 1610 feet, or about .3 of a mile.

Q. What's the purpose of the exhibit, Mr. Blevins?

A. This was to show how far our water that we injected would move away from the wellbore itself.

Q. That water, regardless of where it goes, is not going to water out Wolfcamp production in the area, is it?

A. No, sir, that water won't.

Q. It's not a hazard to any production, so far as you know, is it?

A. Since there's no production, no, sir.

Q. All right. All right, let's go to Exhibit Number Ten and have you tell me about that.

A. Exhibit Number Ten is our injectivity test that we ran on the Peterson "H" No. 1. Basically this is to decide if the formation will, one, take water, and two, what size pump we will need to pump it in.

We see no breakover in our instantaneous wellhead shutdown pressures; therefor, we feel that we have not reached the parting pressure of the formation and it will stay confined in there and we will always have to inject at a particular pressure.

Q. All right, let me see if I understand the exhibit. The second dotted line or dashed line from the bottom up is labeled instantaneous wellhead shutdown pressure?

A. Yes, sir.

Q. All right, and if I look at the pressure which is the vertical column, --

A. Yes, sir.

Q. -- and if I look at 1600 psig --

A. Uh-huh.

Q. -- have I reached a point if I inject at that pressure in which I am fracturing or parting the formation?

A. No, sir, you haven't.

Q. What would happen to the graph if at that point you were fracturing the formation?

A. Okay. If you were fracturing or parting at 1600, you would see this line just break over and essentially you'd see at no matter what rate you injected at, that would be the constant pressure.

Q. It would become a horizontal line straight along the 1600-foot pressure line?

A. Essentially, yes, sir.

Q. All right. So if you should inject above and beyond the anticipated injection pressure, you still would not part the formation?

A. Yes, sir, that's true.

Q. All right, sir, so let's look back now at the pressure you propose to inject in, the 1400 psig --

A. Yes, sir.

Q. -- at that point your calculation demonstrates that you would not fracture the formation?

A. That's true.

Q. All right. Is there anything else about this exhibit that you want to direct our attention to?

A. No, sir.

Q. All right. Let's go on to Exhibit Number Eleven.

A. Exhibit Eleven is a gamma ray injector profile temperature log. We ran this to be sure that the water that we were injecting was not communicated behind the pipe or in the formation as far as we could see. There's different runs on here. The indication from the man that ran it, said that there is no sign of communications on there. It's down in the interpretation at the bottom of the log itself. We have --

Q. Your study of that log also confirms that opinion ?

A. Yes, sir, it does.

Q. All right, and again, what is the purpose of Exhibit Eleven?

A. This is to show that there is no communication behind the pipe of the water that we are injecting.

Q. And this test shows that there is none?

A. Yes, sir. That's true.

Q. Exhibit Number Twelve.

A. Exhibit Number Twelve is a temperature survey ran on our well, Peterson "H" No. 1, by John West Engineering out of Hobbs.

Q. This is a temperature survey on the disposal well?

A. Yes, sir, it is.

Q. All right.

A. This is to show the top of cement behind the 5-1/2 inch casing. Based on his calculation the top of cement is approximately 5210 feet, which is what we previously entered on a previous exhibit.

Q. And why is this important?

A. To show that where we are perforated in at 7332 feet is covered with cement, with sufficient cement above us that we would not break out and go into unprotected pipe or formations.

Q. Exhibit Number Thirteen, Mr. Blevins.

A. Exhibit Number Thirteen is a water analysis. The first one of the three is on the Todd zone of the Wolfcamp. It shows that general measurements of the water.

The second one is the Fusselman; the third is the Penn.

This is to show the compatibilities of the waters with each other and that there is no major differences between them.

Q. You can't drink any of this water from any of the three of these formations, can you?

A. No, sir.

Q. All right. You're not damaging or endangering any drinking water sources, are you?

A. No, sir, I'm not.

Q. Exhibit Number Fourteen.

A. Exhibit Number Fourteen is in compliance with the rules set up by the OCD to show that all plugged and abandoned wells within a half mile radius are sufficiently cemented off so as not to contaminate any formation.

Q. This is the P&A well to the north of the half mile radius circle on Exhibit Number One?

A. Yes, sir, this is the Amoco Peterson "B" No. 1.

Q. Okay, and in your opinion is it properly cemented and plugged so there wouldn't be fluids migrating out of the Wolfcamp?

A. Yes, sir, it is.

Q. I notice that you've not included a schematic of Enserch's P&A Well, the No. 2, in Section 32.

A. At the time we were preparing they had not P&A'd. They proposed for a Montoya completion -- injection disposal well, and we did not consider that plugged and abandoned at the time.

Q. All right. So apart from the Enserch

well in the south of the circle and the Amoco well in the north of the circle, there are no other plugged and abandoned wells except the disposal well?

A. True.

Q. All right. Exhibit Number Fifteen, Mr. Blevins, tell us about that.

A. Fifteen is a history of the Peterson "H" No. 1 Well. It was to show the tests and procedures of the different zones that we tried, and that they were unsuccessful. It's just for Commission information.

Q. All right. Exhibit Number Sixteen.

A. Exhibit Sixteen is the Easy Drill Squeeze packer, which is set below the Wolfcamp at 7499 on the wellbore schematic of the Peterson "H". This was requested by the Commission in our application to show what type of retainer that we had above our Penn perforations to insure that it is adequate to squeeze off all the possible communication in the wellbore.

Q. In your opinion is this an adequate squeeze packer to use for this purpose?

A. Oh, yes, sir, it is.

Q. Exhibit Number Seventeen.

A. Seventeen is just a compensated neutron formation density log of the Peterson "H". Again, this is just for the Examiner's convenience.

Q. Okay. Tell me something about the economics of this project, Mr. Blevins. What does it currently cost you in terms of barrels of water per day to truck this stuff away?

A. Oh, it's about $1.14 on the average for 1980 is what it cost us to truck the water away, and that includes the water that we disposed of in the Amoco well, which is cheaper than the trucking to the south of us. But on the average it's $1.14 a barrel.

Q. If the Division approves the -- this well for disposal in the Wolfcamp of the water produced from the Pennsylvanian and Fusselman wells, in your opinion would it lengthen the economic life of this project?

A. Yes, sir, it would.

Q. And why?

A. Basically it would reduce maintenance costs. You can produce the well at a lower rate economically and therefor it would recover more reserves.

Q. How long have you been working in this area, Mr. Blevins?

A. Approximately fourteen months.

Q. In your opinion is the proposed disposal formation in the proposed well the optimum well and formation to use of disposal of water produced in the South Peterson Field?

A. Yes, sir, it would be.

Q. Based upon your studies are you able to find or locate any other well or formation that could serve as a disposal formation or well for this disposed water?

A. We haven't been able to yet.

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

A. Yes, sir, it will.

Q. Were Exhibits One through Seventeen prepared by you directly or tabulated and compiled under your direction and supervision?

A. Yes, sir, they were.

MR. KELLAHIN: Let me take just a moment here. That concludes my examination of Mr. Blevins. We move the introduction of Phillips' Exhibits One through Seventeen.

MR. STAMETS: Without objection -- I believe there are eighteen, Tom.

MR. KELLAHIN: Eighteen?

A. Oh, the other log.

MR. STAMETS: There are two logs.

MR. KELLAHIN: I'm sorry, there are two

logs. Eighteen.

MR. STAMETS: Without objection these exhibits will be admitted.

Are there questions of this witness, Mr. Carr?

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Blevins, I would like to direct your attention to what I think is your Exhibit Number Two. It's a copy of Form C-108 which was filed with the Commission.

A. Yes, sir.

Q. Was this form previously submitted to Enserch?

A. Yes, sir.

Q. Have you amended it since the original time that -- I'm not trying to lead you into anything, but the figure that we had on the form that we saw was a minimum injection -- minimum injection volume of 400. Has that recently been changed? Is 300 correct?

A. 300 is correct, yes, sir, and we -- that was the amendment that we made on the form --

Q. Okay.

A. -- when we resent it in.

Q. Did you testify that 300 barrels a day was the water that you're currently producing from your operations in this area?

A. Yes, sir, that's basically what we've seen out there.

Q. Is the Amoco well actually taking any water or are you planning to dispose of all of your water into this disposal well?

A. This one, if we're granted the Peterson "H" No. 1, we would dispose of all the water that we could. It would have to be tested first. We're not for sure how far out this would go before pressure might exceed what we could inject at.

After the testing we would dispose of all our water into the well itself.

Q. And a maximum of 1000 barrels a day would meet your foreseeable needs.

A. Yes, projected on what I have now.

Q. I'd like you to now look at your structure map. I don't know what number it is.

Exhibit Number Six. I believe you stated and correct me if I'm wrong, that this is offered to show that you are -- would be injecting at a structural position whereby you would not be watering out any gas wells, if there are such in the Wolfcamp formation.

A. No, sir, I didn't say anything about gas wells.

Q What was the purpose of this exhibit?

A. This is to show that our well is structurally lower than the wells in the field on that side except for our No. 4-A Well, the only well which is lower than our well structurally.

Q If there was gas in the Wolfcamp, it would be above any water zone, is that correct?

A. It should be above it, yes, sir.

Q And so this injection zone is structurally low in the Wolfcamp, is that correct?

A. Yes, sir.

Q I believe you stated that you anticipated that the injection -- injection of fluids, the waters would generally drain to the south and east.

A. Based on what we can see here that's what we would anticipate.

Q. And what are you basing that conclusion on?

A. Well, the well being injected, there's no pressure drainage in the Wolfcamp;since there's no pressure drainage it would drain due to gravity. We're structurally low. We anticipate the structure goes south is lower than us and we anticipate to the east is lower than what we are, and so that's why it would not drain toward No. 7, your No. 7 Well, because you're structurally higher than what we are.

Q. Do you have any control to the east of the proposed injection well that would confirm your interpretation?

A. No, sir.

Q. Now I'd like to have you look at Exhibit Number Seven, which is the long cross section. Does this exhibit show that the Wolfcamp injecting interval is continuous across this entire area?

A. Yes, sir.

Q. And as such, do you still believe that the injection waters would drain off to the east and not across the interval which you've shown?

A. No, sir, it would be hard for them to run uphill and when you're injecting under pressure it will move -- migrate downward.

Q. But -- and you do not think that it would be running to the west across the structure which you have shown on this cross section?

A. No, sir, not without a pressure drainage.

Q. Does this show -- this does show, does it not, that the zone correlates over a wide area?

A. Yes, sir, it does.

Q. And the characteristics appear to be relatively the same in the Well Peterson "H" No. 1 at A' and also all the way in the Goldston Well, which is at "A" on the cross section?

A. Yes, sir, for the gamma ray it would.

Q. So you -- so the real purpose here is to show a high degree of correlation.

A. Yes, sir.

Q. Now, if we look at your water injection calculations, which is your Exhibit Number Nine, I believe you indicated that if you inject water at 300 barrels per day at a constant rate, you would anticipate at the end of 10 years that you would drain an area with a radius of 1186 feet.

A. Not drain, I would inject.

Q. I mean you would inject and you would --

A. Have a radius of 1186 feet for my injected water.

Q. And you'd have produced water within that radius in a circle.

A. I'm not following that.

Q. The injected water would reach 1186 feet from the wellbore.

A. Yes, sir.

Q. All right. How close is the Lambirth No. 3 Well to the proposed injection well?

A. Which No. 3, yours or ours?

Q. Ours.

A. Okay, you're 7700 feet from it. Your No. 7 Well is the closest well and it's 1400 feet from it.

Q. If you -- do you anticipate an increase in the volumes of water you will have to inject?

A. Yes, sir, I do. That's why we asked for 1000 barrels maximum.

Q. And if you go to 1000 barrel maximum, what is the radius that you feel there would be water encroachment?

A. 1610 feet.

Q. So it would reach the Lambirth No. 7 Well, which is 1400 feet away.

A. Yes, sir.

Q. If there were hydrocarbons --

A. If there was hydrocarbons present.

Q. Now, let me direct your attention to the well history, and I'm trying to read this and having trouble doing so.

I'm interested in the testing done in the Wolfcamp zone, which I believe is the last paragraph on page two of this exhibit. And I note in there it says no oil produced.

A. Yes, sir.

Q. Did you make any gas in the well?

A. No, sir.

Q. Now, it looks to me like you acidized this, is that correct?

A. Yes, sir.

Q. Do you know when this well was acidized?

A. Just prior to the time we ran our injectivity test. Let me think.

Q. Well --

A. Sometime last August.

Q. It says at the top August 1, 1980. Would it have been before that date or after that date?

A. No, this is after. This is chronological so we're after -- after we had tested this -- at August 1st we were testing the Penn and then after the Penn didn't prove productive we squeezed that off and we tested the Wolfcamp to try to find hydrocarbons and all we recovered was water, and then we acidized it and ran an injectivity test in it.

Q. Would that have been in close proximity with it? Do you think it would have been in August or would it have been later?

A. Probably in August that -- that year.

Q. All right. So your water analysis is actually a sample that you took after you acidized, is that correct?

That's Exhibit Thirteen.

A. Yes, sir, much after we acidized.

Q. Now, Mr. Blevins, this question may sound familiar to you, but suppose there were hydrocarbons in the Wolfcamp underneath the Enserch lease that might be watered out in the No. 7 Well by injection.

Do you know of any way to monitor this situation and be certain that your injection water would not affect the hydrocarbons under the Enerch lease prior to any damage being done?

A. If by some remote possibility there were hydrocarbons there, no, it would be too expensive to monitor. You're talking $40,000 to set up a system to monitor.

MR. CARR: I have no further questions of Mr. Blevins.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Blevins, do you know what zone the

Amoco disposal well is utilizing?

A. Yes, sir.

Q. Is it the Wolfcamp zone?

A. No, sir, it's --

Q. Well, I think that's -- that's basically what I was trying to determine, Mr. Blevins.

A. I believe it is a Fusselman completion. The last testimony would have it in there. It just slips my mind now.

Q. Is that the only other disposal well which has been approved in this area?

A. As far as I know, sir.

MR. STAMETS: Are there any other questions of this witness? He may be excused.

MR. KELLAHIN: That concludes our direct case, Mr. Stamets.

MR. STAMETS: I believe we need to swear this witness. He was out of the room when we were swearing witnesses.

If you'd like to stand and be sworn, please.

(Mr. Renoult sworn.)

DANIEL C. RENOULT

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Daniel C. Renoult. I am employed by Enserch Exploration, Inc., in Midland, Texas.

Q. And, Mr. Renoult, in what capacity are you employed?

A. As a District Petroleum Engineer.

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

A. Yes, sir.

Q. Are you familiar with the application filed by Phillips in this case?

A. Yes, sir.

Q. Are you familiar with the subject area?

A. Yes, sir, I am.

MR. CARR: Are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q Mr. Renoult, have you prepared certain exhibits for introduction in this case?

A. Yes, sir, I have.

Q Will you please refer to what has been marked Enserch Exhibit Number One and explain what it is and what it shows?

A. Exhibit Number One is a map showing Enserch Exploration's acreage in part of Roosevelt County, New Mexico. Enserch Exploration acreage is shaded in gray on this map. Enserch Exploration has six wells currently producing in the subject area. These wells are located in the South Peterson Field.

This field was discovered by Enserch Exploration with the drilling of the Lambirth Well No. 1.

These six wells are evidenced by the red dot on this map. All these wells are currently producing from the Fusselman and/or Pennsylvanian formations. These two geological formations which are currently producing in the field are located below the Wolfcamp formation.

Phillips Petroleum proposed salt water disposal well, the Peterson "H" Well No. 1 is evidenced by the black arrow on this exhibit. The Phillips Petroleum

Peterson "H" Well No. 1 is located only 510 feet from Enserch acreage to the west. The Phillips Petroleum proposed salt water disposal well is located only 1170 feet from the Enserch Lambirth Well No. 7 to the west. The Enserch Exploration Well No. 7 is currently completed through and producing from the Fusselman formation. The Enserch Lambirth Well No. 7 exhibits up-hole recompletion possibilities through the Pennsylvanian formation and Wolfcamp formation. The Phillips Petroleum "H" Well No. 1 is located approximately 3600 feet from the Enserch Exploration Lambirth Well No. 3, located to the southwest. This well, the Enserch Exploration Lambirth Well No. 3 was tested through the Fusselman formation and is currently producing from the Pennsylvanian formation. The Lambirth Well No. 3 exhibits additional up-hole recompletion possibilities through the Three Brothers formation and the Wolfcamp formation.

Also indicated on this exhibit in Section 11 -- I'm sorry, in Section 1 of Range 33 East, Township 6 South, is the Enserch Exploration Lambirth Well No. 11. This well was drilled as a Fusselman test in early 1981. The Fusselman and the Pennsylvanian formation didn't prove to be productive in this Lambirth Well No. 11. Enserch Exploration, Inc., and its partners are planning to test in the near future the Wolfcamp and San Andres formations for hydrocarbon production in this well.

MR. KELLAHIN: In which well?

A. Lambirth Well NO. 11.

This map also shows that directly to the south and east of the proposed Phillips Petroleum salt water disposal well Enserch Exploration, Inc., owns a substantial acreage which has not yet been tested as far as Wolfcamp hydrocarbon production is concerned.

Also evidenced on this exhibit by a yellow dot is the H. L. Brown, Junior, Mary Martin Well No. 1. This well is producing from the Wolfcamp formation where Phillips Petroleum is planning to dispose of salt water. As of December 31st, 1980, the cumulative production from this well was equal to 1,613,901 standard cubic feet of gas and 10,500 barrels of condensate.

MR. STAMETS: Excuse me, that's the well colored in yellow in Section 29.

MR. CARR: That's right.

MR. STAMETS: And that is a Wolfcamp gas well.

MR. CARR: That's correct.

A. Yes, sir.

Additional hydrocarbon Wolfcamp production is present in the Todd Field located southeast of the Peterson "H" Well No. 1, where Phillips Petroleum is considering disposing of salt water. This field is off the map, located to the right. In 1980 7 oil wells were producing from the Wolfcamp formation in the Todd Field.

Q. All right, Mr. Renoult, now if I -- I'd like to direct your attention to the No. 11 Well in Section 1, Township 6 South, Range 32 East. There's a dry hole symbol there. Does that symbol apply only to the Fusselman and the Penn?

A. Yes, sir, it does.

Q. Now, in the normal course of events when you test a well, do you generally start and test the deepest formations first?

A. Yes, sir, we start at the bottom and work our way up.

Q. Have you contacted your partners concering testing the Wolfcamp in this well?

A. Yes, sir, we have.

Q. And I believe your testimony is that there are three wells that you consider to have possible Wolfcamp production in them, is that right?

A. Yes, sir.

Q. And which wells are those?

A. There is the Enserch Lambirth Well No. 7, Enserch Lambirth Well No. 3, and Enserch Lambirth Well No. 11.

Q. Will you now refer to Enserch Exhibit Number Two and review this for Mr. Stamets?

A. Exhibit Number Two gives a gas and condensate production history of the H. L. Brown, Junior, Mary Martin Well NO. 1.

This well was indicated by a yellow dot in the previous exhibit, Exhibit Number One.

This well was initially drilled by Magnolia Petroleum in November, 1955. The well was abandoned and re-entered by H. L. Brown, Junior, in May, 1969.

This well is perforated through the Wolfcamp formation from 7381 feet to 7401 feet. The well was eventually connected to a gas line in early 1970. As of December 31st, 1980, this well produced approximately 1.6 Bcf of gas and 10,500 barrels of condensate from the Wolfcamp formation where Phillips Petroleum is considering disposing of salt water.

Q. Now this is the nearest Wolfcamp production to the injection well, is that correct?

A. Yes, sir.

Q. It's still some distance from the Lambirth No. 2 -- No. 3 and No. 7 Wells.

A. Yes, sir. This well is located approximately 29,000 feet south from the Phillips Petroleum Peterson "H" Well No. 1.

Q. Will you now refer to Enserch Exhibit Three and review this for the Examiner?

A. Exhibit Number Three gives the production history and forecast for the Enserch Exploration Lambirth Well No. 7. This well is located only 1170 feet from the proposed Phillips Petroleum salt water disposal well.

Extrapolating the previously established decline rate down to an economic limit of 30 barrels of oil per month indicated the Enserch Exploration Lambirth Well No. 7 will produce until December, 1983.

The remaining producing life of the Fusselman formation in the Enserch Exploration Lambirth Well No. 7 is approximately equal to 2-1/2 years.

Q. And then at the time the Fusselman reaches its economic limit what plans would you have for the well?

A. This well will be recompleted up-hole through the Pennsylvanian formation and Wolfcamp formation.

Q. Will you refer to Exhibit Number Four and review that for the Examiner?

A. Yes, sir. Exhibit Number Four is composed of the open hole logs from the Enserch Exploration Lambirth Well No. 7. The first page is a compensated formation density compensated neutron porosity log. The second page is a dual laterolog sperically forecast log.

The Enserch Lambirth Well No. 7 is currently producing from a 3-foot interval in the Fusselman formation. This well is perforated from 7824 feet to 7827 feet. It's cumulative production as December 31st, 1980, was equal to 75,069 barrels of oil.

The remaining producing life of the Fusselman formation is estimated at 2-1/2 years.

Up-hole recompletion possibilities are present in the subject well. The Pennsylvanian formation offers 16 feet of pay from 7704 feet to 7720 feet. Based on the production history in the subject South Peterson Field, the producing life of the Penn formation in the Enserch Lambirth Well No. 7 was estimated at approximately five years.

Q. Will you now review Exhibit Number Five?

A. Exhibit Number Five is a suite of open hole logs through the Wolfcamp formation in the Enserch Exploration Lambirth Well No. 7.

The Enserch Exploration Lambirth Well No. 7 is located only 1170 feet west of the Peterson "H" Well No. 1, where Phillips Petroleum is planning of disposing salt water.

The Enserch Exploration Lambirth Well

No. 7 has 14 feet of potential hydrocarbon pay in the Wolfcamp formation from 7332 feet to 7346 feet. This potential hydrocarbon pay through the Wolfcamp formation in the Enserch Exploration Lambirth Well No. 7 runs 7 feet high to the Phillips Petroleum Peterson "H" Well No. 1.

Since the Lambirth Well No. 7 is currently completed through the Fusselman formation and since this well has some excellent up-hole recompletion possibilities through the Pennsylvanian formation, Enserch Exploration has not yet had a chance and the opportunity to test and deplete the Wolfcamp formation in this well.

Q. Mr. Renoult, is it your testimony then that the potential Wolfcamp zone in the No. 7 Well is structurally higher than the zone that was perforated in the Phillips Well?

A. Yes, sir, it's 7 feet high to the Phillips Petroleum Peterson "H" Well NO. 1.

Q. How soon do you anticipate being able to test the Wolfcamp?

A. Going to take at least 7-1/2 years, the time to deplete the Fusselman formation, recomplete the well in the Pennsylvanian formation, and deplete the Pennsylvanian formation.

Q. Will you now refer to Enserch Exhibit

Number Six and review this for the Examiner?

A. Exhibit Number Six gives the production history and forecast of the offset Enserch Exploration Lambirth Well NO. 3.

This well was initially tested and completed through the Fusselman formation where it produced from in August and September, 1978. Because of a limited deliverability from the Fusselman the Lambirth Well No. 3 was recompleted up-hole through the Peterson Pennsylvanian formation.

Extrapolating a previously established decline rate down to 1000 Mcf per month indicated that the Enserch Exploration Lambirth Well No. 3 will produce until December, 1988. The remaining producing life of the Pennsylvanian formation in the Enserch Exploration Lambirth Well No. 3 is approximately equal to 7-1/2 years.

Q. Will you now refer to Enserch Exhibit Number Eight, or Number Seven.

A. Exhibit Number Seven is composed of the open hole logs in the Enserch Exploration Lambirth Well No. 3.

The Enserch Exploration Lambirth Well No. 3 was initially tested and completed through the Fusselman formation from 7840 feet to 7849 feet. After less than two months of production in August and September, 1978, the Fusselman formation was temporarily abandoned because of its low rate.

The Enserch Exploration Lambirth Well No. 3 then was recompleted up-hole through the most prolific Pennsylvanian formation. The remaining life of the Pennsylvanian formation is estimated at approximately 7-1/2 years in this well.

After depletion of the Pennsylvanian formation Enserch will recomplete the Lambirth Well No. 3 down to the Fusselman horizon from 7840 to 7849. After complete depletion of the Fusselman zone, the Lambirth Well No. 3 will be recompleted up-hole through the Three Brothers interval from 7653 to 7660.

After depletion of the Three Brothers interval the well will be recompleted up-hole through the Wolfcamp potential pay.

Q. Will you now refer to Enserch Exhibit Number Eight?

A. Exhibit Number Eight is composed of the open hole logs from the Enserch Exploration Lambirth Well No. 3 through the Wolfcamp horizon.

The Enserch Exploration Well No. 3 has 10 feet of potential hydrocarbon pay in the Wolfcamp formation from 7334 feet to 7344 feet. This potential hydrocarbon pay in the Wolfcamp formation in the Enserch Exploration

Lambirth Well NO. 3, runs 21 feet high to the Phillips Petroleum Peterson "H" Well No. 1.

Since the Lambirth Well No. 3 currently is producing from the Pennsylvanian formation and since this well has some recompletion possibilities in the Fusselman and Three Brothers formations, Enserch Exploration has not yet had the opportunity to test and deplete the Wolfcamp formation in the Lambirth Well No. 3.

Q Mr. Renoult, will you now review the data contained on Exhibit Number Nine?

A. Exhibit Number Nine is composed of a suite of logs from the Peterson "H" Well No. 1, where Phillips Petroleum is considering disposing of salt water. This exhibit is composed of three pages.

The first page is a Schlumberger Computer Processed Coriband Log used to analyze the Wolfcamp formation. Indicated on this exhibit are the perforations through the Wolfcamp zone in the Phillips Petroleum Peterson "H" Well No. 1. This well is perforated through a 9-foot section from 7332 feet to 7341 feet. This corresponds to a subsea depth of -2948 feet to -2957 feet.

The Wolfcamp perforations in the Phillips Petroleum Peterson "H" Well No. 1 are running 7 feet low to the offset Enserch Exploration Lambirth Well No. 7 and 21 feet low to the offset Enserch Lambirth Well No. 3.

The second page of this exhibit is a Compensated Formation Density Compensated Neutron Log for the Wolfcamp.

The third page of the exhibit is a Dual Laterolog Spherically Forecast Log through the Wolfcamp formation in the Peterson "H" Well No. 1.

Q. Will you now review your Exhibit Number Ten for the Examiner?

A. Exhibit Number Ten is a Schlumberger Coriband Computer listing pertaining to the Phillips Petroleum Peterson "H" Well No. 1.

The Peterson "H" No. 1 is perforated through the Wolfcamp formation from 7332 feet to 7341 feet. This 9-foot injection zone has an average water saturation of 36.8 percent, an average porosity of 13.4 percent, and an average permeability of 4.1 millidarcies, as indicated by the Schlumberger Computer Processed Coriband Log.

Q. Will you now go to your Exhibit Number Eleven?

A. Exhibit Number Eleven provides water encroachment calculations based on average daily injection rate of 700 barrels per day proposed for Phillips Petroleum Peterson "H" No. 1. This volume was derived from a minimum volume of 400 barrels per day and a maximum volume of 1000 barrels per day, as indicated by Phillips Petroleum in April, 1981.

9 feet with an average porosity of 13.4 percent were perforated in the Phillips Petroleum Peterson "H" Well No. 1. Water encroachment calculations were conducted based on radial front propogation.

The Phillips Petroleum Peterson "H" No. 1 is located only 510 feet from Enserch Lambirth lease. This exhibit indicates that based on an average daily injection volume of 700 barrels per day water will encroach on Enserch Exploration acreage in less than 12 months.

The Enserch Exploration Lambirth Well No. 7 is located only 1170 feet west of the Phillips Petroleum Peterson "H" Well No. 1. Water injected in the Phillips Petroleum well will reach the wellbore of the Enserch Exploration Lambirth Well No. 7 in approximately 3-1/2 years. This will be before Enserch Exploration had time to test and deplete the Wolfcamp formation in its Lambirth Well No. 7.

Q. Will you now go to Enserch Exhibit Number Twelve?

A. Exhibit Number Twelve is a stratigraphic cross section between the Phillips Petroleum Peterson "H" Well NO. 1 on the right and the Enserch Exploration Lambirth

Well No. 7. The Enserch Lambirth Well No. 7 is located 1170 feet west of the proposed salt water disposal well.

The interval where Phillips Petroleum is considering disposing of salt water is indicated in blue on this stratigraphic cross section. The Wolfcamp hydrocarbon potential pay in the Enserch Exploration Lambirth Well No. 7 is indicated in red on this exhibit.

The Lambirth Well No. 7 is running 7 feet high to the Phillips Petroleum Peterson "H" Well No. 1. This stratigraphic cross section shows a correlation between the Enserch Lambirth Well No. 7 and the Phillips Petroleum Peterson "H" Well No. 1 is outstanding through the Wolfcamp formation where Phillips is considering disposing of salt water.

Based on an average injection volume of 700 barrels per day water will encroach on the Enserch Lambirth lease in less than 12 months and will reach the wellbore of the Lambirth Well No. 7 in approximately 3-1/2 years.

Q. Now, Mr. Renoult, this is a stratigraphic cross section, is that correct?

A. Yes, sir.

Q. And these wells are not -- these wells are not hung at their true subsea depth, is that right?

A. That's correct.

Q. If they were at their true depth would that affect what this exhibit depicts?

A. No, sir.

Q. Will you now go to Enserch Exhibit Number Thirteen?

A. Exhibit Number Thirteen is a stratigraphic cross section running from the Phillips Petroleum Peterson "H" Well No. 1, located on the right, to Enserch Exploration Lambirth Well No. 3, located on the left.

The interval where Phillips Petroleum is considering disposing of salt water is indicated in blue on this exhibit. The Enserch Exploration Lambirth Well No. 3 is running 21 feet high to the proposed salt water disposal well.

Again the stratigraphic cross section shows that correlation between Enserch Exploration Lambirth Well No. 3 and the Peterson "H" Well No. 1 is outstanding through the Wolfcamp formation where Phillips Petroleum is considering disposing of salt water.

Q. Mr. Renoult, what conclusions can you reach from your study of this particular area and the proposed disposal project?

A. Enserch Exploration's study has shown that hydrocarbon production in the Wolfcamp formation does exist in the subject area. This study has shown that Enserch

Exploration is going to test the Wolfcamp formation in the Lambirth Well No. 11 in the very near future.

This study has shown thatthe offset Lambirth Wells No. 7 and No. 3 are currently producing from the Fusselman and Pennsylvanian formations. After depletion of these producing horizons up-hole recompletion through the Wolfcamp formation will eventually be performed by Enserch Exploration.

Enserch Exploration's study has shown that outstanding well-to-well correlation does exist through the Wolfcamp formation in the subject area.

Q. In your opinion would granting the application of Phillips impair the correlative rights of Enserch?

A. Yes, sir, it would.

Q. Why is that?

A. Disposing of salt water in the Phillips Petroleum Peterson "H" Well No. 1 is a real threat considering all the potential of the Enserch wells and offsetting Enserch acreage. Premature water breaks through and water encroachment will result in the loss of hydrocarbon production and hydrocarbon reserves.

Q. In your opinion will granting the application of Phillips result in waste?

A. Yes, sir, it would.

Q. And why is that?

A. Disposing of salt water in the Phillips Petroleum Peterson "H" Well No. 1 would increase the risk in the Enserch wells and would decrease the recoverable reserves.

Q. In your opinion would reserves be left in the ground that otherwise could be produced?

A. Yes, sir.

Q. Do you have a recommendation to make to the Examiner concerning the application of Phillips?

A. I recommend that Phillips Petroleum's application be denied.

Q. Mr. Renoult, were Enserch Exhibits One through Thirteen prepared by you or under your direction and supervision?

A. Yes, sir, they were.

MR. CARR: At this time, Mr. Stamets, we would offer Enserch Exhibits One through Thirteen.

MR. STAMETS: Without objection they will be admitted.

MR. CARR: I have nothing further on direct.

MR. STAMETS: Any questions of this witness?

MR. KELLAHIN: Yes, sir.

MR. STAMETS: Mr. Kellahin.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Renoult, let me see if I understand why you're here.

You don't have any problem with the disposal of water into the Wolfcamp formation insofar as your Pennsylvanian and Fusselman production is concerned, do you? In other words, you don't consider the disposal into the Wolfcamp as a potential risk to the Pennsylvanian and Fusselman production, do you?

A. No, sir.

Q. Your concern is with regards to what you identify as a potential that the Wolfcamp might at some point in the future be productive in some of your wells in the South Peterson Field, is that not true?

A. That's correct.

Q. And you've made a study of all the logs, I assume, for all the wells that Enserch operates in this field, have you not?

A. I looked at the nearby wells which would be directly concerned by -- and primarily concerned by the application of Phillips Petroleum.

Q. All right, and in that examination you have identified a concern for the potential for Wolfcamp production in the No. 7 Well in Section 30; the No. 3 Well in Section 31; and if I understood you correctly, this No. 11 Well in Section 1, which is this short section to the south.

A. Yes, sir, and also our untested acreage to the south and southeast of the proposed Phillips Petroleum Peterson "H" Well No. 1.

Q. Well now you've already tested the acreage to the south in Section 32, have you not, for the Wolfcamp?

A. No, sir.

Q. The Enserch Rader No. 2 Well, the proposed disposal well that you wanted to use several months ago, you don't have a log of the Wolfcamp in that well?

A. I do have a log.

Q. All right, do you have that log with you?

A. No, sir.

Q. You're not concerned about this well some six miles to the south in Section 29, are you?

A. This well doesn't belong to Enserch so I'm not directly concerned by this well.

Q. All right. The only reason to bring that up is that it is some six miles away from the disposal well before you encounter any Wolfcamp production, is that not true?

A. No. The reason for bringing this was to show that there is some Wolfcamp production in this area.

Q. That's right, and the nearest Wolfcamp production is some six miles away.

A. For the time being, yes, sir.

Q. All right. You don't have a log for the Rader Enserch No. 2 Well?

A. No, sir, I don't have it here.

Q. I guess we'd better get it. May I have a minute to go get it?

MR. STAMETS: Sure.

MR. KELLAHIN: All right, sir, thank you. I'm ready.

MR. STAMETS: All right, we'll go back on the record then. Resume the hearing.

Q. Now, Mr. Renoult, I direct your attention to your Exhibit Number Ten which is an analysis on the Phillips proposed disposal well and direct your attention to the second page and it shows an average porosity of 13.4 percent?

A. Yes, sir.

Q. And that's the porosity for the Wolfcamp?

A. Yes, sir.

Q. In the disposal well?

A. Yes, sir.

Q. All right. And despite that average porosity of 13.4 percent, Mr. Renoult, when Phillips did test that zone they encountered nothing but formation water, is that not true?

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

Q. All right, sir. Now let's go to your log on the Enserch No. 7 Well, which I think is Number Five. Do you have that exhibit, Mr. Renoult?

A. Yes, sir.

Q. Now this log is a compensated formation density log, is it not, that will show an indication of porosity, will it not?

A. Yes, sir, it does.

Q. All right, sir. Would you look at what you've identified as this Wolfcamp potential pay at -- I believe you've indicated it in yellow, and would you tell me what in your opinion is the porosity for that zone?

A. The maximum porosity is around 7 percent and the average porosity would be around 4 or 5 percent, I guess.

Q. All right, sir. Would you look for the information on the No. 3 Well, which I think is Exhibit Number

Eight. Let me make sure. Yes, sir, Exhibit Number Eight.

A. Yes, sir.

Q. Now, this is the density log for the Lambirth No. 3 Well. This was one of the other wells you were concerned about having potential Wolfcamp production.

A. Yes, sir.

Q. Would you identify for us what you believe to be the porosity for the Wolfcamp potential pay indicated in the yellow?

A. The maximum porosity is around 9 percent in the middle part of the Wolfcamp pay, and around 14 percent in the top part of the Wolfcamp pay, and the average porosity for the entire zone should be around 10 percent, more or less.

Q. All right, sir. Let's go to the information -- did you supply us any information on this No. 11 Well in Section 1? There's a log on that one, isn't there, somewhere?

A. No, sir.

Q. No? You didn't supply any information with regards to your opinion that there was potential Wolfcamp production in that No. 11 Well?

A. No, I didn't submit any log from the Lambirth Well No. 11.

Q. Okay. So with regards to the No. 3 Well and the No. 7 Well your entire opinion about the potential Wolfcamp production is based upon the analysis of the logs we've just talked about?

A. It's based on the log illustration and also based on the structural pay, structural position of the pay.

Q. The structural position insofar as that you anticipate water disposed of in the disposal well would migrate in that general direction.

A. Structural position depicts that we're higher to the well which made water, which definitely leaves the possibility of producing oil or gas from the Wolfcamp formation in the Lambirth Well No. 7 and Lambirth Well No. 3.

Q. And that in turn is based upon your estimates of what this porosity is for each of these wells?

A. No, sir, the structural position has nothing to do with the magnitude of the porosity.

Q. No, I understand, but in order to evaluate and reach the opinion that there is potential Wolfcamp production in the No. 7 and No. 3 Well you've relied, have you not, on this porosity number that you've just given me?

A. Yes, sir.

Q. All right. Now the Rader Enserch No. 2 Well in Section 32, that was your disposal well?

A. The proposed Enserch salt water disposal well.

Q. Yes, sir, and you had proposed to dispose of produced water from the Pennsylvanian and Fusselman into the Montoya formation?

A. Yes, sir.

Q. All right. You never tested the Wolfcamp in that Enserch Rader No. 2 Well, did you, Mr. --

A. No.

Q. -- Renoult?

A. No, the Wolfcamp was not tested in the Rader Well No. 2.

Q. All right, and it wasn't tested and you were going to use that wellbore for disposal purposes because the Wolfcamp permeability and porosity figures were just too low, weren't they?

A. No, sir.

Q. They weren't?

A. I don't say that we are going to dispose of water in the Montoya because the Wolfcamp had lower porosity. Enserch Exploration --

Q. No, sir, you misunderstood my question. Maybe I didn't make myself clear.

You did not attempt to test for hydrocarbon production in the Wolfcamp in that disposal well, did you?

A. No, sir, we don't attempt to test the Wolfcamp.

Q. All right. You had attempted to test production out of the Pennsylvanian and Fusselman, I think, in that well.

A. Yes, sir.

Q. And you found that you couldn't get production out of either of those formations, and that you were going to go ahead and use this as a disposal well in the Montoya. That's right?

A. Yes, sir.

Q. And you were going to go ahead and do that without ever testing the potential for Wolfcamp production in that well.

A. Enserch Exploration needed to have a salt water disposal well in the South Peterson Field. It's an operating necessity.

Q. All right, sir.

A. We are spending over $35,000 a month to dispose of water. Based on a 10-year life, this would represent after tax savings of $4.3-million if we could dispose of water in the Rader Well No. 2.

Q. My point is that you thought so little of the log indications in the Wolfcamp for that disposal well that you've never bothered to test it, that you were going to use the well for disposal purposes and never test that Wolfcamp, weren't you?

A. It has not been tested.

Q. No, sir, and the reason you haven't is because it represents too high a risk.

A. No, sir.

Q. All right, but as a matter of fact, you haven't done it yet, have you?

A. Not yet.

Q. And that is not any of the wells you've indicated as ones of concern for you in your direct testimony, was it?

A. That's correct, because we are going to dispose water in the Montoya formation.

Q. All right. Mr. Renoult, let me show you what was introduced in Commission Case 7226 as Phillips Petroleum Company's Exhibit Number Two, and direct your attention to Enserch Exploration Company's Gladys Rader No. 2, which is the disposal well.

I'd like to direct your attention to that log and to the Wolfcamp as picked in the log and have you identify for me what, in your opinion, is the porosity of the Wolfcamp in the disposal well?

A. It's kind of hard to measure the porosity in a log where the vertical lines are not all present, but I guess -- the maximum porosity seems to be around 2, 2.5 percent. I would like to underline that I'm dealing with a reduced scale log with no vertical lines and not too many horizontal lines. My evaluation is approximate.

Q. What would you characterize the possible success of a Wolfcamp completion in the No. 7 Well for us? In terms of a percentage? Is this 100 percent sure thing for the Wolfcamp if you test that formation or is it 10 percent, how would you characterize the risk of getting a commercial Wolfcamp production at that location?

A. Approximately 50 percent.

Q. Does that take into consideration the fact that the offsetting location of Phillips to the east had porosity of 13.4 percent and produced nothing but water?

A. Yes, sir.

Q. Okay. Is your management going to make the decision on perforating the Wolfcamp based upon your decision, Mr. Renoult, or is that decision to be made by others?

A. In which well, sir?

Q. Well, your testimony has been that at some point in the future, prior to abandonment, Enserch is going to test the Wolfcamp in the No. 7 and the No. 3 Well. Is that a correct restatement of what you have said?

A. Yes, sir.

Q. All right, upon whose recommendation are they going to do that?

A. Management will review the engineering recommendation submitted by the district and will decide or not to go along with the recommendation from the district.

Q. I'm trying to understand where your recommendation lies in terms of the final decision by your company to test the Wolfcamp.

Are you simply giving us your recommendation on whether the Wolfcamp ought to be tested or is this in fact something that Enserch has already committed itself to do?

A. As indicated in my testimony, before we test the Wolfcamp we need to deplete the lowermost horizon. We need to deplete the Fusselman formation. We need to deplete the Pennsylvanian formation. We need to deplete the Three Brothers formation. So we are looking at a substantial amount of time before the Wolfcamp is tested and I cannot commit Enserch top management for a decision they might take ten years from now.

Q. So what you're telling us, that you may have some potential Wolfcamp production that you're going to test 7, 8, 10 years from now.

A. Yes, sir.

Q. And that this application ought to be denied based upon that.

A. Yes, sir.

Q. Isn't the real purpose in your objection here today, Mr. Renoult, because Phillips objected to your disposal well in the Montoya in Section 32?

A. No, sir.

Q. Let's look at some of the other wells in Exhibit Number One. Let me direct your attention to Section 31, to Well No. 6 up in the northwest corner. Do I understand correctly that Well No. 10 is a replacement well for Well No. 6?

A. That's correct.

Q. And Well No. 6 was originally drilled and penetrated through the Wolfcamp and attempted a completion in the Pennsylvanian?

A. That's correct.

Q. And that the No. 6 Well is now plugged and abandoned?

A. I think that's correct, also.

Q. And that you subsequently drilled No. 10 as a replacement well for the No. 6 Well?

A. That's correct.

Q. All right. You didn't bother to test the Wolfcamp formation in the No. 6 Well, did you, Mr. Renoult?

A. I don't believe the Wolfcamp was tested in the Enserch Lambirth No. -- Well No. 6 because when Enserch was running pipe in this well, Enserch dropped the casing. The casing is broken, corkscrewed, and we don't have any good cement bond between the casing and the formation.

That's the reason why this well was abandoned through the Fusselman.

Q. Let me direct your attention to the No. 5 Well in the little, short section, No. 1, to the south of -- in the Peterson Field.

That's a dry hole symbol, is it?

A. Yes, sir.

Q. All right, has that well been plugged and abandoned?

A. Yes, sir.

Q. And that well was drilled to test the Pennsylvanian and the Fusselman?

A. Yes, sir.

Q. All right. You didn't test the Wolfcamp in that well, did you?

A. The Wolfcamp was not tested in this well.

Q. It was tested?

A. Was not tested.

Q. Was not tested?

A. To the best of my knowledge.

Q. All right, and that well's been plugged and abandoned now.

A. Yes, sir --

Q. Excuse me, and that's the immediate east offset to this No. 11 Well that you think is going to have some Wolfcamp that you're going to test?

A. Yes, sir.

Q. Why in the world didn't you test it in the No. 5 Well?

A. Because in the Lambirth Well No. 11 we had some indication of hydrocarbons and I don't know if we had indication of hydrocarbons in the Lambirth Well No. 5.

Q. There's the Enserch Rader No. 1 Well?

A. Yes, sir.

Q. That well's been plugged and abandoned, has it not?

A. Yes, sir.

Q. And that well was drilled through the

Wolfcamp and tested the Pennsylvanian and the Fusselman?

A. I think so.

Q. All right, sir, and you plugged and abandoned that well without testing the Wolfcamp, didn't you?

A. We just renewed the lease to test the remaining up-hole formations in the Rader Well No. 1.

Q. And when are you going to do that?

A. The lease would expire in May 11th or 13th of 1982.

Q. 1982, and you haven't plugged and abandoned this well? I thought you told me you had.

A. Yes, we are going to re-enter this well.

Q. You're going to re-enter the well?

A. Yes.

Q. All right.

A. And we renewed the lease for this purpose.

Q. All right. Do you have the logs of that well available with you today?

A. No, sir.

Q. Do you have the log of No. 5 in Section 1 available with you today?

A. No, sir.

Q. How about the logs on the No. 11 Well in Section 1?

A. I don't have the open hole logs from Lambirth Well No. 11.

Q. Let me ask you one more series of questions, Mr. Renoult.

For the Enserch Well No. 7 and the No. 3 you've given us some calculations of -- or an opinion that you thought there was hydrocarbons present in the Wolfcamp in those wells.

Now in your Exhibit Number Ten, which is the calculations on the porosity in the disposal well, you've used a water saturation of 36.8 percent, and yet we know that well produced water. What have you used for a water saturation in your calculations for the No. 3 and the No. 7 Well?

Or have you made a similar calculation as you've done here?

A. No, sir. On Exhibit Number Ten the calculations were performed by Schlumberger. I don't believe I have the same type of data for the Enserch Lambirth Well No. 7 and Well No. 3.

Q. Oh, I'm sorry. I thought you had had that information. You haven't done a similar thing for your two wells as you've done for the -- this well?

A. I don't believe we have this type of computation from Schlumberger.

Q. Okay.

MR. KELLAHIN: Thank you. I have nothing further.

MR. STAMETS: Do you have something on redirect, Mr. Carr?

MR. CARR: Yes, I do, just a couple of short questions.

MR. STAMETS: Okay.

REDIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Renoult, I believe you testified that you -- that Enserch did not test the Wolfcamp in the Rader No. 2, is that correct?

A. Yes, sir, to the best of my knowledge.

Q. Looking at the overall effort of Enserch to develop this area, would a disposal well be of greater value to you than the Wolfcamp production in the Rader No. 2?

A. Yes, sir. As indicated in the two previous hearings we had regarding the Rader Well No. 2, Enserch is spending approximately $36,000 per month to dispose of salt water from the field.

Multiplied by 12 months and multiplied by 10 years, this would represent a net after tax savings of

$4.3-million.

We don't expect that the after tax net of income which could be generated from the Wolfcamp would be so high.

Q. I believe you stated that you've just renewed the lease on the Rader No. 1, is that correct?

A. Yes, sir.

Q. And when did you do that?

A. This was done around April, 1981. I don't recall the exact date.

Q. Was this a one year extension at the end of the --

A. Yes, sir.

Q. -- former lease?

A. Yes.

MR. CARR: I have no further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Renoult, Enserch would like to have a salt water disposal well out here and Phillips opposes it; and Phillips would like to have a salt water disposal well out here and Enserch opposes it.

Is there any zone out there that you

feel that could be used as a disposal zone by Phillips that you wouldn't be opposed to and which would be available to Enserch for disposal purposes?

A. Enserch is willing to dispose the water --

Q. I want -- I want your recommendation if there is a zone out there that you think both of you could agree to and would accept water.

A. I know one zone where we could dispose water. I don't think Phillips and Enserch could agree about it.

Q. No, that's not the question I asked. I'm asking you if you recognize any zone which could be used in this area to dispose of this water safely, without the potential for damaging hydrocarbon resources?

A. I don't know of any zone where Enserch and Phillips would --

Q. So in other words --

A. -- agree at this point.

Q. -- you feel that -- that you're going to have to spend this $4-1/2 million over the next few years to dispose of water.

A. If our application is denied by the Commission, Enserch would have no choice but to have this expense.

Q. It certainly seems like there is an awful lot of vertical section exposed out there to -- for there not to be some zone somewhere which would accept salt water.

A. Well, many zones don't have any porosity or permeability to inject the volumes of water we are considering and some zones were not tested, either.

Q. Would it be your recommendation that -- that if this zone is not an acceptable zone for disposal purposes and your zone is not an acceptable zone for disposal purposes, that the Division authorize no salt water disposal wells in this area?

A. I would not commit the -- the Division of New Mexico.

Q. I'm asking you your professional recommendation. Is that what you're indicating to me, that if we can't use the Montoya, if we can't use the Wolfcamp, there -- are you saying that there are no other zones out there which we could use for salt water disposal, and we shouldn't approve any other wells for salt water dispcsal?

A. No, that's not what I said, no. I -- we committed to have the water disposed of in the Montoya formation and not in the Wolfcamp. I didn't -- I have not made any extensive study of the remaining intervals above the Wolfcamp formation.

Q. Suppose your management requested you to work with Phillips to try and find a disposal zone which would be satisfactory with both companies, do you think that could be done?

A. I hope so.

Q. Okay. We've hit on the nub of the problem here.

On Exhibit Number Nine opposite the Wolfcamp zone in the column marked porosity and fluids analysis by volume, in the central part of that column opposite the blue perforated interval, there is what appears to be a dark shaded area. What is that supposed to represent?

A. This is supposed to represent a moved hydrocarbon volume, a volume of hydrocarbon just pushed by the drilling fluids when the well was being drilled, which indicates that the Wolfcamp has permeability, since the drilling fluids were able to push these hydrocarbons away from the wellbore.

Q. Why didn't Phillips see any of these hydrocarbons when they tested this zone?

MR. KELLAHIN: I've got a copy you can read. Here's the original.

MR. STAMETS: Good, I'd like to see that. Maybe that will help resolve some of this.

Anyhow, the question remains the same.

If there are moved hydrocarbons that have moved through the action of drilling fluid, why didn't they move back into the wellbore when it was perforated?

A. Different reasons are possible. One could be that we don't have the hydrocarbons represented by the log. Or the other reason is they were pushed too far from the wellbore and were not produced during the testing operations performed by Phillips Petroleum.

If you look at the water analysis from Phillips Petroleum, the Ph of the water is only 4.7, which might indicate that all the acid injected in the formation was not recovered and consequently, the testing performed by Phillips Petroleum was not long enough to produce the hydrocarbons which are within the Wolfcamp.

MR. STAMETS: Are there other questions of this witness? He may be excused.

MR. CARR: At this time I'd call Tom Brown.

THOMAS E. BROWN

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. Thomas E. Brown, Midland, Texas.

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

A. I'm employed as an Area Staff Geologist by Enserch Exploration, Incorporated.

Q. Have you previously testified before this Commission or one of its Examiners and had your credentials accepted and made a matter of record?

A. Yes, I have.

Q. Are you familiar with the application that Phillips filed in this case?

A. Yes.

Q. Are you familiar with the area which immediately surrounds the well which is the subject of the application?

A. Yes.

MR. CARR: Are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q. Will you please refer to what has been marked for identification as Enserch Exhibit Number Fourteen and explain what it is and what it shows?

A. Exhibit Fourteen is a stratigraphic cross section that goes from New Hope East Field in Section 29, Township 6 South, Range 34 East, it goes northward through Peterson South Penn, Fusselman, continues on through Peterson Field, and goes up north to a recently completed Mississippian well, Enserch No. 1 Finley, yet undesignated field.

This cross section is hung on a datum of the Three Brothers regional marker, which is this line right here.

The purpose of this cross section is to show that in the shallow part of the section the correlations are fairly easy. All the units can be correlated through; only the deeper portion is -- are the correlations real difficult.

So a pay that's identified here in the Sonny Brown No. 1 Martin, which was completed in the Wolfcamp formation, can be correlated across northward from some 12 miles.

This pay, which is marked in red here, corresponds roughly with -- which is hard to do here with this one inch to 100 foot scale -- but this roughly corresponds to what was marked on the Phillips exhibit as the Todd interval and it was colored yellow on that exhibit.

Partof this cross section shows that the interval that had the Wolfcamp pay in the Sonny Brown-Martin Well can be correlated across into the South Peterson Field and is present, in fact, in the three Enserch Wells that are up here, the Enserch No. 4 Lambirth, the discovery well, Enserch No. 1 Lambirth, and Enserch No. 3 Lambirth.

And from a geologic point of view there's very little difference in the sedimentation across there, as can be determined by both samples and logs.

Q. Do you have anything further to add to your testimony?

A. No.

Q. Was Exhibit Fourteen prepared by you?

A. Yes, it was.

MR. CARR: At this time, Mr. Stamets, we would offer Enserch Exhibit Fourteen.

MR. STAMETS: Without objection this exhibit will be admitted.

MR. CARR: I have nothing further of Mr. Brown on direct.

MR. STAMETS: Any questions of this witness?

MR. KELLAHIN: Just a minute, let me look at something.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Brown, apart from the Magnolia No. 1 Martin Well in Section 29, some six miles to the southeast of the proposed disposal well, do any of the other wells on your cross section produce from the Wolfcamp?

A. None of the other wells produce from the Wolfcamp, that's correct.

MR. KELLAHIN: I have nothing further. Thank you.

MR. STAMETS: Mr. Carr?

REDIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Brown, to your knowledge do any wells other than that -- the Brown Mary Martin No. 1, have any of those other wells, are they perforated and completed in the Wolfcamp?

A. Aside from the Phillips well I don't know of any other one that's been perforated and completed in that.

MR. STAMETS: The witness may be excused.

Mr. Kellahin, do you intend to offer any rebuttal testimony?

MR. KELLAHIN: Let me find out. I've got one witness, Mr. Luck.

Mr. Luck has not been sworn.

(Mr. Luck sworn.)

B. J. LUCK

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Luck, would you please state your occupation for us?

A. Yes. My name is B. J. Luck. I'm the Geological Development Director for Phillips Petroleum for the Permian Basin Region, which includes, among others, 11 counties in southeast New Mexico.

Q. Mr. Philip Drisko has testified on several occasions for Phillips here before the Division. What is his working relationship with you, Mr. Luck?

A. He works for me. He is my Field Supervisor.

Q. Have you previously testified before the New Mexico Division?

A. No, I have not.

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

A. I have a degree, a BA degree in geology from Texas Christian University in 1950. I subsequently worked as a mud logger. I started to work for Phillips Petroleum in Midland, Texas, 1953. Spent approximately 12 to 13 years in West Texas-Southeast New Mexico; approximately 10 years working the Four Corners area in northwest New Mexico.

I have worked as a qualified log analyst after a great many intensive courses in log analysis. I have worked a number of places around the world.

Q. Have you had an opportunity to study some of the logs in the South Peterson Field with regards to the Wolfcamp formation?

A. I have.

MR. KELLAHIN: We tender Mr. Luck as an expert geologist and log analyst.

MR. STAMETS: He is considered qualified.

Q. Mr. Luck, I'd like to direct your attention to Enserch's last exhibit, it's a cross section that was placed on the wall.

Mr. Brown has correlated the Wolfcamp across a rather extensive area and shown that the Magnolia Well in A' on the cross section is a producing Wolfcamp well.

Based upon your experience and study of this area, Mr. Luck, do you have an opinion as to whether or not the Wolfcamp as encountered in the South Peterson Field would be potentially productive from the Wolfcamp as found in the Magnolia well?

A. I would like to go on record as saying that the South Peterson Field is a separate geological feature, to the best of my knowledge and examination, a separate feature from the Todd Field, and a separate feature from the well on the extreme right under A'.

I do not feel that simply because a formation or a correlation as good as the red zone there, or the yellow zone on our own exhibit, can easily be followed and agreed on, doesn't necessarily make it a pay across 300 miles of New Mexico.

You must have a geological feature.

Q. All right, sir. Have you found a -- what you called a geological feature for the Wolfcamp in the South Peterson Field area?

A. I personally have not mapped this on a structural basis. It would appear that the Fusselman and Pennsylvanian are of a sufficient geological feature substance that the Wolfcamp probably does reflect them. I personally have not mapped it but I feel that it would reflect and be a part of the feature called South Peterson.

Q. All right, would you -- let me ask you this, then. You've heard the testimony this afternoon by all the witnesses with regards to the opinions of the various individuals as to the potential porosity to be encountered in particularly the Enserch No. 7 Well and the No. 3 Well.

Based upon your opinion as a geologist and log analyst, would you recommend that the Wolfcamp be perforated and tested in those two wells?

A. No, sir, I would not. I have found in my experience that a carbonate zone, dolomite or lime, of this thin nature usually requires fracturing to be commercially productive and I have also found -- I'm speaking in generalities here -- that a 4 percent porosity without fracturing is seldom ever a commercial reservoir.

There are exceptions, of course, but I'm speaking of the general nature and one particularly of this type. And I have seen this type of reservoir in many places.

Q. In your opinion, Mr. Luck, would approval of Phillips' application to use the Wolfcamp as a disposal formation in the Peterson "H" 1 Well constitute a risk to Enserch in their offsetting wells or leases?

A. I do not feel it would.

Q. In your opinion is the Wolfcamp encountered in the Enserch acreage capable of production in paying quantities, based upon your analysis?

A. I have not examined every well but the majority of the wells, and I believe we have a list of probably all the wells done by a previous witness for Phillips, would indicate that most of these wells by Enserch have less than 5 percent porosity, and I do not think that the criteria here are indicative of a commercial reservoir.

I do not personally know, also, I may further state, I do not know of any shows of hydrocarbon in our well. We tested primarily on a log analysis.

Q. In what ways would that log analysis differ from the testimony Enserch has given us based upon their logs?

A. Only insofar as the analysis that was done by Schlumberger is concerned. I think perhaps most everyone is aware of the disclaimer that are given by the various wireline log companies when they do a log analysis, saying this interpretation is based on the best physical measurement parameters, et cetera, that could be written in the record, if necessary. But my point is this: Schlumberger, who did the analysis in their Coriband system, computer analysis, used a formation water resistivity of their own choice, showing the well to be less than 50 percent water saturation, or that zone to be calculated less than the water saturation.

By virtue of our perforating and testing of that well, which we have read in the record, being conclusive evidence of the formation fluid therein, this Schlumberger analysis of 30-some odd percent, as read into the record by Mr. Renoult, is probably in gross error, because Schlumberger used an RW, meaning formation resistivity, that was less than correct.

MR. KELLAHIN: That concludes my examination of Mr. Luck.

MR. STAMETS: Are there questions of Mr. Luck?

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Luck, just so I understand your testimony, even if there is a high degree of correlation across a large area like this, was it your testimony that for there to be commercial production you need to have a geologic structure. Is that what you said?

A. Yes, of some type, a feature, a trap.

MR. CARR: I have no further questions of Mr. Luck.

MR. STAMETS: Any other questions of Mr. Luck? He may be excused.

MR. CARR: I would like to recall Mr. Brown.

MR. STAMETS: Mr. Brown may be recalled.

THOMAS E. BROWN RECALLED

and being previously sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Brown, have you mapped the Wolfcamp in this area?

A. Yes, I have.

Q. The area governing -- or covered by Exhibit Number Fourteen?

A. Yes.

Q. What conclusions can you reach about the geologic structure across this area?

A. That it is a structure at Wolfcamp level and by Wolfcamp level I'm referring to the Wolfcamp B line that's used up there as the Wolfcamp.

In fact, seismically,the reason I had to make it is to get the tops for seismic. Seismically our exploration in the area, we are mapping at the Wolfcamp seismically, and it is structure at that level in South Peterson Field.

While it's a different structure than the structure down at New Hope East Field, it is a very similar structure seismically and geologically.

MR. CARR: I have nothing further of Mr. Brown.

MR. STAMETS: Any questions for Mr. Brown?

MR. KELLAHIN: No, sir.

MR. STAMETS: He may be excused.

