Case No.

7353

Application

Transcripts.

Small Exhibits

ETC

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

EXAMINER HEARING

IN THE MATTER OF:

Application of Texaco, Inc., for the amendment of Division Order No. R-5530, Lea County, New Mexico. CASE 7353

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:	W. Perry Pearce, Esq. Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501
For the Applicant:	Ken Bateman, Esq. WHITE, KOCH, KELLY, & McCARTHY 220 Otero Street Santa Fe, New Mexico 87501

A P P E A R A N C E S

For Phillips Petroleum: W. Thomas Kellahin, Esq.
KELLAHIN & KELLAHIN
500 Don Gaspar
Santa Fe, New Mexico 87501

I N D E X

CHARLES R. WOLLE

Direct Examination by Mr. Bateman 5

Cross Examination by Mr. Kellahin 13

Cross Examination by Mr. Stamets 16

MICHAEL BROWNLEE

Direct Examination by Mr. Kellahin 21

Cross Examination by Mr. Bateman 32

Cross Examination by Mr. Stamets 33

STATEMENT BY MR. MILLER 33

STATEMENT BY MR. BATEMAN 34

STATEMENT BY MR. KELLAHIN 35

E X H I B I T S

Texaco Exhibit One, Plat	5
Texaco Exhibit Two, Graph	7
Phillips Exhibit One, Plat	23
Phillips Exhibit Two, Order	24
Phillips Exhibit Three, Order	24
Phillips Exhibit Four, Production History	28
Phillips Exhibit Five, Graph	30
Phillips Exhibit Six, Graph	30
Phillips Exhibit Seven, Graph	31

MR. STAMETS: Call next Case 7353.

MR. PEARCE: Application of Texaco, Inc., for the amendment of Division Order No. R-5530, Lea County, New Mexico.

MR. BATEMAN: Mr. Examiner, I'm Ken Bateman of White, Koch, Kelly, & McCarthy, representing the applicant.

I have one witness.

MR. STAMETS: Any other appearances?

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing in association with Joe Peacock, for Phillips Petroleum Company.

MR. STAMETS: No witnesses, I --

MR. KELLAHIN: I have one witness.

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

(Witnesses sworn.)

CHARLES R. WOLLE

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

DIRECT EXAMINATION

BY MR. BATEMAN:

Q. Would you state your full name for the record, please, and your place of employment?

A. Charles R. Wolle. I work for Texaco, Incorporated, Midland, Texas.

Q. And in what capacity do you -- are you employed by Texaco?

A. I'm the Division Reservoir -- excuse me, Division Operations Engineer for our Midland Division Office.

Q. In that connection are you familiar with the area in question in the application today?

A. Yes, sir, I am.

Q. Have you previously testified before the Commission and made your educational and work experience qualifications a matter of record?

A. Yes, I have.

MR. BATEMAN: I offer Mr. Wolle as an expert.

MR. STAMETS: He is considered qualified.

Q. Mr. Wolle, would you refer to what's been marked Exhibit One and generally review the history of the development of the Vacuum Grayburg pool?

A. Okay.

Q. Or project, excuse me.

A. Exhibit One essentially shows the outline of the Central Vacuum Unit, which is in the Vacuum-Grayburg-San Andres Field, in Lea County, New Mexico.

This project is developed on 20-acre spacing. We have essentially a five spot water injection plot in here. There are two minor areas where the development is not complete; up in Section 30 on the north there is one infill location that does not presently have a producing well. We're evaluating a replacement well. The well that's there has been plugged and abandoned. And along the northwest and the west boundaries of the unit, as indicated by the circles and the diamonds and the triangle, there are some lease line injectors which have not to date been drilled.

Other than that, the pattern is complete and along the remaining boundaries of the unit there are lease line injectors with the exception of the very southeast edge, which is the edge of the field. There are no Vacuum-Grayburg-San Andres wells to the south and east there and for that reason there are no lease line injectors in that area.

The Central Vacuum Unit is offset to the east and the north by the Phillips-operated East Vacuum Unit; to the southwest by the Texaco-operated Vacuum-Grayburg-San Andres Unit; to the northwest by Mobil's State Bridges Unit;

and to the west in Section 35 by a lease operated by Continental and a lease operated by Phillips, which are not at the present time under waterflood operation. With that one exception in Section 35, I believe the entire remainder of the Vacuum-Grayburg-San Andres Field is experiencing water injection operations.

By virtue of our having developed a five-spot water injection pattern on a 40-acre basis, from an engineering standpoint this project is operating as a waterflood. By having the lease line wells, as we do virtually completely surrounding the project, with the exception of those that have not yet been drilled, we are preventing any movement of fluids either into or out of the unit boundary.

At the present time negotiations are underway between Texaco and Mobil, Continental, and Phillips to complete the drilling of these lease line injectors. We would anticipate that would most likely be done in the early part of 1982, and that will virtually surround the unit with lease line injection wells.

This will be a protection of the correlative rights, both of the unit and of the offset operators when this is done.

Q. All right, sir, would you proceed then with what's been marked Exhibit Two and describe the history

of the water injection project?

A. Okay. This is a graphical representation of the history of the Central Vacuum Unit. The unit became effective on October 1st, 1977. The initial water injection began in January of 1978 and it increased over a period of time until the latter part of 1979, when it reached more or less its present level of injection of approximately 55,000 barrels per day, and during that period between January of '78 and the latter part of '79 we were drilling and converting wells to injection.

You can see from the graph a curve representing the number of active injection wells and that increased until its present level of 70 in July of this year. The active number of -- the number of active producing wells is also represented graphically and we currently have 74 producing wells on this project.

In January at the time -- or January of '78 at the time of the initiation of water injection the oil producing rate from this project was about 3300 barrels per day. Beginning in about the middle of 1979 that rate started increasing significantly. It increased, the last point on the curve, which is the July, 1981, production level of 11,350 barrels per day. We don't have the final production figures for August, but it's going to be very nearly 12,000 barrels

per day in August.

And September production is averaging very nearly the top project allowable of 12,320 barrels per day.

Continuing the trend of the oil production rate, we anticipate, or we project that by the latter part of 1982, if there are no restrictions on the production allowable for this project, we'll reach a producing rate of approximately 17,000 barrels of oil per day. This is approximately 5000 barrels of oil per day higher than our current rate of just over 12,000 barrels per day.

Q. Have you calculated the reserves in -- both primary and secondary in this area?

A. Yes, we have. The ultimate primary reserves were determined to be 42,277,000 barrels.

MR. STAMETS: What was that figure again, please?

A. 42,277,000 barrels. And there were projected secondary reserves on a one-to-one primary to secondary ratio of, again, 42,277,000 barrels.

Our production to date from the unit is 44 -- or through July of this year, is 44,559,000 barrels, leaving reserves of approximately 40,000,000 barrels yet to be recovered from this project.

Q. Now you've indicated that there is a limit or a top allowable identified in the order under which you're currently operating. Would you state again for the record what the constraint on production is at the moment?

A. The current top allowable for the project is 12,320 barrels per day, which is based on 80 barrels per day times 77 proration units times 2.

Q. And I believe you testified that you would expect to reach that level in the current month?

A. Yes, sir, that's correct. We'll be right at that number this month.

Q. Well then, would you state for the record what relief Texaco is requesting?

A. Yes. We would request that the Central Vacuum Unit be granted a capacity allowable enabling us to produce the -- all of the wells in the project at their capacity.

We would point out that in view of the fact that we do not have lease line injection wells along the northwest and the west boundaries of the project, producing wells that are not offset by a lease line injection wells would be limited, as is stated in the current order, to a maximum production of 80 barrels per day. We're not seeking to change that. We would still restrict that production until

such time as lease line injection wells are drilled and are on injection.

Q What would be the effect if you were required to continue to operate the project under the top allowable as presently identified?

A Initially we'd have to restrict our injection to some lower level; otherwise, we would faced with a situation where we would possibly be pushing oil, or we'd run a significant possibility of pushing oil into areas of the reservoir where it could not be recovered, and consequently reducing the ultimate production, ultimate reserves, that we could expect from this project, and we're talking about ultimate secondary production here of on the order of 42,000,000 barrels, so just by reducing that ultimate recovery of one percent we're talking about almost half a million barrels of oil that we would not otherwise produce, and it's -- that's a significant amount of oil and it represents a significant amount of money, both to the operators of the Central Vacuum Unit and to the State of New Mexico, as royalty interest owner, and because there is a significant possibility that ultimate production would be reduced as a result of having to reduce injection rates, we'd like to -- we are requesting that the allowable be increased to a capacity allowable.

Q As far as you know, has this situation

ever occurred before in -- with respect to pressure maintenance projects having reached the top allowable granted by the Commission?

A. I'm not aware of a situation where this has occurred.

Q. In your opinion will the grant of this application prevent waste and protect correlative rights?

A. Yes, sir, it will.

Q. And what is your understanding of the future of the offsetting acreage in the north, it's the northwest after those lease line injectors are completed?

A. Okay. To the northwest the boundary between Central Vacuum Unit and Mobil, Mobil has an established waterflood project there already.

To the west in Section 35, as I mentioned earlier, that area is not under waterflood at the present time, but in conjunction with the drilling and completion of the lease line injectors between the Central Vacuum Unit and Continental and Phillips, it's our understanding that those operators are going to pursue water injection operations in conjunction with those lease line injection wells being completed.

Q. Were Exhibits One prepared by you or under your direction?

A. Yes, they were.

MR. BATEMAN: I offer Exhibits One and Two.

MR. STAMETS: These exhibits will be admitted.

MR. BATEMAN: I have no further direct.

MR. STAMETS: Any questions of the witness?

MR. KELLAHIN: Yes, Mr. Stamets.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Wolle, this is a pressure maintenance project operated by Texaco, is it not?

A. That's correct.

Q. And it is to the west of a similar pressure maintenance project operated by Phillips Petroleum Company?

A. Yes, sir.

Q. They operate that under a pressure maintenance order that's very much like the one that you operate on.

A. Yes, sir.

Q. The principal difference in those two

orders, is it not, Mr. Wolle, the fact that you have a limitation that you have discussed to us on your allowable.

A. I'm not very familiar with the order on the East Vacuum Unit, but from conversation I understand that is correct.

Q. All right, sir. You called the pattern of injection here a waterflood pattern and have two or three times in your testimony made reference to a waterflood. You don't have any intentions of changing your project to a waterflood project, do you, sir?

A. Well, the definitions of the State of New Mexico are such that a project is classified as pressure maintenance or waterflood based on the production from the individual wells in the project at the time of unitization.

Q. Yes, sir, I know.

A. And they have not much room for interpretation of the definitions.

Q. I understand, and your project now is classified as a pressure maintenance project.

A. That is correct.

Q. And what do your wells on a per well basis make in terms of barrels of oil?

A. We've got about, say, 70 wells and about 12,000 barrels a day, so that would be, say, 170 barrels a

day, roughly.

Q. That's well above what the Commission --

A. Well --

Q. -- classifies as stripper wells?

A. Yes, sir.

Q. All right, so that portion of your application that refers to a reclassification of your project as a waterflood project is really not your intention, is it, sir?

A. It's not our intention to determine the discretion of the Commission, if they should feel that it should be classified as a waterflood project.

Q. Well, normally the Commission can't exercise a discretion unless the applicant makes an application seeking that kind of relief, and my question is whether you're seeking relief to reclassify this as a waterflood project or not.

A. We would prefer to have the allowable increase granted and maintain the classification as a pressure maintenance project.

Q. All right, sir. In reference to your order, have you made a determination as to how that might be accomplished in terms of modification of your own order?

A. We feel that the regulation of the Division gives insufficient latitude to increase the allowable,

if they feel that is justified.

Q. In reference to your Exhibit Number Two, Mr. Wolle, you've given us some of the production history for your project. What kind of bottom hole pressures are you experiencing now in this project area?

A. We're in the process currently of taking our annual bottom hole pressure survey for this project. Last year the bottom hole pressure was approximately 750, 760, psi. The preliminary indications that we see for this year, that the bottom hole pressure is in the range of 890 to 900 psi, and again, this is incomplete, but that's the indication that we have.

MR. KELLAHIN: Thank you. I have no further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Is the projected 17,000 barrels a day the highest expected productivity from this reservoir?

A. That's what we project at the present time, yes, sir.

Q. Okay.

A. We hope it will go higher but we can't reasonably project that to be higher.

Q Now today you indicated that primary production from the wells in this area should have been in excess of 42,000,000 barrels.

A Yes, sir.

Q Is this the same figure that was presented in the original application?

A Yes, sir.

Q Okay. Now, you also indicated that as of today these wells have produced 44,000,000 plus.

A Yes, sir.

Q Then as a whole one could say that these wells have produced their primary production, is that right?

A We have passed the point that they produced their ultimate primary, yes, sir.

Q Now, looking at Exhibit Two, which is essentially -- has on it a decline curve for the production from those wells, if we projected that production on at the rate that that was declining, could we utilize that to say at what date these wells would have declined to the stripper state, on an average basis?

A Yes, sir, we could. I've not done that but we could.

Q Could you kind of eyeball that quickly and give us that date?

A. Okay, assuming around -- for round figures, somewhere in the low 70's for active producers, say 700 barrels per day, probably would have been -- would be, oh, 1986. Somewhere in that time frame.

Q. Do you recall what the primary production was at the start of the project?

A. The cumulative production for the project prior to October 1 of '77 was 36,862,000 barrels.

Q. Okay. Now you indicated you didn't really want to lose the pressure maintenance label but you wanted to be treated like a waterflood. What's the logic in that?

A. Well, the pressure maintenance definition is fairly straightforward and in the classification, or the rules for pressure maintenance projects the Commission or the Division has the authority to set an allowable for a pressure maintenance project.

A waterflood clasification, conversely, has no allowable other than capacity allowable.

So we're esentially asking for -- or we are asking for a capacity allowable for our pressure maintenance project.

We've got no -- no problem in maintaining the pressure maintenance classification with a sufficient

allowable to handle our projected production from the project.

Q. If we wanted to call it a waterflood, you wouldn't feel bad?

A. No, sir, that would in essence accomplish the same relief that we're seeking.

Q. Okay. Now you testified that you felt it was possible that we could lose a half million barrels final production out of this project as a result of reducing injection rates.

A. No, sir. My comment was that by reducing the ultimate recovery by just one percent, if we were to reduce the injection rate and would decrease our ultimate recovery. Just one percent represents approximately a half million barrels.

Q. So that, that wasn't a firm figure.

A. No, sir. Each percent that that ultimate production drops represents almost half a million barrels of oil.

Q. Aren't there some schools of engineering thought that, say, that lower injection rates result in greater ultimate recovery?

A. There's some, I'll say, controversy or discussion on that point. One line of thought that goes like that and the other line of thought is that decreased or lower

injection rates will result in lower ultimate recoveries.

So there's some controversy among the, well, I'll say experts, on that.

Q. Is Texaco operating this project under an injection pressure limit?

A. We have, and I don't recall offhand what that limitation is, whether it's half a pound per psi or .2.

Q. Is it Texaco's intention not to operate this project above the fracture limit of the reservoir?

A. That is correct. We do not anticipate that and are not planning to do that.

Q. Your only alternative, then, if I understand you correctly, if you don't get the relief sought today, your only alternative would be to restrict injection volume beginning later this year.

A. It would have to begin in the very near future, yes, sir.

Q. Has this project achieved fillup at this stage?

A. Yes, sir.

Q. What's the ratio of water in to fluid out?

A. The injection ratio, well, for July it happened to be 2.64. It has varied between -- for this year,

between 2.5 up to over 3.4.

Q. Where do those other barrels of water go?

A. Beg pardon?

Q. Where do those other barrels of water go?

A. Well, I think in any waterflood project you don't have complete control of injection fluid into your desired zones. You have -- you have some loss.

MR. STAMETS: Any other questions of this witness? You may be excused.

Do you have anything further, Mr. Bateman?

MR. BATEMAN: Nothing further.

MR. STAMETS: Mr. Kellahin?

MR. KELLAHIN: Yes, sir.

MICHAEL BROWNLEE

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. All right, sir, would you please state your name?

A. My name is Michael Brownlee.

Q. Mr. Brownlee, how are you employed?

A. I'm a reservoir engineer, employed by Phillips Petroleum Company.

Q. Have you ever testified before this New Mexico Oil Conservation Division?

A. No, sir.

Q. Would you describe to the Examiner when and where you obtained your degree?

A. I obtained a BS degree from Texas A&M University in petroleum engineering; graduated in May, '78.

Q. Subsequent to graduation in '78, where have you been employed as an engineer?

A. I was an operations engineer for Chevron USA in Coalingua, California, and I held that position for approximately sixteen months.

For the past two years, since that time, I've been employed by Phillips as a reservoir engineer in Odessa, Texas.

Q. What area of responsibility has been assigned to you by your employer with regards to your duties as a reservoir engineer?

A. Geographically my primary responsibility is the Vacuum Field. I am the reservoir engineer maintaining and operating the East Vacuum Unit, and have worked with the voidage calculations and completions, workovers, and so forth,

in that area.

Q. Where is Phillips' East Vacuum project in relation to Texaco's Central Vacuum project?

A. Our East Vacuum project is located to the east and to the north of Texaco's Central Vacuum Unit.

MR. KELLAHIN: We tender Mr. Brownlee as an expert reservoir engineer.

MR. STAMETS: The witness is considered qualified.

Q. Mr. Brownlee, let me direct your attention to what we've marked as Phillips' Exhibit Number One, which is the plat.

A. Uh-huh.

Q. And have you identify, first of all, what is indicated on that plat.

A. The area in the middle of this plat, outlined in purple, is Texaco's Central Vacuum Unit. To the east and north, outlined in yellow is our East Vacuum Unit and on Section 35 to the west of the Central Vacuum Unit I have outlined the 240-acre tract, our Hale State lease, and an 80-acre tract in the northwestern portion of that section, our Mable lease.

Q. How is Phillips' East Vacuum Unit governed in terms of Oil Division regulations and orders?

A. Our East Vacuum Unit is a pressure maintenance project and operates under a pressure maintenance order very similar to the one that the Central Vacuum Unit operates under.

Q. All right, sir, let me direct your attention to what we've marked as Phillips' Exhibits Two, which is the Texaco pressure maintenance order --

A. Uh-huh.

Q. -- and Exhibit Three, which is Phillips' pressure maintenance order.

Now with regards to those two exhibits, Mr. Brownlee, would you direct our attention to any significant differences that exist, or may exist, between the two orders?

A. On page six of the Central Vacuum Unit order and on page six of the East Vacuum Unit order I have outlined two phrases that seem to be the predominant difference in our two pressure maintenance orders.

Q. All right, sir, would you describe what those are?

A. In Order 13 of the Central Vacuum Unit order the statement reads that the project area shall receive the project area allowable and said project area allowable shall be the sum of the basic project area allowable plus the

water injection credit allowable.

Now to that point that is identical to Rule 2 of the East Vacuum Unit order.

Continuing with the Central Vacuum Unit order, it places a limitation, I shall read it, "and shall be limited to 80 barrels of oil per day times the number of developed 40-acre project area times two."

This phrase seems to be the difference, and this limitation seems to be the difference in our two projects.

Q. Okay. Have you made any calculations based upon what you know of the Texaco project and applying the current limitation of 80 barrels, as outlined in yellow, can you indicate to me what their current limit project allowable is?

A. 12,320 barrels per day.

Q. All right, sir, and if that phrase is omitted from their order, then it will be identical to your order.

A. This is true.

Q. And if that is done, do you have an opinion as to what their project allowable would then be?

A. Having not known Texaco's average bottom hole pressure until this morning, I based my work on a range

from 600 to 900 pounds bottom hole pressure, psi bottom hole pressure.

At 900 pounds their total project allowable in July would have been in excess of 38,000 barrels per day.

Q. All right, sir, and what is Phillips' current total project allowable?

A. Ours is -- we're not as yet replacing voidage to a point -- our project is at low enough pressure, we're not yet replacing voidage to a point where we are receiving added injection allowable credit, so ours is still confined to the 80 barrels times the number of 40-acre units.

Q. All right, sir.

Does Phillips have any objection to the modification of Texaco's pressure maintenance order so that its language in the paragraphs to which you referred is identical?

A. No.

Q. In fact, you support that position, don't you?

A. Very much.

Q. What, if any, position does Phillips have with regards to the reclassification of Texaco's project as a waterflood project?

A. We don't want any operator in this field to be allowed an unlimited allowable as would be outlined by the present waterflood regulations without the replacement of reservoir voidage.

Q. Tell me why you have that concern.

A. Generally it would create a pressure sink in the middle of the field and specifically involving our Hale State lease to the west, which has six wells completed in the Grayburg-San Andres formation, all of which are operating at this top allowable of 80 barrels a day.

If Texaco were to operate the offset wells at this unlimited allowable, it would allow oil to migrate from our lease to theirs.

Q. If Texaco's project is reclassified as a waterflood, in your opinion would they have any obligation or requirement to continue with the injection of water?

A. Not in my understanding of the present rules.

Q. In your opinion could they create a situation in which the pressure in their project is significantly below your bottom hole pressure in your project?

A. Yes, sir.

Q. And in your opinion what then would happen?

A. Lease line migration.

Q. Are the lease line wells drilled in such a pattern and operated in such a way that you can through your own efforts prevent oil from migrating across the lease line in the event the Texaco project is classified as a waterflood?

A. Our -- between our East Vacuum Unit and the Central Vacuum Unit the agreement now is that Texaco has drilled every other well and we drilled every other well, geographically speaking, and they will operate theirs and we will operate ours, and we hold no obligation to one another in that agreement.

Q. Yes, sir, but based upon the existing wells, the way you operate your wells, in the event that Texaco's project is no longer a pressure maintenance project and is classified a waterflood, and in fact a pressure sink occurs in their project, what can you do with your wells to avoid the migration of oil across the lease line, or the project line?

A. There is nothing that we could do within -- there is nothing within our power at this time that we could do to stop that.

Q. All right, sir, we've looked at the first three exhibits. Let's go on to some of your other exhibits here, Mr. Brownlee. I have marked as Exhibit Number Four this

Central Vacuum Unit No. 1 Texaco-operated production history. Let me take a moment and make sure my exhibits are in the same order as yours.

A. Yes.

Q. All right, sir, I direct your attention to Exhibit Number Four. Would you describe what that is?

A. This is a plot of Texaco's production history since the time of their unitization, and as you can see, the curve marked by triangles in about the middle of the page is their daily rate of oil, barrels per day, and our last point we had plotted was in July exceeded 11,000 barrels per day, and as Mr. Wolle said before, if they continue with their excellent response, they are going to exceed the 12,320 barrel per day limit very soon.

I would like to point out that this plot, this graph does show that as a pressure maintenance project operator Texaco is doing a very good job. With proper water injection they have made this reservoir respond to injection and therefor have increased their production.

Q. Based upon your study of their production history and their success with the pressure maintenance project, Mr. Brownlee, in your opinion has the time come for Texaco to abandon this as a pressure maintenance and convert it to waterflood?

A. No. No.

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

A. This plot, as I mentioned earlier, I was unaware of the bottom hole pressure in their unit until this morning, so I did my calculations at 600, 700, and 900 psi bottom hole pressure, and I've highlighted the one at 700 psi, so I will speak from that just as a matter of convenience.

This first graph is the produced voidage in reservoir barrels per day from their unit, and I have -- I did not take these -- these next few graphs back to the original unitization point. I started them at the point when Texaco exceeded their basic project area allowable.

Q. What's the purpose of the exhibit, Mr. Brownlee? What does it say?

A. Well, what it's telling us now is that Texaco is only drawing out approximately 21,500 barrels per day of reservoir -- they're only creating that much voidage, and that is the point of this. This is tied in with the following.

Q. All right, let's look at that Exhibit Number Six, sir.

A. Exhibit Number Six is strictly the water injection credit allowable. This does not include the basic

project area allowable of 80 barrels per day times the number of 40-acre units. And as you can see, that 700 psi curve is up very close to 30,000 barrels per day, about 3000 barrels per day more than their voidage is at this point.

Q. What's the conclusion, then, Mr. Brownlee?

A. The conclusion is that if Texaco continues as they have in the past with a -- in a prudent manner with their pressure maintenance project, that -- and this limit of 12,000 barrels is lifted, then their basic project or their total project allowable should be much more than what they're able to produce, anyway.

Q. The point is the limitation that's in their order that's not in your order is hurting them, isn't it?

A. Right.

Q. All right. Exhibit Number Seven, what's that?

A. Exhibit Number Seven is merely the water injection credit allowable plus the basic project area allowable. It's 6160 barrels higher on the curve.

Q. All right, sir. In your opinion, Mr. Brownlee, would the removal of the top allowable restriction as you've defined it for us from the Texaco order be in the best interest of conservation, the prevention of waste, and

the protection of correlative rights?

A. Yes, sir.

Q. Were Exhibits One through Six prepared or compiled under your direction and supervision, except for the two orders?

A. Yes.

MR. KELLAHIN: We move the introduction of Exhibits One through Seven.

MR. STAMETS: These exhibits will be admitted.

Are there questions of this witness?

MR. BATEMAN: Just one question.

MR. STAMETS: Okay.

CROSS EXAMINATION

BY MR. BATEMAN:

Q. Is there a significant difference in your opinion given the facts in the Texaco operations as you know them, between the removal of the limitation and the grant of the capacity allowable?

A. It's my understanding of the pressure maintenance order that the removal of that limitation gives them more than capacity allowable.

Q. The potential to draw more than they

could possibly produce?

A. As the equation for water injection and credit allowable is specified in the order.

MR. BATEMAN: No further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q. The net effect of what Phillips is proposing here is to have this rather large section of the reservoir operated under the same rules, is that correct?

A. Yes, sir.

Q. Does anybody here remember back in the dim, dark past why this limit in Order 13 of Order No. R-5530 was placed in that?

