CASE NO.

7629

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,

ETC.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

August 19, 1982

Re: CASE NO. 7629
ORDER NO. R-7053

Mr. William F. Carr
Campbell, Byrd & Black
Attorneys at Law
Post Office Box 2208
Santa Fe, New Mexico

Applicant:

Gulf Oil Corporation

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 Ernest L. Padilla

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

EXAMINER HEARING

IN THE MATTER OF:

Application of Gulf Oil Corporation for salt water disposal, Lea County, New Mexico. CASE 7629

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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

For the Applicant: William F. Carr, Esq.
CAMPBELL, BYRD, & BLACK P.A.
Jefferson Place
Santa Fe, New Mexico 87501

APPEARANCES

For Doyle Hartman: Ernest L. Padilla, Esq.
P. O. Box 2523
Santa Fe, New Mexico 87501

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MR. STAMETS: We'll call next Case 7629.

MR. MILLS: Application of Gulf Oil Corporation for salt water disposal, Lea County, New Mexico.

MR. CARR: May it please the Examiner, my name is William F. Carr, with the law firm Campbell, Byrd, and Black, P. A., of Santa Fe, appearing on behalf of the applicant.

I have two witnesses.

MR. PADILLA: Mr. Examiner, Ernest L. Padilla on behalf of Doyle Hartman.

MR. STAMETS: Do you have any witnesses, Mr. Padilla?

MR. PADILLA: I have one witness, Mr. Examiner.

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

(Witnesses sworn.)

MR. CARR: May it please the Examiner, initially we would like to note that the legal advertisement for this case provides that Gulf is proposing to dispose of produced water into the Yates and Seven Rivers formation.

That is not correct, inasmuch as Gulf is

only proposing to inject into the Seven Rivers.

MR. STAMETS: Okay, the Seven Rivers only.

MR. CARR: Yes, sir.

MR. STAMETS: Since that last one was advertised, I see no problem in amending the application to permit injection only into that formation.

MR. CARR: We would first call Mr. Kalteyer.

CHARLES F. KALTEYER

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

DIRECT EXAMINATION

BY MR. CARR:

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

A Charles F. Kalteyer, Midland, Texas.

Q Mr. Kalteyer, by whom are you employed and in what capacity?

A Employed by Gulf Oil Corporation and classified as a Chief Proration Engineer.

Q Have you previously testified before this Commission or one of its examiners and had your credentials

as a petroleum engineer accepted and made a matter of record?

A. Yes, sir.

Q. Are you familiar with the application filed in this case on behalf of Gulf Oil Corporation?

A. Yes, sir.

Q. Are you familiar with the proposed disposal well and the subject area?

A. Yes, sir.

MR. CARR: Are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q. Mr. Kalteyer, will you briefly state what Gulf is seeking in this application?

A. Gulf is seeking authority to dispose of produced water from the Arnott-Ramsey NCTE lease into the open hole interval from 3169 to 3385 of the Seven Rivers formation in our Arnott-Ramsey NCTE Well No. 5, located in Unit E of Section 16, Township 25 South, Range 37 East, Lea County, New Mexico.

Q. Have you prepared a plat depicting the Arnott-Ramsey State NCTE lease and the surface location of the Well No. 5?

A. Yes, sir, our Exhibit Number One is a plat of the area. The Arnott-Ramsey NCTE lease is outlined

in red and the Well No. 5 is circled in red.

In compliance with item five of the OCD Form C-108, a copy of which is the cover sheet for our packet of exhibits, a half mile radius circle around No. 5 has been drawn on the plat. The circle represents the well's area of review for purposes of this application.

Q Mr. Kalteyer, does this plat show all wells within two miles of the proposed disposal well?

A Yes, sir.

Q Does it also show the lease ownership in the area?

A Yes, sir.

Q Do you have exhibits which depict downhole particulars of all wells of public record within the area of review which penetrate the proposed injection interval?

A Yes, sir, our Exhibit Number Two is a tabular summary listing available information on the present condition of ten wellbores in the area of review, other than No. 5.

Also, Exhibits Three-A, Three-B, and Three-C are schematic diagrams showing plugging details of the three plugged wells -- plugged wells within the area of review.

The tops of cement shown as calculated are

not a matter of public record but were calculated by Gulf personnel in our Hobbs office, using the 75 percent excess Class C.

Q Will you refer to Exhibits Three-A, Three-B, and Three-C, and just briefly summarize for the Examiner the plugging information contained thereon?

A Exhibit Three-A is a shcematic of Gulf's Arnott-Ramsey NCT-E Well No. 1, showing that it was drilled to a total depth of 3512 feet and has been completed in the open hole interval, 3231 to 3512. The 5-1/2 inch casing has been cut and pulled from 2200 feet, cement plugs were set from 2600 to 3450; from 2125 to 2225; from 1260 to 1360; and from the surface to 100 feet.

Exhibit Number Three-B is a diagrammatic sketch of Gulf's Arnott-Ramsey NCT-E Well No. 3. It shows that it was drilled to a total depth of 3125, has been completed in the open hole interval, 2880 to 3048. It was abandoned in 1976 with a bridge plug set at 2708, with a 10-sack cement plug on top of it and a 15-sack plug was set from 1036 to 1180. Another plug set at 2032 to -- excuse me, 232 to 376, and then a surface plug set from zero to 65, consisting of 10 sacks, and no pipe was removed, and no casing was removed from the well.

Exhibit Three-C is a diagrammatic sketch

of Gulf's Arnott-Ramsey NCT-E Well No. 4, which was drilled to a total depth of 3400 feet, completed in the open hole from 2557 to total depth. It was abandoned in 1960 with no casing removed. A plug was set from 2500 feet to 3400 feet, consisting of 210 sacks of sacks of cement. Another plug was set at 1000 to 1110, consisting of 25 sacks of cement. After the casing had been perforated at 1075 feet and 150 sacks cement was pumped in.

The surface plug of 100 feet consisted of 20 sacks of cement.

Q Mr. Kalteyer, are these the only plugged and abandoned wells within the area of review?

A Yes, sir.

Q In your opinion are they sufficiently plugged so as to not become vehicles for the migration of injected fluids into other than the injection interval?

A Yes.

Q Have you prepared an exhibit showing the downhole particulars of the proposed injection well?

A Yes, sir, our Exhibit Four consists of two pages. The first page is a schematic of the present status of our Arnott-Ramsey NCT-E Well No. 5, and also of the proposed downhole arrangement under injection.

The well was drilled to a total depth of

3385. 8-5/8ths OD 28 pound H-40 casing set in 12-1/2 inch hole at 472 feet with 250 sacks of cement, with cement to the surface by circulation. 5-1/2 inch OD 17-pound casing set in 7-7/8ths inch hole at a depth of 3169 feet with 150 sacks of cement on bottom and 150 sacks of cement through a DV tool at 1139.

The first stage top of the cement was calculated to be at 2438 and the second stage reached the surface.

The well was originally drilled as an oil producer in June of 1953, was originally completed in the open hole interval from 3159 to 3385. It potentialed for six barrels of oil and three barrels of water and 156 Mcf of gas per day.

Production declined to two barrels of oil and three barrels of water and in October of '55 a cast iron bridge plug was set at 3160, plugging off the open hole interval, and a 5-1/2 inch casing was selectively perforated from 2990 to 3040 and 3080 to 3150 in the Yates formation Jalmat Gas Pool.

This zone was potentialed on October 21, 1955, with an estimated open flow of 8800 Mcf a day and it produced in excess of 3.3 billion cubic feet of gas. It ceased to produce and was temporarily abandoned in June of 197[illegible],

due to low gas volume and low pressure.

An attempt was made to restore the well to production by acidizing and swabbing in 1977, and the well was swabbed dry; no production; and the well was then -- was plugged and abandoned in March of 1981.

Q. Mr. Kalteyer, are you proposing to inject into a portion of this reservoir which in your opinion has been depleted?

A. Yes, sir, into the -- into the interval of the original completion in the Seven Rivers.

Q. Does Gulf propose to, if approved, complete the well with the annulus filled with an inhibited fluid?

A. Yes, sir.

Q. Will you put a gauge at the surface and otherwise comply with the rules of the Oil Conservation Division and Federal underground injection control program?

A. Yes, sir.

Q. Will you tell the Examiner of your plans for operating the well and of the -- and of the analysis and compatibility of the data you've obtained on the liquids involved?

A. All right, sir.

Gulf's Exhibit Number Five covers the proposed operation of the injection well. The lease is currently

producing from 150 to 175 barrels of water per day, and we anticipate that the average daily rate disposal would be 150 barrels a day and we don't anticipate that it would exceed 800 barrels per day. The system will be closed and we anticipate that the average injection pressure will be approximately 400 pounds per square inch and the maximum injection pressure at .2 psi per foot gradient to the top of the completion interval would be 633 psi rather than 650 as shown on our exhibit.

The source of the injection fluids will be from the Gulf Arnott-Ramsey State NCT-E lease. The zone of disposal is productive of oil and gas within one mile of the proposed disposal well.

Exhibit Six-A is a water analysis report prepared by Petrolite Corporation of Langlie-Mattix water formation -- formation water, showing total dissolved solids of 22,940. This sample was taken from Gulf's Arnott-Ramsey B-8.

The Exhibit Number Six-B is a water sample taken from Jalmat formation, Gulf's Arnott-Ramsey B-11, showing a total dissolved solids of 15,025 milligrams per liter.

Exhibit Six-C is analysis of combined -- these combined waters, Jalmat and Langlie-Mattix, also prepared by Tretolite Corporation. They've indicated that these

wells -- these waters will be compatible.

Q Mr. Kalteyer are there other salt water disposal wells in this area?

A Yes, sir. If you'll refer to Exhibit One, the Bettis-Boyle-Stovall Christmas No. 1 in Unit E of Section 20, T25, R37, and also the Burleson and -- Burleson's Guthmann No. 2 in Unit J of Section 29, T25, 37.

Q Will you tell the Examiner of Gulf's proposed stimulation program for the zones within the injection interval?

A Gulf anticipates that we will acidize the interval with 20 percent hydrochloric acid, and the volume will be determined at that time of water.

Q In compliance with item number eleven of Oil Conservation Division Form C-108, do you have an exhibit giving the chemical analysis of fresh water being produced within one mile of the proposed injection well?

A Yes, sir. Gulf's Exhibit Number Eight is a three-page exhibit. The first page is a summary of water analysis reports from the two known fresh water sources within approximately one mile of the Arnott-Ramsey NCT Well No. 5.

The fresh water wells are shown as solid blue squares on the Exhibit One.

The Bowington house water well is located

in Unit A of Section 21, T25, R37, which was sampled in May of this year, indicating 8800 milligrams per liter of chlorides and 14,312 milligrams per liter total dissolved solids.

The Meaders house water well is located in Unit M of Section 9, Township 25, Range 37, was also sampled in May, indicating 800 milligrams per liter chlorides and total dissolved solids of 5182.

Copies of these two analyses, prepared by Petrolite Corporation are included.

Q Could you briefly explain to the Examiner why you are requesting that this well be converted to a salt water disposal well?

A As I stated before, we are currently producing approximately 150 to 175 barrels of salt water per day from the Arnott-Ramsey NCT-E lease and it's trucked for disposal at an average cost of $5-to-$6000 per month. Conversion of this well would facilitate the disposal of the produced water from the Arnott-Ramsey NCT-E lease and prevent waste by greatly reducing the production costs, thereby lowering the economic limit, plus allowing us to recover additional hydrocarbon reserves which otherwise might not be recovered.

Q In your opinion would this approval of this application therefor prevent waste?

A Yes, sir.

Q. Would it be in the best interest of conservation?

A. Yes, sir.

Q. Would it impair the correlative rights of any other operator in the area?

A. No, I believe not.

Q. In compliance with item thirteen of Oil Conservation Division Form C-108 you have proof that Notice of this application has been furnished to the owner of the land on which the well is located and the leasehold operators within one-half mile of the well location?

A. Yes, sir. Gulf Exhibit Number Nine is a copy of our notification letter of July 21st, 1982, to the Commissioner of Public Lands and the three outside leasehold operators within the area of review, consisting of a three-page exhibit, the third page indicates the -- the receipts by Amoco, Union Texas, and ARCO, and we have received verbal notification this morning from the Commissioner of Public Lands that they did receive this notification and they've given a waiver.

Q. Mr. Kalteyer, have other operators in the area contacted you concerning this application?

A. Yes, sir. We have a waiver from Union Texas Petroleum.

MR. CARR: Mr. Stamets, would you like the waiver marked as an exhibit in this case?

MR. STAMETS: No, that's not necessary. It would just be adding to the case file.

A. And we have a transmittal letter to Gulf and the waiver from the Commissioner of Public Lands. And we have a letter from ARCO Oil and Gas, who is the operator of the No. 1 Woolworth.