Any further testimony in this case?

Mr. Carr, do you have a closing statement?

MR. CARR: Yes, I do.

I think the central issue in this case is the question of correlative rights, the protection of correlative rights in the area.

I think if you look at the evidence certain things are clear.

One, if water is injected as Phillips is proposing, that water will migrate and will in a relatively short period of time reach the offsetting Enserch wells. I believe the evidence presented here today shows that there is a high possibility for commercial production from the Wolfcamp.

There is structure. There is a high correlation geologically with these other known producing wells in the area.

Enserch, in the wells that offset the proposed injection well, is encountering the Wolfcamp at a shallower horizon.

They also have plans to test the No. 11 Well in the immediate future and thereby be able to -- could establish that there is the real potential for Wolfcamp production.

So I think as you look at this case, it is important for you, when you look at the evidence, to recognize that the burden must be on the applicant. The applicant has to show that they're not going to impair someone's correlative rights. They have failed to do this.

They have failed to show that they are not going to be watering out offset Enserch property in the Wolfcamp.

If you grant Phillips' application in this case you will be permitting watering out certain Enserch property, and the testimony here today is there is no possible way to monitor the effect of this until the damage has already been done, no economically feasible way to do this.

You will by granting the application, therefor deny Enserch the opportunity to produce its just and fair share of the reserves underlying its property, and I submit by granting the application you will have failed to carry out your statutory duty to protect the correlative rights of the owner -- of each property owner in a common source of supply.

We also submit that when this watering out occurs, that hydrocarbons will be lost that cannot be recovered and you therefor would be condoning waste.

We submit that when you review the evidence, there is only one possible conclusion that you can reach and that is that Phillips has failed to meet their burden of proof and the application, therefor, must be denied.

MR. KELLAHIN: Mr. Stamets, we'd waive our right for a closing statement. I don't think there is any reason to make a closing statement when the record here today is replete with evidence that warrant this application being granted.

We're going to waive our closing statement because the evidence here presented today is substantially different from that made by Enserch in their case. You'll note that in Phillips' application we're talking about Wolfcamp that does not produce in this area; that has never produced in this area; that only produces some six miles to the southeast.

We feel that a closing statement is not necessary insofar as Enserch has failed to establish any reason why this application ought not to be granted.

You can see by their own course of action that they drilled wells thorugh the Wolfcamp, subsequently plugged and abandoned those wells without ever testing the Wolfcamp. We've attempted to elicit from Mr. Renoult testimony with regards to his opinion as to why he thinks there is Wolfcamp. We find from Mr. Luck's testimony that Mr. Renoult's basises for porosity are based upon an erroneous calculation as to the degree of water saturation.

We can see that in this area the Wolfcamp, as tested by the Phillips well, had a log analysis of porosity of 13.4 percent, and yet when they test that well, they get nothing but water.

There is not a well in the area with porosity that exceeds that or approaches that. That reason alone is sufficient reason to grant Phillips' application.

They're asking us to sit idly by for some seven to ten years while Enserch waits. We maintain that the only reason that they've introduced an objection to this application is because they're upset with our opposition to their application for salt water disposal.

But the facts are clearly different. In that case, or Enserch's request, it was water to be disposed of in an area where there was not isolation between the disposal formation and formations being produced by some twelve other wells, actively being produced.

That is not the situation here.

Mr. Renoult tells us that their objection is not to the question of whether the water will remain confined to the Wolfcamp, but it's speculated testimony that they'll somehow encroach upon the Wolfcamp in the No. 7 and the No. 3 Well.

For those reasons we believe that a closing statment is not necessary and therefor we waive ours.

MR. STAMETS: If there is nothing further, the hearing is adjourned.

(Hearing concluded.)

CERTIFICATE

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

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7318, heard by me on July 29 1981.

Richard L. Stamets, Examiner
Oil Conservation Division

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR: Phillips Petroleum Company
ADDRESS: 4001 Penbrook St., Odessa, Texas 79762

LEASE NAME: Peterson "H" | WELL NO.: 1 | FIELD: Peterson (South) | COUNTY: Roosevelt

LOCATION: UNIT LETTER M ; WELL IS LOCATED 660 FEET FROM THE South LINE AND 510 FEET FROM THE West LINE, SECTION TOWNSHIP 5-S RANGE 33-E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13-3/8"	350'	420	Surface	Circ 95 sxs
INTERMEDIATE -	8-5/8"	3496'	1000	Surface	Circ 225 sxs
LONG STRING	5-1/2"	7982'	800	5210'	Temp. Survey
TUBING	2-7/8"	7367'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker "R" at 7308+' (Lok Set)		

NAME OF PROPOSED INJECTION FORMATION: Wolfcamp (Todd)
TOP OF FORMATION: 7148' (-2764')
BOTTOM OF FORMATION: 7644' (-3206')

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing
PERFORATIONS OR OPEN HOLE? Perforations
PROPOSED INTERVAL(S) OF INJECTION: 7332-7341' Wolfcamp (Todd)

IS THIS A NEW WELL DRILLED FOR DISPOSAL? No
IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Fusselman Completion
HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? Yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH:
7616-7660' (180 sxs), 7792-7806' (1000 gals Injectrol G + 80 sxs), 7846-7866' (1000 gals Injectrol G + 18 sxs)

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA: 300
DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA: None
DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA: 7704' (-3320')

ANTICIPATED DAILY INJECTION VOLUME (BBLS.): MINIMUM 300 | MAXIMUM 1000
OPEN OR CLOSED TYPE SYSTEM: Closed
IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure
APPROX. PRESSURE (PSIG): 1400

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE — WATER TO BE DISPOSED OF: Yes | NATURAL WATER IN DISPOSAL ZONE: Yes | ARE WATER ANALYSES ATTACHED? Yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND):
Mr. G. E. Peterson, East Star Rt., Elida, New Mexico 88116

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL:
Enserch Exploration, Inc., P. O. Box 4815, Midland, Texas 79702
Amoco Production Co., Box 3092, Houston, Texas 77001

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 2
CASE NO. 7318
Submitted by Phillips
Hearing Date 7-29-81

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? SURFACE OWNER: Yes | EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL: Yes

ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)? PLAT OF AREA: Yes | ELECTRICAL LOG: Yes | DIAGRAMMATIC SKETCH OF WELL: Yes

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

W. J. Mueller (Signature) | Sr. Engineering Specialist (Title) | July 20, 1981 (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

skm

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

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no Docket 24-81; Case731

II. Operator: Phillips Petroleum Company

Address: 4001 Penbrook, Odessa, TX 79762

Contact party: J. O. Woodson Phone: (505) 393-5121

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.

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: July 25, 1981

* 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. ________

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells:

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 3
CASE NO. 7318
Submitted by Phillips
Hearing Date 7-29-81

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 4
CASE NO. 7318
Submitted by Phillips
Hearing Date 7-29-81

Application for Approval of Salt Water Disposal Well
Phillips Petroleum--Peterson "H" No. 1
Peterson (South) Field
Roosevelt County, New Mexico

Operator Well Name	Location	Distance to Peterson "H" No. 1	Casing String Setting Depth	Cement (Sacks)	Cement Tops	Total Depth	Current Producing Interval (Subsea depth)	Current Producing Formation	RKB Elevation
Amoco Peterson "B" No. 1	4980' FSL 660' FWL Unit E Sec. 29 T5S, R33E	2500'	13-3/8" @ 344' 8-5/8" @ 3472' 5-1/2" @ 7877'	425 900 250	Surface Surface 6222'	7852'	D&A	D&A	4428'
Enserch Lambirth No. 7	510' FSL 660' FEL Unit P Sec. 30 T5S, R33E	1400'	13-3/8" @ 358' 9-5/8" @ 1991' 5-1/2" @ 7858'	300 750 450	Surface Surface 6630'	7882'	7826'-7829' (-3435' to -3438')	Fusselman	4391'
Enserch Radar No. 2	1880' FNL 560' FWL Unit E Sec. 32 T5S, R33E	2600'	13-3/8" @ 356' 9-5/8" @ 1981' 5-1/2" @ 8000'	250 914 350	Surface Surface 6850'	8000'	7902'-7930' (-3503' to -3531')	Montoya (proposed SWD well)	4399'
Phillips Lambirth "A" No. 4	560' FNL 560' FEL Unit A Sec. 31 T5S, R33E	1800'	13-3/8" @ 360' 8-5/8" @ 3500' 5-1/2" @ 8000'	420 780 960	Surface Surface 4200'	8000'	7814'-7828' (-3423' to -3437')	Fusselman	4391'
Phillips Peterson "H" No. 1	660' FSL 510' FWL Unit M Sec. 29 T5S, R33E	0'	13-3/8" @ 350' 8-5/8" @ 3496' 5-1/2" @ 7994'	420 1000 800	Surface Surface 5210'	8000'	7332'-7341' (-2948' to -2957')	Wolfcamp (proposed SWD well)	4384'

Application for Salt Water Disposal Well
Phillips Petroleum--Peterson "H" No. 1
Peterson (South) Field
Roosevelt County, New Mexico

Listing of wells within a two mile radius.

Operator Well Name	Unit	Section	Township	Range	Distance to Peterson "H" No. 1	Current Producing Formation
Amoco Lambirth #1	B	30	5S	33E	4800'	Plugged & Abandoned
Amoco Peterson "B" No. 1	E	29	5S	33E	2500'	Plugged & Abandoned
Amoco Peterson "D" No. 1	B	19	5S	33E	9530'	Pennsylvanian
Amoco Radcliff No. 1	M	17	5S	33E	5380'	Pennsylvanian
Amoco Radcliff No. 1	I	24	5S	33E	9450'	Plugged & Abandoned
Amoco Swearingen "A" No. 1	J	19	5S	33E	6700'	Pennsylvanian
Amoco Swearingen "B" No. 1	F	20	5S	33E	7950'	Plugged & Abandoned
Amoco Swearingen "B" No. 2	D	20	5S	33E	9250'	Plugged & Abandoned
Amoco Swearingen "B" No. 3	L	20	5S	33E	6580'	Pennsylvanian
Amoco Swearingen "B" No. 4	E	20	5S	33E	7690'	Pennsylvanian
Energy Reserves Group Bledsoe No. 2	A	11	6S	33E	5080'	Pennsylvanian
Enserch Lambirth No. 1	K	31	5S	33E	5690'	Fusselman
Enserch Lambirth No. 3	C	31	5S	33E	7700'	Pennsylvanian
Enserch Lambirth No. 4	O	31	5S	33E	3850'	Pennsylvanian
Enserch Lambirth No. 5	N	1	6S	33E	7700'	Plugged & Abandoned
Enserch Lambirth No. 6	D	31	5S	33E	5520'	Fusselman
Enserch Lambirth No. 7	P	30	5S	33E	1400'	Fusselman
Enserch Lambirth No. 8	L	30	5S	33E	4480'	Fusselman
Enserch Lambirth No. 9	P	25	5S	32E	6720'	Fusselman
Enserch Lambirth No. 10	D	31	5S	33E	5700'	Fusselman

Operator Well Name	Unit	Section	Township	Range	Distance to Peterson "H" No. 1	Current Producing Formation
Enserch Lambirth No. 11	M	1	6S	33E	8300'	Not completed
Enserch Radar No. 1	L	32	5S	33E	4100'	Plugged & Abandoned
Enserch Radar No. 2	E	32	5S	33E	2600'	Montoya
Phillips Goldston "A" No. 1	P	36	5S	32E	8700'	Plugged & Abandoned
Phillips Goldston "A" No. 2	P	36	5S	32E	8500'	Plugged & Abandoned
Phillips Lambirth "A" No. 1	J	31	5S	33E	4800'	Fusselman
Phillips Lambirth "A" No. 2	F	31	5S	33E	4910'	Fusselman
Phillips Lambirth "A" No. 3	N	31	5S	33E	6530'	Fusselman
Phillips Lambirth "A" No. 4	A	31	5S	33E	1800'	Fusselman
Phillips Lambirth "A" No. 5	M	30	5S	33E	5450'	Pennsylvanian
Phillips Lambirth "B" No. 1	P	2	6S	33E	9300'	Pennsylvanian
Phillips Lambirth State No. 1	H	36	5S	32E	7250'	Fusselman
Phillips Peterson "H" No. 1	M	29	5S	33E	0'	Wolfcamp

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR		ADDRESS	
Phillips Petroleum Company		4001 Penbrook St., Odessa, Texas 79762	
LEASE NAME	WELL NO.	FIELD	COUNTY
Peterson "H"	1	Peterson (South)	Roosevelt

LOCATION

UNIT LETTER M ; WELL IS LOCATED 660 FEET FROM THE South LINE AND 510 FEET FROM THE West LINE, SECTION TOWNSHIP 5-S RANGE 33-E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13-3/8"	350'	420	Surface	Circ 95 sxs
INTERMEDIATE	8-5/8"	3496'	1000	Surface	Circ 225 sxs
LONG STRING	5-1/2"	7982'	800	5210'	Temp. Survey
TUBING	2-7/8"	7367'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker "R" at 7308+' (Lok Set)		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Wolfcamp (Todd)	7148' (-2764')	7644' (-3206')

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Perforations	7332-7341' Wolfcamp (Todd)

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Fusselman Completion	Yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

7516-7660' (180 sxs), 7792-7806' (1000 gals Injectrol G + 80 sxs), 7846-7866' (1000 gals Injectrol G + 18 sxs)

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
300	None	7704' (-3320')

ANTICIPATED DAILY INJECTION VOLUME (BBLS.) MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
300	1000	Closed	Pressure	1400

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE –	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
	Yes	Yes	Yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Mr. G. E. Peterson, East Star Rt., Elida, New Mexico 88116

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Enserch Exploration, Inc., P. O. Box 4815, Midland, Texas 79702

Amoco Production Co., Box 3092, Houston, Texas 77001

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	
	Yes	Yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	Yes	Yes	Yes

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

W. J. Mueller — Sr. Engineering Specialist — July 20, 1981
(Signature) (Title) (Date)

NOTE: *Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests.* SEE RULE 701.

skm

Exhibit 2
Case 7318

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

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no Docket 24-81; Case7318

II. Operator: Phillips Petroleum Company

Address: 4001 Penbrook, Odessa, TX 79762

Contact party: J. O. Woodson Phone: (505) 393-5121

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.

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: July 25, 1981

* 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 3
Case 7318

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells:

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Application for Approval of Salt Water Disposal Well
Phillips Petroleum--Peterson "H" No. 1
Peterson (South) Field
Roosevelt County, New Mexico

Operator Well Name	Location	Distance to Peterson "H" No. 1	Casing String Setting Depth	Cement (Sacks)	Cement Tops	Total Depth	Current Producing Interval (Subsea depth)	Current Producing Formation	RKB Elevation
Amoco Peterson "B" No. 1	4980' FSL 660' FWL Unit E Sec. 29 T5S, R33E	2500'	13-3/8" @ 344' 8-5/8" @ 3472' 5-1/2" @ 7877'	425 900 250	Surface Surface 6222'	7852'	D&A	D&A	4428'
Enserch Lambirth No. 7	510' FSL 660' FEL Unit P Sec. 30 T5S, R33E	1400'	13-3/8" @ 358' 9-5/8" @ 1991' 5-1/2" @ 7858'	300 750 450	Surface Surface 6630'	7882'	7826'-7829' (-3435' to -3438')	Fusselman	4391'
Enserch Radar No. 2	1880' FNL 560' FWL Unit E Sec. 32 T5S, R33E	2600'	13-3/8" @ 356' 9-5/8" @ 1981' 5-1/2" @ 8000'	250 914 350	Surface Surface 6850'	8000'	7902'-7930' (-3503' to -3531')	Montoya (proposed SWD well)	4399'
Phillips Lambirth "A" No. 4	560' FNL 560' FEL Unit A Sec. 31 T5S, R33E	1800'	13-3/8" @ 360' 8-5/8" @ 3500' 5-1/2" @ 8000'	420 780 960	Surface Surface 4200'	8000'	7814'-7828' (-3423' to -3437')	Fusselman	4391'
Phillips Peterson "H" No. 1	660' FSL 510' FWL Unit M Sec. 29 T5S, R33E	0'	13-3/8" @ 350' 8-5/8" @ 3496' 5-1/2" @ 7994'	420 1000 800	Surface Surface 5210'	8000'	7332'-7341' (-2948' to -2957')	Wolfcamp (proposed SWD well)	4384'

Exhibit 4
Case 7318.

Application for Salt Water Disposal Well
Phillips Petroleum--Peterson "H" No. 1
Peterson (South) Field
Roosevelt County, New Mexico

Listing of wells within a two mile radius.

Operator Well Name	Unit	Section	Township	Range	Distance to Peterson "H" No. 1	Current Producing Formation
Amoco Lambirth #1	B	30	5S	33E	4800'	Plugged & Abandoned
Amoco Peterson "B" No. 1	E	29	5S	33E	2500'	Plugged & Abandoned
Amoco Peterson "D" No. 1	B	19	5S	33E	9530'	Pennsylvanian
Amoco Radcliff No. 1	M	17	5S	33E	5380'	Pennsylvanian
Amoco Radcliff No. 1	I	24	5S	33E	9450'	Plugged & Abandoned
Amoco Swearingen "A" No. 1	J	19	5S	33E	6700'	Pennsylvanian
Amoco Swearingen "B" No. 1	F	20	5S	33E	7950'	Plugged & Abandoned
Amoco Swearingen "B" No. 2	D	20	5S	33E	9250'	Plugged & Abandoned
Amoco Swearingen "B" No. 3	L	20	5S	33E	6580'	Pennsylvanian
Amoco Swearingen "B" No. 4	E	20	5S	33E	7690'	Pennsylvanian
Energy Reserves Group Bledsoe No. 2	A	11	6S	33E	5080'	Pennsylvanian
Enserch Lambirth No. 1	K	31	5S	33E	5690'	Fusselman
Enserch Lambirth No. 3	C	31	5S	33E	7700'	Pennsylvanian
Enserch Lambirth No. 4	O	31	5S	33E	3850'	Pennsylvanian
Enserch Lambirth No. 5	N	1	6S	33E	7700'	Plugged & Abandoned
Enserch Lambirth No. 6	D	31	5S	33E	5520'	Fusselman
Enserch Lambirth No. 7	P	30	5S	33E	1400'	Fusselman
Enserch Lambirth No. 8	L	30	5S	33E	4480'	Fusselman
Enserch Lambirth No. 9	P	25	5S	32E	6720'	Fusselman
Enserch Lambirth No. 10	D	31	5S	33E	5700'	Fusselman

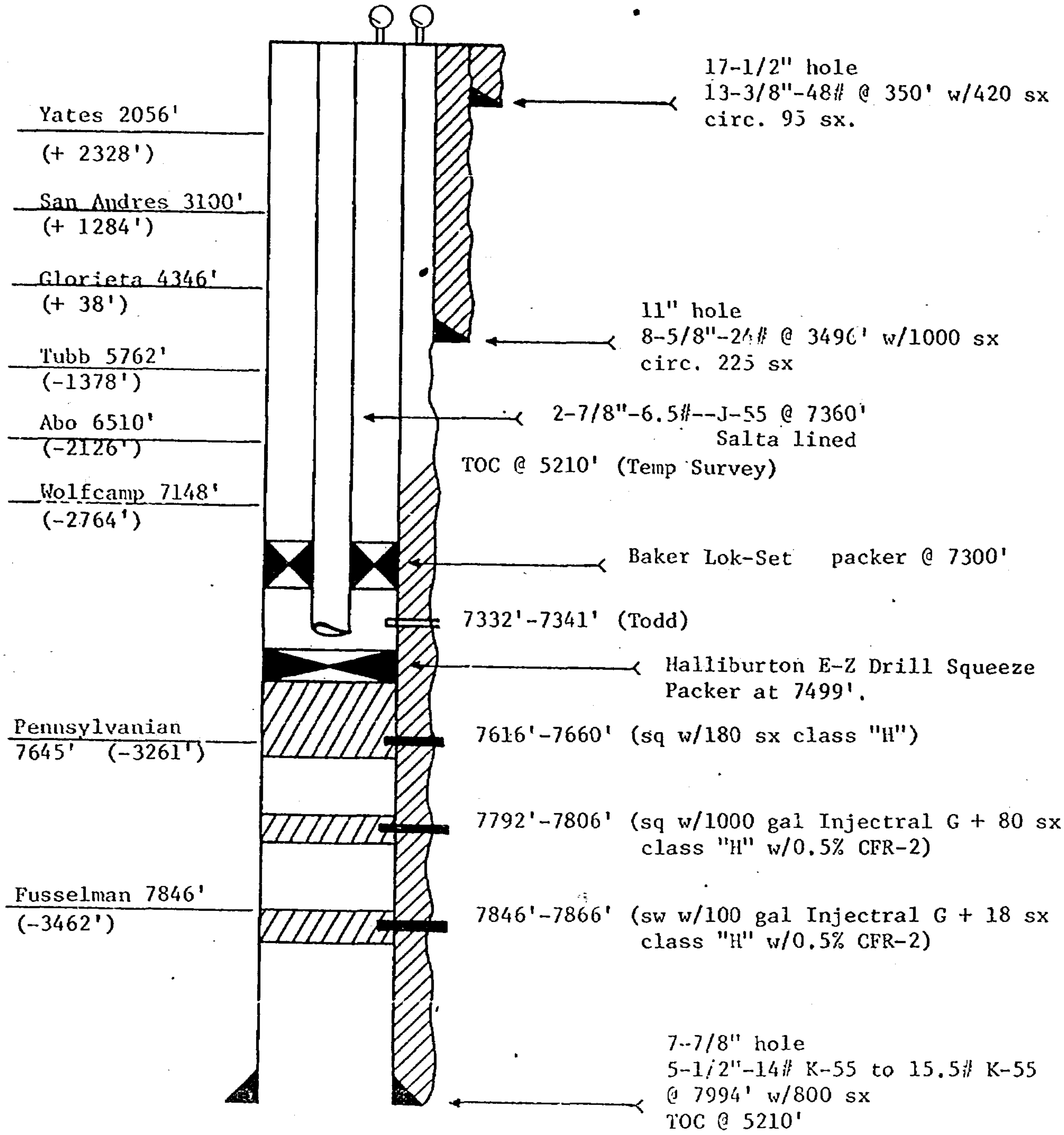
Exhibit 5
Case 7318

Application for Salt Water Disposal Well
Peterson "H" No. 1, Roosevelt County, N.M.
Page No. 2

Operator Well Name	Unit	Section	Township	Range	Distance to Peterson "H" No. 1	Current Producing Formation
Enserch Lambirth No. 11	M	1	6S	33E	8300'	Not completed
Enserch Radar No. 1	L	32	5S	33E	4100'	Plugged & Abandoned
Enserch Radar No. 2	E	32	5S	33E	2600'	Montoya
Phillips Goldston "A" No. 1	P	36	5S	32E	8700'	Plugged & Abandoned
Phillips Goldston "A" No. 2	P	36	5S	32E	8500'	Plugged & Abandoned
Phillips Lambirth "A" No. 1	J	31	5S	33E	4800'	Fusselman
Phillips Lambirth "A" No. 2	F	31	5S	33E	4910'	Fusselman
Phillips Lambirth "A" No. 3	N	31	5S	33E	6530'	Fusselman
Phillips Lambirth "A" No. 4	A	31	5S	33E	1800'	Fusselman
Phillips Lambirth "A" No. 5	M	30	5S	33E	5450'	Pennsylvanian
Phillips Lambirth "B" No. 1	P	2	6S	33E	9300'	Pennsylvanian
Phillips Lambirth State No. 1	H	36	5S	32E	7250'	Fusselman
Phillips Peterson "H" No. 1	M	29	5S	33E	0'	Wolfcamp

Peterson "H" No. 1
660' FSL and 510' FWL
Section 29, T-5-S, R-33-E
Roosevelt County, New Mexico

Exhibit 8
Case 7318



PETERSON 'H' NO. 1

Peterson (South) Field

Water Injection Calculations

Proposed Injection Zone:	Wolfcamp (Todd)
Perforations:	7332'-7341'
Net Interval:	9'
Average Porosity:	15.6%
Formation Volume Factor for Water:	1.01
Static Fluid Level:	1800'
Specific Gravity of Fluid:	1.073; 0.465 psi/ft
BHT:	136°F

Exhibit 9
Case 7318

1. Estimated BHP of Todd Zone:

$$\left(\frac{7332 + 7341}{2} - 1800\right) \times 0.465 \cong 2575 \text{ psi}$$

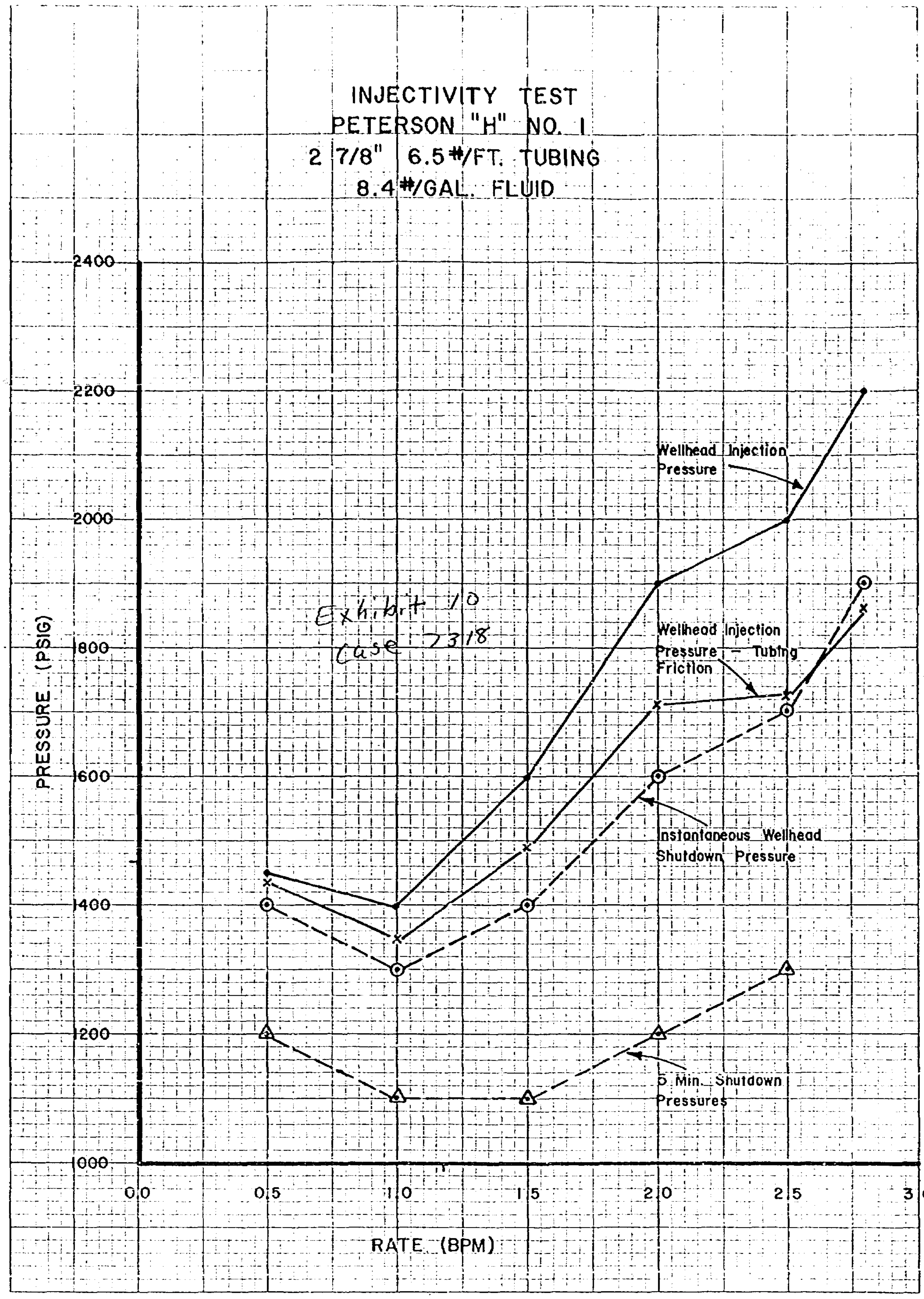
2. Maximum allowable pressure:

$$0.2 \times 7332 = 1466 \text{ psi}$$

3. Reservoir volume encroached by injected water:

$$W_i = 7758Ah\phi/B_w$$
$$A = W_iB_w/7758h\phi$$
$$A = 0.000927W_i$$
$$A = \pi r^2/43560$$
$$r = (43560A/\pi)^{1/2}$$

Year	Acres (feet) encroached at 300 BWPD constant	13%/year increase
1	10.2 (376')	10.2 (376')
2	20.3 (531')	21.6 (547')
3	30.5 (650')	34.6 (693')
4	40.6 (750')	49.2 (826')
5	50.8 (839')	65.8 (955')
6	60.9 (919')	84.5 (1082')
7	71.1 (993')	105.6 (1210')
8	81.2 (1061')	129.5 (1340')
9	91.4 (1126')	156.5 (1473')
10	101.5 (1186')	187.0 (1610')
	0.22 miles	0.30 miles



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1342-A

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W80-1120

To Phillips Petroleum Company
Box 1178
Lovington, New Mexico

Date 10-13-80

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by ______ Date Rec. 10-13-80

Well No. Peterson "H" #1 Depth 7332-41' Formation Todd

County Roosevelt Field S. Peterson Source 5½" Casing

Resistivity	0.076 @ 74°F.		
Specific Gravity	1.086		
pH	4.7		
Calcium (Ca)	10,500		*MPL
Magnesium (Mg)	Nil		
Chlorides (Cl)	75,000		
Sulfates (SO_4)	1,400		
Bicarbonates (HCO_3)	Nil		
Soluble Iron (Fe)	140		

Remarks:

*Milligrams per liter

Exhibit 13
Case 7318

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By W. L. Brewer
CHEMIST

NOTICE

THIS REPORT IS LIMITED TO THE DESCRIBED SAMPLE TESTED. ANY USER OF THIS REPORT AGREES THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER IT BE TO ACT OR OMISSION, RESULTING FROM SUCH REPORT OR ITS USE.

1342-A

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W79-215

To: Phillips Petroleum Company
Box 1178
Lovington, New Mexico

Date: 2-28-79

Submitted by:

Date Rec.: 2-28-79

Well No.: Lambirth "A" #1 Depth: 7970' Formation: Fusselman

County: Roosevelt Field: Peterson Source: Heater Treater

Resistivity	0.103 @ 74°F.		
Specific Gravity	1.069		
pH	6.4		
Calcium (Ca)	3,350		*MPL
Magnesium (Mg)	3,000		
Chlorides (Cl)	59,000		
Sulfates (SO_4)	1,600		
Bicarbonates (HCO_3)	855		
Soluble Iron (Fe)	70		

Remarks:

*Milligrams per liter

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By: W. L. Brewer
CHEMIST

NOTICE

1342-A

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W80-320

To Phillips Petroleum Company
Box 1178
Lovington, New Mexico

Date 3-27-80

Submitted by ______ Date Rec. 3-27-80

Well No. Lambirth A #5 Depth As Marked Formation Penn

County Lea Field S. Peterson Source Swab

	7664-7748	7744-7748	
Resistivity	0.081 @ 70°F.	0.100 @ 70°F.	
Specific Gravity	1.076	1.061	
pH	6.2	5.7	
Calcium (Ca)	8,000	8,500	*MPL
Magnesium (Mg)	2,220	1,800	
Chlorides (Cl)	65,000	50,000	
Sulfates (SO_4)	900	850	
Bicarbonates (HCO_3)	315	855	
Soluble Iron (Fe)	60	80	

Remarks:

*Milligrams per liter

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By W. L. Brewer
CHEMIST

NOTICE

Date of Abandonment
2-17-76

AMOCO - Peterson "B" #1
1980' FSL and 660' FWL
Unit E; Section 29
T-5-S; R-33-E
Roosevelt Co., New Mexico

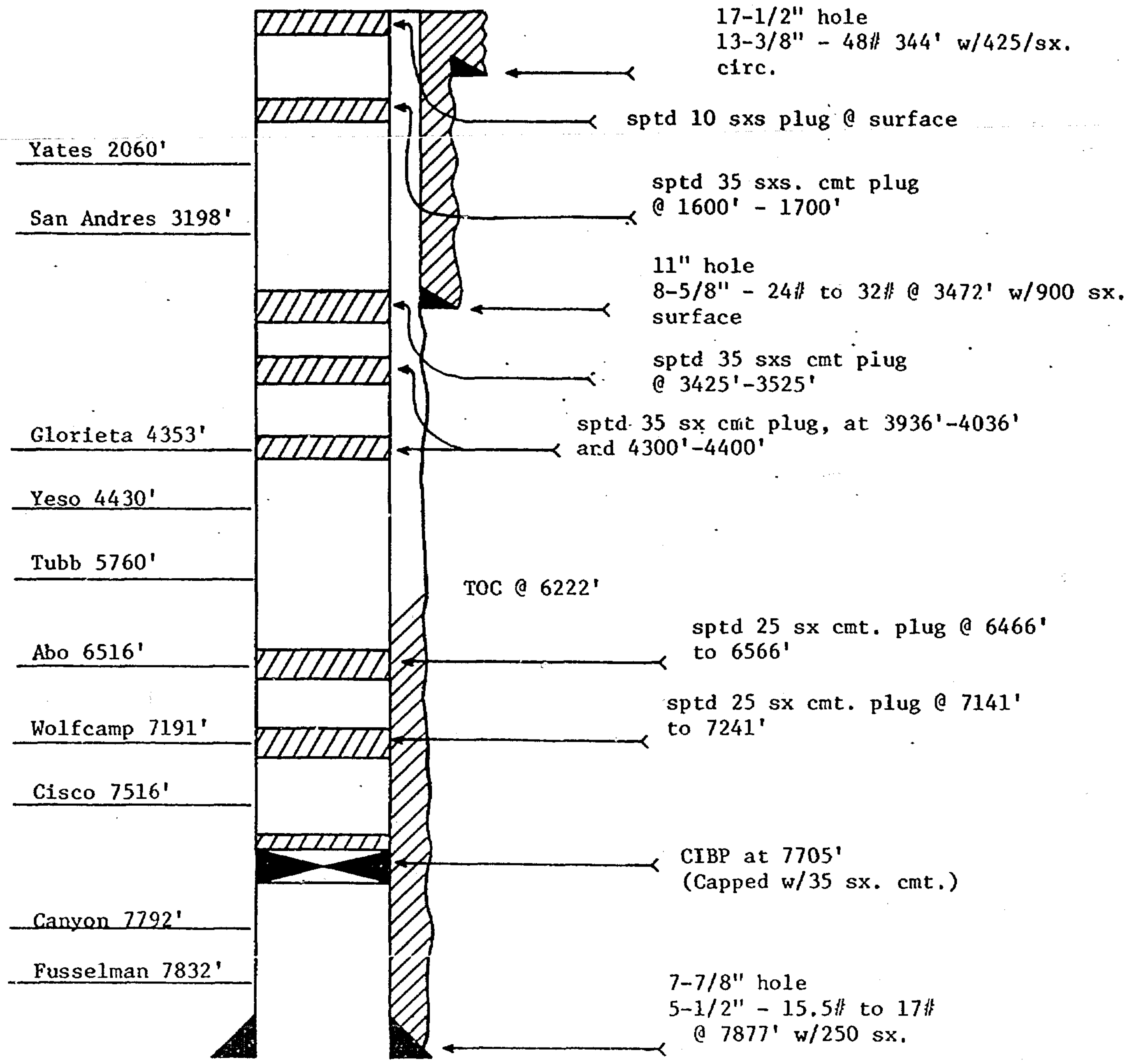


Exhibit 14
Case 7318

Peterson "H" No. 1
Sec. 29, T-5-S, R-33-E
Roosevelt County, New Mexico

Well History

May 1, 1981

Location: 660' FSL 510' FWL Sec 29, T-5-S, R-33-E, Roosevelt County, New Mexico.

Bit size 11". Ran 8-5/8" 24# K-55 STC R-3 csg set @ 3496'. Cmt w/ 800 sx Cl H w/ 30% DD 11.7 PPS + 200 H w/ 2% CaCl 15.7 pg. Circ 225 sxs.

Bit size 7-7/8". Ran 5-1/2" 15.5# K-55, 8rd, (4006. 86') x 100 jts 5-1/2" 14" K-55, 8rd, Set @ 7982'. Cmt w/ 350 sx H w/ 30% DD, 2% DCL. Tailed in w/ 450 sx H w/ 2% KCL. Plug to 7939' w/ 10 bbls 10% Acetic Acid + 185 BW. Temp survey by John West Engr TOC 5210'.

July 8, 1980

Perf'd 5-1/2" csg w/ 2 jet shots per foot at 7846-7852' and 7862-7866'. Ran 2-7/8" tbg and pkr, set tbg at 7801', pkr 7769'. Western trt'd dwn tbg through 5-1/2" csg perfs 7846-7866' w/ 500 gals 15% Ne HCl. Max press 3850#, min vacuum. Inj rate 1 BPM. Swbd 6 hrs, 2 BO, 57 BLW, 53 BSW. Ran Howco cmt retainer, set at 7825' on 2-7/8" tbg. Howco sqzd perfs 7846-7866' w/ 1000 gals Injectrol "G" followed by 20 sxs Class "H" cmt w/ 5/10% CFR-2. Flushed w/ 45 BW. Max Press 1800#, holding 975#. Pulled out of retainer, reversed 2 sxs cmt. Spotted 10 bbls Acetic acid.

Dresser Atlas perf'd 5-1/2" csg w/ 2 JSPF, 7792-7806'. Ran 2-7/8" tbg and pkr, set pkr at 7701', tbg 7760'. Western treated dwn tbg through 5-1/2" csg perfs 7792-7806' w/ 750 gals 15% NeHCl. Max press 4400#, min zero, ISIP zero, injection rate .75 BPM. Swbd 10 hrs, trace oil, 155 BSW. CRC ran tracer survey in 5-1/2" csg. Found fluid exit through perfs 7792-7806', channeling dwn to 7812'. Set Howco cmt ret at 7769'. Howco filled csg and tbg w/ produced wtr, established inj rate of 7 BPM at 250# in 5-1/2" csg perfs 7792-7806'. Pmpd in 5000 gals Injectrol "G" at 1500# to 1800#, followed by 100 sxs Class "C" cmt w/ 5/10% CRF-2. With 62 sxs in formation, press increased to 4000#, holding at 3800#. Pulled tbg out of ret, reversed 23 sxs. Circ'd tbg and csg clean. Ran 4-3/4" bit, 4--3-1/2" DC's on 2-7/8" tbg, tagged top cmt at 7757', drld cmt to 7769', started drlg on ret. Drld cmt ret at 7769', cmt to 7808'. Lowered bit to 7820', drld cmt to 7825'. Western spotted 10 bbls 10% Acetic acid.

Dresser Atlas perf'd 5-1/2" csg w/ 4 jet shots per foot, 7793-7801'. Set 2-7/8" tbg at 7787', Baker Model "R" pkr at 7728'. Western treated dwn 2-7/8" tbg through 5-1/2" csg perfs 7793-7801' w/ 250 gals 15% NeHCl. Max Pressure 3400#, min zero, inj rate 1/2 BPM. Swbd 10 hrs, trace oil, 87 BSW. Ran 2-7/8" tbg and cmt ret: set ret at 7780'. Howco cmt'd dwn tbg through csg perfs 7793-7801' w/ 1000 gals Injectrol "G" followed by 100 sxs Cl "H" cmt w/ 1/2% CFR-2. Sqzd 80 sxs in formation, reversed 20 sxs. Max press 4000#, holding 3800#.

Exhibit 15
Case 7318

August 1, 1980

Dresser Atlas perf'd 5-1/2" csg w/ 2 JSPF, 7616-7627', 7630-7636', 7646-7650', 7656-7662' 7676-7680', 7706-7710', 7716-7722', 7746-7760'. Ran tbg, pkr and BP, set BP at 7768', pkr at 7593'. Swbd 4 hrs, 41 BLW, no oil, swbd dry. Western spotted 1000 gals 15% NeHCl over 5-1/2" csg perfs 7606-7760'. Set pkr at 7788', pressured to 4000#, pkr leaked. Reset pkr at 7586', pressured to 3500# and leaked. Reversed acid to truck. Pulled tbg and pkr. Ran 2-7/8" tbg and new pkr. Western treated through 5-1/2" csg perfs 7606' to 7660' w/ 2500 gals 15% NeHCl flushed w/ 50 BW. Max press 4000#, min 3900#, inst SDP 3900#, inj rate 4 BPM. Swbd 4 hrs, 45 BLW, no oil. Swbd 10 hrs, 4 BO, 40 BLW. Swbg. Swbd 10 hrs, 8 BO, 23 BLW. Swbd 10 hrs, 6 BO, 8 BLW. Western trt'd dwn 2-7/8" tbg through 5-1/2" csg perfs 7616-7760' w/ 20,000 gals gelled 15% NeHCl as follows: A--5000 gals acid. B--15 ball sealers. C--5000 gals acid. D--10 ball sealers. E--10,000 gals acid. Flshd w/ 20,000 gals 2% KCl wtr. Max press 6900#, min 5000#, inst SDP 4150#. Inj rate 6.2 BPM. Swbd 6 hrs, trace oil, 8 BLW, swbd dry. Swbg. Swbd 6 hrs, no oil, 5 BLW, swbd dry. Lowered tbg to 7668'. Reverse circ'd w/ 75 bbls 2% KCL wtr. Western spotted 1000 gals 15% NeHCl over perfs 7616-7660'. Reset pkr at 7602', flshd acid w/ 50 bbls 2% KCl wtr. Max press 3600#, min 3500#, inst SDP 3400#, inj rate 1.5 BPM. Ran 2-7/8" tbg and ret, set ret at 7499'. Running tbg and pkr. Howco sqzd perfs 7616-7660' w/ 200 sx Class "H" cmt. Pressed 180 sx in perfs, reversed 20 sx. Max press 4000#, holding 4000#.

Welex perf'd 5-1/2" csg w/ 2 JSPF, 7332-7341'. Ran tbg and pkr, set pkr at 7308'. Swbd 8 hrs, no oil, 78 BW. Swbd 8 hrs, no oil, 85 BSW. Swbd 8 hrs, no oil, 75 BSW. Swbd 6 hrs, 80 BW, no oil. Western trt'd dwn tbg. Csg perf 7332-7341', 5000 gals 28% acid, flshd w/ 47 BW. MP 4400#, MP 2700#, SD 2500#. Rate 3 BPM. Ran injectivity test. Ran tracer survey. Hold well for disposal purposes.

HALLIBURTON SERVICES

EZ Drill® Bridge Plug

EZ Drill® Bridge Plug

Halliburton's drillable bridge plug, the EZ Drill®, offers improved operating performance at higher temperatures and pressures and faster removal from a well by either rotary or cable tool drilling methods.

It runs in faster, because of the smaller OD of the tool, and drilling out time is significantly faster than comparable products. The new EZ Drill bridge plug has main structural parts composed of controlled cast iron, to enhance uniform drillability.

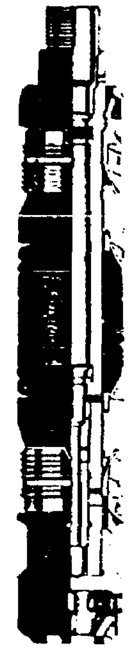
Important design features include:

- High temperature and pressure sealing element. This consists of a relatively soft rubber center packer between harder rubber rings and expandable metal shoes. The metal shoes expand with the rubber packer, to help prevent extrusion of the packers over the wedges at high pressures and temperatures.
- Smaller tool diameter. The design of the packer element permits the use of smaller tool diameters so that only one tool is required for a given casing size, regardless of its weight (wall thickness). This design also offers greater clearance with casing ID and, therefore, less danger of premature setting while going in the hole.
- Top drilling. When the top portion of the EZ Drill bridge plug is drilled into, the mandrel opening is penetrated before the upper slips are reached, allowing any pressure buildup from below to bleed off sufficiently and be relieved through the mandrel into the casing. This is an integral feature of the tool's design and does not require an adapter.
- Floating mandrel. The mandrel upon which all external parts are mounted is free to move with pressure. Forces due to well pressures, either from above or below the bridge plug, are thus applied directly to the slips and packer element, causing it to set tighter as pressures increase.
- Junk pusher. The lower end of the EZ Drill bridge plug is made to help prevent cuttings and other debris from fouling the tool slips, to prevent premature setting while going in the hole.
- Quick removal. Each part of the EZ Drill bridge plug is designed for quick removal from the well with either rotary or cable tools, i.e.:
  A. Material used for each component is selected for the maximum drillability permitted by its strength requirements.
  B. Wedges, metal shoes and packer element are locked together to help prevent their spinning while being drilled.
  C. Slips are grooved so that they will be broken up in small pieces, which can be circulated away from the bit. The holding ability of the slips is not impaired.

EZ Drill bridge plugs are designed primarily to be set on electrical wire line—or tubular goods with necessary modifications.

EZ Drill® Squeeze Packers

EZ Drill® Squeeze Packer with spring loaded back-pressure valve



EZ Drill SV® Squeeze Packer with pressure balanced sliding valve

Halliburton Services field proven EZ Drill® Squeeze Packers permit faster removal from the well by either rotary or cable tool methods without reduction in operating performance at even elevated temperatures and pressures.

In addition, OD of the tool is less and ID of the tool is greater than comparable products now in use, permitting faster running-in and quicker displacement of fluids at less pressure. Drilling out time is significantly quicker than comparable products.

The EZ Drill squeeze packer contains a spring loaded back pressure valve. The main structural parts of this tool are made of controlled cast iron.

EZ Drill® Packer

(Cont'd)

The EZ Drill SV squeeze packer contains a pressure-balanced sliding valve for control of fluid movement in the well. As with the other type, the main structural parts of this tool are made of controlled cast iron.

DESIGN FEATURES COMMON TO BOTH TYPES INCLUDE:

- High temperature and pressure sealing element. Consists of a relatively soft rubber center packer between harder rubber rings and expandable metal shoes. The metal shoes expand with the rubber packer, help prevent extrusion of the packers over the wedges at high pressures and temperatures.
- Smaller tool diameter. The design of the packer element permits the use of smaller tool diameters, thus less danger of premature setting while going in hole.
- Floating Mandrel. The mandrel upon which all the external parts are mounted is free to move with pressure. Forces due to well pressures, either from above or below the packer, are thus applied directly to the slips and packer element, causing it to set tighter as pressures are increased.
- Junk Pusher. The lower end of EZ Drill® packers is made to help prevent cuttings and other debris from fouling the tool slips, causing premature setting while going in the hole. The "Junk Pusher" is ribbed to provide good anchor in cement to resist the tool's rotation as it is being drilled out.
- Designed for quick removal. Each part of EZ Drill packers is designed for quick removal from the well with either rotary or cable tools, i.e.:

A. The material used for each component is selected for maximum drillability permitted by its strength requirements.

B. The wedges, metal shoes and packer element are locked together to prevent their spinning while being drilled.

C. The slips are grooved so that they will be broken up in small pieces, which can be circulated away from the bit. The holding ability of the slips is not impared.

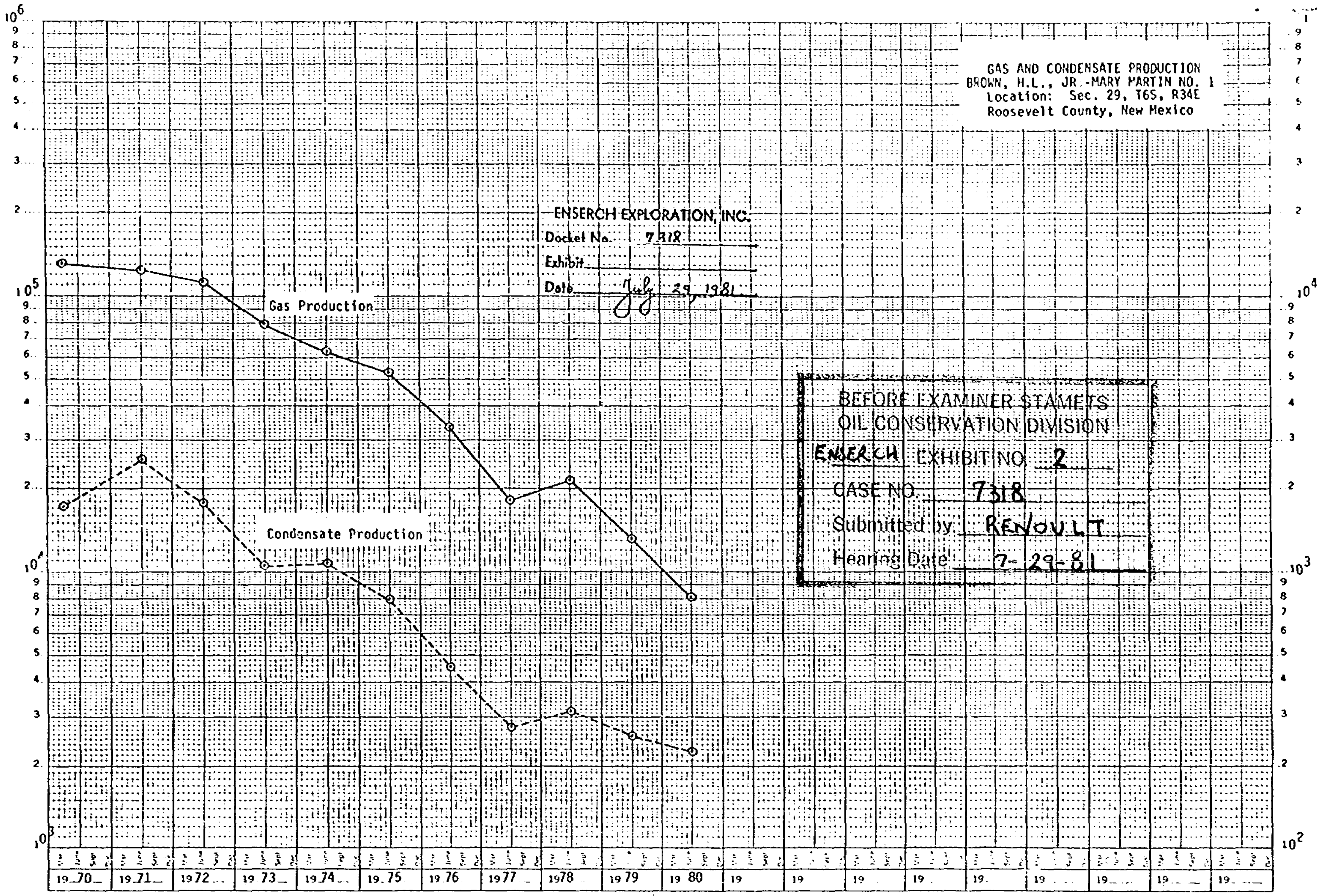
Fluid movement through EZ Drill SV® squeeze packers is controlled with a pressure-balanced "Sliding Valve" which replaces the spring-loaded back-pressure valve.

Operated by reciprocation of the tubing, the valve may be opened or closed, as desired, before and after squeeze cementing. Fluid movement through the valve will not affect its position. When the valve is in the up position, the packer is sealed against fluid or gas movement in either direction. When the valve is in the down position, fluid may be pumped through the packer or pressure may be relieved from below it. When the valve is open an unrestricted fluid passage is provided through side ports in the tool. With interlocking valve fingers not exposed to cement slurry, the sliding valve is not likely to be cemented in place.

EZ Drill® and EZ Drill SV® squeeze packers may be set on tubing (drill pipe), electrical wire line, or sand line. They may be converted for use as bridge plugs (no fluid movement in either direction through the tool) before running in the hole.