MR. KELLAHIN: Yes, sir, I have the great sage from the east, Mr. Verle (sic) Miller, who is the author of that magic formula, and he'll be happy to tell you, I'm sure. He told me and I did not understand it.

MR. STAMETS: Mr. Miller, would you tell us? I don't believe we need you sworn for this; if you'd just edify this we'd appreciate it.

MR. MILLER: Yes. When Texaco came for unit -- they asked for unitization of the Central Vacuum Unit, and its pressure maintenance order, they asked at that

time that the allowable be established very similar to their 100 percent Vacuum Unit, which permitted another 80 barrels per day per well drilled.

At that time Phillips entered testimony and said no, that any allowable in excess of 80 barrels per 40-acre tract must be earned by water injection credit, and somehow we -- we presented the formula and -- but Texaco had testified they really wanted the two times 80, or another 80 for each well drilled, so that the two got added together in their order.

MR. STAMETS: Okay. I think I understand that.

Are there any other questions of Mr. Brownlee? He may be excused.

Do either of you have anything you wish to add or offer at this time?

MR. BATEMAN: Just a brief statement, if I may.

I think the principal problem is a definitional problem in Rule 701. There's no design, I think I can say safely, on Texaco's part to operate this in the future in any different way than they have in the past. The problem obviously is the -- is the allowable limitation that occurs in the present order.

The waterflood definition, as I'm sure you're aware, provides for a capacity allowable, or the rule provides for a capacity allowable, for projects defined under the rules as a waterflood project.

On the other hand, pressure maintenance projects, under the rule, the rule provides only for an allowable formula to be fixed by the Division on an individual basis.

So it seems to me that there's ample latitude for the Commission to, on the individual basis if the pressure maintenance designation is to be continued, to provide for a capacity allowable in a pressure maintenance project.

MR. STAMETS: Let me ask one question, then, to make certain that there is no misunderstanding on my part.

If the Phillips suggestion were taken, the effect at this time would be to grant, in essence, the production increase, at least as much as Texaco is looking for at the present time, would serve Texaco essentially as well as what they requested?

MR. BATEMAN: That's as I understand it.

MR. STAMETS: Okay, thank you.

MR. KELLAHIN: You asked Mr. Wolle earlier

if he would feel bad if this was a waterflood project. He said he didn't think so.

Phillips would feel very bad if it was.

We think that we've suggested to you a way that you could accommodate Texaco's problem, put both operators on an equal basis with similar orders and do equity to everyone.

MR. STAMETS: The Division always appreciates the public spirited nature of these submittals that we get, and certainly this is one of those that we will take in that light.

If there is nothing further, this case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY 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. 7353, heard by me on 9-23 1981.

Richard L. Stamets, Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date SEPTEMBER 23, 1981 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
Charles R. Wolle	Texaco Inc	Midland, Tx
R.J. Anthony	Texaco Inc	Hobbs, N M
D L [illegible]	Northern Natural Gas	Midland, Tx.
Mike H. Brownlee	Phillips Petr. Co.	Odessa, Tx.
Joe V Peacock	" " "	" "
[illegible]	" " "	
[illegible]	[illegible]	Santa Fe NM
Bob Huber	Byram	Santa Fe
[illegible]	[illegible]	Santa Fe
S.G. Buell	Jasper & Buell	Santa Fe
Bill Bog	Bogle Farms	Dexter NM
W.J. Mueller	Phillips Petr. Co.	Odessa, Tx
L. G. Buck	L. G. Buck	Hobbs, NM.
Larry Brooks	OCD	[illegible]
[illegible]	[illegible]	HOBBS, NM
Ernie Busch	[illegible]	Kirtland, NM
W. Kellahin	Kellahin & Kellahin	Santa Fe
Steve Reed	[illegible]	[illegible]

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date SEPTEMBER 23, 1981 Time: 9:00 A.M.

NAME	REPRESENTING	LOCATION
James T. Jennings	Jennings & Chasek	Roswell NM
Ray Westall	Loco Hills Water Disp	Loco Hills
A K Carpenter	U.S.G.S	Albuquerque NM
Roger Anderson	BIA-USGS	Albuquerque NM

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

EXAMINER HEARING

IN THE MATTER OF:

Application of Texaco, Inc., for the amendment of Division Order No. R-5530, Lea County, New Mexico. CASE 7353

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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

For the Applicant: Ken Bateman, Esq.
WHITE, KOCH, KELLY, & McCARTHY
220 Otero Street
Santa Fe, New Mexico 87501

A P P E A R A N C E S

For Phillips Petroleum: W. Thomas Kellahin, Esq.
KELLAHIN & KELLAHIN
500 Don Gaspar
Santa Fe, New Mexico 87501

I N D E X

CHARLES R. WOLLE

Direct Examination by Mr. Bateman 5

Cross Examination by Mr. Kellahin 13

Cross Examination by Mr. Stamets 16

MICHAEL BROWNLEE

Direct Examination by Mr. Kellahin 21

Cross Examination by Mr. Bateman 32

Cross Examination by Mr. Stamets 33

STATEMENT BY MR. MILLER 33

STATEMENT BY MR. BATEMAN 34

STATEMENT BY MR. KELLAHIN 35

E X H I B I T S

Texaco Exhibit One, Plat	5
Texaco Exhibit Two, Graph	7
Phillips Exhibit One, Plat	23
Phillips Exhibit Two, Order	24
Phillips Exhibit Three, Order	24
Phillips Exhibit Four, Production History	28
Phillips Exhibit Five, Graph	30
Phillips Exhibit Six, Graph	30
Phillips Exhibit Seven, Graph	31

MR. STAMETS: Call next Case 7353.

MR. PEARCE: Application of Texaco, Inc., for the amendment of Division Order No. R-5530, Lea County, New Mexico.

MR. BATEMAN: Mr. Examiner, I'm Ken Bateman of White, Koch, Kelly, & McCarthy, representing the applicant.

I have one witness.

MR. STAMETS: Any other appearances?

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing in association with Joe Peacock, for Phillips Petroleum Company.

MR. STAMETS: No witnesses, I --

MR. KELLAHIN: I have one witness.

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

(Witnesses sworn.)

CHARLES R. WOLLE

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

DIRECT EXAMINATION

BY MR. BATEMAN:

Q. Would you state your full name for the record, please, and your place of employment?

A. Charles R. Wolle. I work for Texaco, Incorporated, Midland, Texas.

Q. And in what capacity do you -- are you employed by Texaco?

A. I'm the Division Reservoir -- excuse me, Division Operations Engineer for our Midland Division Office.

Q. In that connection are you familiar with the area in question in the application today?

A. Yes, sir, I am.

Q. Have you previously testified before the Commission and made your educational and work experience qualifications a matter of record?

A. Yes, I have.

MR. BATEMAN: I offer Mr. Wolle as an expert.

MR. STAMETS: He is considered qualified.

Q. Mr. Wolle, would you refer to what's been marked Exhibit One and generally review the history of the development of the Vacuum Grayburg pool?

A. Okay.

Q. Or project, excuse me.

A. Exhibit One essentially shows the outline of the Central Vacuum Unit, which is in the Vacuum-Grayburg-San Andres Field, in Lea County, New Mexico.

This project is developed on 20-acre spacing. We have essentially a five spot water injection plot in here. There are two minor areas where the development is not complete; up in Section 30 on the north there is one infill location that does not presently have a producing well. We're evaluating a replacement well. The well that's there has been plugged and abandoned. And along the northwest and the west boundaries of the unit, as indicated by the circles and the diamonds and the triangle, there are some lease line injectors which have not to date been drilled.

Other than that, the pattern is complete and along the remaining boundaries of the unit there are lease line injectors with the exception of the very southeast edge, which is the edge of the field. There are no Vacuum-Grayburg-San Andres wells to the south and east there and for that reason there are no lease line injectors in that area.

The Central Vacuum Unit is offset to the east and the north by the Phillips-operated East Vacuum Unit; to the southwest by the Texaco-operated Vacuum-Grayburg-San Andres Unit; to the northwest by Mobil's State Bridges Unit;

and to the west in Section 35 by a lease operated by Continental and a lease operated by Phillips, which are not at the present time under waterflood operation. With that one exception in Section 35. I believe the entire remainder of the Vacuum-Grayburg-San Andres Field is experiencing water injection operations.

By virtue of our having developed a five-spot water injection pattern on a 40-acre basis, from an engineering standpoint this project is operating as a waterflood. By having the lease line wells, as we do virtually completely surrounding the project, with the exception of those that have not yet been drilled, we are preventing any movement of fluids either into or out of the unit boundary.

At the present time negotiations are underway between Texaco and Mobil, Continental, and Phillips to complete the drilling of these lease line injectors. We would anticipate that would most likely be done in the early part of 1982, and that will virtually surround the unit with lease line injection wells.

This will be a protection of the correlative rights, both of the unit and of the offset operators when this is done.

Q All right, sir, would you proceed then with what's been marked Exhibit Two and describe the history

of the water injection project?

A Okay. This is a graphical representation of the history of the Central Vacuum Unit. The unit became effective on October 1st, 1977. The initial water injection began in January of 1978 and it increased over a period of time until the latter part of 1979, when it reached more or less its present level of injection of approximately 55,000 barrels per day, and during that period between January of '78 and the latter part of '79 we were drilling and converting wells to injection.

You can see from the graph a curve representing the number of active injection wells and that increased until its present level of 70 in July of this year. The active number of -- the number of active producing wells is also represented graphically and we currently have 74 producing wells on this project.

In January at the time -- or January of '78 at the time of the initiation of water injection the oil producing rate from this project was about 3300 barrels per day. Beginning in about the middle of 1979 that rate started increasing significantly. It increased, the last point on the curve, which is the July, 1981, production level of 11,350 barrels per day. We don't have the final production figures for August, but it's going to be very nearly 12,000 barrels

per day in August.

And September production is averaging very nearly the top project allowable of 12,320 barrels per day.

Continuing the trend of the oil production rate, we anticipate, or we project that by the latter part of 1982, if there are no restrictions on the production allowable for this project, we'll reach a producing rate of approximately 17,000 barrels of oil per day. This is approximately 5000 barrels of oil per day higher than our current rate of just over 12,000 barrels per day.

Q. Have you calculated the reserves in -- both primary and secondary in this area?

A. Yes, we have. The ultimate primary reserves were determined to be 42,277,000 barrels.

MR. STAMETS: What was that figure again, please?

A. 42,277,000 barrels. And there were projected secondary reserves on a one-to-one primary to secondary ratio of, again, 42,277,000 barrels.

Our production to date from the unit is 44 -- or through July of this year, is 44,559,000 barrels, leaving reserves of approximately 40,000,000 barrels yet to be recovered from this project.

Q. Now you've indicated that there is a limit or a top allowable identified in the order under which you're currently operating. Would you state again for the record what the constraint on production is at the moment?

A. The current top allowable for the project is 12,320 barrels per day, which is based on 80 barrels per day times 77 proration units times 2.

Q. And I believe you testified that you would expect to reach that level in the current month?

A. Yes, sir, that's correct. We'll be right at that number this month.

Q. Well then, would you state for the record what relief Texaco is requesting?

A. Yes. We would request that the Central Vacuum Unit be granted a capacity allowable enabling us to produce the -- all of the wells in the project at their capacity.

We would point out that in view of the fact that we do not have lease line injection wells along the northwest and the west boundaries of the project, producing wells that are not offset by [illegible]ase line injection wells would be limited, as is stated in the current order, to a maximum production of 80 barrels per day. We're not seeking to change that. We would still restrict that production until

such time as lease line injection wells are drilled and are on injection.

Q What would be the effect if you were required to continue to operate the project under the top allowable as presently identified?

A Initially we'd have to restrict our injection to some lower level; otherwise, we would faced with a situation where we would possibly be pushing oil, or we'd run a significant possibility of pushing oil into areas of the reservoir where it could not be recovered, and consequently reducing the ultimate production, ultimate reserves, that we could expect from this project, and we're talking about ultimate secondary production here of on the order of 42,000,000 barrels, so just by reducing that ultimate recovery of one percent we're talking about almost half a million barrels of oil that we would not otherwise produce, and it's -- that's a significant amount of oil and it represents a significant amount of money, both to the operators of the Central Vacuum Unit and to the State of New Mexico, as royalty interest owner, and because there is a significant possibility that ultimate production would be reduced as a result of having to reduce injection rates, we'd like to -- we are requesting that the allowable be increased to a capacity allowable.

Q As far as you know, has this situation

ever occurred before in -- with respect to pressure maintenance projects having reached the top allowable granted by the Commission?

A. I'm not aware of a situation where this has occurred.

Q. In your opinion will the grant of this application prevent waste and protect correlative rights?

A. Yes, sir, it will.

Q. And what is your understanding of the future of the offsetting acreage in the north, it's the northwest after those lease line injectors are completed?

A. Okay. To the northwest the boundary between Central Vacuum Unit and Mobil, Mobil has an established waterflood project there already.

To the west in Section 35, as I mentioned earlier, that area is not under waterflood at the present time, but in conjunction with the drilling and completion of the lease line injectors between the Central Vacuum Unit and Continental and Phillips, it's our understanding that those operators are going to pursue water injection operations in conjunction with those lease line injection wells being completed.

Q. Were Exhibits One prepared by you or under your direction?

A Yes, they were.

MR. BATEMAN: I offer Exhibits One and Two.

MR. STAMETS: These exhibits will be admitted.

MR. BATEMAN: I have no further direct.

MR. STAMETS: Any questions of the witness?

MR. KELLAHIN: Yes, Mr. Stamets.

CROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Wolle, this is a pressure maintenance project operated by Texaco, is it not?

A That's correct.

Q And it is to the west of a similar pressure maintenance project operated by Phillips Petroleum Company?

A Yes, sir.

Q They operate that under a pressure maintenance order that's very much like the one that you operate on.

A Yes, sir.

Q The principal difference in those two

orders, is it not, Mr. Wolle, the fact that you have a limitation that you have discussed to us on your allowable.

A. I'm not very familiar with the order on the East Vacuum Unit, but from conversation I understand that is correct.

Q. All right, sir. You called the pattern of injection here a waterflood pattern and have two or three times in your testimony made reference to a waterflood. You don't have any intentions of changing your project to a waterflood project, do you, sir?

A. Well, the definitions of the State of New Mexico are such that a project is classified as pressure maintenance or waterflood based on the production from the individual wells in the project at the time of unitization.

Q. Yes, sir, I know.

A. And they have not much room for interpretation of the definitions.

Q. I understand, and your project now is classified as a pressure maintenance project.

A. That is correct.

Q. And what do your wells on a per well basis make in terms of barrels of oil?

A. We've got about, say, 70 wells and about 12,000 barrels a day, so that would be, say, 170 barrels a

day, roughly.

Q That's well above what the Commission --

A Well --

Q -- classifies as stripper wells?

A Yes, sir.

Q All right, so that portion of your application that refers to a reclassification of your project as a waterflood project is really not your intention, is it, sir?

A It's not our intention to determine the discretion of the Commission, if they should feel that it should be classified as a waterflood project.

Q Well, normally the Commission can't exercise a discretion unless the applicant makes an application seeking that kind of relief, and my question is whether you're seeking relief to reclassify this as a waterflood project or not.

A We would prefer to have the allowable increase granted and maintain the classification as a pressure maintenance project.

Q All right, sir. In reference to your order, have you made a determination as to how that might be accomplished in terms of modification of your own order?

A We feel that the regulation of the Division gives insufficient latitude to increase the allowable,

if they feel that is justified.

Q In reference to your Exhibit Number Two, Mr. Wolle, you've given us some of the production history for your project. What kind of bottom hole pressures are you experiencing now in this project area?

A We're in the process currently of taking our annual bottom hole pressure survey for this project. Last year the bottom hole pressure was approximately 750, 760, psi. The preliminary indications that we see for this year, that the bottom hole pressure is in the range of 890 to 900 psi, and again, this is incomplete, but that's the indication that we have.

MR. KELLAHIN: Thank you. I have no further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q Is the projected 17,000 barrels a day the highest expected productivity from this reservoir?

A That's what we project at the present time, yes, sir.

Q Okay.

A We hope it will go higher but we can't reasonably project that to be higher.

Q Now today you indicated that primary production from the wells in this area should have been in excess of 42,000,000 barrels.

A Yes, sir.

Q Is this the same figure that was presented in the original application?

A Yes, sir.

Q Okay. Now, you also indicated that as of today these wells have produced 44,000,000 plus.

A Yes, sir.

Q Then as a whole one could say that these wells have produced their primary production, is that right?

A We have passed the point that they produced their ultimate primary, yes, sir.

Q Now, looking at Exhibit Two, which is essentially -- has on it a decline curve for the production from those wells, if we projected that production on at the rate that that was declining, could we utilize that to say at what date these wells would have declined to the stripper state, on an average basis?

A Yes, sir, we could. I've not done that but we could.

Q Could you kind of eyeball that quickly and give us that date?

A. Okay, assuming around -- for round figures, somewhere in the low 70's for active producers, say 700 barrels per day, probably would have been -- would be, oh, 1986. Somewhere in that time frame.

Q. Do you recall what the primary production was at the start of the project?

A. The cumulative production for the project prior to October 1 of '77 was 36,862,000 barrels.

Q. Okay. Now you indicated you didn't really want to lose the pressure maintenance label but you wanted to be treated like a waterflood. What's the logic in that?

A. Well, the pressure maintenance definition is fairly straightforward and in the classification, or the rules for pressure maintenance projects the Commission or the Division has the authority to set an allowable for a pressure maintenance project.

A waterflood clasification, conversely, has no allowable other than capacity allowable.

So we're esentially asking for -- or we are asking for a capacity allowable for our pressure maintenance project.

We've got no -- no problem in maintaining the pressure maintenance classification with a sufficient

allowable to handle our projected production from the project.

Q If we wanted to call it a waterflood, you wouldn't feel bad?

A No, sir, that would in essence accomplish the same relief that we're seeking.

Q Okay. Now you testified that you felt it was possible that we could lose a half million barrels final production out of this project as a result of reducing injection rates.

A No, sir. My comment was that by reducing the ultimate recovery by just one percent, if we were to reduce the injection rate and would decrease our ultimate recovery. Just one percent represents approximately a half million barrels.

Q So that, that wasn't a firm figure.

A No, sir. Each percent that that ultimate production drops represents almost half a million barrels of oil.

Q Aren't there some schools of engineering thought that, say, that lower injection rates result in greater ultimate recovery?

A There's some, I'll say, controversy or discussion on that point. One line of thought that goes like that and the other line of thought is that decreased or lower

injection rates will result in lower ultimate recoveries.

So there's some controversy among the, well, I'll say experts, on that.

Q. Is Texaco operating this project under an injection pressure limit?

A. We have, and I don't recall offhand what that limitation is, whether it's half a pound per psi or .2.

Q. Is it Texaco's intention not to operate this project above the fracture limit of the reservoir?

A. That is correct. We do not anticipate that and are not planning to do that.

Q. Your only alternative, then, if I understand you correctly, if you don't get the relief sought today, your only alternative would be to restrict injection volume beginning later this year.

A. It would have to begin in the very near future, yes, sir.

Q. Has this project achieved fillup at this stage?

A. Yes, sir.

Q. What's the ratio of water in to fluid out?

A. The injection ratio, well, for July it happened to be 2.64. It has varied between -- for this year,

between 2.5 up to over 3.4.

Q. Where do those other barrels of water go?

A. Beg pardon?

Q. Where do those other barrels of water go?

A. Well, I think in any waterflood project you don't have complete control of injection fluid into your desired zones. You have -- you have some loss.

MR. STAMETS: Any other questions of this witness? You may be excused.

Do you have anything further, Mr. Bateman?

MR. BATEMAN: Nothing further.

MR. STAMETS: Mr. Kellahin?

MR. KELLAHIN: Yes, sir.

MICHAEL BROWNLEE

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. All right, sir, would you please state your name?

A. My name is Michael Brownlee.

Q. Mr. Brownlee, how are you employed?

A. I'm a reservoir engineer, employed by Phillips Petroleum Company.

Q. Have you ever testified before this New Mexico Oil Conservation Division?

A. No, sir.

Q. Would you describe to the Examiner when and where you obtained your degree?

A. I obtained a BS degree from Texas A&M University in petroleum engineering; graduated in May, '78.

Q. Subsequent to graduation in '78, where have you been employed as an engineer?

A. I was an operations engineer for Chevron USA in Coalingua, California, and I held that position for approximately sixteen months.

For the past two years, since that time, I've been employed by Phillips as a reservoir engineer in Odessa, Texas.

Q. What area of responsibility has been assigned to you by your employer with regards to your duties as a reservoir engineer?

A. Geographically my primary responsibility is the Vacuum Field. I am the reservoir engineer maintaining and operating the East Vacuum Unit, and have worked with the voidage calculations and completions, workovers, and so forth,

in that area.

Q. Where is Phillips' East Vacuum project in relation to Texaco's Central Vacuum project?

A. Our East Vacuum project is located to the east and to the north of Texaco's Central Vacuum Unit.

MR. KELLAHIN: We tender Mr. Brownlee as an expert reservoir engineer.

MR. STAMETS: The witness is considered qualified.

Q. Mr. Brownlee, let me direct your attention to what we've marked as Phillips' Exhibit Number One, which is the plat.

A. Uh-huh.

Q. And have you identify, first of all, what is indicated on that plat.

A. The area in the middle of this plat, outlined in purple, is Texaco's Central Vacuum Unit. To the east and north, outlined in yellow is our East Vacuum Unit and on Section 35 to the west of the Central Vacuum Unit I have outlined the 240-acre tract, our Hale State lease, and an 80-acre tract in the northwestern portion of that section, our Mable lease.

Q. How is Phillips' East Vacuum Unit governed in terms of Oil Division regulations and orders?

A. Our East Vacuum Unit is a pressure maintenance project and operates under a pressure maintenance order very similar to the one that the Central Vacuum Unit operates under.

Q. All right, sir, let me direct your attention to what we've marked as Phillips' Exhibits Two, which is the Texaco pressure maintenance order --

A. Uh-huh.

Q. -- and Exhibit Three, which is Phillips' pressure maintenance order.

Now with regards to those two exhibits, Mr. Brownlee, would you direct our attention to any significant differences that exist, or may exist, between the two orders?

A. On page six of the Central Vacuum Unit order and on page six of the East Vacuum Unit order I have outlined two phrases that seem to be the predominant difference in our two pressure maintenance orders.

Q. All right, sir, would you describe what those are?

A. In Order 13 of the Central Vacuum Unit order the statement reads that the project area shall receive the project area allowable and said project area allowable shall be the sum of the basic project area allowable plus the

water injection credit allowable.

Now to that point that is identical to Rule 2 of the East Vacuum Unit order.

Continuing with the Central Vacuum Unit order, it places a limitation, I shall read it, "and shall be limited to 80 barrels of oil per day times the number of developed 40-acre project area times two."

This phrase seems to be the difference, and this limitation seems to be the difference in our two projects.

Q Okay. Have you made any calculations based upon what you know of the Texaco project and applying the current limitation of 80 barrels, as outlined in yellow, can you indicate to me what their current limit project allowable is?

A 12,320 barrels per day.

Q All right, sir, and if that phrase is omitted from their order, then it will be identical to your order.

A This is true.

Q And if that is done, do you have an opinion as to what their project allowable would then be?

A Having not known Texaco's average bottom hole pressure until this morning, I based my work on a range

from 600 to 900 pounds bottom hole pressure, psi bottom hole pressure.

At 900 pounds their total project allowable in July would have been in excess of 38,000 barrels per day.

Q. All right, sir, and what is Phillips' current total project allowable?

A. Ours is -- we're not as yet replacing voidage to a point -- our project is at low enough pressure, we're not yet replacing voidage to a point where we are receiving added injection allowable credit, so ours is still confined to the 80 barrels times the number of 40-acre units.

Q. All right, sir.

Does Phillips have any objection to the modification of Texaco's pressure maintenance order so that its language in the paragraphs to which you referred is identical?

A. No.

Q. In fact, you support that position, don't you?

A. Very much.

Q. What, if any, position does Phillips have with regards to the reclassification of Texaco's project as a waterflood project?

A. We don't want any operator in this field to be allowed an unlimited allowable as would be outlined by the present waterflood regulations without the replacement of reservoir voidage.

Q. Tell me why you have that concern.

A. Generally it would create a pressure sink in the middle of the field and specifically involving our Hale State lease to the west, which has six wells completed in the Grayburg-San Andres formation, all of which are operating at this top allowable of 80 barrels a day.

If Texaco were to operate the offset wells at this unlimited allowable, it would allow oil to migrate from our lease to theirs.

Q. If Texaco's project is reclassified as a waterflood, in your opinion would they have any obligation or requirement to continue with the injection of water?

A. Not in my understanding of the present rules.

Q. In your opinion could they create a situation in which the pressure in their project is significantly below your bottom hole pressure in your project?

A. Yes, sir.

Q. And in your opinion what then would happen?

A. Lease line migration.

Q. Are the lease line wells drilled in such a pattern and operated in such a way that you can through your own efforts prevent oil from migrating across the lease line in the event the Texaco project is classified as a waterflood?

A. Our -- between our East Vacuum Unit and the Central Vacuum Unit the agreement now is that Texaco has drilled every other well and we drilled every other well, geographically speaking, and they will operate theirs and we will operate ours, and we hold no obligation to one another in that agreement.

Q. Yes, sir, but based upon the existing wells, the way you operate your wells, in the event that Texaco's project is no longer a pressure maintenance project and is classified a waterflood, and in fact a pressure sink occurs in their project, what can you do with your wells to avoid the migration of oil across the lease line, or the project line?

A. There is nothing that we could do within -- there is nothing within our power at this time that we could do to stop that.

Q. All right, sir, we've looked at the first three exhibits. Let's go on to some of your other exhibits here, Mr. Brownlee. I have marked as Exhibit Number Four this

Central Vacuum Unit No. 1 Texaco-operated production history. Let me take a moment and make sure my exhibits are in the same order as yours.