Q. Where is that well located?

A. It is located in Section 16 -- no, excuse me. Their No. 1 Woolworth Well is located 990 feet from the north line, 330 feet from the east line, of Section 17, Township 25 South, Range 37 East.

Q. Could you summarize this letter from ARCO for the Examiner?

A. This should be in the files of the OCD. It was addressed to Joe Ramey and it is not ARCO's wish to prevent Gulf from disposing of salt water into their well, so they respectfully request the following provisions be made part of the approval of the injection of salt water:

In the event water production increases in ARCO's Woolworth Well No. 1, Gulf Exploration and Production Company will immediately stop injection of their Arnott-Ramsey MCT-E Well No. 5 and will cooperate with ARCO to determine if

the source of water is Gulf's well.

If the source of water is determined to be Gulf's Arnott-Ramsey No. 5, Gulf will not resume injection until the cause of the water break has been corrected.

Q. Are these conditions that are requested by ARCO acceptable to Gulf?

A. Yes, sir, they are.

Q. Have you received any correspondence from any other operators in the area?

A. Yes, sir. We've received a letter from Doyle Hartman, oil operator in Midland, dated July 27th, 1982, a copy of which was submitted to the OCD and a copy addressed to the Examiner, and in that letter Doyle Hartman is asking Gulf to farm out their acreage.

Q. And is this proposal acceptable to Gulf Oil Corporation?

A. No, sir.

Q. And why not?

A. We are currently operating the property and wish to continued to develop and operate it.

Q. Were -- will Gulf call an additional witness to testify as to geological considerations in this matter?

A. Yes, sir.

Q. Were Exhibits One through Nine prepared

by you or under your direction or supervision?

A Yes, sir, they were, with the exception of the various water sample analyses.

Q Have you reviewed these and can you testify that they are accurate and from the files of Gulf Oil Corporation?

A Yes, sir.

MR. CARR: At this time, Mr. Stamets, we would offer into evidence Gulf Oil Corporation Exhibits One through Nine.

MR. STAMETS: These exhibits will be admitted.

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

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Kalteyer, there appears to be some problem with the water analyses, being Exhibits Six-A, Six-B, and Six-C. For example, on Exhibit Six-B the chlorides shown are 24,000 milligrams per liter. The total dissolved solids are only 15,000. And when I do the math on the combined sample, it would look like the total dissolved solids on the second sample would have to be about 50,000 instead of 15,000

A Are you on Exhibit Six-C?

Q Six-B and then Six-C. Six-C, as I understand it, is a 50-50 sample of the two waters that represent -- are represented by Six-A and Six-B. They give a 36,787 total dissolved solids.

Exhibit Six-A shows 22,940, and I don't believe there's any way you can take 22,000 water, add 15,000 water, and get 36,000 water.

In any event --

A All right.

Q -- I think there's a problem with those exhibits and that you probably --

A We would --

Q -- ought to get Tretolite to get you some revised ones and send --

A All right.

Q -- those in.

A All right.

Q I don't see that it's any major problem; just certainly looks strange.

MR. STAHETS: Are there other questions of this witness? Mr. Padilla.

CROSS EXAMINATION

BY MR. PADILLA:

Q. Mr. Kalteyer, why is it necessary to stimulate the disposal zone?

A. We want to clean it out again. It's been plugged off --

Q. Was --

A. -- for some time.

Q. -- that well stimulated with nitroglycerin to begin with?

A. Yes, sir.

Q. And didn't it take 250 shots of nitroglycerin at that time?

A. I would have to refer to my records, but it was stimulated.

Q. Do you know what the separation between the Yates and the Seven Rivers is?

A. In footage?

Q. In footage, yes, sir.

A. I think that we could probably bring that out in a log that we're presenting by our next witness.

Q. Well, do you know also what the -- you're going to squeeze off the Yates formation, is that correct?

A. Yes, we're going to squeeze off the Yates

completion.

Q. Will the next witness also testify as to the distance between the -- the perforations in the Yates and the disposal zone?

A. Yes, sir, he will have a log of the well, Well No. 5, and will be able to show that distance.

Q. Is ARCO's well in Section 17 an oil or a gas well, do you know?

A. It's a gas well.

MR. PADILLA: No further questions, Mr. Examiner.

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

MR. CARR: At this time, Mr. Stamets, we'd call Bill Stewart.

BILL STEWART

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

DIRECT EXAMINATION

BY MR. CARR:

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

A My name is William F. Stewart. I live in Midland, Texas.

Q By whom are you employed and in what capacity?

A Gulf Oil Corporation as a petroleum geologist.

Q Have you previously testified before this Commission or one of its Examiners?

A No, I haven't.

Q Will you briefly summarize for Mr. Stamets your educational background and your work experience?

A I received a Bachelor of Science degree in geological engineering from Colorado School of Mines in December of 1979.

I've worked for two years in Odessa, Texas, for Gulf Oil as a production geologist, and a half year with Gulf Oil in Midland, Texas, as a geotechnologist.

Q Does your area of responsibility include the area which is the subject of this hearing today?

A Yes, sir, it does.

Q Are you familiar with the application filed in this case on behalf of Gulf Oil Corporation?

A Yes, sir, I am.

Q Are you familiar with the subject area

and the proposed injection well?

A. I am.

MR. CARR: Are the witness' qualifications acceptable?

MR. STAMETS: They are.

Q. Mr. Stewart, do you have an exhibit giving geological data on the formations in the proposed injection interval?

A. Yes, sir, Exhibit Ten-A is a gamma ray neutron log of the Arnott-Ramsey NCT-E Well No. 5, which, along with Exhibit Ten-B, depicts each of the formations in the injection interval, as well as others above, giving geological name, depth, thicknesses, and lithologic details.

Referring to Exhibit Ten-A, this is the log. It was logged in 1953;at a depth of 3151 feet it shows the top of the Seven Rivers formation and at 2910 feet, the top of the Yates formation. The Yates perforated intervals are shown in the 5-1/2 inch casing. The base of the casing is 3169. And the proposed injection interval from the base of the casing to the TD at 3385.

Q. And are the perforations in the Yates those perforations which Gulf intends to squeeze before they commence injection?

A. Yes, those perforations are to be squeezed.

Q Will you now refer to Exhibit Number Eleven?

A Yes, sir. Our Exhibit Number Eleven is a cross section, further showing the geological relationship of the formations in the area and a series of wells.

First of all, you'll notice that the Seven Rivers formation is continuous throughout this area and you'll note the Doyle Hartman well to the right at A'.

You'll notice his perforations in the lower portion of the Yates formation and the Seven Rivers top is shown also, there.

Q Now, Mr. Stewart, there's an index, or a map, in the lower righthand corner of this exhibit, is there not?

A Yes, sir.

Q And that shows the line of the cross section.

A Right, and the location of Gulf's proposed injection well, the half mile radius circle.

Q I'd like to direct your attention to the well on this cross section immediately to the left of the proposed injection well. What is the status of that well?

A This is an injection well, Langlie-Jal Unit No. 89.

Q And could you compare the injection inter-

val in this well with the proposed injection interval in the subject well?

A They are injecting into the -- approximately mid Seven Rivers, into the top of the Queen, which overlaps with our zone of proposed injection in the Seven Rivers formation in our Ramsey 5 Well.

Q Okay. Mr. Stewart, do you have an exhibit giving the geological data on the underground fresh water aquifers which overlie or underlie the proposed injection interval in this area?

A Yes, sir. Exhibit Number Twelve describes the fresh water aquifers in the area of the Arnott-Ramsey NCT-E Well No. 5.

Referring to that exhibit, the Arnott-Ramsay NCT-E Well No. 5 is located approximately one mile northeast of the Town of Jal in Lea County, New Mexico.

In this area a division between aquifers of differing geological age exists. The subject well is located very near, just east of the division but within the area of the Ogallala formation, Tertiary age, or Quaternary age aquifers, in this case happen to be Quaternary Alluvium.

To the west and southwest aquifers are produced from the Chinle and Santa Rosa Triassic age aquifers of the group.

The top of Red Beds for the subject well is estimated to be at 50 feet by gamma ray log correlation from nearby wells.

Q. Mr. Stewart, has Gulf Oil Corporation examined all available geological and engineering data and has Gulf found any evidence of any hydrologic connection between the disposal zone and any underground source of drinking water?

A. We have found no evidence of any connection.

Q. And is a statement to this effect contained with your exhibits as Exhibit Number Thirteen?

A. Yes.

Q. Were Exhibits Ten-A, Ten-B, Eleven, Twelve, and Thirteen prepared by you or compiled under your direction and supervision?

A. Yes, sir, they were.

Q. Can you testify as to the accuracy of these exhibits?

A. I can.

MR. CARR: At this time, Mr. Stamets, we would offer into evidence Gulf's Exhibits Ten-A, Ten-B, Eleven, Twelve, and Thirteen.

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

Q. If I may, I'd like to refer back briefly

to Exhibit Number Eleven for one additional question.

Mr. Stewart, if you'll refer to Exhibit Number Eleven, I would direct your attention to the well immediately the right of the proposed injection. Would you identify this well for the Examiner?

All right, if you would look at the second well to the right of the injection well, I'm interested in the-- in Gulf's No. 11 Well.

A. All right, the Arnott-Ramsay NCT-E No. 11.

Q. When was this well drilled?

A. This well was completed in March of 1982 as a gas well in the Jalmat Pool.

Q. Did it also -- was it also completed in the Yates formation?

A. It was completed in the Yates formation and is producing from the Yates formation.

Q. Do you have any -- do you have the initial potential or any other data on this well?

A. This well IP'ed for flowing 360 Mcf of gas per day.

Q. In your opinion is this a -- how would you evaluate the quality of this well?

A. Well, it is commercial production in the Yates.

Q If you were -- if this well started to water out as a result of the injection in the proposed injection well, what action would Gulf take?

A We would cease injecting into the salt water disposal well.

MR. CARR: I have no further questions.

MR. STAMETS: Are there any other questions of this witness? Mr. Padilla?

CROSS EXAMINATION

BY MR. PADILLA:

Q Mr. Stewart, what are the squeeze procedures that Gulf will employ in their well, do you know?

A I would have to refer that to Mr. Kalteyer, our engineer.

MR. PADILLA: Mr. Kalteyer, if you would, please.

MR. KALTEYER: The procedure for squeezing?

MR. PADILLA: Yes, sir.

MR. KALTEYER: We have not -- that will be decided in our Hobbs office and I do not -- I can not give you that plan of procedure for squeezing that well.

We'll be glad to furnish it, but I do not have that information. Probably it has not been worked up at

this time.

But we'll be glad to furnish it if the Examiner desires that information.

Q. Mr. Stewart, do you know when -- who's the operator of the injection well to the west of your proposed location?

A. I believe that's Union Texas Petroleum Company.

Q. Are they operating the unit to the -- to the west of that, of your well?

A. They are.

Q. Did they receive permission to inject at the time this unit was formed?

A. I don't know.

Q. Do you know whether Gulf operates any wells along any -- any of the surrounding areas from the Jalmat formation?

A. Pardon me, I didn't understand the question.

Q. Does Gulf operate any wells that produce gas from the Jalmat formation in the area of the proposed injection well?

A. From the Jalmat Pool, yes, from the Jalmat Pool.

Q. Of the Yates?

A. Yes, the Yates formation of the Jalmat Pool.

Q. Do you have any wells that produce from the Yates formations?

A. Yes.

Q. Where are those wells located?

A. Our No. 11 Well in Section 16, Township 25 South, Range 37 East, is producing gas from the Yates formation.

I believe our No. 2 Well is also producing gas from (inaudible).

Q. And that's -- those wells are located in the south half of Section 16, is that correct?

A. Correct, the No. 11 being in the north half; No. 2 in the south half.

MR. STAMETS: Where is that No. 2 Well?

A. It's right down there on the top of No. 5 of 25 South. It looks like about 990 from the south, 1980 from the east.

MR. STAMETS: Unusual symbol. I wasn't certain what type of well that represented there.

Q. Are those wells producing in commercial quantities? Was that your testimony?

A. Yes, they are.

Q. What is the separation between the zone that you're going to squeeze off in the Yates formation with the disposal interval? What is the footage separation?

A. Between the lower perfs and the casing?

Q. Yes, sir.

A. Or the top of the injection interval?

Q. Correct.

A. Nineteen feet.

Q. What separates -- what is -- what's in those 19 feet?

A. Dense dolomite, with no porosity.

Q. Mr. Stewart, between -- in those 19 feet is there cement now, between the casing and the annulus?

A. I would have to refer that to our engineer.

MR. KALTEYER: Yes, sir. The pipe was set and cemented with a casing seal, so it has been cemented.

Q. There's only nineteen feet of separation between the lower perfs of the Yates and the top of the disposal interval?

MR. KALTEYER: Yes, sir.

MR. PADILLA: Nothing else, Mr. Stamets.