EZ DRILL® AND EZ DRILL SV® SQUEEZE PACKERS AND EZ DRILL BRIDGE PLUGS

EZ Squeeze Packer Catalog No.	EZ-SV Squeeze Packer Catalog No.	EZ Drill Bridge Plug Catalog No.	RECOMMENDED Csg./Tbg. RANGE		Max. OD of Tool (Inches)	ID Lightest St. Csg./Tbg. To be Set in (Inches)
			Size OD (Inches)	Weight Range (Lbs./Ft.)		
802.303			2⅞	6.50	2.187	2.441
802.305			3½ 3 L. Pipe Nom.	5.75—10.20 Non. Up. Tbg. 9.30 EUE Tbg. 7.70	2.69	3.188
802.307			4 3½ L. Pipe Ncm.	11.85-14.0 D.Pipe 11.6 Casing 11.00 EUE Tbg. 9.5 Non. Up. Tbg. 9.25	3.125	3.548
802.309	802.339	803.639	4½	9.5 —13.5	3.66	4.090
	802.338		4½	13.5 —15.1	3.58	3.920
802.311	802.341	803.641	5	11.5 —18	3.97	4.560
802.313	802.343	803.643	5½	13 —23	4.37	5.044
802.319	802.349	803.649	6⅝ 7	17 —28 20 —38	5.50 5.50	6.456 6.456
	802.351	803.651	7 7⅝	17 —20 20 —39	6.12 6.12	7.125 7.125
	802.353		8⅝	24 —49	7.00	8.097
	802.354		9⅝	29.3 —53.5	7.75	9.063
	802.357		10¾	32.75—65.7	9.00	10.192
	802.355		11¾	42 —65	9.87	11.084
	802.358		13⅜	48 —72	11.68	12.715

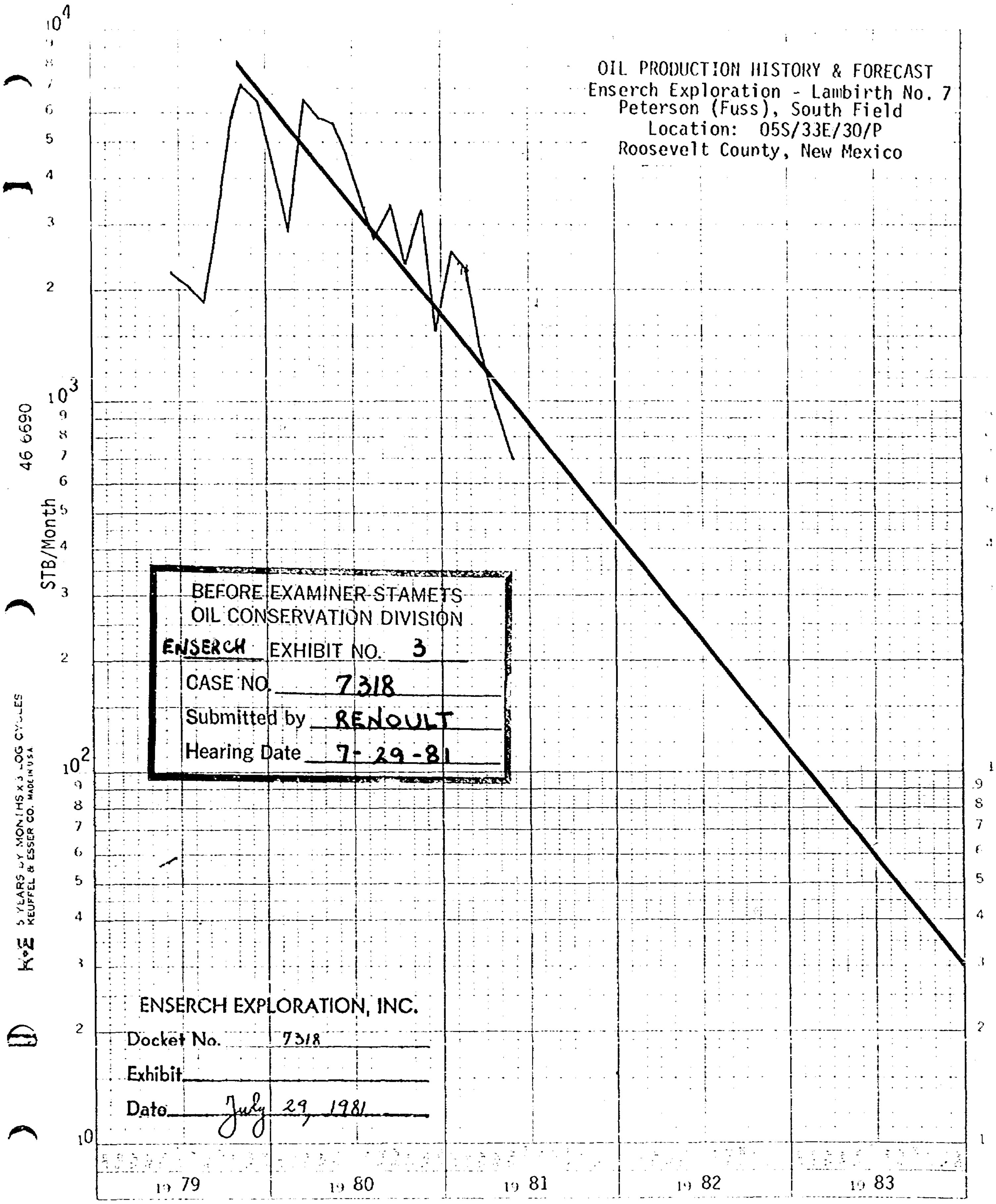

GAS AND CONDENSATE PRODUCTION
BROWN, H.L., JR.-MARY MARTIN NO. 1
Location: Sec. 29, T6S, R34E
Roosevelt County, New Mexico
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29, 1981
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 2
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81
Gas Production
Condensate Production
Gas Production (MCF)
Condensate Production (Bbls)
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980

PRODUCTION HISTORY

Brown, H.L., Jr. - Mary Martin No. 1
Location: Sec. 29, T6S, R34E
Roosevelt County, New Mexico

Date	Gas MCF	Condensate Bbls	Water Bbls
1970	130,833	1,729	10
1971	125,870	2,527	
1972	113,669	1,793	
1973	79,950	1,046	
1974	63,646	1,071	169
1975	53,421	800	154
1976	33,577	456	167
1977	18,130	277	390
1978	21,537	316	363
1979	13,259	258	209
1980	8,109	227	246
Cumulative Production	1,613,901	10,500	1,708

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29, 1981



BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 3
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29, 1981

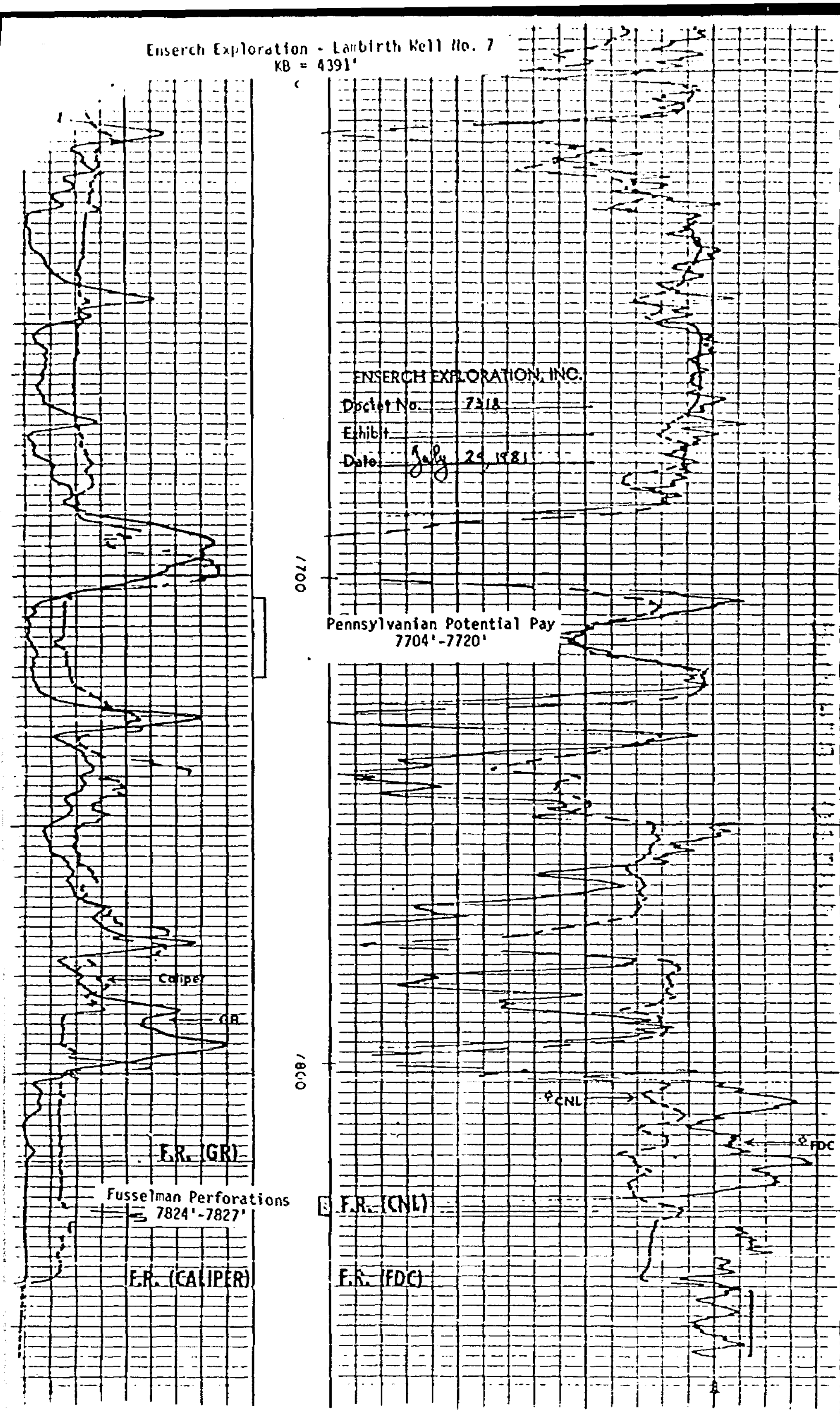
PRODUCTION HISTORY
Enserch Exploration - Lambirth Well No. 7
Peterson (Fusselman), South Field

Location: 05S/33E/30/P
Roosevelt County, New Mexico

Date	Oil	Gas	Water	GOR	Water Cut
	Bbls	MCF	Bbls	SCF/Bbl	%
01/79					
02/79					
03/79					
04/79					
05/79					
06/79	2,244	1,031	1,120	459	33
07/79	2,112	871	804	412	30
08/79	1,879	1,056	494	562	21
09/79	3,345	771	1,859	230	36
10/79	5,912	2,493	1,261	421	18
11/79	6,891	2,262	1,257	328	15
12/79	6,228	2,172	348	348	5
01/80	6,250	1,767	1,380	282	18
02/80	2,724	1,840	1,014	675	27
03/80	6,242	1,971	1,399	316	18
04/80	5,541	2,035	1,370	367	20
05/80	5,279	2,122	1,722	402	21
06/80	4,376	2,221	1,262	508	22
07/80	3,120	1,537	1,689	493	35
08/80	2,723	1,589	2,470	584	48
09/80	3,260	1,789	2,434	549	43
10/80	2,274	1,800	1,089	792	32
11/80	3,142	2,460	3,194	783	50
12/80	1,527	1,669	1,507	1,093	50
Cum. Prod.	75,069	33,456	27,673	446	27
01/81	2,433	3,032	2,319	1,246	51
02/81	2,292	2,645	1,210	528	35
03/81	1,354	2,183	1,212	895	47
04/81	993	1,635	1,428	1,647	59
05/81	694	1,547	1,248	2,230	64

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit ______
Date July 29/1981

Enserch Exploration - Lambirth Well No. 7
KB = 4391'



GAMMA RAY API UNITS

0 — 100

100 — 200

CALIPER DIAM. IN INCHES

6 — 16

POROSITY INDEX (%) LIME MATRIX

COMPENSATED FORMATION DENSITY POROSITY

30 20 10 0 -10

COMPENSATED NEUTRON POROSITY

30 20 10 0 -10

COMPANY ENSERCH EXPLORATION INC

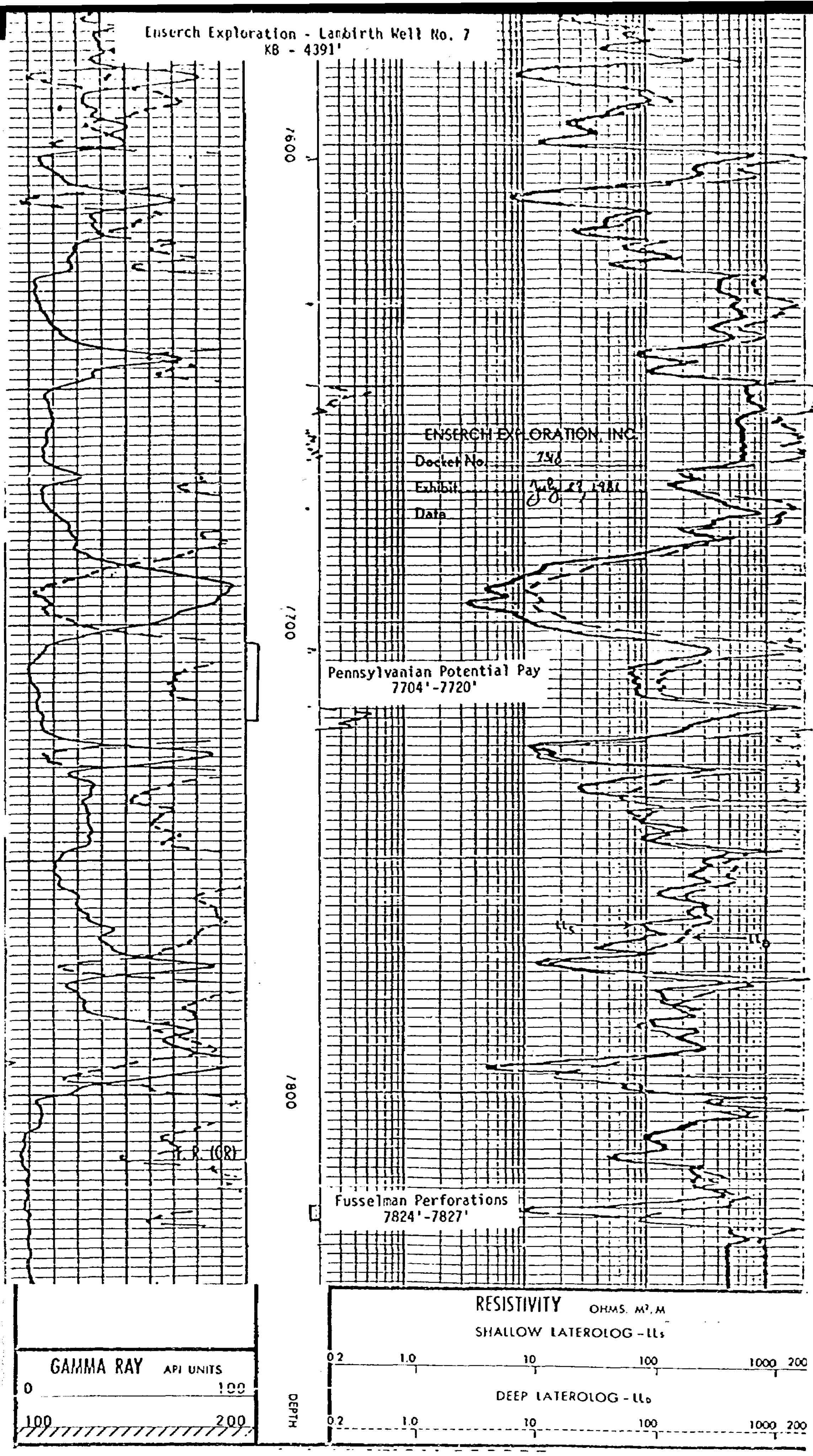
WELL LAMBIRTH #7

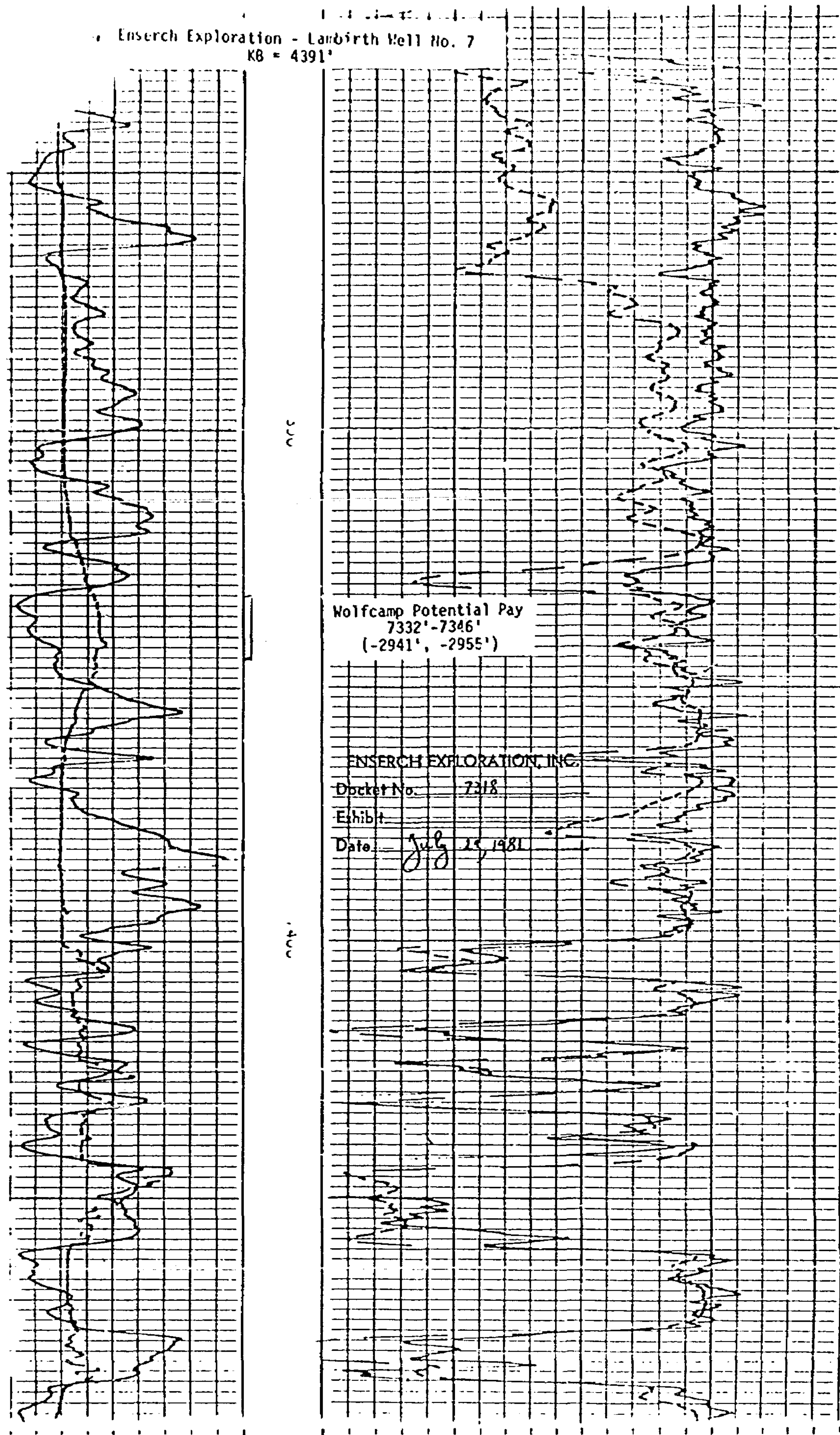
FIELD SOUTH PETERSON

COUNTY ROOSEVELT STATE NEW MEXICO

SCHL. FR 7842
SCHL. TD 7843
DRLR. TD 7872
Elev:
KB 4391
DF 4390
GL 4376.5

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 4
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81


Enserch Exploration - Lambirth Well No. 7
KB - 4391'
7600
ENSERCH EXPLORATION, INC.
Docket No. 7??
Exhibit
Date
July 23, 1981
7700
Pennsylvanian Potential Pay
7704'-7720'
LLs
LLD
7800
G.R. (GR)
Fusselman Perforations
7824'-7827'
GAMMA RAY API UNITS
0 100
100 200
DEPTH
RESISTIVITY OHMS. M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000 2000

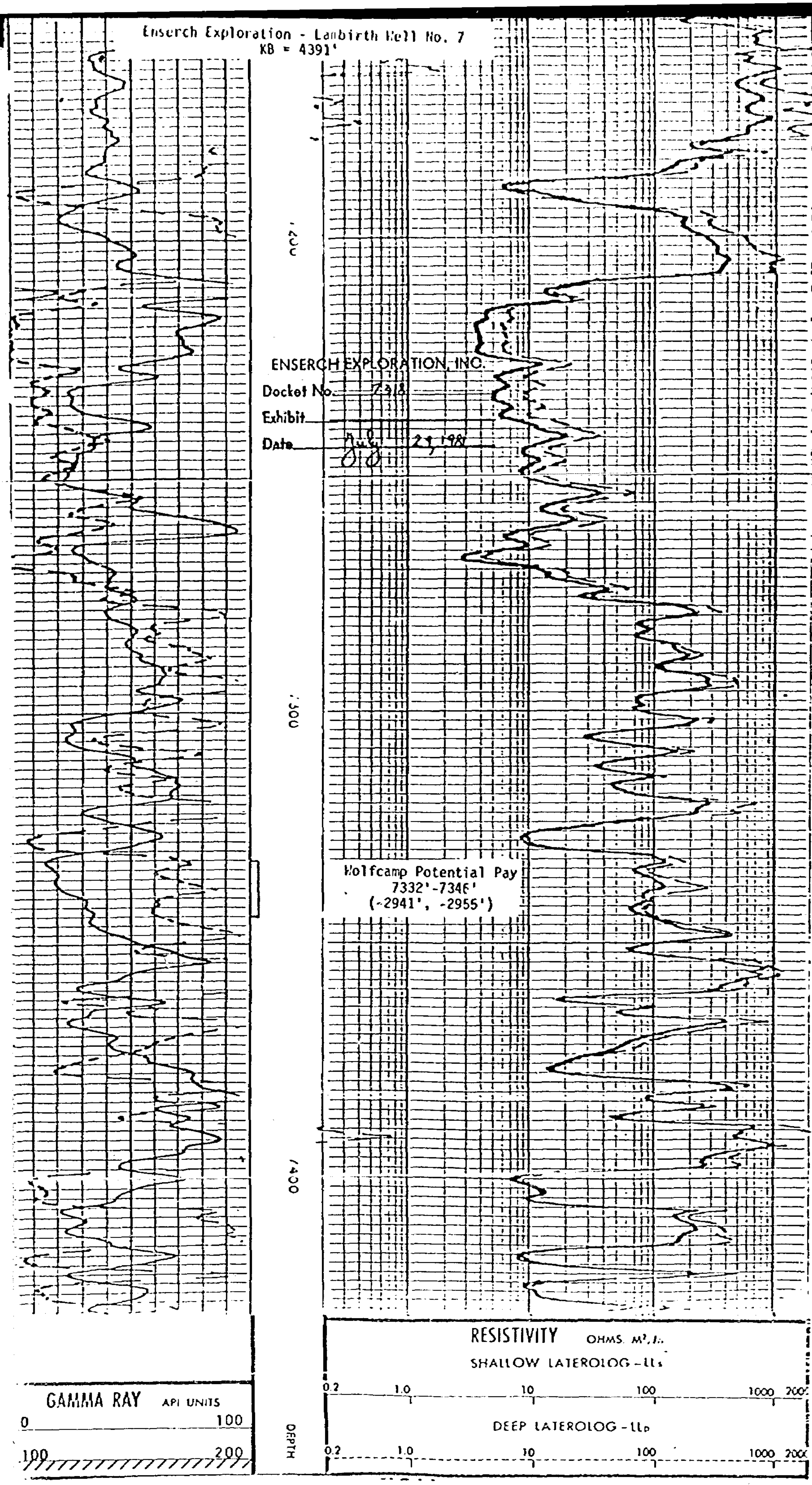


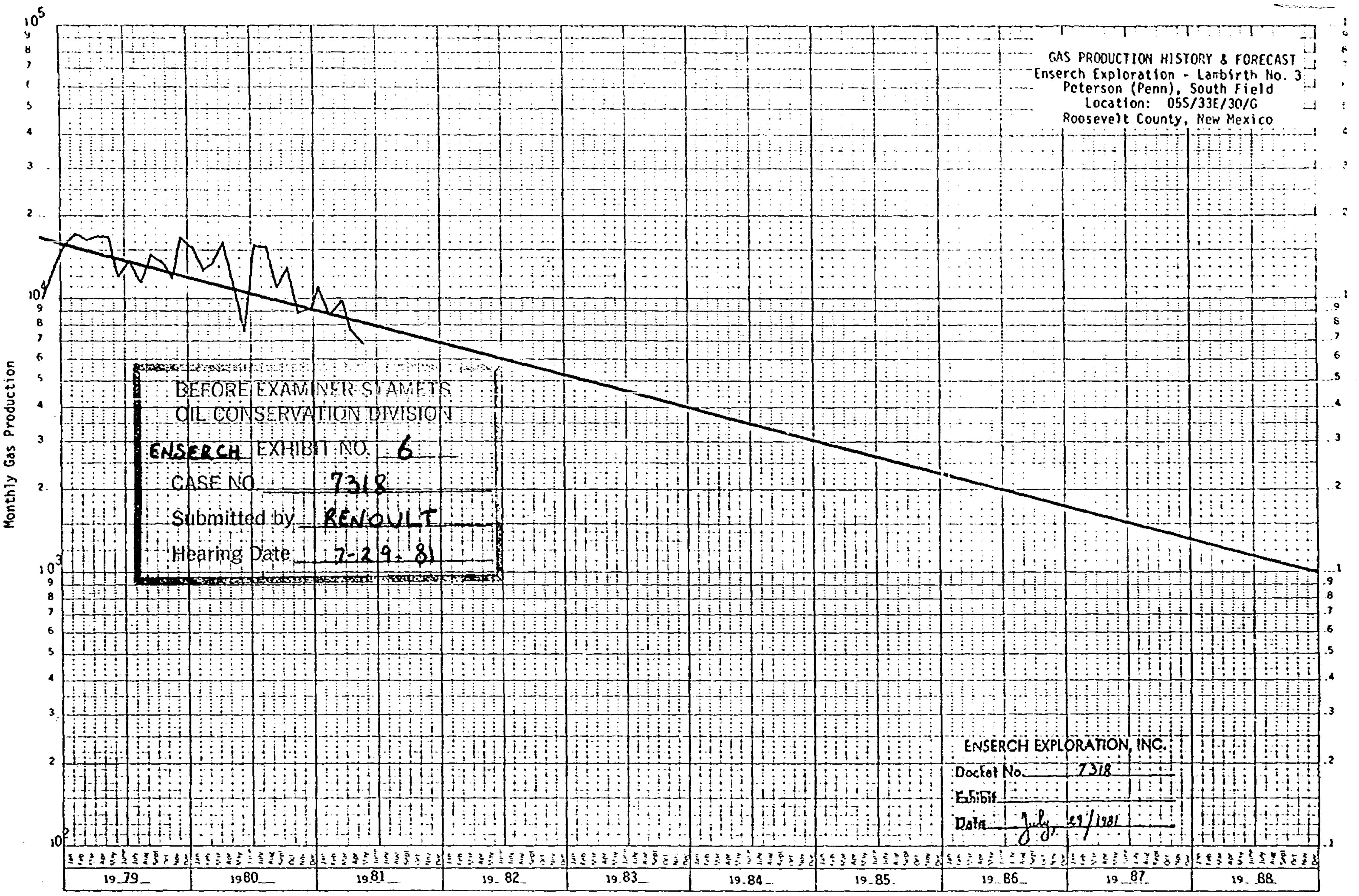
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 5
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81

GAMMA RAY API UNITS	POROSITY INDEX (%) LIME MATRIX
0 — 100	COMPENSATED FORMATION DENSITY POROSITY
100 — 200	30 20 10 0 -10
CALIPER DIAM. IN INCHES	COMPENSATED NEUTRON POROSITY
6 — 16	30 20 10 0 -10

COMPANY ENSERCH EXPLORATION INC
WELL LAMBIRTH #7
FIELD SOUTH PETERSON
COUNTY ROOSEVELT STATE NEW MEXICO

SCHL. FR 7842
SCHL. TD 7843
DRLR. TD 7872
Elev:
KB 4391
DF 4390
GL 4376.5


Enserch Exploration - Lambirth Well No. 7
KB = 4391'
7200
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
7300
Wolfcamp Potential Pay
7332'-7346'
(-2941', -2955')
7400
RESISTIVITY OHMS M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000 2000
GAMMA RAY API UNITS
0 100
100 200
DEPTH


GAS PRODUCTION HISTORY & FORECAST
Enserch Exploration - Lambirth No. 3
Peterson (Penn), South Field
Location: 05S/33E/30/G
Roosevelt County, New Mexico
Monthly Gas Production
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 6
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29/1981
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988

PRODUCTION HISTORY

Enserch Exploration - Lambirth Well No. 3
Peterson (Penn), South Field
Location: 05S/33E/30/G
Roosevelt County, New Mexico

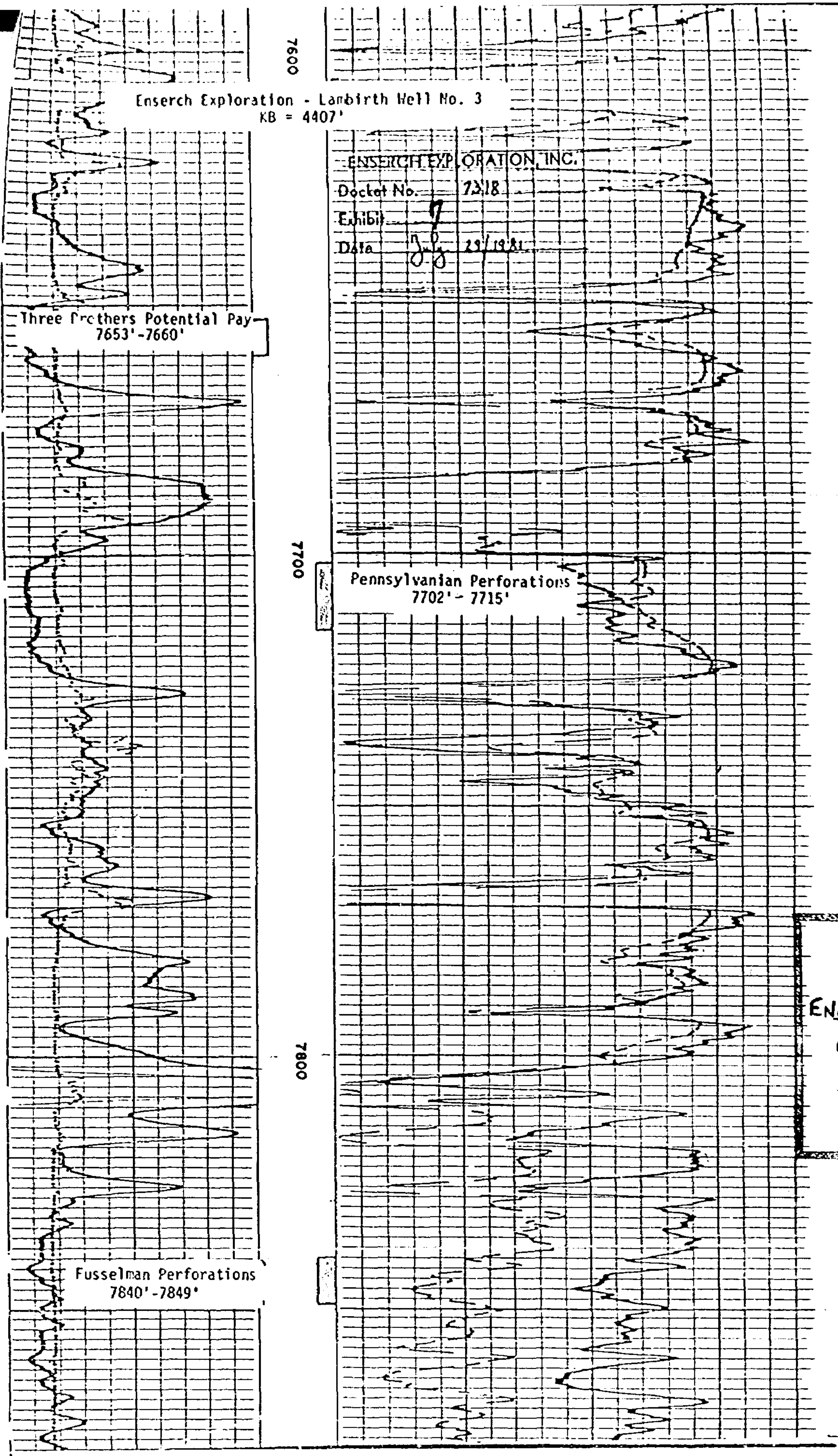
Date	Gas MCF	Condensate Bbls	Water Bbls	GOR SCF/Bbl	Water Cut %
11/78	10,206	174	0	58,655	0
12/78	13,103	231	0	56,722	0
01/79	15,867	222	0	71,472	0
02/79	17,045	298	0	57,198	0
03/79	16,348	350	0	46,708	0
04/79	16,788	383	0	43,832	0
05/79	16,789	380	0	44,181	0
06/79	12,423	241	0	51,323	0
07/79	13,971	374	0	37,355	0
08/79	11,486	320	0	35,893	0
09/79	14,404	671	0	21,466	0
10/79	13,564	542	0	25,025	0
11/79	11,907	407	0	29,255	0
12/79	18,732	546	0	30,644	0
01/80	15,385	505	0	30,465	0
02/80	12,772	653	0	19,558	0
03/80	13,455	255	0	52,764	0
04/80	15,929	302	0	76,078	0
05/80	9,965	131	0	97,692	0
06/80	7,620	78	0	148,716	0
07/80	15,169	102	0	55,769	0
08/80	15,590	280	0	50,314	0
09/80	11,522	229	0	444,029	0
10/80	12,878	29	0	∞	0
11/80	8,799	0	0	∞	0
12/80	9,114	0	0	∞	0
01/81	11,720	0	0	∞	0
02/81	8,942	0	0	∞	0
03/81	9,672	0	0	∞	0
04/81	7,768	0	0	∞	0
05/81	6,856	94	0	72,936	0
Cumulative Production	393,789	7,797	0	50,505	0

ENSERCH EXPLORATION, INC.

Docket No. 7318

Exhibit

Date July 29, 1981



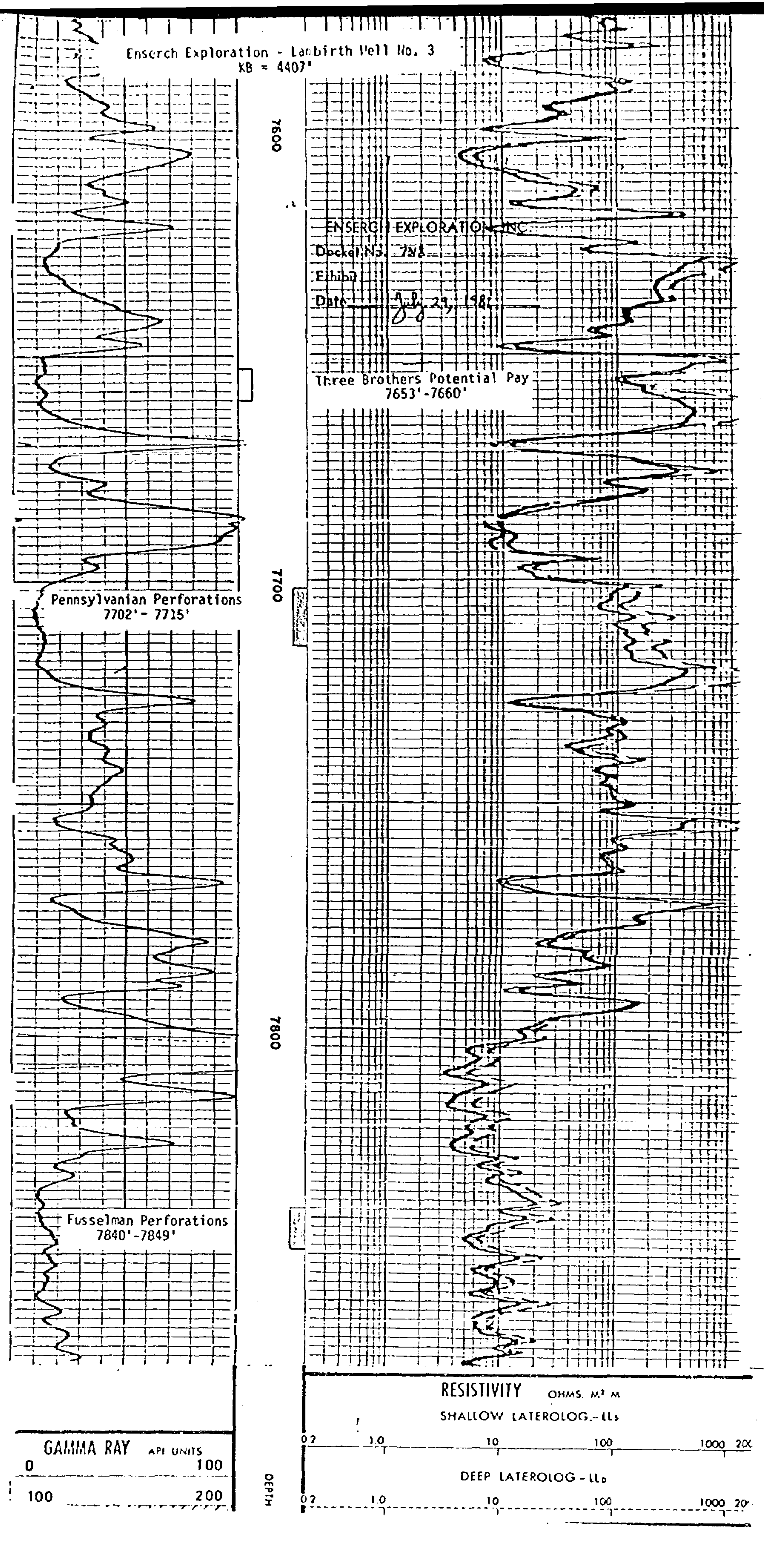
DETAIL LOG

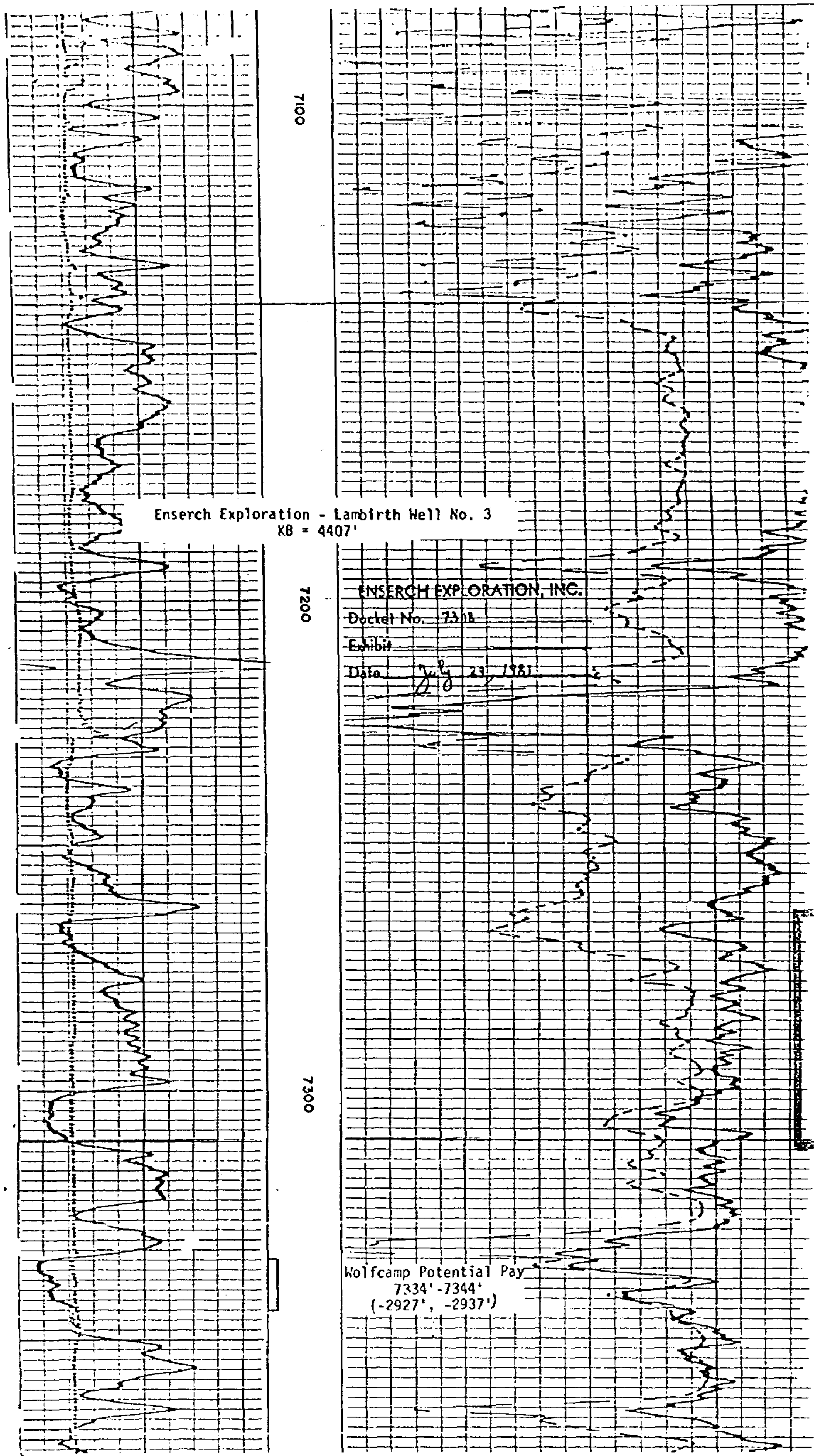
5" = 100'

CALIPER DIAM. IN INCHES	POROSITY INDEX (%) LIME MATRIX
6 — 16	COMPENSATED FORMATION DENSITY POROSITY: 30 — 20 — 10 — 0 — -10
GAMMA RAY API UNITS: 0 — 100; 100 — 200	COMPENSATED NEUTRON POROSITY: 30 — 20 — 10 — 0 — -10

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 7
CASE NO. 7318
Submitted by RENOVLT
Hearing Date 7-29-81

Exh 7


Enserch Exploration - Lanbirth Well No. 3
KB = 4407'
7600
ENSERCH EXPLORATION INC.
Docket No.
Exhibit
Date
Three Brothers Potential Pay
7653'-7660'
7700
Pennsylvanian Perforations
7702' - 7715'
7800
Fusselman Perforations
7840'-7849'
GAMMA RAY API UNITS
0
100
100
200
DEPTH
RESISTIVITY OHMS. M² M
SHALLOW LATEROLOG - LLs
0.2
1.0
10
100
1000
DEEP LATEROLOG - LLd
0.2
1.0
10
100
1000



BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 8
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81

DETAIL LOG

5" = 100'

CALIPER DIAM. IN INCHES

6 16

GAMMA RAY API UNITS

0 100

100 200

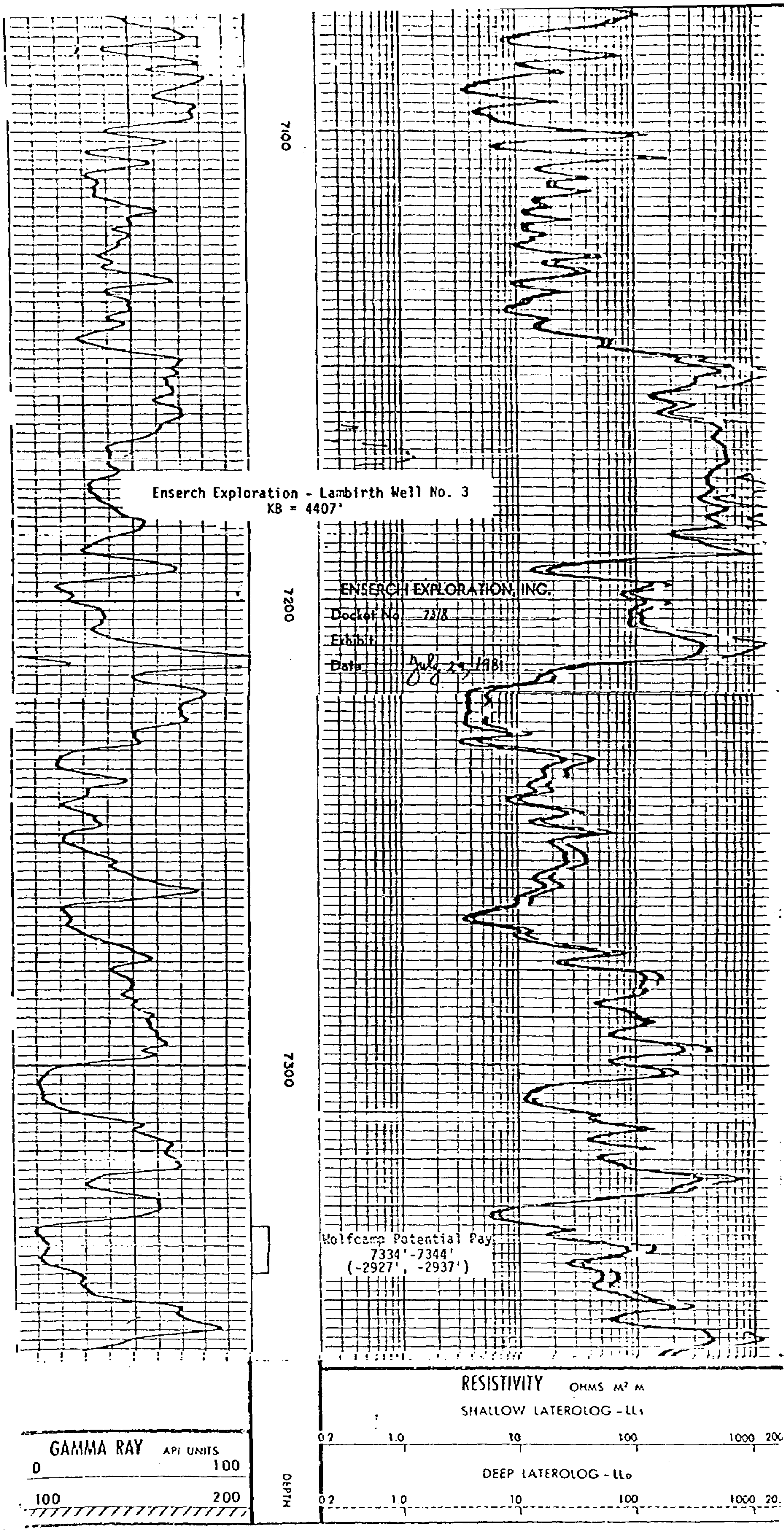
POROSITY INDEX (%) LIME MATRIX

COMPENSATED FORMATION DENSITY POROSITY

30 20 10 0 -1.

COMPENSATED NEUTRON POROSITY

30 20 10 0 -1(

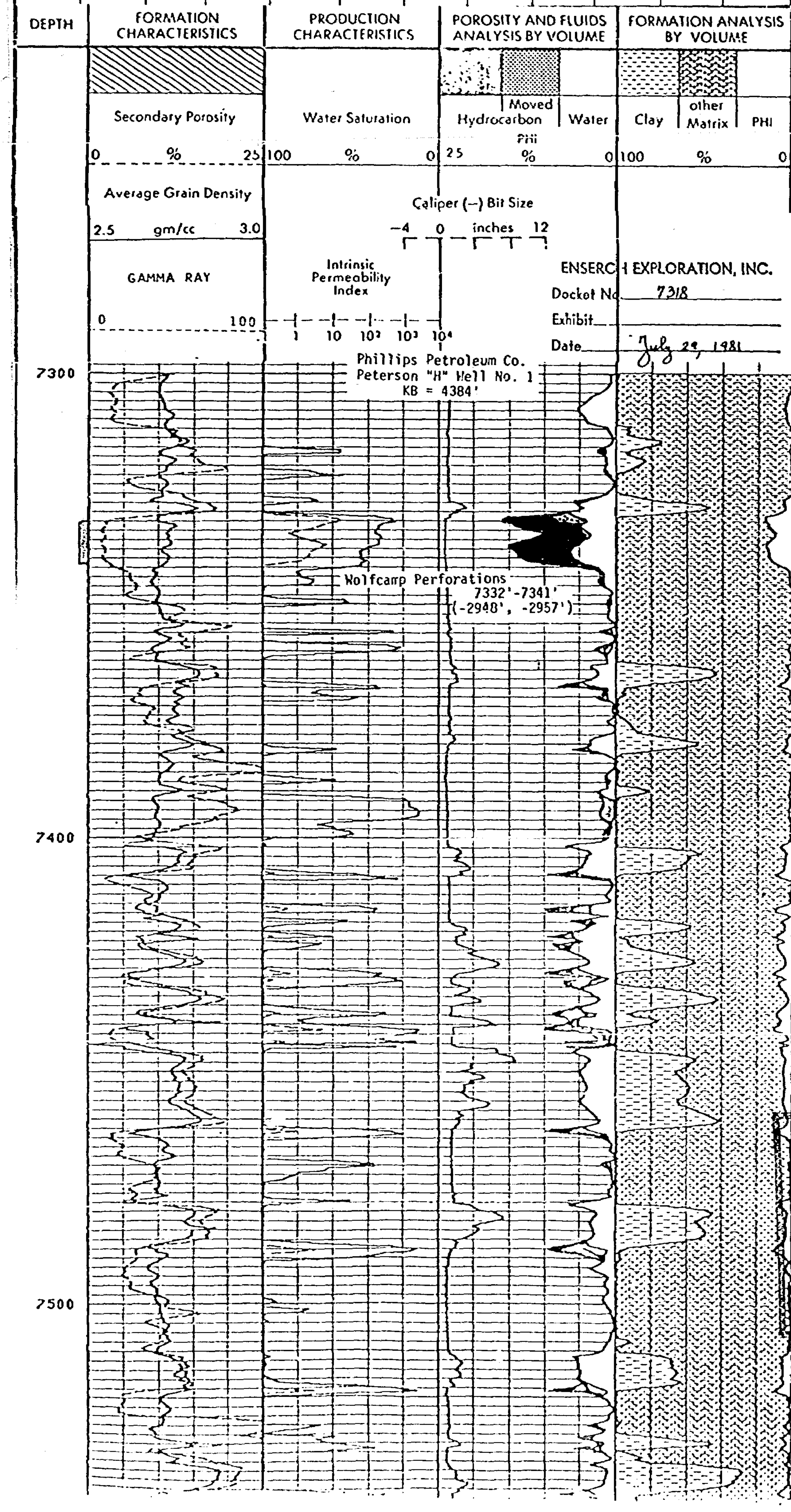

Enserch Exploration - Lambirth Well No. 3
KB = 4407'
7100
7200
7300
ENSERCH EXPLORATION, INC.
Docket No 7318
Exhibit
Date July 27, 1981
Wolfcamp Potential Pay
7334'-7344'
(-2927', -2937')
RESISTIVITY OHMS M² M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000 2000
GAMMA RAY API UNITS
0 100
100 200
DEPTH

This SYNERGETIC LOG presentation was computed using
CORIBAND — Analysis of Complex Reservoirs

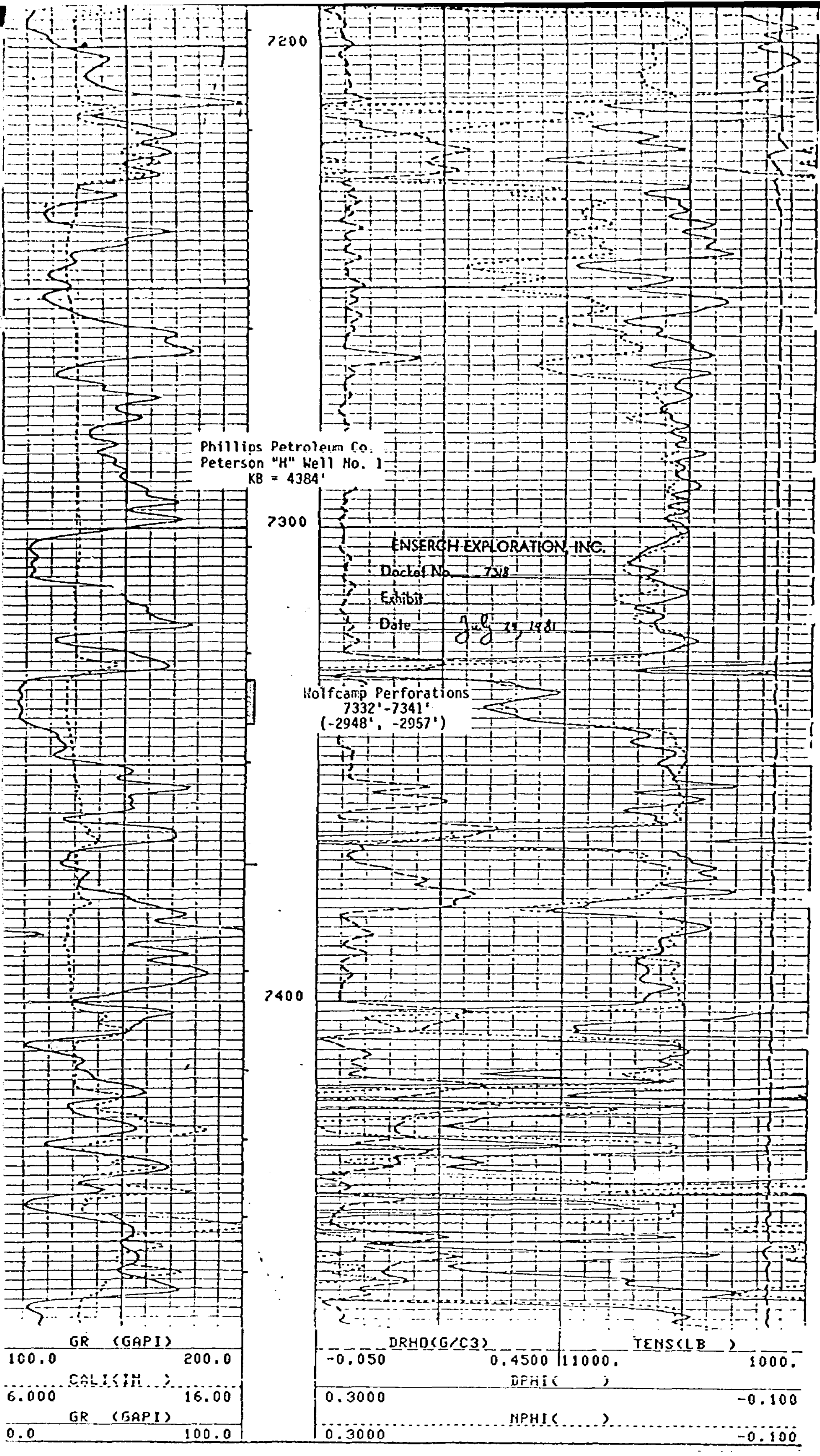
Field Recording	Engineer: TUCKER	Truck No: 8131	Location: LVLD	C.C. Job No.
Office Recording	Comp. Center: PBCC	Program No:	Analyst: MCGINLEY	54714
Mud Measurements	Rm .087 @ 75 °F	Rmf .062 @ 75 °F	BHT 141 °F	Bit Size 7 7/8

COMPUTATION PARAMETERS

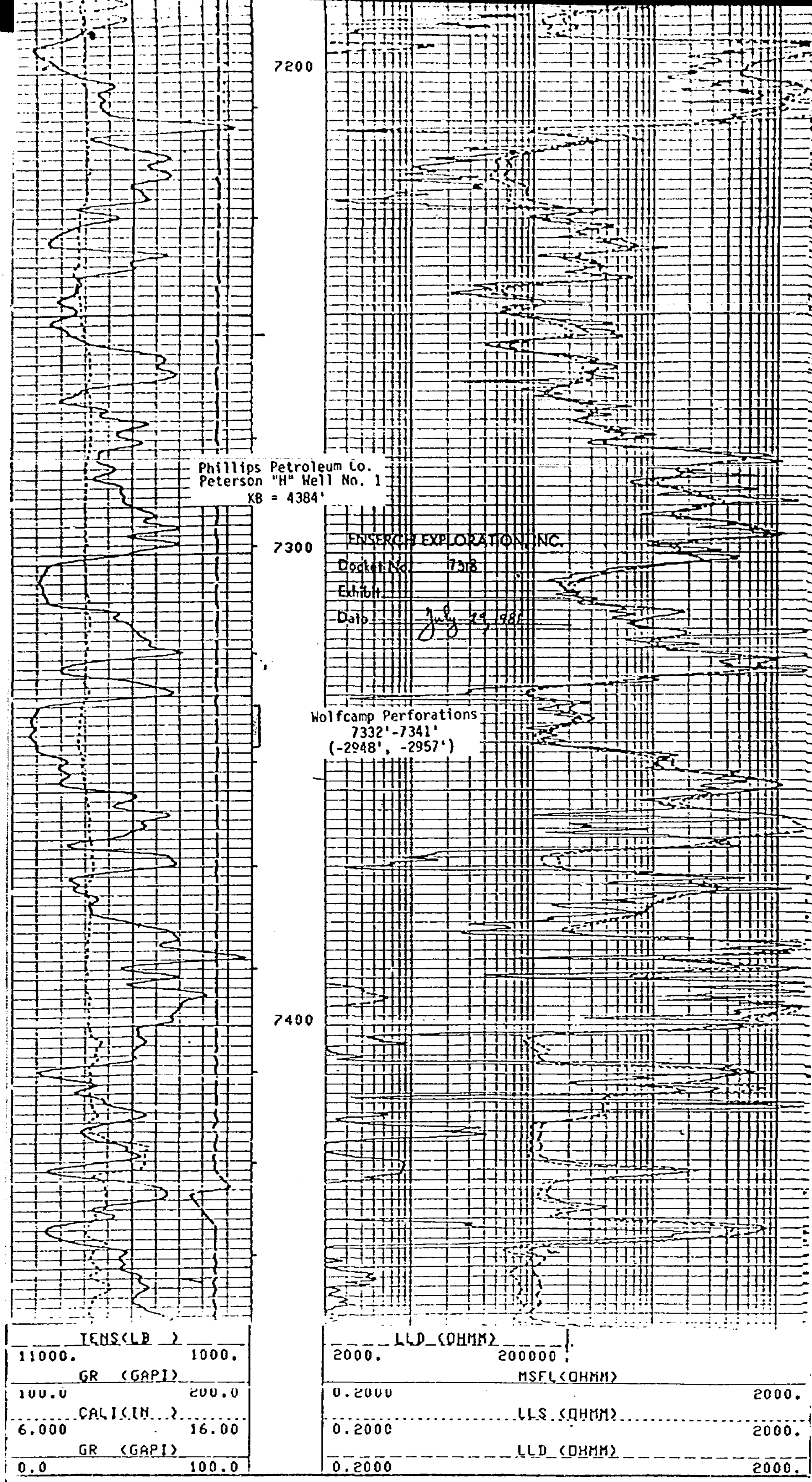
Depth Interval From	Depth Interval To	R_w	R_{MF}	R_{SH}	Δt_{cl}	$PHI\ N_{cl}$	ρ_{Bcl}	GR_{sd}	GR_{cl}	"M"	ρ_{hy}
7976	7820	.045	.034	10		24	2.65	25	110	2.2	.8
7820	7300	.045	.034	10		24	2.65	25	110	2.0	.8



BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 9
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81



7200
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
7400
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
DRHO(G/C3)
-0.050 0.4500
TENS(LB)
11000. 1000.
DPHI( )
0.3000 -0.100
NPHI( )
0.3000 -0.100


7200
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
7400
TENS(LB)
11000. 1000.
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
LLD (OHMM)
2000. 200000.
MSFL(OHMM)
0.2000 2000.
LLS (OHMM)
0.2000 2000.
LLD (OHMM)
0.2000 2000.