A. Yes.

Q. All right, sir, I direct your attention to Exhibit Number Four. Would you describe what that is?

A. This is a plot of Texaco's production history since the time of their unitization, and as you can see, the curve marked by triangles in about the middle of the page is their daily rate of oil, barrels per day, and our last point we had plotted was in July exceeded 11,000 barrels per day, and as Mr. Wolle said before, if they continue with their excellent response, they are going to exceed the 12,320 barrel per day limit very soon.

I would like to point out that this plot, this graph does show that as a pressure maintenance project operator Texaco is doing a very good job. With proper water injection they have made this reservoir respond to injection and therefor have increased their production.

Q. Based upon your study of their production history and their success with the pressure maintenance project, Mr. Brownlee, in your opinion has the time come for Texaco to abandon this as a pressure maintenance and convert it to waterflood?

A. No. No.

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

A. This plot, as I mentioned earlier, I was unaware of the bottom hole pressure in their unit until this morning, so I did my calculations at 600, 700, and 900 psi bottom hole pressure, and I've highlighted the one at 700 psi, so I will speak from that just as a matter of convenience.

This first graph is the produced voidage in reservoir barrels per day from their unit, and I have -- I did not take these -- these next few graphs back to the original unitization point. I started them at the point when Texaco exceeded their basic project area allowable.

Q. What's the purpose of the exhibit, Mr. Brownlee? What does it say?

A. Well, what it's telling us now is that Texaco is only drawing out approximately 21,500 barrels per day of reservoir -- they're only creating that much voidage, and that is the point of this. This is tied in with the following.

Q. All right, let's look at that Exhibit Number Six, sir.

A. Exhibit Number Six is strictly the water injection credit allowable. This does not include the basic

project area allowable of 80 barrels per day times the number of 40-acre units. And as you can see, that 700 psi curve is up very close to 30,000 barrels per day, about 9000 barrels per day more than their voidage is at this point.

Q. What's the conclusion, then, Mr. Brownlee?

A. The conclusion is that if Texaco continues as they have in the past with a -- in a prudent manner with their pressure maintenance project, that -- and this limit of 12,000 barrels is lifted, then their basic project or their total project allowable should be much more than what they're able to produce, anyway.

Q. The point is the limitation that's in their order that's not in your order is hurting them, isn't it?

A. Right.

Q. All right. Exhibit Number Seven, what's that?

A. Exhibit Number Seven is merely the water injection credit allowable plus the basic project area allowable. It's 6160 barrels higher on the curve.

Q. All right, sir. In your opinion, Mr. Brownlee, would the removal of the top allowable restriction as you've defined it for us from the Texaco order be in the best interest of conservation, the prevention of waste, and

the protection of correlative rights?

A Yes, sir.

Q Were Exhibits One through Six prepared or compiled under your direction and supervision, except for the two orders?

A Yes.

MR. KELLAHIN: We move the introduction of Exhibits One through Seven.

MR. STAMETS: These exhibits will be admitted.

Are there questions of this witness?

MR. BATEMAN: Just one question.

MR. STAMETS: Okay.

CROSS EXAMINATION

BY MR. BATEMAN:

Q Is there a significant difference in your opinion given the facts in the Texaco operations as you know them, between the removal of the limitation and the grant of the capacity allowable?

A It's my understanding of the pressure maintenance order that the removal of that limitation gives them more than capacity allowable.

Q The potential to draw more than they

could possibly produce?

A. As the equation for water injection and credit allowable is specified in the order.

MR. BATEMAN: No further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q. The net effect of what Phillips is proposing here is to have this rather large section of the reservoir operated under the same rules, is that correct?

A. Yes, sir.

Q. Does anybody here remember back in the dim, dark past why this limit in Order 13 of Order No. R-5530 was placed in that?

MR. KELLAHIN: Yes, sir, I have the great sage from the east, Mr. Verle (sic) Miller, who is the author of that magic formula, and he'll be happy to tell you, I'm sure. He told me and I did not understand it.

MR. STAMETS: Mr. Miller, would you tell us? I don't believe we need you sworn for this; if you'd just edify this we'd appreciate it.

MR. MILLER: Yes. When Texaco came for unit -- they asked for unitization of the Central Vacuum Unit, and its pressure maintenance order, they asked at that

time that the allowable be established very similar to their 100 percent Vacuum Unit, which permitted another 80 barrels per day per well drilled.

At that time Phillips entered testimony and said no, that any allowable in excess of 80 barrels per 40-acre tract must be earned by water injection credit, and somehow we -- we presented the formula and -- but Texaco had testified they really wanted the two times 80, or another 80 for each well drilled, so that the two got added together in their order.

MR. STAMETS: Okay. I think I understand that.

Are there any other questions of Mr. Brownlee? He may be excused.

Do either of you have anything you wish to add or offer at this time?

MR. BATEMAN: Just a brief statement, if I may.

I think the principal problem is a definitional problem in Rule 701. There's no design, I think I can say safely, on Texaco's part to operate this in the future in any different way than they have in the past. The problem obviously is the -- is the allowable limitation that occurs in the present order.

The waterflood definition, as I'm sure you're aware, provides for a capacity allowable, or the rule provides for a capacity allowable, for projects defined under the rules as a waterflood project.

On the other hand, pressure maintenance projects, under the rule, the rule provides only for an allowable formula to be fixed by the Division on an individual basis.

So it seems to me that there's ample latitude for the Commission to, on the individual basis if the pressure maintenance designation is to be continued, to provide for a capacity allowable in a pressure maintenance project.

MR. STAMETS: Let me ask one question, then, to make certain that there is no misunderstanding on my part.

If the Phillips suggestion were taken, the effect at this time would be to grant, in essence, the production increase, at least as much as Texaco is looking for at the present time, would serve Texaco essentially as well as what they requested?

MR. BATEMAN: That's as I understand it.

MR. STAMETS: Okay, thank you.

MR. KELLAHIN: You asked Mr. Wolle earlier

if he would feel bad if this was a waterflood project. He said he didn't think so.

Phillips would feel very bad if it was.

We think that we've suggested to you a way that you could accommodate Texaco's problem, put both operators on an equal basis with similar orders and do equity to everyone.

MR. STAMETS: The Division always appreciates the public spirited nature of these submittals that we get, and certainly this is one of those that we will take in that light.

If there is nothing further, this case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY 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

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

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

October 14, 1981

Re: CASE NO. 7353
ORDER NO. R-5330-C

Mr. Ken Bateman
White, Koch, Kelly & McCarthy
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico 87501

Applicant:

Texaco Inc.

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other Thomas Kellahin, Joe Peacock

Memo

From

R. L. STAMETS
Technical
Support Chief

To Texaco

Charles Wally

Lillup stands at -

80%

OIL CONSERVATION DIVISION SANTA FE

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. 7353
Order No. R-5530-C

APPLICATION OF TEXACO INC.
FOR THE AMENDMENT OF DIVISION
ORDER NO. R-5530, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 23, 1981, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 13th day of October, 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, Texaco Inc., seeks the amendment of Order No. R-5530, which authorized its Central Vacuum Unit Area Pressure Maintenance Project, to increase the total project area allowable, or as an alternative, to reclassify the project as a waterflood project.

(3) That said Division Order No. R-5530, as amended, authorized the applicant to operate said pressure maintenance project in the Vacuum Grayburg-San Andres Pool, Lea County, New Mexico.

(4) That paragraph (13) of Order No. R-5530 established parameters and limitations for a project area allowable to be available for producing wells within said project.

(5) That under said paragraph (13) the project area allowable is limited to 12,320 barrels per day.

(6) That wells in the project are now producing at a combined rate of approximately 12,000 barrels per day and production is expected to increase to approximately 17,000 barrels per day.

(7) That removal of the limitation on the project area allowable, which limit equals 80 barrels of oil per day times the number of developed 40-acre tracts within the project area times two, would permit the applicant the relief sought and would be consistent with the allowable formula for an offsetting pressure maintenance project in the same pool.

(8) That no offset operator objected to the proposed increase in project area allowable.

(9) That that part of the subject application seeking in the alternative to reclassify said pressure maintenance project as a waterflood should be dismissed.

(10) That approval of the application will not result in waste nor violation of correlative rights.

IT IS THEREFORE ORDERED:

(1) That effective October 1, 1981, paragraph (13) on page 6 of Division Order No. R-5530 is hereby amended to read in its entirety as follows:

> "(13) That the project area shall receive a project area allowable, and said project area allowable shall be the sum of the basic project area allowable plus the water injection credit allowable."

(2) That that portion of the application in this case seeking, in the alternative, to redesignate Texaco Inc.'s Central Vacuum Pressure Maintenance Project as a waterflood project is hereby dismissed.

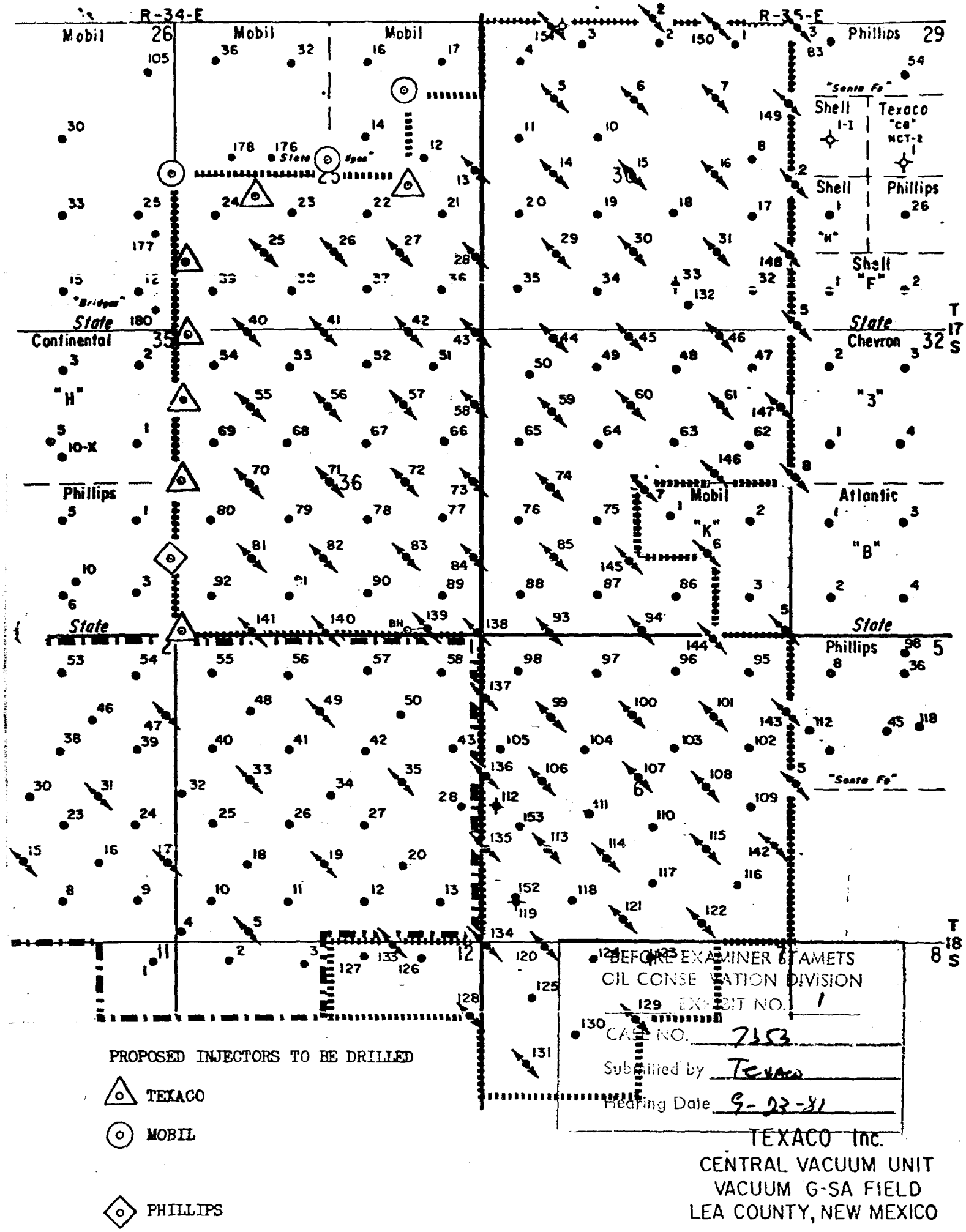
(3) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

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

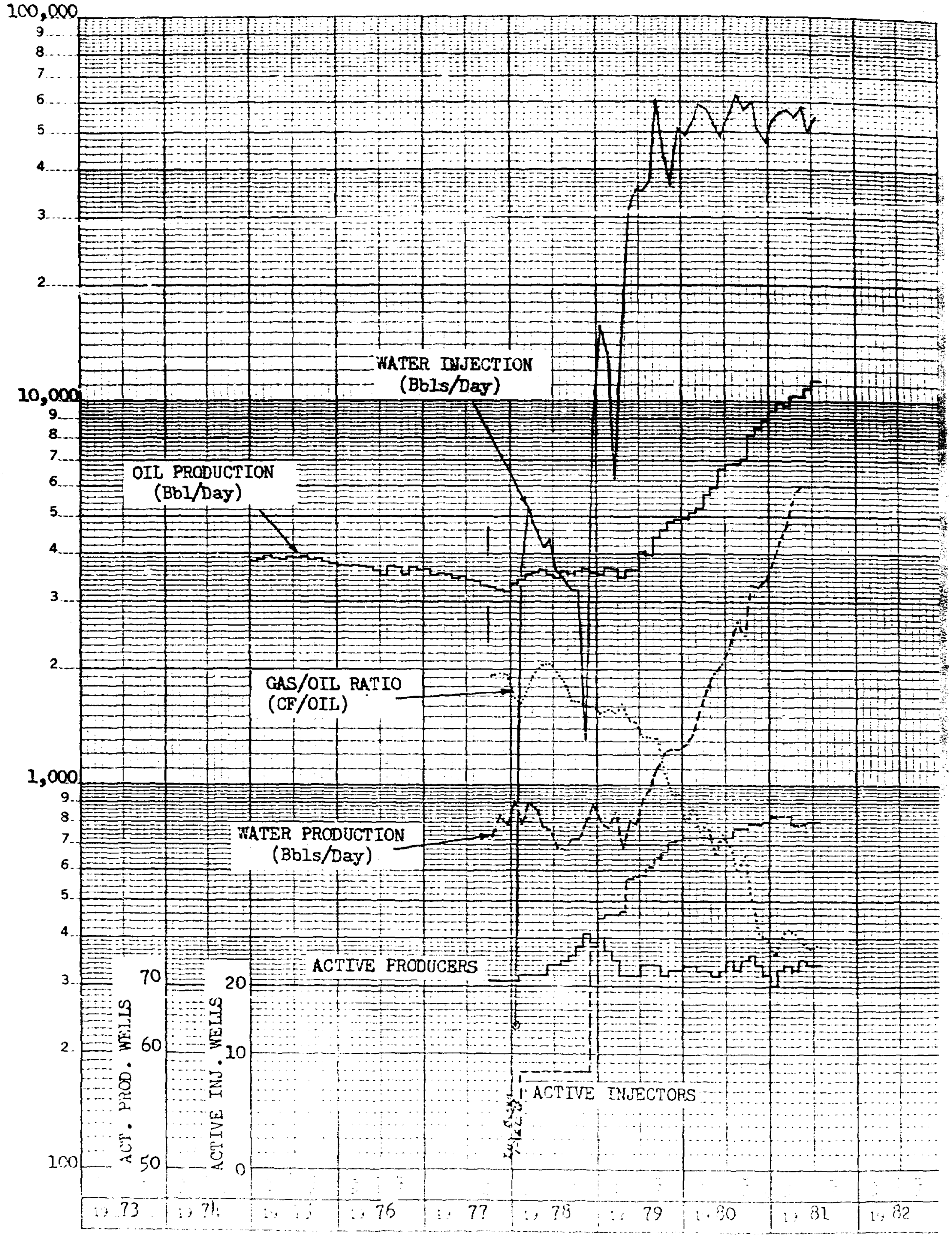
STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E
fd/

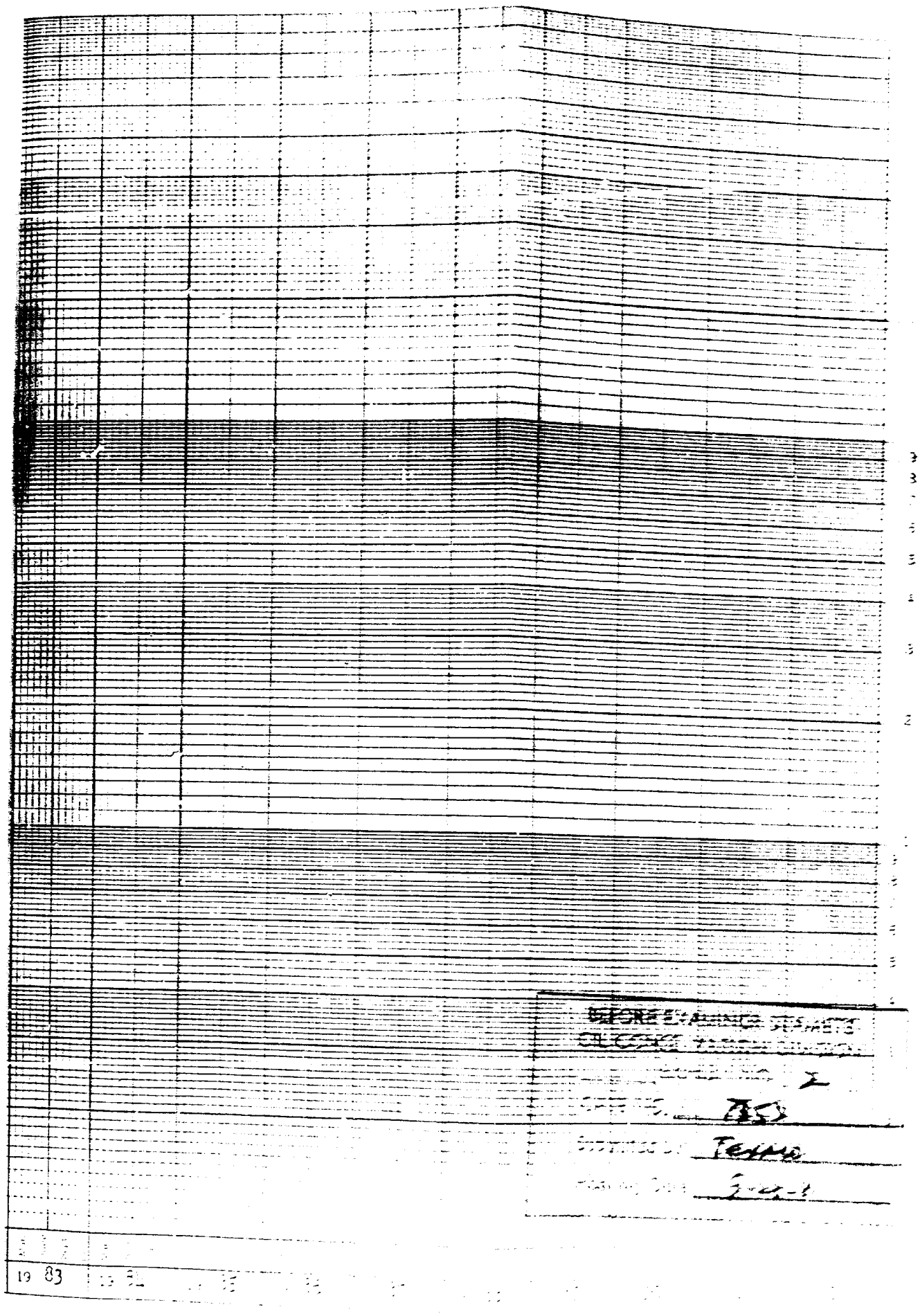

R-34-E
R-35-E
T 17 S
T 18 S
Mobil
Phillips
Shell
Texaco
Chevron
Atlantic
Continental
State
"Santa Fe"
"Bridges"
"H"
"K"
"B"
"F"
"W"
"3"
10-X
PROPOSED INJECTORS TO BE DRILLED
TEXACO
MOBIL
PHILLIPS
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 1
CASE NO. 7353
Submitted by Texaco
Hearing Date 9-22-81
TEXACO Inc.
CENTRAL VACUUM UNIT
VACUUM G-SA FIELD
LEA COUNTY, NEW MEXICO

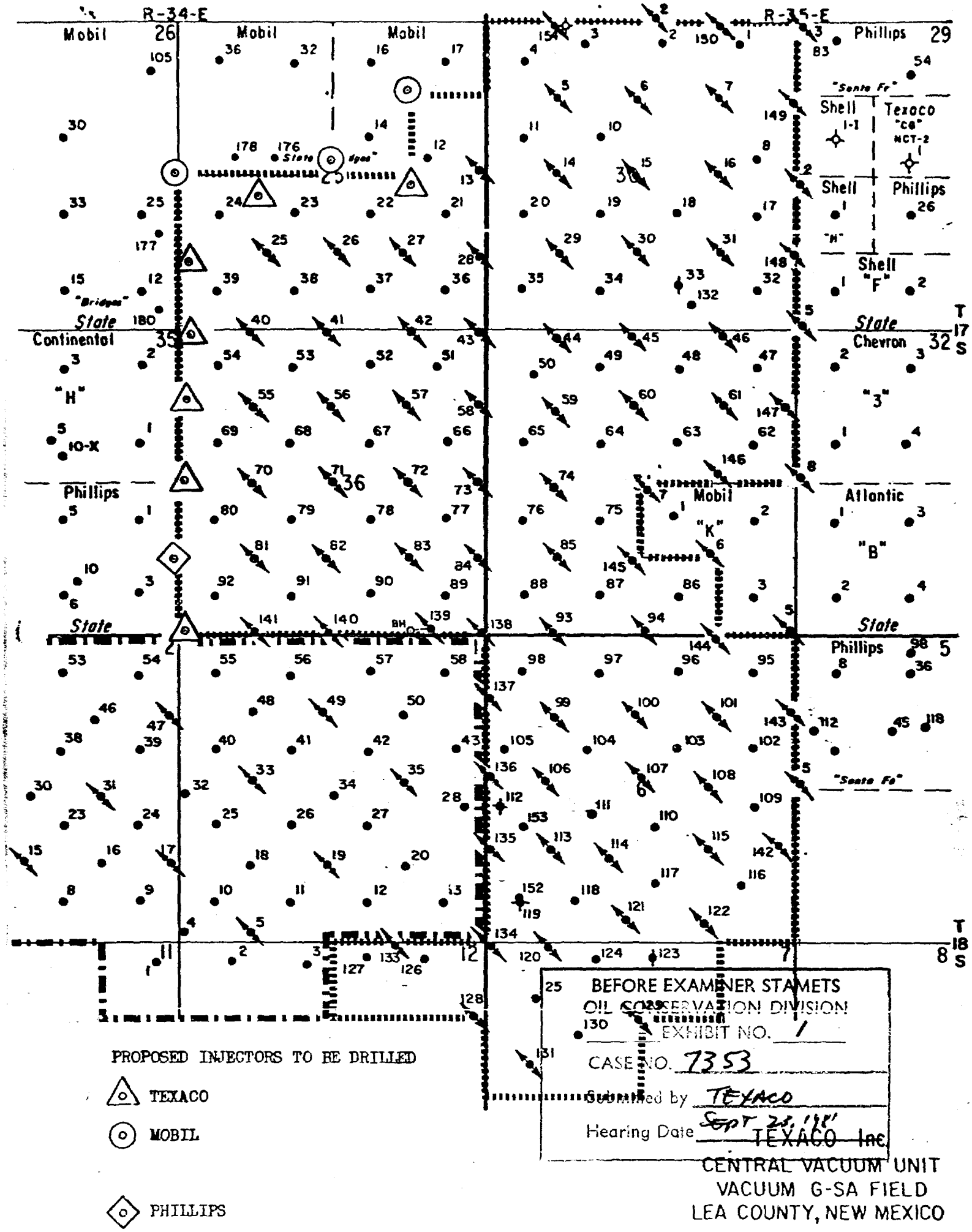
TEXACO WI: 36.15841



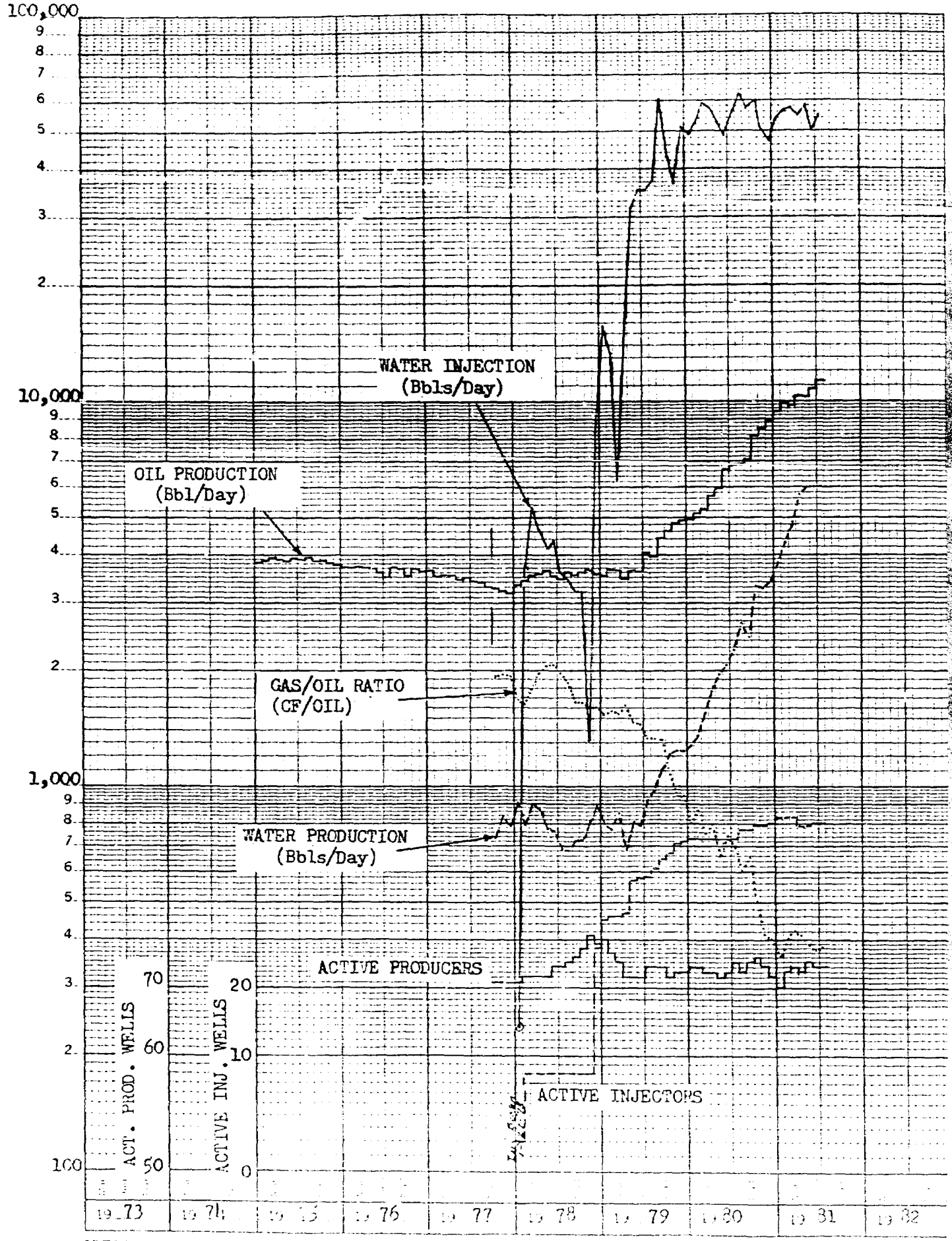
OPERATOR: TEXACO Inc.
EFFECTIVE DATE OF UNIT: 10-1-77

CENTRAL VA[illegible] UNIT
VA[illegible] (G-[illegible]) FIELD


Texaco


R-34-E
R-35-E
T 17 S
T 18 S
Mobil
Phillips
Shell
Texaco
Chevron
Atlantic
Continental
State
"Santa Fe"
"Bridges"
PROPOSED INJECTORS TO BE DRILLED
TEXACO
MOBIL
PHILLIPS
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 1
CASE NO. 7353
Submitted by TEXACO
Hearing Date Sept 28, 1978
TEXACO Inc.
CENTRAL VACUUM UNIT
VACUUM G-SA FIELD
LEA COUNTY, NEW MEXICO