MR. STAMETS: Any other questions of these witnesses?

MR. CARR: Nothing further.

MR. STAMETS: They may be excused.

MR. CARR: Just a minute, we may have another question.

I have one question for Mr. Kalteyer.

Mr. Kalteyer, based on your review of this area, in your opinion would injection of produced salt water into the proposed injection well pose any danger to the Hartman Well in terms of causing it to prematurely water out?

MR. KALTEYER: No, sir, at that distance I don't anticipate that it could, even if we were injecting directly into the Yates formation. We're injecting into the Seven Rivers, which is a depleted oil zone.

MR. CARR: I have no further questions.

MR. STAMETS: Any other questions of these witnesses? They may be excused.

We'll take about a fifteen minute recess.

(Thereupon a recess was taken.)

MR. STAMETS: The hearing will please come to order. Mr. Padilla?

WILLIAM P. AYCOCK

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

DIRECT EXAMINATION

BY MR. PADILLA:

Q. Mr. Aycock, would you please state your name, by whom you're employed, and your connection with the -- with Mr. Hartman?

A. I'm employed by Doyle Hartman in connection with the application of Gulf for salt water disposal, which, I believe, is 7629, Case Number 7629.

Q. What's your full name, Mr. Aycock?

A. William P. Aycock.

Q. Where do you reside?

A. Midland, Texas.

Q. And, Mr. Aycock, have you previously testified before the Oil Conservation Division and had your credentials accepted as a matter of record?

A. I have.

MR. PADILLA: Mr. Examiner, are Mr. Aycock's credentials acceptable as a petroleum engineer?

MR. STAMETS: They are.

Q. Mr. Aycock, have you prepared certain exhibits in connection with this hearing today for introduction?

A. Yes, sir, I have.

Q. Would you look at what has been marked as Doyle Hartman's Exhibit Number One and tell us what it is and what it contains?

A. Exhibit Number One is a land map of the area that contains the application well and four of the several Jalmat wells that are operated by Doyle Hartman. Those wells indicated on the map being those that we feel could be affected by this application were it to be granted, particularly at the 800 barrel per day rate.

Behind the land map are logs with available completion information for both the Gulf Arnott-Ramsay NCT-E No. 5, which is the application well, and each of the Doyle Hartman operated wells that's indicated on the map, as well as graphs and production tabulations for each of those wells, and a completion summary from Doyle Hartman's proprietary well files for his El Paso Pritchett Federal No. 1, which is located in the northwest of the southeast of Section 9, approximately 1-1/4 miles to the northeast of the application well.

Q. Mr. Aycock, obviously that latter well you testified about is the most -- is the one that concerns

Mr. Hartman the most, is that correct?

A Yes, sir.

Q Can you tell us about the production history of that well?

A Yes, sir, I can.

Mr. Hartman's Pritchett Federal No. 1 is 50 percent owned by El Paso Natural Gas Company; was spudded on July the 24th, 1979, and completed on August the 9th, 1979, for an initial potential of 357 Mcf per day from a completion interval 2942 to 3082 feet, which has been perforated with 17 shots, acidized with 5000 gallons, and sand/water fraced with 61,000 gallons of gelled salt water and 101,500 pounds of sand.

All of the completion interval for this well is within the Yates portion of the Jalmat Pool.

This well has, as of -- as of July 1st, 1982, this well had produced an accumulative volume of 270-million cubic feet and indicated remaining reserves for this well are between at least 200 and probably 300,000,000 cubic feet, based on current performance.

Q Mr. Aycock, what are the -- can you explain in more detail what the concerns of Mr. Hartman are with respect to the proposed injection or salt water disposal well --

A Yes, sir.

Q -- that Gulf is applying for?

A We can either refer to Gulf's schematic, and I don't remember it's -- it's Exhibit Number Four, beg your pardon -- either theirs or the first page of our Exhibit Number One.

We have the log that is their Exhibit Number Ten, I believe, in their package. They do not have a log. Gulf mentioned, but did not elaborate on the fact that their well was completed on June the 3rd, 1953, I mean spudded on June the 3rd, 1953, and completed on July 28th, 1953, from open hole between 3169, which is the casing seat, and the TD of 3385, from the Seven Rivers portion of the Jalmat Pool.

It was, according to the records that I can find, it was acidized with 4000 gallons and shot with 250 quarts of nitroglycerin at the time it was completed.

According to the available production records on file with the Commission, and as summarized by the New Mexico Engineering Committee, this well only produced 935 total barrels of oil between initial completion and the time it was shut-in in January 1955.

At that point it was worked over, effective June of '56, to the Yates perforations, which were indicated on Gulf's Exhibit and which I have taken the liberty of penciling in on ours. We did not receive the copies of the Com-

mission's well files from the Hobbs office, which we ordered, in time to include that information in -- on our exhibit. We knew that they were completed in the Yates from the production history but we did not know where.

It is -- it has accumulated approximately 3.4 Bcf of gas during its production history. We can document the fact that the Yates is gas productive in the immediate area and because of two of Mr. Hartman's wells located immediately to the north and northwest, admittedly at some distance, they have the Seven Rivers portion open and are productive of gas.

I don't think there's any question we can substantiate that we -- that the injection will be into, regardless of what has taken place in the past and the circumstances surrounding the permits that were given to conduct the waterflood units, we are concerned that injection at anything over and above what the wells will take on natural hydrostatic pressure in particular, could cause communication around the casing shoe in a wellbore that's been heavily shot with nitroglycerin, regardless of the procedures that are used to squeeze the perforations and in particular if there is not a large volume of cement used and a plug not left in the wellbore to be drilled out.

In other words, as the Examiner is aware,

some operators choose to squeeze and attempt to reverse out after they've achieved squeeze pressure.

We would object strenuously to that type of procedure being employed here.

I would also point out to the Examiner that if 300 sacks of cement were used on the original cement job here, and another, I believe, 150 up the hole, that makes a total of 450 sacks of cement. Mr. Hartman routinely completes his wells at this depth with plus or minus 1000, 1100, sacks of cement in order to bring the long string cement job back to the surface.

We just believe that a wellbore that is thirty years old, in which an operator proposes to inject up to 800 barrels of water per day, first of all, we think that based on the fact that the well only potentialed for 6 barrels of oil and 3 barrels of water per day indicates that it's a low quality, low permeability reservoir, and we feel that this is verified by the fact that it only accumulated 935 barrels of total production before it became non-commercial and uneconomical for Gulf to produce in 1955.

So we anticipate that high injection pressures would be required to put away anything like the volumes that Gulf is requesting and at this -- at this stage we think there's a probability that communication to the gas

productive Yates will occur.

It is our further opinion that if that does occur, that the observation of it at some well half a mile to a mile away and then cessation of injection at that point will have caused considerable irredeemable waste of gas that would -- in the zone that has been invaded at that point.

As the Examiner is aware, and as I won't bother him to document here, but I can do so if he wishes, there is a great deal of literature in the petroleum engineering profession, in particular the Society of Petroleum Engineers of AIME has published it. I'm aware of particular information that has been released by Amoco Research in which they have studied exactly this type of situation and they have found that residual gas saturations under these conditions can range as high as 40 percent; roughly double what a residual oil saturation would be under -- under those conditions.

Once water has invaded these zones, there is a strong possibility to a strong probability that relative permeability to gas will be destroyed within the interval that the water has touched and that regardless of what takes place thereafter, with the low remaining reservoir pressure, permeability to gas could never be re-established within the zone so affected, and therefor, the gas that was in the zone that had been affected would be wasted.

Q Mr. Aycock, I think you took all the questions -- you've answered all the questions I was going to ask you, and let me ask you now to refer to what has been marked as Exhibit Number Three, which is a structure map. Would you tell us -- give us an explanation of that?

A It is our opinion that the prevailing drainage is parallel to the structure and --

Q I'm sorry, I think that was Exhibit Number Two, is that correct?

A Yes, that's Exhibit Number Two, and we presented a Yates structure map. I apologize once again that there's no -- there's no title block on here that shows I had to prepare these in a rush.

This is a Yates structure map and it shows basically that the structures are aligned in a north/south direction and we believe that the tendency is going to be not for any radial drainage or radial injection to occur, but we are -- all of our experience in the area indicates that the sand has preferential permeability along the structures and therefor preferential drainage and preferential migration of the injected fluids will occur, basically, in a north/south direction rather than in a radial direction.

If that were to be the case, any substantial volume of water were to be injected into this low perme-

ability reservoir and it were to be -- there is, let us say, for the purposes of discussion that there probably is a limited portion of the total depth that's represented by the lower Seven Rivers within the application wellbore that has higher permeability than the remainder, and if that portion is forced to take water, the probability is that it will migrate at some extended distance away from the wellbore that is where it's being injected.

Our experience with other areas of the Jalmat Pool says from half a mile to a mile and a half away we have experienced water that's being injected in waterflood units where proper -- we're not saying that there wasn't -- it wasn't properly -- permission wasn't given or anything else, we're simply saying that that is our observation and we're saying that demonstrably waste will occur when water is injected into a zone that produces gas and it channels and isolates the gas saturation and does not allow it to be produced at the wellbore.

This is particularly the case in this situation where we have low reservoir pressures and we don't have enough reservoir energy contained within the gas that's trapped to allow it to move the water out of the way under any pressure differentials that could be imposed upon the reservoir at this stage, so we think the probability is that

trapping would occur, is very, very great.

If we were to lose our well, we're looking at an immediate waste of -- theoretical waste of between 2 and 300,000,000 cubic feet. That does not count what waste might occur on the Gulf leases themselves. We don't -- we're not saying that Gulf would willingly or knowingly, obviously it's their opinion that this waste is not going to occur. We're saying that it does. If it's Gulf, if it's waste on Gulf's leases that's regrettable, but it's not our problem. If it's waste that occurs on our lease, it is our problem to the extent that we've already had an indication from some of the joint interest owners expressing their strong objection to this permit on the basis of just that it's been made without knowing the technical details involved.

Q Mr. Aycock, do you know whether Mr. Hartman was ever contacted by Gulf prior to them filing their application for this disposal well?

A To my knowledge he was not contacted by Gulf. He chose to contact them when he saw the case had been docketed.

Q With relation to the structure map, how does the injection well to the west in Section 17 -- what -- well, let me ask you this: How -- what effect does the injection well to the west of the proposed disposal well have

on your explanation of the structure map?

A Well, we think that that's the reason that there hasn't already been untoward results; that the drainage is taking place basically in the north/south direction, and that that's the reason that we haven't seen any effect of it at this point on our lease.

Q Would that have a tendency to increase the migration in a northwesterly direction?

A It could. It wouldn't -- if there is, if there would be a tendency for any radial flow, the fact that there is a pressure point entry set up at that well location could -- could well encourage the water further, even above the other existing permeabilities, the pressure differentials induced will encourage water to migrate for substantial distances in the north/south direction.

Q Mr. Aycock, referring to what has been marked as Exhibit Number Three, would you tell us what that is and what it contains?

A Exhibit Number Three is a copy of Mr. Hartman's letter to Gulf. Mr. Kalteyer mentioned in his testimony that Mr. Hartman had made an offer to Gulf; however, we don't believe that he adequately elaborated upon the offer and we'd like to do so.

Mr. Hartman's offer to Gulf was not an

attempt to farm in a lease that he considered highly profitable. It was in an attempt to see that water injection took place in the location that we believe is proper for the disposal of produced salt water, which is in the lower Langlie-Mattix. In this letter he offers to take over Gulf's well and deepen it and complete it in the Langlie-Mattix for them as a water disposal well at no cost and risk to Gulf. He is willing to take that chance if he were offered a farmout that he felt probably a marginal well but would give him economic justification for the entire venture.

I might add that his anticipated investment to carry out the offer that's been to Gulf is on the order of a half a million dollars, so obviously, it was not made lightly.

Q Mr. Aycock, has Mr. Hartman at this point received any consideration for any actual damage to the gas reserves underlying the southeast quarter of Section 9 --

A Not to my knowledge, no.

Q -- by Gulf or anyone else?

A Not to my knowledge, he has not.

Q And that well in Section 9 in the southeast quarter of Section 9 is producing commercial quantities, is that right?

A Yes, sir, it is.

Q. Mr. Aycock, do you have anything further to add to your testimony?

A. We believe that the situation that's before the Commission now is covered very adequately under Section 70-2-12, Nos. 4 and 7, of Article Two of the Oil Conservation Division Regulation of Wells that's in the back of the book that's furnished to all operators, and I won't impose upon the Commission's time by reading that, but I'd just like to get in the record that we feel like both of those sections, that the language is directly applicable to this situation under the facts that we believe are reasonable and can be substantiated here by any disinterested observer.

MR. PADILLA: Mr. Examiner, I offer Exhibits One through Three, and I have nothing further at this point.

MR. STAMETS: These exhibits will be admitted.