****

****
*   CORIBAND   *
****
* SCHLUMBERGER *
****

COMPANY   PHILLIPS PETROLEUM

WELL   PETERSON H 1

FIELD   PETERSON

COUNTY   ROOSEVELT

STATE   NEW MEXICO

DATE   24-JUN-80

COMPUTED AT:-   PERMIAN BASIN COMPUTING CENTER

****

THIS JOB IS LISTED FROM TOP TO BOTTOM

THIS IS A 01 FOOT LISTING

LISTING IS DISCRIMINATED FOR VSH>50%

LISTING IS DISCRIMINATED FOR PHI<1.9%

PERMEABILITY = (62500(PHI**6))/(SW**2)   [10%<SW<50%]

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 10
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7-29-81

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29, 1981

DEPTH FEET	PERM. TO OIL-GAS (INDEX)	WATER SAT. %	POROSITY TOTAL %	POROSITY SEC. %	MATRIX DENSITY GM/CC	SHALE VOLUME %
7304.0	0.00	100	2.2	0.0	2.70	0
7305.0	0.00	100	3.6	0.0	2.70	0
7306.0	0.00	100	4.2	0.0	2.71	0
7307.0	0.00	100	5.0	0.0	2.72	0
7308.0	0.00	99	5.1	0.0	2.72	0
7309.0	0.00	100	4.5	0.0	2.74	0
7310.0	0.00	99	4.1	0.0	2.73	0
7311.0	0.00	100	2.9	0.0	2.72	0
7316.0	0.00	89	1.9	0.0	2.70	15
7317.0	0.00	56	2.5	0.0	2.69	5
7327.0	0.00	72	3.8	0.0	2.64	15
7328.0	0.01	85	5.6	0.0	2.61	38
7330.0	0.03	97	6.9	0.0	2.62	39
7331.0	6.75	35	15.4	0.0	2.69	2
7332.0	16.31	25	16.0	0.0	2.70	0
7333.0	4.42	34	14.2	0.0	2.75	0
7334.0	1.12	36	11.5	0.0	2.73	0
7335.0	0.79	33	10.6	0.0	2.73	0
7336.0	2.26	34	12.8	0.0	2.73	0
7337.0	6.23	34	15.0	0.0	2.73	0
7338.0	3.47	42	14.6	0.0	2.71	0
7339.0	2.18	44	13.8	0.0	2.72	0
7340.0	1.55	44	13.1	0.0	2.73	0
7341.0	0.39	44	10.3	0.0	2.72	0
7342.0	0.00	54	4.6	0.0	2.69	0
7343.0	0.00	80	2.3	0.0	2.69	0
7344.0	0.00	78	2.1	0.0	2.69	0
7345.0	0.00	71	2.4	0.0	2.68	0
7359.0	0.00	21	2.4	0.0	2.68	0
7360.0	0.00	41	2.3	0.0	2.69	0
7363.0	0.00	100	3.4	0.0	2.66	34
7366.0	0.00	100	3.4	0.0	2.62	47
7367.0	0.02	63	6.7	0.0	2.70	20
7368.0	0.00	34	3.7	0.0	2.75	5
7370.0	0.00	46	2.7	0.0	2.77	2
7379.0	0.00	100	3.5	0.0	2.63	38
7380.0	0.00	100	3.6	0.0	2.64	45
7381.0	0.01	58	6.0	0.0	2.67	26
7390.0	0.00	100	2.3	0.0	2.71	16

Wolfcamp - Injection zone :

Water saturation = 36.8%

Average porosity = 13.4%

Permeability = 4.13 md

WATER INJECTION CALCULATIONS
WATER ENCROACHMENT

Phillips Petroleum Company - Peterson "H" Well No. 1
Peterson, South Field

Proposed injection zone:	Wolfcamp
Perforations:	7332'-7341' (KB = 4384')
:	(-2948', -2957')
Net interval:	9'
Average porosity:	13.4%
Average water saturation:	36.8%
Irreducible fluid saturation:	20%
Displaceable porosity:	10.7%

Reservoir volume encroached by injected water:

$$W_i = (7758\ A\ h\ \phi_D)/B_W$$

Reservoir area encroached by injected water:

$$A = (B_W \times W_i)/(7758\ h\ \phi_D)$$

Proposed injection volume:

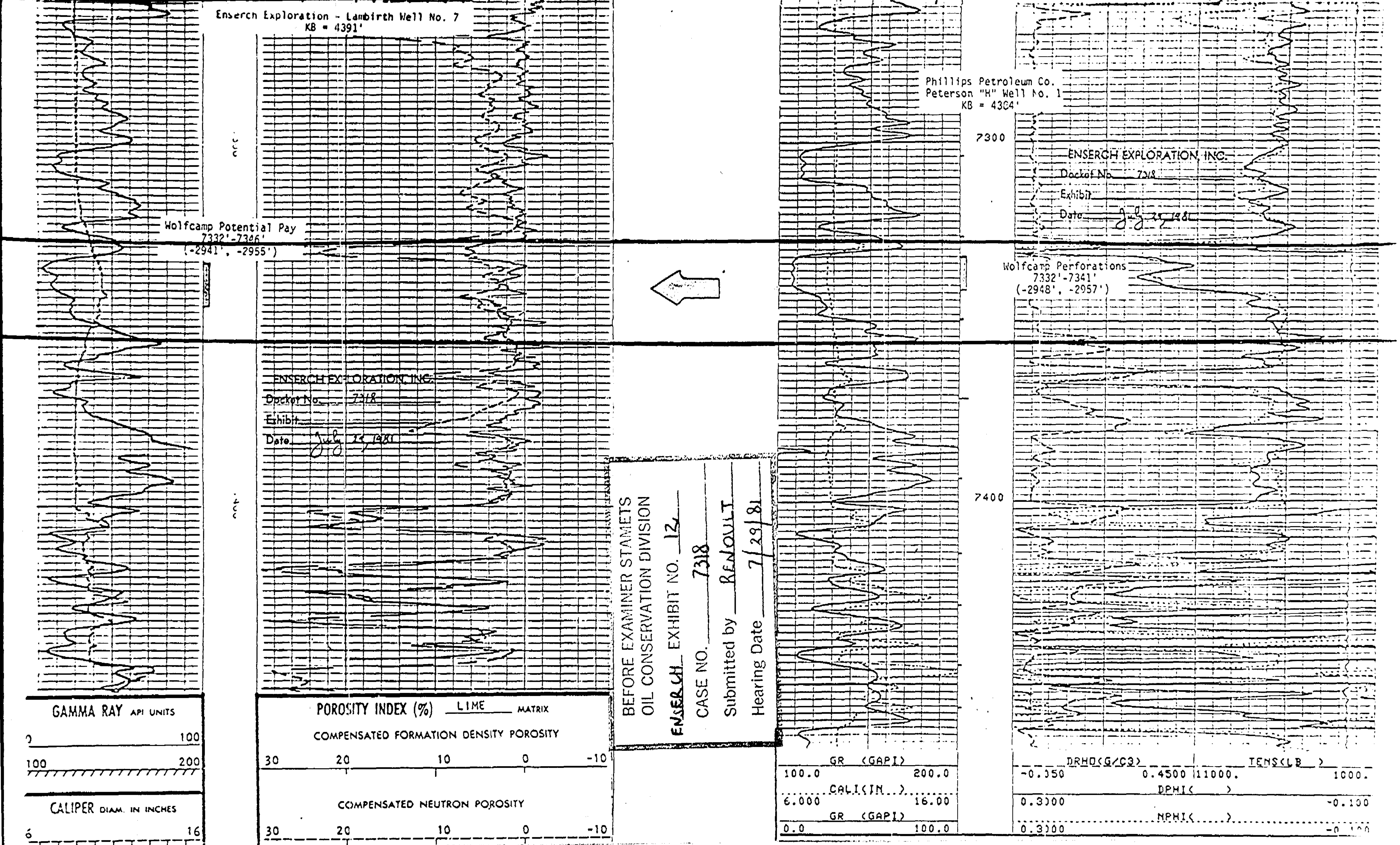
Anticipated:	Not available
Minimum:	400 bbls/day (12,160 bbls/month)
Maximum:	1000 bbls/day (30,400 bbls/month)

Area encroached by injection water (700 bbls/day):

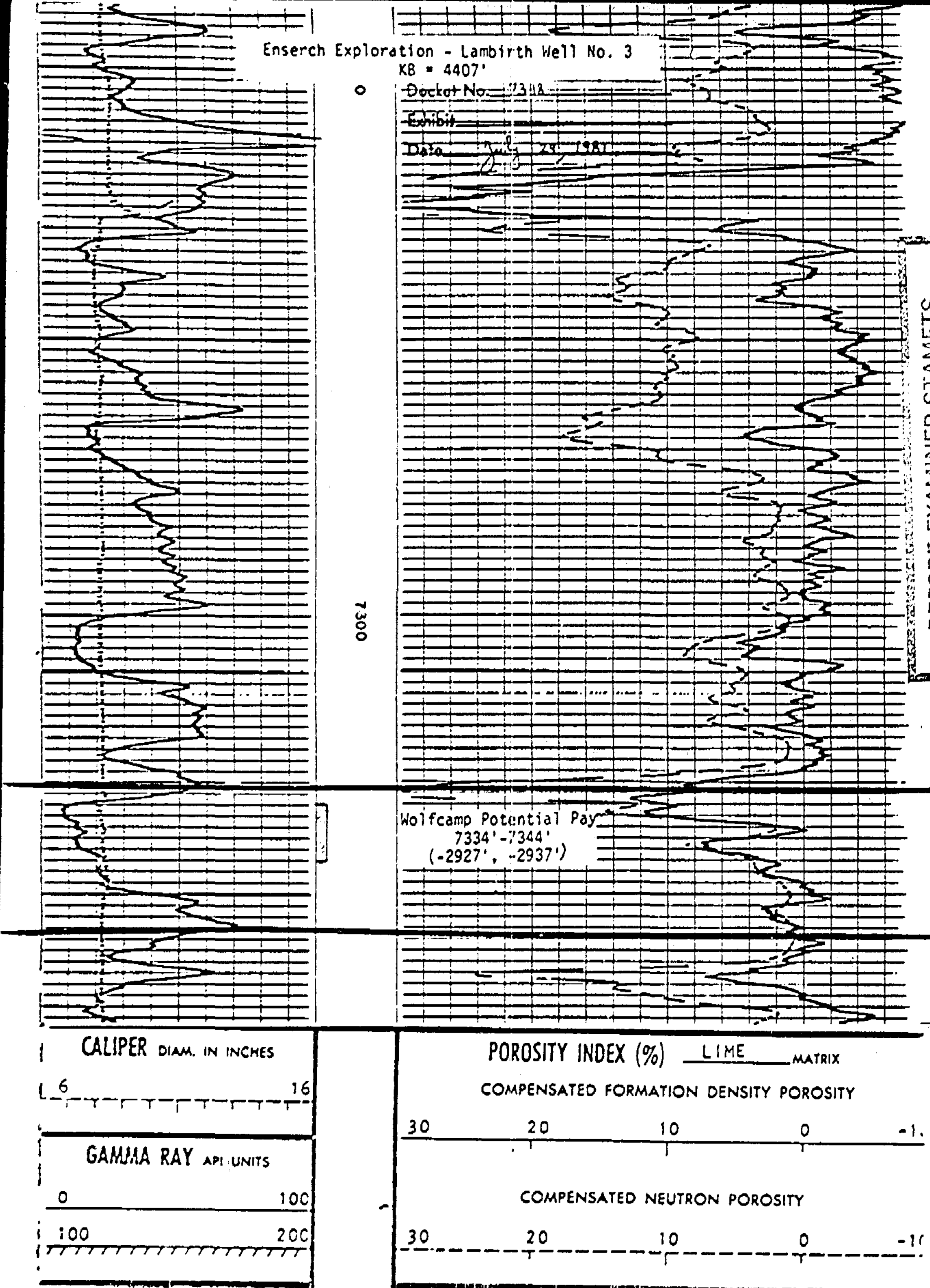
Year 1:	A = 27.3 acres	(radius =	615')
Year 2:	= 54.6 acres	=	870'
Year 3:	= 81.9 acres	=	1065'
Year 4:	= 109.2 acres	=	1230'
Year 5:	= 136.5 acres	=	1376'
Year 6:	= 163.8 acres	=	1507'
Year 7:	= 191.1 acres	=	1628'
Year 8:	= 218.4 acres	=	1740'
Year 9:	= 245.7 acres	=	1846'
Year 10:	= 273.0 acres	=	1946'

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29 / 1981

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 11
CASE NO. 7318
Submitted by RFNO117
Hearing Date 7-29-81



BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
ENSERCH EXHIBIT NO. 12
CASE NO. 7318
Submitted by RENOULT
Hearing Date 7/29/81



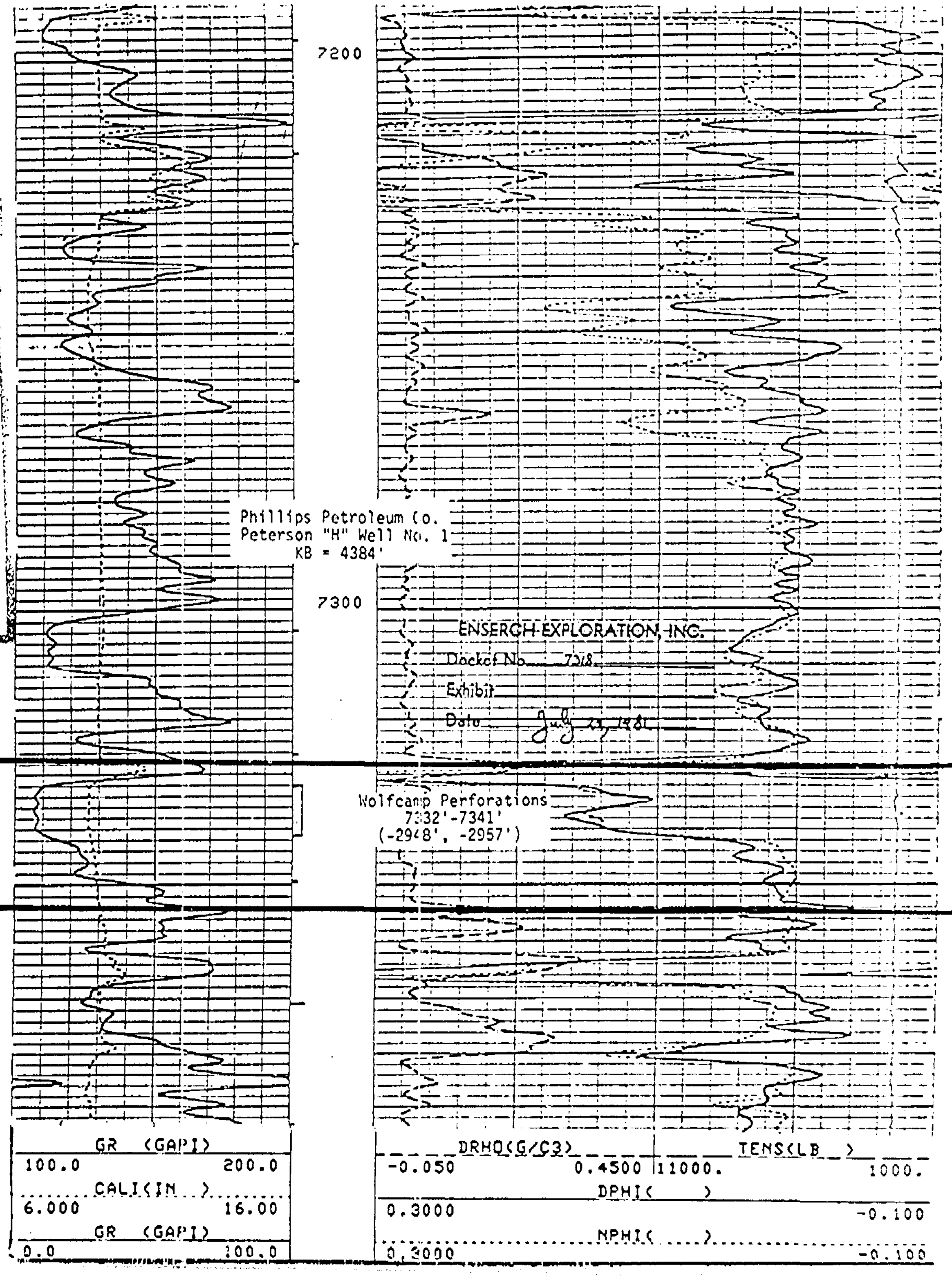
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION

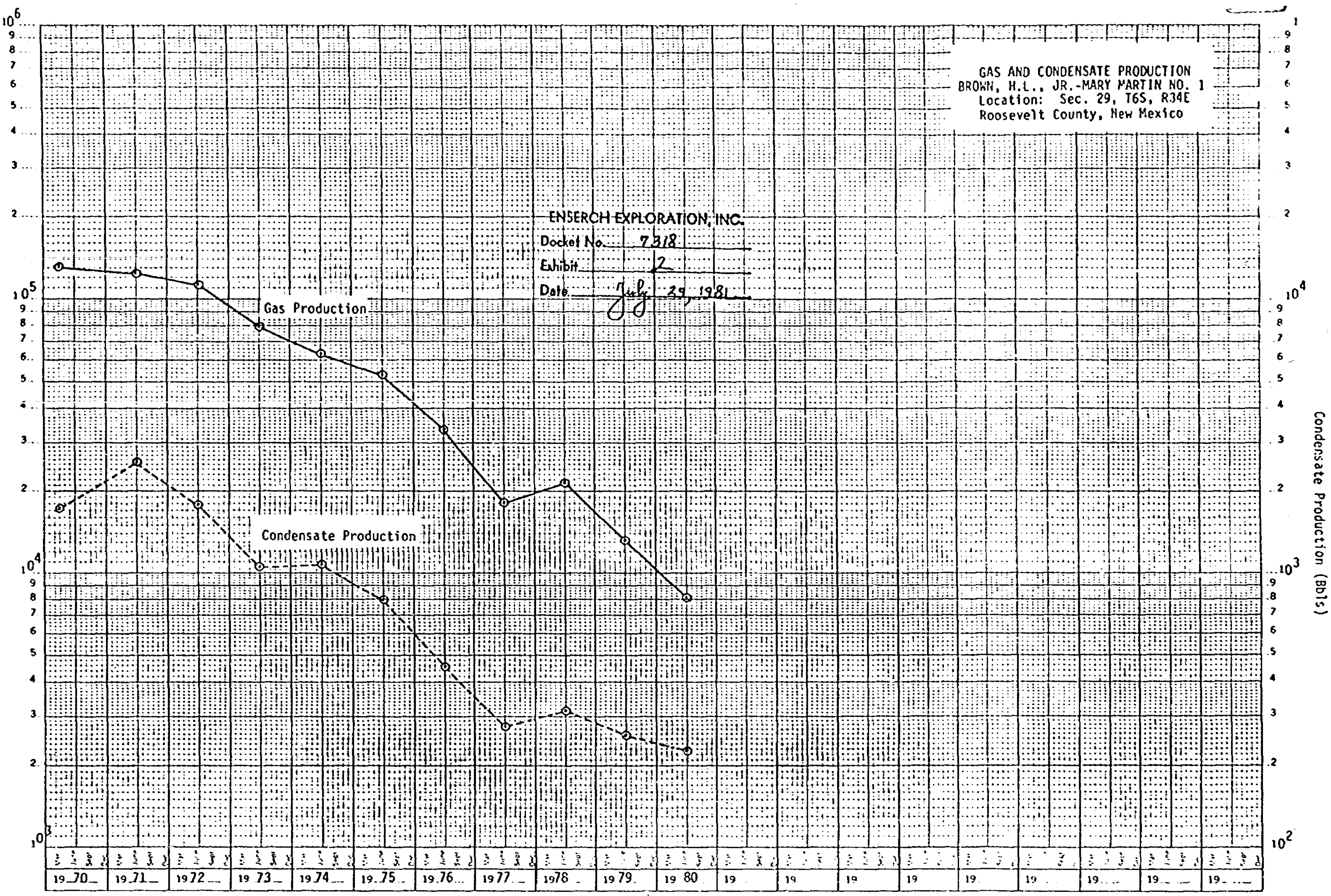
ENSERCH EXHIBIT NO. 13

CASE NO. 7318

Submitted by RENOULT

Hearing Date 7-29-81




GAS AND CONDENSATE PRODUCTION
BROWN, H.L., JR.-MARY MARTIN NO. 1
Location: Sec. 29, T6S, R34E
Roosevelt County, New Mexico
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 2
Date July 29, 1981
Gas Production
Condensate Production
Gas Production (MCF)
Condensate Production (Bbls)
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980

PRODUCTION HISTORY

Brown, H.L., Jr. - Mary Martin No. 1
Location: Sec. 29, T6S, R34E
Roosevelt County, New Mexico

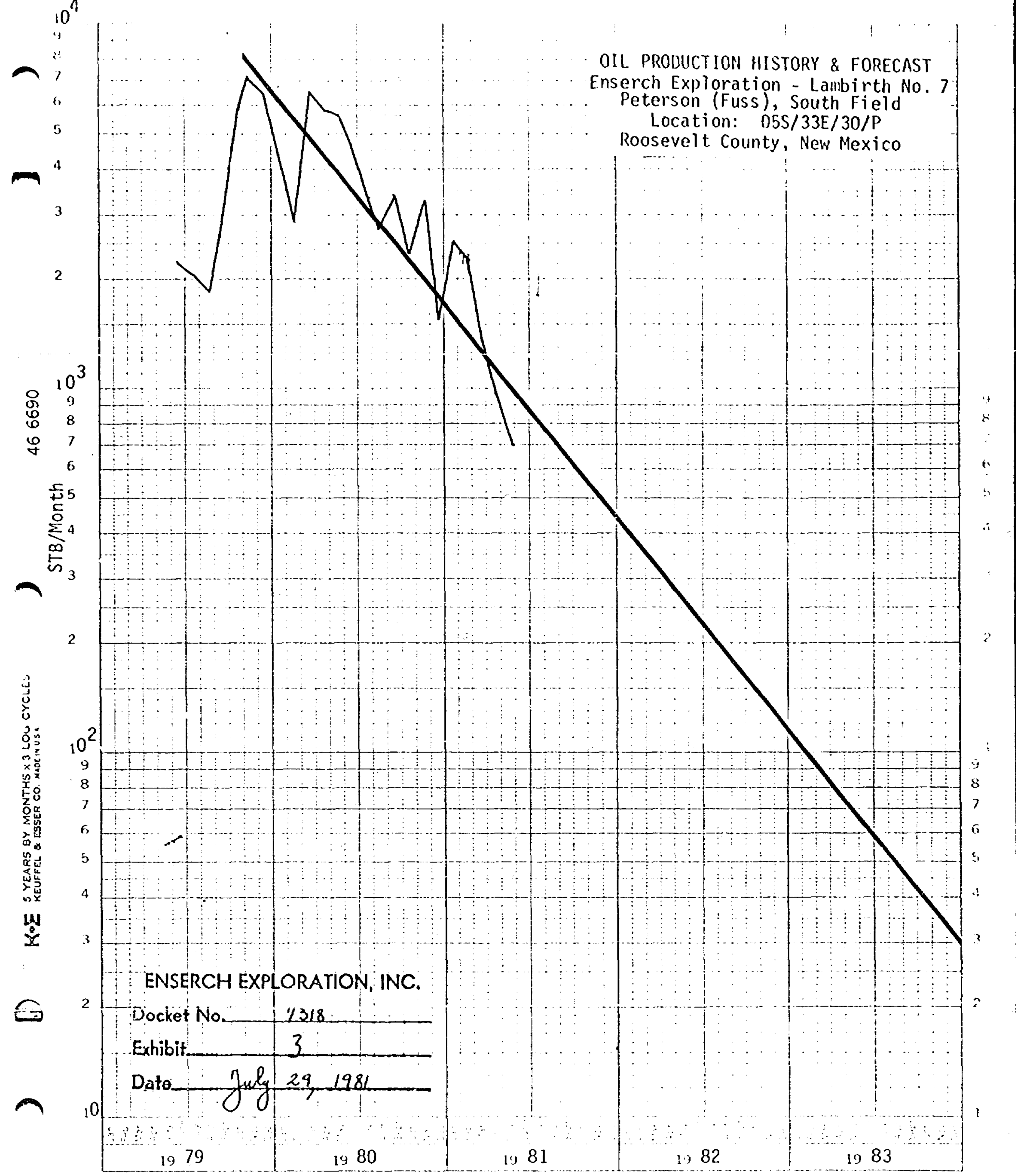
Date	Gas MCF	Condensate Bbls	Water Bbls
1970	130,833	1,729	10
1971	125,870	2,527	
1972	113,669	1,793	
1973	79,950	1,046	
1974	63,646	1,071	169
1975	53,421	800	154
1976	33,577	456	167
1977	18,130	277	390
1978	21,537	316	363
1979	13,259	258	209
1980	8,109	227	246
Cumulative Production	1,613,901	10,500	1,708

ENSERCH EXPLORATION, INC.

Docket No. 7318

Exhibit

Date July 29, 1981



OIL PRODUCTION HISTORY & FORECAST
Enserch Exploration - Lambirth No. 7
Peterson (Fuss), South Field
Location: 05S/33E/30/P
Roosevelt County, New Mexico
STB/Month
46 6690
K&E 5 YEARS BY MONTHS X 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
1979
1980
1981
1982
1983
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 3
Date July 29, 1981

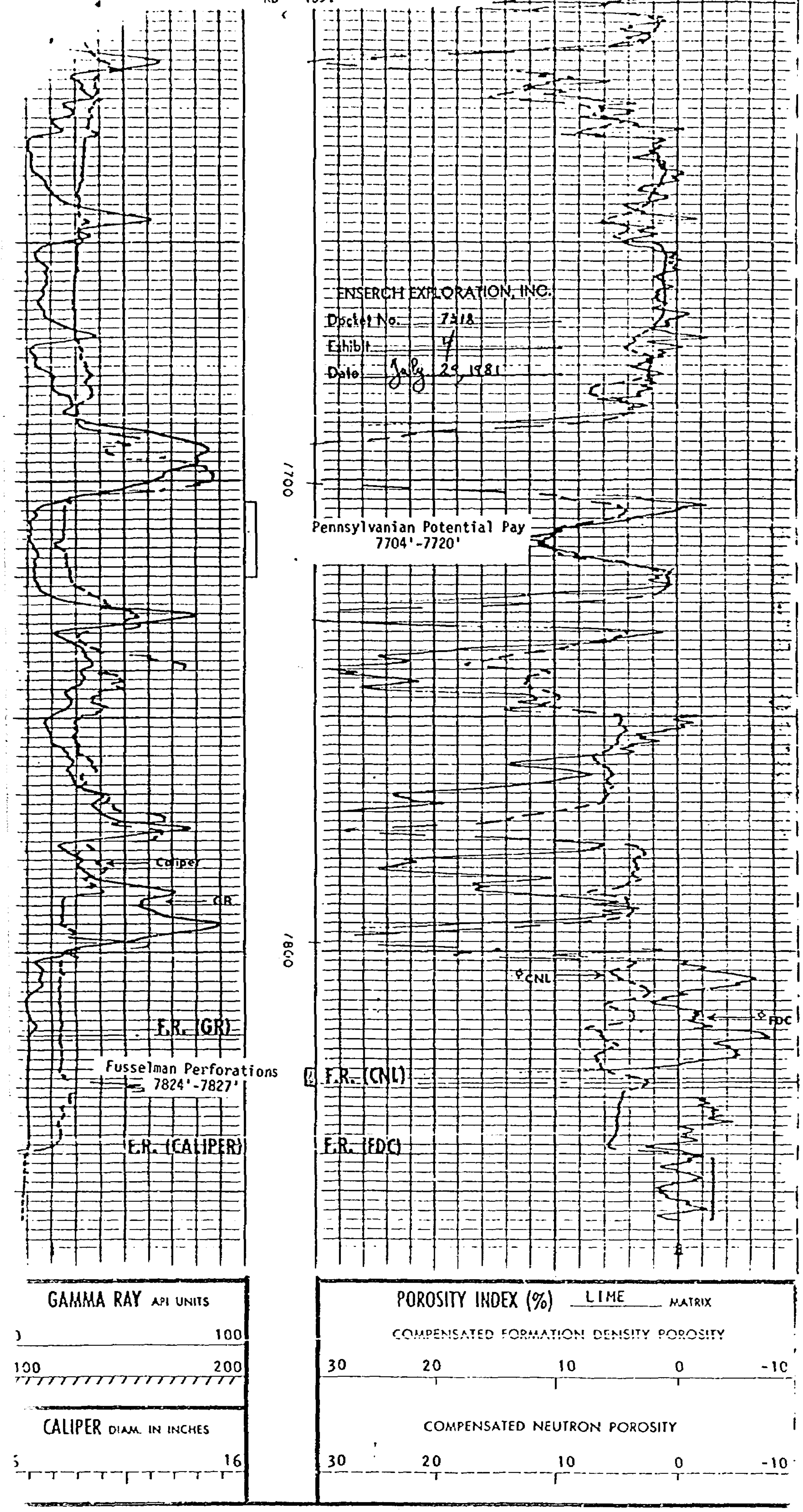
PRODUCTION HISTORY
Enserch Exploration - Lambirth Well No. 7
Peterson (Fusselman), South Field

Location: 05S/33E/30/P
Roosevelt County, New Mexico

Date	Oil Bbls	Gas MCF	Water Bbls	GOR SCF/Bbl	Water Cut %
01/79					
02/79					
03/79					
04/79					
05/79					
06/79	2,244	1,031	1,120	459	33
07/79	2,112	871	804	412	30
08/79	1,879	1,056	494	562	21
09/79	3,345	771	1,859	230	36
10/79	5,912	2,493	1,261	421	18
11/79	6,891	2,262	1,257	328	15
12/79	6,228	2,172	348	348	5
01/80	6,250	1,767	1,380	282	18
02/80	2,724	1,840	1,014	675	27
03/80	6,242	1,971	1,399	316	18
04/80	5,541	2,035	1,370	367	20
05/80	5,279	2,122	1,722	402	21
06/80	4,376	2,221	1,262	508	22
07/80	3,120	1,537	1,689	493	35
08/80	2,723	1,589	2,470	584	48
09/80	3,260	1,789	2,434	549	43
10/80	2,274	1,800	1,089	792	32
11/80	3,142	2,460	3,194	783	50
12/80	1,527	1,669	1,507	1,093	50
Cum. Prod.	75,069	33,456	27,673	446	27
01/81	2,433	3,032	2,319	1,246	51
02/81	2,292	2,645	1,210	528	35
03/81	1,354	2,183	1,212	895	47
04/81	993	1,635	1,428	1,647	59
05/81	694	1,547	1,248	2,230	64

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29/1981

Enserch Exploration - Lambirth Well No. 7
KB = 4391'



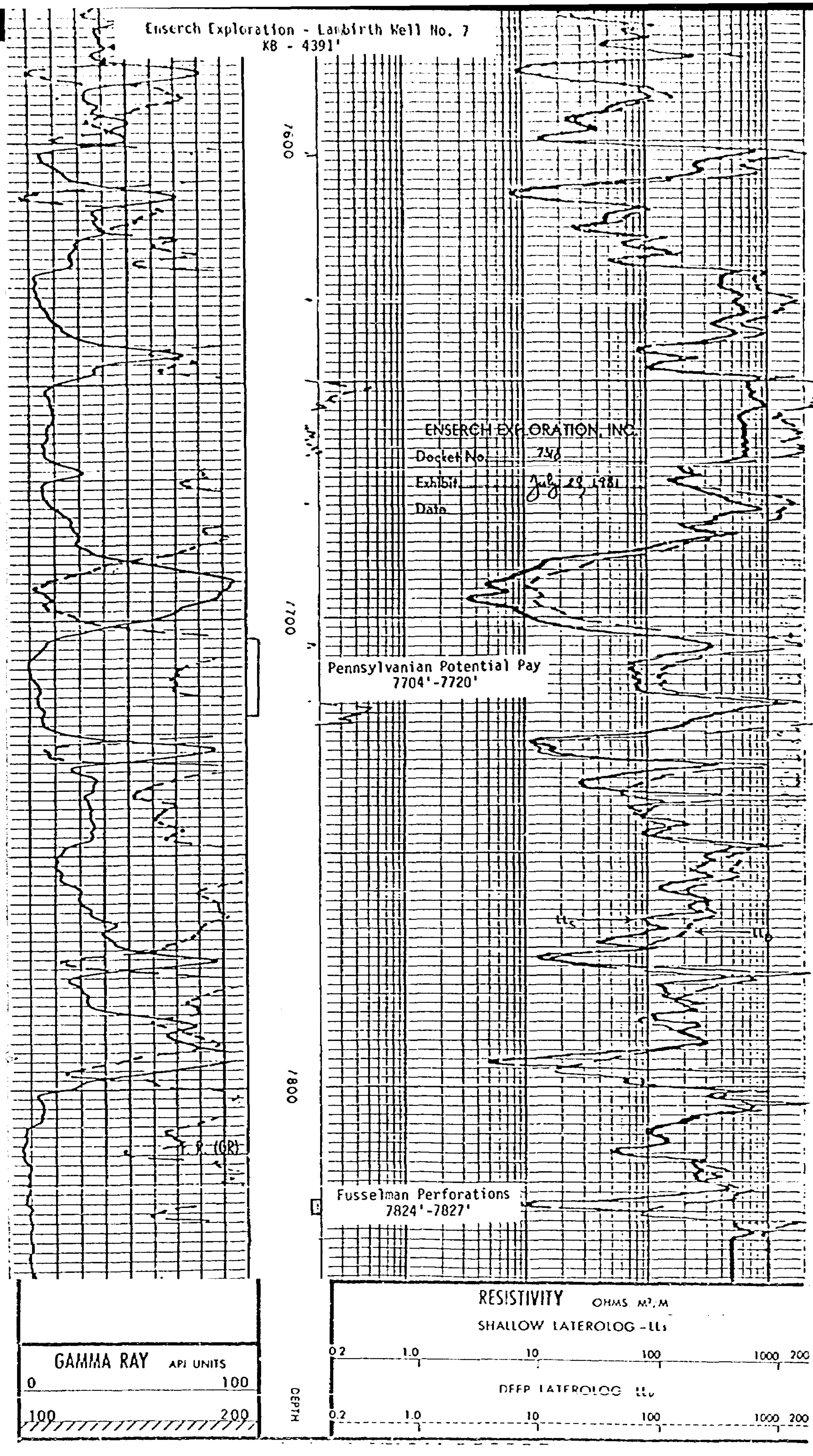
COMPANY ENSERCH EXPLORATION INC

WELL LAMBIRTH #7

FIELD SOUTH PETERSON

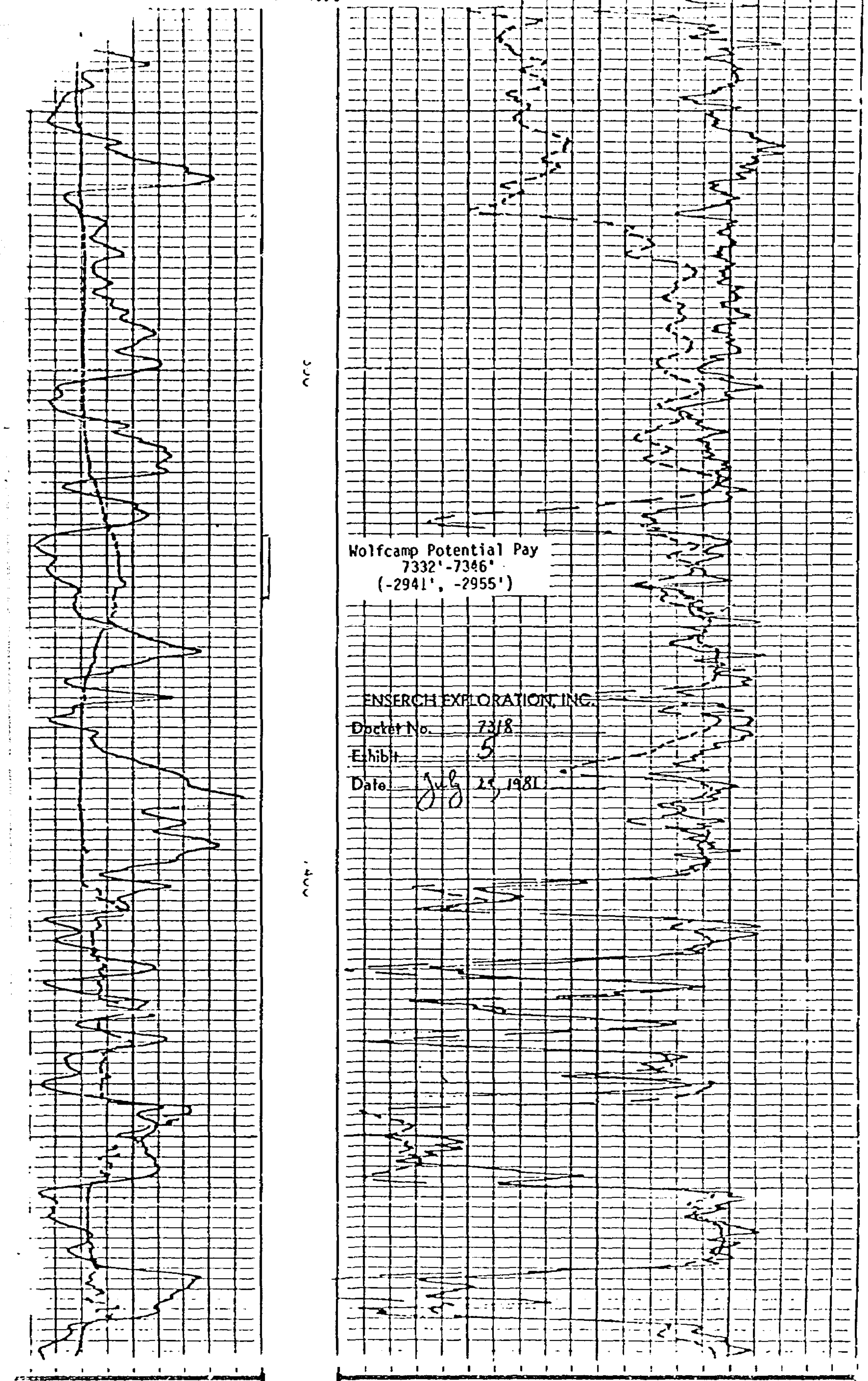
COUNTY ROOSEVELT STATE NEW MEXICO

SCHL. FR 7842
SCHL. TD 7843
DRLR. TD 7872
Elev:
KB 4391
DF 4390
GL 4376.5



Enserch Exploration - Lambirth Well No. 7
KB - 4391'
7600
ENSERCH EXPLORATION, INC.
Docket No.
Exhibit
July 28, 1981
Date
7700
Pennsylvanian Potential Pay
7704'-7720'
LLs
LLd
T. R. (GR)
7800
Fusselman Perforations
7824'-7827'
GAMMA RAY API UNITS
0
100
100
200
DEPTH
RESISTIVITY OHMS M²/M
SHALLOW LATEROLOG - LLs
0.2
1.0
10
100
1000
2000
DEEP LATEROLOG LLd
0.2
1.0
10
100
1000
2000

Enserch Exploration - Lambirth Well No. 7
KB = 4391'



GAMMA RAY API UNITS

0 — 100

100 — 200

CALIPER DIAM. IN INCHES

6 — 16

POROSITY INDEX (%) LIME MATRIX

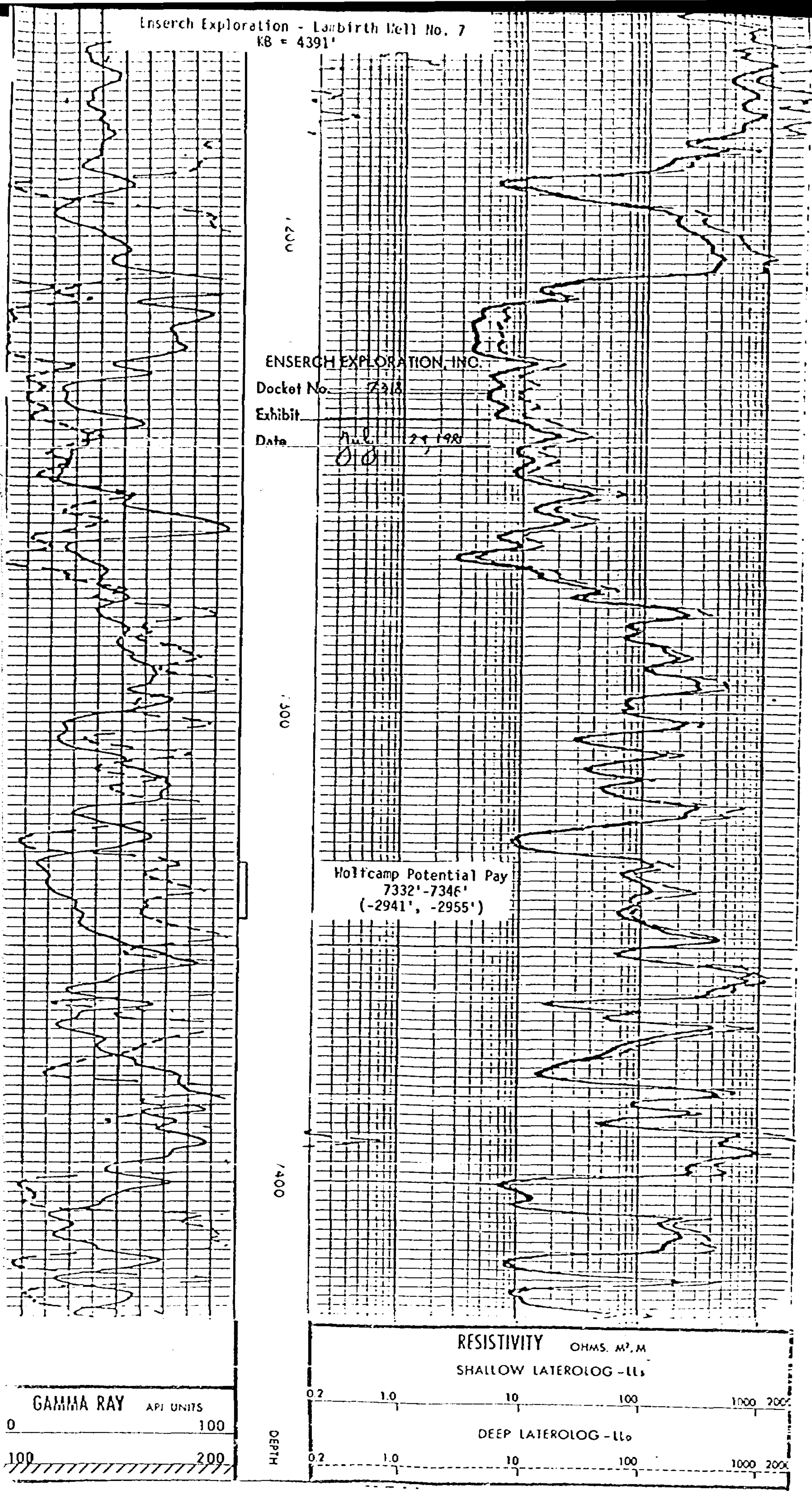
COMPENSATED FORMATION DENSITY POROSITY

30 20 10 0 -10

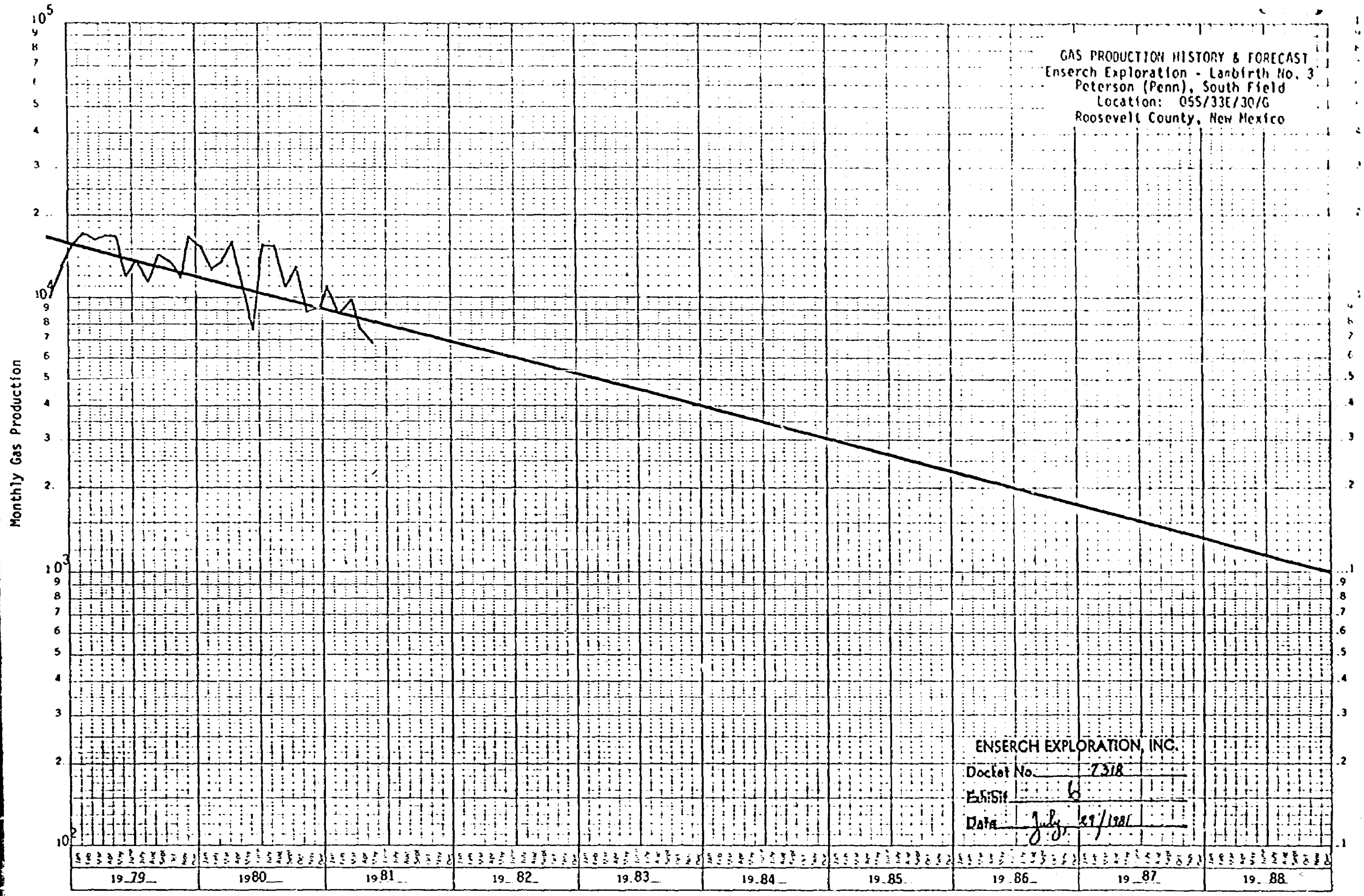
COMPENSATED NEUTRON POROSITY

30 20 10 0 -10

COMPANY	ENSERCH EXPLORATION INC	SCHL. FR 7842
		SCHL. TD 7843
WELL	LAMBIRTH #7	DRLR. TD 7872
		Elev:
FIELD	SOUTH PETERSON	KB 4391
		DF 4390
COUNTY	ROOSEVELT STATE NEW MEXICO	GL 4376.5



Enserch Exploration - Lambirth Well No. 7
KB = 4391'
7200
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date Aul 24, 198
7300
Holtcamp Potential Pay
7332'-7346'
(-2941', -2955')
7400
GAMMA RAY API UNITS
0 100
100 200
DEPTH
RESISTIVITY OHMS. M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LLd
0.2 1.0 10 100 1000 2000


GAS PRODUCTION HISTORY & FORECAST
Enserch Exploration - Lambirth No. 3
Peterson (Penn), South Field
Location: 05S/33E/30/G
Roosevelt County, New Mexico
Monthly Gas Production
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 6
Date July 29/1981
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988

PRODUCTION HISTORY

Enserch Exploration - Lambirth Well No. 3
Peterson (Penn), South Field
Location: 05S/33E/30/G
Roosevelt County, New Mexico

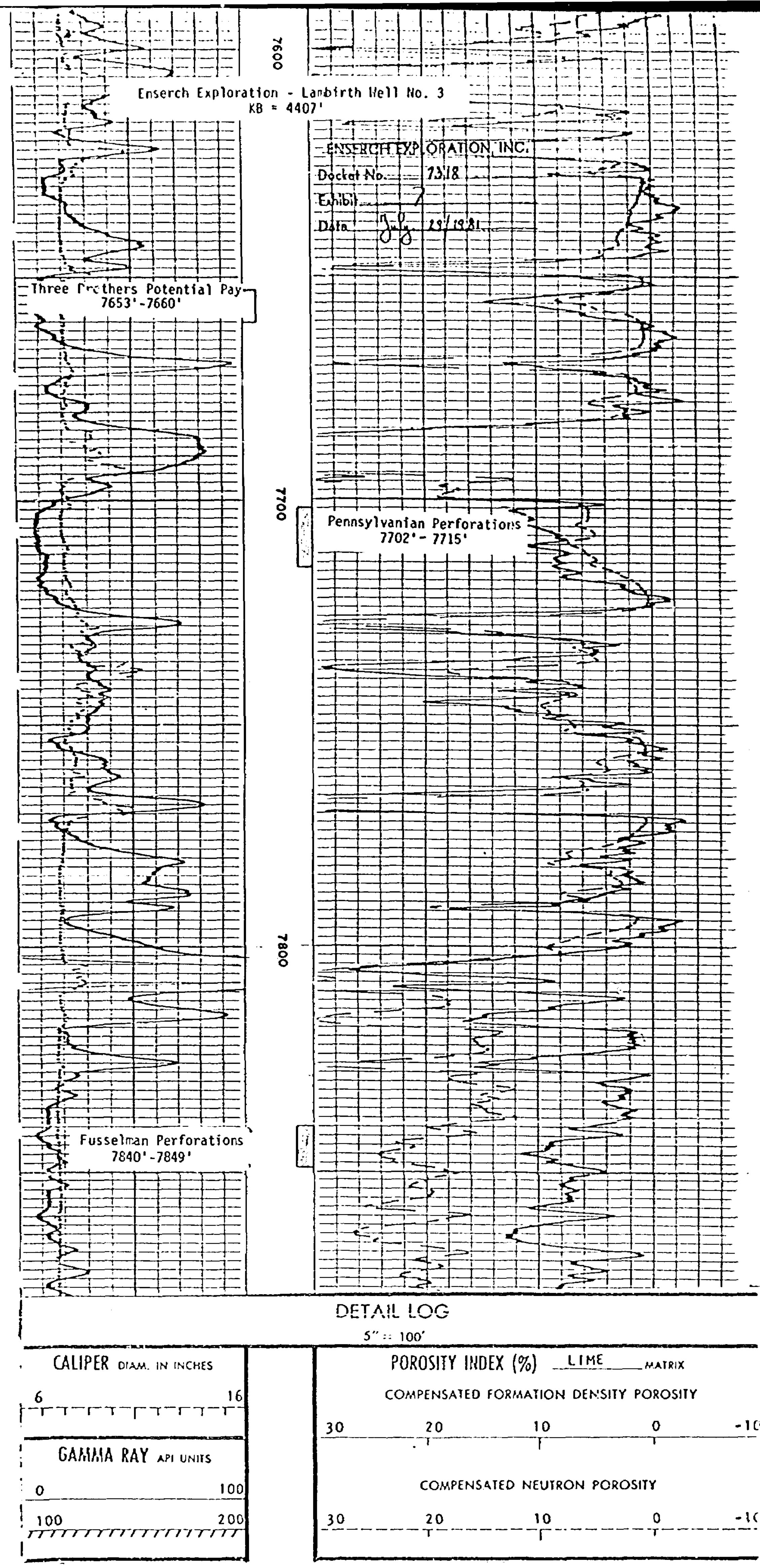
	Gas	Condensate	Water	GOR	Water Cut
Date	MCF	Bbls	Bbls	SCF/Bbl	%
11/78	10.206	174	0	58,655	0
12/78	13,103	231	0	56,722	0
01/79	15,867	222	0	71,472	0
02/79	17,045	298	0	57,198	0
03/79	16,348	350	0	46,708	0
04/79	16,788	383	0	43,832	0
05/79	16,789	380	0	44,181	0
06/79	12,423	241	0	51,323	0
07/79	13,971	374	0	37,355	0
08/79	11,486	320	0	35,893	0
09/79	14,404	671	0	21,466	0
10/79	13,564	542	0	25,025	0
11/79	11,907	407	0	29,255	0
12/79	18,732	546	0	30,644	0
01/80	15,385	505	0	30,465	0
02/80	12,772	653	0	19,558	0
03/80	13,455	255	0	52,764	0
04/80	15,929	302	0	76,078	0
05/80	9,965	131	0	97,692	0
06/80	7,620	78	0	148,716	0
07/80	15,169	102	0	55,769	0
08/80	15,590	280	0	50,314	0
09/80	11,522	229	0	444,029	0
10/80	12,878	29	0	∞	0
11/80	8,799	0	0	∞	0
12/80	9,114	0	0	∞	0
01/81	11,720	0	0	∞	0
02/81	8,942	0	0	∞	0
03/81	9,672	0	0	∞	0
04/81	7,768	0	0	∞	0
05/81	6,856	94	0	72,936	0
Cumulative Production	393,789	7,797	0	50,505	0

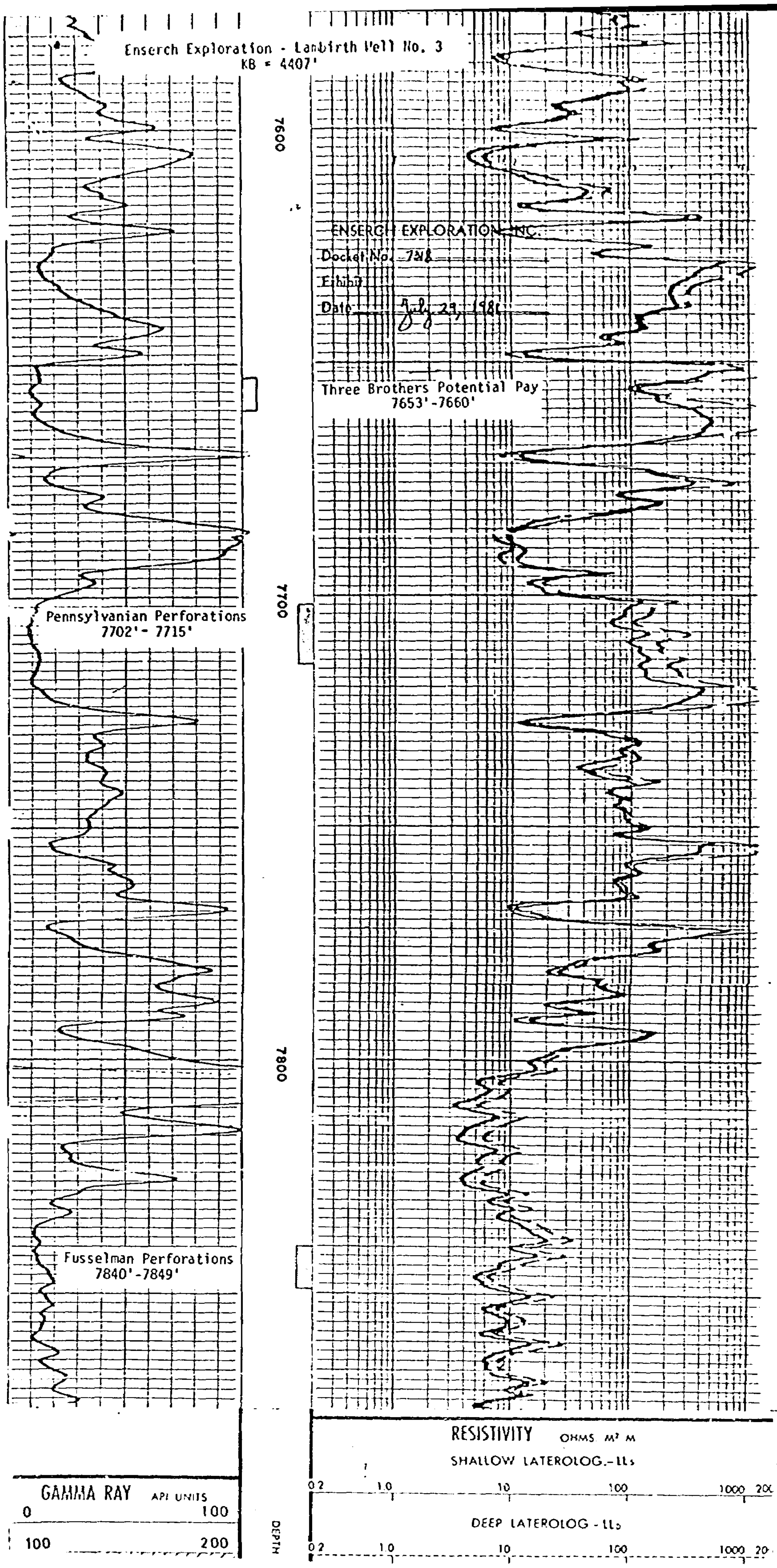
ENSERCH EXPLORATION, INC.

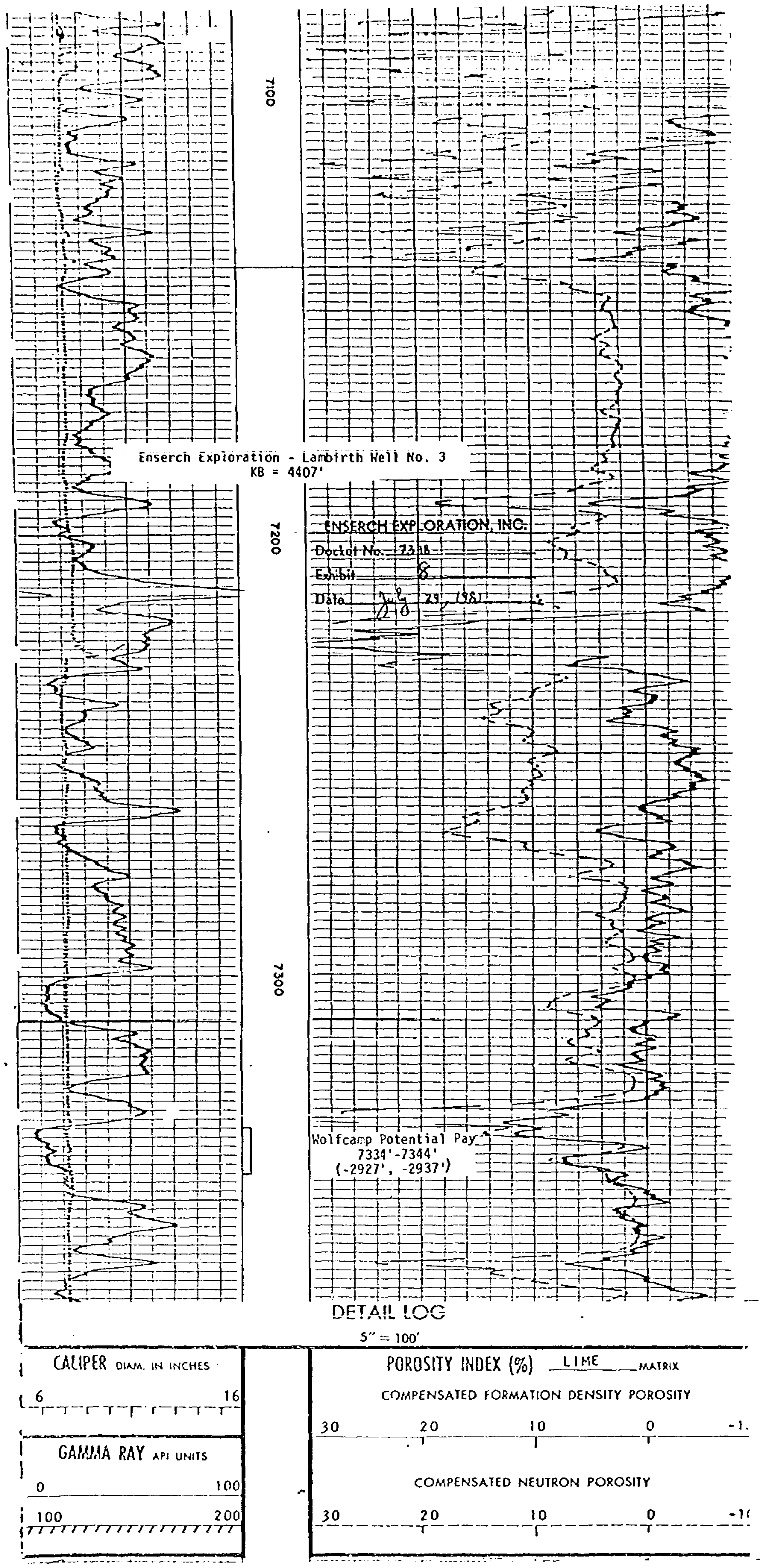
Docket No. 7318

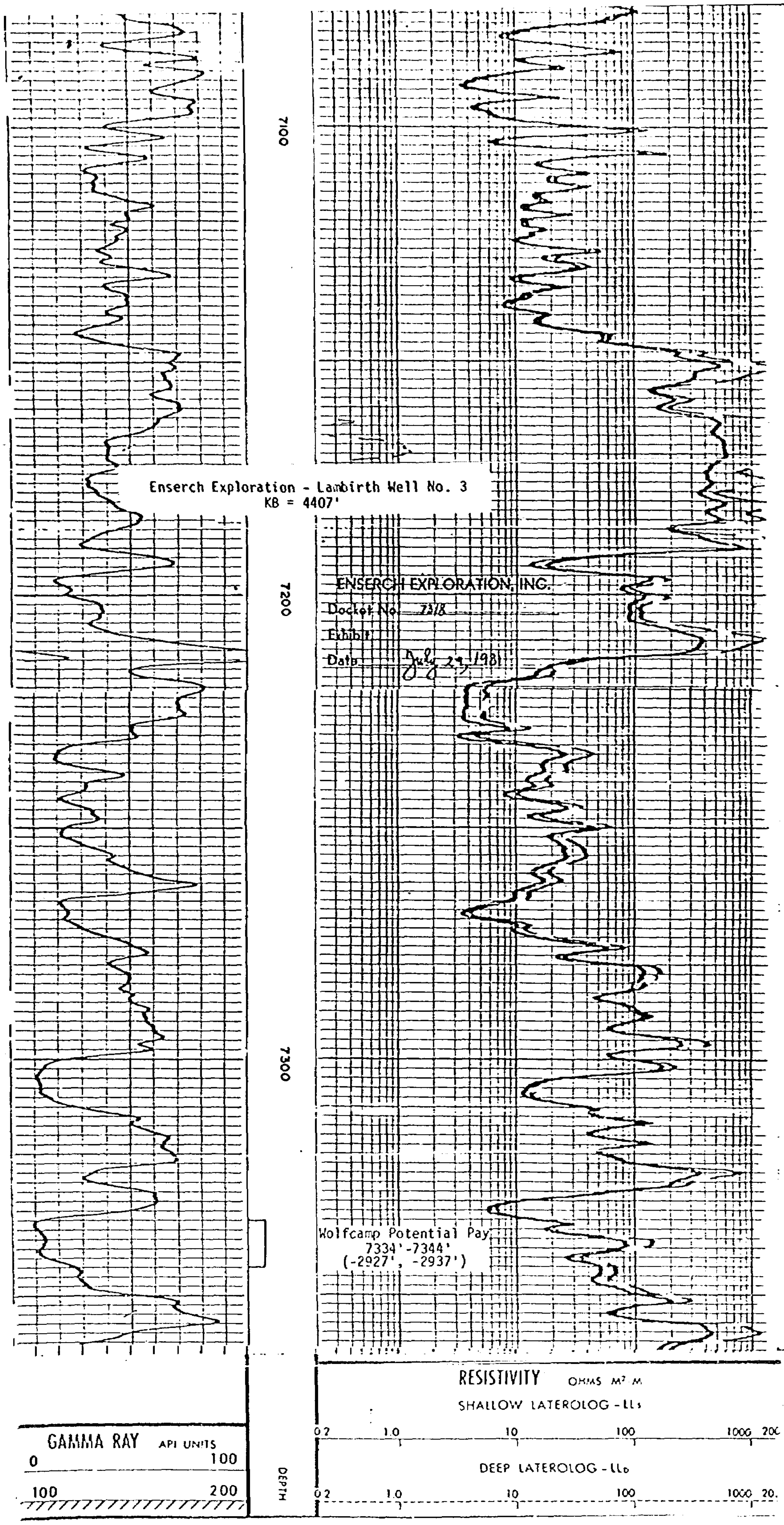
Exhibit ____

Date July 29, 1981


7600
Enserch Exploration - Lambirth Well No. 3
KB = 4407'
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 7
Date July 28 1981
Three Brothers Potential Pay
7653'-7660'
7700
Pennsylvanian Perforations
7702' - 7715'
7800
Fusselman Perforations
7840'-7849'
DETAIL LOG
5" = 100'
CALIPER DIAM. IN INCHES
6
16
GAMMA RAY API UNITS
0
100
100
200
POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30
20
10
0
COMPENSATED NEUTRON POROSITY
30
20
10
0


Enserch Exploration - Lambirth Well No. 3
KB = 4407'
7600
ENSERCH EXPLORATION INC.
Docket No. 7_8
Exhibit
Date July 29, 198_
Three Brothers Potential Pay
7653'-7660'
7700
Pennsylvanian Perforations
7702' - 7715'
7800
Fusselman Perforations
7840'-7849'
GAMMA RAY API UNITS
0 100
100 200
DEPTH
RESISTIVITY OHMS M² M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LLd
0.2 1.0 10 100 1000 2000


7100
Enserch Exploration - Lambirth Well No. 3
KB = 4407'
7200
ENSERCH EXPLORATION, INC.
Docket No.
Exhibit 8
Date July 29, 1981
7300
Wolfcamp Potential Pay
7334'-7344'
(-2927', -2937')
DETAIL LOG
5" = 100'
CALIPER DIAM. IN INCHES
6 16
GAMMA RAY API UNITS
0 100
100 200
POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -1.
COMPENSATED NEUTRON POROSITY
30 20 10 0 -1(



Enserch Exploration - Lambirth Well No. 3
KB = 4407'
7100
7200
7300
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
Wolfcamp Potential Pay
7334'-7344'
(-2927', -2937')
RESISTIVITY OHMS M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
GAMMA RAY API UNITS
0 100
100 200
DEPTH
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000 2000