TEXACO WI: 36.15811



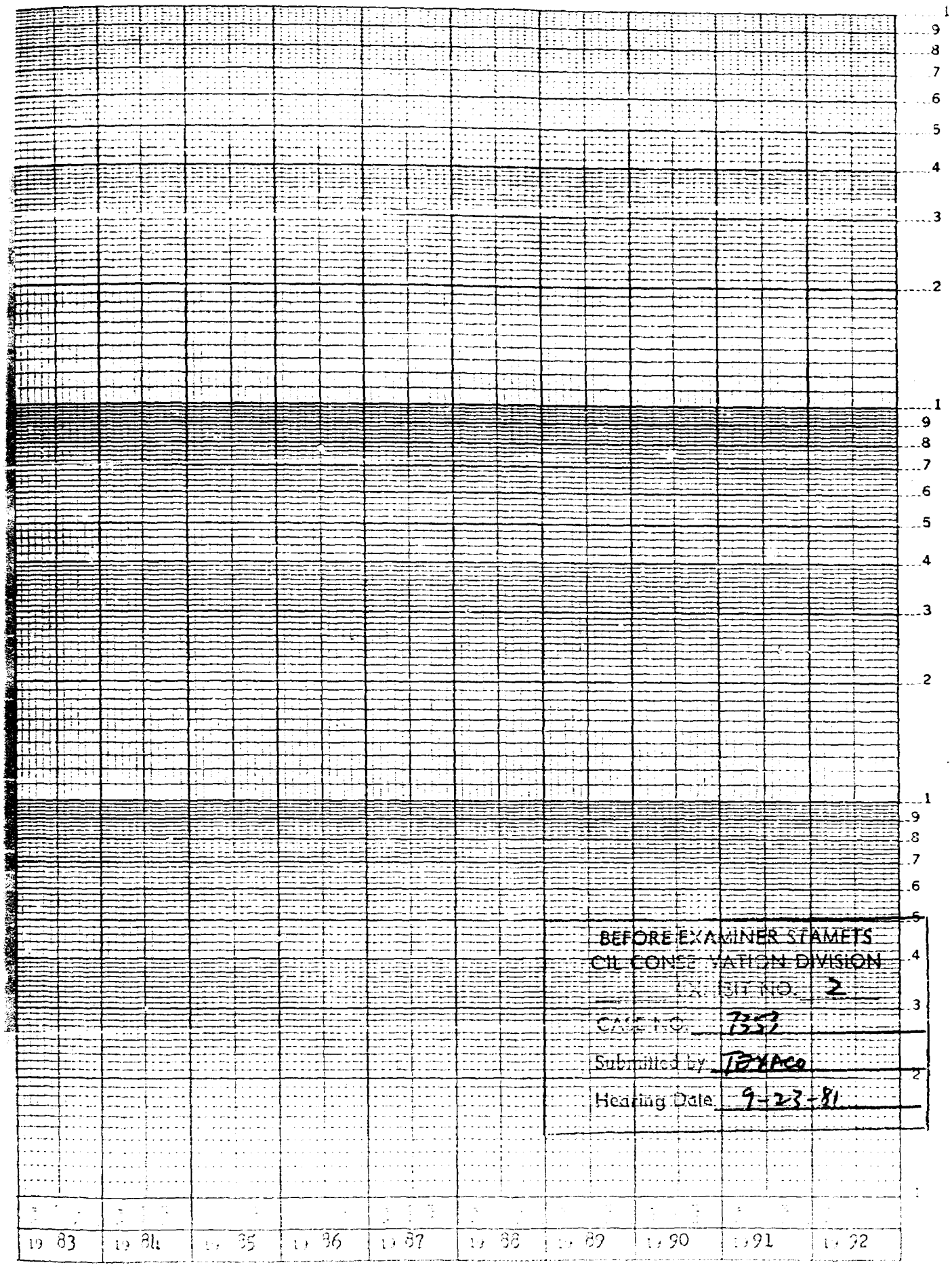
47 6840

K·E 20 YEARS BY MONTHS X 3 LOG CYCLES
KEUFFEL & ESSER CO MADE IN USA

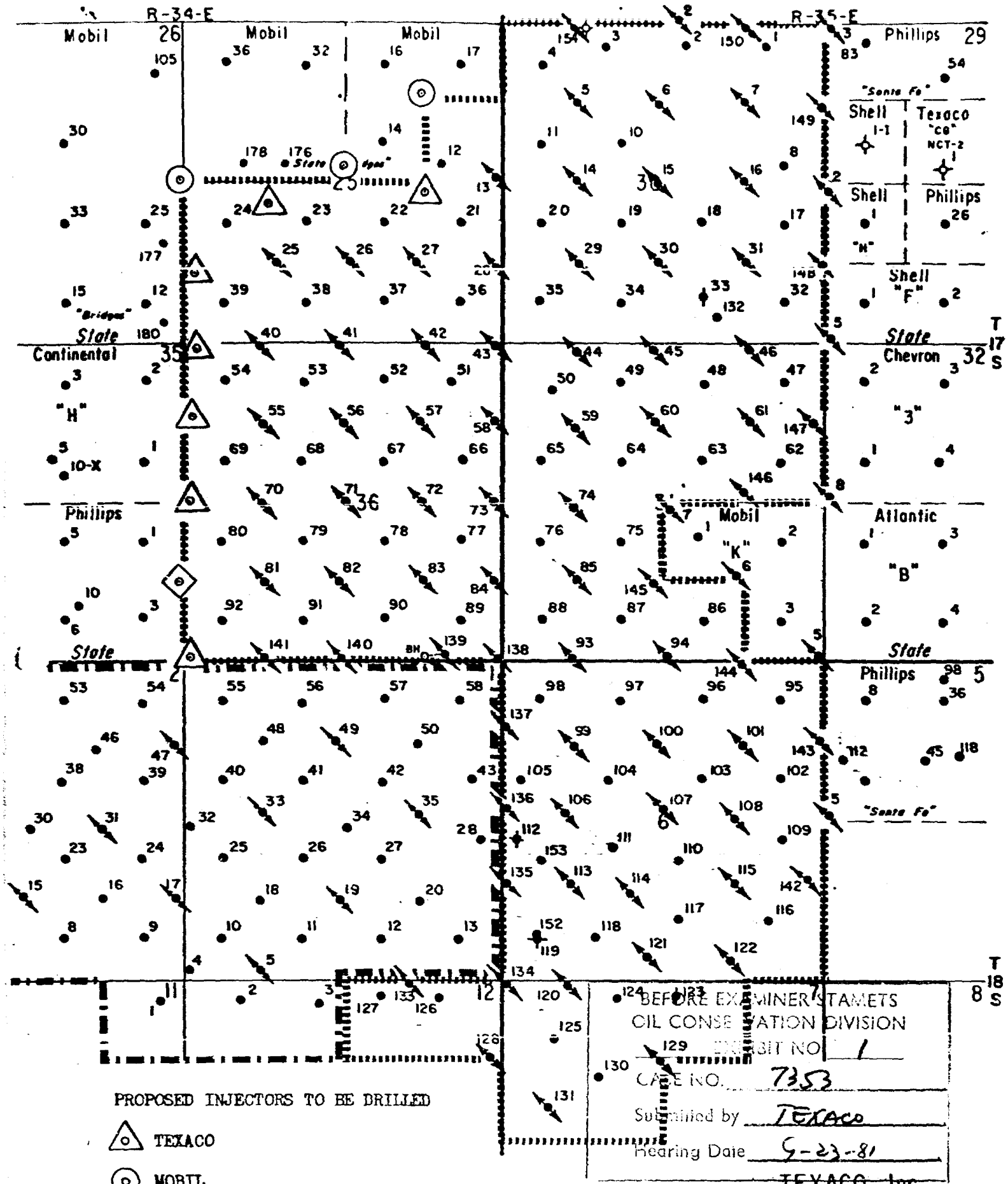
OPERATOR: TEXACO Inc.

EFFECTIVE DATE OF UNIT: 10-1-77

CENTRAL VACUUM UNIT
VACUUM (GRA) FIELD



A COUNTY, NEW MEXICO



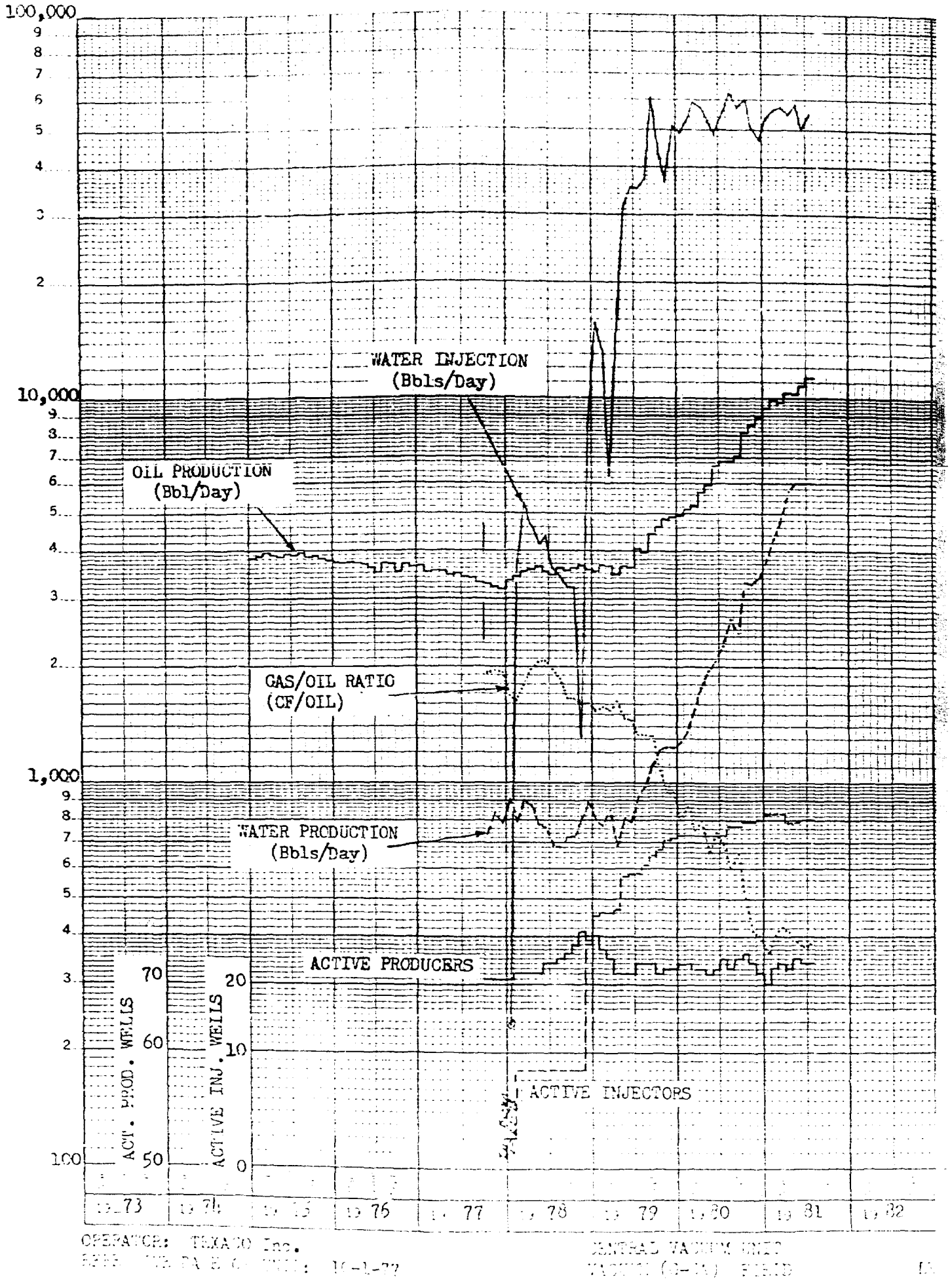
BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 1
CASE NO. 7353
Submitted by TEXACO
Hearing Date 6-23-81

TEXACO Inc.
CENTRAL VACUUM UNIT
VACUUM G-SA FIELD
LEA COUNTY, NEW MEXICO

TEXACO WI: 36.1588

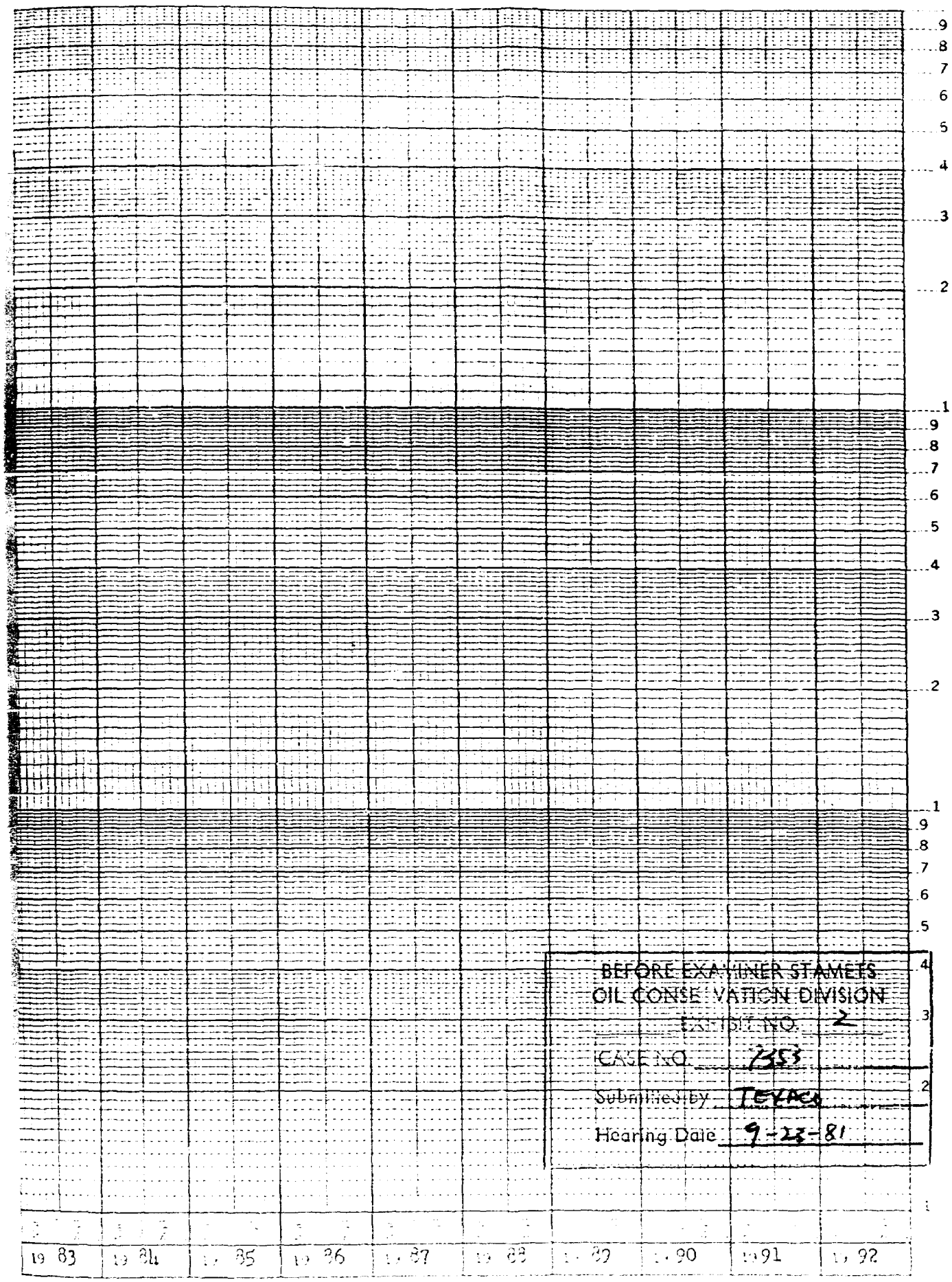
47 6840

K·E 20 YEARS BY MONTHS X 3 LOG CYCLES
MADE IN U.S.A.



OPERATOR: TEXACO Inc.

CENTRAL VACUUM UNIT



A COUNTY, NEW MEXICO

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 6008
Order No. R-5530

APPLICATION OF TEXACO INC., FOR
A PRESSURE MAINTENANCE PROJECT,
LEA COUNTY, NEW MEXICO.

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Phillips EXHIBIT NO. 2
CASE NO. 7353
Submitted by
Hearing Date

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 17, 1977, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 20th day of September, 1977, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That by Commission Order No. R-5496 dated August 9, 1977, statutory unitization was approved for the Central Vacuum Unit Area, Lea County, New Mexico.

(3) That the applicant herein, Texaco Inc., seeks authority to institute a pressure maintenance project on the aforesaid Central Vacuum Unit Area, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into the San Andres formation through the 55 wells described on Exhibit A attached to this order.

(4) That to permit an efficient injection pattern, the unorthodox locations of the 54 new injection wells as reflected on said Exhibit A should be approved.

(5) That the applicant further seeks the designation of a project area and the promulgation of special rules and regulations governing said project including special allowable provisions.

(6) That the project area should consist of those proration units within the boundary of said Central Vacuum Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

(7) That the total project area allowable should be equal to the sum of the basic project area allowable plus the water injection credit allowable, and said total project area allowable should be limited to 80 barrels of oil per day times the number of developed 40-acre proration units in the project area times two.

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

(9) That the water injection credit allowable should be based on the following formula:

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

and should be calculated as follows:

$$\text{Water Injection Credit Allowable} = \left\{ \frac{W_i - W_p}{BPAA\left[\beta_o + \left(\frac{R_p - R_s}{1000}\right)\beta_g\right]} - 1 \right\} BPAA$$

where W_i = Average daily water injection during previous month, project area

W_p = Average daily water production during previous month, project area

BPAA = Basic Project Area Allowable = 80 x number of 40-acre tracts in project area

β_o = Oil formation volume factor, reservoir barrels per stock tank barrel, as determined from Exhibit B, for latest available project area reservoir pressure

R_p = Producing gas-oil ratio, cubic feet per barrel, during previous month, project area

R_s = Solution gas-oil ratio, cubic feet per barrel, as determined from Exhibit B, for latest available project area reservoir pressure

β_g = Gas formation volume factor, reservoir barrels per MCF, as determined from Exhibit B, for latest available project area reservoir pressure

In no event should the Water Injection Credit Allowable be less than zero.

(10) That the project area allowable should be produced from the wells within the project area in any proportion provided that any proration unit situated on the boundary of said Central Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside the unit should not be permitted to produce in excess of 80 barrels of oil per day.

(11) That each of the newly drilled injection wells in the project should be equipped with surface casing and production casing set at approximately 350 feet and 4800 feet, respectively, and cemented to the surface.

(12) That injection should be accomplished through 2 3/8-inch plastic coated tubing installed in a packer which should be set approximately 50 feet above the uppermost perforation in the case of newly drilled wells and at approximately 4376 feet in the one well to be converted to injection.

(13) That the casing-tubing annulus in each injection well 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.

(14) That the injection wells or system should be equipped with a pop-off valve or acceptable substitute which will limit the surface injection pressure to no more than 0.2 pounds per foot of depth to the uppermost perforation unless the Secretary-Director of the Commission should administratively authorize a higher pressure.

(15) That there are 15 wells, as set out on Exhibit C to this order, which are located within or immediately adjacent to the boundaries of said Central Vacuum Unit which are completed or plugged in such a manner that will not assure that they will not serve as channels for injected water to migrate from the San Andres formation to other formations or to the surface.

(16) That to prevent migration of injected water from the San Andres formation, formation injection pressure at wells offsetting the wells identified on said Exhibit C should be limited to hydrostatic pressure until such time as the wells on said Exhibit C have been repaired or it shall otherwise be demonstrated to the satisfaction of the Secretary-Director of the Commission that the same will not serve as avenues for escape of such waters.

(17) That the wells within the project should be equipped to facilitate periodic testing of the annular space between strings of production and surface casing.

(18) That the operator should take all other 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 from injection, producing, or plugged and abandoned wells.

(19) That approval of the subject application should result in the recovery of additional volumes of oil from the Central Vacuum Unit Area, thereby preventing waste.

(20) That the application should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a pressure maintenance project in the Central Vacuum Unit Area, Vacuum-Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into 55 wells at orthodox and unorthodox locations as set out on Exhibit A attached to this order and by reference made a part hereof.

(2) That each of the newly drilled injection wells shall be equipped with surface casing and production casing set at approximately 350 feet and 4800 feet, respectively, and cemented to the surface.

(3) That injection shall be accomplished through 2 3/8-inch plastic coated tubing installed in a packer set approximately 50 feet above the uppermost perforation in the case of newly drilled wells and at approximately 4376 feet in the one existing well converted to injection.

(4) That the casing-tubing annulus in each injection well shall be filled with an inert fluid and a pressure gauge or approved leak detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection wells or system shall be equipped with a pop-off valve or acceptable substitute which will limit the surface injection pressure to no more than 0.2 pounds per foot of depth to the uppermost perforations.

(6) That the Secretary-Director of the Commission may administratively authorize a pressure limitation in excess of that set out in Order No. (5) above upon a showing by the operator that such higher pressure will not result in fracturing of the confining strata.

(7) That the applicant shall not inject water into the formation of any well located on a 40-acre tract that has on it, or that directly or diagonally offsets a tract that has on it, one of the 15 wells identified on Exhibit C attached hereto and by reference made a part hereof, at a pressure greater than hydrostatic until such well has been repaired or it has been shown to the satisfaction of the Secretary-Director of the Commission that such well will not serve as an avenue of escape for waters injected into the San Andres formation and he has authorized a higher than hydrostatic pressure.

(8) That the wells within the project area shall be equipped with risers or in another acceptable manner such as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

(9) That the operator shall immediately notify the supervisor of the Commission district office at Hobbs of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the project area, or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(10) That the pressure maintenance project shall be designated the Texaco Inc. Central Vacuum Unit Pressure Maintenance Project.

(11) That the project area of said Central Vacuum Unit Pressure Maintenance Project shall consist of those proration units within the boundary of the Central Vacuum Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

(12) That those wells within the Central Vacuum Unit Area that are not included within the project area as defined above shall be prorated in accordance with the Rules and Regulations of the Commission.

(13) That the project area shall receive a project area allowable, and said project area allowable shall be the sum of the basic project area allowable plus the water injection credit allowable, and shall be limited to 80 barrels of oil per day times the number of developed 40-acre project area times two.

(14) That the basic project area allowable shall be equal to 80 barrels of oil per day times the number of developed 40-acre proration units in the project area.

(15) That the water injection credit allowable shall be based on the following formula:

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

and should be calculated as follows:

$$\text{Water Injection Credit Allowable} = \left\{\frac{W_i - W_p}{BPAA\left[\beta_o + \left(\frac{R_p - R_s}{1000}\right)\beta_g\right]} - 1\right\} BPAA$$

where:
W_i = Average daily water injection during previous month, barrels per day, project area only
W_p = Average daily water produced during previous month, barrels per day, project area only
BPAA = Basic Project Area Allowable = 80 x number of 40-acre tracts in project area
β_o = Oil formation volume factor, reservoir barrels per stock tank barrel, as determined from Exhibit B (attached hereto and by reference made a part hereof), for the latest available project area reservoir pressure
R_p = Producing gas-oil ratio, cubic feet per barrel, for previous month, project area only
R_s = Solution gas-oil ratio, cubic feet per barrel, as determined from Exhibit B, for the latest available project area reservoir pressure
β_g = Gas formation volume factor, reservoir barrels per MCF, as determined from Exhibit B, for latest available project area reservoir pressure

In no event shall the Water Injection Credit Allowable be less than zero, i.e., negative numbers derived from application of the above formula shall be ignored.