Are there questions of the witness? Mr. Carr?

CROSS EXAMINATION

BY MR. CARR:

Q. Mr. Aycock, I believe you stated that Mr. Hartman did not receive any notification from Gulf of this application, is that correct?

A. Not to my knowledge, he did not.

Q. What interest does Mr. Hartman have within the area of review that would impose any duty on Gulf to give him notice of this application?

A. Well, he operates an offsetting well that is a nearby lease. It's not a first location offset, but it's within astandard location, an 80-acre location, of the common lease line.

Q. Does he have any ownership interest within a half mile of the --

A. No.

Q. -- proposed injection well? What is a standard location in this area?

A. Well, it would be essentially a 40-acre location depending on the acreage that were able to be assigned to it.

Q. So you're talking about 40-acre locations when you say standard in this area?

A. Right.

Q. How close to the proposed injection well is Mr. Hartman's well --

A. Roughly a mile and a quarter.

Q. And are there not gas wells between Mr. Hartman's well and the proposed injection well --

A. Gulf operates at least --

Q. -- completed in these zones?

A. --one of them, that's correct.

Q. And if a water response was experienced in a well it would be likely to occur in the wells located between the injection well and Mr. Hartman's well before the Hartman well.

A. That's correct.

Q. Now I believe you've indicated from your plat that you're concerned that there are a number of wells of Mr. Hartman that might be affected by injection, is that correct?

A. That's right.

Q. Including the well in Section 33 to the north.

A. Correct.

Q. How far distant is that well from the proposed injection well?

A. Well, they range from slightly over one mile to slightly over two miles away from the injection well.

Q. I believe you indicated you'd made a study of this area, is that correct?

A. I have not made a study. I believe I stated that our experience has been between a half a mile and

two miles from injection along the preferential strike of the permeability of the formation we have experienced a water breakthrough into producing gas wells throughout the Jalmat trend.

Q And I believe that you said that that was a result of waterflooding units in the area, is that correct?

A That's correct.

Q Well, now, do you have similar experience as a result of injection for single disposal wells?

A No, but the condition is no different for a single disposal well than for a waterflood injection well. The reservoir doesn't know the difference.

Q I believe there are a number of waterflood projects in this area, is that correct?

A There are.

Q And there are some of those injecting into the same formation which is the subject of this hearing today?

A That's correct, they are.

Q Is there anyway you would be able to tell whether or not there was a water response resulting from this injection well or from some other waterflood project in the area two miles distant from the disposal well?

A Not any specific way other than the fact

that if we were to experience water injection immediately after Gulf had started disposing of it, the suspicion would obviously be that it had occurred from this well.

Q. In your experience does this response over a distance of in excess of a mile occur immediately?

A. Probably not, but it could -- it could well occur effectively immediately, depending upon the relative permeability situation and we're not -- we don't have enough data to define that at this point.

Q. Are you aware there's a disposal well in the northeast of the southwest quarter of Section 9, immediately to the north of the proposed location?

A. Uh-huh.

Q. Do you know what formation is being injected into through that well?

A. No, I do not.

MR. STAMETS: Mr. Carr, which well is this? You said the northeast southwest --

MR. CARR: West of Section 9. It's an Amoco Production -- I don't see it on Mr. Hartman's plat.

On Gulf's Exhibit Number One there is an injection symbol at that location. I don't know into what formation it's disposing, either.

Q. In your experience, when you have encountered

a response to injection over a distance of a mile or two miles, what volumes were being injected in those? Do you have any data on it?

A. From, all the way from very small to very large.

Q. Do you have any idea what very small would be?

A. Oh, I'd say in the range of 50 to 100 barrels a day, all the way up to several hundred barrels a day.

Q. Do you have any particular well you could cite to us that would tell us --

A. Not -- not at the moment. If the Examiner so desires, I could document it.

We've also found a number of cases in which Mr. Hartman has drilled wells into areas that we know that the lower Seven Rivers was at one time gas productive from previously exhibited production records, and we've found with the wells that he's drilled that it has been invaded by such waters and is therefor no longer a potential gas reservoir.

Q. In these situations where you've encountered a response over a wide area, do you have any information which you could present today as to the pressures that are

being employed in the injection process?

A. I do not.

Q. And I believe you indicated that you were -- and correct me if this is not correct -- that you had some concern about the nitroglycerin employed in the completion employed by Gulf in their efforts to complete in the Seven Rivers formation, is that correct?

A. That's right.

Q. And was it your -- if I understood your testimony correctly, you were concerned that this might have fractured the formation around the wellbore which could permit migration --

A. Not only fractured the formation but destroyed the integrity of the -- of the cement job that by our experience is inadequate on the face of it because of the low volume.

Q. I believe you indicated that there was a fairly poor oil well completed by Gulf in the Seven Rivers, is that correct?

A. Correct. It potentialed for six barrels a day and according to the records that are available, it produced a cumulative volume of 935 barrels prior to its being abandoned.

Q. And then subsequently they completed a gas

well in the Seven Rivers.

A. They completed a gas well in the Yates.

Q. That's correct, and was that a fairly good gas well?

A. Yes, it was an excellent gas well.

Q. Was the gas in that zone when first produced under pressure?

A. Presumably so. I don't have the data to indicate what it was but it must have been in order for them to be able to produce that much.

Q. Well, if you have a pressured gas zone in the Yates and you fractured into that, wouldn't you have anticipated some gas would have been produced with the oil in the Seven Rivers?

A. Well, you may -- you may have. There's no gas, according to the record that I have, there was no gas reported for the two years that this well was on production.

Q. So is --

A. There was 587 barrels of oil reported in 1953, and 348 barrels of oil reported in 1954, and no gas was reported. So I have no way of telling you what may or may not have occurred.

Q. But you have no information as to any gas having been produced from the Seven Rivers.

A None whatsoever and it's not available, as far as I know, unless it's in Gulf's records.

Q I believe you testified, Mr. Aycock, that in your opinion high pressure would have to be employed by Gulf to inject the volumes they're proposing to inject in this interval.

A That is my opinion based upon the apparent low permeability of the zone, as indicated by the poor well that they had been able to achieve.

Q And if that was required, they would have to come back to this Commission for further approval, is that not correct?

A That depends, of course, upon the order that -- whether or not this request is approved and what specifications are contained within the order.

Q If they are only permitted to inject at .1 pound per foot of depth to the top of the injection interval, would that in your opinion be high pressure, 363 --

A It could be in this case. Me recommendation would be that a maximum pressure of whatever a gravity head would allow the formation to take.

Q Do you have any evidence that would show that using the standard Commission injection figure for determining the pressure limitations would in fact cause any

fracturing of the formation in this area?

A. I didn't say that it would cause fracturing of the formation.

Q. Do you have any evidence that would show that it would cause migration?

A. I think, yes, I can probably document that.

Q. Do you have any?

A. Not with me at this point, I do not. The mobility ratio between gas and water is, as the Commission is aware, is extremely unfavorable and this leads to channeling and fingering of an unstable injection front over very long distances because of the physics of the process involved.

Q. I believe you indicated that Mr. Hartman was willing to take a farmout on this property and expend some money to develop it, is that correct?

A. That's correct.

Q. Isn't that the real purpose that you're appearing in this hearing today --

A. No, it is not.

Q. -- is in an effort to get the farmout?

A. Well, the purpose in our appearing is to request that Gulf be held to doing what we believe a reasonable and prudent operator would do under the conditions,

which is take their well, deepen it to the lower Langlie-Mattix, and inject the water into the lower Langlie-Mattix where none of the concerns that we have would presumably apply if proper mechanical procedures were employed in achieving that completion.

Q. Are you indicating that you believe that Gulf will not be using proper mechanical procedures?

A. In our opinion, from the testimony that's been provided here today, I would say unequivocally, no.

Q. That they are not going to use proper mechanical procedures.

A. They don't say or by their own testimony they don't know what procedures they're going to use. In the absence of something I could specifically agree with, I would have to say no.

Q. And you believe that they would be permitted to employ procedures absent approval of the Oil --

A. I don't know what they would be allowed to do by the Oil Commission. I'm not criticizing the Oil Commission in the performance of their duties.

I'm simply attempting to answer the question. In my opinion, without a detailed procedure that would outline specific procedure that would give every chance of isolating, then I would have to say they are not planning

to employ it. When I see such, I might change my opinion.

Q At this point you don't know.

A This far I do not know.

Q Thank you very much. No further questions.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Aycock, in waterflooding for secondary recovery the idea is to put water in and force the oil to the producing wells; in fact, repressure the reservoir.

When water is injected into a gas sand does this same sort of thing happen or something different happen from what happens in a flood?

A Well, what's different, of course, is, as you're aware, Mr. Stamets, is that first the mobility ratio between oil and water is approaching unity, whereas the mobility ratio between gas and water is much more unfavorable. The gas has much more viscosity so therefor the water will tend to finger through the gas and travel for long distances.

If you -- I don't have any with me, but if you -- a given piece of reservoir can be subjected to a relative permeability test in which the viscosity influence can be determined. It's a standard portion of reservoir engineering technology to recognize that when you have high gas

saturation, even within an oil reservoir, that is going to be waterflooded, that you can expect to see premature breakthrough of the water and instability of the flood front, or maybe the inability to every establish that front.

And I would disagree with you, respectfully, only in one portion, the attempt -- the reason for injecting water is not necessarily to repressure the reservoir. It's to affect the existing saturation distribution that's within the reservoir.

What you intend to do is to displace the oil from the zones where it is into a different saturation distribution so that it can flow to the producing wells. Pressuring or not repressuring the reservoir is only achieved to the point that the energy to create that resaturation distribution is required. Other than that, normally it's a matter of operational expediency as to what level of reservoir pressure the projects operate.

In other words, if you want to try to restore flowing production, you certainly can increase the pressure by injecting it at higher pressures. On the other hand, if all you wish to do is to resegregate the saturation, in most cases of reservoirs with which I'm familiar that have commercial permeability, pretty close to the optimum flow can be achieved by allowing the gravity head of the water injected

to provide the sole energy.

MR. STAMETS: Any other questions of the witness? Mr. Padilla?

REDIRECT EXAMINATION

BY MR. PADILLA:

Q. Mr. Aycock, once you have water down into the gas bearing reservoir can that be corrected?

A. Well, if there is sufficient pressure differential available. Once the gas is isolated behind the water front, it will no longer flow. This is a characteristic that we call relative permeability, which says that is a permeability of the reservoir but the effective permeability at any saturation is dependent upon that saturation.

In other words, it reaches a threshold value and within some broad spectrum of saturations you have multiphase flow and at either end of it you have, say, single phase flow in a two phase system; what -- we're talking about water and gas here, and under the conditions that we have here with low reservoir pressure, I would expect the probabilities are very great that when water is trapped behind the water front, or gas is isolated by surrounding water, that there is not enough energy contained within the gas, which is the only way that it could -- the saturation could again become

continuous so that it could flow the well. I would expect that it probably could not be achieved.

Therefor it would be wasted, whatever was trapped would be wasted.

Q. Could water reach the Hartman well before it reached the Gulf well?

A. Depending upon the permeability orientation of the reservoir, that's entirely possible. I have no data that says that it is, but I also have none that says that it's not.

MR. PADILLA: I have nothing further, Mr. Examiner.

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

Anyone have anything further in this case? Mr. Carr?

MR. CARR: Gulf has a statement, Mr. Stamets.

MR. STAMETS: Before you give your statement, I would like to ask that subsequent to the hearing that Gulf supply me with a plat such as is submitted with the original application showing the Jalmat producing gas wells within a mile of the proposed injection well. I know we've talked about some of the producing wells from this

horizon but it's not been made clear where they all are.

I think that would be very helpful in this decision, and I would ask that Gulf send a copy of that to Mr. Hartman.

Mr. Padilla, do you have a closing statement?

MR. PADILLA: Yes, sir.

Mr. Stamets, I believe this case is a classic case of oil and gas conservation. The central issue here is waste.

Obviously, a definition of waste, or inherent in the definition is the issue of correlative rights. Both of these are affected and are very important in this case.

The opportunity to produce the Hartman acreage is central. There's no question but that Gulf, as operator of its properties, may do so, but it may not do so to the detriment and injury of the neighboring leases in accordance with the 70-2-12 (B) 4 and 7.

Section 4 of that statute says that, basically, thou shalt not waterflood or flood thy neighbor's reserves.

And Number 7 says that thou shalt not injure the neighbor's leases.

There is a possibility in this case that both of tese instances could occur and simply a corollary of waste and correlative rights, and injuring correlative rights and causing of waste.

There's also a problem with potential inverse condemnation in this case where the Division would approve, through approval of this application, the application to the detriment of Mr. Hartman, should that ever occur.