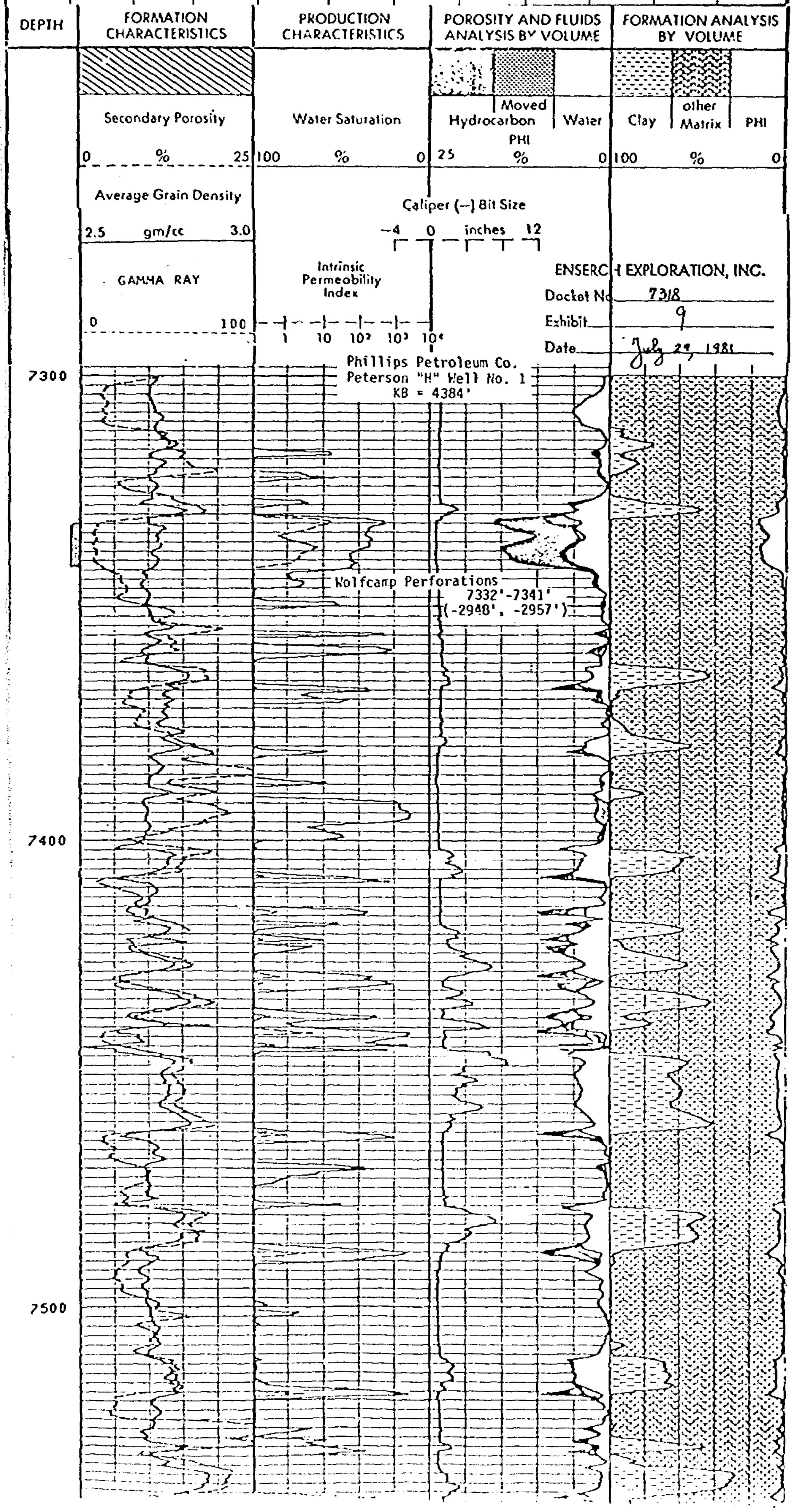
This SYNERGETIC LOG presentation was computed using

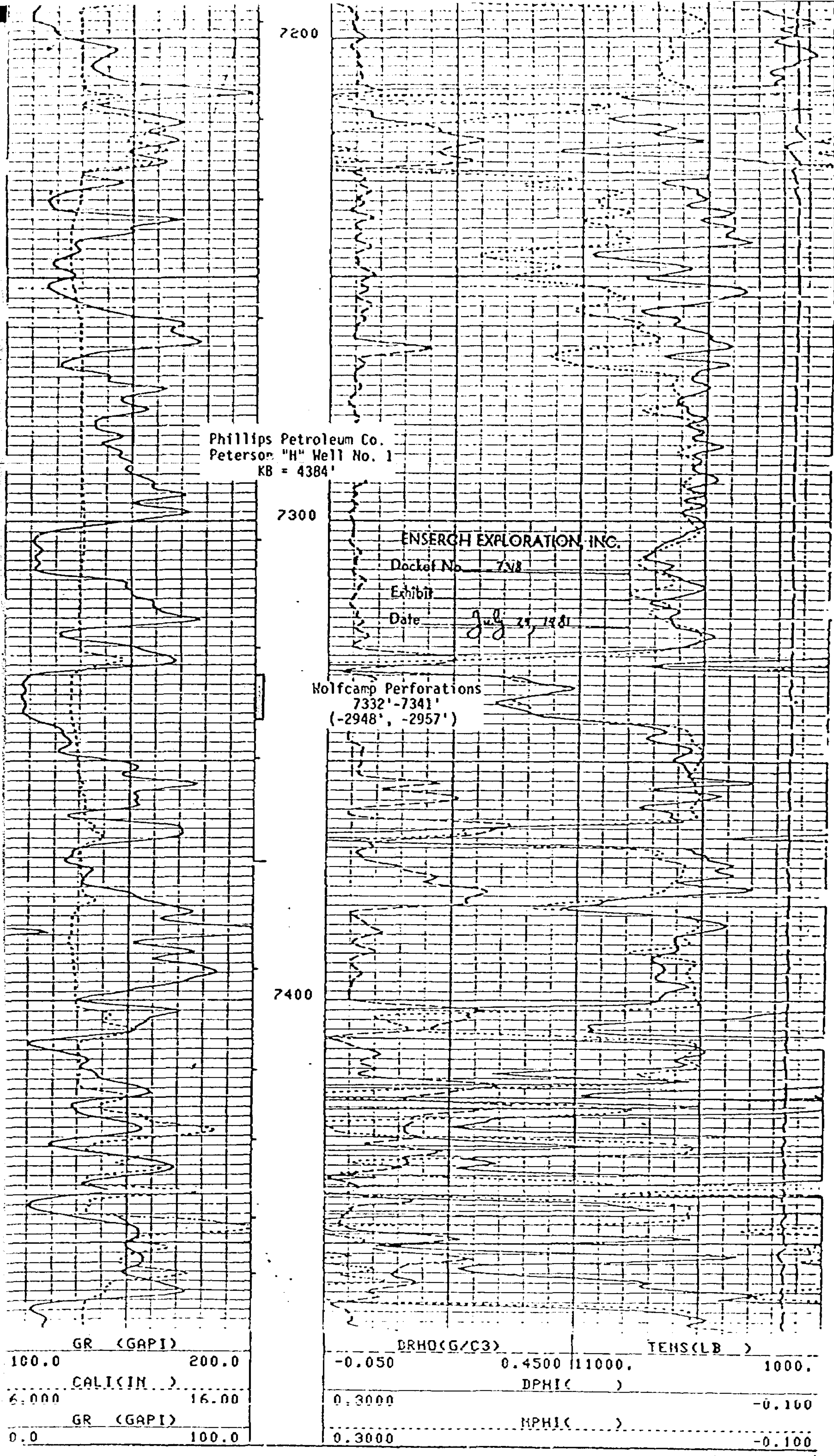
CORIBAND® – Analysis of Complex Reservoirs

Field Recording	Engineer: TUCKER	Truck No. 8131	Location: LVLD	C.C. Job No.
Office Recording	Comp. Center: PBCC	Program No:	Analyst: MCGINLEY	54714
Mud Measurements	Rm .087 @ 75 °F	Rmf .06 @ 75 °F	BHT: 141 °F	Bit Size 7 7/8

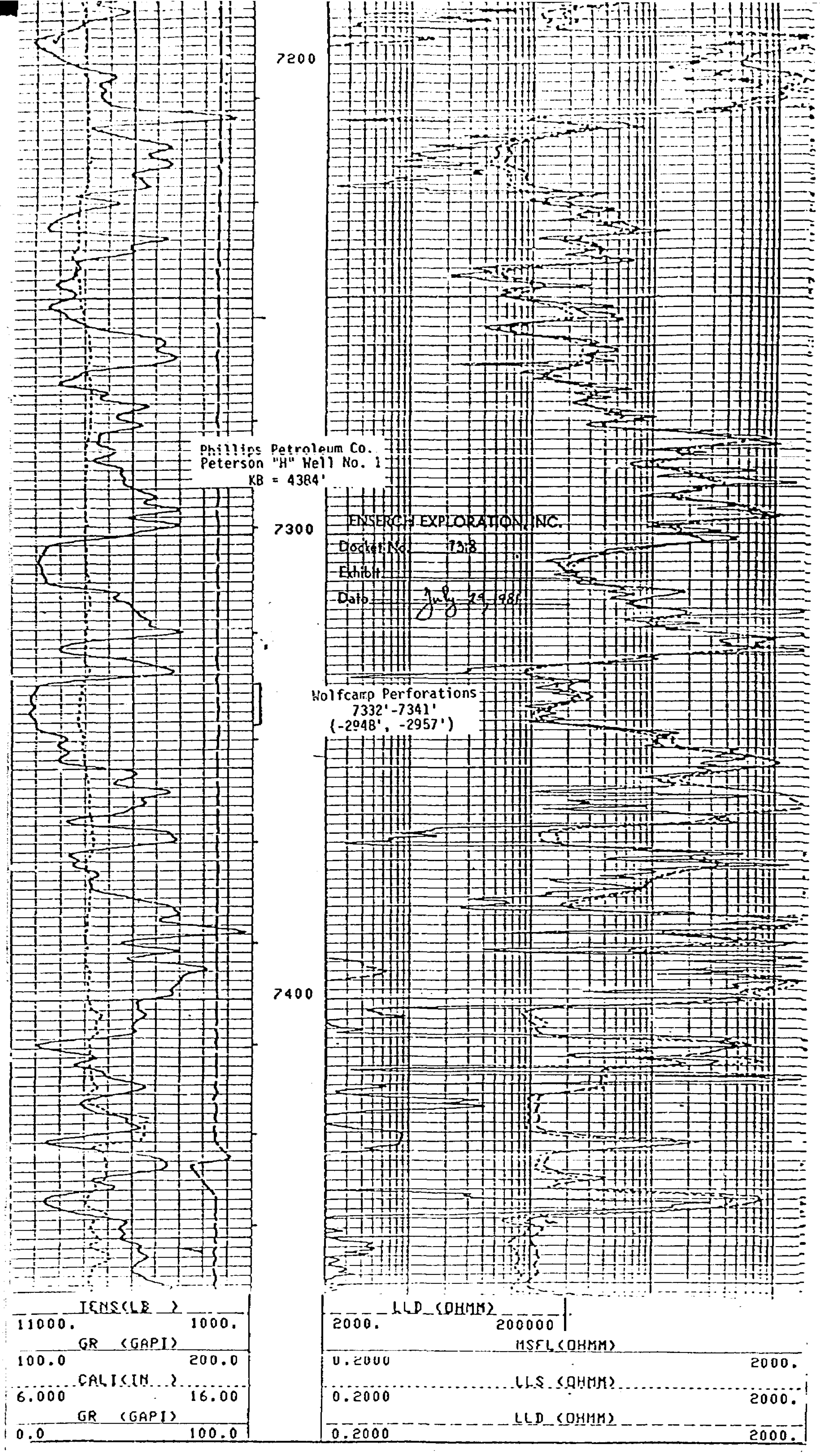
COMPUTATION PARAMETERS

Depth Interval From	Depth Interval To	R_w	R_{MF}	R_{SH}	Δt_{cl}	PHI N_{cl}	ρ_{Bcl}	GR_{sd}	GR_{cl}	"M"	ρ_{hy}
7976	7820	.045	.034	10		24	2.65	25	110	2.2	.8
7820	7300	.045	.034	10		24	2.65	25	110	2.0	.8





7200
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
ENSERCH EXPLORATION, INC.
Docket No. 7?8
Exhibit
Date July 2?, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
7400
GR (GAPI)
100.0
200.0
CALI(IN)
6.000
16.00
GR (GAPI)
0.0
100.0
DRHO(G/C3)
-0.050
0.4500
TENS(LB)
11000.
1000.
DPHI( )
0.3000
-0.100
NPHI( )
0.3000
-0.100


7200
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
ENSERCH EXPLORATION, INC.
Docket No.
Exhibit
Date
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
7400
TENS(LB)
11000. 1000.
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
LLD (OHMM)
2000. 200000
MSFL(OHMM)
0.2000 2000.
LLS (OHMM)
0.2000 2000.
LLD (OHMM)
0.2000 2000.

****

****
*   CORIBAND   *
****
* SCHLUMBERGER *
****

COMPANY PHILLIPS PETROLEUM

WELL PETERSON H 1

FIELD PETERSON

COUNTY ROOSEVELT

STATE NEW MEXICO

DATE 24-JUN-80

COMPUTED AT:- PERMIAN BASIN COMPUTING CENTER

****

THIS JOB IS LISTED FROM TOP TO BOTTOM

THIS IS A 01 FOOT LISTING

LISTING IS DISCRIMINATED FOR VSH>50%

LISTING IS DISCRIMINATED FOR PHI<1.9%

PERMEABILITY = (62500(PHI**6))/(SW**2)   [10%<SW<50%]

ENSERCH EXPLORATION, INC.

Docket No. 7318

Exhibit 10

Date July 29, 1981

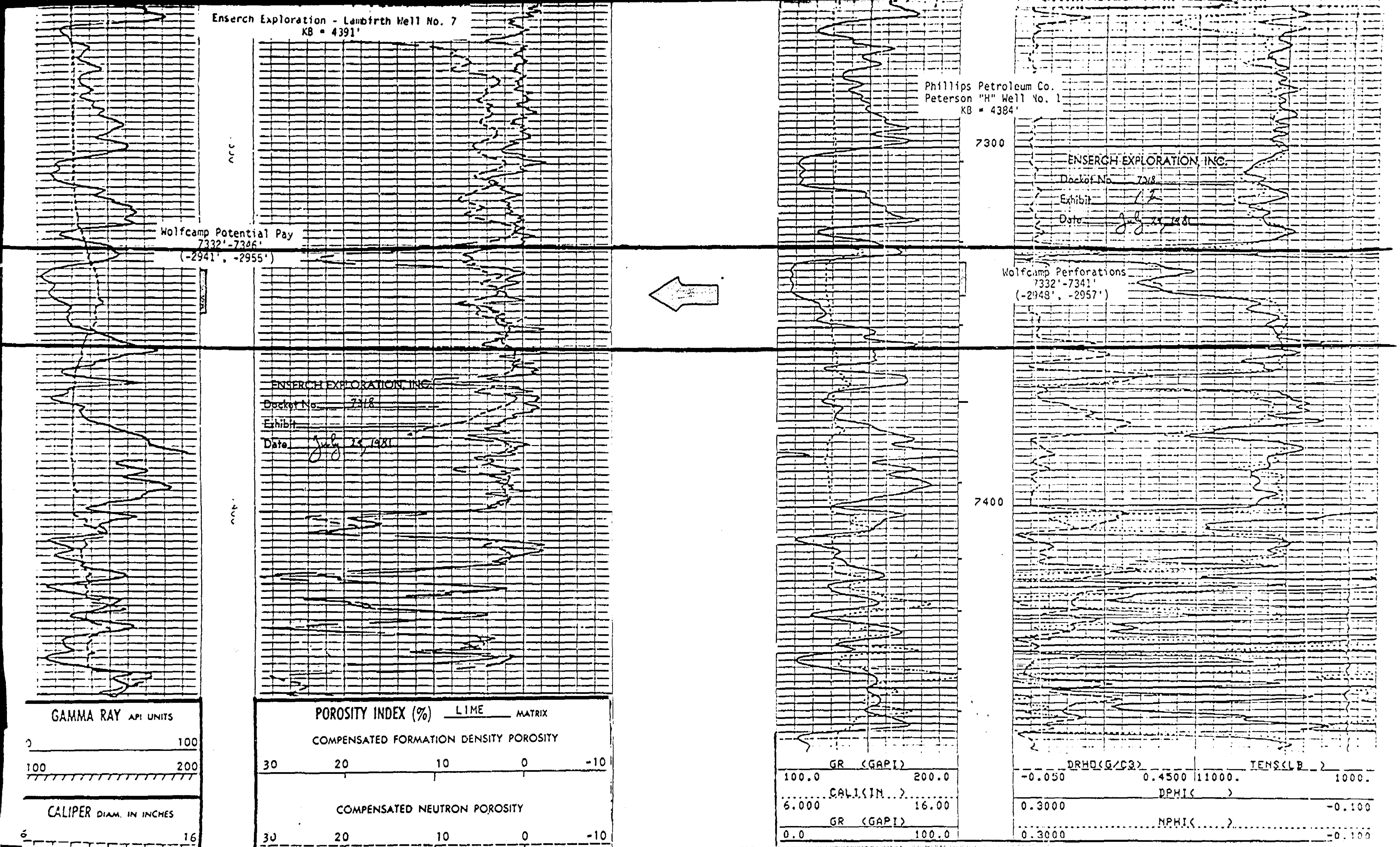
DEPTH FEET	PERM. TO OIL-GAS (INDEX)	WATER SAT. %	POROSITY TOTAL %	POROSITY SEC. %	MATRIX DENSITY GM/CC	SHALE VOLUME %
7304.0	0.00	100	2.2	0.0	2.70	0
7305.0	0.00	100	3.6	0.0	2.70	0
7306.0	0.00	100	4.2	0.0	2.71	0
7307.0	0.00	100	5.0	0.0	2.72	0
7308.0	0.00	99	5.1	0.0	2.72	0
7309.0	0.00	100	4.5	0.0	2.74	0
7310.0	0.00	99	4.1	0.0	2.73	0
7311.0	0.00	100	2.9	0.0	2.72	0
7316.0	0.00	89	1.9	0.0	2.70	15
7317.0	0.00	56	2.5	0.0	2.69	5
7327.0	0.00	72	3.8	0.0	2.64	15
7328.0	0.01	85	5.6	0.0	2.61	38
7330.0	0.03	97	6.9	0.0	2.62	39
7331.0	6.75	35	15.4	0.0	2.69	2
7332.0	16.31	25	16.0	0.0	2.70	0
7333.0	4.42	34	14.2	0.0	2.75	0
7334.0	1.12	36	11.5	0.0	2.73	0
7335.0	0.79	33	10.6	0.0	2.73	0
7336.0	2.26	34	12.8	0.0	2.73	0
7337.0	6.23	34	15.0	0.0	2.73	0
7338.0	3.47	42	14.6	0.0	2.71	0
7339.0	2.18	44	13.8	0.0	2.72	0
7340.0	1.55	44	13.1	0.0	2.73	0
7341.0	0.39	44	10.3	0.0	2.72	0
7342.0	0.00	54	4.6	0.0	2.69	0
7343.0	0.00	80	2.3	0.0	2.69	0
7344.0	0.00	78	2.1	0.0	2.69	0
7345.0	0.00	71	2.4	0.0	2.68	0
7359.0	0.00	21	2.4	0.0	2.68	0
7360.0	0.00	41	2.3	0.0	2.69	0
7363.0	0.00	100	3.4	0.0	2.66	34
7366.0	0.00	100	3.4	0.0	2.62	47
7367.0	0.02	63	6.7	0.0	2.70	20
7368.0	0.00	34	3.7	0.0	2.75	5
7370.0	0.00	46	2.7	0.0	2.77	2
7379.0	0.00	100	3.5	0.0	2.63	38
7380.0	0.00	100	3.6	0.0	2.64	45
7381.0	0.01	58	6.0	0.0	2.67	26
7390.0	0.00	100	2.3	0.0	2.71	16

Wolfcamp - Injection zone :

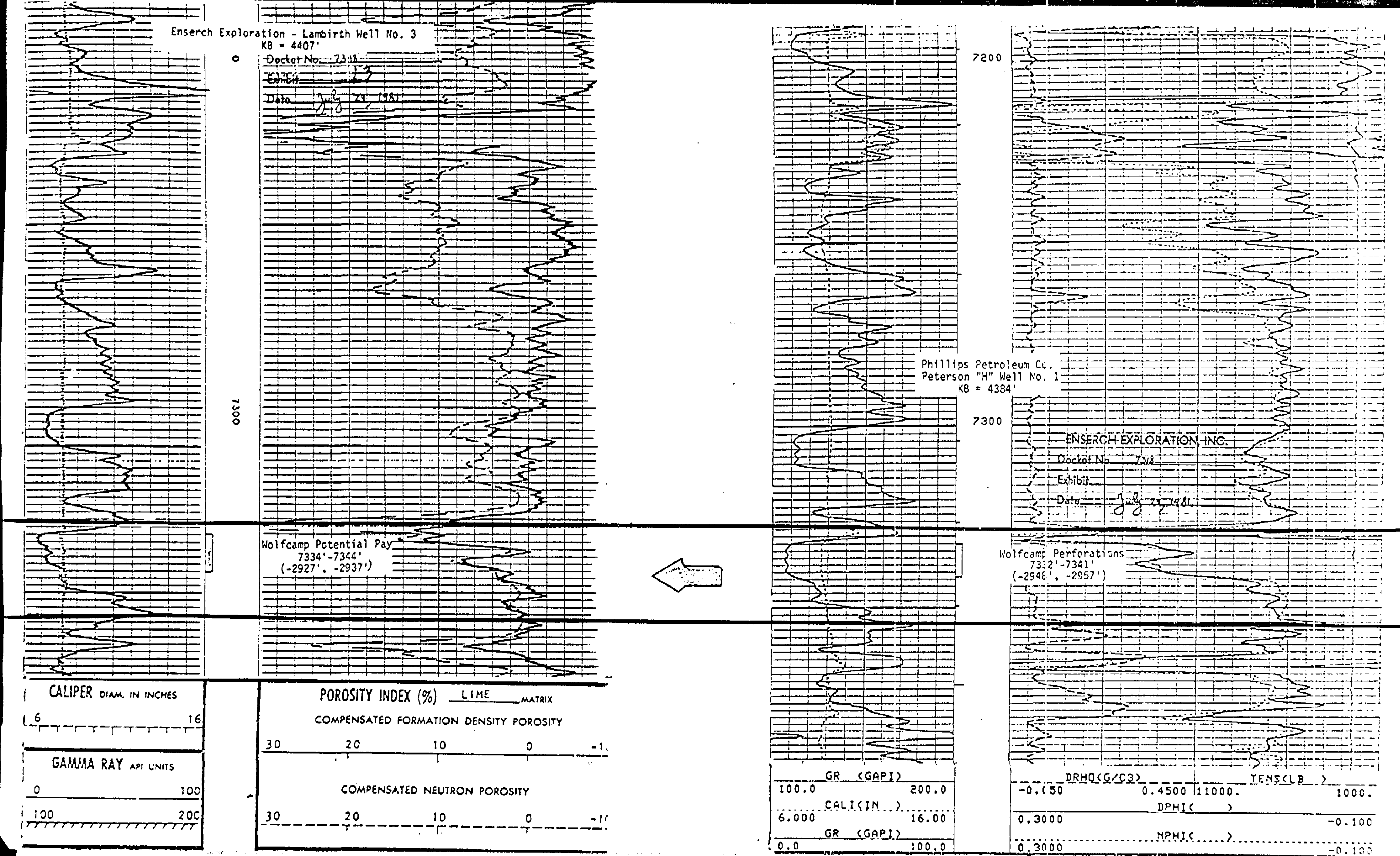
Water saturation = 36.8%

Average porosity = 13.4%

Permeability = 4.13 md



Ensearch Exploration - Lambirth Well No. 7
KB = 4391'
Wolfcamp Potential Pay
7332'-7346'
(-2941', -2955')
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
GAMMA RAY API UNITS
0 100
100 200
CALIPER DIAM. IN INCHES
6 16
POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -10
COMPENSATED NEUTRON POROSITY
30 20 10 0 -10
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
7400
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 17
Date July 23, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
DRHO(G/C3)
-0.050 0.4500
TENS(LB)
11000. 1000.
DPHI( )
0.3000 -0.100
NPHI( )
0.3000 -0.100



Enserch Exploration - Lambirth Well No. 3
KB = 4407'
Docket No. 7318
Exhibit 13
Date July 23, 1981
7300
Wolfcamp Potential Pay
7334'-7344'
(-2927', -2937')
CALIPER DIAM. IN INCHES
6
16
GAMMA RAY API UNITS
0
100
100
200
POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30
20
10
0
COMPENSATED NEUTRON POROSITY
30
20
10
0
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7200
7300
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
GR (GAPI)
100.0
200.0
CALI(IN)
6.000
16.00
GR (GAPI)
0.0
100.0
DRHO(G/C3)
-0.050
0.4500
TENS(LB)
11000.
1000.
DPHI( )
0.3000
-0.100
NPHI( )
0.3000

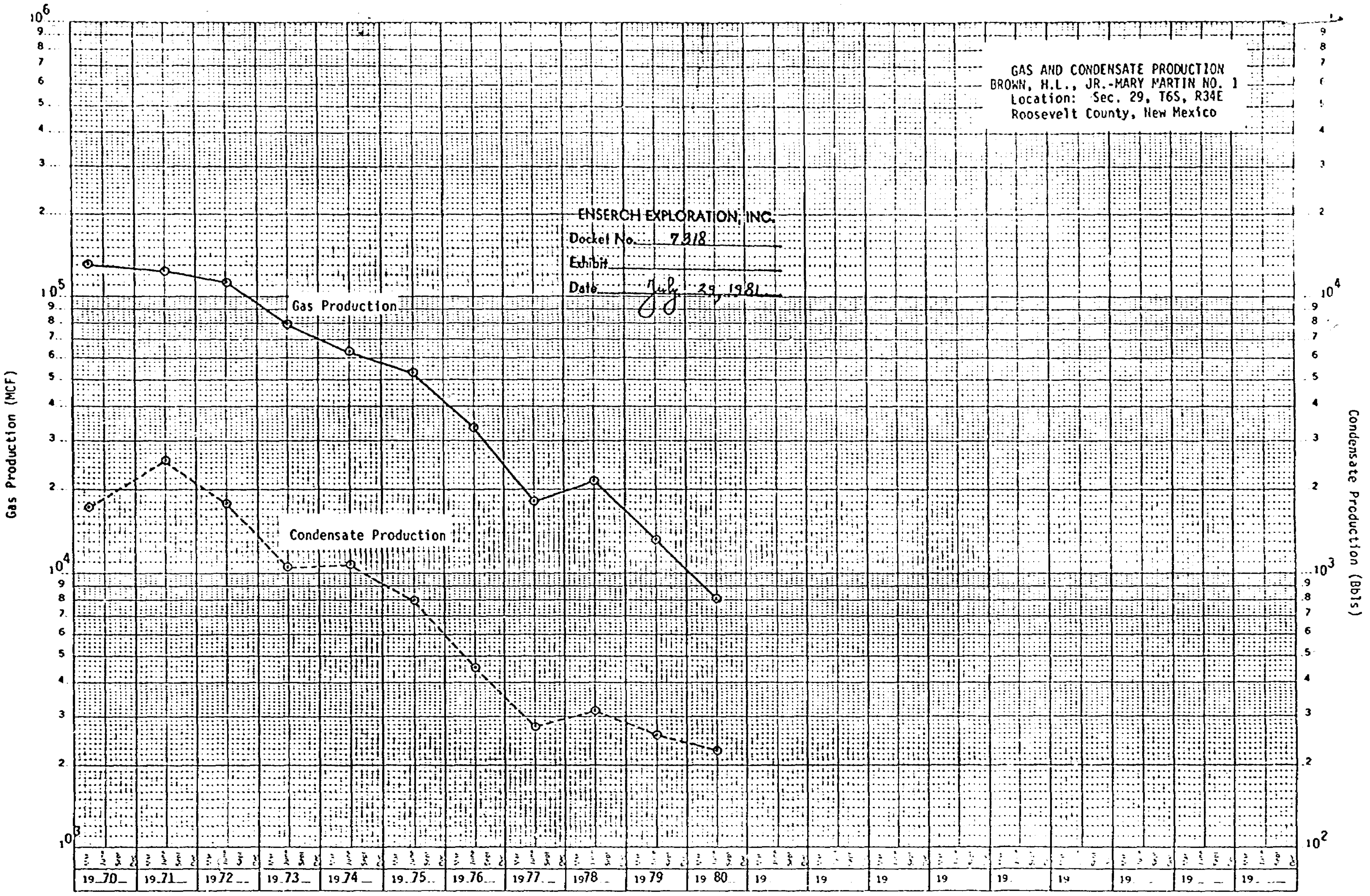


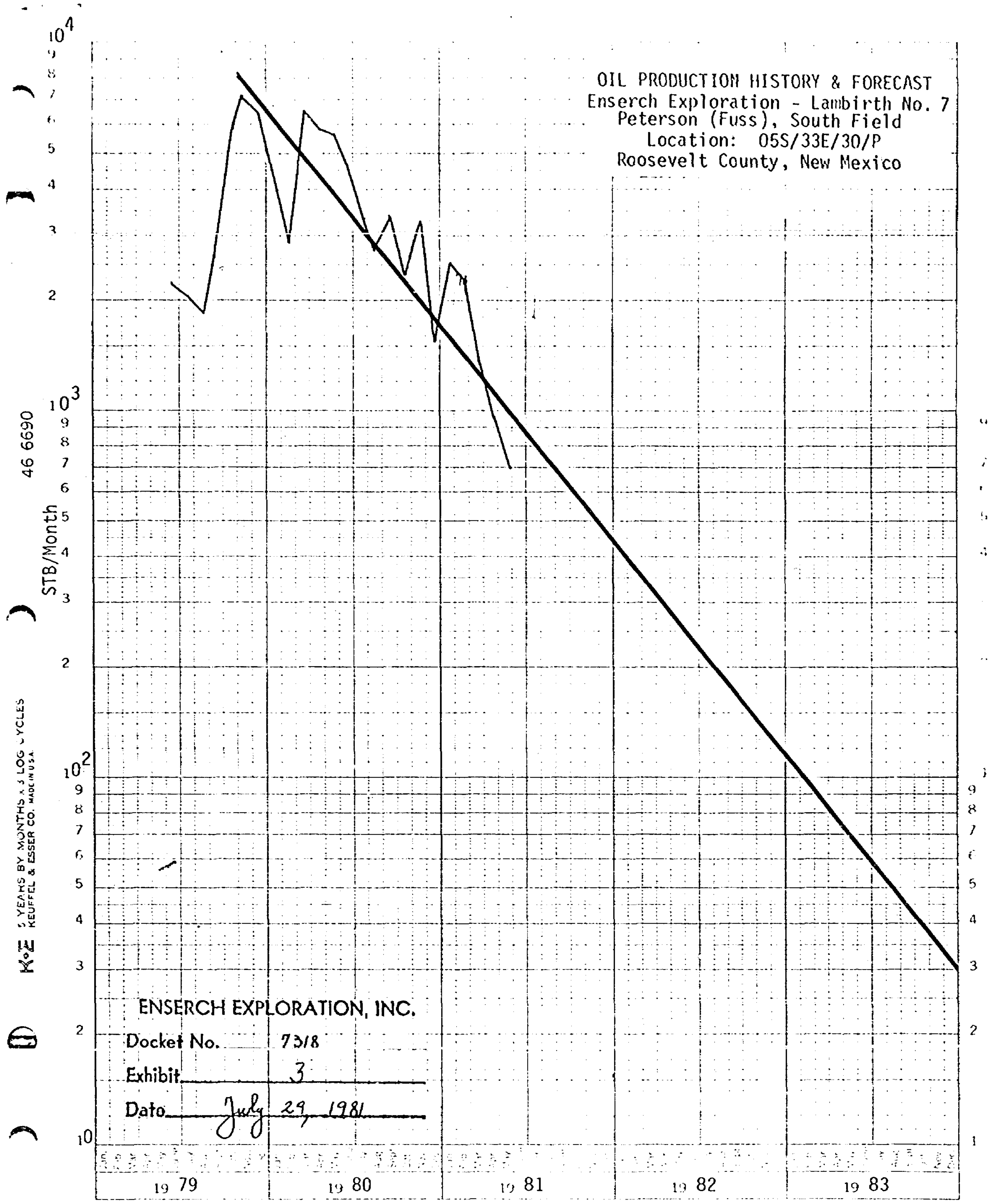
Exhibit 2
Case 7318

PRODUCTION HISTORY

Brown, H.L., Jr. - Mary Martin No. 1
Location: Sec. 29, T6S, R34E
Roosevelt County, New Mexico

Date	Gas MCF	Condensate Bbls	Water Bbls
1970	130,833	1,729	10
1971	125,870	2,527	
1972	113,669	1,793	
1973	79,950	1,046	
1974	63,646	1,071	169
1975	53,421	800	154
1976	33,577	456	167
1977	18,130	277	390
1978	21,537	316	363
1979	13,259	258	209
1980	8,109	227	246
Cumulative Production	1,613,901	10,500	1,708

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29, 1981



OIL PRODUCTION HISTORY & FORECAST
Enserch Exploration - Lambirth No. 7
Peterson (Fuss), South Field
Location: 05S/33E/30/P
Roosevelt County, New Mexico
STB/Month
46 6690
K&E 5 YEARS BY MONTHS x 3 LOG CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
1979
1980
1981
1982
1983
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 3
Date July 29, 1981

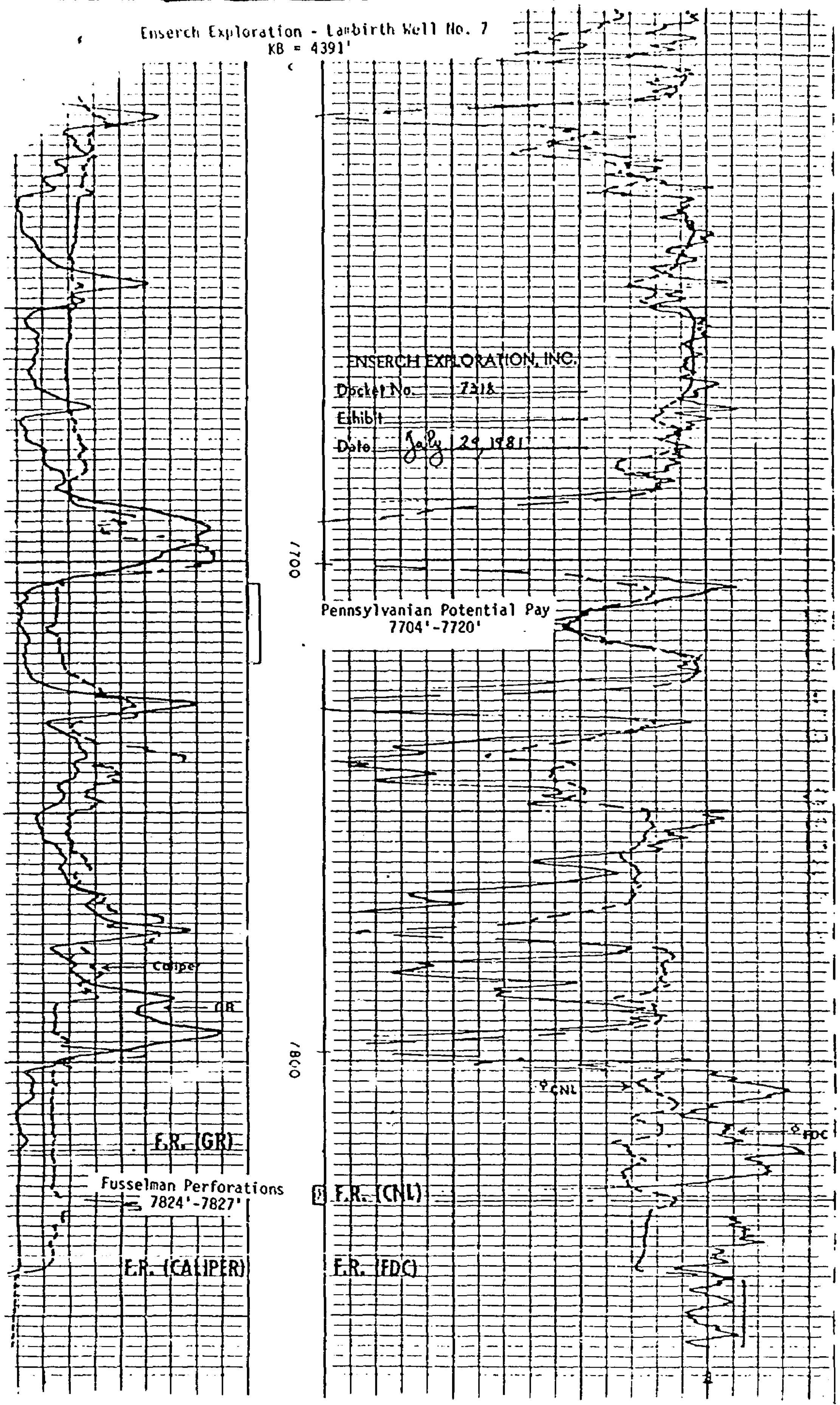
PRODUCTION HISTORY
Enserch Exploration - Lambirth Well No. 7
Peterson (Fusselman), South Field

Location: 05S/33E/30/P
Roosevelt County, New Mexico

Date	Oil	Gas	Water	GOR	Water Cut
	Bbls	MCF	Bbls	SCF/Bbl	%
01/79					
02/79					
03/79					
04/79					
05/79					
06/79	2,244	1,031	1,120	459	33
07/79	2,112	871	804	412	30
08/79	1,879	1,056	494	562	21
09/79	3,345	771	1,859	230	36
10/79	5,912	2,493	1,261	421	18
11/79	6,891	2,262	1,257	328	15
12/79	6,228	2,172	348	348	5
01/80	6,250	1,767	1,380	282	18
02/80	2,724	1,840	1,014	675	27
03/80	6,242	1,971	1,399	316	18
04/80	5,541	2,035	1,370	367	20
05/80	5,279	2,122	1,722	402	21
06/80	4,376	2,221	1,262	508	22
07/80	3,120	1,537	1,689	493	35
08/80	2,723	1,589	2,470	584	48
09/80	3,260	1,789	2,434	549	43
10/80	2,274	1,800	1,089	792	32
11/80	3,142	2,460	3,194	783	50
12/80	1,527	1,669	1,507	1,093	50
Cum. Prod.	75,069	33,456	27,673	446	27
01/81	2,433	3,032	2,319	1,246	51
02/81	2,292	2,645	1,210	528	35
03/81	1,354	2,183	1,212	895	47
04/81	993	1,635	1,428	1,647	59
05/81	694	1,547	1,248	2,230	64

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29/1981

Enserch Exploration - Lambirth Well No. 7
KB = 4391'



GAMMA RAY API UNITS

0 — 100

100 — 200

CALIPER DIAM. IN INCHES

6 — 16

POROSITY INDEX (%) LIME MATRIX

COMPENSATED FORMATION DENSITY POROSITY

30 20 10 0 -10

COMPENSATED NEUTRON POROSITY

30 20 10 0 -10

COMPANY ENSERCH EXPLORATION INC

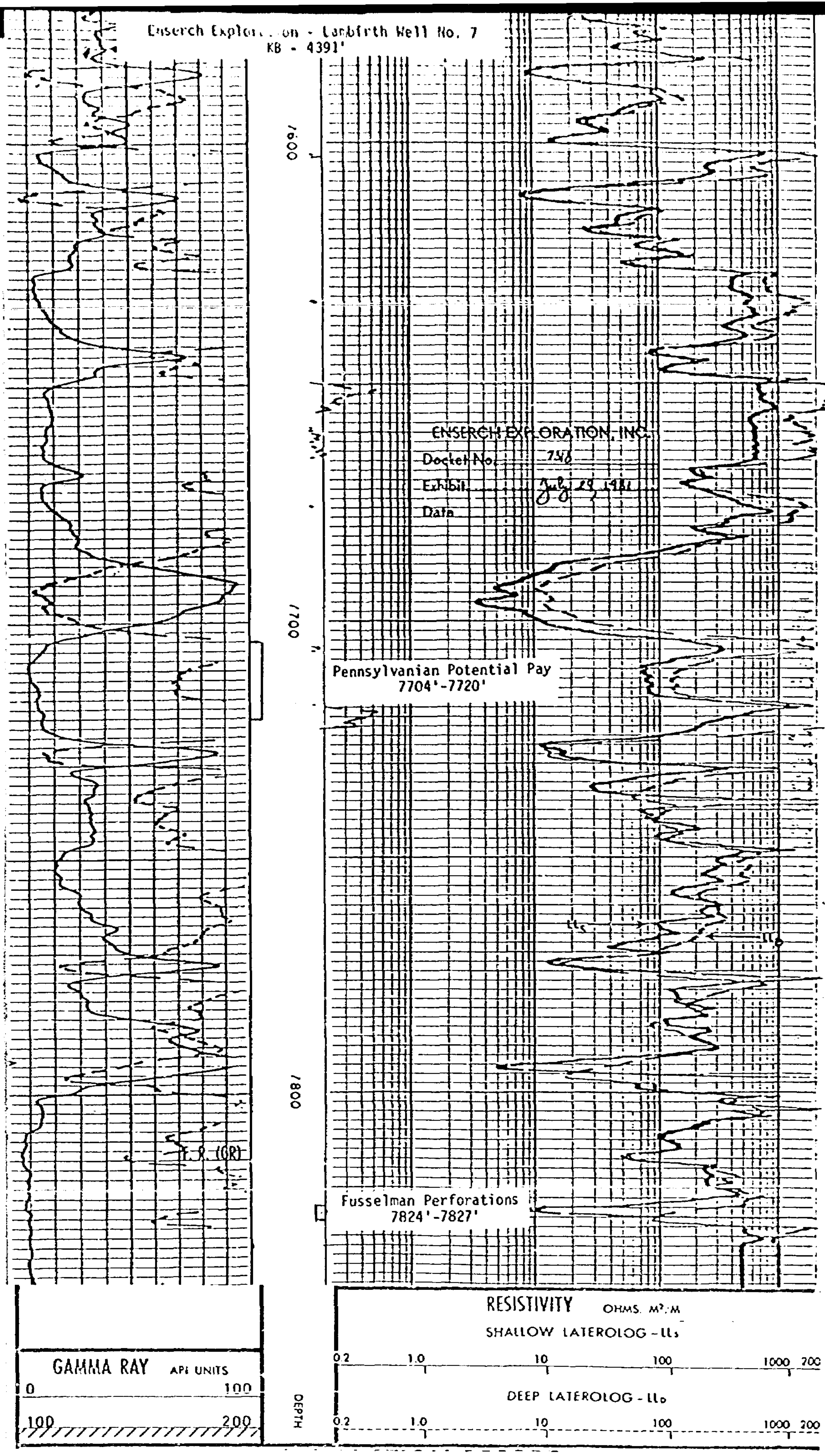
WELL LAMBIRTH #7

FIELD SOUTH PETERSON

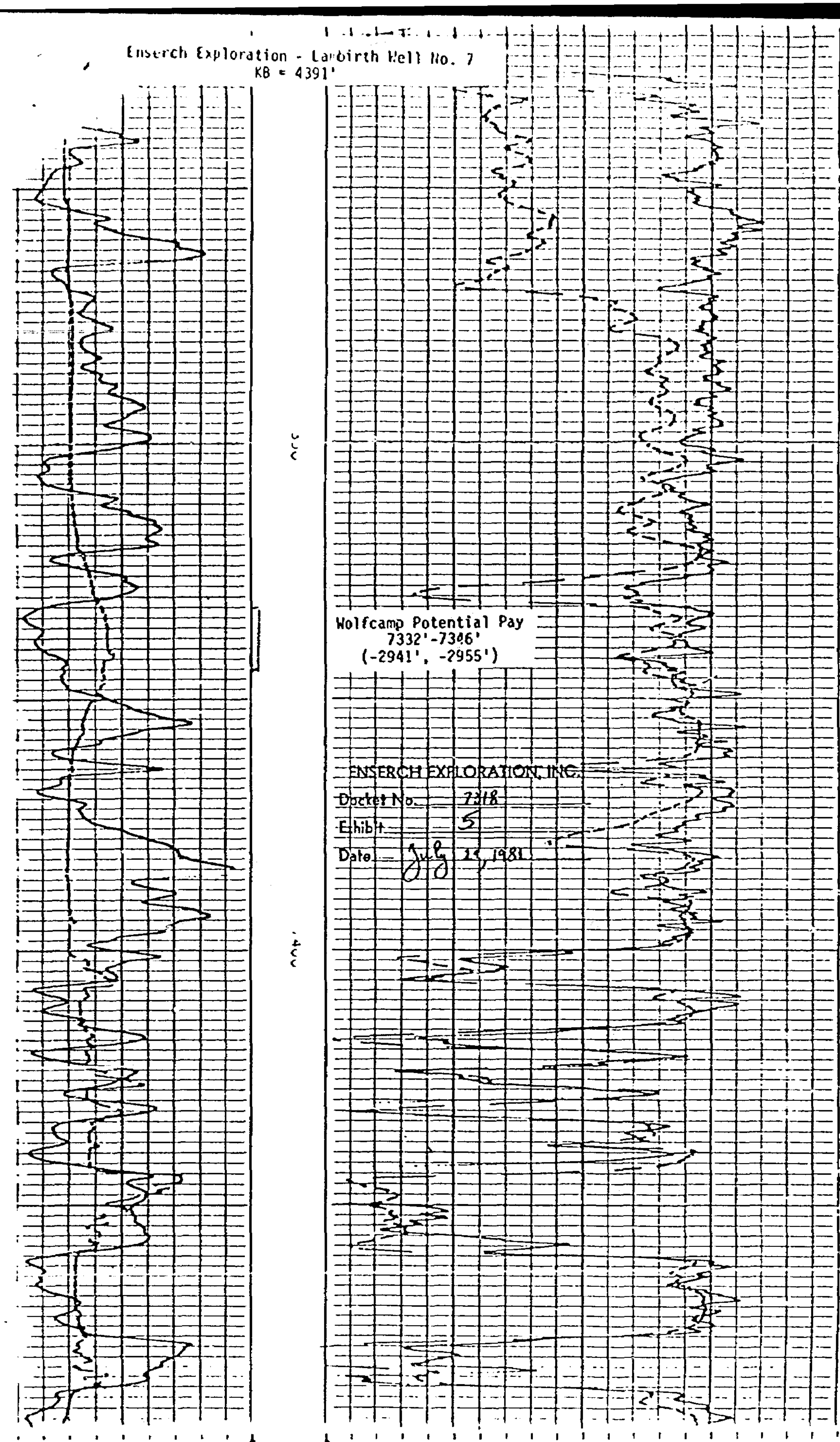
COUNTY ROOSEVELT STATE NEW MEXICO

SCHL. FR 7842
SCHL. TD 7843
DRLR. TD 7872
Elev:
KB 4391
DF 4390
GL 4376.5

Exhibit 4
Case 7318


Enserch
Well No. 7
KB - 4391'
7600
7700
7800
ENSERCH EXPLORATION, INC.
Docket No.
Exhibit
Data
Pennsylvanian Potential Pay
7704'-7720'
Fusselman Perforations
7824'-7827'
GAMMA RAY API UNITS
0 100
100 200
DEPTH
RESISTIVITY OHMS M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000

Enserch Exploration - Lambirth Well No. 7
KB = 4391'



GAMMA RAY API UNITS

0 — 100

100 — 200

CALIPER DIAM. IN INCHES

6 — 16

POROSITY INDEX (%) LIME MATRIX

COMPENSATED FORMATION DENSITY POROSITY

30 20 10 0 -10

COMPENSATED NEUTRON POROSITY

30 20 10 0 -10

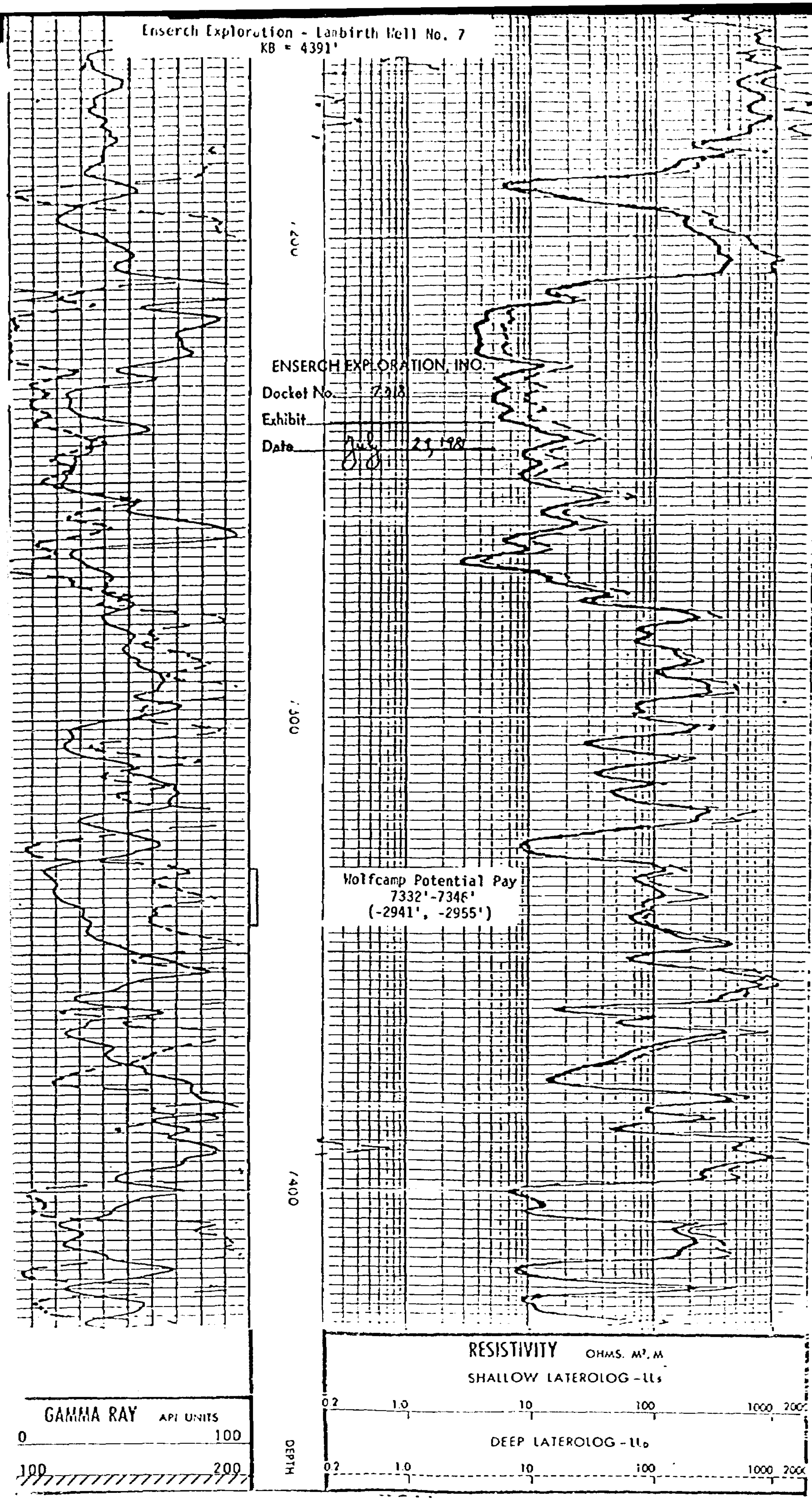
COMPANY ENSERCH EXPLORATION INC

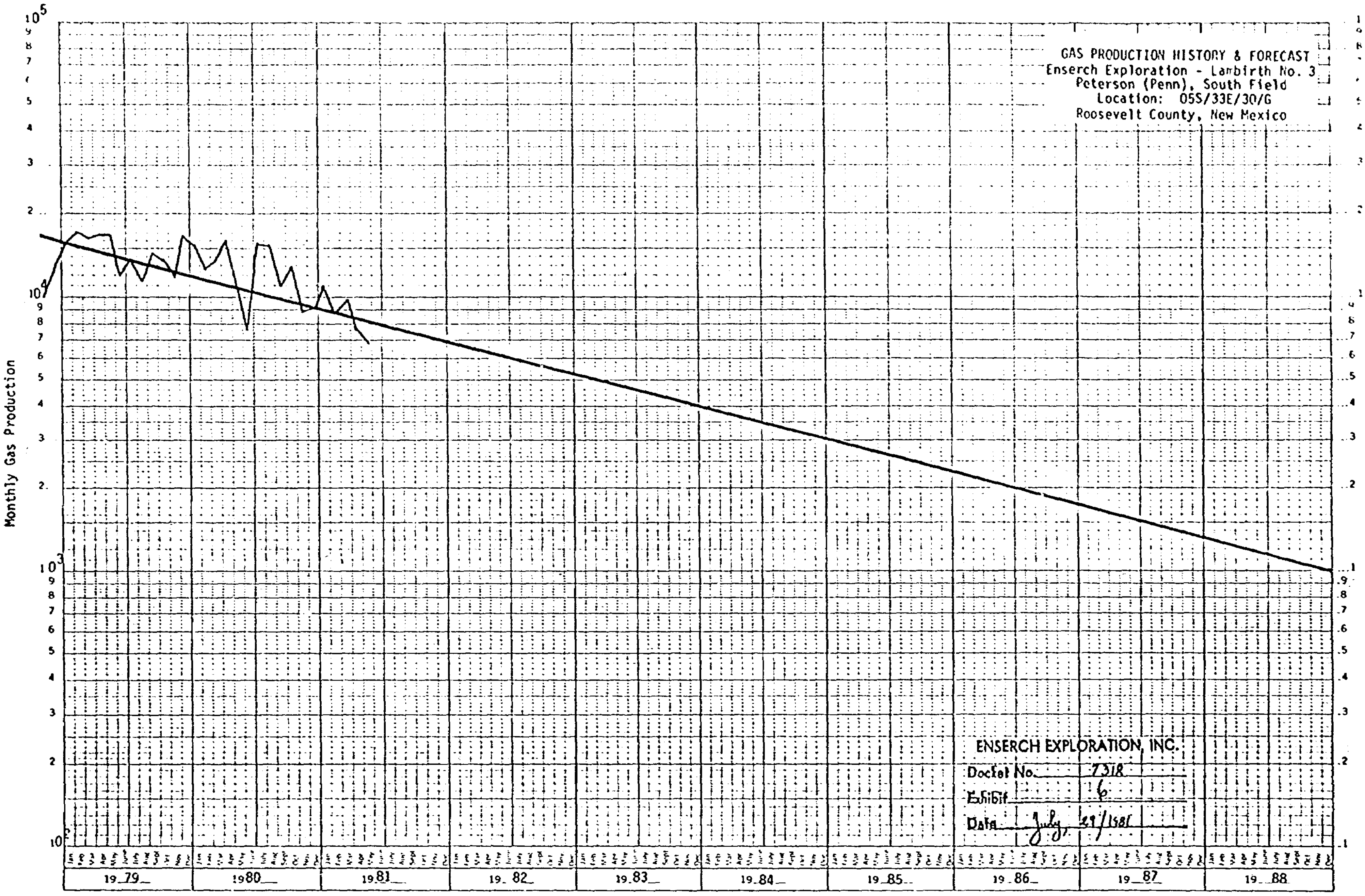
WELL LAMBIRTH #7

FIELD SOUTH PETERSON

COUNTY ROOSEVELT STATE NEW MEXICO

SCHL. FR 7842
SCHL. TD 7843
DRLR. TD 7872
Elev:
KB 4391
DF 4390
GL 4376.5


Enserch Exploration - Lambirth Well No. 7
KB = 4391'
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 198
Wolfcamp Potential Pay
7332'-7346'
(-2941', -2955')
RESISTIVITY OHMS. M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000 2000
GAMMA RAY API UNITS
0 100
100 200
DEPTH


GAS PRODUCTION HISTORY & FORECAST
Enserch Exploration - Lambirth No. 3
Peterson (Penn), South Field
Location: 05S/33E/30/G
Roosevelt County, New Mexico
Monthly Gas Production
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 6
Date July 29/1981

PRODUCTION HISTORY

Enserch Exploration - Lambirth Well No. 3
Peterson (Penn), South Field
Location: 05S/33E/30/G
Roosevelt County, New Mexico

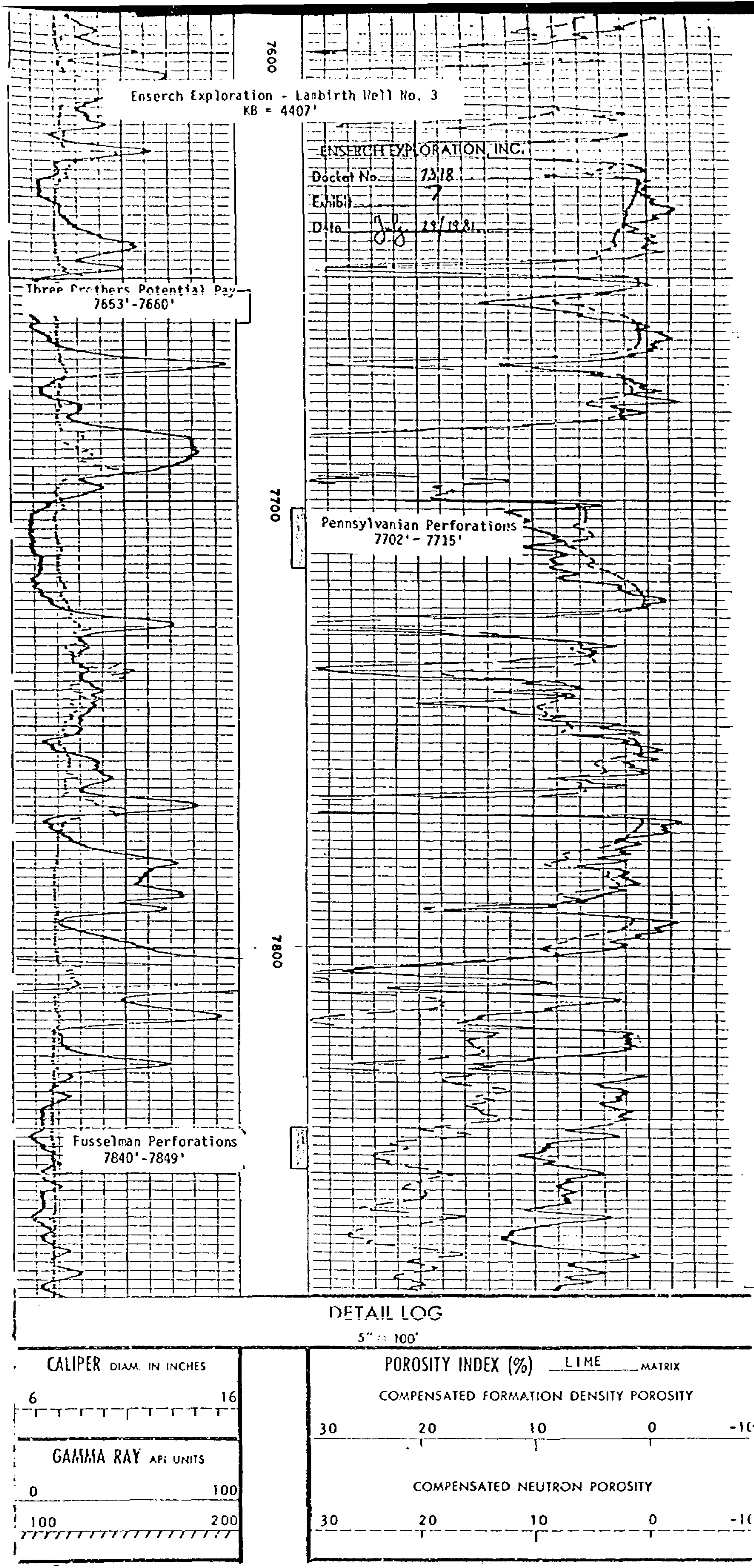
Date	Gas MCF	Condensate Bbls	Water Bbls	GOR SCF/Bbl	Water Cut %
11/78	10,206	174	0	58,655	0
12/78	13,103	231	0	56,722	0
01/79	15,867	222	0	71,472	0
02/79	17,045	298	0	57,198	0
03/79	16,348	350	0	46,708	0
04/79	16,788	383	0	43,832	0
05/79	16,789	380	0	44,181	0
06/79	12,423	241	0	51,323	0
07/79	13,971	374	0	37,355	0
08/79	11,486	320	0	35,893	0
09/79	14,404	671	0	21,466	0
10/79	13,564	542	0	25,025	0
11/79	11,907	407	0	29,255	0
12/79	18,732	546	0	30,644	0
01/80	15,385	505	0	30,465	0
02/80	12,772	653	0	19,558	0
03/80	13,455	255	0	52,764	0
04/80	15,929	302	0	76,078	0
05/80	9,965	131	0	97,692	0
06/80	7,620	78	0	148,716	0
07/80	15,169	102	0	55,769	0
08/80	15,590	280	0	50,314	0
09/80	11,522	229	0	444,029	0
10/80	12,878	29	0	∞	0
11/80	8,799	0	0	∞	0
12/80	9,114	0	0	∞	0
01/81	11,720	0	0	∞	0
02/81	8,942	0	0	∞	0
03/81	9,672	0	0	∞	0
04/81	7,768	0	0	∞	0
05/81	6,856	94	0	72,936	0
Cumulative Production	393,789	7,797	0	50,505	0

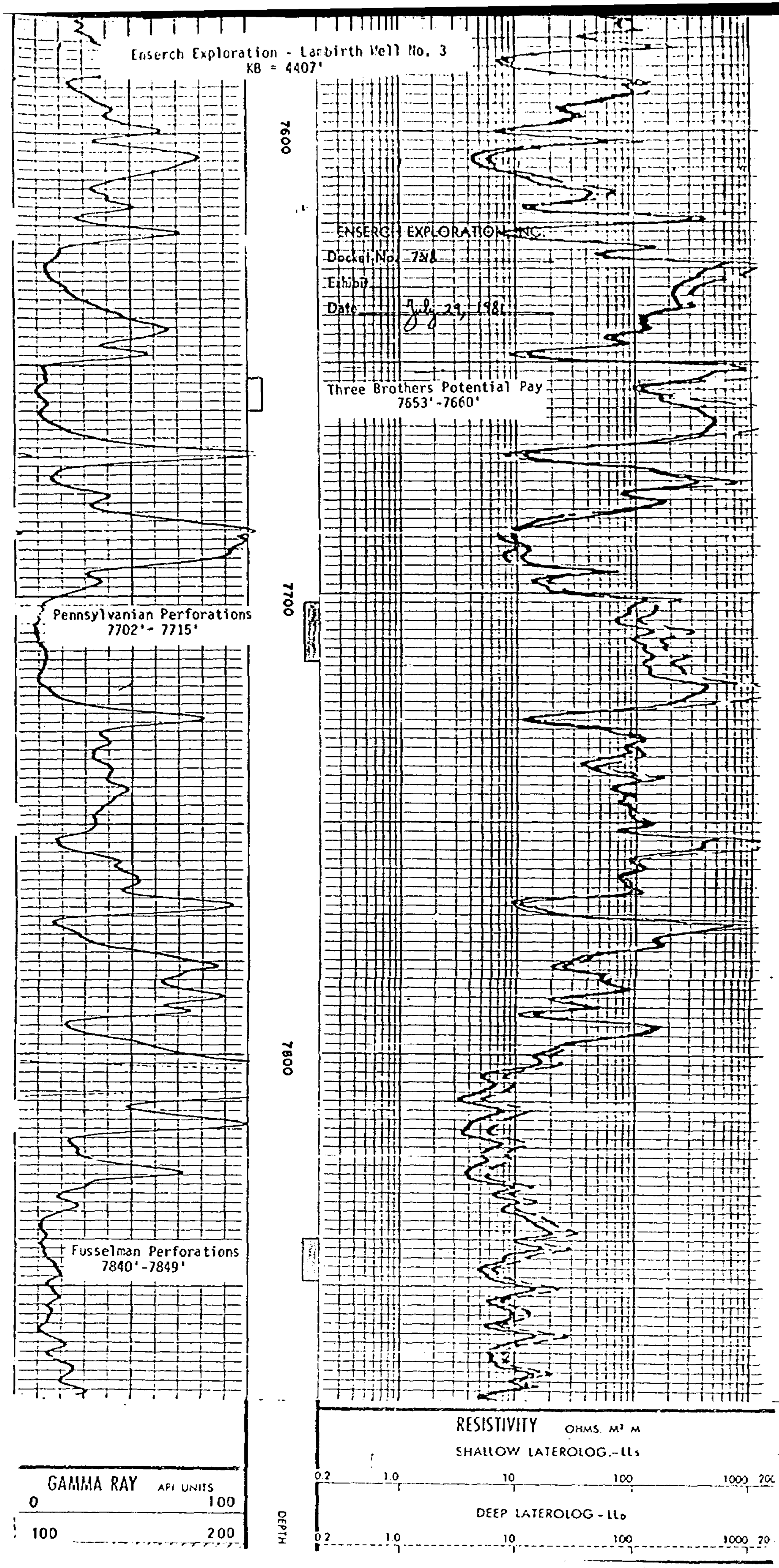
ENSERCH EXPLORATION, INC.