(13) That the average project area reservoir pressure shall be determined prior to the commencement of injection of water into the reservoir and at least annually thereafter. The average project area pressure shall be the average of the pressures in at least ten representative wells selected by the operator of the unit and the Supervisor of the Hobbs District Office of the Commission at an agreed upon datum.

(14) That the project area allowable may be produced from any well within the project area in any proportion provided, however, that any proration unit situated on the boundary of the Central Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside said Central Vacuum Unit shall not be permitted to produce in excess of 80 barrels of oil per day.

(15) That each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total project area allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

(16) That the Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and, except as provided under Order (14) above, may be produced from the wells in the Project in any proportion.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

S E A L

dr/

JOE D. RAMEY, Member & Secretary

CENTRAL VACUUM UNIT
Authorized Injection Wells

54 new wells to be drilled at the following locations:

WELL NO.	LOCATION	SECTION	TOWNSHIP SOUTH	RANGE EAST
5	1310' FNL & 1310' FWL	30	17	35
6	1310' FNL & 2630' FWL	30	17	35
7	1310' FNL & 1330' FEL	30	17	35
13	2630' FNL & 10' FEL	25	17	34
14	2630' FNL & 1310' FWL	30	17	35
15	2630' FNL & 2630' FWL	30	17	35
16	2630' FNL & 1330' FEL	30	17	35
25	1330' FSL & 1310' FWL	25	17	34
26	1330' FSL & 2630' FWL	25	17	34
27	1330' FSL & 1330' FEL	25	17	34
28	1330' FSL & 10' FEL	25	17	34
29	1330' FSL & 1310' FWL	30	17	35
30	1330' FSL & 2630' FWL	30	17	35
31	1330' FSL & 1330' FEL	30	17	35
40	10' FSL & 1310' FWL	25	17	34
41	10' FSL & 2630' FWL	25	17	34
42	10' FSL & 1330' FEL	25	17	34
43	10' FSL & 10' FEL	25	17	34
44	10' FSL & 1310' FWL	30	17	35
45	10' FSL & 2630' FWL	30	17	35
46	10' FSL & 1330' FEL	30	17	35
55	1310' FNL & 1310' FWL	36	17	34
56	1310' FNL & 2630' FWL	36	17	34
57	1310' FNL & 1330' FEL	36	17	34
58	1310' FNL & 10' FEL	36	17	34
59	1310' FNL & 1310' FWL	31	17	35
60	1310' FNL & 2630' FWL	31	17	35
61	1310' FNL & 1330' FEL	31	17	35
70	2630' FNL & 1310' FWL	36	17	34
71	2630' FNL & 2630' FWL	36	17	34
72	2630' FNL & 1330' FEL	36	17	34
73	2630' FNL & 10' FEL	36	17	34
74	2630' FNL & 1310' FWL	31	17	35
81	1330' FSL & 1310' FWL	36	17	34
82	1330' FSL & 2630' FWL	36	17	34
83	1330' FSL & 1330' FEL	36	17	34
84	1330' FSL & 10' FEL	36	17	34
85	1330' FSL & 1310' FWL	31	17	35
93	10' FSL & 1310' FWL	31	17	35
94	10' FSL & 2630' FWL	31	17	35
99	1310' FNL & 1310' FWL	6	18	35
100	1310' FNL & 2630' FWL	6	18	35
101	1310' FNL & 1330' FEL	6	18	35
106	2520' FNL & 1040' FWL	6	18	35

Case No. 6008
Order No. R-5530
Exhibit "A"

54 new wells to be drilled at the following locations continued

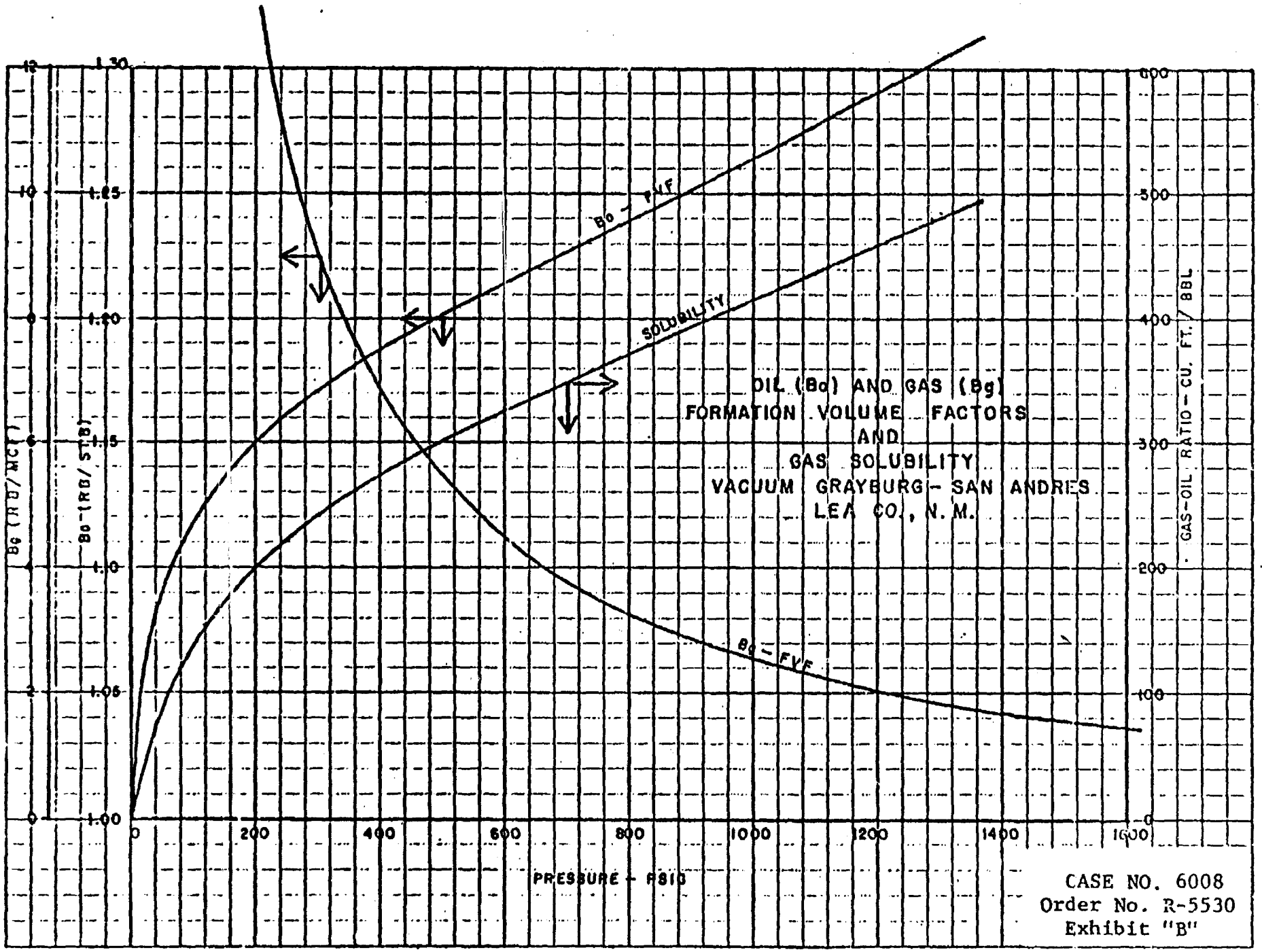
WELL NO.	LOCATION	SECTION	TOWNSHIP SOUTH	RANGE EAST
107	2450' FNL & 2630' FWL	6	18	35
108	2630' FNL & 1480' FEL	6	18	35
113	1620' FSL & 1100' FWL	6	18	35
114	1460' FSL & 2100' FWL	6	18	35
115	1600' FSL & 1500' FEL	6	18	35
120	60' FNL & 1100' FWL	7	18	35
121	400' FSL & 2380' FWL	6	18	35
122	350' FSL & 1560' FEL	6	18	35
128	1310' FNL & 200' FEL	12	18	34
129	1310' FNL & 2630' FWL	7	18	35

One existing well, Sun Oil Company Lea State "B" No. 7 located as follows:

131	2119' FNL & 918' FWL	7	18	35

OPERATOR	LEASE	WELL NO.	UT.	SEC.	TWP.	RGE.
Continental Oil Co.	State H 35	9	H	35	17S	34E
Getty Oil Company	State AN	8	P	7	18S	35E
Getty Oil Company	State AN	9	I	7	18S	35E
Getty Oil Company	State BA	6	D	36	17S	34E
Marathon Oil Co.	Warn State A/c 2	6	K	6	18S	35E
Marathon Oil Co.	Warn State A/c 2	10	K	6	18S	35E
Mobil Oil Corp.	Bridges State	11	F	25	17S	34E
Mobil Oil Corp.	State DD	1	D	31	17S	35E
Phillips Petroleum Co.	Santa Fe	87	L	31	17S	35E
Texaco Inc.	New Mexico "AB" State	5	J	6	18S	35E
Texaco Inc.	New Mexico "AE" State	4	F	12	18S	34E
Texaco Inc.	New Mexico "O" State NCT-1	14	J	36	17S	34E
Texaco Inc.	New Mexico "O" State NCT-1	18	H	36	17S	34E
Texaco Inc.	New Mexico "P" State	1	J	7	18S	35E
Texaco Inc.	New Mexico "Q" State	4	P	25	17S	34E

Case No. 6008
Order No. R-5530
Exhibit "C"



CASE NO. 6008
Order No. R-5530
Exhibit "B"

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. 6367
Order No. R-5897

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

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 3
CASE NO. 7353
Submitted by
Hearing Date

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 25, 1978, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 16th day of January, 1979, 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 by Division Order No. R-5871 dated November 27, 1978, statutory unitization was approved for the East Vacuum Grayburg-San Andres Unit Area, Lea County, New Mexico.

(3) That the applicant herein, Phillips Petroleum Company, seeks authority to institute a pressure maintenance project on the aforesaid East Vacuum Grayburg-San Andres Unit Area, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into the San Andres formation through 59 wells, 31 of which would be drilled in 1979 during Phase II of the Project Development Program and 28 of which would be drilled in 1980 during Phase III of the Development Program.

(4) Applicant further seeks the designation of a project area for said pressure maintenance project and the promulgation of special rules and regulations governing said project including special allowable provisions.

(5) That for Phase I of the Project Development Program, applicant proposes to drill during 1979 ten producing wells at unorthodox locations as specified below:

TRACT NO.	WELL NO.	LOCATION	UNIT	SECTION
3229	005	1310' FSL and 1310' FWL	M	32
3202	001	1310' FSL and 1330' FEL	O	32
3202	003	1330' FNL and 1330' FEL	G	32
3328	002	1310' FSL and 1310' FWL	M	33
3366	001	1330' FNL and 1310' FWL	E	33
3333	004	1330' FNL and 1330' FEL	G	33
3456	005	1330' FNL and 1310' FWL	E	34
2801	002	1310' FSL and 1310' FWL	M	28
2801	004	1310' FSL and 1330' FEL	O	28
2721	001	1310' FSL and 1310' FWL	M	27

all in Township 17 South, Range 35 East, NMPM, Lea County, New Mexico.

(6) That during Phase II of the Development Program applicant proposes to drill 18 additional producing wells, all at unorthodox locations, and during Phase III of the Program applicant proposes to drill 26 additional producing wells, also at unorthodox locations.

(7) That all of the wells referred to in Findings Nos. (3), (5) and (6) above, being 59 injection wells at unorthodox locations and 54 producing wells at unorthodox locations, together with the currently completed producing wells in the Unit Area, will provide a thorough and efficient sweep of hydrocarbons throughout the unitized area, and will result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(8) That the above-described injection and producing wells, some of which would be at unorthodox locations along the unit boundaries in accordance with lease-line agreements with operators of offsetting lands, will not impair but will protect correlative rights.

(9) That the applicant's request for the designation of a Pressure Maintenance Project for the East Vacuum Grayburg-San Andres Unit Area, and for the promulgation of special rules and regulations governing said project, is in the interest of conservation and should be approved, subject to certain provisions.

(10) That the project area should consist of those proration units within the boundary of the East Vacuum Grayburg-San Andres Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

(11) That the total project area allowable should be equal to the sum of the basic project area allowable plus the water injection credit allowable.

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

(13) That the water injection credit allowable should be based on the following formula:

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

and should be calculated in accordance with Exhibits "A" and "B" attached hereto and by reference made a part hereof.

(14) That the project area allowable should be produced from the wells within the project area in any proportion provided that any proration unit situated on the boundary of said East Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside the Unit or on the Unit boundary should not be permitted to produce in excess of 80 barrels of oil per day.

(15) That each of the newly drilled production or injection wells in the project should be equipped with surface casing set at approximately 350 feet and cemented to the surface and with "production" casing set at total depth, approximately 4900 feet.

(16) That the "production" casing on each of said newly drilled wells should be cemented to the surface, except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and cemented to the surface, the "production" casing may be cemented back into the base of the intermediate casing string.

(17) That injection should be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing should be corrosion protected by a non-reactive internal lining or coating. The casing-tubing

annulus in each injection well should be filled with an inert fluid and a surface pressure gauge or approved leak detection device should be attached to the annulus.

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

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

(20) That provision should be made for the Division Director to authorize placing wells on injection and the drilling of injection wells and additional producing wells at orthodox and unorthodox locations anywhere within the Unit Area without notice and hearing, provided that no unorthodox location is closer than ten feet to a quarter-quarter section line nor closer than 330 feet to the unit boundary, unless such well located closer than 330 feet to the unit boundary is covered by a lease-line agreement with the operator of the lands offsetting such well or the owner of the offsetting lands has waived objection to such location in writing.

(21) That there are a number of wells within the East Vacuum Grayburg-San Andres Unit Area and on lands offsetting the unit area which have previously been plugged and abandoned in a manner which may permit waters injected into the San Andres formation to escape into other formations, including the Salado formation and the shallow fresh water-bearing formations unless remedial action is taken on said wells prior to injection in their near vicinity.

(22) That there are a number of wells within the East Vacuum Grayburg-San Andres Unit Area and on lands offsetting the unit area which penetrate the Vacuum Grayburg-San Andres Pool and are completed in deeper pay zones, but which are cased and cemented in such a manner as may permit the escape of waters injected into the San Andres formation into other formations as described above.

(23) That those wells referred to in Findings Nos. (21) and (22) above which are inadequately plugged and abandoned or are inadequately cased and cemented, or are suspected of being so, include, but are not necessarily limited to, the wells listed in Exhibit "C" attached hereto and by reference made a part hereof.

(24) That no injection at greater than hydrostatic pressure should be made into the Grayburg or San Andres formation in any well in the East Vacuum Grayburg-San Andres Unit Area within one-half mile of any well listed on Exhibit "C" attached hereto until remedial action has been taken on such well to ensure that it will not serve as an avenue of escape for injected waters or until tests have been conducted on such well or other evidence concerning such well has been presented, all establishing to the satisfaction of the Supervisor of the Hobbs District Office of the Division that remedial work on such well is unnecessary.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to institute and operate a pressure maintenance project in the East Vacuum Grayburg-San Andres Unit Area, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into the San Andres formation through certain wells which will be administratively approved for water injection at some later date by the Division Director.

(2) That said project shall be designated the East Vacuum Unit Pressure Maintenance Project.

(3) That the following unorthodox locations are hereby approved for new producing wells which are to be drilled by the unit operator during Phase I of the Project Development Program:

TRACT NO.	WELL NO.	LOCATION	UNIT	SECTION
3229	005	1310' FSL and 1310' FWL	M	32
3202	001	1310' FSL and 1330' FEL	O	32
3202	003	1330' FNL and 1330' FEL	G	32
3328	002	1310' FSL and 1310' FWL	M	33
3366	001	1330' FNL and 1310' FWL	E	33
3333	004	1330' FNL and 1330' FEL	G	33
3456	005	1330' FNL and 1310' FWL	E	34
2801	002	1310' FSL and 1310' FWL	M	28
2801	004	1310' FSL and 1330' FEL	O	28
2721	001	1310' FSL and 1310' FWL	M	27

all in Township 17 South, Range 35 East, NMPM, Lea County, New Mexico.

(4) That Special Rules and Regulations governing the East Vacuum Unit Pressure Maintenance Project are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
EAST VACUUM UNIT PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the East Vacuum Unit Pressure Maintenance Project shall consist of those proration units within the boundaries of the East Vacuum Grayburg-San Andres Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

RULE 2. The project area shall receive a project area allowable, and said project area allowable shall be the sum of the basic project area allowable plus the water injection credit allowable.

RULE 3. The basic project area allowable shall be equal to 80 barrels of oil per day times the number of developed 40-acre proration units in the project area.

RULE 4. The water injection credit allowable shall be contingent upon full reservoir voidage replacement of all produced fluids and shall be based upon the following formula:

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

The water injection credit allowable shall be calculated in accordance with the procedures and parameters depicted on Exhibits "A" and "B" to Order No. R-5897.

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

RULE 5. The weighted average project area reservoir pressure shall be determined prior to commencement of injection of water into the reservoir and at least annually thereafter. The weighted average project area pressure shall be determined from the pressures in at least ten representative wells selected by the unit operator and the Supervisor of the Hobbs District Office of the Division.

RULE 6. The project area allowable may be produced from the wells within the project area in any proportion provided, however, that any proration unit situated on the boundary of the East Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside said East Vacuum Unit or on the East Vacuum Unit boundary shall not be permitted to produce in excess of 80 barrels of oil per day.

RULE 7. Those wells within the East Vacuum Unit Area that are not included within the project area as defined above shall be prorated in accordance with the Rules and Regulations of the Division.

RULE 8. The Division Director shall have authority to approve, without notice and hearing, the drilling of wells at unorthodox locations anywhere within the unit boundary, provided however, no unorthodox location shall be closer than ten feet to any quarter-quarter section line, and provided further, that no such unorthodox location shall be closer than 330 feet to the outer boundary of the unit area, unless such well is covered by a lease-line agreement with the operator of the lands offsetting such well, and a copy of the lease-line agreement accompanies the application for such unorthodox location, or unless such offset operator has waived objection to the proposed unorthodox location in writing, and his waiver accompanies the application.

RULE 9. No well shall be placed on water injection in the East Vacuum Unit Area unless the Division Director has approved such well for injection. Applications for injection approval shall be filed in accordance with Rule 701 of the Division Rules and Regulations.

RULE 10. Each newly drilled injection or producing well shall be equipped with a minimum of 350 feet of surface casing and "production" casing run to total depth (approximately 4900 feet). All casing strings shall be cemented to the surface except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and cemented to the surface, the "production" string may be cemented back into the base of the intermediate casing.

RULE 11. Injection shall be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing shall be corrosion protected by a non-reactive internal lining or coating. The casing-tubing annulus in each injection well shall be filled with an inert fluid and a surface pressure gauge or approved leak detection device shall be attached to the annulus.

RULE 12. The injection wells or system shall be equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost perforation. The Division Director may administratively authorize a pressure limitation in excess of the above upon showing by the unit operator that such higher pressure will not result in fracturing of the confining strata.

RULE 13. All wells within the project area shall be equipped with risers or in some other acceptable manner as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

RULE 14. The unit operator shall immediately notify the Supervisor of the Hobbs District Office of the Division of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the project area, or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

RULE 15. Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report, on a form prescribed by the Division, outlining thereon the data required and requesting allowables for each of the several wells in the Project as well as the total project area allowable.

RULE 16. The Division shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and, except as provided under Rule 6 above, may be produced from the wells in the Project in any proportion.

IT IS FURTHER ORDERED:

(1) That no injection at greater than hydrostatic pressure shall be made into the Grayburg or San Andres formation in any well in the East Vacuum Grayburg-San Andres Unit Area within one-half mile of any well listed on Exhibit "C" attached hereto until remedial action has been taken on such well to ensure that it will not serve as an avenue of escape for injected waters, or until tests have been conducted on such well or other evidence concerning such well has been presented

established to the satisfaction of the Supervisor of the Hobbs District Office of the Division that remedial work on such well is unnecessary.

(2) That Order No. R-3150 which authorized a pilot waterflood project in this area is hereby rescinded.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L

fd/

EAST VACUUM GRAYBURG-SAN ANDRES UNIT
PRESSURE MAINTENANCE PROJECT

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

WATER INJECTION CREDIT ALLOWABLE CALCULATION DATA

ATTACHMENT TO _____, 19__, REPORT

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

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

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

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

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

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

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

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

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

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

EXHIBIT "A"
ORDER NO. R-5897

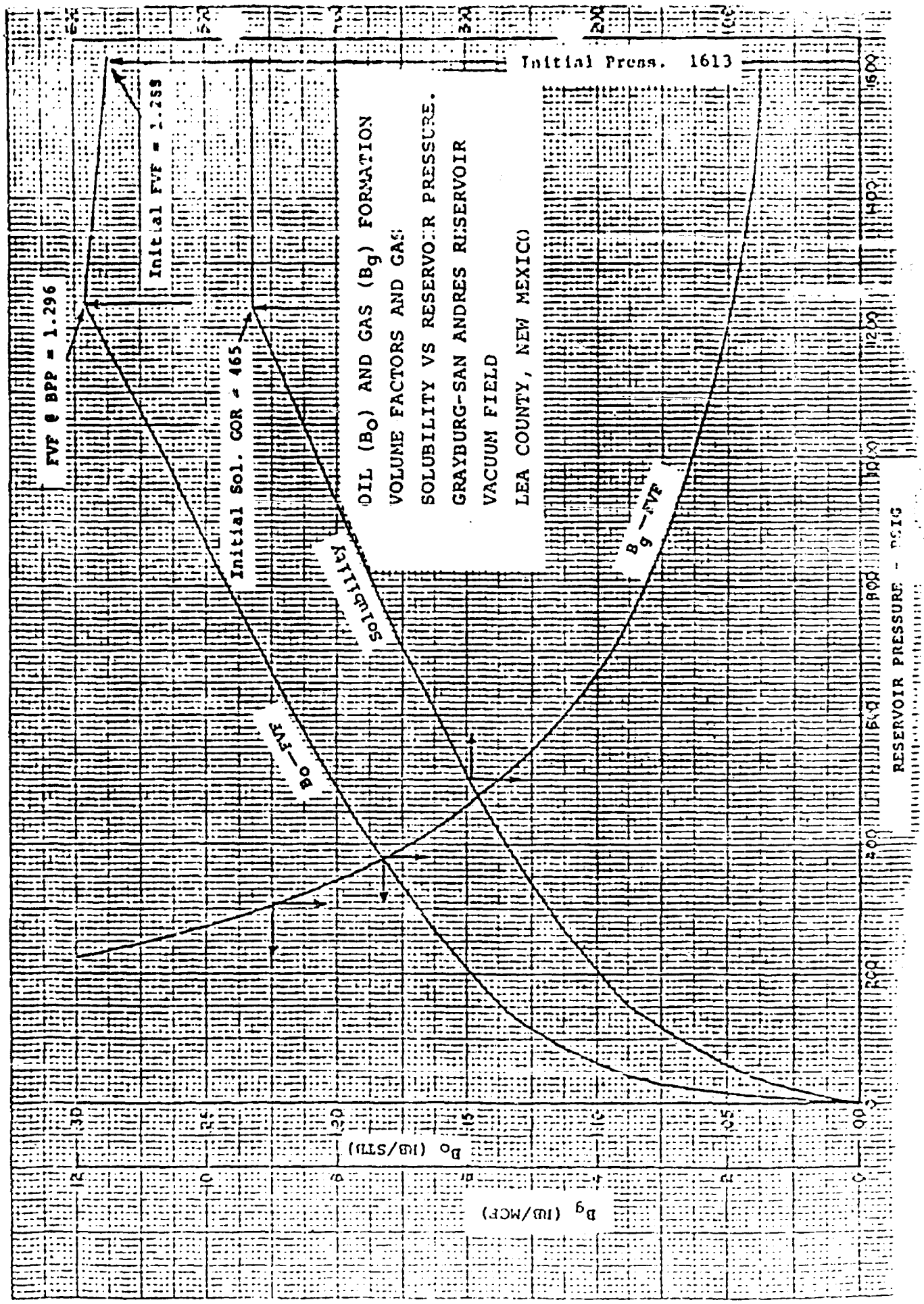


Exhibit "B" Order No. R-5897

EXHIBIT "C"