Now, they have not -- Gulf, in my opinion, has not conclusively said that there would be no injury to the Hartman lease. We don't know whether or not they have -- whether or not this water will migrate or finger into -- into the Hartman lease. Nonetheless, I think that we can at least speculate that it would. There is a possibility and there is -- the possibility is not just a frivolous possibility.

They've presented no cementing data. They've presented no squeeze procedures. Cementing data they have presented simply says that -- that in their opinion nothing would happen, but thirty years is a long time since completion of that well.

All we're basically saying is that even though other injection wells in the area, we should not compound this problem at this time through increased injection and increased injection pressures.

MR. STAMETS: Mr. Carr?

MR. CARR: May it please the Examiner, I think it's important to remember that Gulf has a substantial stake, not only in disposal of produced water in the proposed injection well, but also in seeing that the formations in the area are not damaged.

Within the year they've completed two wells in this formations in the immediate area, one this year immediately offsetting the proposed injection well to the east. The well was drilled and completed at a substantial cost. It is a commercial well and they're certainly not proposing to do something which is going to jeopardize that investment, and result in premature watering out of that well.

This well lies between Mr. Hartman's well and the proposed injection well, and any damage that would occur, would certainly occur to the Gulf well first.

Hartman has expressed concern about what might happen if there was an increase in water being produced in one of their wells within the area of review. Gulf is certainly agreeable, any time there is an abnormal increase in water in this area to cease injection and determine whether or not their injection in this well is in fact contributing to the problem.

What will result from approval of this

application is an economic savings which will extend the economic life of those wells in the area; therefor, permitting the production of hydrocarbons that otherwise would be lost.

I think we've put in enough sound evidence that shows that in fact will occur. We have presented some fairly detailed evidence based on a study of the area, not just general speculation based on our experience in the area, absent any particular study.

We are of the opinion that we are going to be injecting only a small volume of water. There is no danger to Mr. Hartman's property whatsoever, and that the application should be granted.

MR. STAMETS: 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. 7629, heard by me on 8-4 1982.

Richard L. Stamets, Examiner
Oil Conservation Division

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

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. 7629
Order No. R-7053

APPLICATION OF GULF OIL CORPORATION
FOR SALT WATER DISPOSAL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on August 4, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 10th day of August, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Gulf Oil Corporation, is the owner and operator of the Arnott-Ramsay (NCT-E) Well No. 5, located in Unit E of Section 16, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Seven Rivers formation, with injection into the open hole interval from approximately 3169 feet to 3385 feet.

(4) That the injection should be accomplished through 2-3/8 inch plastic lined tubing installed in a packer set at approximately 3155 feet; that the Jalmat perforations from 2990 feet to 3150 feet should be squeezed; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 635 psi.

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

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

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

(9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Gulf Oil Corporation, is hereby authorized to utilize its Arnott-Ramsay (NCT-E) Well No. 5, located in Unit E of Section 16, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico, to dispose of produced salt water into the Seven Rivers formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 3155 feet, with injection into the open hole interval from approximately 3169 feet to 3385 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the Jalmat perforations from 2990 feet to 3150 feet shall be squeezed; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 635 psi.

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

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

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

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 702, 703, 704, 705, 706, 708, and 1120 of the Division Rules and Regulations.

(7) 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

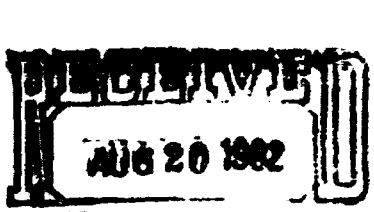
Gulf Oil Exploration and Production Company

J. M. Thacker
GENERAL MANAGER PRODUCTION
SOUTHWEST DISTRICT

August 17, 1982

P. O. Drawer 1150
Midland, TX. 79702

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501



Attention: Mr. Richard L. Stamets, Examiner

Gentlemen:

Re: Case #7629, August 4, 1982, Application for Authorization to Inject into Arnott-Ramsay (NCT-E) Well No. 5, Lea County, New Mexico

In response to your request made during the subject Hearing we are forwarding a copy of our Exhibit No. 1 revised to show all of the Jalmat Gas wells in the area of our proposed disposal well. Included with this plat is a copy of the Jalmat portion of the Southeast Gas Proration Schedule for July, 1982 on which the gas wells shown on the plat are underlined.

At this time we are also submitting a corrected copy of Exhibit No. 6B along with copies of Exhibits 6A and 6C. As indicated on Exhibit 6B, an arithmetic error was made by Tretolite in calculating the mg/l content of NaCl. This results in a corrected value of 50,276 mg/l total dissolved solids in the Arnott-Ramsay (NCT-B) Well No. 11.

Please refer to ARCO's letter dated 8/2/82 which was submitted with the testimony. We would like to correct their mentioned location of the Woolworth "WN" No. 1 to read 330' FNL & 990' FEL of Section 17, T-25-S, R-37-E, instead of 990' FNL & 330' FEL.

We sincerely hope that the additional information and corrections submitted herewith will aid in an early approval of this application.

Yours very truly,

for F. H. MARTIN
Technical Manager

AWB/da

Attachments

cc: New Mexico Oil Conservation Division
P.O. Box 1980
Hobbs, New Mexico 88240
Attn: Mr. Jerry Sexton

Campbell, Byrd and Black
P.O. Box 2208
Santa Fe, New Mexico 87501
Attn: Mr. William F. Carr

Doyle Hartman
P.O. Box 10426
Midland, Texas 79702
Attn: Mr. W. P. Aycock

ARCO Oil & Gas Company
P.O. Box 1610
Midland, Texas 79702
Attn: Mr. B. L. Stokely

INDIAN BASIN UPPER PENN.(PRO GAS) MAG

DESCRIPTION	STAT	AF	MAY PROD	MAY GOR	MO ALLOC	ACRE-DELIV
EL PASO EXPLORATION CO				**********		
J C [illegible] FED GAS COM						
[illegible]	N	.90	8947		8947	576
PERCY M. ENGLISH				**********		
[illegible]	N	1.00	12694	12694	81014	640
FLAG REDFERN OIL CO				**********		
[illegible]	N	1.00	58135	1134253	81014	640
PIPELINE TOTAL		3.90	328965	583549	251989	2496
POOL TOTAL		54.60	3209024	2670499	2871086	34941

JALMAT TANSILL YT 7 RVRS (PRO GAS)

EL PASO NATURAL GAS COMPANY

ALPHA TWENTY-ONE PRODUCTION CO.				**********		
EL PASO STATE						
[illegible]	N	.50	6055	8710	5613	80
EL PASO FLOY FEDERAL						
[illegible]	N	.75	2720		2720	120
EL PASO STATE						
[illegible]	N	.75	807		807	120
EL PASO STATE						
[illegible]	N	.50	6993	12953	5613	80
MARRISON						
[illegible]			113			
[illegible]			2940			
P. U. SUMMARY	M	1.00	7053		3053	160
AMERADA HESS CORPORATION				**********		
E C EAGLE						
[illegible]	N	2.00	9382		9382	320
AMOCO PRODUCTION CO				**********		
LACKIE B TR 2 FEDERAL						
[illegible]	N	.75	2656		2656	120
LACKIE C FED						
[illegible]	N	1.00	3704		3704	160
MYERS B FEDERAL NCT A						
[illegible]			6378			
[illegible]			7405			
P. U. SUMMARY	M	2.00	13783	1G7055	22454	320
[illegible]	N	1.00	399		399	160
MURRIS R. ANTWEIL				**********		
EAGLE						
[illegible]	N	1.00		19418	11227	160
TERRA FEDERAL						
[illegible]	N	.50	6042	3666	5613	80
APCELO OIL COMPANY				**********		
BROWN						
[illegible]	N	1.00	603		603	160
AGCO OIL & GAS COMPANY				**********		
EVA E HENEGHY WN						
[illegible]			4938			
[illegible]			3185			
P. U. SUMMARY	M	2.00	8123		8123	320
F M APPLESON WN						
[illegible]	N	1.00	459		459	160
JIM CAMP WN						
[illegible]	N	.71	4787		4787	113
JOHN P CUNNEFF WN						
[illegible]			2124			
[illegible]			5661			
[illegible]			4718			
[illegible]			2536			
P. U. SUMMARY	M	2.00	14829		14829	320
COOPER 29						
[illegible]	N	1.00	8020		8020	160
R A CORDEN A WN						
[illegible]	N	.75	2031		2031	120
CROSBY A						
[illegible]	N	.50	5313		5313	80
FREDERICK M CURRY WN						
[illegible]	N	2.00	11727		11727	320
DUANE ANDREWS CCH WN						
[illegible]	N	2.00	3144		3144	320
W B DUANE WN						
[illegible]	N	1.00				160

JALMAT TANSILL YT 7 RVRS (PRO GAS) EPG

DESCRIPTION	STAT	AF	MAY PROD	MAY GOR	MO ALLOC	ACRE-DELIV
HALE WN						
[illegible]	N	1.00	1634		1634	160
D D HARRISON WN						
[illegible]	N	1.00	11147		11147	160
WILLIAM M HARRISON A & D WN						
[illegible]			2401			
[illegible]			2241			
[illegible]			7802			
P. U. SUMMARY	M	2.00	14044		14044	320
WILLIAM M HARRISON C WN						
[illegible]			5487			
[illegible]						
P. U. SUMMARY	M	1.50	5487		14840	240
JALMAT STATE GAS COM						
[illegible]			1274			
[illegible]			4869			
[illegible]			1629			
P. U. SUMMARY	M	1.50	7772		7772	240
CURRAN JONES WN						
[illegible]			3120			
[illegible]			3424			
P. U. SUMMARY	M	2.00	6544		6544	320
RODMAN JONES						
[illegible]	N	1.00	1301		1301	160
KING GAS COM WN						
[illegible]	N	1.00	1073		1073	160
T R MANKFORD WN						
[illegible]	N	1.00	4339		4339	160
W J MAKKINS WN						
[illegible]			631			
[illegible]			7009			
P. U. SUMMARY	M	2.00	7640		7640	320
MCDONALD WN STATE						
[illegible]			3552			
[illegible]			6148			
[illegible]			5700			
[illegible]			5273			
P. U. SUMMARY	M	4.00	18694		18694	640
[illegible]			607			
[illegible]			4611			
[illegible]			2532			
P. U. SUMMARY	M	4.00	9740		9740	640
[illegible]			7906			
[illegible]			8144			
[illegible]			6577			
P. U. SUMMARY	M	4.00	22627		22627	640
[illegible]	M	1.00	1151		[illegible]	[illegible]
[illegible]	M	4.00	2135		[illegible]	[illegible]
[illegible]	M	1.00	2179		2179	160
ETHEL SHIPLEY ORIENT						
[illegible]	N	1.00	3021		3021	160
N S RECORD WN						
[illegible]	N	1.00	5153		5153	160
J L SELBY						
[illegible]	N	1.00	3674		3674	160
SHIPLEY WN						
[illegible]	N	1.00	2040		2040	160
SHIPLEY A WN						
[illegible]	N	1.00	5362		11227	160
STATE 157 A						
[illegible]	N	1.00	4564		4564	160
E L STEELER WN						
[illegible]	N	1.00	5999		5999	160
[illegible]	N	1.00				160
G. W. TOBY WN GAS COM						
[illegible]						
[illegible]			3134			
[illegible]			7308			
P. U. SUMMARY	M	2.00	10442		10442	320
WELLS WN						
[illegible]	N	1.00	1926		1926	160
MCCULLOUGH WN						
[illegible]	N	1.00	2647		2647	160
O. H. BERRY				**********		
J L ISBELL						
[illegible]	N	.75	5098		5098	120
BETTIS BOYLE AND STOVALL				**********		
LEONARD FEDERAL						
[illegible]	N	1.00				160
CITIES SERVICE COMPANY				**********		
CLOSSON C						
[illegible]	N	1.00	1022		1022	160
STATE B						
[illegible]	N	.50	1591		1591	80
CONOCO INC				**********		
ASCARTE C 24						
[illegible]	N	.50	199		199	80
COOPER B						