Docket No. 7318

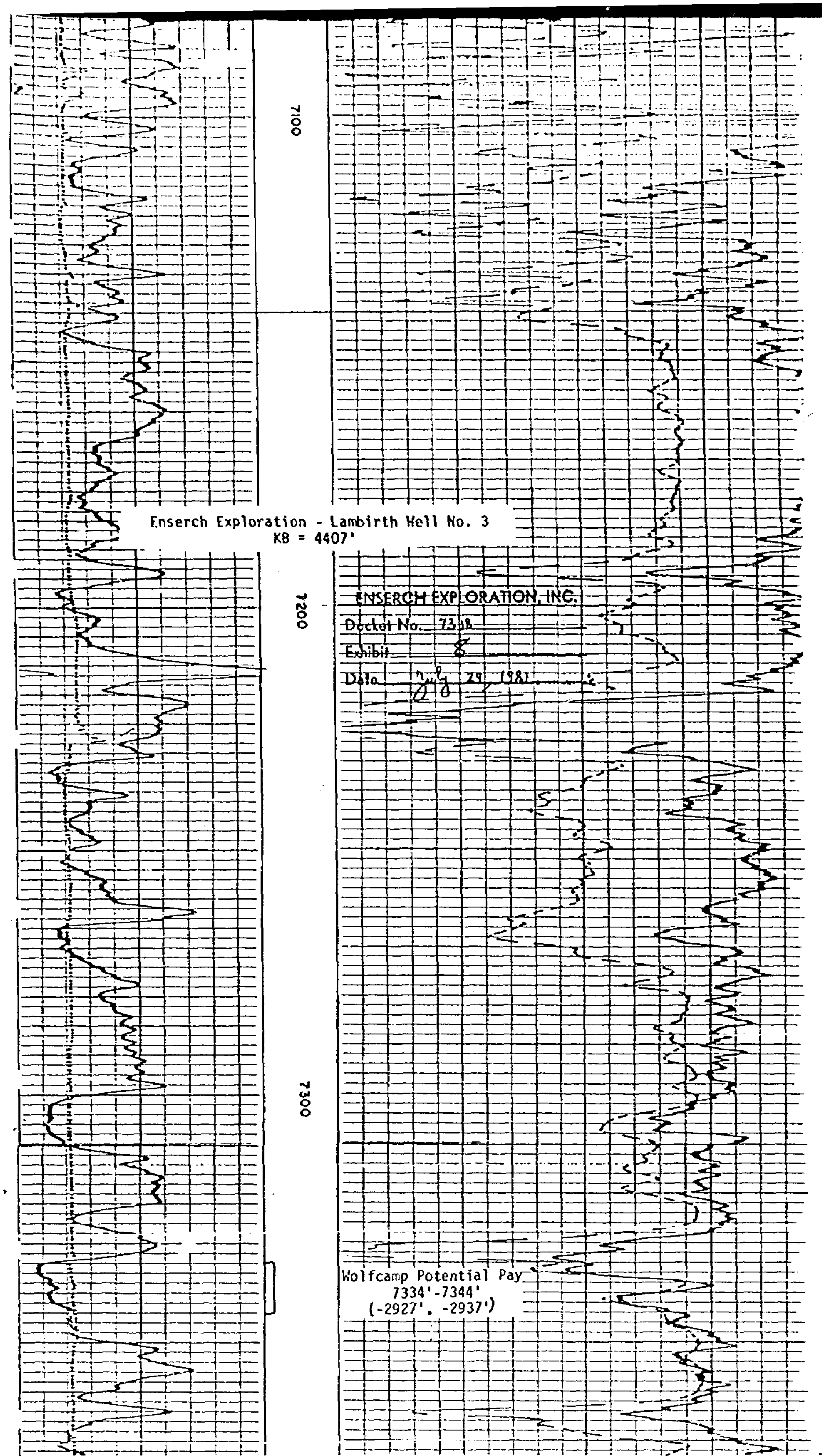
Exhibit

Date July 29, 1981


7600
Enserch Exploration - Lambirth Well No. 3
KB = 4407'
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 7
Date July 29 1981
Three Brothers Potential Pay
7653'-7660'
7700
Pennsylvanian Perforations
7702' - 7715'
7800
Fusselman Perforations
7840'-7849'
DETAIL LOG
5" = 100'
CALIPER DIAM. IN INCHES
6 16
GAMMA RAY API UNITS
0 100
100 200
POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -10
COMPENSATED NEUTRON POROSITY
30 20 10 0 -10



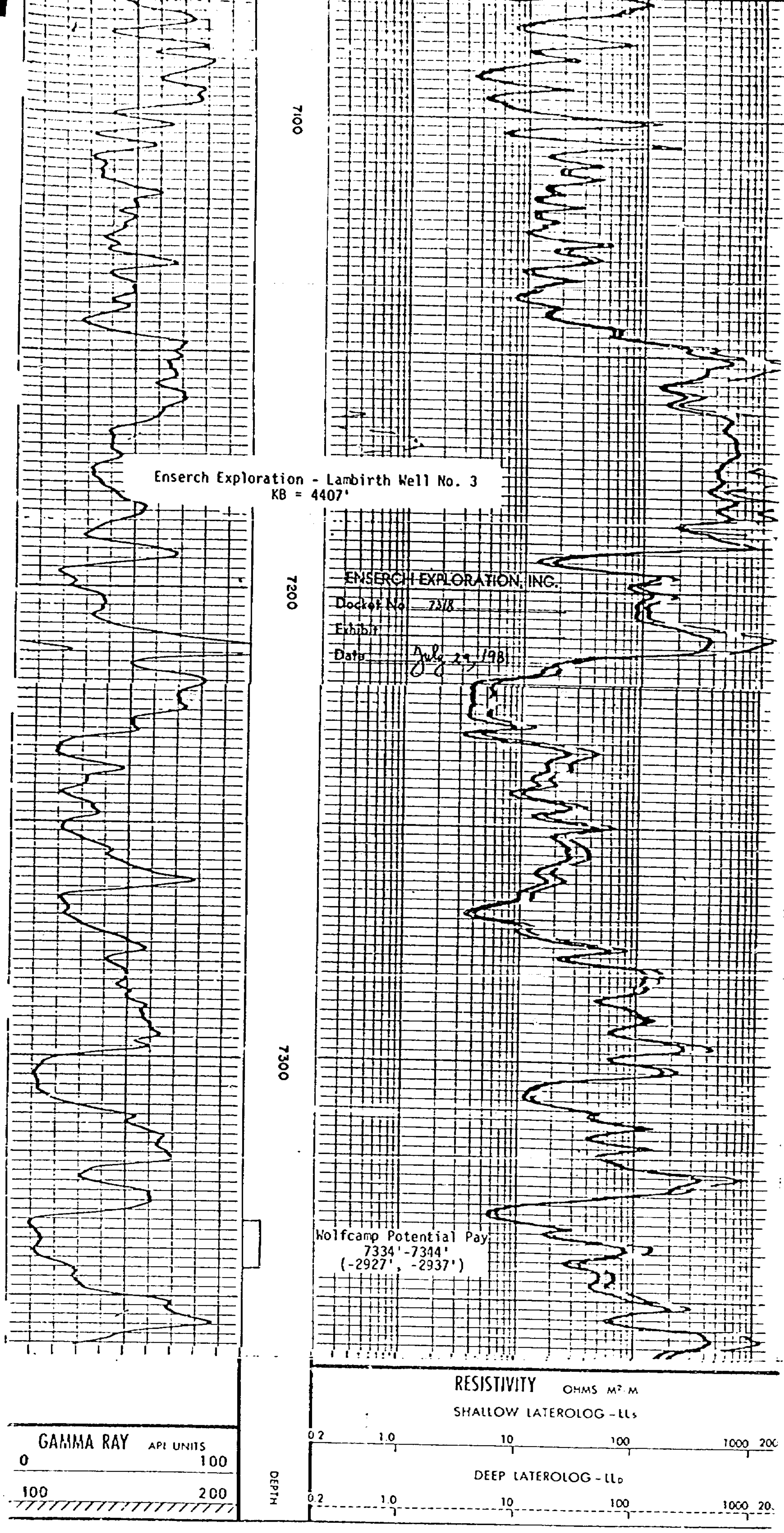
Enserch Exploration - Lambirth Well No. 3
KB = 4407'
7600
ENSERCH EXPLORATION, INC.
Docket No.
Exhibit
Date July 29,
Three Brothers Potential Pay
7653'-7660'
7700
Pennsylvanian Perforations
7702'- 7715'
7800
Fusselman Perforations
7840'-7849'
RESISTIVITY OHMS. M² M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000
GAMMA RAY API UNITS
0 100
100 200
DEPTH



DETAIL LOG

5" = 100'

CALIPER DIAM. IN INCHES	POROSITY INDEX (%) LIME MATRIX
6 — 16	COMPENSATED FORMATION DENSITY POROSITY
	30 — 20 — 10 — 0 — -1.
GAMMA RAY API UNITS	COMPENSATED NEUTRON POROSITY
0 — 100	
100 — 200	30 — 20 — 10 — 0 — -1(


7100
Enserch Exploration - Lambirth Well No. 3
KB = 4407'
7200
ENSERCH EXPLORATION, INC.
Docket No 7318
Exhibit
Date July 29, 1981
7300
Wolfcamp Potential Pay
7334'-7344'
(-2927', -2937')
RESISTIVITY OHMS M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 200
DEEP LATEROLOG - LLD
0.2 1.0 10 100 1000 20
GAMMA RAY API UNITS
0 100
100 200
DEPTH

This [illegible] LOG presentation was computed using

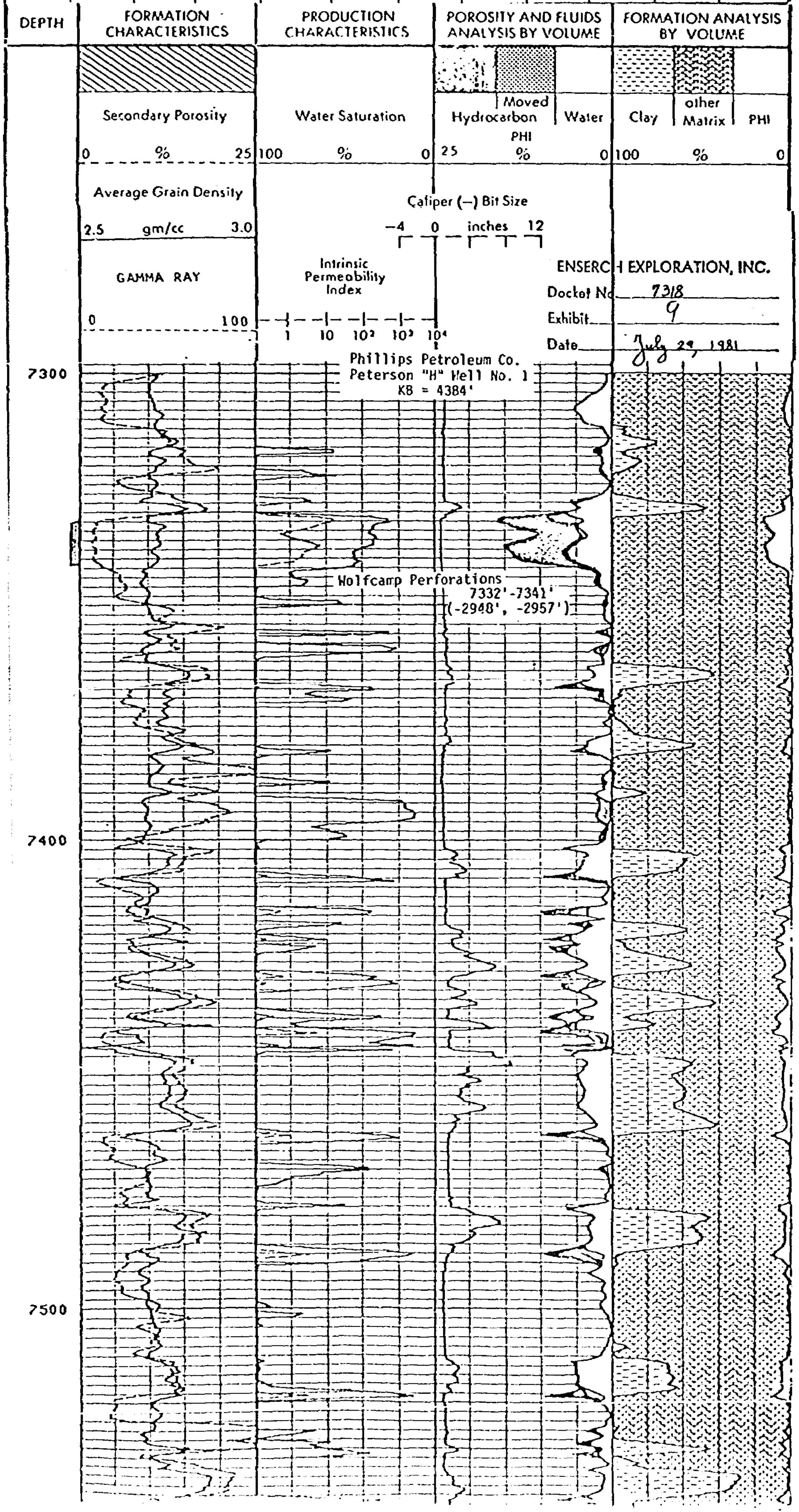
CORIBAND — Analysis of Complex Reservoirs

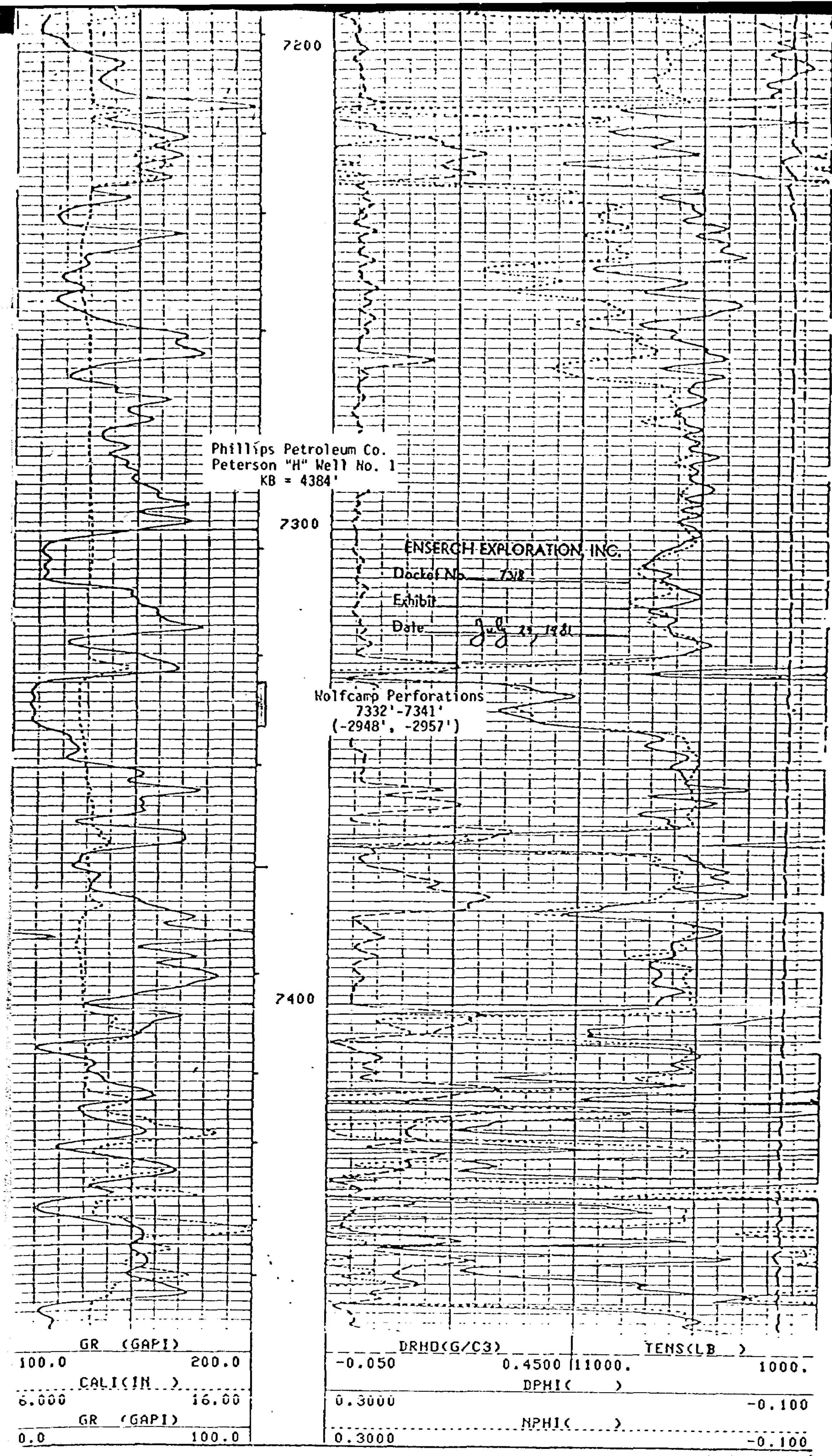
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 4 of our General Terms and Conditions as set out in our current Price Schedule.

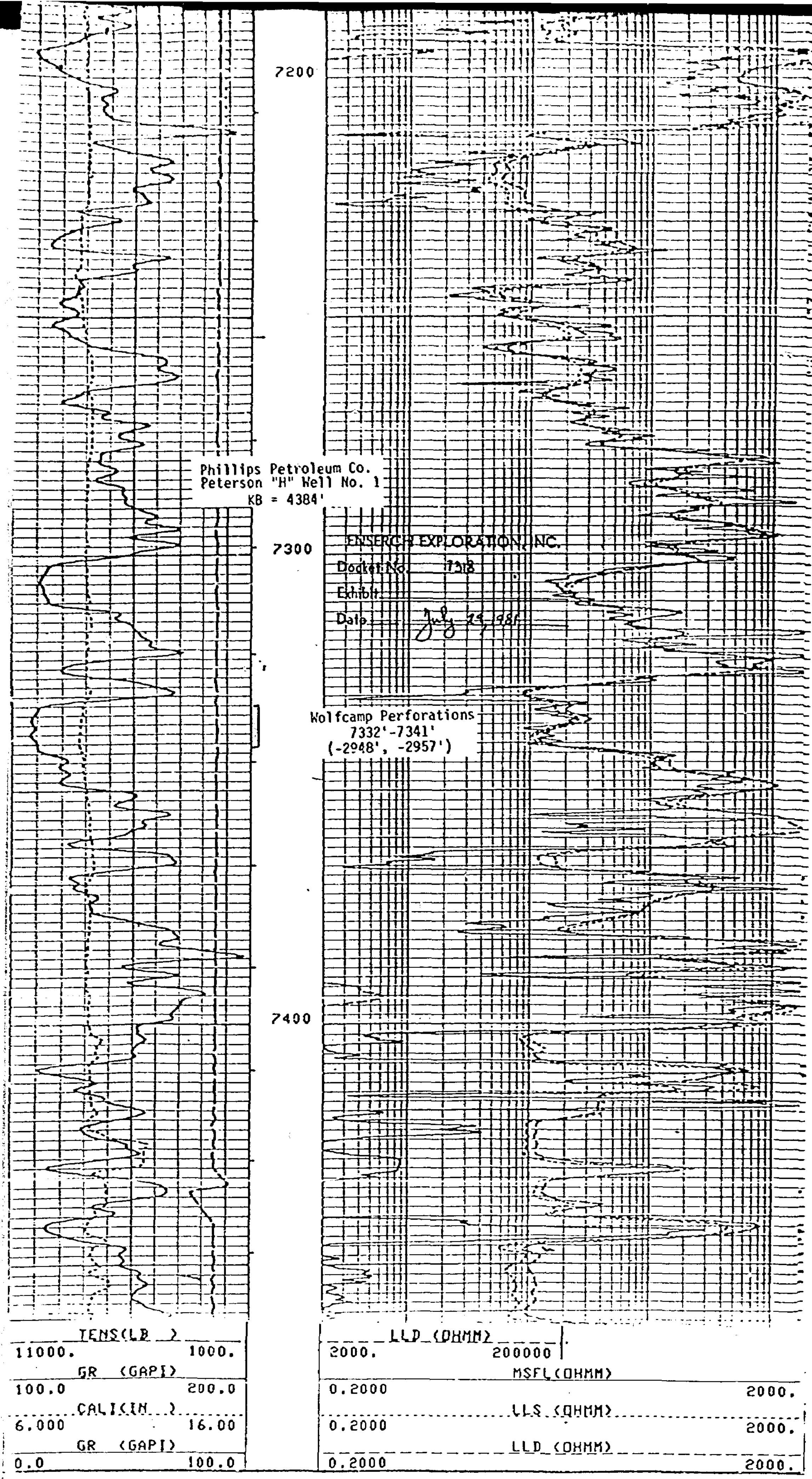
Field Recording	Engineer: TUCKER	Truck No: 8131	Location: LVLD	C.C. Job No.
Office Recording	Comp. Center: PBCC	Program No:	Analyst: MCGINLEY	54714
Mud Measurements	Rm .087 @ 75 °F	Rmf .062 @ 75 °F	BHT 141 °F	Bit Size 7 7/8

COMPUTATION PARAMETERS

Depth Interval From	Depth Interval To	R_w	R_{MF}	R_{SH}	Δt_{cl}	PHI N_{cl}	ρ_{Bcl}	GR_{sd}	GR_{cl}	"M"	ρ_{hy}
7976	7820	.045	.034	10		24	2.65	25	110	2.2	.8
7820	7300	.045	.034	10		24	2.65	25	110	2.0	.8




7200
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
7400
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
DRHO(G/C3)
-0.050 0.4500
TENS(LB)
11000. 1000.
DPHI( )
0.3000 -0.100
NPHI( )
0.3000 -0.100



7200
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
7400
TENS(LB)
11000. 1000.
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
LLD (OHMM)
2000. 200000
MSFL(OHMM)
0.2000 2000.
LLS (OHMM)
0.2000 2000.
LLD (OHMM)
0.2000 2000.

****

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****************
*   CORIBAND   *
****************
* SCHLUMBERGER *
****************
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COMPANY   PHILLIPS PETROLEUM

WELL   PETERSON H 1

FIELD   PETERSON

COUNTY   ROOSEVELT

STATE   NEW MEXICO

DATE   24-JUN-80

COMPUTED AT:- PERMIAN BASIN COMPUTING CENTER

****

THIS JOB IS LISTED FROM TOP TO BOTTOM

THIS IS A 01 FOOT LISTING

LISTING IS DISCRIMINATED FOR VSH>50%

LISTING IS DISCRIMINATED FOR PHI<1.9%

PERMEABILITY = (62500(PHI**6))/(SW**2)   [10%<SW<50%]

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 10
Date July 29, 1981

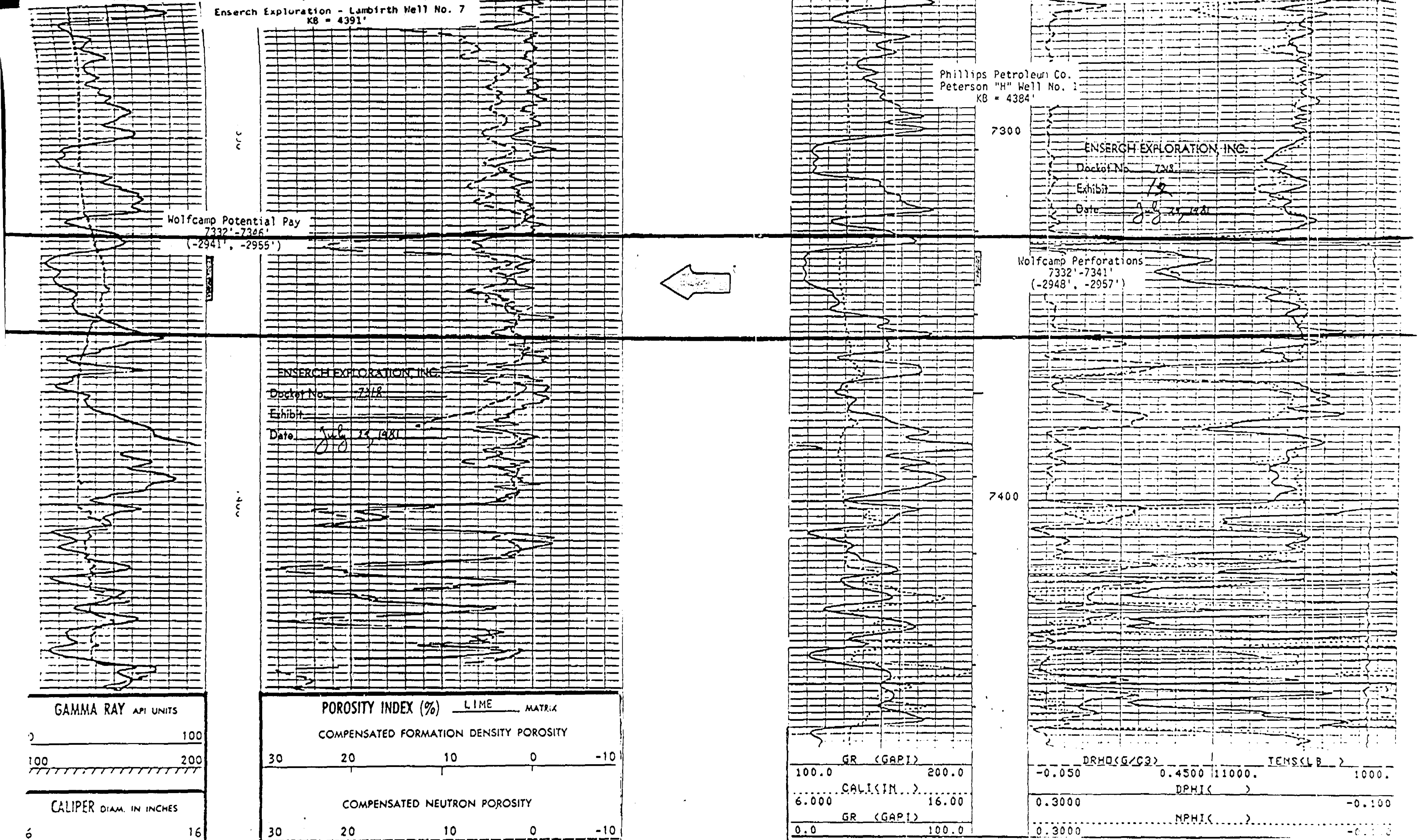
DEPTH FEET	PERM. TO OIL-GAS (INDEX)	WATER SAT. %	POROSITY TOTAL %	POROSITY SEC. %	MATRIX DENSITY G/CC	SHALE VOLUME %
7304.0	0.00	100	2.2	0.0	2.70	0
7305.0	0.00	100	3.6	0.0	2.70	0
7306.0	0.00	100	4.2	0.0	2.71	0
7307.0	0.00	100	5.0	0.0	2.72	0
7308.0	0.00	99	5.1	0.0	2.72	0
7309.0	0.00	100	4.5	0.0	2.74	0
7310.0	0.00	99	4.1	0.0	2.73	0
7311.0	0.00	100	2.9	0.0	2.72	0
7316.0	0.00	89	1.9	0.0	2.70	15
7317.0	0.00	56	2.5	0.0	2.69	5
7327.0	0.00	72	3.8	0.0	2.64	15
7328.0	0.01	85	5.6	0.0	2.61	38
7330.0	0.03	97	6.9	0.0	2.62	39
7331.0	6.75	35	15.4	0.0	2.69	2
7332.0	16.31	25	16.0	0.0	2.70	0
7333.0	4.42	34	14.2	0.0	2.75	0
7334.0	1.12	36	11.5	0.0	2.73	0
7335.0	0.79	33	10.6	0.0	2.73	0
7336.0	2.26	34	12.8	0.0	2.73	0
7337.0	6.23	34	15.0	0.0	2.73	0
7338.0	3.47	42	14.6	0.0	2.71	0
7339.0	2.18	44	13.8	0.0	2.72	0
7340.0	1.55	44	13.1	0.0	2.73	0
7341.0	0.39	44	10.3	0.0	2.72	0
7342.0	0.00	54	4.6	0.0	2.69	0
7343.0	0.00	80	2.3	0.0	2.69	0
7344.0	0.00	78	2.1	0.0	2.69	0
7345.0	0.00	71	2.4	0.0	2.68	0
7359.0	0.00	21	2.4	0.0	2.68	0
7360.0	0.00	41	2.3	0.0	2.69	0
7363.0	0.00	100	3.4	0.0	2.66	34
7366.0	0.00	100	3.4	0.0	2.62	47
7367.0	0.02	63	6.7	0.0	2.70	20
7368.0	0.00	34	3.7	0.0	2.75	5
7370.0	0.00	46	2.7	0.0	2.77	2
7379.0	0.00	100	3.5	0.0	2.63	38
7380.0	0.00	100	3.6	0.0	2.64	45
7381.0	0.01	58	6.0	0.0	2.67	26
7390.0	0.00	100	2.3	0.0	2.71	16

Wolfcamp - Injection zone :

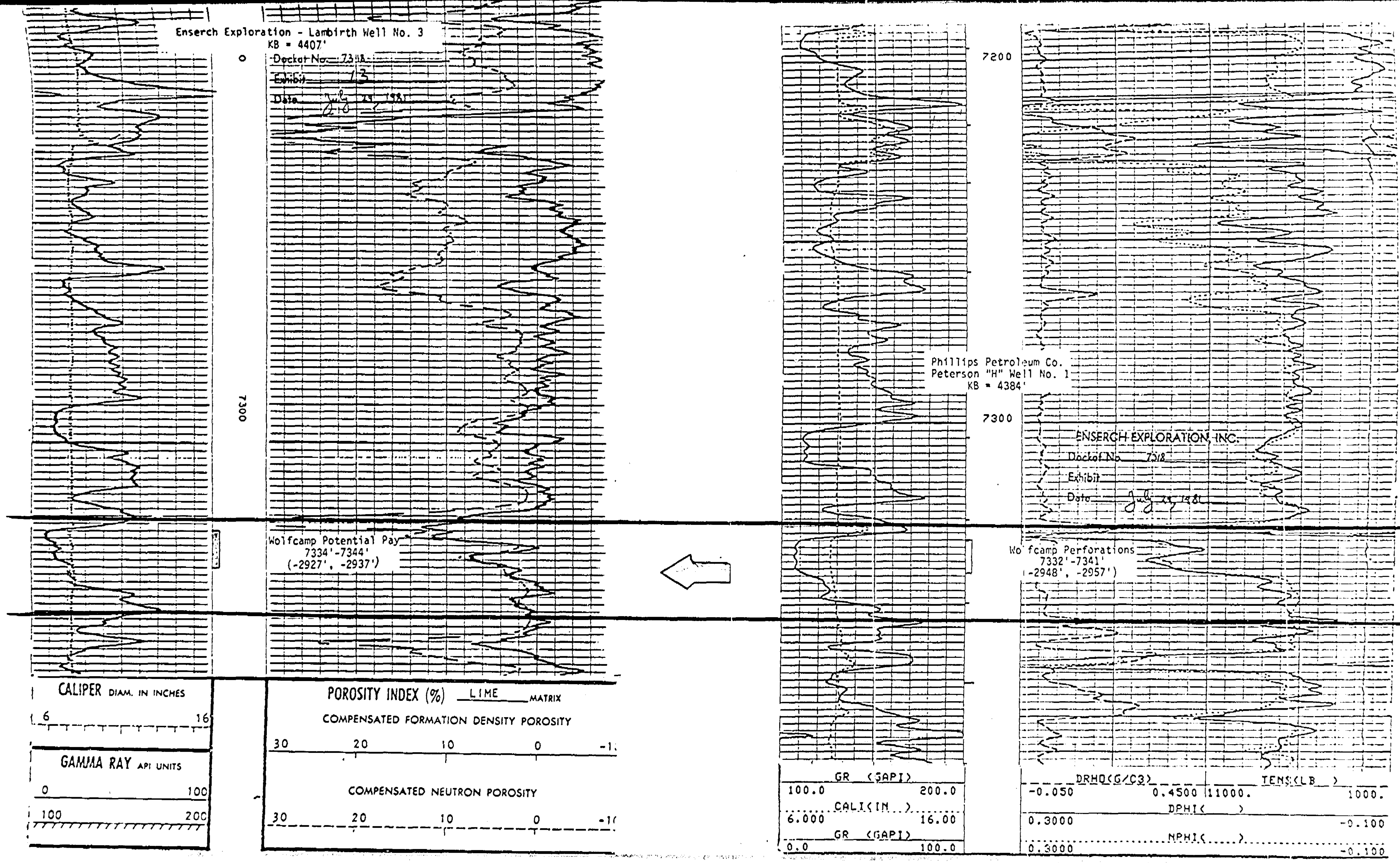
Water saturation = 36.8%

Average porosity = 13.4%

Permeability = 4.13 md



Enserch Exploration - Lambirth Well No. 7
KB = 4391'
Wolfcamp Potential Pay
7332'-7346'
(-2941', -2955')
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
GAMMA RAY API UNITS
0 100
100 200
CALIPER DIAM. IN INCHES
6 16
POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -10
COMPENSATED NEUTRON POROSITY
30 20 10 0 -10
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7300
7400
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit 12
Date July 23, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
DRHO(G/C3)
-0.050 0.4500
TENS(LB)
11000. 1000.
DPHI( )
0.3000 -0.100
NPHI( )
0.3000


Enserch Exploration - Lambirth Well No. 3
KB = 4407'
Docket No. 7318
Exhibit 13
Date July 23, 1981
7300
Wolfcamp Potential Pay
7334'-7344'
(-2927', -2937')
CALIPER DIAM. IN INCHES
6 16
GAMMA RAY API UNITS
0 100
100 200
POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0
COMPENSATED NEUTRON POROSITY
30 20 10 0
Phillips Petroleum Co.
Peterson "H" Well No. 1
KB = 4384'
7200
7300
ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 23, 1981
Wolfcamp Perforations
7332'-7341'
(-2948', -2957')
GR (GAPI)
100.0 200.0
CALI(IN)
6.000 16.00
GR (GAPI)
0.0 100.0
DRHO(G/C3)
-0.050 0.4500
TENS(LB)
11000. 1000.
DPHI( )
0.3000 -0.100
NPHI( )
0.3000 -0.100

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR	ADDRESS
Phillips Petroleum Company	4001 Penbrook St., Odessa, Texas 79762

LEASE NAME	WELL NO.	FIELD	COUNTY
Peterson "H"	1	Peterson (South)	Roosevelt

LOCATION

UNIT LETTER M ; WELL IS LOCATED 660 FEET FROM THE South LINE AND 510 FEET FROM THE West LINE, SECTION TOWNSHIP 5-S RANGE 33-E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13-3/8"	350'	420	Surface	Circ 95 sxs
INTERMEDIATE	8-5/8"	3496'	1000	Surface	Circ 225 sxs
LONG STRING	5-1/2"	7982'	800	5210'	Temp. Survey
TUBING	2-7/8"	7367'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker "R" at 7308+' (Lok Set)		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Wolfcamp (Todd)	7148' (-2764')	7644' (-3206')

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Perforations	7332-7341' Wolfcamp (Todd)

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Fusselman Completion	Yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

7616-7660' (180 sxs), 7792-7806' (1000 gals Injectrol G + 80 sxs), 7846-7866' (1000 gals Injectrol G + 18 sxs)

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
300	None	7704' (-3320')

ANTICIPATED DAILY INJECTION VOLUME (BBLS.) MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
300	1000	Closed	Pressure	1400

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE –	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
	Yes	Yes	Yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Mr. G. E. Peterson, East Star Rt., Elida, New Mexico 88116

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Enserch Exploration, Inc., P. O. Box 4815, Midland, Texas 79702

Amoco Production Co., Box 3092, Houston, Texas 77001

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	
	Yes	Yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	Yes	Yes	Yes

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

W. J. Mueller	Sr. Engineering Specialist	July 20, 1981
(Signature)	(Title)	(Date)

NOTE: *Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests.* SEE RULE 701.

Exhibit 2
Case 7318

skm

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

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no Docket 24-81; Case731

II. Operator: Phillips Petroleum Company

Address: 4001 Penbrook, Odessa, TX 79762

Contact party: J. O. Woodson Phone: (505) 393-5121

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.

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: July 25, 1981

* 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. ________

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

Exhibit 3
Case 7318

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Exhibit 4
Case 7318

Application for Approval of Salt Water Disposal Well
Phillips Petroleum--Peterson "H" No. 1
Peterson (South) Field
Roosevelt County, New Mexico

Operator Well Name	Location	Distance to Peterson "H" No. 1	Casing String Setting Depth	Cement (Sacks)	Cement Tops	Total Depth	Current Producing Interval (Subsea depth)	Current Producing Formation	RKB Elevation
Amoco Peterson "B" No. 1	4980' FSL 660' FWL Unit E Sec. 29 T5S, R33E	2500'	13-3/8" @ 344' 8-5/8" @ 3472' 5-1/2" @ 7877'	425 900 250	Surface Surface 6222'	7852'	D&A	D&A	4428'
Enserch Lambirth No. 7	510' FSL 660' FEL Unit P Sec. 30 T5S, R33E	1400'	13-3/8" @ 358' 9-5/8" @ 1991' 5-1/2" @ 7858'	300 750 450	Surface Surface 6630'	7882'	7826'-7829' (-3435' to -3438')	Fusselman	4391'
Enserch Radar No. 2	1880' FNL 560' FWL Unit E Sec. 32 T5S, R33E	2600'	13-3/8" @ 356' 9-5/8" @ 1981' 5-1/2" @ 8000'	250 914 350	Surface Surface 6850'	8000'	7902'-7930' (-3503' to -3531')	Montoya (proposed SWD well)	4399'
Phillips Lambirth "A" No. 4	560' FNL 560' FEL Unit A Sec. 31 T5S, R33E	1800'	13-3/8" @ 360' 8-5/8" @ 3500' 5-1/2" @ 8000'	420 780 960	Surface Surface 4200'	8000'	7814'-7828' (-3423' to -3437')	Fusselman	4391'
Phillips Peterson "H" No. 1	660' FSL 510' FWL Unit M Sec. 29 T5S, R33E	0'	13-3/8" @ 350' 8-5/8" @ 3496' 5-1/2" @ 7994'	420 1000 800	Surface Surface 5210'	8000'	7332'-7341' (-2948' to -2957')	Wolfcamp (proposed SWD well)	4384'

Application for Salt Water Disposal Well
Phillips Petroleum--Peterson "H" No. 1
Peterson (South) Field
Roosevelt County, New Mexico

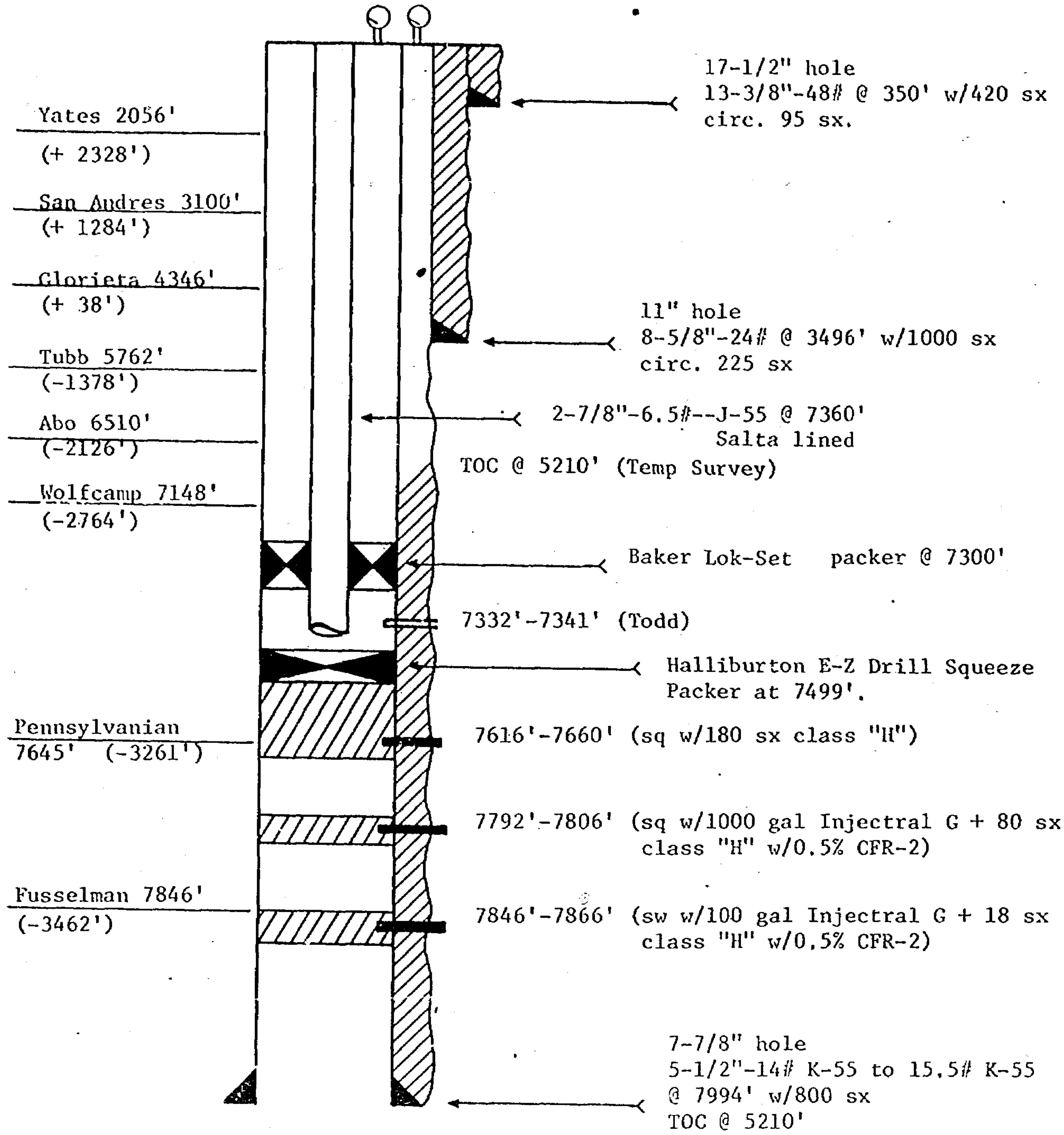
Listing of wells within a two mile radius.

Operator Well Name	Unit	Section	Township	Range	Distance to Peterson "H" No. 1	Current Producing Formation
Amoco Lambirth #1	B	30	5S	33E	4800'	Plugged & Abandoned
Amoco Peterson "B" No. 1	E	29	5S	33E	2500'	Plugged & Abandoned
Amoco Peterson "D" No. 1	B	19	5S	33E	9530'	Pennsylvanian
Amoco Radcliff No. 1	M	17	5S	33E	5380'	Pennsylvanian
Amoco Radcliff No. 1	I	24	5S	33E	9450'	Plugged & Abandoned
Amoco Swearingen "A" No. 1	J	19	5S	33E	6700'	Pennsylvanian
Amoco Swearingen "B" No. 1	F	20	5S	33E	7950'	Plugged & Abandoned
Amoco Swearingen "B" No. 2	D	20	5S	33E	9250'	Plugged & Abandoned
Amoco Swearingen "B" No. 3	L	20	5S	33E	6580'	Pennsylvanian
Amoco Swearingen "B" No. 4	E	20	5S	33E	7690'	Pennsylvanian
Energy Reserves Group Bledsoe No. 2	A	11	6S	33E	5080'	Pennsylvanian
Enserch Lambirth No. 1	K	31	5S	33E	5690'	Fusselman
Enserch Lambirth No. 3	C	31	5S	33E	7700'	Pennsylvanian
Enserch Lambirth No. 4	O	31	5S	33E	3850'	Pennsylvanian
Enserch Lambirth No. 5	N	1	6S	33E	7700'	Plugged & Abandoned
Enserch Lambirth No. 6	D	31	5S	33E	5520'	Fusselman
Enserch Lambirth No. 7	P	30	5S	33E	1400'	Fusselman
Enserch Lambirth No. 8	L	30	5S	33E	4480'	Fusselman
Enserch Lambirth No. 9	P	25	5S	32E	6720'	Fusselman
Enserch Lambirth No. 10	D	31	5S	33E	5700'	Fusselman

Exhibit 5
Case 7318

Operator Well Name	Unit	Section	Township	Range	Distance to Peterson "H" No. 1	Current Producing Formation
Enserch Lambirth No. 11	M	1	6S	33E	8300'	Not completed
Enserch Radar No. 1	L	32	5S	33E	4100'	Plugged & Abandoned
Enserch Radar No. 2	E	32	5S	33E	2600'	Montoya
Phillips Goldston "A" No. 1	P	36	5S	32E	8700'	Plugged & Abandoned
Phillips Goldston "A" No. 2	P	36	5S	32E	8500'	Plugged & Abandoned
Phillips Lambirth "A" No. 1	J	31	5S	33E	4800'	Fusselman
Phillips Lambirth "A" No. 2	F	31	5S	33E	4910'	Fusselman
Phillips Lambirth "A" No. 3	N	31	5S	33E	6530'	Fusselman
Phillips Lambirth "A" No. 4	A	31	5S	33E	1800'	Fusselman
Phillips Lambirth "A" No. 5	M	30	5S	33E	5450'	Pennsylvanian
Phillips Lambirth "B" No. 1	P	2	6S	33E	9300'	Pennsylvanian
Phillips Lambirth State No. 1	H	36	5S	32E	7250'	Fusselman
Phillips Peterson "H" No. 1	M	29	5S	33E	0'	Wolfcamp

Peterson "H" No. 1
660' FSL and 510' FWL
Section 29, T-5-S, R-33-E
Roosevelt County, New Mexico



PETERSON 'H' NO. 1

Peterson (South) Field

Water Injection Calculations

Proposed Injection Zone:	Wolfcamp (Todd)
Perforations:	7332'-7341'
Net Interval:	9'
Average Porosity:	15.6%
Formation Volume Factor for Water:	1.01
Static Fluid Level:	1800'
Specific Gravity of Fluid:	1.073; 0.465 psi/ft
BHT:	136°F

1. Estimated BHP of Todd Zone:

$$\left(\frac{7332 + 7341}{2} - 1800\right) \times 0.465 \cong 2575 \text{ psi}$$

2. Maximum allowable pressure:

$$0.2 \times 7332 = 1466 \text{ psi}$$

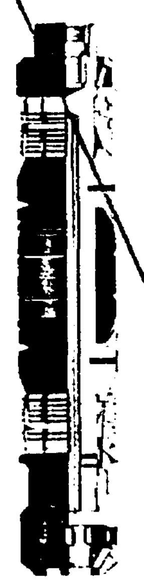
3. Reservoir volume encroached by injected water:

$$W_i = 7758Ah\emptyset/B_w$$
$$A = W_iB_w/7758h\emptyset$$
$$A = 0.000927W_i$$
$$A = \pi r^2/43560$$
$$r = (43560A/\pi)^{\frac{1}{2}}$$

Year	Acres (feet) encroached at 300 BWPD constant	13%/year increase
1	10.2 (376')	10.2 (376')
2	20.3 (531')	21.6 (547')
3	30.5 (650')	34.6 (693')
4	40.6 (750')	49.2 (826')
5	50.8 (839')	65.8 (955')
6	60.9 (919')	84.5 (1082')
7	71.1 (993')	105.6 (1210')
8	81.2 (1061')	129.5 (1340')
9	91.4 (1126')	156.5 (1473')
10	101.5 (1186')	187.0 (1610')
	0.22 miles	0.30 miles

HALLIBURTON SERVICES

EZ Drill®
Bridge Plug



EZ Drill®
Bridge Plug

Halliburton's drillable bridge plug, the EZ Drill®, offers improved operating performance at higher temperatures and pressures and faster removal from a well by either rotary or cable tool drilling methods.

It runs in faster, because of the smaller OD of the tool, and drilling out time is significantly faster than comparable products. The new EZ Drill bridge plug has main structural parts composed of controlled cast iron, to enhance uniform drillability.

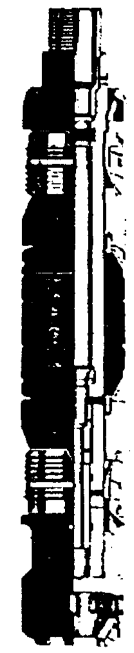
Important design features include:

- High temperature and pressure sealing element. This consists of a relatively soft rubber center packer between harder rubber rings and expandable metal shoes. The metal shoes expand with the rubber packer, to help prevent extrusion of the packers over the wedges at high pressures and temperatures.
- Smaller tool diameter. The design of the packer element permits the use of smaller tool diameters so that only one tool is required for a given casing size, regardless of its weight (wall thickness). This design also offers greater clearance with casing ID and, therefore, less danger of premature setting while going in the hole.
- Top drilling. When the top portion of the EZ Drill bridge plug is drilled into, the mandrel opening is penetrated before the upper slips are reached, allowing any pressure buildup from below to bleed off sufficiently and be relieved through the mandrel into the casing. This is an integral feature of the tool's design and does not require an adapter.
- Floating mandrel. The mandrel upon which all external parts are mounted is free to move with pressure. Forces due to well pressures, either from above or below the bridge plug, are thus applied directly to the slips and packer element, causing it to set tighter as pressures increase.
- Junk pusher. The lower end of the EZ Drill bridge plug is made to help prevent cuttings and other debris from fouling the tool slips, to prevent premature setting while going in the hole.
- Quick removal. Each part of the EZ Drill bridge plug is designed for quick removal from the well with either rotary or cable tools, i.e.:
  A. Material used for each component is selected for the maximum drillability permitted by its strength requirements.
  B. Wedges, metal shoes and packer element are locked together to help prevent their spinning while being drilled.
  C. Slips are grooved so that they will be broken up in small pieces, which can be circulated away from the bit. The holding ability of the slips is not impaired.

EZ Drill bridge plugs are designed primarily to be set on electrical wire line—or tubular goods with necessary modifications.

EZ Drill®
Squeeze Packers

EZ Drill®
Squeeze Packer
with spring loaded
back-pressure valve



EZ Drill SV®
Squeeze Packer
with pressure balanced
sliding valve

Halliburton Services field proven EZ Drill® Squeeze Packers permit faster removal from the well by either rotary or cable tool methods without reduction in operating performance at even elevated temperatures and pressures.

In addition, OD of the tool is less and ID of the tool is greater than comparable products now in use, permitting faster running-in and quicker displacement of fluids at less pressure. Drilling out time is significantly quicker than comparable products.

The EZ Drill squeeze packer contains a spring loaded back pressure valve. The main structural parts of this tool are made of controlled cast iron.

EZ Drill® Packer
(Cont'd)

The EZ Drill SV squeeze packer contains a pressure-balanced sliding valve for control of fluid movement in the well. As with the other type, the main structural parts of this tool are made of controlled cast iron.

DESIGN FEATURES COMMON TO BOTH TYPES INCLUDE:

- High temperature and pressure sealing element. Consists of a relatively soft rubber center packer between harder rubber rings and expandable metal shoes. The metal shoes expand with the rubber packer, help prevent extrusion of the packers over the wedges at high pressures and temperatures.
- Smaller tool diameter. The design of the packer element permits the use of smaller tool diameters, thus less danger of premature setting while going in hole.
- Floating Mandrel. The mandrel upon which all the external parts are mounted is free to move with pressure. Forces due to well pressures, either from above or below the packer, are thus applied directly to the slips and packer element, causing it to set tighter as pressures are increased.
- Junk Pusher. The lower end of EZ Drill® packers is made to help prevent cuttings and other debris from fouling the tool slips, causing premature setting while going in the hole. The "Junk Pusher" is ribbed to provide good anchor in cement to resist the tool's rotation as it is being drilled out.
- Designed for quick removal. Each part of EZ Drill packers is designed for quick removal from the well with either rotary or cable tools, i.e.:

A. The material used for each component is selected for maximum drillability permitted by its strength requirements.

B. The wedges, metal shoes and packer element are locked together to prevent their spinning while being drilled.

C. The slips are grooved so that they will be broken up in small pieces, which can be circulated away from the bit. The holding ability of the slips is not impared.

Fluid movement through EZ Drill SV® squeeze packers is controlled with a pressure-balanced "Sliding Valve" which replaces the spring-loaded back-pressure valve. Operated by reciprocation of the tubing, the valve may be opened or closed, as desired, before and after squeeze cementing. Fluid movement through the valve will not affect its position. When the valve is in the up position, the packer is sealed against fluid or gas movement in either direction. When the valve is in the down position, fluid may be pumped through the packer or pressure may be relieved from below it. When the valve is open an unrestricted fluid passage is provided through side ports in the tool. With interlocking valve fingers not exposed to cement slurry, the sliding valve is not likely to be cemented in place.

EZ Drill® and EZ Drill SV® squeeze packers may be set on tubing (drill pipe), electrical wire line, or sand line. They may be converted for use as bridge plugs (no fluid movement in either direction through the tool) before running in the hole.