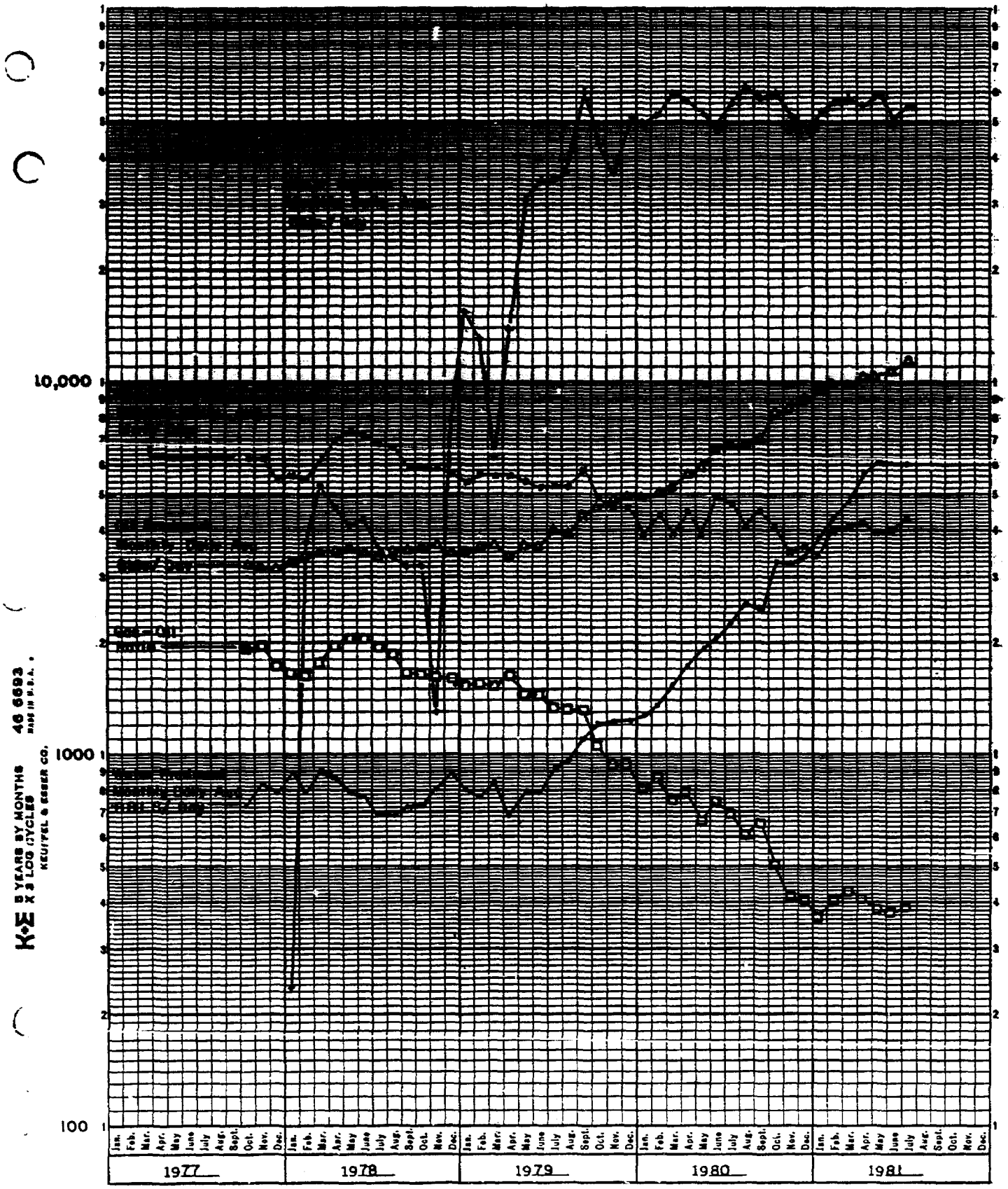
WELLS SUSPECTED OF BEING INADEQUATELY PLUGGED AND ABANDONED OR INADEQUATELY CASED AND CEMENTED

OPERATOR	LEASE	WELL NO.	UNIT	SEC-TWP-RGE
Mobil	State P	7	P	22-17S-35E
Penrose	State	2	N	24-17S-35E
Phillips	Santa Fe	15	A	28-17S-35E
Phillips	Santa Fe	16	L	5-18S-35E
Phillips	Santa Fe	37	F	28-17S-35E
Phillips	Santa Fe	47	C	35-17S-35E
Shell	State U	1	C	3-18S-35E
Shell	State VAA	6	K	5-18S-35E
Shell	State C	1	I	24-17S-34E
Shell	State I	1	E	29-17S-35E
Shell	State S	1	I	21-17S-35E
Stoltz etal.	Abo	1	O	24-17S-35E
Zapata	Shell State	1	O	23-17S-35E
Barnett	State B	1	D	19-17S-35E
Jones	State	2	A	35-17S-35E
Penrose	Scarborough	1	C	25-17S-35E
Amoco	State CV	1	F	25-17S-35E
Amoco	State CV	4	L	25-17S-35E
Amoco	State CV	5	F	25-17S-35E
Chevron	State 6-34	4	J	34-17S-35E
Cities Service	State BJ	2	K	35-17S-35E
Crusader	State	1	E	20-17S-35E
Crusader	State	2	C	19-17S-35E
Crusader	State	3	N	18-17S-35E
Exxon	State J	1	M	19-17S-35E
Exxon	State J	2	L	19-17S-35E
Exxon	State AC	1	H	22-17S-35E
Great Western	State E	2	L	25-17S-35E
Marathon	Warn State	1	M	23-17S-35E
Amoco	State CV	2	E	25-17S-35E
Amoco	State CV	2-Y	E	25-17S-35E
Millard Deck	Carthay State	2	G	20-17S-35E
Exxon	State K	17	P	32-17S-35E
Marathon	Staplin State	1	L	20-17S-35E
Marathon	Warn State	1	B	4-18S-35E
Mobil	N.Vac.AboUnit	207	H	24-17S-34E
Pennzoil	Phillips State	1	A	28-17S-35E
Pennzoil	Phillips State	2	F	28-17S-35E
Phillips	Vac.AboUnit	6-68	H	34-17S-35E
Phillips	Vac.Abo Unit	1-9	J	27-17S-35E
Phillips	Vac.Abo Unit	7-3	P	27-17S-35E
Phillips	Vac.Abo Unit	7-4	I	27-17S-35E
Phillips	Vac.Abo Unit	9-5	H	33-17S-35E
Phillips	Vac.Abo Unit	13-2	E	4-18S-35E

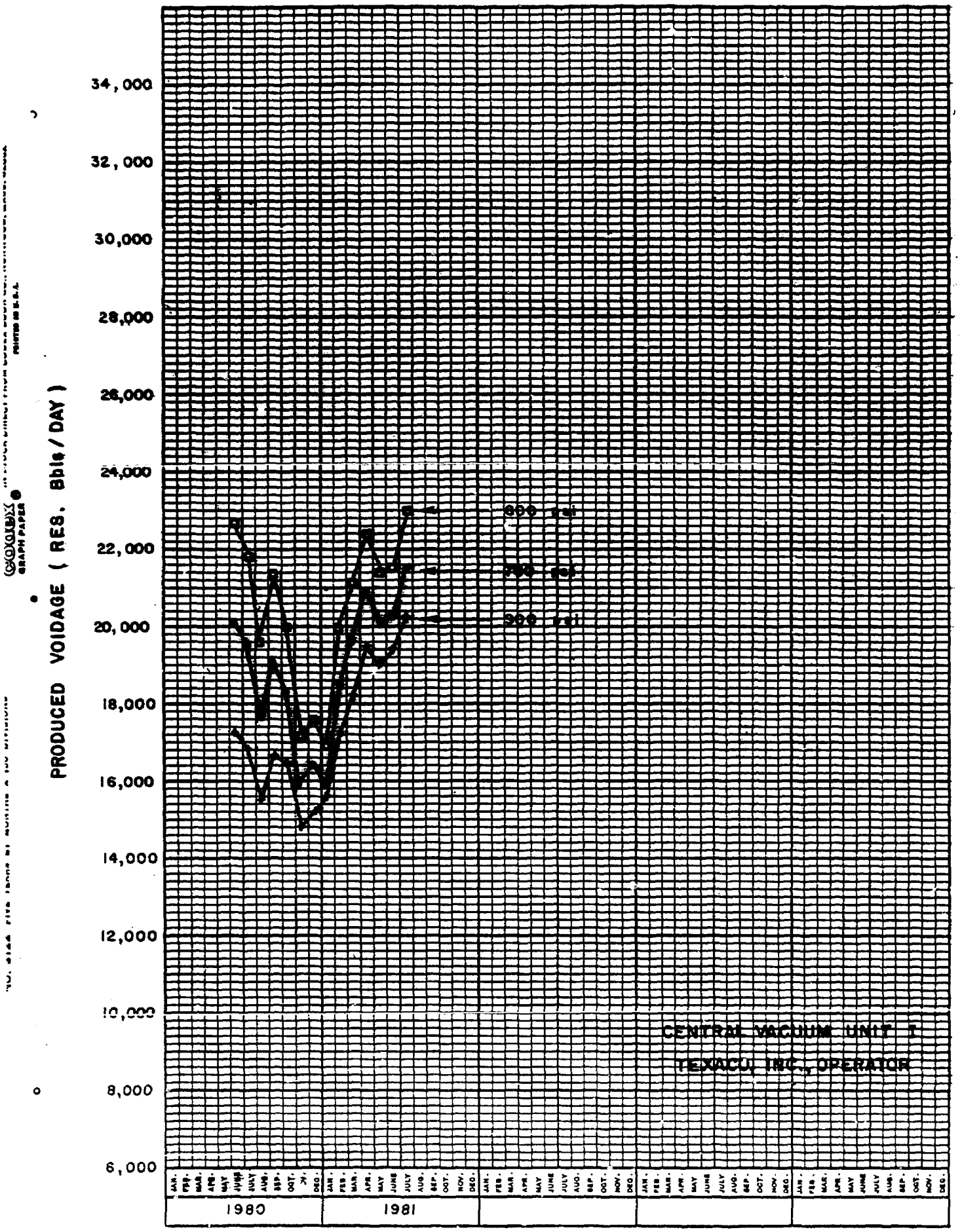
OPERATOR	LEASE	WELL NO.	UNIT	SEC-TWP-RGE
Phillips	Vac.Abo Unit	14-3	N	5-18S-35E
Phillips	Vac.Abo Unit	14-4	L	5-18S-35E
Shell	State V	6	P	27-17S-35E
Shell	State K	1	O	19-17S-35E

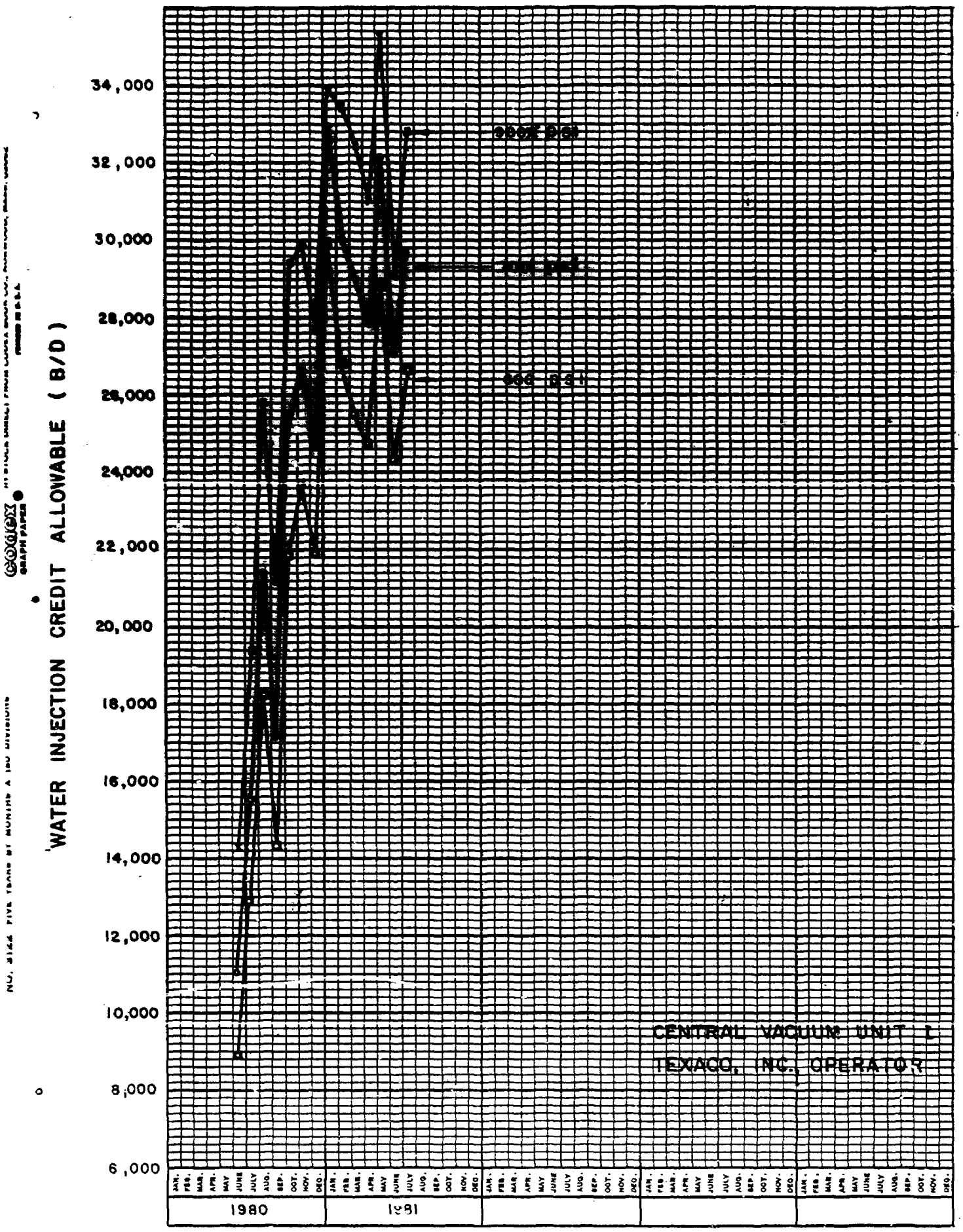
EXHIBIT "C"
ORDER NO. R-5897

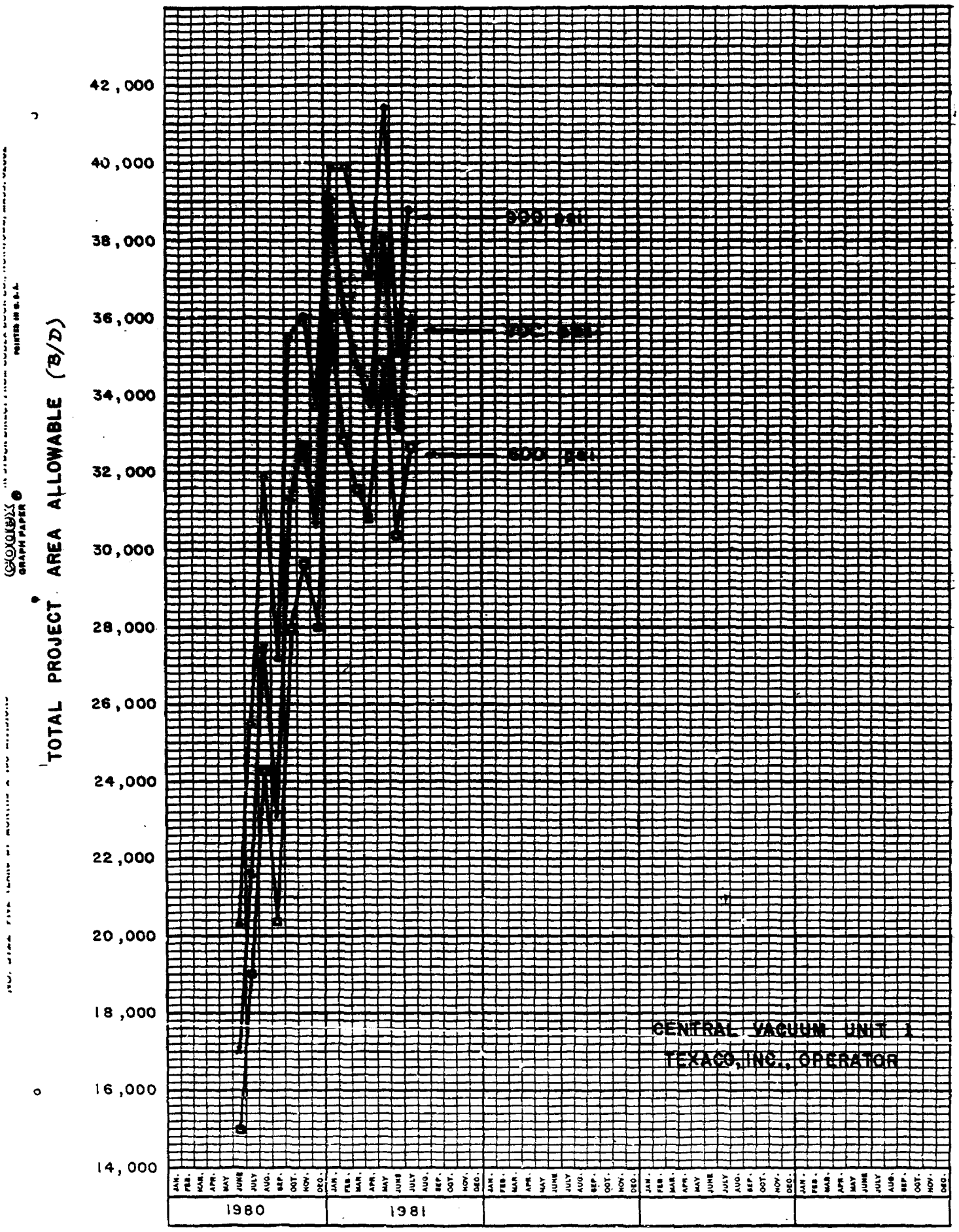
CENTRAL VACUUM UNIT I
TEXACO INC., OPERATOR
PRODUCTION HISTORY



K&E 5 YEARS BY MONTHS 46 6693
X 3 LOG (CYCLES
KEUFFEL & ESSER CO.


PRODUCED VOIDAGE (RES. Bbls / DAY)
34,000
32,000
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
600 psi
500 psi
300 psi
CENTRAL VACUUM UNIT I
TEXACO, INC., OPERATOR
1980
1981
JAN.
FEB.
MAR.
APR.
MAY
JUNE
JULY
AUG.
SEP.
OCT.
NOV.
DEC.


WATER INJECTION CREDIT ALLOWABLE (B/D)
34,000
32,000
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.
1980
1981
CENTRAL VACUUM UNIT
TEXACO, INC., OPERATOR


TOTAL PROJECT AREA ALLOWABLE (B/D)
42,000
40,000
38,000
36,000
34,000
32,000
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
900 psi
800 psi
600 psi
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.
1980
1981
CENTRAL VACUUM UNIT 1
TEXACO, INC., OPERATOR

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 6008
Order No. R-5530

APPLICATION OF TEXACO INC., FOR
A PRESSURE MAINTENANCE PROJECT,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 17, 1977, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 20th day of September, 1977, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That by Commission Order No. R-5496 dated August 9, 1977, statutory unitization was approved for the Central Vacuum Unit Area, Lea County, New Mexico.

(3) That the applicant herein, Texaco Inc., seeks authority to institute a pressure maintenance project on the aforesaid Central Vacuum Unit Area, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into the San Andres formation through the 55 wells described on Exhibit A attached to this order.

(4) That to permit an efficient injection pattern, the unorthodox locations of the 54 new injection wells as reflected on said Exhibit A should be approved.

(5) That the applicant further seeks the designation of a project area and the promulgation of special rules and regulations governing said project including special allowable provisions.

(6) That the project area should consist of those proration units within the boundary of said Central Vacuum Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

(7) That the total project area allowable should be equal to the sum of the basic project area allowable plus the water injection credit allowable, and said total project area allowable should be limited to 80 barrels of oil per day times the number of developed 40-acre proration units in the project area times two.

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

(9) That the water injection credit allowable should be based on the following formula:

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

and should be calculated as follows:

$$\text{Water Injection Credit Allowable} = \left\{ \frac{W_i - W_p}{\text{BPAA}\left[\beta_o + \left(\frac{R_p - R_s}{1000}\right)\beta_g\right]} - 1 \right\} \text{BPAA}$$

where W_i = Average daily water injection during previous month, project area

W_p = Average daily water production during previous month, project area

BPAA = Basic Project Area Allowable = 80 x number of 40-acre tracts in project area

β_o = Oil formation volume factor, reservoir barrels per stock tank barrel, as determined from Exhibit B, for latest available project area reservoir pressure

R_p = Producing gas-oil ratio, cubic feet per barrel, during previous month, project area

R_s = Solution gas-oil ratio, cubic feet per barrel, as determined from Exhibit B, for latest available project area reservoir pressure

β_g = Gas formation volume factor, reservoir barrels per MCF, as determined from Exhibit B, for latest available project area reservoir pressure

In no event should the Water Injection Credit Allowable be less than zero.

(10) That the project area allowable should be produced from the wells within the project area in any proportion provided that any proration unit situated on the boundary of said Central Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside the unit should not be permitted to produce in excess of 80 barrels of oil per day.

(11) That each of the newly drilled injection wells in the project should be equipped with surface casing and production casing set at approximately 350 feet and 4800 feet, respectively, and cemented to the surface.

(12) That injection should be accomplished through 2 3/8-inch plastic coated tubing installed in a packer which should be set approximately 50 feet above the uppermost perforation in the case of newly drilled wells and at approximately 4376 feet in the one well to be converted to injection.

(13) That the casing-tubing annulus in each injection well 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.

(14) That the injection wells or system should be equipped with a pop-off valve or acceptable substitute which will limit the surface injection pressure to no more than 0.2 pounds per foot of depth to the uppermost perforation unless the Secretary-Director of the Commission should administratively authorize a higher pressure.

(15) That there are 15 wells, as set out on Exhibit C to this order, which are located within or immediately adjacent to the boundaries of said Central Vacuum Unit which are completed or plugged in such a manner that will not assure that they will not serve as channels for injected water to migrate from the San Andres formation to other formations or to the surface.

(16) That to prevent migration of injected water from the San Andres formation, formation injection pressure at wells offsetting the wells identified on said Exhibit C should be limited to hydrostatic pressure until such time as the wells on said Exhibit C have been repaired or it shall otherwise be demonstrated to the satisfaction of the Secretary-Director of the Commission that the same will not serve as avenues for escape of such waters.

(17) That the wells within the project should be equipped to facilitate periodic testing of the annular space between strings of production and surface casing.

(18) That the operator should take all other 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 from injection, producing, or plugged and abandoned wells.

(19) That approval of the subject application should result in the recovery of additional volumes of oil from the Central Vacuum Unit Area, thereby preventing waste.

(20) That the application should be approved.

IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a pressure maintenance project in the Central Vacuum Unit Area, Vacuum-Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into 55 wells at orthodox and unorthodox locations as set out on Exhibit A attached to this order and by reference made a part hereof.

(2) That each of the newly drilled injection wells shall be equipped with surface casing and production casing set at approximately 350 feet and 4800 feet, respectively, and cemented to the surface.

(3) That injection shall be accomplished through 2 3/8-inch plastic coated tubing installed in a packer set approximately 50 feet above the uppermost perforation in the case of newly drilled wells and at approximately 4376 feet in the one existing well converted to injection.

(4) That the casing-tubing annulus in each injection well shall be filled with an inert fluid and a pressure gauge or approved leak detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection wells or system shall be equipped with a pop-off valve or acceptable substitute which will limit the surface injection pressure to no more than 0.2 pounds per foot of depth to the uppermost perforations.

(6) That the Secretary-Director of the Commission may administratively authorize a pressure limitation in excess of that set out in Order No. (5) above upon a showing by the operator that such higher pressure will not result in fracturing of the confining strata.

(7) That the applicant shall not inject water into the formation of any well located on a 40-acre tract that has on it, or that directly or diagonally offsets a tract that has on it, one of the 15 wells identified on Exhibit C attached hereto and by reference made a part hereof, at a pressure greater than hydrostatic until such well has been repaired or it has been shown to the satisfaction of the Secretary-Director of the Commission that such well will not serve as an avenue of escape for waters injected into the San Andres formation and he has authorized a higher than hydrostatic pressure.

(8) That the wells within the project area shall be equipped with risers or in another acceptable manner such as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

(9) That the operator shall immediately notify the supervisor of the Commission district office at Hobbs of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the project area, or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(10) That the pressure maintenance project shall be designated the Texaco Inc. Central Vacuum Unit Pressure Maintenance Project.

(11) That the project area of said Central Vacuum Unit Pressure Maintenance Project shall consist of those proration units within the boundary of the Central Vacuum Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

(12) That those wells within the Central Vacuum Unit Area that are not included within the project area as defined above shall be prorated in accordance with the Rules and Regulations of the Commission.

(13) That the project area shall receive a project area allowable, and said project area allowable shall be the sum of the basic project area allowable plus the water injection credit allowable, and shall be limited to 80 barrels of oil per day times the number of developed 40-acre project area times two.

(14) That the basic project area allowable shall be equal to 80 barrels of oil per day times the number of developed 40-acre proration units in the project area.

(15) That the water injection credit allowable shall be based on the following formula:

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

and should be calculated as follows:

$$\text{Water Injection Credit Allowable} = \left\{ \frac{W_i - W_p}{\text{BPAA}\left[\beta_o + \left(\frac{R_p - R_s}{1000}\right)\beta_g\right]} - 1 \right\} \text{BPAA}$$

where:
W_i = Average daily water injection during previous month, barrels per day, project area only
W_p = Average daily water produced during previous month, barrels per day, project area only
BPAA = Basic Project Area Allowable = 80 x number of 40-acre tracts in project area
β_o = Oil formation volume factor, reservoir barrels per stock tank barrel, as determined from Exhibit B (attached hereto and by reference made a part hereof), for the latest available project area reservoir pressure
R_p = Producing gas-oil ratio, cubic feet per barrel, for previous month, project area only
R_s = Solution gas-oil ratio, cubic feet per barrel, as determined from Exhibit B, for the latest available project area reservoir pressure
β_g = Gas formation volume factor, reservoir barrels per MCF, as determined from Exhibit B, for latest available project area reservoir pressure

In no event shall the Water Injection Credit Allowable be less than zero, i.e., negative numbers derived from application of the above formula shall be ignored.

(13) That the average project area reservoir pressure shall be determined prior to the commencement of injection of water into the reservoir and at least annually thereafter. The average project area pressure shall be the average of the pressures in at least ten representative wells selected by the operator of the unit and the Supervisor of the Hobbs District Office of the Commission at an agreed upon datum.

(14) That the project area allowable may be produced from any well within the project area in any proportion provided, however, that any proration unit situated on the boundary of the Central Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside said Central Vacuum Unit shall not be permitted to produce in excess of 80 barrels of oil per day.