JALMAT TANSILL YT 7 RVRS LNRG GAS EPG

DESCRIPTION	SEC	TWP	RNG	UL	AF	DAY ALLOW	MAY 65%	NO. ACRES	ACRE-DEPTH
[illegible]				E	.75				120
[illegible]				E	.50	2707		2707	80
JACK A 24				E					
[illegible]				E	1.00	1132		1132	160
[illegible]				E		775		775	160
JACK B 23									
[illegible]				E	.25	511		511	40
JACK B 25									
BJ	29	24S	37E	H	1.00				160
JACK B 27									
[illegible]						7462			
[illegible]						5106			
P. U. SUMMARY				H	2.00	12547		12547	320
JACK C 26									
[illegible]						2981			
[illegible]						1732			
P. U. SUMMARY				H	1.00	4713		4713	160
LEWIS FED									
[illegible]				H	1.00	27		27	160
LOCKHART B 31									
[illegible]				H	1.50	1212		1212	240
LYNX B 1									
[illegible]						666			
[illegible]						877			
[illegible]						877			
[illegible]						7461			
P. U. SUMMARY				H	0.82	9622		9622	640
[illegible]				H	1.00	601		601	160
LYNX B 28									
[illegible]						78			
[illegible]						6342			
P. U. SUMMARY				H	2.00	6420		6420	320
MARATHON A 26 STATE COM									
[illegible]				H	1.00	130		130	160
MEYER B-29 A/C 1									
[illegible]				H	1.50	1658		1658	240
MEYER B-29 A/C 2									
[illegible]				H	.50	8		8	80
MEYER B 28									
[illegible]						1012			
[illegible]						6899			
[illegible]						715			
[illegible]						407			
P. U. SUMMARY				H	3.00	9381		9381	480
MEYER B 28 BATTERY 2									
[illegible]				H	1.00	98		98	160
MEYER B 33									
[illegible]				H	2.00	712		712	320
SHANNAH 33									
[illegible]				H	.75	409		409	120
SHELLEY A									
[illegible]				H	1.00	621		621	160
SHELLEY B 15									
[illegible]				H	1.00	7653		7653	160
SHELLEY B 22									
[illegible]						745			
[illegible]				H	1.00	745		745	160
SHELLEY B 27									
[illegible]				H	.50	655		655	80
STATE B 32									
[illegible]				H	2.50	95		95	400
[illegible]				H	1.00	4548		4548	160
[illegible]				H	.50	55		55	80
STATE C									
[illegible]				H	1.00	70		70	160
STEVENS A 24									
[illegible]				H	1.50	39		39	240
STEVENS A 25									
[illegible]						1282			
[illegible]						3913			
P. U. SUMMARY				H	1.75	5195		5195	280
STEVENS B									
[illegible]				H	1.00	32		32	160
[illegible]				H	1.00	1243		1243	160
[illegible]				H	2.00	1261		1261	320
[illegible]						2512			
[illegible]						5258			
P. U. SUMMARY				H	2.25	8770		8770	360
STEVENS B F COM									
[illegible]				H	1.00	2111		2111	160
STEVENS B 14									
[illegible]				H	1.00	4946		4946	160
STEVENS B 15									
[illegible]				H	1.00	1502		1502	160
VAUGHN A 12									
[illegible]				H	.50	1485		1485	80
VAUGHN B 1									
[illegible]						7639			
[illegible]						3012			
P. U. SUMMARY				H	2.00	10650		10650	320

JALMAT TANSILL YT 7 RVRS LNRG GAS EPG

DESCRIPTION	SEC	TWP	RNG	UL	AF	DAY ALLOW	MAY 65%	NO. ACRES	ACRE-DEPTH
VAUGHN A 34 FED									
[illegible]	14	24S	36E	H	1.50				240
WELLS A									
[illegible]	25	24S	36E	NC		2644		2618-	
[illegible]	25	24S	36E	H	.50	305		305	80
WELLS B 2									
[illegible]	12	25S	36E	H	1.00	5454		5454	160
CONTEST ENERGY CORP							**********		
CITIES SERVICE FEDERAL									
[illegible]	35	24S	36E	H	1.00	3659		3659	160
CROWN CENTRAL PETROLEUM CORPORATION							**********		
JACK B 26									
[illegible]	26	24S	37E	H	.75	941		941	120
DALPORT OIL CORPORATION							**********		
[illegible]									
[illegible]	22	25S	36E	H	1.00	100		100	160
E F KING									
[illegible]	22	25S	37E	H	.96	269		269	153
EL PASO NATURAL GAS COMPANY							**********		
ERICSON FEDERAL									
[illegible]	22	25S	37E	H	2.00	3329		3329	320
[illegible]									
ELLIOTT FEDERAL									
[illegible]	17	26S	37E	H	1.00				160
[illegible]	21	26S	37E	H	.50				80
[illegible]	17	26S	37E	H	1.00				160
FARNSWORTH C									
[illegible]	26	26S	37E	H	1.75		114152	19644	280
GREGORY FEDERAL									
[illegible]	33	25S	37E	[illegible]		1458			
[illegible]	33	25S	37E	[illegible]		[illegible]			
P. U. SUMMARY				H	2.75	12731		12731	440
HARRISON									
[illegible]	27	25S	37E	N	.25	441		441	40
LINDLEY									
[illegible]	25	25S	37E	H	.25	886		886	40
LINDLEY A FEDERAL									
[illegible]	27	25S	37E	H	1.00				160
MOBERLY C									
[illegible]	26	26S	37E	H	.50				80
PRICHARD									
[illegible]	25	25S	37E	H	1.00	3306		3306	160
PRICHARD A									
[illegible]	16	25S	37E	H	1.00	821		821	160
SHELL STATE									
[illegible]	3	22S	36E	H	.50	3295		3295	80
[illegible]	4	22S	36E	H	1.00	6689		6689	160
SHELL BLACK									
[illegible]	20	26S	37E	H	.16	62		62	25
WELLS B 2									
[illegible]	10	25S	37E	H	1.00	82		82	160
WELLS FEDERAL									
[illegible]	11	25S	37E	H	1.25	4397		4397	200
[illegible]	26	24S	37E	H	1.00	3814		3814	160
[illegible]	28	24S	37E	H	.75	2811		2811	120
[illegible]	27	24S	37E	H	.75	4811		4811	120
[illegible]	33	24S	37E	H	1.25	5016		5016	200
E J WELLS									
[illegible]	34	25S	37E	H	.75	698		698	120
WHITTEN									
[illegible]	33	23S	36E	H	1.00	933		933	160
JAMES A. EVANS							**********		
EYELER A									
[illegible]	20	23S	37E	H	2.00	1439		1439	320
JAMES N. EVANS							**********		
BRADLEY BARRAT									
[illegible]	19	22S	36E	H	1.00	832		832	160
EXXON CORPORATION							**********		
NEW MEXICO E STATE									
[illegible]	1	22S	36E	H	1.00	10400		10400	160
GETTY OIL COMPANY							**********		
A L CHRISTMAS									
[illegible]	28	26S	36E	H	1.00	1624		1624	160
J W COOPER									
[illegible]	34	22S	36E	H	1.00	6686		6686	160
KING C									
[illegible]	12	23S	36E	H	1.05	4681		4681	168
KING D									
[illegible]	6	23S	37E	H	1.02	397		397	163
E F KING									
[illegible]	28	[illegible]	36E	[illegible]		702			
[illegible]	28	23S	36E	[illegible]		1696			
P. U. SUMMARY				H	1.00	2398		2398	160
LIBERTY ROYALTIES									

SALMAT TAMSELL ET 7 OURS (PRO GAS) EPG

DESCRIPTION	STAT CD	AF	DAY ALLOW	DAY ADJ	NET ALLOC	ACRE-AGE
[illegible]	M	1.00	1722		1722	160
[illegible]	M	.50				80
[illegible]	M	1.00	3796		3796	160
[illegible]	M	1.00	2564		2564	160
[illegible]	M	1.00	2665		2665	160
[illegible]	M	1.00	1565		1565	160
[illegible]	M	.75	2048		2048	120
STATE						
[illegible]	M	1.00	9526	15512	11227	160
CHEVRON OIL COMPANY				**********		
[illegible]	M	1.00				160
[illegible]	M	.50	3332		3332	154
[illegible]	M	1.00	712		712	160
[illegible]	M	1.00				160
[illegible]	M	.50				80
[illegible]	M	1.00	214		214	160
[illegible]	M	1.00	176		176	160
CHACE PETROLEUM CORP				**********		
[illegible]			3916			
[illegible]			831			
P. U. SUMMARY	M	1.00	4747		4747	160
CONE OIL CORPORATION				**********		
[illegible]	M	.50	6354	2946	5613	80
[illegible]	M	1.00	2490		2490	160
[illegible]	M	2.08	5926		5926	333
[illegible]	M	1.00	94		94	160
HARRIS AND DALTON				**********		
[illegible]	M	.25	664		664	40
[illegible]				**********		
[illegible]			1			
[illegible]	M	1.00	1		1	160
[illegible]	M	.75	7487	3500	8620	120
COOPER STATE						
[illegible]			1142			
[illegible]			8377			
P. U. SUMMARY	M	1.00	9519	12527	11227	160
COOPER STATE						
[illegible]	M	.50	3363	7181	5613	80
EL PASO RICHARD FEDERAL						
[illegible]	M	1.00	6275		6275	160
EL PASO KEYES FEDERAL						
[illegible]	M	1.00	10021		10021	160
ETZ						
[illegible]	M	.25	1972	280-	2807	60
CHEVRON						
[illegible]	M	1.00	6739		6739	160
FLUOR [illegible]						
[illegible]	M	.25	2087	3469	2807	60
HIGHLANDS STATE						
[illegible]	M	.75	3294		3294	120
HUSKY [illegible]						
[illegible]	M	.50	7107	7679-	5613	80
JALPAT FEDERAL COM						
[illegible]	M	.25	4220	347-	8620	120
KEYES L [illegible]						
[illegible]			1369			
[illegible]			10851			
P. U. SUMMARY	M	1.00	12240		12240	160
[illegible]			10858	15884-		
[illegible]	M	.75	11506	248-	8620	120
[illegible]						
[illegible]			46			
[illegible]			8211			
[illegible]	M	.50	8257	4444-	5613	80
[illegible]						
[illegible]			271			
[illegible]			1458			

SALMAT TAMSELL ET 7 OURS (PRO GAS) EPG

DESCRIPTION	STAT CD	AF	DAY ALLOW	DAY ADJ	NET ALLOC	ACRE-AGE
P. U. SUMMARY	F	1.00	1721		1721	160
[illegible] FEDERAL						
[illegible]	M	1.00	9736		9736	160
[illegible]						
[illegible]						
[illegible]			10724			
[illegible]			11158			
P. U. SUMMARY	M	1.00	21882	10071-	11227	160
[illegible]						
MARALO STATE						
[illegible]	M	.50	5250	2070	5613	80
[illegible]	M	.50	9586	5164-	5613	80
PRESTON - COULSTON						
[illegible]	M	.50	2320		2320	80
SAMEDAN [illegible] STATE						
[illegible]	M	1.00	8692		8692	160
SANTA FE FEDERAL						
[illegible]	P	.75	666		666	120
SHELL STATE						
[illegible]			568			
[illegible]			10683			
P. U. SUMMARY	M	1.00	11251		11251	160
TONY						
[illegible]	M	.50	103		103	80
WINTERS						
[illegible]	M	.75	727		727	120
MCM EXPLORATION INC.				**********		
R M COOPER						
[illegible]	M	.75	3364		3364	120
R M COOPER A						
[illegible]	M	.50	225		225	80
R M COOPER C						
[illegible]	M	1.98	68		68	316
M E EDWARD A						
[illegible]	M	1.00	125		125	160
GORMAN JONES						
[illegible]	M	1.00	498		498	160
E F KING						
[illegible]	M	1.00	5183		5183	160
SINCLAIR A STATE						
[illegible]	M	2.00	440		440	320
SINCLAIR B STATE						
[illegible]	M	2.06	667		667	320
MUSKY OIL COMPANY OF DELAWARE				**********		
NORTH [illegible]						
[illegible]			68			
[illegible]			552			
P. U. SUMMARY	M	1.00	620		620	160
KERN CO.				**********		
EUNICE COOPER						
[illegible]	M	.75	1451		1451	120
BERNARD LANKFORD JR				**********		
SPEAR STATE						
[illegible]	M	1.00	62		62	160
LEWIS B. BURLESON, INC.				**********		
ARCO FEDERAL						
[illegible]	M	1.00	107		107	160
AZTEC						
[illegible]	M	.25	97		97	40
BYER						
[illegible]	M	1.00	144		144	160
FEDERAL						
[illegible]	M	1.00	330		330	160
GUTMAN						
[illegible]	M	.50	914		914	80
HADFIELD						
[illegible]			691			
[illegible]						
P. U. SUMMARY	M	.75	691		691	120
[illegible]	M	1.00	1838		1838	160
HARRYMAN						
[illegible]	M	1.00	4300		4300	160
MCRAE						
[illegible]	M	.50				80
LANGCRAFT						
[illegible]	M	.75	2176		2176	120
LEONARD						
[illegible]			238			
[illegible]						
P. U. SUMMARY	M	.50	238		238	80
SAUNDERS STATE						
[illegible]	M	1.00	2783		2783	160
WINCHESTER						
[illegible]	M	.50	2957		2957	80
MARALO INC.				**********		