EZ DRILL® AND EZ DRILL SV® SQUEEZE PACKERS AND EZ DRILL BRIDGE PLUGS

EZ Squeeze Packer Catalog No.	EZ-SV Squeeze Packer Catalog No.	EZ Drill Bridge Plug Catalog No.	RECOMMENDED Csg./Tbg. RANGE		Max. OD of Tool (Inches)	ID Lightest St. Csg./Tbg. To be Set in (Inches)
			Size OD (Inches)	Weight Range (Lbs./Ft.)		
802.303			2⅞	6.50	2.187	2.441
802.305			3½ 3 L. Pipe Nom.	5.75—10.20 Non. Up. Tbg. 9.30 EUE Tbg. 7.70	2.69	3.188
802.307			4 3½ L. Pipe Nom.	11.85-14.0 D.Pipe 11.6 Casing 11.00 EUE Tbg. 9.5 Non. Up. Tbg. 9.25	3.125	3.548
802.309	802.339	803.639	4½	9.5 —13.5	3.66	4.090
	802.338		4½	13.5 —15.1	3.58	3.920
802.311	802.341	803.641	5	11.5 —18	3.97	4.560
802.313	802.343	803.643	5½	13 —23	4.37	5.044
802.319	802.349	803.649	6⅝ 7	17 —28 20 —38	5.50 5.50	6.456 6.456
	802.351	803.651	7 7⅝	17 —20 20 —39	6.12 6.12	7.125 7.125
	802.353		8⅝	24 —49	7.00	8.097
	802.354		9⅝	29.3 —53.5	7.75	9.063
	802.357		10¾	32.75—65.7	9.00	10.192
	802.355		11¾	42 —65	9.87	11.084
	802.358		13⅜	48 —72	11.68	12.715

1344-A

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W80-1120

To Phillips Petroleum Company
Box 1178
Lovington, New Mexico

Date 10-13-80

Submitted by ____ Date Rec. 10-13-80

Well No. Peterson "H" #1 Depth 7332-41' Formation Todd

County Roosevelt Field S. Peterson Source 5½" Casing

Resistivity	0.076 @ 74°F.		
Specific Gravity	1.086		
pH	4.7		
Calcium (Ca)	10,500		*MPL
Magnesium (Mg)	Nil		
Chlorides (Cl)	75,000		
Sulfates (SO_4)	1,400		
Bicarbonates (HCO_3)	Nil		
Soluble Iron (Fe)	140		

Remarks:

*Milligrams per liter

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By W. L. Brewer
CHEMIST

NOTICE

THIS REPORT IS LIMITED TO THE DESCRIBED SAMPLE TESTED. ANY USER OF THIS REPORT AGREES THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER IT BE TO ACT OR OMISSION, RESULTING FROM SUCH REPORT OR ITS USE.

1342-A

HALLIBURTON DIVISION LABORATORY
HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W79-215

To Phillips Petroleum Company
Box 1178
Lovington, New Mexico

Date 2-28-79

Submitted by

Date Rec. 2-28-79

Well No. Lambirth "A" #1 Depth 7970' Formation Fusselman

County Roosevelt Field Peterson Source Heater Treater

Resistivity	0.103 @ 74°F.		
Specific Gravity	1.069		
pH	6.4		
Calcium (Ca)	3,350		*MPL
Magnesium (Mg)	3,000		
Chlorides (Cl)	59,000		
Sulfates (SO_4)	1,600		
Bicarbonates (HCO_3)	855		
Soluble Iron (Fe)	70		

Remarks:

*Milligrams per liter

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By W. L. Brewer
CHEMIST

NOTICE

134C-A

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W80-320

To Phillips Petroleum Company
Box 1178
Lovington, New Mexico

Date 3-27-80

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by ______ Date Rec. 3-27-80

Well No. Lambirth A #5 Depth As Marked Formation Penn

County Lea Field S. Peterson Source Swab

	7664-7748	7744-7748	
Resistivity	0.081 @ 70°F.	0.100 @ 70°F.	
Specific Gravity	1.076	1.061	
pH	6.2	5.7	
Calcium (Ca)	8,000	8,500	*MPL
Magnesium (Mg)	2,220	1,800	
Chlorides (Cl)	65,000	50,000	
Sulfates (SO_4)	900	850	
Bicarbonates (HCO_3)	315	855	
Soluble Iron (Fe)	60	80	

Remarks:

*Milligrams per liter

Respectfully submitted,

Analyst: Brewer

cc:

HALLIBURTON COMPANY

By W. L. Brewer
CHEMIST

NOTICE

THIS REPORT IS LIMITED TO THE DESCRIBED SAMPLE TESTED. ANY USER OF THIS REPORT AGREES THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER IT BE TO ACT OR OMISSION, RESULTING FROM SUCH REPORT OR ITS USE.

Peterson "H" No. 1
Sec. 29, T-5-S, R-33-E
Roosevelt County, New Mexico

Well History

May 1, 1981

Location: 660' FSL 510' FWL Sec 29, T-5-S, R-33-E, Roosevelt County, New Mexico.

Bit size 11". Ran 8-5/8" 24# K-55 STC R-3 csg set @ 3496'. Cmt w/ 800 sx Cl H w/ 30% DD 11.7 PPS + 200 H w/ 2% CaCl 15.7 pg. Circ 225 sxs.

Bit size 7-7/8". Ran 5-1/2" 15.5# K-55, 8rd, (4006. 86') x 100 jts 5-1/2" 14" K-55, 8rd, Set @ 7982'. Cmt w/ 350 sx H w/ 30% DD, 2% DCL. Tailed in w/ 450 sx H w/ 2% KCL. Plug to 7939' w/ 10 bbls 10% Acetic Acid + 185 BW. Temp survey by John West Engr TOC 5210'.

July 8, 1980

Perf'd 5-1/2" csg w/ 2 jet shots per foot at 7846-7852' and 7862-7866'. Ran 2-7/8" tbg and pkr, set tbg at 7801', pkr 7769'. Western trt'd dwn tbg through 5-1/2" csg perfs 7846-7866' w/ 500 gals 15% Ne HCl. Max press 3850#, min vacuum. Inj rate 1 BPM. Swbd 6 hrs, 2 BO, 57 BLW, 53 BSW. Ran Howco cmt retainer, set at 7825' on 2-7/8" tbg. Howco sqzd perfs 7846-7866' w/ 1000 gals Injectrol "G" followed by 20 sxs Class "H" cmt w/ 5/10% CFR-2. Flushed w/ 45 BW. Max Press 1800#, holding 975#. Pulled out of retainer, reversed 2 sxs cmt. Spotted 10 bbls Acetic acid.

Dresser Atlas perf'd 5-1/2" csg w/ 2 JSPF, 7792-7806'. Ran 2-7/8" tbg and pkr, set pkr at 7701', tbg 7760'. Western treated dwn tbg through 5-1/2" csg perfs 7792-7806' w/ 750 gals 15% NeHCl. Max press 4400#, min zero, ISIP zero, injection rate .75 BPM. Swbd 10 hrs, trace oil, 155 BSW. CRC ran tracer survey in 5-1/2" csg. Found fluid exit through perfs 7792-7806', channeling dwn to 7812'. Set Howco cmt ret at 7769'. Howco filled csg and tbg w/ produced wtr, established inj rate of 7 BPM at 250# in 5-1/2" csg perfs 7792-7806'. Pmpd in 5000 gals Injectrol "G" at 1500# to 1800#, followed by 100 sxs Class "C" cmt w/ 5/10% CRF-2. With 62 sxs in formation, press increased to 4000#, holding at 3800#. Pulled tbg out of ret, reversed 23 sxs. Circ'd tbg and csg clean. Ran 4-3/4" bit, 4--3-1/2" DC's on 2-7/8" tbg, tagged top cmt at 7757', drld cmt to 7769', started drlg on ret. Drld cmt ret at 7769', cmt to 7808'. Lowered bit to 7820', drld cmt to 7825'. Western spotted 10 bbls 10% Acetic acid.

Dresser Atlas perf'd 5-1/2" csg w/ 4 jet shots per foot, 7793-7801'. Set 2-7/8" tbg at 7787', Baker Model "R" pkr at 7728'. Western treated dwn 2-7/8" tbg through 5-1/2" csg perfs 7793-7801' w/ 250 gals 15% NeHCl. Max Pressure 3400#, min zero, inj rate 1/2 BPM. Swbd 10 hrs, trace oil, 87 BSW. Ran 2-7/8" tbg and cmt ret; set ret at 7780'. Howco cmt'd dwn tbg through csg perfs 7793-7801' w/ 1000 gals Injectrol "G" followed by 100 sxs Cl "H" cmt w/ 1/2% CFR-2. Sqzd 80 sxs in formation, reversed 20 sxs. Max press 4000#, holding 3800#.

August 1, 1980

Dresser Atlas perf'd 5-1/2" csg w/ 2 JSPF, 7616-7627', 7630-7636', 7646-7650', 7656-7662' 7676-7680', 7706-7710', 7716-7722', 7746-7760'. Ran tbg, pkr and BP, set BP at 7768', pkr at 7593'. Swbd 4 hrs, 41 BLW, no oil, swbd dry. Western spotted 1000 gals 15% NeHCl over 5-1/2" csg perfs 7606-7760'. Set pkr at 7788', pressured to 4000#, pkr leaked. Reset pkr at 7586', pressured to 3500# and leaked. Reversed acid to truck. Pulled tbg and pkr. Ran 2-7/8" tbg and new pkr. Western treated through 5-1/2" csg perfs 7606' to 7660' w/ 2500 gals 15% NeHCl flushed w/ 50 BW. Max press 4000#, min 3900#, inst SDP 3900#, inj rate 4 BPM. Swbd 4 hrs, 45 BLW, no oil. Swbd 10 hrs, 4 BO, 40 BLW. Swbg. Swbd 10 hrs, 8 BO, 23 BLW. Swbd 10 hrs, 6 BO, 8 BLW. Western trt'd dwn 2-7/8" tbg through 5-1/2" csg perfs 7616-7760' w/ 20,000 gals gelled 15% NeHCl as follows: A--5000 gals acid. B--15 ball sealers. C--5000 gals acid. D--10 ball sealers. E--10,000 gals acid. Flshd w/ 20,000 gals 2% KCl wtr. Max press 6900#, min 5000#, inst SDP 4150#. Inj rate 6.2 BPM. Swbd 6 hrs, trace oil, 8 BLW, swbd dry. Swbg. Swbd 6 hrs, no oil, 5 BLW, swbd dry. Lowered tbg to 7668'. Reverse circ'd w/ 75 bbls 2% KCL wtr. Western spotted 1000 gals 15% NeHCl over perfs 7616-7660'. Reset pkr at 7602', flshd acid w/ 50 bbls 2% KCl wtr. Max press 3600#, min 3500#, inst SDP 3400#, inj rate 1.5 BPM. Ran 2-7/8" tbg and ret, set ret at 7499'. Running tbg and pkr. Howco sqzd perfs 7616-7660' w/ 200 sx Class "H" cmt. Pressed 180 sx in perfs, reversed 20 sx. Max press 4000#, holding 4000#.

Welex perf'd 5-1/2" csg w/ 2 JSPF, 7332-7341'. Ran tbg and pkr, set pkr at 7308'. Swbd 8 hrs, no oil, 78 BW. Swbd 8 hrs, no oil, 85 BSW. Swbd 8 hrs, no oil, 75 BSW. Swbd 6 hrs, 80 BW, no oil. Western trt'd dwn tbg. Csg perf 7332-7341', 5000 gals 28% acid, flshd w/ 47 BW. MP 4400#, MP 2700#, SD 2500#. Rate 3 BPM. Ran injectivity test. Ran tracer survey. Hold well for disposal purposes.

WATER INJECTION CALCULATIONS
WATER ENCROACHMENT

Phillips Petroleum Company - Peterson "H" Well No. 1
Peterson, South Field

Proposed injection zone:	Wolfcamp
Perforations:	7332'-7341' (KB = 4384')
:	(-2948', -2957')
Net interval:	9'
Average porosity:	13.4%
Average water saturation:	36.8%
Irreducible fluid saturation:	20%
Displaceable porosity:	10.7%

Reservoir volume encroached by injected water:

$$W_i = (7758\ A\ h\ \phi_D)/B_w$$

Reservoir area encroached by injected water:

$$A = (B_w \times W_i)/(7758\ h\ \phi_D)$$

Proposed injection volume:

Anticipated:	Not available
Minimum:	400 bbls/day (12,160 bbls/month)
Maximum:	1000 bbls/day (30,400 bbls/month)

Area encroached by injection water (700 bbls/day):

Year 1:	A = 27.3 acres	(radius =	615')
Year 2:	= 54.6 acres	=	870'
Year 3:	= 81.9 acres	=	1065'
Year 4:	= 109.2 acres	=	1230'
Year 5:	= 136.5 acres	=	1376'
Year 6:	= 163.8 acres	=	1507'
Year 7:	= 191.1 acres	=	1628'
Year 8:	= 218.4 acres	=	1740'
Year 9:	= 245.7 acres	=	1846'
Year 10:	= 273.0 acres	=	1946'

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29 / 1981

WATER INJECTION CALCULATIONS
WATER ENCROACHMENT

Phillips Petroleum Company - Peterson "H" Well No. 1
Peterson, South Field

Proposed injection zone:	Wolfcamp
Perforations:	7332'-7341' (KB = 4384')
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$$W_i = (7758\ A\ h\ \phi_D)/B_w$$

Reservoir area encroached by injected water:

$$A = (B_w \times W_i)/(7758\ h\ \phi_D)$$

Proposed injection volume:

Anticipated:	Not available
Minimum:	400 bbls/day (12,160 bbls/month)
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Year 1:	A =	27.3 acres	(radius =	615')
Year 2:	=	54.6 acres	=	870'
Year 3:	=	81.9 acres	=	1065'
Year 4:	=	109.2 acres	=	1230'
Year 5:	=	136.5 acres	=	1376'
Year 6:	=	163.8 acres	=	1507'
Year 7:	=	191.1 acres	=	1628'
Year 8:	=	218.4 acres	=	1740'
Year 9:	=	245.7 acres	=	1846'
Year 10:	=	273.0 acres	=	1946'

ENSERCH EXPLORATION, INC.
Docket No. 7318
Exhibit
Date July 29 / 1981

CASE 7315: Application of Rhema Oil Processing for an oil treating plant permit, Lea 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 NW/4 of Section 30, Township 18 South, Range 38 East.

CASE 7274: (Continued from June 17, 1981, Examiner Hearing)

Application of Bass Enterprises Production Company for directional drilling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to directionally drill its James Ranch Unit Well No. 13 from an unorthodox surface location 660 feet from the South line and 1340 feet from the East line of Section 36, Township 22 South, Range 30 East, in such a manner as to bottom said well in the Morrow formation at a standard location at least 660 feet from the South line and 1980 feet from the West line of Section 31, Township 22 South, Range 31 East, the S/2 of said Section 31 to be dedicated to the well.

CASE 7303: (Continued from July 15, 1981, Examiner Hearing)

Application of Florida Hydrocarbons Company for surface commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the surface commingling of Morrow, Strawn, Atoka, and Wolfcamp gas produced from five wells located in Unit F of Section 10, Units G and O of Section 15, and Units A and I of Section 22, all in Township 23 South, Range 34 East, Antelope Ridge Field, after separately metering the gas produced from each well and each zone. Lease liquids would be separated out at the wellhead and the gas processed in a plant, allocating plant production back to each well on the basis of meter readings. Applicant further seeks a procedure whereby additional wells could be similarly commingled in said system.

CASE 7316: Application of Blackwood & Nichols Company, Ltd. for amendment of Order No. R-6636, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Division Order No. R-6636 which authorized directional drilling for its Northeast Blanco Unit Well No. 32-A in Section 7, Township 30 North, Range 7 West, to provide for an amended bottom hole location 2213 feet from the South line and 815 feet from the East line of said Section 7.

CASE 7317: Application of Four Corners Gas Producers Association for designation of a tight formation, San Juan and Rio Arriba Counties, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Dakota formation underlying Townships 30 and 31 North, Ranges 2 thru 7 West, containing 270,260 acres, more or less, as a tight formation pursuant to Section 107 of the Natural Gas Policy Act and 18 CFR Section 271.701-705.

CASE 7318: Application of Phillips Petroleum Company for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Wolfcamp formation in the interval from 7332 feet to 7341 feet in its Peterson "H" Well No. 1 in Unit M of Section 29, Township 5 South, Range 33 East, South Peterson Field.

CAMPBELL, BYRD & BLACK, P.A.
LAWYERS

JACK M. CAMPBELL
HARL D. BYRD
BRUCE D. BLACK
MICHAEL B. CAMPBELL
WILLIAM F. CARR
BRADFORD C. BERGE
WILLIAM G. WARDLE

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SANTA FE, NEW MEXICO 87501
TELEPHONE: (505) 988-4421
TELECOPIER: (505) 983-6043

RECEIVED
JUL 13 1981
OIL CONSERVATION DIVISION
SANTA FE

July 10, 1981

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

Case 7318

Re: Objection to Phillips Petroleum Company's Application to Dispose of Produced Waters in the Peterson "H" Well No. 1, Section 29, Township 5 South, Range 33 East

Dear Mr. Ramey:

On April 22, 1981, Leonard Kersh, District Production Manager for Enserch Exploration, Inc., wrote the Commission expressing the objection of Enserch to the above-referenced application. It has come to my attention that Phillips has now filed its application seeking approval to dispose of produced water in the Peterson "H" No. 1 Well. I, therefore, enclose an additional copy of Mr. Kersh's April 22, 1981 letter and request that you include this in the file on this application.

Your attention to this request is appreciated.

Very truly yours,

William F. Carr

William F. Carr

WFC:lr

cc: Mr. Leonard Kersh

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

NATURAL RESOURCES GROUP
Exploration and Production

July 2, 1981

Application for SWD Peterson "H" No. 1,
Unit M, Section 29, T-5-S, R-33-E,
Roosevelt County, New Mexico

Case 7318

State of New Mexico (3)
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico

Attention: Mr. Oscar A. Simpson
Water Resource Specialist

Gentlemen:

In response to subject letter of June 15, 1981, the following data is submitted.

1. A request has been submitted to schedule captioned application for examiner's hearing on July 29, 1981.
2. Enclosed is a detailed description and schematic of the retainer set at 7499'.
3. As indicated on the well bore schematic, Class C cement is in place in the well bore between 7660' and 7499'. The perforated interval 7616'-7660' was squeezed with 180 sacks Class H cement, with that quantity not squeezed into perforations left in the 5-1/2" casing between 7660'-7499' (below retainer).
4. A copy of the temperature survey of the well bore is enclosed. It confirms cement outside the casing as reflected on the well bore completion schematic.

The well completion, casing and cementing records will be detailed/discussed in the hearing on this application.

Very truly yours,

Harold McLemore

Harold McLemore
Regulation and Proration Supervisor

THM:glr
Enclosure

cc: Mr. Joe V. Peacock (2)

New Mexico Dept. of Energy and Minerals
Oil Conservation Division
Box 1980
Hobbs, New Mexico 88240

Enclosure

HALLIBURTON SERVICES

EZ Drill® Bridge Plug

EZ Drill® Bridge Plug

Halliburton's drillable bridge plug, the EZ Drill®, offers improved operating performance at higher temperatures and pressures and faster removal from a well by either rotary or cable tool drilling methods.

It runs in faster, because of the smaller OD of the tool, and drilling out time is significantly faster than comparable products. The new EZ Drill bridge plug has main structural parts composed of controlled cast iron, to enhance uniform drillability.

Important design features include:

- High temperature and pressure sealing element. This consists of a relatively soft rubber center packer between harder rubber rings and expandable metal shoes. The metal shoes expand with the rubber packer, to help prevent extrusion of the packers over the wedges at high pressures and temperatures.
- Smaller tool diameter. The design of the packer element permits the use of smaller tool diameters so that only one tool is required for a given casing size, regardless of its weight (wall thickness). This design also offers greater clearance with casing ID and, therefore, less danger of premature setting while going in the hole.
- Top drilling. When the top portion of the EZ Drill bridge plug is drilled into, the mandrel opening is penetrated before the upper slips are reached, allowing any pressure buildup from below to bleed off sufficiently and be relieved through the mandrel into the casing. This is an integral feature of the tool's design and does not require an adapter.
- Floating mandrel. The mandrel upon which all external parts are mounted is free to move with pressure. Forces due to well pressures, either from above or below the bridge plug, are thus applied directly to the slips and packer element, causing it to set tighter as pressures increase.
- Junk pusher. The lower end of the EZ Drill bridge plug is made to help prevent cuttings and other debris from fouling the tool slips, to prevent premature setting while going in the hole.
- Quick removal. Each part of the EZ Drill bridge plug is designed for quick removal from the well with either rotary or cable tools, i.e.:
  A. Material used for each component is selected for the maximum drillability permitted by its strength requirements.
  B. Wedges, metal shoes and packer element are locked together to help prevent their spinning while being drilled.
  C. Slips are grooved so that they will be broken up in small pieces, which can be circulated away from the bit. The holding ability of the slips is not impaired.

EZ Drill bridge plugs are designed primarily to be set on electrical wire line—or tubular goods with necessary modifications.

EZ Drill® Squeeze Packers

EZ Drill® Squeeze Packer with spring loaded back-pressure valve

EZ Drill SV® Squeeze Packer with pressure balanced sliding valve

Halliburton Services field proven EZ Drill® Squeeze Packers permit faster removal from the well by either rotary or cable tool methods without reduction in operating performance at even elevated temperatures and pressures.

In addition, OD of the tool is less and ID of the tool is greater than comparable products now in use, permitting faster running-in and quicker displacement of fluids at less pressure. Drilling out time is significantly quicker than comparable products.

The EZ Drill squeeze packer contains a spring loaded back pressure valve. The main structural parts of this tool are made of controlled cast iron.

EZ Drill® Packer

(Cont'd)

The EZ Drill SV squeeze packer contains a pressure-balanced sliding valve for control of fluid movement in the well. As with the other type, the main structural parts of this tool are made of controlled cast iron.

DESIGN FEATURES COMMON TO BOTH TYPES INCLUDE:

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- Smaller tool diameter. The design of the packer element permits the use of smaller tool diameters, thus less danger of premature setting while going in hole.
- Floating Mandrel. The mandrel upon which all the external parts are mounted is free to move with pressure. Forces due to well pressures, either from above or below the packer, are thus applied directly to the slips and packer element, causing it to set tighter as pressures are increased.
- Junk Pusher. The lower end of EZ Drill® packers is made to help prevent cuttings and other debris from fouling the tool slips, causing premature setting while going in the hole. The "Junk Pusher" is ribbed to provide good anchor in cement to resist the tool's rotation as it is being drilled out.
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Fluid movement through EZ Drill SV® squeeze packers is controlled with a pressure-balanced "Sliding Valve" which replaces the spring-loaded back-pressure valve. Operated by reciprocation of the tubing, the valve may be opened or closed, as desired, before and after squeeze cementing. Fluid movement through the valve will not affect its position. When the valve is in the up position, the packer is sealed against fluid or gas movement in either direction. When the valve is in the down position, fluid may be pumped through the packer or pressure may be relieved from below it. When the valve is open an unrestricted fluid passage is provided through side ports in the tool. With interlocking valve fingers not exposed to cement slurry, the sliding valve is not likely to be cemented in place.

EZ Drill® and EZ Drill SV® squeeze packers may be set on tubing (drill pipe), electrical wire line, or sand line. They may be converted for use as bridge plugs (no fluid movement in either direction through the tool) before running in the hole.

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	802.355		11¾	42 —65	9.87	11.084
	802.358		13⅜	48 —72	11.68	12.715

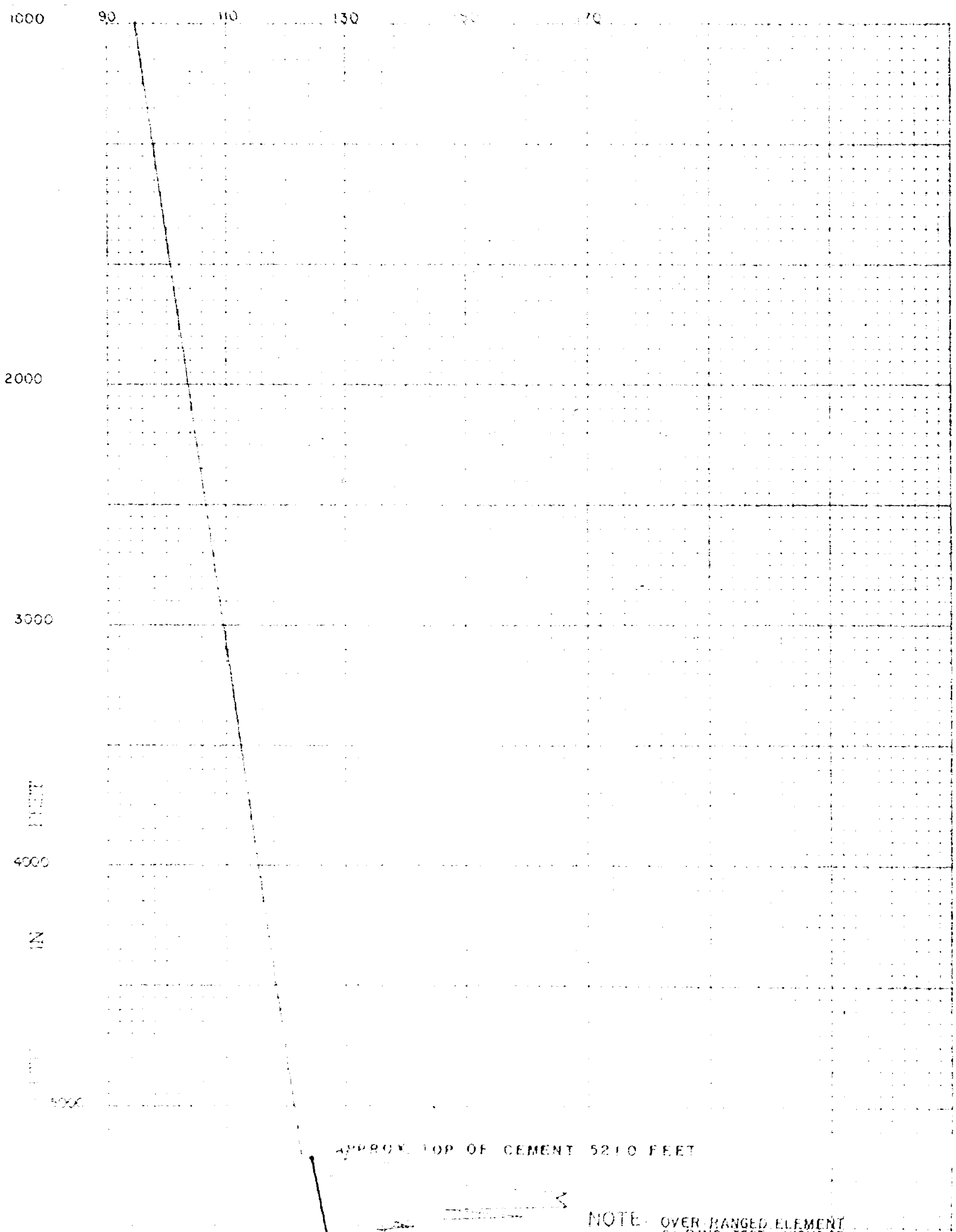
Phillips Petroleum Company
Peterson "H"

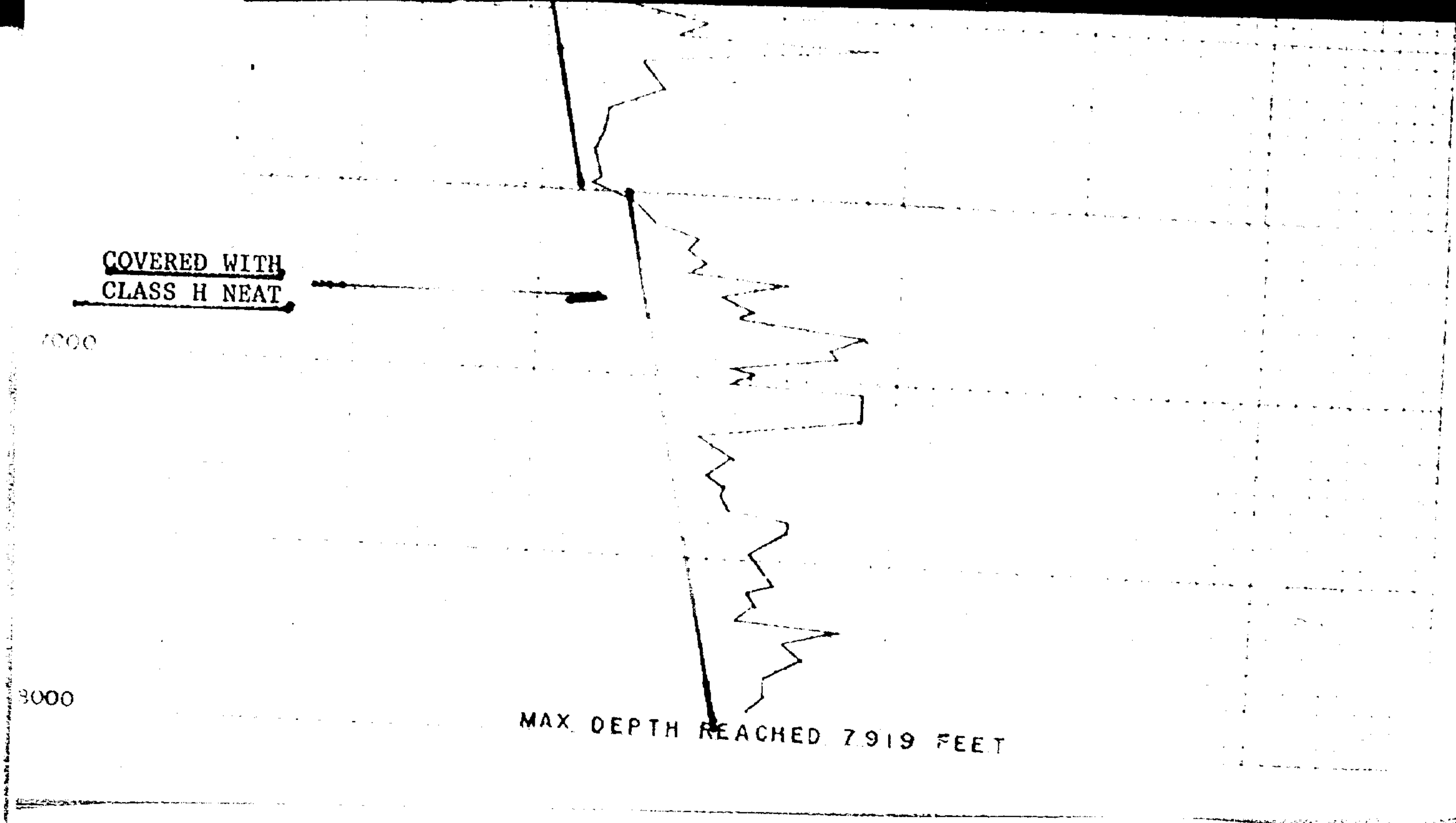
1

Survey run by: J. W. A

Datum: Kelly Drive Bushing

Well data: 450 sacks Class H Cement, and 350 sacks Class H Cement with Diacel D behind 3000 feet of 5 1/2 inch casing in a 7 7/8 inch hole.




COVERED WITH
CLASS H NEAT
8000
MAX DEPTH REACHED 7919 FEET

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

NATURAL RESOURCES GROUP
Exploration and Production

RECEIVED
JUL 08 1981
OIL CONSERVATION DIVISION
SANTA FE

July 2, 1981

Application for SWD Peterson "H" No. 1,
Unit M, Section 29, T-5-S, R-33-E,
Roosevelt County, New Mexico

Case 7318

State of New Mexico (3)
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico

Attention: Mr. Oscar A. Simpson
Water Resource Specialist

Gentlemen:

In response to subject letter of June 15, 1981, the following data is submitted.

1. A request has been submitted to schedule captioned application for examiner's hearing on July 29, 1981.
2. Enclosed is a detailed description and schematic of the retainer set at 7499'.
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The well completion, casing and cementing records will be detailed/discussed in the hearing on this application.

Very truly yours,

Harold McLemore

Harold McLemore
Regulation and Proration Supervisor

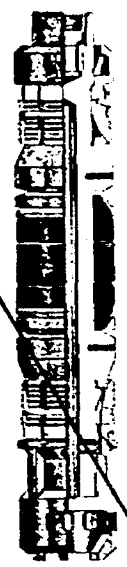
THM:glr
Enclosure

cc: Mr. Joe V. Peacock (2)
New Mexico Dept. of Energy and Minerals
Oil Conservation Division
Box 1980
Hobbs, New Mexico 88240

Enclosure

HALLIBURTON SERVICES

EZ Drill® Bridge Plug



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It runs in faster, because of the smaller OD of the tool, and drilling out time is significantly faster than comparable products. The new EZ Drill bridge plug has main structural parts composed of controlled cast iron, to enhance uniform drillability.

Important design features include:

- High temperature and pressure sealing element. This consists of a relatively soft rubber center packer between harder rubber rings and expandable metal shoes. The metal shoes expand with the rubber packer, to help prevent extrusion of the packers over the wedges at high pressures and temperatures.
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- Top drilling. When the top portion of the EZ Drill bridge plug is drilled into, the mandrel opening is penetrated before the upper slips are reached, allowing any pressure buildup from below to bleed off sufficiently and be relieved through the mandrel into the casing. This is an integral feature of the tool's design and does not require an adapter.
- Floating mandrel. The mandrel upon which all external parts are mounted is free to move with pressure. Forces due to well pressures, either from above or below the bridge plug, are thus applied directly to the slips and packer element, causing it to set tighter as pressures increase.
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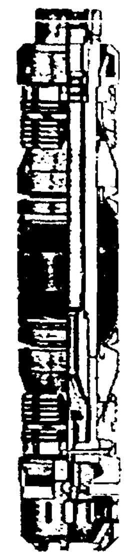
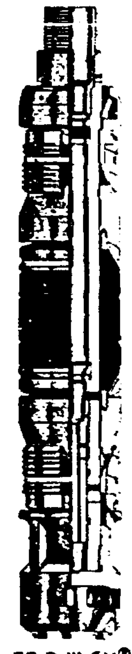
EZ Drill® Squeeze Packers



EZ Drill® Squeeze Packer with spring loaded back-pressure valve



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(Cont'd)

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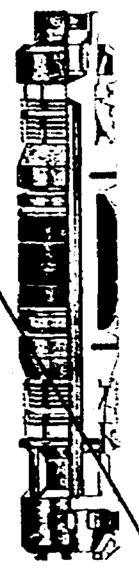

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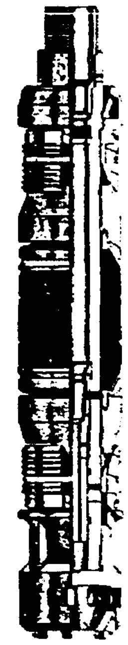

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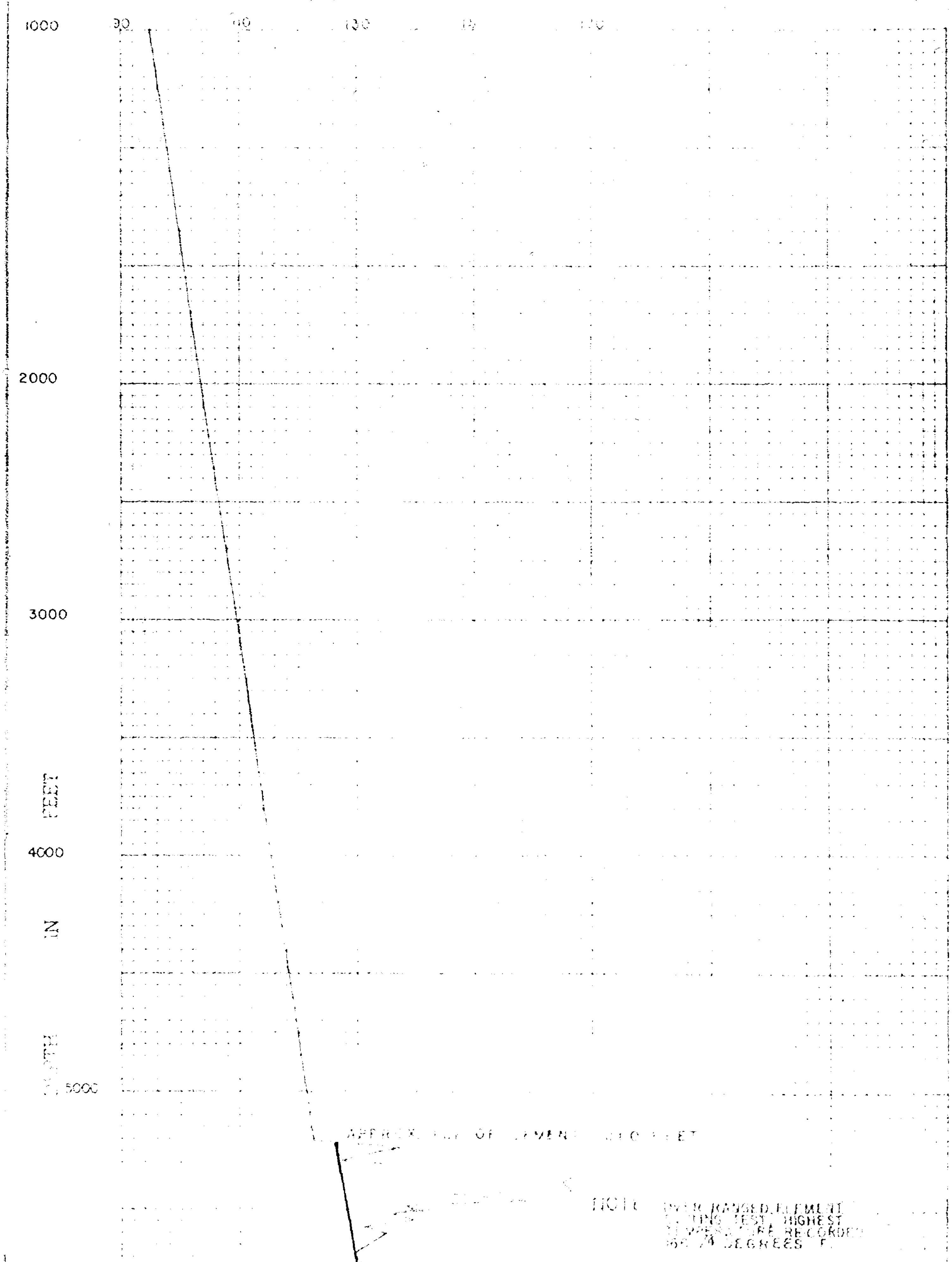
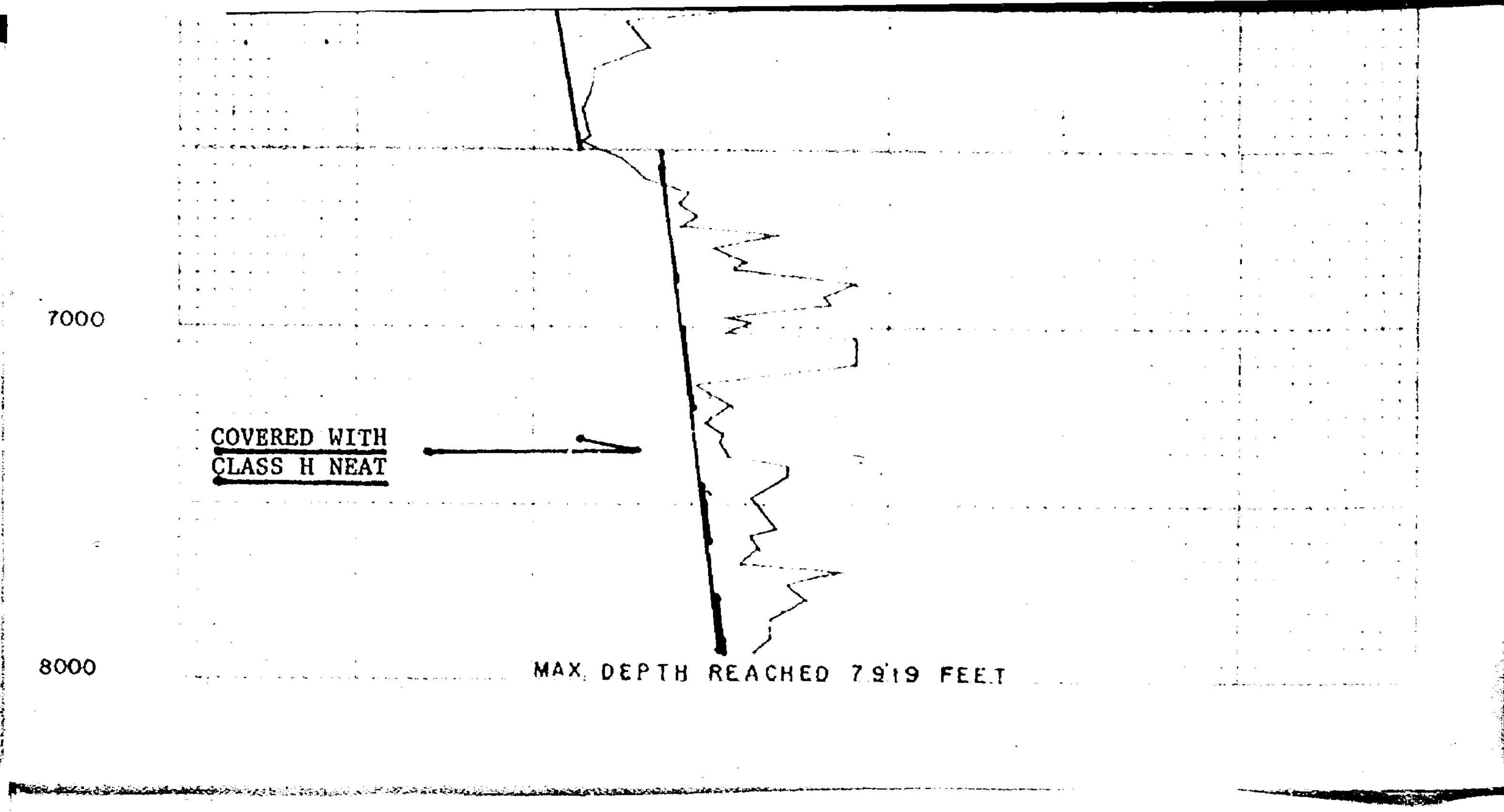
PHILLIPS PETROLEUM COMPANY




7000
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BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

June 15, 1981

Phillips Petroleum Company
4001 Penbrook
Odessa, Texas 79762

Attention: T. Harold McLemore

Re: Application for SWD
Peterson "H" No. 1,
Unit M, Section 29,
Township 5 South, Range
33 East, Roosevelt County,
New Mexico

Dear Sir:

In response to your application for SWD for Peterson "H" Well No. 1, Unit M, Section 29, Township 5 South, Range 33 East, Roosevelt County, New Mexico, we have received an objection to your application from Enserch Exploration. Therefore, your application for a hearing date must be in by June 23 for the July 15 hearing or July 7 for the July 29 hearing.

Also additional information and explanation is requested for the SWD application:

1. Submit a description of the retainer at -7499.

2. Describe what lies between -7499 and -7616, if anything, and what does the dashed area between -7499 and -7616 represent.

3. Send a copy of the temperature survey log run on the Peterson "H" No. 1 well.

Sincerely,

OSCAR A. SIMPSON
Water Resource Specialist

OAS/fd

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

NATURAL RESOURCES GROUP
Exploration and Production

June 2, 1981

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New Mexico Department of Energy and Minerals
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87510

Attention: Mr. R. L. Stametz
Technical Support Chief

Gentlemen:

In response to captioned letter of April 20, 1981, and to supplement our original application, the following data is submitted:

1. Lease and area plat reflecting (a) lessees, leases, and wells with producing formations within a 1/2 mile radius of the Peterson "H" No. 1, and (b) lessee identification within a two mile radius of the Peterson "H" No. 1.

2. Injected and disposed water will be that produced from the Fusselman and Pennsylvanian reservoirs, South Peterson Pool area. Inasmuch as the Wolfcamp is the disposal zone, original analyses of Wolfcamp, Fusselman, and Pennsylvanian produced waters was to establish analytical comparison and compatibility of these waters.

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5. Well bore schematic of Peterson "H" No. 1, with location and size of plug(s) below the injection interval.

We trust these data will allow timely processing of this application. If additional information is required, please advise.

Very truly yours,

T. Harold McLemore
T. Harold McLemore
Regulation & Proration Supervisor

THM:skm
Attachments

cc: New Mexico Department of Energy and Minerals
Oil Conservation Division
Box 1980
Hobbs, New Mexico 88240

Mr. G. E. Peterson
East Star Route
Elida, New Mexico 88116

Ensearch Exploration, Inc.
Box 4815
Midland, Texas 79702

Attachments

WELLS WITHIN A RADIUS OF TWO MILES

OF PETERSON H NO. 1

Roosevelt County, New Mexico

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION
AMOCO	Lambirth #1	Unit B; Section 30 T-5-S; R-33-E	Plugged & Abandoned
AMOCO	Peterson "D" #1	Unit B; Section 19 T-5-S; R-33-E	Pennsylvanian
AMOCO	Radcliff #1	Unit M; Section 17 T-5-S; R-33-E	Pennsylvanian
AMOCO	Radcliff #1	Unit I; Section 24 T-5-S; R-32-E	Plugged & Abandoned
AMOCO	Swearingen "A" #1	Unit J; Section 19 T-5-S; R-33-E	Pennsylvanian
AMOCO	Swearingen "B" #1	Unit F; Section 20 T-5-S; R-33-E	Plugged & Abandoned
AMOCO	Swearingen "B" #2	Unit D; Section 20 T-5-S; R-33-E	Plugged & Abandoned
AMOCO	Swearingen "B" #3	Unit L; Section 20 T-5-S; R-33-E	Pennsylvanian
AMOCO	Swearingen "B" #4	Unit E; Section 20 T-5-S; R-33-E	Pennsylvanian
Energy Reserves Group	Bledsoe #2	Unit A; Section 11 T-6-S; R-33-E	Pennsylvanian
Enserch	Lambirth #1	Unit K; Section 31 T-5-S; R-33-E	Fusselman
Enserch	Lambirth #3	Unit G; Section 31 T-5-S; R-33-E	Pennsylvanian
Enserch	Lambirth #4	Unit O; Section 31 T-5-S; R-33-E	Pennsylvanian
Enserch	Lambirth #5	Unit N; Section 1 T-6-S; R-33-E	Plugged & Abandoned
Enserch	Lambirth #6	Unit D; Section 31 T-5-S; R-33-E	Fusselman
Enserch	Lambirth #8	Unit L; Section 30 T-5-S; R-33-E	Fusselman

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION
Enserch	Lambirth #9	Unit P; Section 25 T-5-S; R-32-E	Fusselman
Enserch	Lambirth #10	Unit D; Section 31 T-5-S; R-33-E	Fusselman
Enserch	Lambirth #11	Unit M; Section 1 T-6-S; R-33-E	Not Completed
Enserch	Rader #1	Unit L; Section 32 T-5-S; R-33-E	Plugged & Abandoned
Phillips	Goldston "A" #1	Unit P; Section 36 T-5-S; R-32-E	Plugged & Abandoned
Phillips	Goldston "A" #2	Unit P; Section 36 T-5-S; R-32-E	Plugged & Abandoned
Phillips	Lambirth "A" #1	Unit J; Section 31 T-5-S; R-33-E	Fusselman
Phillips	Lambirth "A" #2	Unit F; Section 31 T-5-S; R-33-E	Fusselman
Phillips	Lambirth "A" #3	Unit N; Section 31 T-5-S; R-33-E	Fusselman
Phillips	Lambirth "A" #5	Unit M; Section 30 T-5-S; R-33-E	Pennsylvanian
Phillips	Lambirth "B" #1	Unit P; Section 2 T-6-S; R-33-E	Pennsylvanian
Phillips	Lambirth State #1	Unit H; Section 36 T-5-S; R-32-E	Fusselman

WELLS WITHIN A RADIUS OF 1/2 MILE

OF PETERSON "H" NO. 1

Roosevelt County, New Mexico

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION	TD	PRODUCING INTERVAL
Enserch	Lambirth #7	Unit P; Sec. 30 T-5-S; R-33-E 660' FEL and 510' FSL	Fusselman	7872'	7826-7829.5'

CASING STRINGS	SETTING DEPTHS	SACKS CEMENT USED	CEMENT TOPS
13-3/8"	358'	300	Surface
8-5/8"	1991'	750	Surface
5-1/2"	7858'	450	4878'

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION	TD	PRODUCING INTERVAL
Enserch	Rader #2	Unit E; Sec. 32 T-5-S; R-33-E 1880' FNL and 560' FWL	Montoya proposed for salt water injection	7991	Proposed injection interval 7902-7930'

CASING STRINGS	SETTING DEPTHS	SACKS CEMENT USED	CEMENT TOPS
13-3/8"	356'	250	Circ
9-5/8"	1981'	914	Circ
5-1/2"	8000'	350	6850'

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION	TD	PRODUCING INTERVAL
Phillips	Lambirth "A" #4	Unit A; Sec. 31 T-5-S; R-33-E 560' FNL and 560' FEL	Fusselman	8000'	7814-7818' and 7821-7828'

CASING STRINGS	SETTING DEPTHS	SACKS CEMENT USED	CEMENT TOPS
13-3/8"	360'	420'	Circ 95 sxs surface
8-5/8"	3500'	780	Circ 140 sxs sur face
5-1/2"	8000'	960	4200'

PLUGGED AND ABANDONED WELL WITHIN
ONE HALF MILE OF PETERSON "H" NO. 1

Roosevelt County, New Mexico

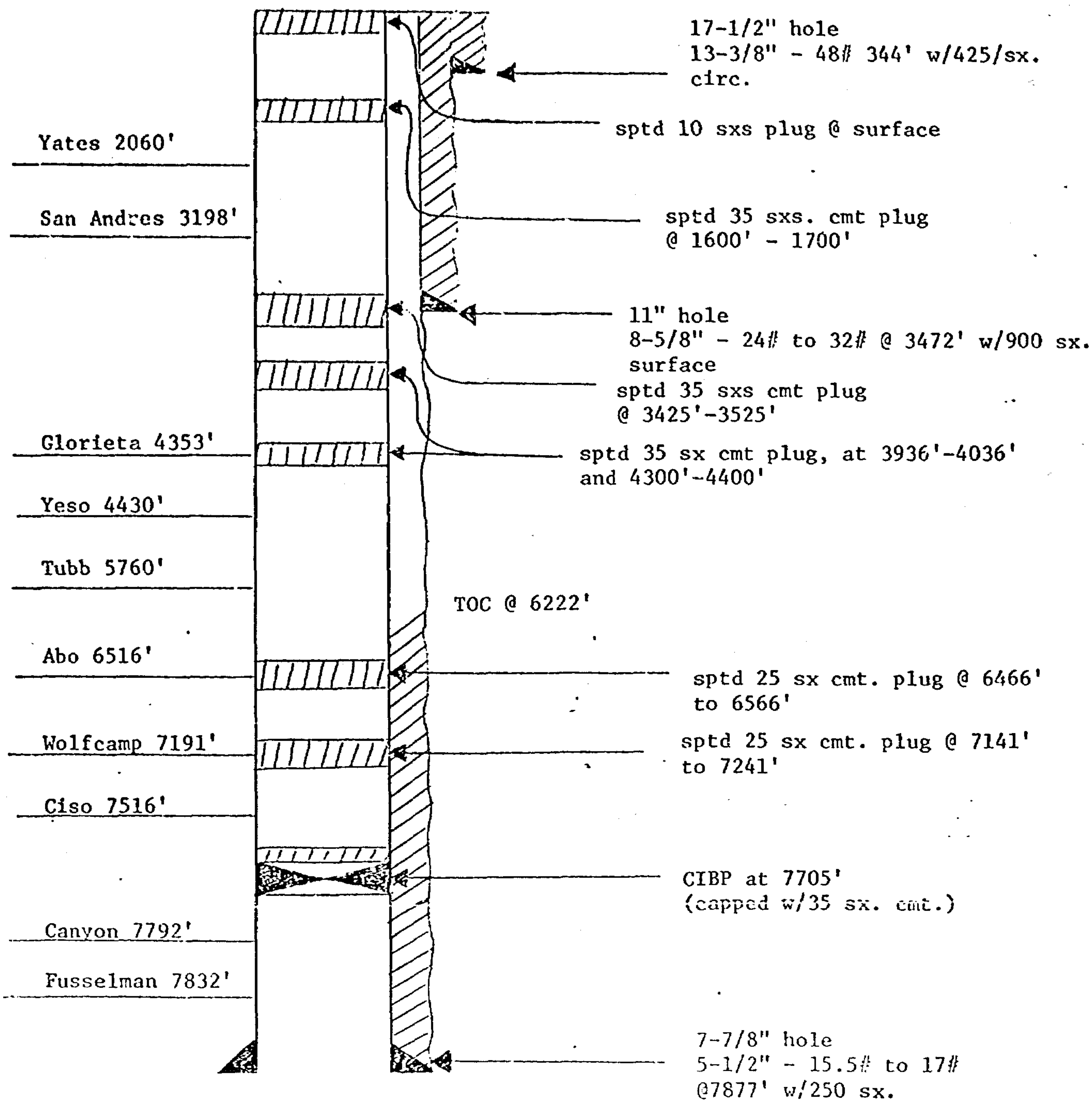
OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION	TD	PRODUCING INTERVAL
AMOCO	Peterson "B" #1	Unit E; Sec. 29 T-5-S; R-33-E 1980' FSL and 660' FWL	Plugged & Abandoned	7852'	7562-7692' and 7718-7768'

CASING STRINGS	SETTING DEPTHS	SACKS CEMENT USED	CEMENT TOPS
13-3/8"	344'	425	Surface
8-5/8"	3472'	900	Surface
5-1/2"	7877'	250	6222'

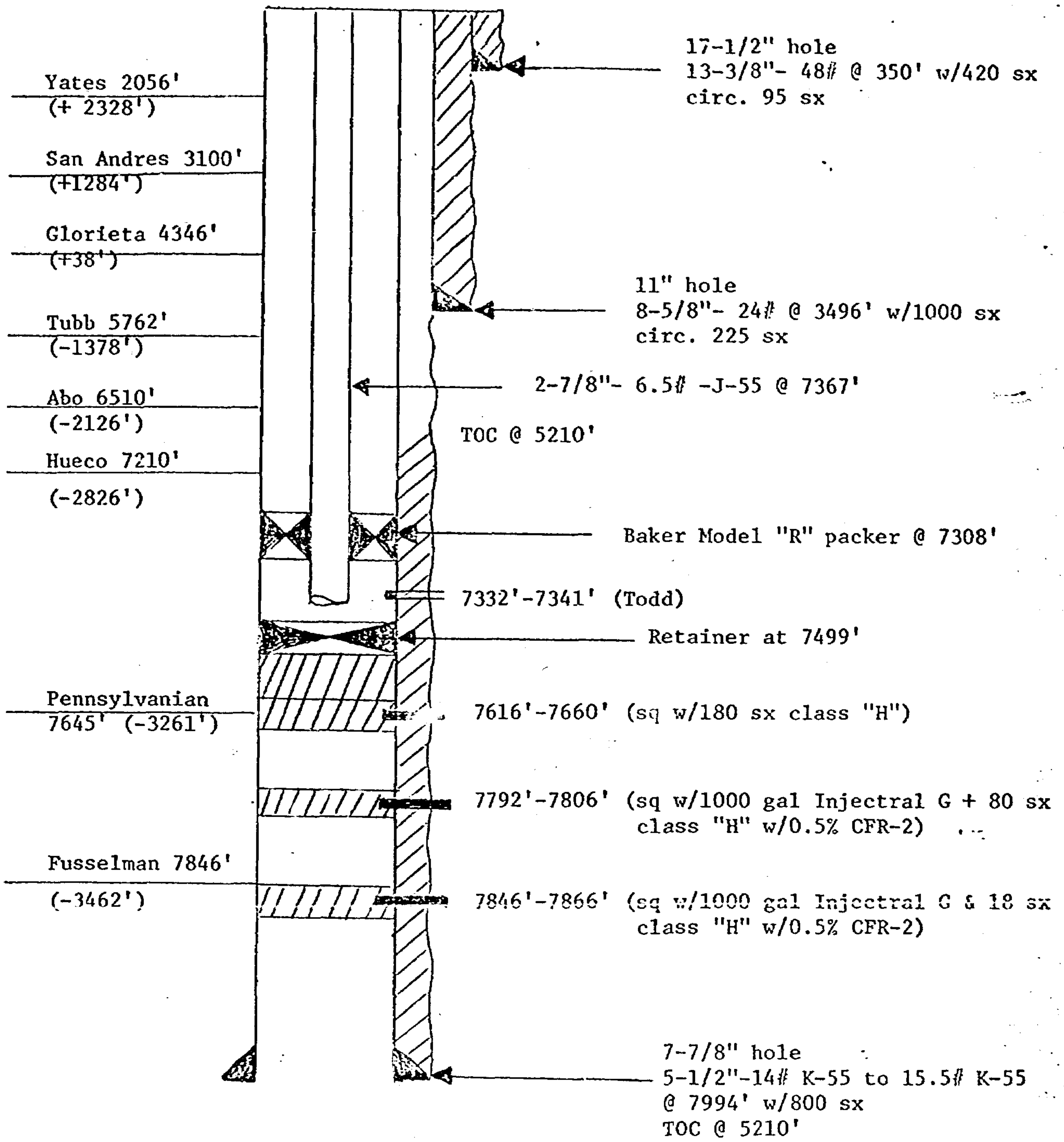
SIZE OF PLUG	LOCATION OF PLUG	DATE OF ABANDONMENT
CIBP capped w/35 sxs cmt.	7705'	2-17-76
Sptd 25 sxs cmt plug.	7141-7241'	
Sptd 25 sxs cmt plug.	6466-6566'	
Sptd 35 sxs cmt plug.	4300-4400' and 3936-4036'	
Sptd 35 sxs cmt plug.	3425-3525'	
Sptd 35 sxs cmt plug.	1600-1700'	
Sptd 10 sxs plug	At surface	

Date of Abandonment
2-17-76

AMOCO - Peterson "B" #1
1980' FSL and 660' FWL
Unit E; Section 29
T-5-S; R-33-E
Roosevelt Co., New Mexico



Peterson "H" No. 1
660' FSL and 510' FWL
Section 29, T-5-S, R-33-E
Roosevelt County, New Mexico



PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

NATURAL RESOURCES GROUP
Exploration and Production

June 2, 1981

Application for SWD Peterson "H" No. 1,
Unit M, Section 29, T-5-S, R-33-E,
Roosevelt County, New Mexico

New Mexico Department of Energy and Minerals
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87510

Attention: Mr. R. L. Stametz
Technical Support Chief

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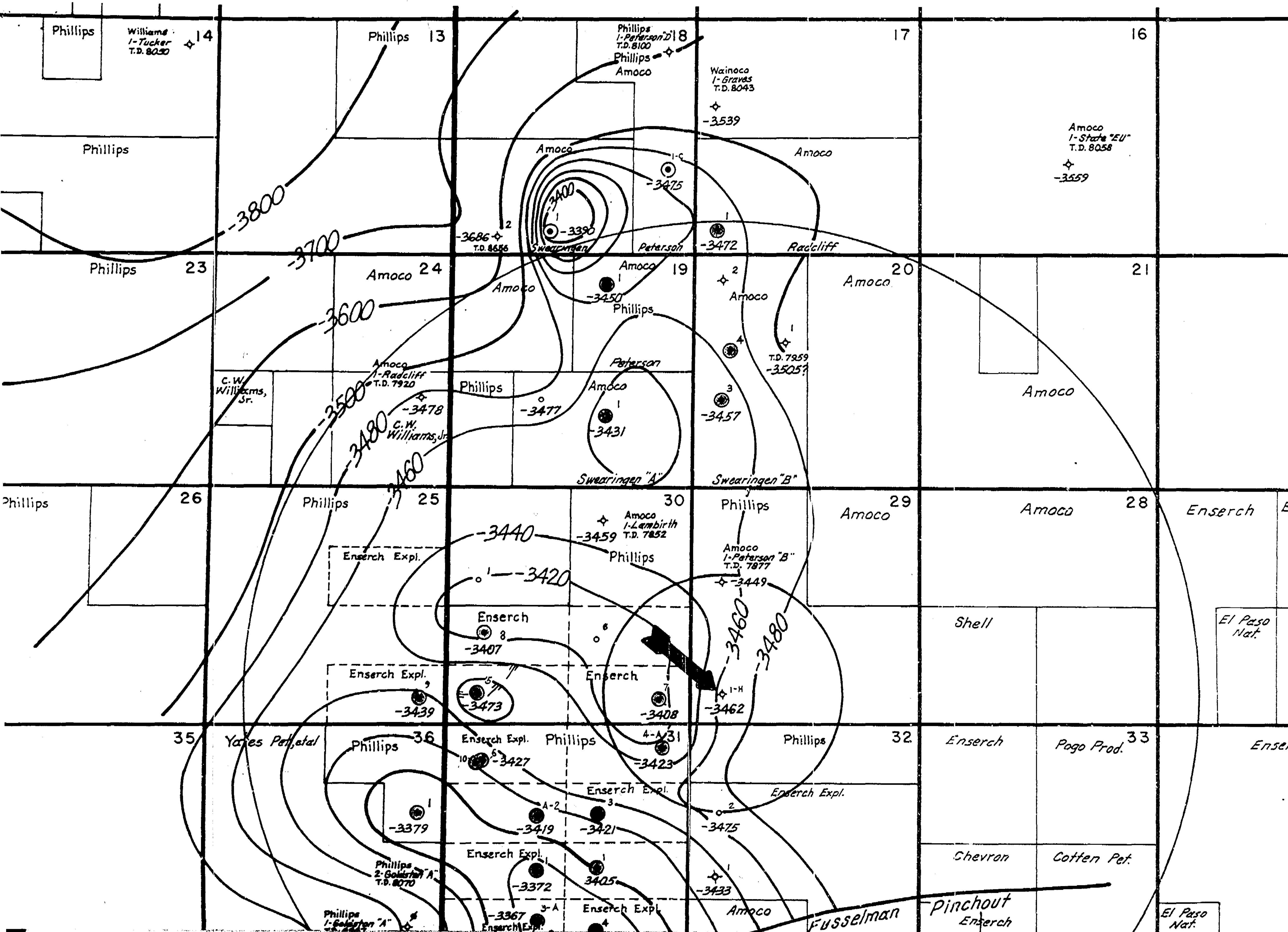
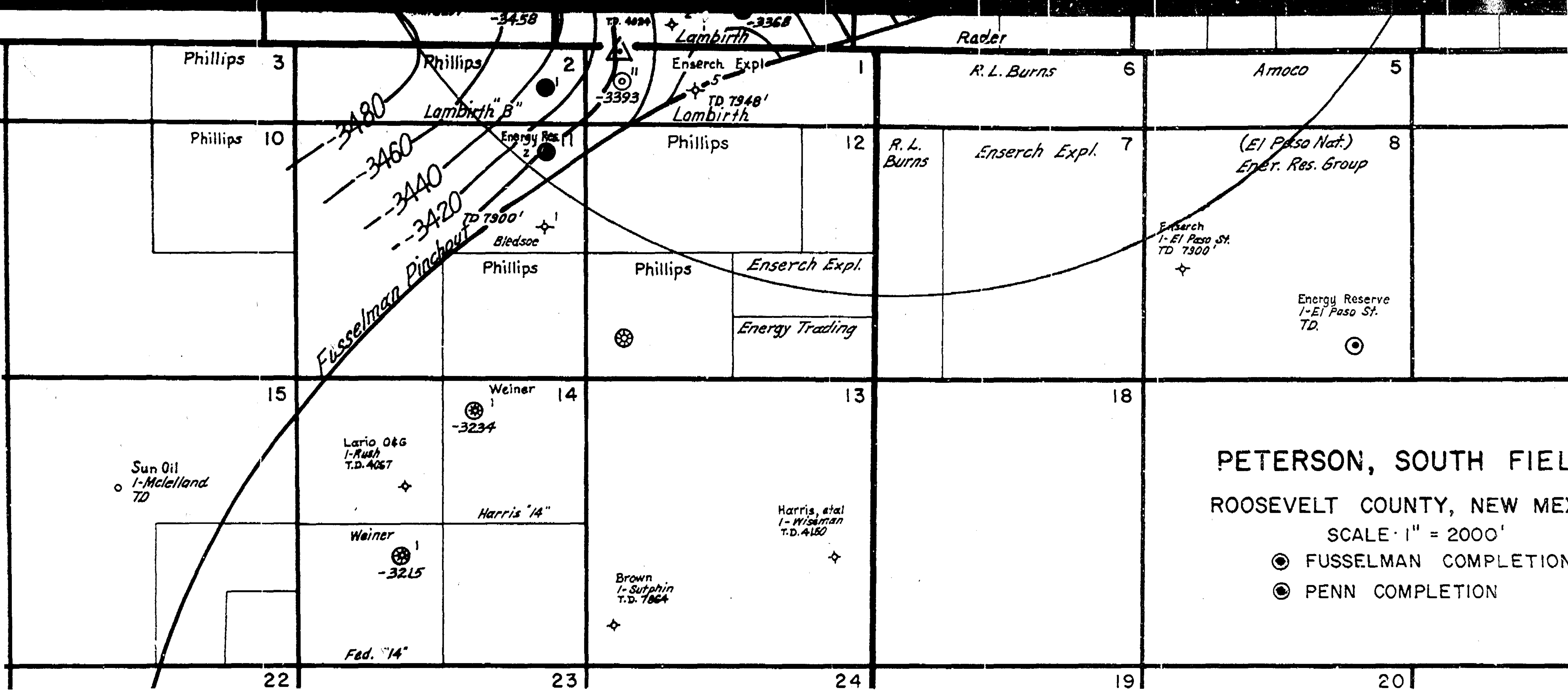

Phillips
Williams
1-Tucker
T.D. 8050
14
Phillips
13
Phillips
1-Peterson "D"
T.D. 8100
18
Phillips
Amoco
17
16
Wainoco
1-Graves
T.D. 8043
-3539
Amoco
1-State "EU"
T.D. 8058
-3559
Phillips
Amoco
Amoco
-3475
-3800
-3700
-3400
-3390
-3686
T.D. 8656
Swearingen
Peterson
-3472
Radcliff
Phillips
23
Amoco
24
Amoco
19
20
Amoco
21
-3600
Amoco
-3450
Phillips
Amoco
T.D. 7959
-3505?
Amoco
1-Radcliff
T.D. 7920
C.W. Williams, Sr.
Phillips
Peterson
Amoco
-3500
-3478
-3477
-3457
Amoco
-3480
C.W. Williams, Jr.
-3431
-3460
Swearingen "A"
Swearingen "B"
Phillips
26
Phillips
25
30
Phillips
Amoco
29
Amoco
28
Enserch
Amoco
1-Lambirth
T.D. 7852
-3459
-3440
Enserch Expl.
Phillips
Amoco
1-Peterson "B"
T.D. 7877
-3449
-3420
Enserch
Shell
El Paso Nat.
-3407
Enserch Expl.
Enserch
-3473
-3439
-3462
-3408
35
Yates Pet. et al
Phillips
36
Enserch Expl.
Phillips
31
Phillips
32
Enserch
Pogo Prod.
33
-3427
-3423
Enserch Expl.
Enserch Expl.
-3379
-3419
-3421
-3475
Enserch Expl.
Phillips
2-Goldston "A"
T.D. 8070
3405
-3372
-3433
Chevron
Cotten Pet.
-3367
Enserch Expl.
Phillips
1-Goldston "A"
Enserch Expl.
Amoco
Fusselman
Pinchout
Enserch
El Paso Nat.