(15) That each month the project operator shall submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total project area allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

(16) That the Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and, except as provided under Order (14) above, may be produced from the wells in the Project in any proportion.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

S E A L

dr/

JOE D. RAMEY, Member & Secretary

CENTRAL VACUUM UNIT
Authorized Injection Wells

54 new wells to be drilled at the following locations:

WELL NO.	LOCATION	SECTION	TOWNSHIP SOUTH	RANGE EAST
5	1310' FNL & 1310' FWL	30	17	35
6	1310' FNL & 2630' FWL	30	17	35
7	1310' FNL & 1330' FEL	30	17	35
13	2630' FNL & 10' FEL	25	17	34
14	2630' FNL & 1310' FWL	30	17	35
15	2630' FNL & 2630' FWL	30	17	35
16	2630' FNL & 1330' FEL	30	17	35
25	1330' FSL & 1310' FWL	25	17	34
26	1330' FSL & 2630' FWL	25	17	34
27	1330' FSL & 1330' FEL	25	17	34
28	1330' FSL & 10' FEL	25	17	34
29	1330' FSL & 1310' FWL	30	17	35
30	1330' FSL & 2630' FWL	30	17	35
31	1330' FSL & 1330' FEL	30	17	35
40	10' FSL & 1310' FWL	25	17	34
41	10' FSL & 2630' FWL	25	17	34
42	10' FSL & 1330' FEL	25	17	34
43	10' FSL & 10' FEL	25	17	34
44	10' FSL & 1310' FWL	30	17	35
45	10' FSL & 2630' FWL	30	17	35
46	10' FSL & 1330' FEL	30	17	35
55	1310' FNL & 1310' FWL	36	17	34
56	1310' FNL & 2630' FWL	36	17	34
57	1310' FNL & 1330' FEL	36	17	34
58	1310' FNL & 10' FEL	36	17	34
59	1310' FNL & 1310' FWL	31	17	35
60	1310' FNL & 2630' FWL	31	17	35
61	1310' FNL & 1330' FEL	31	17	35
70	2630' FNL & 1310' FWL	36	17	34
71	2630' FNL & 2630' FWL	36	17	34
72	2630' FNL & 1330' FEL	36	17	34
73	2630' FNL & 10' FEL	36	17	34
74	2630' FNL & 1310' FWL	31	17	35
81	1330' FSL & 1310' FWL	36	17	34
82	1330' FSL & 2630' FWL	36	17	34
83	1330' FSL & 1330' FEL	36	17	34
84	1330' FSL & 10' FEL	36	17	34
85	1330' FSL & 1310' FWL	31	17	35
93	10' FSL & 1310' FWL	31	17	35
94	10' FSL & 2630' FWL	31	17	35
99	1310' FNL & 1310' FWL	6	18	35
100	1310' FNL & 2630' FWL	6	18	35
101	1310' FNL & 1330' FEL	6	18	35
106	2520' FNL & 1040' FWL	6	18	35

Case No. 6008
Order No. R-5530
Exhibit "A"

54 new wells to be drilled at the following locations continued

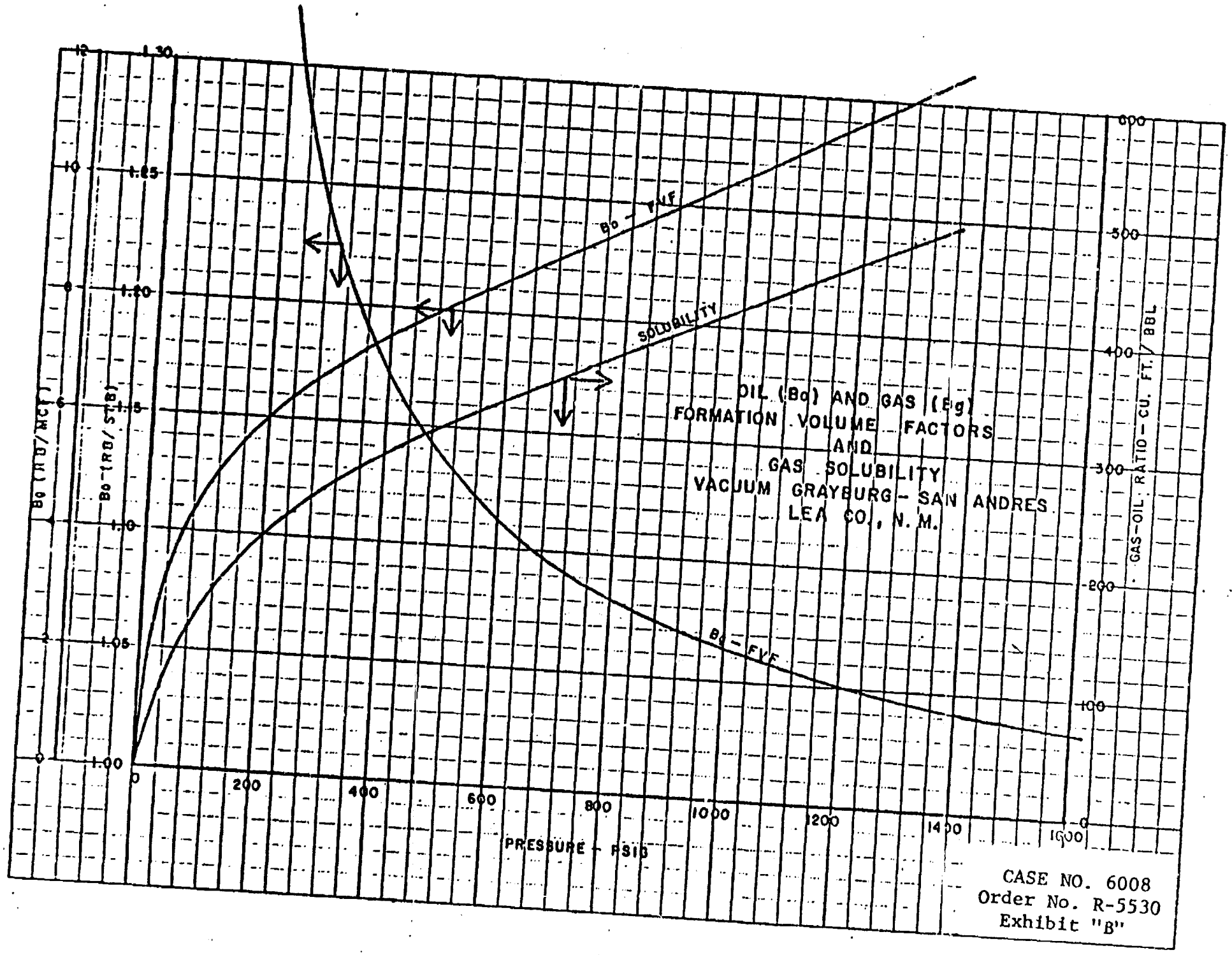
WELL NO.	LOCATION	SECTION	TOWNSHIP SOUTH	RANGE EAST
107	2450' FNL & 2630' FWL	6	18	35
108	2630' FNL & 1480' FEL	6	18	35
113	1620' FSL & 1100' FWL	6	18	35
114	1460' FSL & 2100' FWL	6	18	35
115	1600' FSL & 1500' FEL	6	18	35
120	60' FNL & 1100' FWL	7	18	35
121	400' FSL & 2380' FWL	6	18	35
122	350' FSL & 1560' FEL	6	18	35
128	1310' FNL & 200' FEL	12	18	34
129	1310' FNL & 2630' FWL	7	18	35

One existing well, Sun Oil Company Lea State "B" No. 7 located as follows:

131	2119' FNL & 918' FWL	7	18	35

OPERATOR	LEASE	WELL NO.	UT.	SEC.	TWP.	RGE.
Continental Oil Co.	State H 35	9	H	35	17S	34E
Getty Oil Company	State AN	8	P	7	18S	35E
Getty Oil Company	State AN	9	I	7	18S	35E
Getty Oil Company	State BA	6	D	36	17S	34E
Marathon Oil Co.	Warn State A/c 2	6	K	6	18S	35E
Marathon Oil Co.	Warn State A/c 2	10	K	6	18S	35E
Mobil Oil Corp.	Bridges State	11	F	25	17S	34E
Mobil Oil Corp.	State DD	1	D	31	17S	35E
Phillips Petroleum Co.	Santa Fe	87	L	31	17S	35E
Texaco Inc.	New Mexico "AB" State	5	J	6	18S	35E
Texaco Inc.	New Mexico "AE" State	4	F	12	18S	34E
Texaco Inc.	New Mexico "O" State NCT-1	14	J	36	17S	34E
Texaco Inc.	New Mexico "O" State NCT-1	18	H	36	17S	34E
Texaco Inc.	New Mexico "P" State	1	J	7	18S	35E
Texaco Inc.	New Mexico "Q" State	4	P	25	17S	34E

Case No. 6008
Order No. R-5530
Exhibit "C"


OIL (Bo) AND GAS (Eg)
FORMATION VOLUME FACTORS
AND
GAS SOLUBILITY
VACUUM GRAYBURG - SAN ANDRES
LEA CO., N. M.
Bo - FVF
SOLUBILITY
Eg - FVF
PRESSURE - PSIG
GAS-OIL RATIO - CU. FT. / BBL
Bo (RB/STB)
Eg (RB/MCF)
1.30
1.25
1.20
1.15
1.10
1.05
1.00
12
10
8
6
4
2
0
800
600
400
300
200
100
0
200
400
600
800
1000
1200
1400
1600
CASE NO. 6008
Order No. R-5530
Exhibit "B"

#3

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. 6367
Order No. R-5897

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

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 25, 1978, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 16th day of January, 1979, 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 by Division Order No. R-5871 dated November 27, 1978, statutory unitization was approved for the East Vacuum Grayburg-San Andres Unit Area, Lea County, New Mexico.

(3) That the applicant herein, Phillips Petroleum Company, seeks authority to institute a pressure maintenance project on the aforesaid East Vacuum Grayburg-San Andres Unit Area, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into the San Andres formation through 59 wells, 31 of which would be drilled in 1979 during Phase II of the Project Development Program and 28 of which would be drilled in 1980 during Phase III of the Development Program.

(4) Applicant further seeks the designation of a project area for said pressure maintenance project and the promulgation of special rules and regulations governing said project including special allowable provisions.

(5) That for Phase 1 of the Project Development Program, applicant proposes to drill during 1979 ten producing wells at unorthodox locations as specified below:

TRACT NO.	WELL NO.	LOCATION	UNIT	SECTION
3229	005	1310' FSL and 1310' FWL	M	32
3202	001	1310' FSL and 1330' FEL	O	32
3202	003	1330' FNL and 1330' FEL	G	32
3328	002	1310' FSL and 1310' FWL	M	33
3366	001	1330' FNL and 1310' FWL	E	33
3333	004	1330' FNL and 1330' FEL	G	33
3456	005	1330' FNL and 1310' FWL	E	34
2801	002	1310' FSL and 1310' FWL	M	28
2801	004	1310' FSL and 1330' FEL	O	28
2721	001	1310' FSL and 1310' FWL	M	27

all in Township 17 South, Range 35 East, NMPM, Lea County, New Mexico.

(6) That during Phase II of the Development Program applicant proposes to drill 18 additional producing wells, all at unorthodox locations, and during Phase III of the Program applicant proposes to drill 26 additional producing wells, also at unorthodox locations.

(7) That all of the wells referred to in Findings Nos. (3), (5) and (6) above, being 59 injection wells at unorthodox locations and 54 producing wells at unorthodox locations, together with the currently completed producing wells in the Unit Area, will provide a thorough and efficient sweep of hydrocarbons throughout the unitized area, and will result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(8) That the above-described injection and producing wells, some of which would be at unorthodox locations along the unit boundaries in accordance with lease-line agreements with operators of offsetting lands, will not impair but will protect correlative rights.

(9) That the applicant's request for the designation of a Pressure Maintenance Project for the East Vacuum Grayburg-San Andres Unit Area, and for the promulgation of special rules and regulations governing said project, is in the interest of conservation and should be approved, subject to certain provisions.

(10) That the project area should consist of those proration units within the boundary of the East Vacuum Grayburg-San Andres Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

(11) That the total project area allowable should be equal to the sum of the basic project area allowable plus the water injection credit allowable.

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

(13) That the water injection credit allowable should be based on the following formula:

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

and should be calculated in accordance with Exhibits "A" and "B" attached hereto and by reference made a part hereof.

(14) That the project area allowable should be produced from the wells within the project area in any proportion provided that any proration unit situated on the boundary of said East Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside the Unit or on the Unit boundary should not be permitted to produce in excess of 80 barrels of oil per day.

(15) That each of the newly drilled production or injection wells in the project should be equipped with surface casing set at approximately 350 feet and cemented to the surface and with "production" casing set at total depth, approximately 4900 feet.

(16) That the "production" casing on each of said newly drilled wells should be cemented to the surface, except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and cemented to the surface, the "production" casing may be cemented back into the base of the intermediate casing string.

(17) That injection should be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing should be corrosion protected by a non-reactive internal lining or coating. The casing-tubing

annulus in each injection well should be filled with an inert fluid and a surface pressure gauge or approved leak detection device should be attached to the annulus.

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

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

(20) That provision should be made for the Division Director to authorize placing wells on injection and the drilling of injection wells and additional producing wells at orthodox and unorthodox locations anywhere within the Unit Area without notice and hearing, provided that no unorthodox location is closer than ten feet to a quarter-quarter section line nor closer than 330 feet to the unit boundary, unless such well located closer than 330 feet to the unit boundary is covered by a lease-line agreement with the operator of the lands offsetting such well or the owner of the offsetting lands has waived objection to such location in writing.

(21) That there are a number of wells within the East Vacuum Grayburg-San Andres Unit Area and on lands offsetting the unit area which have previously been plugged and abandoned in a manner which may permit waters injected into the San Andres formation to escape into other formations, including the Salado formation and the shallow fresh water-bearing formations unless remedial action is taken on said wells prior to injection in their near vicinity.

(22) That there are a number of wells within the East Vacuum Grayburg-San Andres Unit Area and on lands offsetting the unit area which penetrate the Vacuum Grayburg-San Andres Pool and are completed in deeper pay zones, but which are cased and cemented in such a manner as may permit the escape of waters injected into the San Andres formation into other formations as described above.

(23) That those wells referred to in Findings Nos. (21) and (22) above which are inadequately plugged and abandoned or are inadequately cased and cemented, or are suspected of being so, include, but are not necessarily limited to, the wells listed in Exhibit "C" attached hereto and by reference made a part hereof.

(24) That no injection at greater than hydrostatic pressure should be made into the Grayburg or San Andres formation in any well in the East Vacuum Grayburg-San Andres Unit Area within one-half mile of any well listed on Exhibit "C" attached hereto until remedial action has been taken on such well to ensure that it will not serve as an avenue of escape for injected waters or until tests have been conducted on such well or other evidence concerning such well has been presented, all establishing to the satisfaction of the Supervisor of the Hobbs District Office of the Division that remedial work on such well is unnecessary.

IT IS THEREFORE ORDERED:

(1) That the applicant, Phillips Petroleum Company, is hereby authorized to institute and operate a pressure maintenance project in the East Vacuum Grayburg-San Andres Unit Area, Vacuum Grayburg-San Andres Pool, Lea County, New Mexico, by the injection of water into the San Andres formation through certain wells which will be administratively approved for water injection at some later date by the Division Director.

(2) That said project shall be designated the East Vacuum Unit Pressure Maintenance Project.

(3) That the following unorthodox locations are hereby approved for new producing wells which are to be drilled by the unit operator during Phase I of the Project Development Program:

TRACT NO.	WELL NO.	LOCATION	UNIT	SECTION
3229	005	1310' FSL and 1310' FWL	M	32
3202	001	1310' FSL and 1330' FEL	O	32
3202	003	1330' FNL and 1330' FEL	G	32
3328	002	1310' FSL and 1310' FWL	M	33
3366	001	1330' FNL and 1310' FWL	E	33
3333	004	1330' FNL and 1330' FEL	G	33
3456	005	1330' FNL and 1310' FWL	E	34
2801	002	1310' FSL and 1310' FWL	M	28
2801	004	1310' FSL and 1330' FEL	O	28
2721	001	1310' FSL and 1310' FWL	M	27

all in Township 17 South, Range 35 East, NMPM, Lea County, New Mexico.

(4) That Special Rules and Regulations governing the East Vacuum Unit Pressure Maintenance Project are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
EAST VACUUM UNIT PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the East Vacuum Unit Pressure Maintenance Project shall consist of those proration units within the boundaries of the East Vacuum Grayburg-San Andres Unit upon which is located an injection well and any directly or diagonally offsetting proration unit which contains a producing well.

RULE 2. The project area shall receive a project area allowable, and said project area allowable shall be the sum of the basic project area allowable plus the water injection credit allowable.

RULE 3. The basic project area allowable shall be equal to 80 barrels of oil per day times the number of developed 40-acre proration units in the project area.

RULE 4. The water injection credit allowable shall be contingent upon full reservoir voidage replacement of all produced fluids and shall be based upon the following formula:

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

The water injection credit allowable shall be calculated in accordance with the procedures and parameters depicted on Exhibits "A" and "B" to Order No. R-5897.

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

RULE 5. The weighted average project area reservoir pressure shall be determined prior to commencement of injection of water into the reservoir and at least annually thereafter. The weighted average project area pressure shall be determined from the pressures in at least ten representative wells selected by the unit operator and the Supervisor of the Hobbs District Office of the Division.

RULE 6. The project area allowable may be produced from the wells within the project area in any proportion provided, however, that any proration unit situated on the boundary of the East Vacuum Unit which proration unit is not directly or diagonally offset by a San Andres injection well outside said East Vacuum Unit or on the East Vacuum Unit boundary shall not be permitted to produce in excess of 80 barrels of oil per day.

RULE 7. Those wells within the East Vacuum Unit Area that are not included within the project area as defined above shall be prorated in accordance with the Rules and Regulations of the Division.

RULE 8. The Division Director shall have authority to approve, without notice and hearing, the drilling of wells at unorthodox locations anywhere within the unit boundary, provided however, no unorthodox location shall be closer than ten feet to any quarter-quarter section line, and provided further, that no such unorthodox location shall be closer than 330 feet to the outer boundary of the unit area, unless such well is covered by a lease-line agreement with the operator of the lands offsetting such well, and a copy of the lease-line agreement accompanies the application for such unorthodox location, or unless such offset operator has waived objection to the proposed unorthodox location in writing, and his waiver accompanies the application.

RULE 9. No well shall be placed on water injection in the East Vacuum Unit Area unless the Division Director has approved such well for injection. Applications for injection approval shall be filed in accordance with Rule 701 of the Division Rules and Regulations.

RULE 10. Each newly drilled injection or producing well shall be equipped with a minimum of 350 feet of surface casing and "production" casing run to total depth (approximately 4900 feet). All casing strings shall be cemented to the surface except that in any well in which an intermediate casing string has been run to below the top of the Yates formation and cemented to the surface, the "production" string may be cemented back into the base of the intermediate casing.

RULE 11. Injection shall be accomplished through tubing installed in a packer set within 100 feet of the uppermost perforation. The injection tubing shall be corrosion protected by a non-reactive internal lining or coating. The casing-tubing annulus in each injection well shall be filled with an inert fluid and a surface pressure gauge or approved leak detection device shall be attached to the annulus.

RULE 12. The injection wells or system shall be equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 0.2 psi per foot of depth to the uppermost perforation. The Division Director may administratively authorize a pressure limitation in excess of the above upon showing by the unit operator that such higher pressure will not result in fracturing of the confining strata.

RULE 13. All wells within the project area shall be equipped with risers or in some other acceptable manner as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

RULE 14. The unit operator shall immediately notify the Supervisor of the Hobbs District Office of the Division of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from or around any producing well, the leakage of water or oil from or around any plugged and abandoned well within the project area, or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

RULE 15. Each month the project operator shall submit to the Division a Pressure Maintenance Project Operator's Report, on a form prescribed by the Division, outlining thereon the data required and requesting allowables for each of the several wells in the Project as well as the total project area allowable.

RULE 16. The Division shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for the wells in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and, except as provided under Rule 6 above, may be produced from the wells in the Project in any proportion.

IT IS FURTHER ORDERED:

(1) That no injection at greater than hydrostatic pressure shall be made into the Grayburg or San Andres formation in any well in the East Vacuum Grayburg-San Andres Unit Area within one-half mile of any well listed on Exhibit "C" attached hereto until remedial action has been taken on such well to ensure that it will not serve as an avenue of escape for injected waters, or until tests have been conducted on such well or other evidence concerning such well has been presented

establishing to the satisfaction of the Supervisor of the Hobbs District Office of the Division that remedial work on such well is unnecessary.

(2) That Order No. R-3150 which authorized a pilot waterflood project in this area is hereby rescinded.

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

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L

fd/

EAST VACUUM GRAYBURG-SAN ANDRES UNIT
PRESSURE MAINTENANCE PROJECT

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

WATER INJECTION CREDIT ALLOWABLE CALCULATION DATA

ATTACHMENT TO _____, 19__, REPORT

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

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

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

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

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

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

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

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

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

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

EXHIBIT "A"
ORDER NO. R-5897

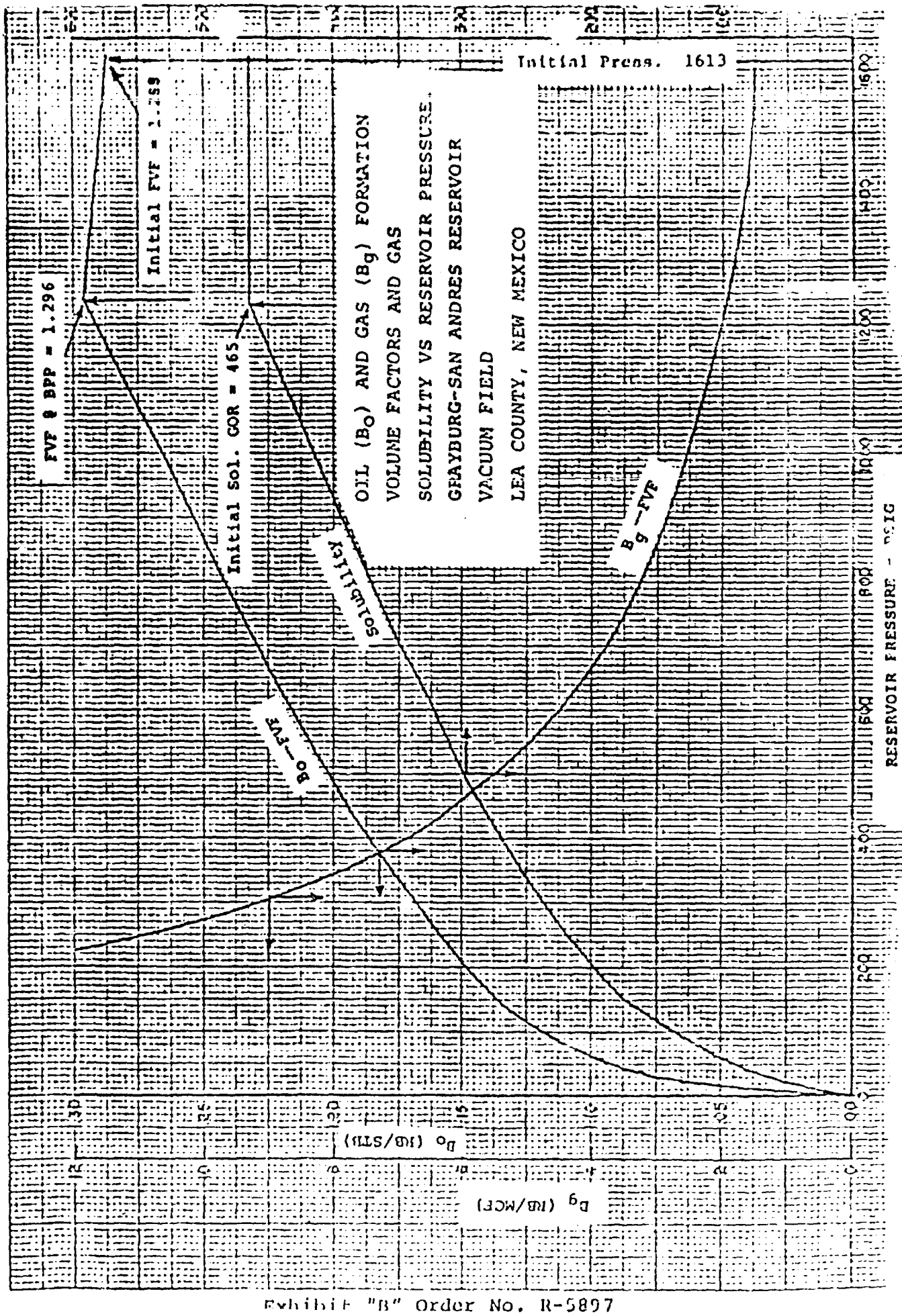


Exhibit "B" Order No. R-5897

EXHIBIT "C"