JALMAT TANSILL YT 7 RVRS (PRO GAS) EPG

DESCRIPTION	STAT US	AF	DAY ALLOW	DAY GOR	CUM ALLOC	ACRES-DELIV
[illegible]						
[illegible]	P	.50	887		887	80
[illegible]	P	.50	613		613	80
[illegible]	P	.50	968		968	80
MARATHON OIL COMPANY				**********		
MCCLESKEY STATE AC 1 COM						
2H1842534E (PUMP)			2622			
2H1842534E (PUMP)			963			
P. U. SUMMARY	R	9.75	3585		3585	600
MARITIMABLE PETROLEUM CORPORATION				**********		
CHESLEY B						
2H1502534E	N	1.00	1965		1965	160
MOBIL PRODUCING TEXAS AND NEW MEXICO				**********		
LISSIE						
3K 325 37E	N	1.00	52		52	160
PETRO LEWIS CORP				**********		
NEW MEXICO P STATE						
4C1922537E	N	1.00	1071		1071	160
1014192253?E	N	1.00	558		558	160
PETROLEUM CORPORATION OF TEXAS				**********		
LASSLE A STATE						
2H1424534E	N	.50	391		391	80
LANGLEY						
1G2423534E	N	.75	4152		4152	120
TEXAS STATE						
2B1423534E	N	.50	72		72	80
PHILLIPS PETROLEUM COMPANY				**********		
MEYER						
1J3624534E	N	.25	241		241	40
C B [illegible]						
1A2424534E	N	1.25	3140	24348	14034	200
[illegible]						
[illegible]						
[illegible]						
M C [illegible]						
4J3524537E	N	2.00	1925		1925	320
READING AND BATES OIL AND GAS CO				**********		
HUMBLE STATE						
3I3224537E	N	.75	6954		6954	120
SANTA FE ENERGY CO.				**********		
ELLIS B 2						
1A 625537E	N	.25	1627		1627	40
SINCLAIR OIL CORPORATION				**********		
A C RECORD						
1A2222534E	N	.25	317		317	40
SOUTHLAND ROYALTY COMPANY				**********		
BOOLEY-MTN						
3J2924537E	N	2.00	2170		2170	320
SUN EXPLORATION & PRODUCTION CO.				**********		
BLINEBRY A						
2L2423537E	N	1.00	2404		2404	160
BOREN-GREER GAS COM						
2C2122536E	N	2.00	2670		2670	320
B A CHRISTMAS						
2I2522536E	N	1.00	3123		3123	160
COOPER B						
2K1424534E	N	1.00	188		188	160
COOPER C						
1K1424534E	N	2.00	1634		1634	320
J L CLIFFT						
2G1426534E	N	1.00	2963		2963	160
HUDDLE						
2B 824537E	N	1.00	7756		7756	160
JACK						
1E 824537E	N	1.00	3385		3385	160

JALMAT TANSILL YT 7 RVRS (PRO GAS) EPG

DESCRIPTION	STAT US	AF	DAY ALLOW	DAY GOR	CUM ALLOC	ACRES-DELIV
NATTIE JAMES						
1G1024534E	N	1.00	10931	16000	11227	160
EMERY [illegible]						
[illegible]			3222			
[illegible]			8264			
EMERY [illegible]						
1D 1235346E	N	1.00	1330		1330	160
LEGAL						
1B1125537E (PUMP)			89			
1A1125537E (PUMP)			140			
MYERS B						
2H1134534E	N	1.00	2026		2026	160
2H1134534E	N	1.00	1348		1348	160
C MYERS						
1J [illegible]	N	1.00	6		6	160
2M [illegible]	N	1.00	2520		2520	160
PEARL ESTATE ET AL COM						
1C2222534E	N	1.00	7934		7934	160
STATE A AC 1						
[illegible]	N	1.00	[illegible]		[illegible]	320
[illegible]	N	1.00	[illegible]		[illegible]	160
[illegible]	N	.50	[illegible]		[illegible]	80
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]	N	.75	[illegible]		4962	120
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]	N	.75	[illegible]		2226	120
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]	N	1.00	[illegible]		2617	240
[illegible]	N	1.00	[illegible]		1987	160
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]	N	1.50	[illegible]			240
[illegible]			[illegible]			
[illegible]			4391			
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]	N	1.00	[illegible]		217	160
[illegible]	N	1.50	[illegible]		3745	400
[illegible]	N	1.50	4421		4421	240
STATE A AC 2						
[illegible]	N	.75	2158		2158	120
[illegible]	N	1.00	[illegible]		567	160
[illegible]			[illegible]			
[illegible]			14709			
[illegible]			14794			
[illegible]	N	1.00	1392		1392	160
[illegible]			[illegible]			
[illegible]			[illegible]			
[illegible]			11055			
[illegible]			[illegible]			
[illegible]	N	1.00	174		174	160
[illegible]	N	1.00	143		143	160
[illegible]	N	.50	118		118	80
STATE A AC 3 COM A						
1A1021534E	N	1.00	3729		3729	160
2A2121534E	N	1.00	2549		2549	160
WINNINGHAM	N	.50	185		185	80
SUN OIL COMPANY				**********		
CHEAP KING NW						
P. U. SUMMARY	R	1.00	9516		9516	160
LEGAL						
P. U. SUMMARY	R	1.00	229		229	160
STATE A AC 1						
P. U. SUMMARY	R	3.00	9476		9476	480
P. U. SUMMARY	R	1.00	[illegible]		[illegible]	160
P. U. SUMMARY	R	1.00	[illegible]		[illegible]	160
P. U. SUMMARY	R	1.00	7648		7648	160
P. U. SUMMARY	R	2.00	4952		4952	320
STATE A AC 2						
P. U. SUMMARY	R	4.00	21376		21376	640
P. U. SUMMARY	R	1.00	[illegible]		[illegible]	160
P. U. SUMMARY	R	2.00	11055		11055	320
TANNE OIL AND CATTLE CO				**********		
JUDY						
ZF 725537E	N	.25	21		21	40
TENNECO INCORPORATED				**********		
E E BLINEBRY A FEDERAL NCT 1 COM						
2I5123537E	N	2.22	3611		3611	355

JALMAT TANSILL YT 7 RVRS (PRO GAS) 096

DESCRIPTION	STAT	AC	FAC	BAL	CUM	ACTIVITY
AMERADA HESS CORP						
[illegible] FEDERAL						
[illegible]	R	1.00	397		397	160
ATLANTIC RICHFIELD COMPANY						
[illegible]	R	.50	4465		4465	80
[illegible]	R	1.00	320		320	160
[illegible]	R	1.00	327		327	160
C J [illegible]						
[illegible]	R	.50	190		190	80
ARCO OIL & GAS COMPANY						
[illegible]	R	.50	354		354	80
PIPELINE TOTAL		321.19	994863	478838	103 119	51306

EL PASO NATURAL GAS AND MARATHON OIL

ARCO OIL & GAS COMPANY						
[illegible]						
[illegible]			108			
[illegible]			3304			
P. U. SUMMARY	R	2.00	3412		3412	320
PIPELINE TOTAL		2.00	3412		3412	320

GETTY RESERVE OIL

GETTY OIL COMPANY						
[illegible]	R	1.00	750		750	160
PIPELINE TOTAL		1.00	750		750	160

NORTHERN NATURAL GAS COMPANY

AMERADA HESS CORPORATION						
[illegible]	R	1.00	2952		2952	160
[illegible]	R	1.00		39522	11237	160
[illegible]	R	1.00	1800		1800	160
ATLANTIC RICHFIELD CO						
[illegible]	R	1.00	8100		8100	160
[illegible]	R	.50	1250		1250	80
[illegible]			437			
[illegible]			1353			
P. U. SUMMARY	R	1.00	1790		1790	160
GETTY OIL COMPANY						
[illegible]	R	2.00	367		367	320
GREAT WESTERN DRILLING COMPANY						
[illegible]	R	1.00	413		413	160
GULF OIL CORPORATION						
[illegible]	R	2.00	7220		7220	320
[illegible]	R	2.00				120
[illegible]	R	1.25	1525		1525	200
[illegible]	R	1.00	2098		2098	160
A L [illegible]	R	2.00	6636		6636	320
[illegible]	R	.25	2300	14475	2007	40
J F [illegible]						
[illegible]			3050			
[illegible]			1332			
[illegible]			5450			
P. U. [illegible]	R	3.75	10852		10852	600
J F [illegible]						
[illegible]	R	1.00				160

JALMAT TANSILL YT 7 RVRS (PRO GAS) NMG

DESCRIPTION	STAT	AC	FAC	BAL	CUM	ACTIVITY
MARY LEONARD NCT B						
[illegible]	R	3.00	182		182	480
MARY LEONARD						
[illegible]	R	.25	1305		1305	40
A [illegible]						
[illegible]			297			
[illegible]			998			
P. U. SUMMARY	R	3.00	295	92998	33681	480
TEXACO INCORPORATED						
NEW MEXICO STATE [illegible] NCT 2						
[illegible]	R	1.00	1320		1320	160
J O YOUNG						
[illegible]	R	1.00	731		731	160
TEXAS TEXAS PETROLEUM CORPORATION						
[illegible]	R	.75	9572		9572	120
PIPELINE TOTAL		31.25	56038	146985	101158	5000

PETRO LEWIS CORPORATION

DALLAS HEGASLAND						
[illegible]	R	2.00	1113		1113	320
ZIA ENERGY, INC.						
[illegible]	R	1.75				280
PIPELINE TOTAL		3.75	1113		1113	600

PHILLIPS PETROLEUM COMPANY

JAMES N. EVANS						
[illegible]	R	.50	698		698	80
MIDLAND PRODUCTION COMPANY						
[illegible]	R	1.00	1647		1647	160
PIPELINE TOTAL		1.50	2345		2345	240
POOL TOTAL		340.69	1058529	625033	1143005	57706

JUSTIS GLORIETA (PRORATED GAS)

EL PASO NATURAL GAS COMPANY

ALPHA TWENTY-ONE PRODUCTION CO.						
JUSTICE FEDERAL						
P. U. SUMMARY	R	2.00	1020		1020	320
Justice NC Fed. Com						
2H[illegible]						
AMERADA HESS CORPORATION						
STATE N. E. COM						
SA [illegible]	R	1.00	5492		5492	160
ARCO OIL & GAS COMPANY						
EATON B NO						
[illegible]	R	1.00	2741		2741	160
EL PASO EXPLORATION CO.						
CARLSON FEDERAL						
[illegible]	R	2.00	912		912	320
CARLSON A FEDERAL						
[illegible]	R	2.00	16133		16133	320
LAMBLE FEDERAL						
[illegible]	R	2.00				320
EL PASO NATURAL GAS COMPANY						
CARLSON B FEDERAL						
[illegible]	R	2.00	13810		13810	320
JUSTICE NC FED. COM			1020			
SP[illegible]						
GETTY OIL COMPANY						
X B [illegible]						
[illegible]	R	2.00	13199		13199	320
GULF OIL CORPORATION						

[redacted]

TRETOLITE DIVISION
[redacted]

WATER ANALYSIS REPORT

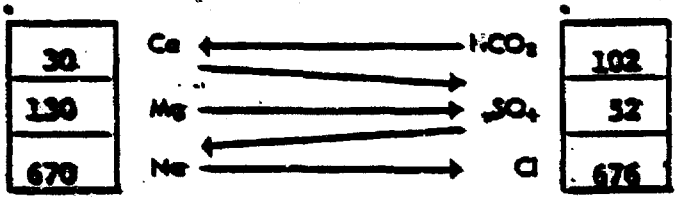
COMPANY Gulf Oil Co. ADDRESS Jal, NM DATE 7-15-82

SOURCE Artesian Runway 3 #11 DATE SAMPLED 7-15-82 ANALYSIS NO.