PETERSON, SOUTH FIEL
ROOSEVELT COUNTY, NEW ME
SCALE · 1" = 2000'
FUSSELMAN COMPLETION
PENN COMPLETION
Fusselman Pinchout
-3480
-3460
-3440
-3420
-3458
-3393
-3368
-3234
-3215
Phillips
Lambirth "B"
Lambirth
Enserch Expl
TD 7948'
TD 7900'
Bledsoe
Energy Res.
Rader
R. L. Burns
Amoco
Enserch Expl.
(El Paso Nat.)
Ener. Res. Group
Enserch
1-El Paso St.
TD 7300'
Energy Reserve
1-El Paso St.
TD.
Energy Trading
Weiner
Harris "14"
Lario O&G
1-Rush
T.D. 4067
Sun Oil
1-Mclelland
TD
Fed. "14"
Brown
1-Sutphin
T.D. 7864
Harris, etal
1-Wiseman
T.D. 4150
3
10
2
11
1
12
6
7
5
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14
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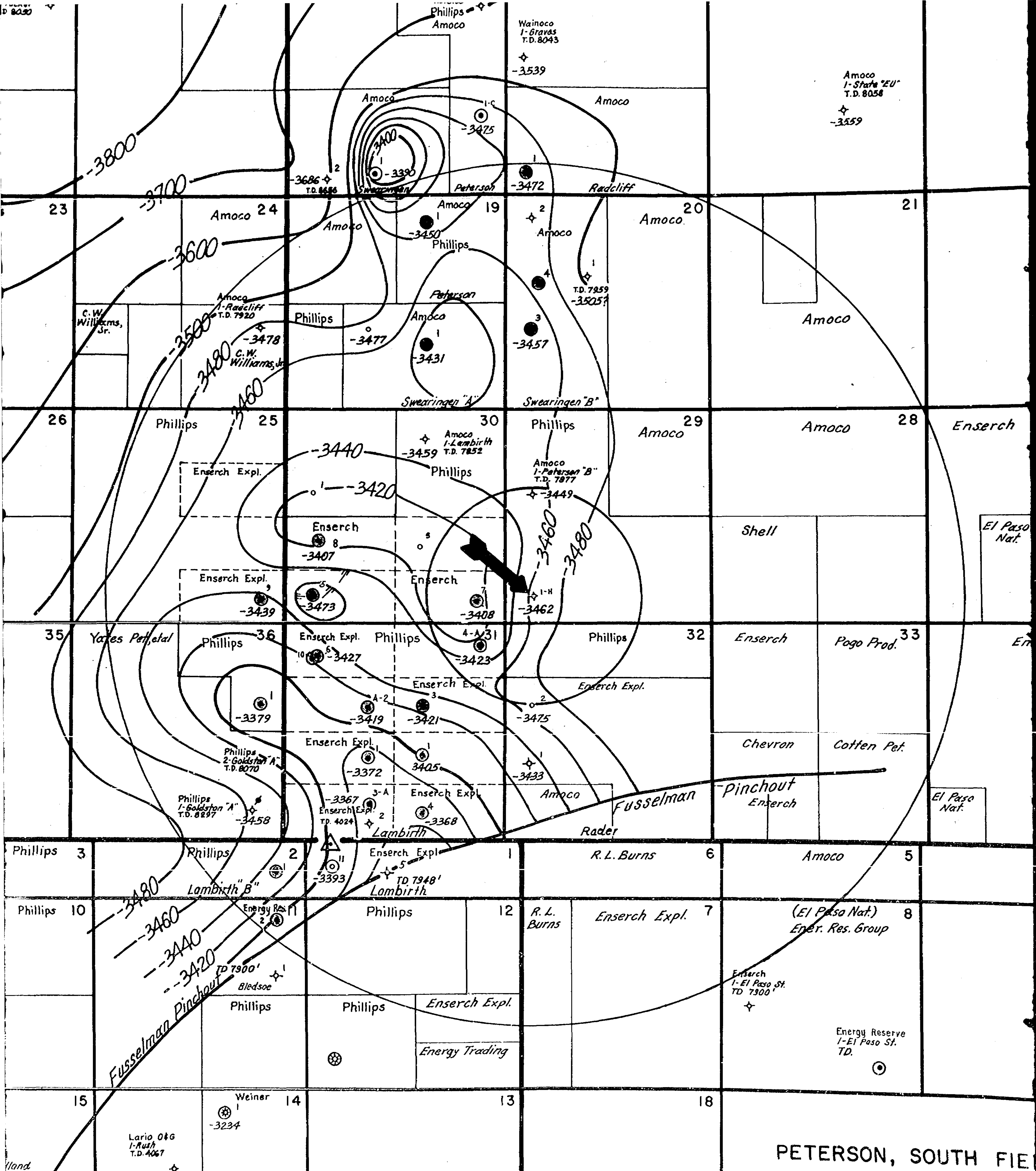
20



PETERSON, SOUTH FIE
Fusselman Pinchout
Fusselman Pinchout
-3800
-3700
-3600
-3500
-3480
-3460
-3440
-3420
-3400
Amoco
Phillips
Enserch
Enserch Expl.
Shell
Chevron
Cotten Pet.
Pogo Prod.
El Paso Nat.
R.L. Burns
Yates Pet. et al
C.W. Williams, Sr.
C.W. Williams, Jr.
Energy Trading
Swearingen "A"
Swearingen "B"
Lambirth
Lambirth "B"
Peterson
Radcliff
Rader
Bledsoe
Weiner
Lario O&G 1-Rush T.D. 4067
Wainoco 1-Graves T.D. 8043
Amoco 1-State "EU" T.D. 8058
Amoco 1-Radcliff T.D. 7920
Amoco 1-Lambirth T.D. 7852
Amoco 1-Peterson "B" T.D. 7877
Phillips 2-Goldston "A" T.D. 8070
Phillips 1-Goldston "A" T.D. 8297
Enserch 1-El Paso St. TD 7300'
Energy Reserve 1-El Paso St. TD.
(El Paso Nat.) Ener. Res. Group

WELLS WITHIN A RADIUS OF TWO MILES

OF PETERSON H NO. 1

Roosevelt County, New Mexico

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION
AMOCO	Lambirth #1	Unit B; Section 30 T-5-S; R-33-E	Plugged & Abandoned
AMOCO	Peterson "D" #1	Unit B; Section 19 T-5-S; R-33-E	Pennsylvanian
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AMOCO	Radcliff #1	Unit I; Section 24 T-5-S; R-32-E	Plugged & Abandoned
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AMOCO	Swearingen "B" #1	Unit F; Section 20 T-5-S; R-33-E	Plugged & Abandoned
AMOCO	Swearingen "B" #2	Unit D; Section 20 T-5-S; R-33-E	Plugged & Abandoned
AMOCO	Swearingen "B" #3	Unit L; Section 20 T-5-S; R-33-E	Pennsylvanian
AMOCO	Swearingen "B" #4	Unit E; Section 20 T-5-S; R-33-E	Pennsylvanian
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Enserch	Lambirth #3	Unit G; Section 31 T-5-S; R-33-E	Pennsylvanian
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Enserch	Lambirth #5	Unit N; Section 1 T-6-S; R-33-E	Plugged & Abandoned
Enserch	Lambirth #6	Unit D; Section 31 T-5-S; R-33-E	Fusselman
Enserch	Lambirth #8	Unit L; Section 30 T-5-S; R-33-E	Fusselman

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Enserch	Lambirth #10	Unit D; Section 31 T-5-S; R-33-E	Fusselman
Enserch	Lambirth #11	Unit M; Section 1 T-6-S; R-33-E	Not Completed
Enserch	Rader #1	Unit L; Section 32 T-5-S; R-33-E	Plugged & Abandoned
Phillips	Goldston "A" #1	Unit P; Section 36 T-5-S; R-32-E	Plugged & Abandoned
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Phillips	Lambirth "A" #3	Unit N; Section 31 T-5-S; R-33-E	Fusselman
Phillips	Lambirth "A" #5	Unit M; Section 30 T-5-S; R-33-E	Pennsylvanian
Phillips	Lambirth "B" #1	Unit P; Section 2 T-6-S; R-33-E	Pennsylvanian
Phillips	Lambirth State #1	Unit H; Section 36 T-5-S; R-32-E	Fusselman

WELLS WITHIN A RADIUS OF 1/2 MILE

OF PETERSON "H" NO. 1

Roosevelt County, New Mexico

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION	TD	PRODUCING INTERVAL
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8-5/8"	1991'	750	Surface
5-1/2"	7858'	450	4878'

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Enserch	Rader #2	Unit E; Sec. 32 T-5-S; R-33-E 1880' FNL and 560' FWL	Montoya proposed for salt water injection	7991	Proposed injection interval 7902-7930'

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CASING STRINGS	SETTING DEPTHS	SACKS CEMENT USED	CEMENT TOPS
13-3/8"	360'	420'	Circ 95 sxs surface
8-5/8"	3500'	780	Circ 140 sxs sur face
5-1/2"	8000'	960	4200'

PLUGGED AND ABANDONED WELL WITHIN
ONE HALF MILE OF PETERSON "H" NO. 1

Roosevelt County, New Mexico

OPERATOR	WELL NAME AND NO.	LOCATION	PRODUCING FORMATION	TD	PRODUCING INTERVAL
AMOCO	Peterson "B" #1	Unit E; Sec. 29 T-5-S; R-33-E 1980' FSL and 660' FWL	Plugged & Abandoned	7852'	7562-7692' and 7718-7768'

CASING STRINGS	SETTING DEPTHS	SACKS CEMENT USED	CEMENT TOPS
13-3/8"	344'	425	Surface
8-5/8"	3472'	900	Surface
5-1/2"	7877'	250	6222'

SIZE OF PLUG	LOCATION OF PLUG	DATE OF ABANDONMENT
CIBP capped w/35 sxs cmt.	7705'	2-17-76
Sptd 25 sxs cmt plug.	7141-7241'	
Sptd 25 sxs cmt plug.	6466-6566'	
Sptd 35 sxs cmt plug.	4300-4400' and 3936-4036'	
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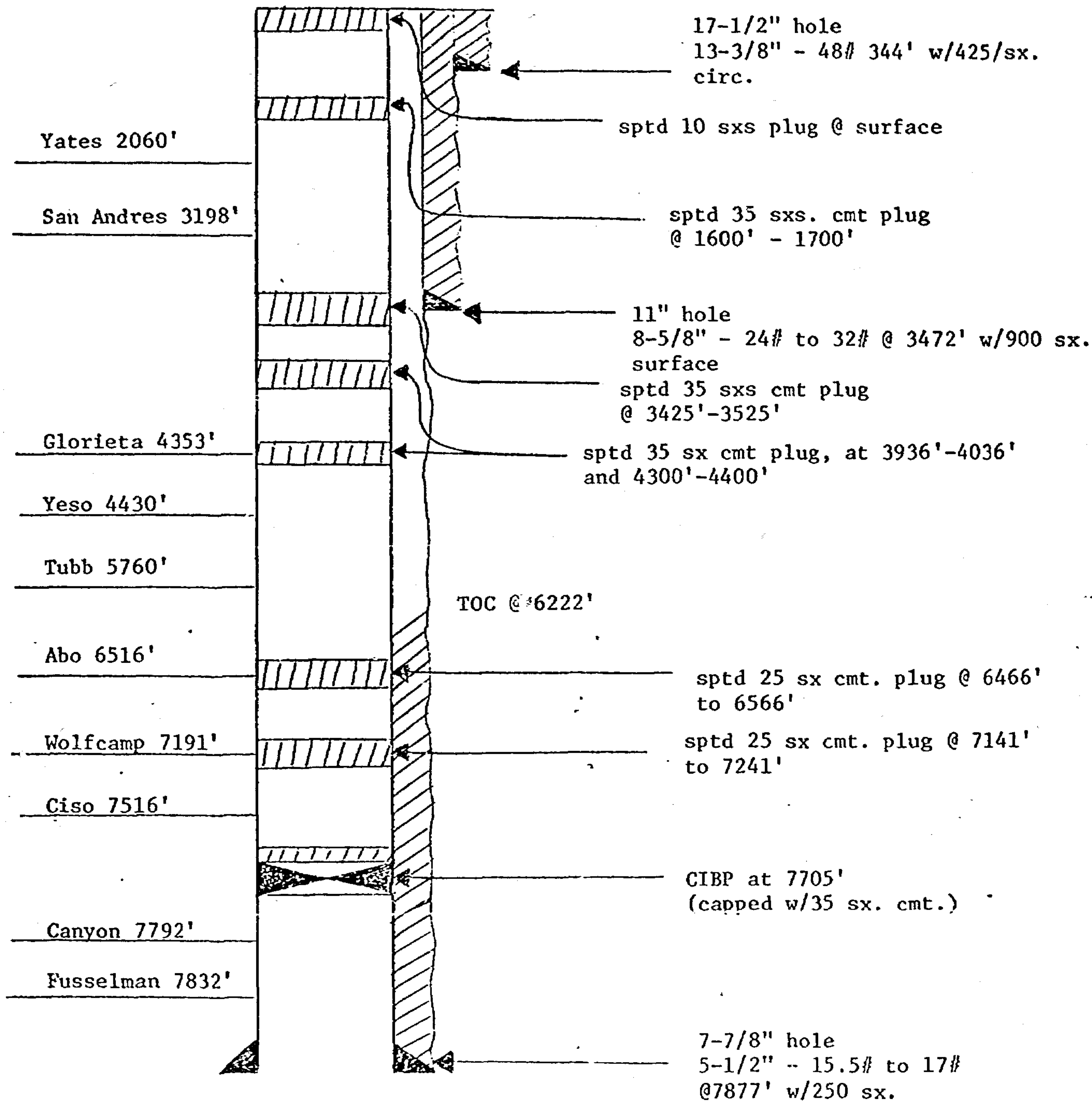
Sptd 35 sxs cmt plug.	1600-1700'	
Sptd 10 sxs plug	At surface	

Date of Abandonment
2-17-76

AMOCO - Peterson "B" #1
1980' FSL and 660' FWL
Unit E; Section 29
T-5-S; R-33-E
Roosevelt Co., New Mexico



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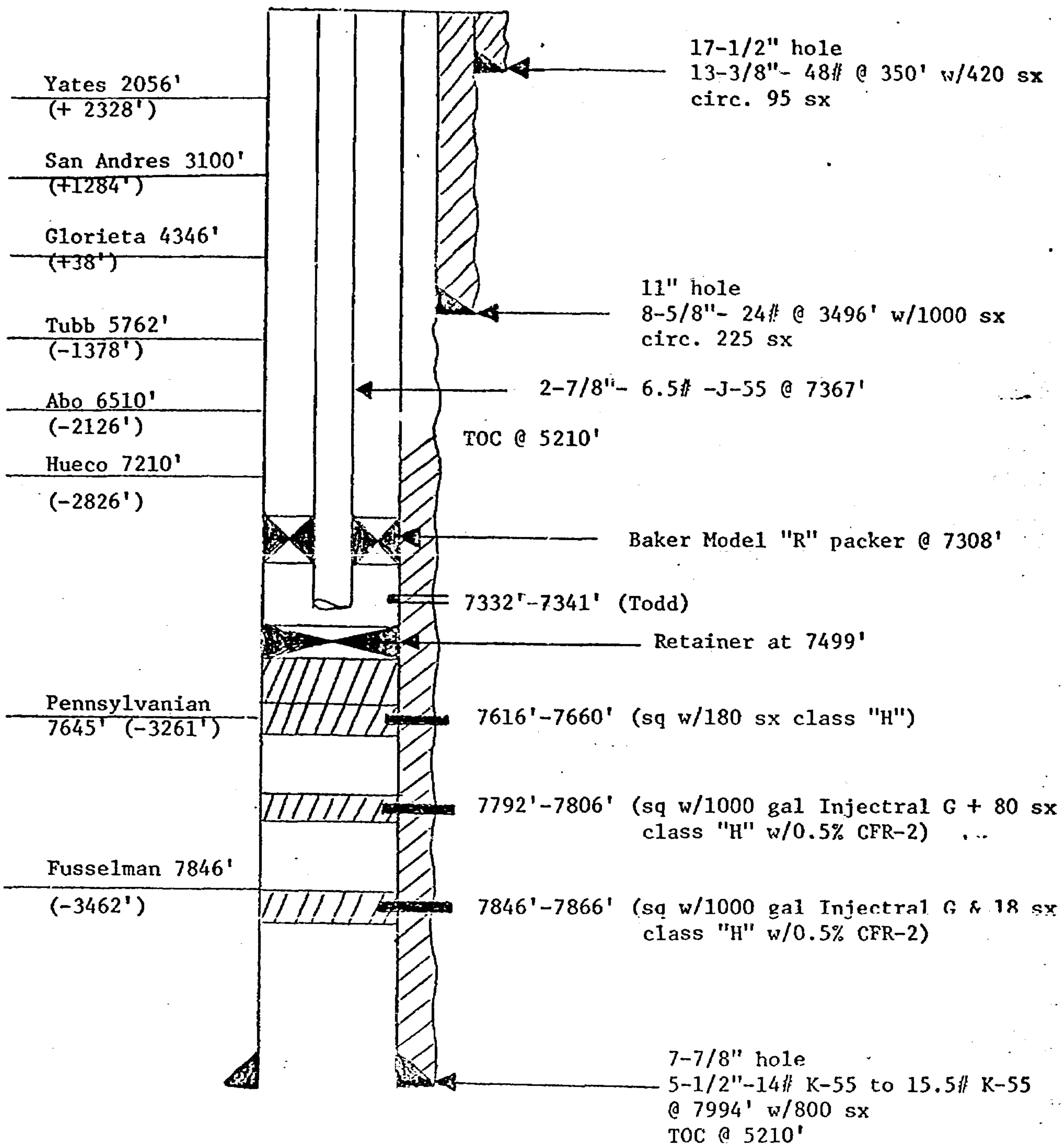
660' FSL and 510' FWL
Section 29, T-5-S, R-33-E
Roosevelt County, New Mexico



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OFFICE OF THE SECRETARY

BRUCE KING
GOVERNOR

POST OFFICE BOX 2770
113 WASHINGTON AVENUE
SANTA FE, NEW MEXICO 87501
(505) 827-2471

April 20, 1981

Case 7318

Phillips Petroleum Company
4001 Penbrook
Odessa, Texas 79762

Re: Application for SWD - Peterson "H" No. 1, Unit M, Section 29, Township 5 South, Range 33 East, Roosevelt County, New Mexico

Gentlemen:

The Division has received the subject application.

Before we may process the application the following items must be completed, addressed or corrected:

1. The plat submitted does not contain all the information required in accordance with Rule 701-B (1). The plat needs to show the location of all other wells within a radius of two miles from the proposed injection well and the formation from which the wells are producing or have produced. The plat should also include the lessees, if any, within the two-mile radius.

2. From the information supplied on water analysis it is not clear as to the intended source of fluid or fluids to be injected. Please clarify the intent of the three water analysis submitted as related to Rule 710-B(4).

3. The data submitted does not include a tabular summary and schematics as required by (OCS) Memo 3-77. A copy of this memorandum is enclosed for your convenience.

4. The (SWD) well schematic should show the location and size of the plug below the injection interval.

Sincerely,

R. L. STAMETS
Technical Support Chief

RLS/og

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ENERGY AND MINERALS DEPARTMENT
OFFICE OF THE SECRETARY

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April 20, 1981

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Technical Support Chief

RLS/og

April 22, 1981

RECEIVED
JUN 10 1981
OIL CONSERVATION DIVISION
SANTA FE

New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Joe D. Ramey
Division Director

Re: Objection to Form C-108
Phillips Petroleum Co.
Peterson "H" No. 1 well
Section 29, T-5-S, R-33-E

Gentlemen:

Enserch Exploration, Inc. opposes the subject application submitted by Phillips Petroleum Co., April 9, 1981. We respectfully request that administrative approval not be granted for this application.

Yours very truly,

Leonard Kersh

Leonard Kersh
District Production Manager

LK/fd

See Back

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Leonard Kersh
District Production Manager

LK/fd

See Back

OIL CONSERVATION DIVISION
DISTRICT I

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

DATE June 8, 1981

RE: Proposed MC ______
Proposed DHC ______
Proposed NSL ______
Proposed NSP ______
Proposed SWD X
Proposed WFX ______
Proposed PMX ______

Gentlemen:

I have examined the application for the:

Phillips Pet. Co.	Peterson H No. 1-M	29-5-33
Operator	Lease and Well No.	Unit, S - T - R

and my recommendations are as follows:

O.K.----J.S.

RECEIVED
JUN 15 1981
OIL CONSERVATION DIVISION
SANTA FE

Yours very truly,

/mc

OIL CONSERVATION DIVISION
DISTRICT I

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

DATE June 8, 1981

RE: Proposed MC ____
Proposed DHC ____
Proposed NSL ____
Proposed NSP ____
Proposed SWD X
Proposed WFX ____
Proposed PMX ____

Gentlemen:

I have examined the application for the:

Phillips Pet. Co.	Peterson H No. 1-M	29-5-33
Operator	Lease and Well No.	Unit, S - T - R

and my recommendations are as follows:

O.K.----J.S.

Yours very truly,

Jerry Sexton

/mc

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

NATURAL RESOURCES GROUP
Exploration and Production

RECEIVED
APR 13 1981
OIL CONSERVATION DIVISION
SANTA FE

April 9, 1981

Conversion to Salt Water Disposal--
Peterson "H" No. 1, Unit M,
Section 29, T-5-S, R-33-E,
Roosevelt County, New Mexico

New Mexico Department of Energy and Minerals (3)
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico, 87501

Attention: Mr. Joe D. Ramey
Division Director

Gentlemen:

We respectfully request administrative approval to convert subject well to salt water disposal service as detailed on the attached Form C-108. The following data is submitted in support of this request.

1. Unit Plat reflecting the proposed salt water disposal well and salt water disposal well area. (Peterson "H," No. 1, Unit M, Section 29, T-5-S, R-33-E.)

2. Compensated Neutron - Formation Density and Dual Lateralog Micro-SFL logs of the disposal well.

3. Diagramatic sketch of the proposed well, tubing and packer identifying the Wolfcamp (Hueco-Todd) perforated interval.

4. The name of the disposal formation is Wolfcamp (Hueco-Todd) with disposal to be into the interval 7332'-7341'. Maximum anticipated injection pressure will be no more than 1400 PSIO to the top of the perforations with a maximum daily volume of 1000 bbls.

By copy hereof, respective offset operator and surface owner are notified of this application. Their waivers of objection are requested.

Your consideration and early advice will be appreciated.

Yours very truly,

PHILLIPS PETROLEUM COMPANY

T. Harold McLemore
Regulation and Proration Supervisor

THM:SKN:ehg
Attachments

cc: New Mexico Dept. of Energy and Minerals
Oil Conservation Division
P. O. Box 1980
Hobbs, New Mexico, 88240

Mr. G. E. Peterson
East Star Rt.
Elida, New Mexico, 88116

Ensearch Exploration, Inc.
P. O. Box 4815
Midland, Texas, 79702

Attachments (w/o logs)

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR: Phillips Petroleum
ADDRESS: 4001 Penbrook Odessa, Texas 79762
LEASE NAME: Peterson "H"
WELL NO.: 1
FIELD: Peterson, South
COUNTY: Roosevelt

LOCATION
UNIT LETTER M ; WELL IS LOCATED 660' FEET FROM THE South LINE AND 510 FEET FROM THE West LINE, SECTION 29 TOWNSHIP 5-S RANGE 33E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13-3/8	350	420	Surface	Circ 95 sx
INTERMEDIATE	8-5/8	3496	1000	Surface	Circ 225 sx
LONG STRING	5-1/2	7982	800	5210'	Log
TUBING	2-7/8	7367	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker "R" @ 7308' ± (Lok Set)		

NAME OF PROPOSED INJECTION FORMATION: Wolfcamp (Hueco-Todd)
TOP OF FORMATION: 7210 (-2826)
BOTTOM OF FORMATION: 7644 (-3206)

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing
PERFORATIONS OR OPEN HOLE? Perforations
PROPOSED INTERVAL(S) OF INJECTION: 7332-7341 Wolfcamp (Hueco-Todd)

IS THIS A NEW WELL DRILLED FOR DISPOSAL? No
IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Fusselman Completion
HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH
7616-7660 (180 sx) 7792-7806 (1000 gal Injectrol G + 80 sx) 7846-7866 (1000 gal Injectrol G + 18 SX)

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA: 300
DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA: None
DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA: 7704 (-3320)

ANTICIPATED DAILY INJECTION VOLUME (BBLS.): MINIMUM 400; MAXIMUM 1000
OPEN OR CLOSED TYPE SYSTEM: Closed
IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure
APPROX. PRESSURE (PSIG): 1400

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE —
WATER TO BE DISPOSED OF: yes
NATURAL WATER IN DISPOSAL ZONE: yes
ARE WATER ANALYSES ATTACHED? yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)
Mr. G. E. Peterson, East Star Rt., Elida, New Mexico 88116

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL
Ensearch Exploration, Inc., P.O. Box 4815, Midland, Texas 79702

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? SURFACE OWNER: yes; EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL: yes

ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)? PLAT OF AREA: yes; ELECTRICAL LOG: yes; DIAGRAMMATIC SKETCH OF WELL: yes

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

W.J. Mueller (Signature) | Sr. Engineering Specialist (Title) | April 9, 1981 (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

LABORATORY WATER ANALYSIS

Lab No: W80-1120

Date: 10-13-80

Well No.:	Peterson "H" #1	Depth:	7332-41'	Formation:	Wolfcamp (Hueco-Todd)
County:	Roosevelt	Field:	S. Peterson	Source:	5-1/2" Casing

Resistivity	0.076 @ 74°F	
Specific Gravity	1.086	
pH	4.7	
Calcium (Ca)	10,500	*MPL
Magnesium (Mg)	Nil	
Chlorides (Cl)	75,000	
Sulfates (SO_4)	1,400	
Bicarbonates (HCO_3)	Nil	
Soluble Iron (Fe)	140	

*Milligrams per liter

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

Name: [signature] W. J. Mueller

Title: Senior Engineering Specialist

Date: April 15, 1981

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

LABORATORY WATER ANALYSIS

Lab No: W80-320

Date: 3-27-80

Well No.:	Lambirth A #5	Depth:	As Marked	Formation:	Penn
County:	Lea	Field:	S. Peterson	Source:	Swab

	7664-7748	7744-7748	
Resistivity	0.081 @ 70°F	0.100 @ 70°F	
Specific Gravity	1.076	1.061	
pH	6.2	5.7	
Calcium (Ca)	8,000	8,500	*MPL
Magnesium (Mg)	2,220	1,800	
Chlorides (Cl)	65,000	50,000	
Sulfates (SO_4)	900	850	
Bicarbonates (HCO_3)	315	855	
Soluble Iron (Fe)	60	80	

*Milligrams per liter

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

Name: W. J. Mueller

Title: Senior Engineering Specialist

Date: April 15, 1981

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

LABORATORY WATER ANALYSIS

Lab No: W79-215

Date: 2-28-79

Well No.:	Lambirth "A" #1	Depth:	7970'	Formation:	Fusselman
County:	Roosevelt	Field:	Peterson	Source:	Heater Treater

Resistivity	0.103 @ 74°F.	
Specific Gravity	1.069	
pH	6.4	
Calcium (Ca)	3,350	*MPL
Magnesium (Mg)	3,000	
Chlorides (Cl)	59,000	
Sulfates (SO_4)	1,600	
bicarbonates (HCO_3)	855	
Soluble Iron (Fe)	70	

*Milligrams per liter

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

Name: W. J. Mueller

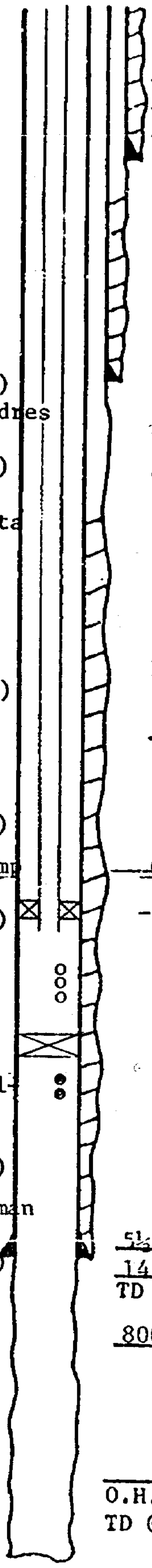
Title: Senior Engineering Specialist

Date: April 15, 1981

PHILLIPS PETROLEUM COMPANY--Permian Basin Region

RKB @ 4384'
CHF @ ______
GL @ ______

Area Hobbs
District Lovington
Date March 20, 19[illegible]
Lease & Well No. Peterson "H" No. 1
Legal Description 660' FSL, 510' FWL, Sec 29, T5S R33E, Roosevelt County, New Mexico
Field Peterson, South Pool Area
Status SI - BOPD - BWPD - GOR
Tbg. /Salta lined 2-7/8" EUE 6.5 # J55 Gr. @ 7367' SN @ ______'
Pkr. Baker mod. "R" Lok Set @ 7308 ± '
Other ______ @ ______'



13-3/8"OD @ 350'
48' # to - #
420 Sxs.

11" Hole

Yates 2056 (+2328)
San Andres 3100 (+1284)

8-5/8"OD @ 3496'
24 # to - #
1000 Sxs
TOC @ GL '
Circ 225 Sxs

Glorieta 4346 (+38)

DV Collar X
Sxs ______
TOC ______'
Psi Test ______

Tubb 5762 (-1378)

7-7/8" Hole

Abo 6510 (-2126)

Wolfcamp 7210 (-2826) (Hueco-Todd)

- 7308' ±

7332'-41', Wolfcamp (Hueco-Todd)

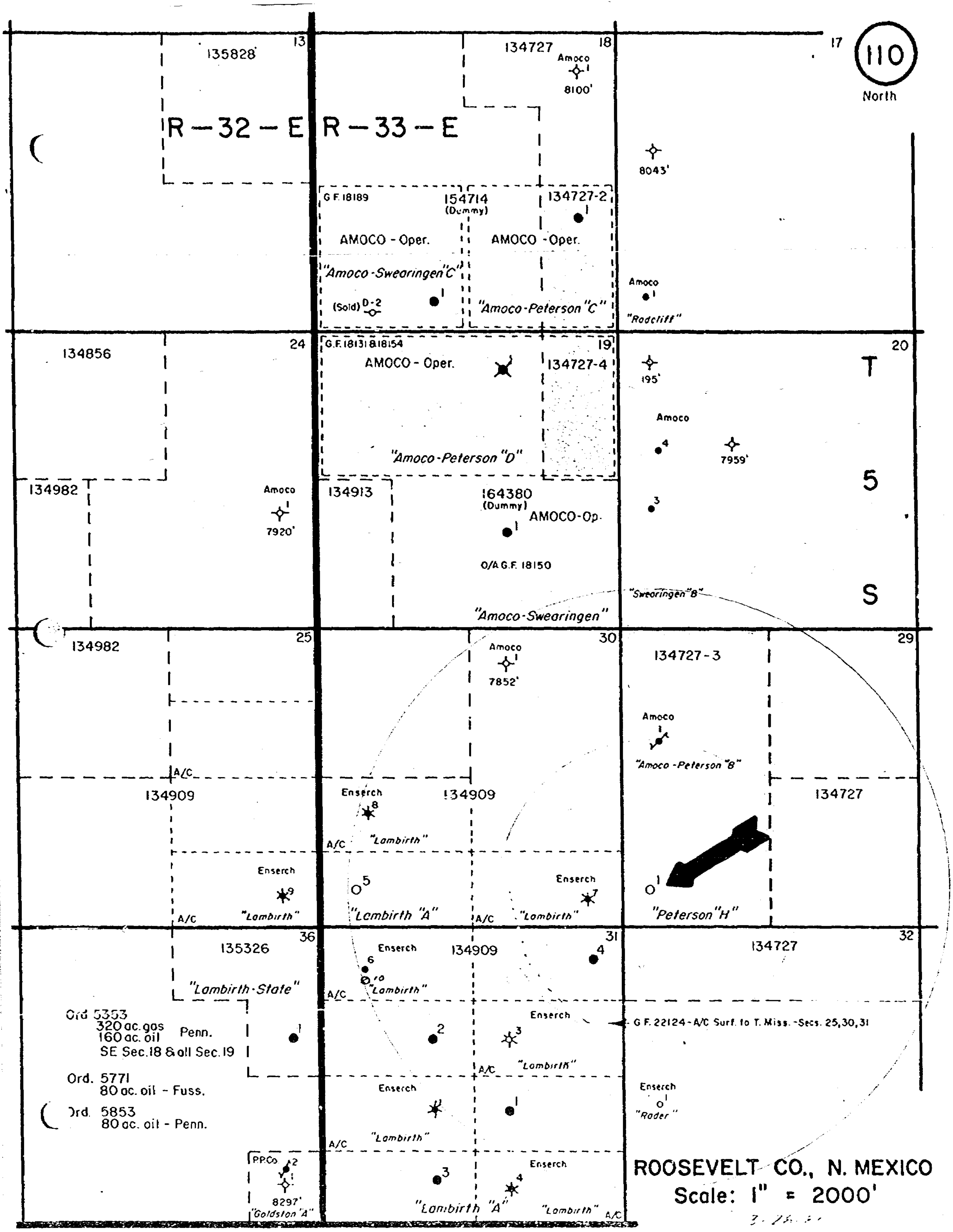
7616'-60', Sq. w/180 Sxs class "H".

Pennsylvanian 7645 (-3261)

Fusselman 7846' (-3462)

5½ "OD @ 7994'
14 # K-55 to 15.5# K-55
TD @ ______
800 Sxs TOC @ 5210'

______" Hole
O.H. ______'
TD @ ______


110
North
R-32-E
R-33-E
135828
134727
Amoco
8100'
8043'
G.F. 18189
154714 (Dummy)
134727-2
AMOCO - Oper.
AMOCO - Oper.
"Amoco-Swearingen "C"
(Sold) D-2
"Amoco-Peterson "C"
Amoco
"Rodcliff"
134856
G.F. 18131 & 18154
AMOCO - Oper.
134727-4
195'
T
Amoco
7959'
"Amoco-Peterson "D"
134982
Amoco
7920'
134913
164380 (Dummy)
AMOCO-Op.
5
O/A G.F. 18150
"Swearingen "B"
S
"Amoco-Swearingen"
134982
Amoco
7852'
134727-3
Amoco
"Amoco-Peterson "B"
A/C
134909
Enserch
134909
134727
"Lambirth"
Enserch
Enserch
"Lambirth"
"Lambirth "A"
"Lambirth"
"Peterson "H"
135326
Enserch
134909
134727
"Lambirth-State"
"Lambirth"
Ord 5353
320 ac. gas
160 ac. oil
Penn.
SE Sec. 18 & all Sec. 19
Enserch
G.F. 22124 - A/C Surf. to T. Miss. - Secs. 25, 30, 31
"Lambirth"
Ord. 5771
80 ac. oil - Fuss.
Enserch
Enserch
Ord. 5853
80 ac. oil - Penn.
"Rader"
"Lambirth"
P.P.Co.
Enserch
8297'
"Goldston "A"
"Lambirth "A"
"Lambirth"
ROOSEVELT CO., N. MEXICO
Scale: 1" = 2000'

PHILLIPS PETROLEUM COMPANY
ODESSA, TEXAS 79762
4001 PENBROOK

NATURAL RESOURCES GROUP
Exploration and Production

April 9, 1981

RECEIVED
APR 16 1981
OIL CONSERVATION DIVISION
SANTA FE

Conversion to Salt Water Disposal--
Peterson "H" No. 1, Unit M,
Section 29, T-5-S, R-33-E,
Roosevelt County, New Mexico

New Mexico Department of Energy and Minerals (3)
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico, 87501

Attention: Mr. Joe D. Ramey
Division Director

Gentlemen:

We respectfully request administrative approval to convert subject well to salt water disposal service as detailed on the attached Form C-108. The following data is submitted in support of this request.

1. Unit Plat reflecting the proposed salt water disposal well and salt water disposal well area. (Peterson "H," No. 1, Unit M, Section 29, T-5-S, R-33-E.)

2. Compensated Neutron - Formation Density and Dual Lateralog Micro-SFL logs of the disposal well.

3. Diagramatic sketch of the proposed well, tubing and packer identifying the Wolfcamp (Hueco-Todd) perforated interval.

4. The name of the disposal formation is Wolfcamp (Hueco-Todd) with disposal to be into the interval 7332'-7341'. Maximum anticipated injection pressure will be no more than 1400 PSIO to the top of the perforations with a maximum daily volume of 1000 bbls.

By copy hereof, respective offset operator and surface owner are notified of this application. Their waivers of objection are requested.

Your consideration and early advice will be appreciated.

Yours very truly,

PHILLIPS PETROLEUM COMPANY

T. Harold McLemore
Regulation and Proration Supervisor

THM:SKN:ehg
Attachments

cc: New Mexico Dept. of Energy and Minerals
Oil Conservation Division
P. O. Box 1980
Hobbs, New Mexico, 88240

Mr. G. E. Peterson
East Star Rt.
Elida, New Mexico, 88116

Ensearch Exploration, Inc.
P. O. Box 4815
Midland, Texas, 79702

Attachments (w/o logs)

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR		ADDRESS	
Phillips Petroleum		4001 Penbrook Odessa, Texas 79762	
LEASE NAME	WELL NO.	FIELD	COUNTY
Peterson "H"	1	Peterson, South	Roosevelt

LOCATION

UNIT LETTER M ; WELL IS LOCATED 660' FEET FROM THE South LINE AND 510 FEET FROM THE West LINE, SECTION 29 TOWNSHIP 5-S RANGE 33E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13-3/8	350	420	Surface	Circ 95 sx
INTERMEDIATE	8-5/8	3496	1000	Surface	Circ 225 sx
LONG STRING	5-1/2	7982	800	5210'	Log
TUBING	2-7/8	7367	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker "R" @ 7308' ± (Lok Set)		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
Wolfcamp (Hueco-Todd)	7210 (-2826)	7644 (-3206)

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Perforations	7332-7341 Wolfcamp (Hueco-Todd)

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Fusselman Completion	yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

7616-7660 (180 sx) 7792-7806 (1000 gal Injectrol G + 80 sx) 7846-7866 (1000 gal Injectrol G + 18 SX)

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
300	None	7704 (-3320)

ANTICIPATED DAILY INJECTION VOLUME (BBLS.) MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
400	1000	Closed	Pressure	1400

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE –	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
	yes	yes	yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Mr. G. E. Peterson, East Star Rt., Elida, New Mexico 88116

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Ensearch Exploration, Inc., P.O. Box 4815, Midland, Texas 79702

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	
	yes	yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	yes	yes	yes

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

W.J. Mueller — Sr. Engineering Specialist — April 9, 1981
(Signature) (Title) (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

LABORATORY WATER ANALYSIS

Lab No: W80-1120

Date: 10-13-80

Well No.:	Peterson "H" #1	Depth:	7332-41'	Formation:	Wolfcamp (Hueco-Todd)
County:	Roosevelt	Field:	S. Peterson	Source:	5-1/2" Casing

Resistivity	0.076 @ 74°F	
Specific Gravity	1.086	
pH	4.7	
Calcium (Ca)	10,500	*MPL
Magnesium (Mg)	Nil	
Chlorides (Cl)	75,000	
Sulfates (SO_4)	1,400	
Bicarbonates (HCO_3)	Nil	
Soluble Iron (Fe)	140	

*Milligrams per liter

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

Name: W. J. Mueller

Title: Senior Engineering Specialist

Date: April 15, 1981

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

LABORATORY WATER ANALYSIS

Lab No: W80-320

Date: 3-27-80

Well No.: Lambirth A #5	Depth: As Marked	Formation: Penn	
County: Lea	Field: S. Peterson	Source: Swab	
	7664-7748	7744-7748	
Resistivity	0.081 @ 70°F	0.100 @ 70°F	
Specific Gravity	1.076	1.061	
pH	6.2	5.7	
Calcium (Ca)	8,000	8,500	*MPL
Magnesium (Mg)	2,220	1,800	
Chlorides (Cl)	65,000	50,000	
Sulfates (SO_4)	900	850	
Bicarbonates (HCO_3)	315	855	
Soluble Iron (Fe)	60	80	

*Milligrams per liter

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

Name: W. J. Mueller

Title: Senior Engineering Specialist

Date: April 15, 1981

PHILLIPS PETROLEUM COMPANY
4001 Penbrook Street
Odessa, Texas 79762

LABORATORY WATER ANALYSIS

Lab No: W79-215

Date: 2-28-79

Well No.: Lambirth "A" #1	Depth: 7970'	Formation: Fusselman
County: Roosevelt	Field: Peterson	Source: Heater Treater

Resistivity	0.103 @ 74°F.	
Specific Gravity	1.069	
pH	6.4	
Calcium (Ca)	3,350	*MPL
Magnesium (Mg)	3,000	
Chlorides (Cl)	59,000	
Sulfates (SO_4)	1,600	
bicarbonates (HCO_3)	855	
Soluble Iron (Fe)	70	

*Milligrams per liter

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

Name: W. J. Mueller

Title: Senior Engineering Specialist

Date: April 15, 1981

PHILLIPS PETROLEUM COMPANY--Permian Basin Region

RKB @ 4384'
CHF @ ______
GL @ ______

Area Hobbs

District Lovington

Date March 20, 19[illegible]

Lease & Well No. Peterson "H" No. 1

Legal Description 660' FSL, 510' FWL, Sec 29, T5S R33E,
Roosevelt County, New Mexico

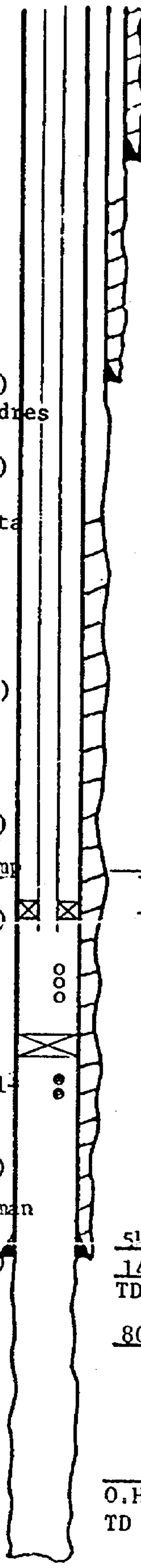
Field Peterson, South Pool Area

Status SI - BOPD - BWPD - GOR

Tbg. 2-7/8" /Salta lined EUE 6.5 # J55 Gr. @ 7367' SN @ ______'

Pkr. Baker mod. "R" Lok Set @ 7308 ± '

Other ______ @ ______'



13-3/8"OD @ 350'
48' # to - #
420 Sxs.

11" Hole

Yates
2056
(+2328)

8-5/8"OD @ 3496'
24 # to - #
1000 Sxs
TOC @ GL '
Circ 225 Sxs

San Andres
3100
(+1284)

Glorieta
4346
(+38)

DV Collar X
Sxs ______
TOC ______'
Psi Test ______

Tubb
5762
(-1378)

7-7/8" Hole

Abo
6510
(-2126)

Wolfcamp
7210
(-2826)

(Hueco-Todd)
- 7308' ±

7332'-41', Wolfcamp
(Hueco-Todd)

Pennsylvanian
7645
(-3261)

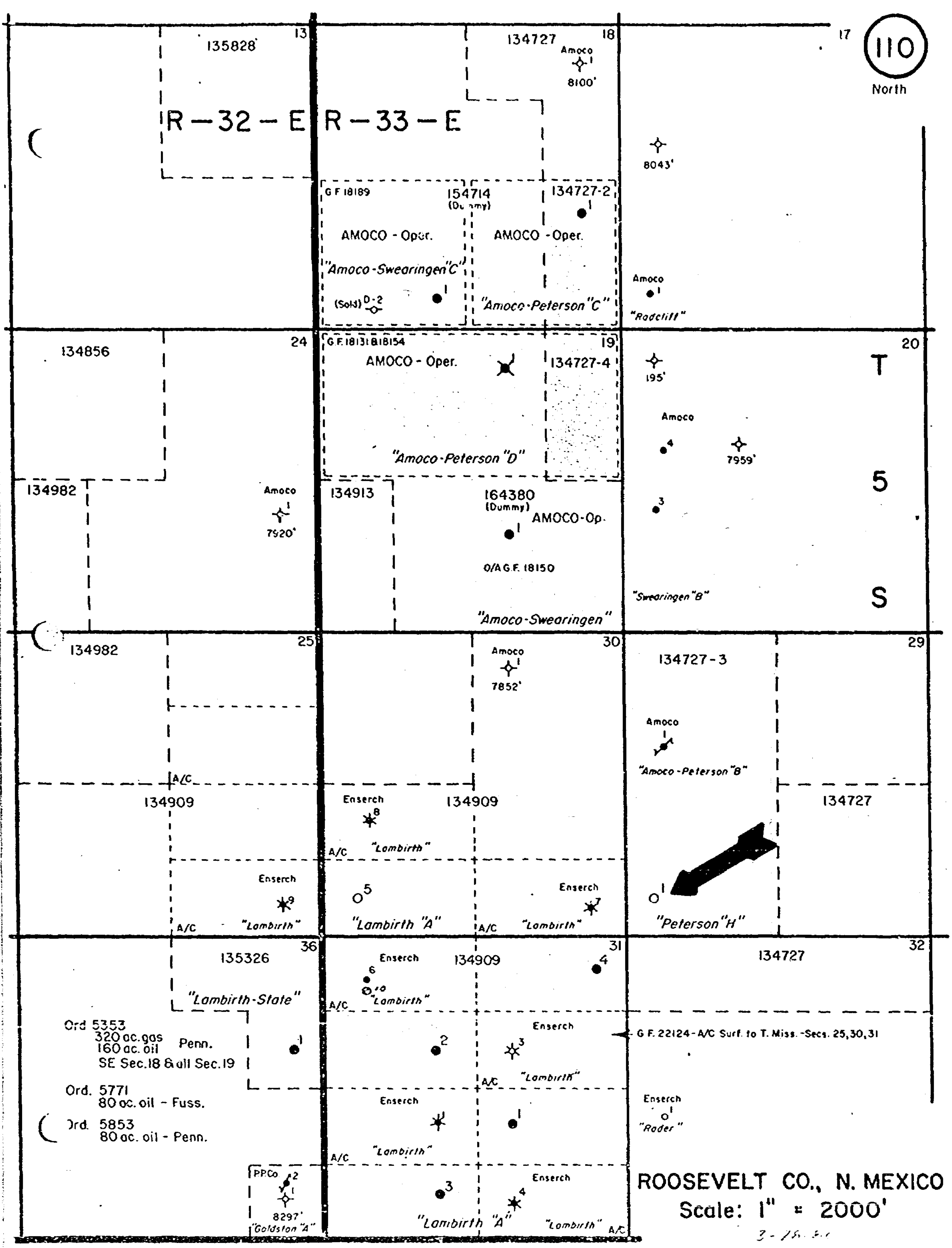
7616'-60', Sg. w/180 Sxs class "H".

Fusselman
7846'
(-3462)

5½ "OD @ 7994'
14 # K-55 to 15.5# K-55
TD @ ______

800 Sxs TOC @ 5210'

______" Hole
O.H. ______'
TD @ ______


110
North
R-32-E
R-33-E
T
5
S
135828
134727
Amoco
8100'
8043'
GF 18189
154714
(Dummy)
134727-2
AMOCO - Oper.
"Amoco-Swearingen "C"
"Amoco-Peterson "C"
(Sold) D-2
Amoco
"Radcliff"
134856
G.F. 18131 & 18154
"Amoco-Peterson "D"
134727-4
195'
7959'
134982
Amoco
7920'
134913
164380
(Dummy)
AMOCO-Op.
O/A G.F. 18150
"Amoco-Swearingen"
"Swearingen "B"
7852'
134727-3
"Amoco-Peterson "B"
A/C
134909
Enserch
"Lambirth"
"Lambirth "A"
134727
"Peterson "H"
135326
"Lambirth-State"
Ord 5353
320 ac. gas
160 ac. oil
Penn.
SE Sec.18 & all Sec.19
Ord. 5771
80 ac. oil - Fuss.
Ord. 5853
80 ac. oil - Penn.
G.F. 22124 - A/C Surf. to T. Miss. - Secs. 25,30,31
"Rader"
P.P.Co.
8297'
"Goldston "A"
ROOSEVELT CO., N. MEXICO
Scale: 1" = 2000'

dr/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 7318

Order No. R-6767

APPLICATION OF PHILLIPS PETROLEUM COMPANY
FOR SALT WATER DISPOSAL, ROOSEVELT COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on July 29, 1981, at Santa Fe, New Mexico, before Examiner Richard L. Stamets

NOW, on this ______ day of __________, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Phillips Petroleum Company, is the owner and operator of the Peterson "H" Well No. 1, located in Unit M of Section 29, Township 5 South, Range 33 East, NMPM, South Peterson Field, Roosevelt County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Wolfcamp formation, with injection into the perforated interval from approximately 7332 feet to 7341 feet.

(4) That the offset operator to the West, Enserch Exploration, Inc., objected to utilization of the proposed disposal interval and well.

(5) That said objection was predicated upon the potential for hydrocarbon production from such interval in its Lambirth Well No. 7 located in Unit P of Section 30 and its Lambirth Well No. 3 located in Unit G of Section 31, both in Township 5 South, Range 33 East, and its Lambirth Well No. 11 located in Unit M of Section 1, Township 6 South, Range 33 East, NMPM, Lea County, New Mexico.

(6) That while the protestant presented evidence to demonstrate that the proposed disposal zone was productive of gas approximately five to six miles to the South, there were no drill stem tests, ~~other tests~~, nor any other definitive evidence presented from which a reasonable determination could be made that any of said wells could produce hydrocarbons from the proposed disposal zone.

~~(7) That the proposed disposal interval is productive of water in said Peterson "H" Well No. 1.~~

(7) ~~(8)~~ That ~~while~~ the proposed disposal zone in said Peterson "H" Well No. 1 exhibits greater apparent permeability, porosity, and thickness than other wells in the area, including those listed in Finding No. (5) above, it is structurally lower than said wells, and is productive of water only

(8) That while there is no ~~clear-cut~~ substantial evidence of the same, hydrocarbons could concievably be found up dip from said Peterson "H" Well No. 1 in the proposed disposal interval.

(9) ~~(10)~~ That reasonable projections of disposal volumes and calculations of the radius of encroachment of the injected fluid in the zone indicate that the injected fluid will not move off applicant's lease for three years nor intercept protestant's closest well for approximately seven years.

(10) ~~(11)~~ That these time periods will permit the protestant to more fully evaluate the disposal interval under its properties in said field and develop evidence as to the productive potential

of the proposed disposal zone.

(11) ~~(12)~~ That the protestant should be permitted to return and renew its objection to the use of the proposed disposal well at any time within the next seven years, when and if, substantial ~~clear cut~~ evidence of such hydrocarbon production potential is available.

(12) ~~(4)~~ That the injection should be accomplished through 2 7/8 -inch plastic lined tubing installed in a packer set at approximately 7300 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(13) ~~(5)~~ That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1466 psi.

(14) ~~(6)~~ That the Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the Wolfcamp formation.

(15) ~~(7)~~ That the operator should notify the supervisor of the Lea district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(16) ~~(8)~~ That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(17) ~~(9)~~ That approval of the subject application ~~will prevent~~ with the provision for ~~reopening the case~~ as permitting reopening of protestant's objection, will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to utilize its Peterson "H" Well No. 1 located in Unit M of Section 29, Township 5 South, Range 33 East, NMPM, South Peterson Field, Roosevelt County, New Mexico, to dispose of produced salt water into the Wolfcamp formation, injection to be accomplished through 2 7/8 -inch tubing installed in a packer set at approximately 7300 feet, with injection into the perforated interval from approximately 7332 feet to 7341 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1446 psi.

(3) That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Wolfcamp formation.

(4) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(5) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 706 and 1120 of the Division Rules and Regulations.

(7) That the Division may reopen this case at any time within the next seven years upon application and demonstration by the protestant ~~that there are tests or other~~ of substantial evidence that there is hydrocarbon production potential in its wells from the Wolfcamp disposal zone which may be affected by the continued disposal of water into said Peterson "H" Well No. 1.

(8) 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.