WELLS SUSPECTED OF BEING INADEQUATELY PLUGGED AND ABANDONED OR INADEQUATELY CASED AND CEMENTED

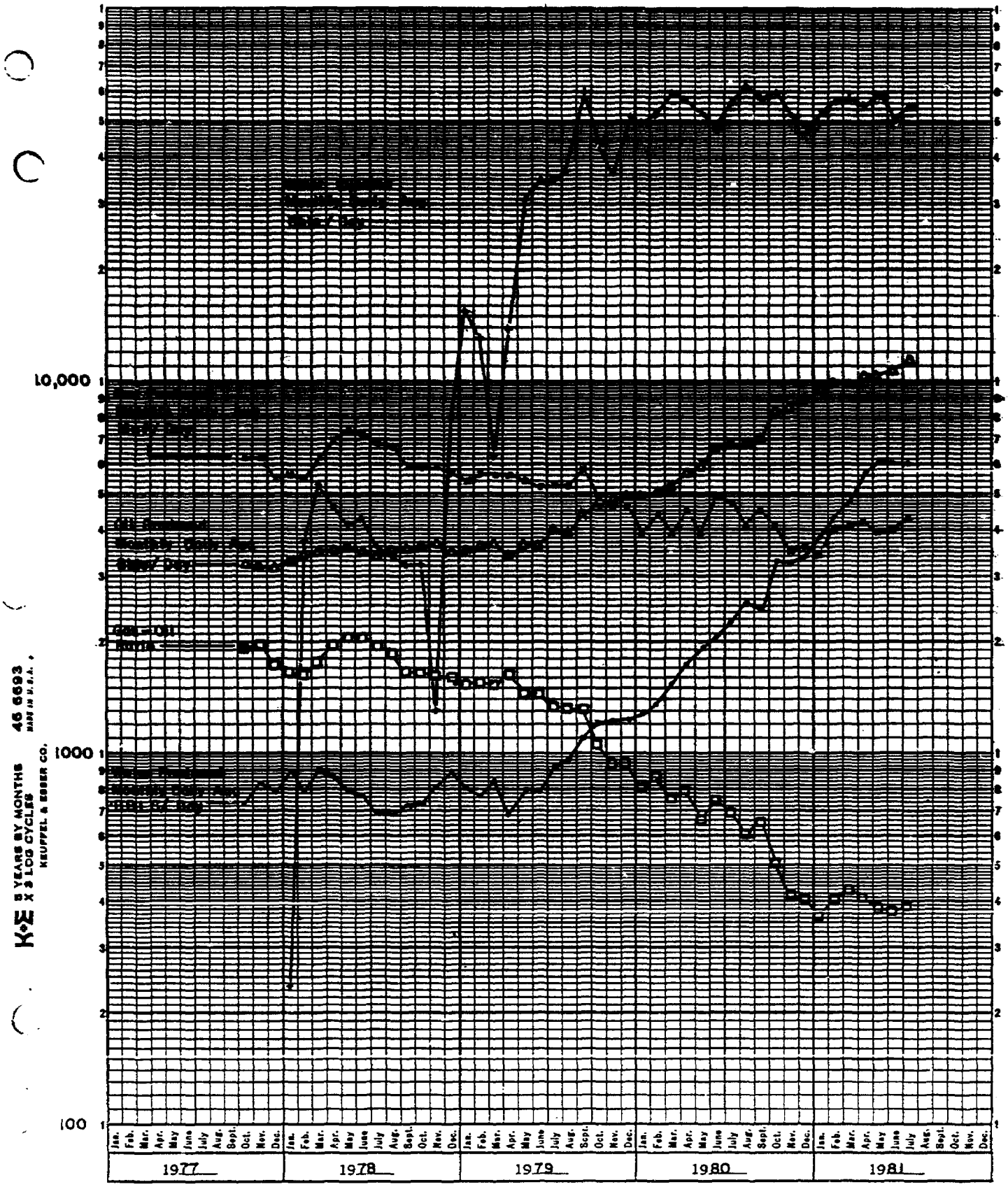
OPERATOR	LEASE	WELL NO.	UNIT	SEC-TWP-RGE
Mobil	State P	7	P	22-17S-35E
Penrose	State	2	N	24-17S-35E
Phillips	Santa Fe	15	A	28-17S-35E
Phillips	Santa Fe	16	L	5-18S-35E
Phillips	Santa Fe	37	F	28-17S-35E
Phillips	Santa Fe	47	C	35-17S-35E
Shell	State U	1	C	3-18S-35E
Shell	State VAA	6	K	5-18S-35E
Shell	State C	1	I	24-17S-34E
Shell	State I	1	E	29-17S-35E
Shell	State S	1	I	21-17S-35E
Stoltz etal.	Abo	1	O	24-17S-35E
Zapata	Shell State	1	O	23-17S-35E
Barnett	State B	1	D	19-17S-35E
Jones	State	2	A	35-17S-35E
Penrose	Scarborough	1	C	25-17S-35E
Amoco	State CV	1	F	25-17S-35E
Amoco	State CV	4	L	25-17S-35E
Amoco	State CV	5	F	25-17S-35E
Chevron	State 6-34	4	J	34-17S-35E
Cities Service	State BJ	2	K	35-17S-35E
Crusader	State	1	E	20-17S-35E
Crusader	State	2	C	19-17S-35E
Crusader	State	3	N	18-17S-35E
Exxon	State J	1	M	19-17S-35E
Exxon	State J	2	L	19-17S-35E
Exxon	State AC	1	H	22-17S-35E
Great Western	State E	2	L	25-17S-35E
Marathon	Warn State	1	M	23-17S-35E
Amoco	State CV	2	E	25-17S-35E
Amoco	State CV	2-Y	E	25-17S-35E
Millard Deck	Carthay State	2	G	20-17S-35E
Exxon	State K	17	P	32-17S-35E
Marathon	Staplin State	1	L	20-17S-35E
Marathon	Warn State	1	B	4-18S-35E
Mobil	N.Vac.AboUnit	207	H	24-17S-34E
Pennzoil	Phillips State	1	A	28-17S-35E
Pennzoil	Phillips State	2	F	28-17S-35E
Phillips	Vac.AboUnit	6-68	H	34-17S-35E
Phillips	Vac.Abo Unit	1-9	J	27-17S-35E
Phillips	Vac.Abo Unit	7-3	P	27-17S-35E
Phillips	Vac.Abo Unit	7-4	I	27-17S-35E
Phillips	Vac.Abo Unit	9-5	H	33-17S-35E
Phillips	Vac.Abo Unit	13-2	E	4-18S-35E

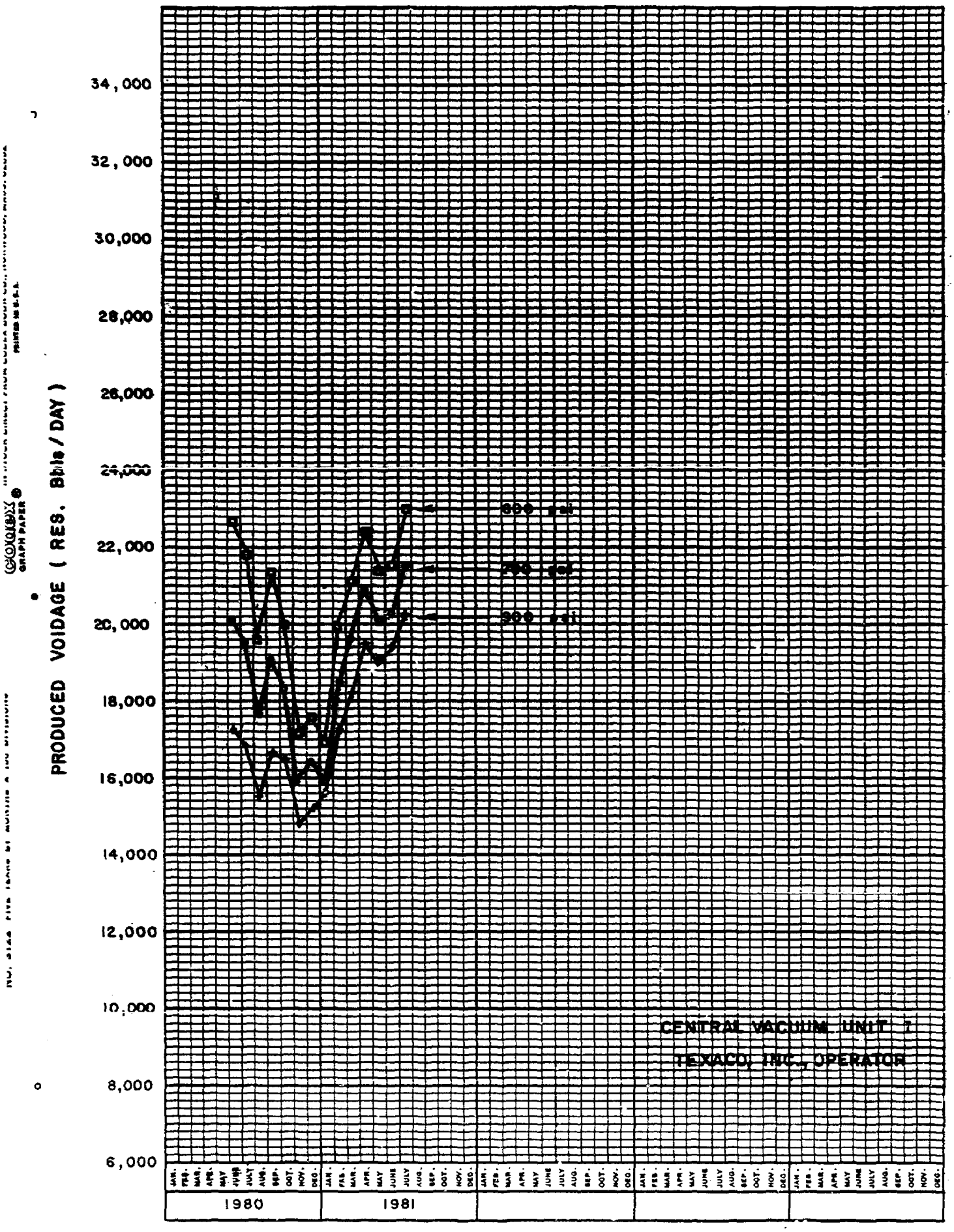
OPERATOR	LEASE	WELL NO.	UNIT	SEC-TWP-RGE
Phillips	Vac.Abo Unit	14-3	N	5-18S-35E
Phillips	Vac.Abo Unit	14-4	L	5-18S-35E
Shell	State V	6	P	27-17S-35E
Shell	State K	1	O	19-17S-35E

EXHIBIT "C"
ORDER NO. R-5897

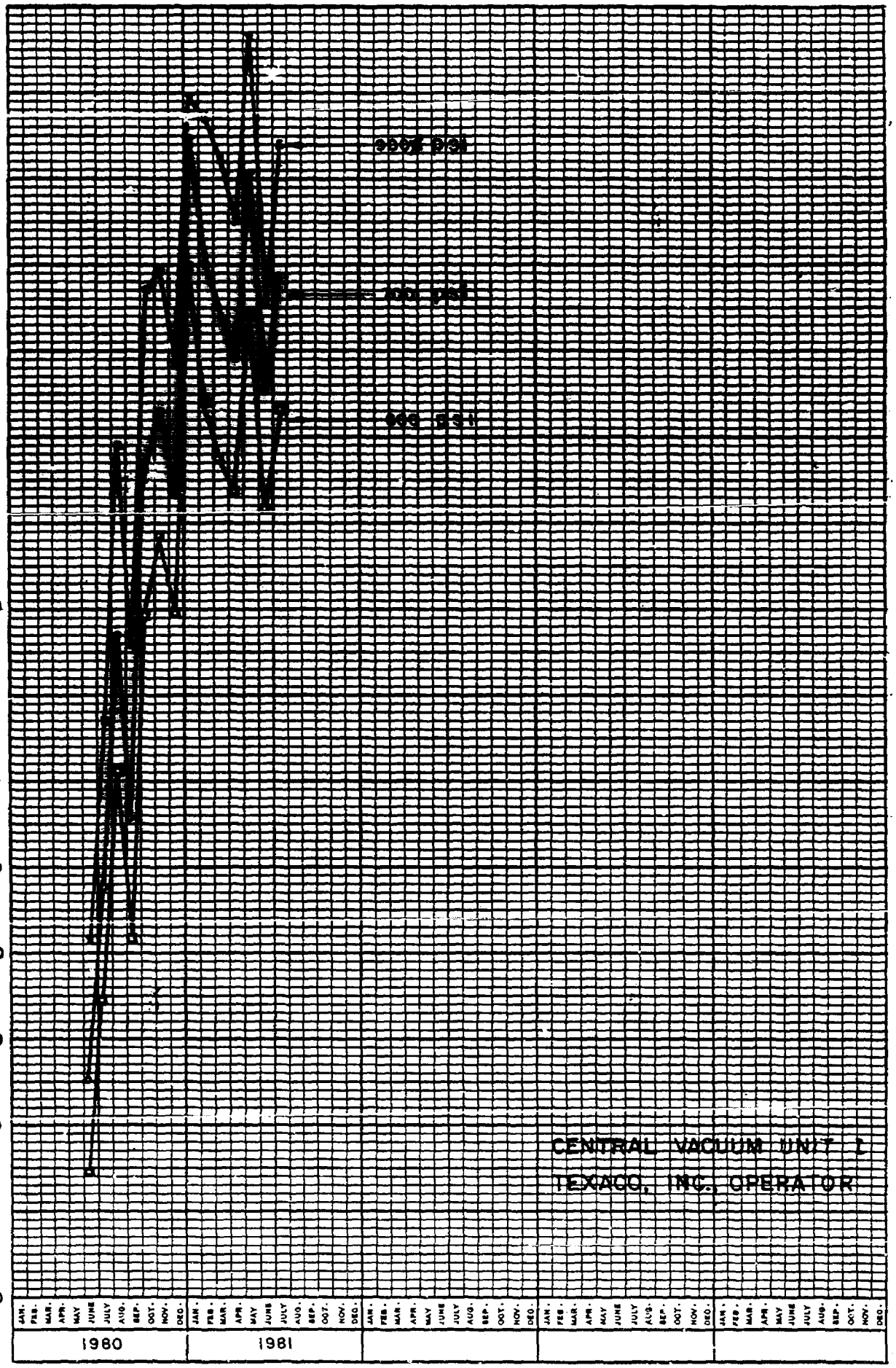
(4)

CENTRAL VACUUM UNIT I
TEXACO INC., OPERATOR
PRODUCTION HISTORY

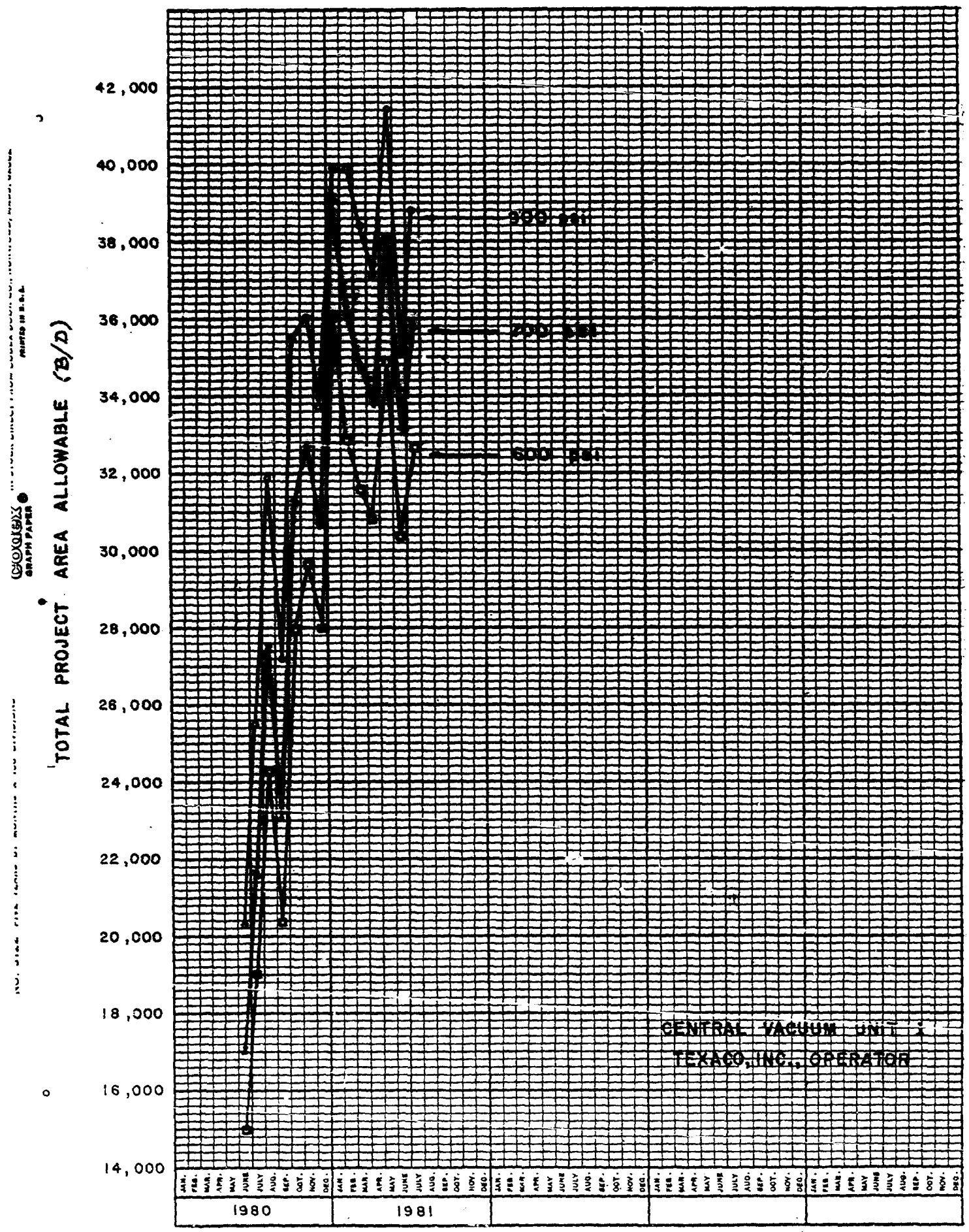



PRODUCED VOIDAGE (RES. Bbls / DAY)
34,000
32,000
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
CENTRAL VACUUM UNIT
TEXACO, INC., OPERATOR
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.
1980
1981

WATER INJECTION CREDIT ALLOWABLE (B/D)



(7)


TOTAL PROJECT AREA ALLOWABLE (B/D)
42,000
40,000
38,000
36,000
34,000
32,000
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
900 psi
700 psi
500 psi
CENTRAL VACUUM UNIT
TEXACO, INC., OPERATOR
1980
1981

Dockets Nos. 31-81 and 32-81 are tentatively set for October 7, and October 21, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 23, 1981

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

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

CASE 7353: Application of Texaco, Inc., for the amendment of Division Order No. R-5530, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-5530, which authorized its Central Vacuum Unit Area Pressure Maintenance Project, to increase the total project area allowable, or as an alternative, to reclassify the project as a waterflood project.

CASE 7354: Application of Corona Oil Company, for a pilot steam-enhanced oil recovery project, Guadalupe County, New Mexico.
Applicant, in the above-styled cause, seeks authority to institute a pilot steam-enhanced oil recovery project in the Santa Rosa formation by using two existing wells and three additional wells to be drilled to complete a five spot pattern located in the NE/4 NW/4 of Section 17, Township 11 North, Range 26 East.

CASE 7355: Application of Doyle Hartman for directional drilling and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill his Bates Well No. 3, the surface location of which is 1635 feet from the South line and 1210 feet from the West line of Section 20, Township 25 South, Range 37 East, in such a manner as to bottom it at a depth of 3500 feet in the Jalmat Gas Pool at an unorthodox location 2310 feet from the South line and 1650 feet from the West line of Section 20. The SW/4 of said Section 20 would be dedicated to the well.

CASE 7356: Application of S & I Oil Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the W/2 SW/4 of Section 12, Township 29 North, Range 15 West, Cha Cha-Gallup Oil Pool, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7357: Application of Union Oil Company of California for compulsory pooling, Lea County New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Atoka and Morrow formations underlying the W/2 of Section 16, Township 22 South, Range 33 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7343: (Continued from September 9, 1981, Examiner Hearing)

Application of Caribou Four Corners, Inc. for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Cha Cha Gallup Oil Pool underlying the E/2 NW/4 of Section 18, Township 29 North, Range 14 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7358: Application of John Yuronka for compulsory pooling, Lea County, New Mexico.
Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Langley Mattix Pool underlying the SW/4 of Section 6, Township 23 South, Range 37 East, to form four 40-acre tracts, each to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the wells, and a charge for risk involved in drilling said wells.

CASE 7359: Application of Energy Reserves Group for creation of a new gas pool and an unorthodox location, Roosevelt County, New Mexico.

Applicant, in the above-styled cause, seeks creation of a new Cisco gas pool for its Miller Com Well No. 1, located in Unit M of Section 12, Township 6 South, Range 33 East.

Applicant further seeks approval of an unorthodox location for its Miller "A" Well No. 1-Y, to be drilled 1800 feet from the South line and 1700 feet from the East line of Section 11 of the same township. The S/2 of said Section 11 to be dedicated to the well.

CASE 7345: (Continued from September 9, 1981, Examiner Hearing)

Application of Bass Enterprises Production Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Lovington Penn Pool underlying the N/2 NE/4 of Section 13, Township 16 South, Range 36 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7360: Application of L. J. Buck for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause seeks authority to dispose of produced salt water into the Seven Rivers formation in the interval from 3221 feet to 3250 feet in his Monco Well No. 2 in Unit M of Section 25, Township 25 South, Range 36 East.

CASE 7352: (Continued from September 9, 1981 Examiner Hearing)

Application of Yates Petroleum Corporation for designation of a tight formation, Eddy County, New Mexico. Applicant, in the above-styled cause, pursuant to Section 107 of the Natural Gas Policy Act 18-CFR Section 271.701-705, seeks the designation as a tight formation of the Permo-Penn and formation underlying all of the following townships:

Township 17 South, Ranges 24 thru 26 East;

18 South, 24 and 25 East;

19 South, 23 thru 25 East;

20 South, 21 thru 24 East;

20½ South, 21 and 22 East;

21 South, 21 and 22 East;

Also Sections 1 thru 12 in 22 South, 21 and 22 East,

All of the above containing a total of 315,000 acres more or less.

CASE 7329: (Readvertised)

Application of Loco Hills Water Disposal Company for an exception to Order No. R-3221, Eddy County, New Mexico

Applicant, in the above-styled cause, seeks an exception to Order No. R-3221 to permit the commercial disposal of produced brine into several unlined surface pits located in the N/2 SW/4 SW/4 of Section 16, Township 17 South, Range 30 East.

Dockets Nos. 31-81 and 32-81 are tentatively set for October 7, and October 21, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - SEPTEMBER 29, 1981

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

CASE 7116: (DE NOVO)

Application of Southland Royalty Company for designation of a tight formation, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Dakota formation underlying portions of Township 31 and 32 North, Ranges 10, 11, 12, and 13 west, containing 93,860 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.

Upon application of Consolidated Oil & Gas, Inc., this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 7161: Application of Southland Royalty Company for designation of a tight formation, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the designation of the Dakota formation underlying all or portions of Township 31 North, Ranges 10 and 11 West, and Township 32 North, Ranges 10, 11, 12, and 13 West, containing 92,871 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 7162: Application of R. A. Mendenhall Associates, Ltd., for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Delaware Mountain Group formation underlying the NW/4 SE/4 of Section 10, Township 22 South, Range 27 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

TEXACO
PETROLEUM PRODUCTS

PRODUCING DEPARTMENT

September 1, 1981

TEXACO
U.S.A.
A DIVISION OF TEXACO INC.
P. O. BOX 3109
MIDLAND, TEXAS 79702

REQUEST FOR HEARINC
TEXACO INC.
CENTRAL VACUUM UNIT
VACUUM GRAYBURG SAN ANDRES FIELD
LEA COUNTY, NEW MEXICO

Case 7353

Oil Conservation Division
State Land Office Bldg.
Old Santa Fe Trail
Santa Fe, NM 87501

Gentlemen:

Texaco Inc. respectfully requests that a hearing be scheduled for September 23, 1981, to consider amending Order #R-5530 (Case #6008) to allow for an increase in the total project area allowable or as an alternative to reclassify the Central Vacuum Unit from a pressure maintenance project to a waterflood project.

Yours very truly,

Alan R. McDaniel
Division Manager

By James W. Cox
James W. Cox
Petroleum Engineering Manager

CRW/lt

ROUGH

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. 7353

Order No. R-5330-C

Application of Texaco, Inc., for the amendment of Division Order No. R-5530, Lea County, New Mexico.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on Sept 23, 19 81, at Santa Fe, New Mexico, before Examiner RLS.

NOW, on this _____ day of October, 19 81, 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, Texaco Inc., seeks the amendment of Order No. R-5530, which authorized its Central Vacuum Unit Area Pressure Maintenace Project, to increase the total project area allowable, or as an alternative, to reclassify the project as a waterflood project.

(3) That said Division Order No R-5530, as amended, authorized the applicant to operate a pressure maintenance project in the Vacuum-Grayburg-San Andres Pool, Lea County, New Mexico.

said

(4) That paragraph (13) of Order No R-5530 established parameters and limitations for a project area allowable to be available for producing wells within said project.

(5) That under said paragraph (13) the project area allowable is limited to 12,320 barrels per day

(6) That wells in the project are now producing at a combined rate of approximately 12,000 barrels per day and production is expected to increase to approximately 12,000 barrels per day.

(7) That removal of the limitation on the project area allowable, which limit equals 80 barrels per day per unit times the number of developed 40-acre tracts within the project area times two, would permit the applicant the relief sought and would be consistent with the allowable formula for an offsetting pressure maintenance project in the same pool.

(8) That no offset operator objected to the proposed increase in project area allowable.

~~(9) That approval of the app~~

(9) That that part of the subject application seeking in the alternative to reclassify said pressure maintenance project as a waterflood should be dismissed.

(10) That approval of the application will not result in waste nor violation of correlative rights.

IT IS THEREFORE ORDERED

(1) That effective October 1, 1981, paragraph (13) on page 6 of Division Order No R-5530 is hereby amended to read in its entirety as follows:

"

(13) That the project area shall receive a project area allowable, and said project area allowable shall be the sum of the basic project area allowable plus the water injection credit allowable.

"

(2) That that portion of the application in this case seeking (in the alternative) to redesignate Texaco Inc.'s Central Vacuum Pressure Maintenance Project as a waterflood project is hereby dismissed.

(3) Jurisdiction