Analysis	Mg/l		*Meq/l	
1. pH	7.6			
2. H_2S (Qualitative)	170 ppm			
3. Specific Gravity	1.050			
4. Dissolved Solids	50,276 ~~15,025~~			
5. Suspended Solids				
6. Phenolphthalein Alkalinity ($CaCO_3$)				
7. Methyl Orange Alkalinity ($CaCO_3$)	5100			
8. Bicarbonate (HCO_3)	HCO_3 6222	+61	102	HCO_3
9. Chlorides (Cl)	Cl 24000	+35.5	676	Cl
10. Sulfates (SO_4)	SO_4 2500	+48	52	SO_4
11. Calcium (Ca)	Ca 600	+20	30	Ca
12. Magnesium (Mg)	Mg 1580	+12.2	130	Mg
13. Total Hardness ($CaCO_3$)	8000			
14. Total Iron (Fe)	2.5			
15. Barium (Qualitative)				
16. Strontium				

*Milli equivalents per liter

PROBABLE MINERAL COMPOSITION



Compound	Equiv. Wt.	X	Meq/l	=	Mg/l
$Ca(HCO_3)_2$	81.04		30		2431
$CaSO_4$	68.07				
$CaCl_2$	55.50				
$Mg(HCO_3)_2$	73.17		72		5265
$MgSO_4$	60.19		52		3130
$MgCl_2$	47.62		6		286
$NaHCO_3$	84.00				
Na_2SO_4	71.03		58.46 x 670 =		39,218
NaCl	58.46		670		~~39,147~~

Saturation Values Distilled Water 20°C

$CaCO_3$	13 Mg/l
$CaSO_4 \cdot 2H_2O$	2,090 Mg/l
$MgCO_3$	103 Mg/l

REMARKS Jal Mar Formation 50,276

EXHIBIT NO. 6B
Case 7629
August 4, 1982

Respectfully submitted
TRETOLITE DIVISION

WU AGT SANA

WU INFOMASTER 1-02140IN215 08/03/82
ICS IPMKAKC KSC
06091 08-03 0216P CDT KAKA
TWX 9109950511 WU AGT SANA
1-00635I215 08/03/82
TWX AMOCOPRD A HOU
002 HOUSTON, TEXAS AUG 3, 1982
PMS STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NE MEXICO 87501

ATTENTION: MR. JOE D. RAMEY, DIRECTOR

RE: APPLICATION TO INJECT INTO
ARNOTT-RAMSAY (NCT-E)
WELL NO. 5
LEA COUNTY, NEW MEXICO

RLL

Case 7629

RECEIVED
AUG 06 1982
OIL CONSERVATION DIVISION
SANTA FE

GENTLEMEN:

THIS IS TO ADVISE THAT THE UNDERSIGNED HAS BEEN GIVEN DUE NOTICE THAT GULF OIL CORPORATION IS MAKING APPLICATION FOR AUTHORIZATION TO INJECT INTO ITS ARNOTT-RAMSAY (NCT-E) WELL NO. 5 OVER THE APPROXIMATE OPEN HOLE INTERVAL FROM 3169' TO 3385' OF THE YATES AND SEVEN RIVERS FORMATIONS.

WE HEREBY WAIVE ANY OBJECTION TO THE GRANTING OF THIS APPLICATION FOR WELL NO. 5. THIS WELL IS LOCATED 1980' FNL & 560' FWL OF SECTION 16, T-25-S, R-37-E, LEA COUNTY, NEW MEXICO.

YOURS VERY TRULY,

R. G. SMITH
REGIONAL PRODUCTION MANAGER-WEST
AMOCO PRODUCTION COMPANY
P. O. BOX 3092
HOUSTON, TEXAS 77253

1403 EST

1426 EST

WU AGT SANA

ENERGY AND MINERALS DEPARTMENT

OCD

PLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Gulf Oil Corporation

Address: P.O. Box 150, Midland, Texas 79702

Contact party: C. F. Kalteyer Phone: (915) 685-4750

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

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

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

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

VII. Attach data on the proposed operation, including:

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

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

IX. Describe the proposed stimulation program, if any.

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

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

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

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

XIV. Certification

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

Name: C. F. Kalteyer Title Chief Proration Engineer

Signature: C F Kalteyer Date: July 21, 1982

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

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

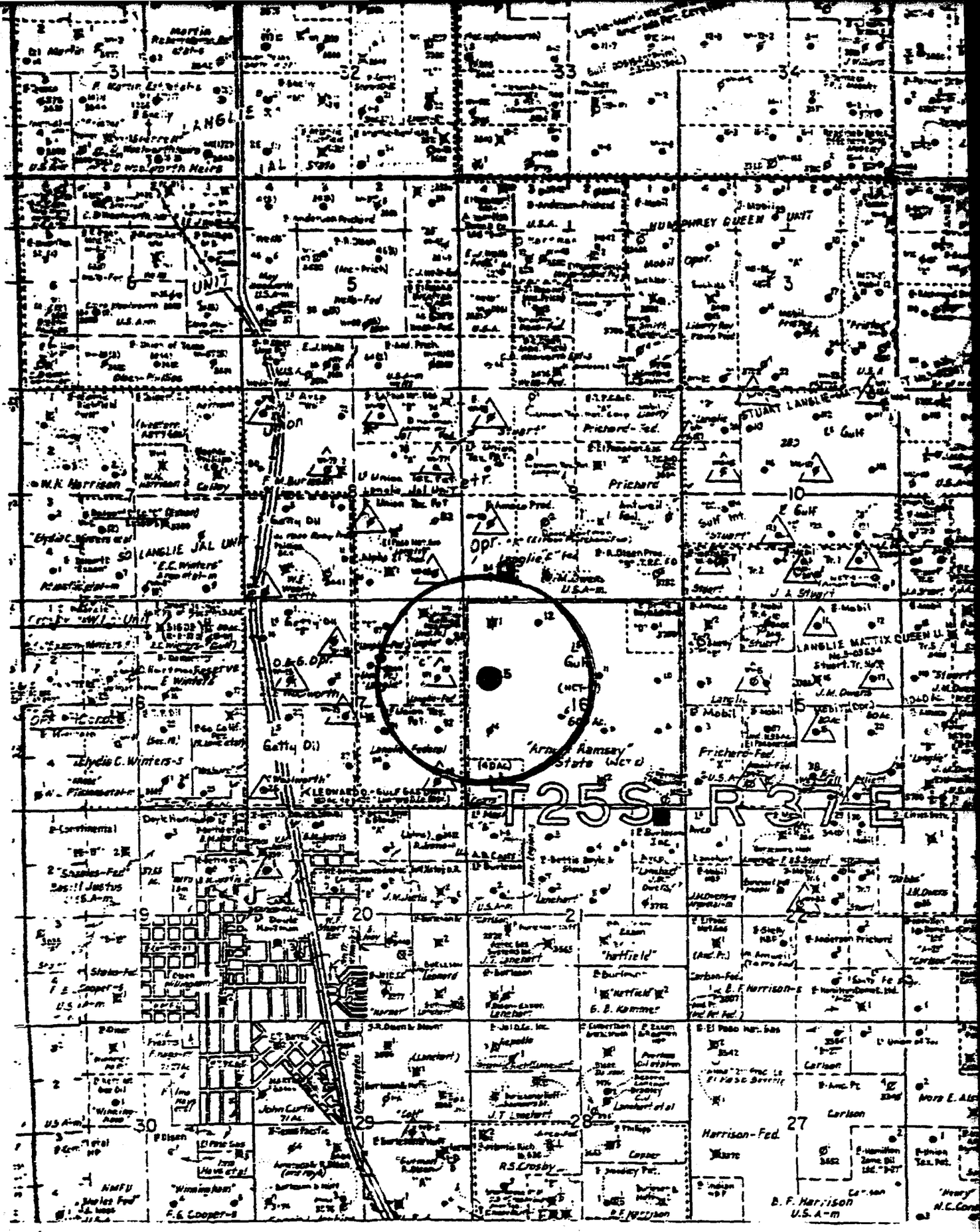
(2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;

(3) the formation name and depth with expected maximum injection rates and pressures; and

(4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.



Ref. Item V of C-108

LOCATION PLAT
GULF OIL CORPORATION
ARNOTT-RAMSAY (NCT-E) WELL NO. 5

UNIT E, SECTION 16
T-25-S, R-37-E
LEA COUNTY, NEW MEXICO
Scale: 1" 3000'

LEGEND

- Subject Well
- Injection Wells
- Fresh Water Supply Wells
- Other SWD Wells

EXHIBIT NO. 1
CASE 7629
August 4, 1982

TABULAR SUMMARY
WELLS WITHIN ONE-HALF MILE OF
GULF OIL CORPORATION ARNOTT-RAMSAY (NCT-E)
WELL NO. 5

ARCO OIL & GAS COMPANY — Woolworth "WN" #1

330' FNL & 990' FEL, Sec. 17, T-25-S, R-37-E
TD: 3453' PBTD: 3217'
Spud Date: 3-25-39
Perforated: 3100'-3120'
Csg:
9-5/8" @1192' w/500sx. cmt., TOC Circ.
7" @3199' w/300sx. cmt., TOC @1225' (calc.)

GULF OIL CORPORATION — Arnott-Ramsay (NCT-E) #1

660' FNL & 660' FWL, Sec. 16, T-25-S, R-37-E
TD: 3512'
Spud Date: 6-9-37
Open Hole: 3231'-3512'. P&A: 8-6-60.
Csg:
13-3/8" @37' w/50sx. cmt., TOC Circ.
7-5/8" @1316' w/600sx. cmt., TOC Circ.
5-1/2" @3231' w/125sx. cmt., TOC @2300' (calc.)
Casing cut and pulled from 2200'.

Arnott-Ramsay (NCT-E) #3

615' FSL & 705' FWL, Sec. 16, T-25-S, R-37-E
TD: 3125' PBTD: 3048'
Spud Date: 5-18-55
Open Hole: 2880'-3048'. P&A: 8-2-76
Csg:
8-5/8" @322' w/200sx. cmt., TOC Circ.
5-1/2" @2880' w/450sx. cmt. & 225sx. cmt. thru
DV Tool @1108', TOC Circ.

Arnott-Ramsay (NCT-E) #4

1980' FSL & 660' FWL, Sec. 16, T-25-S, R-37-E
TD: 3400'
Spud Date: 5-1-53
Open Hole: 3120'-3400' P&A: 7-31-60
Csg:
10-3/4" @460' w/325sx. cmt., TOC Circ.
7" @3120' w/150sx. cmt., TOC @2557' by Temp. Survey.

EXHIBIT NO. 2
Case 7629
August 4, 1982
Page 1 of 3

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 10f3 EXHIBIT NO. 2
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

GULF OIL CORPORATION	Arnott-Ramsay (NCT-E) #6	2310' FSL & 2310' FWL, Sec. 16, T-25-S, R-37-E TD: 3817' PBTD: 3357' Spud Date: 6-7-75 Perforated: 2929'-3030' (current), 3412'-3646' (closed with BP and cement @ 3357'). Csg: 8-5/8" @1120' w/435sx. cmt., TOC Circ. 4-1/2" @3817' w/350sx. cmt., TOC @2550' by Temp. Survey.
	Arnott-Ramsay (NCT-E) #12	660' FNL & 1980' FWL, Sec. 16, T-25-S, R-37-E TD: 3803' PBTD: 3762' Spud Date: 12-2-81 Perforated: 3432'-3668' Csg: 8-5/8" @404' w/250sx. cmt. 5-1/2" @3803' w/330sx. cmt. & 850sx. cmt. thru DV Tool @2696', TOC Circ.
UNION TEXAS PET. CORP.	Langlie Jal Unit #84	660'FSL & 660' FWL, Sec. 9, T-25-S, R-37-E TD: 3607' PBTD: 3604' Spud Date: 4-28-37 Perforated: 3356'-3583' Csg: 8-5/8" @1173' w/400sx. cmt., TOC Circ. 5-1/2" @3244' w/400sx. cmt., TOC Circ. 4" Liner 3071'-3607' w/150sx. cmt., TOC Circ.
	Langlie Jal Unit #88	990' FNL & 330' FEL, Sec. 17, T-25-S, R-37-E TD: 3605' PBTD: 3585' Spud Date: 8-20-52 Perforated: 3168'-3580' Csg: 9-5/8" @158' w/125sx. cmt., TOC Circ. 7" @3076' w/200sx. cmt. & 200sx. cmt. thru DV Tool @1090', TOC 1561' (1st stage) - Surface (2nd stage) (calc.) 4-1/2" Liner 2860'-3604' w/100sx. cmt., TOC Circ.

EXHIBIT NO. 2
Case 7629
August 4, 1982
Page 2 of 3

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 203 EXHIBIT NO. 2
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

UNION TEXAS PET. CORP.	Langlie Jal Unit #89 (Water Injection)	1980' FNL & 660' FEL, Sec. 17, T-25-S, R-37-E TD: 3660' PBTD: 3655' Spud Date: 11-18-52 Perforated: 3286'-3539' Csg: 10-3/4" @306' w/250sx. cmt., TOC Circ. 7" @3409' w/200sx. cmt., TOC @2185' (calc.) 4-1/2" Liner 3055'-3655' w/150sx. cmt., TOC Circ.
	Langlie Jal Unit #92	1980' FSL & 660' FEL, Sec. 17, T-25-S, R-37-E TD: 3587' PBTD: 3490' Spud Date: 11-1-52 Perforated: 3318'-3416' (current), 3413'-3507' (covered by liner). Csg: 10-3/4" @307' w/250sx. cmt., TOC Circ. 7" @3204' w/200sx. cmt., TOC @1890' (calc.) 4-1/2" Liner 3047'-3587' w/125sx. cmt., TOC Circ.

EXHIBIT NO. 2
Case 7629
August 4, 1982
Page 3 of 3

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 3 of 3 EXHIBIT NO. 2
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

Diagrammatic Sketch Showing

ARNOTT-RAMSAY (NCT-E) WELL NO. 1

660' FNL & 660' FWL
UNIT D, SEC. 16, T-25-S, R-37-E
LEA COUNTY, NEW MEXICO
GULF OIL CORPORATION
P & A (8-6-60)

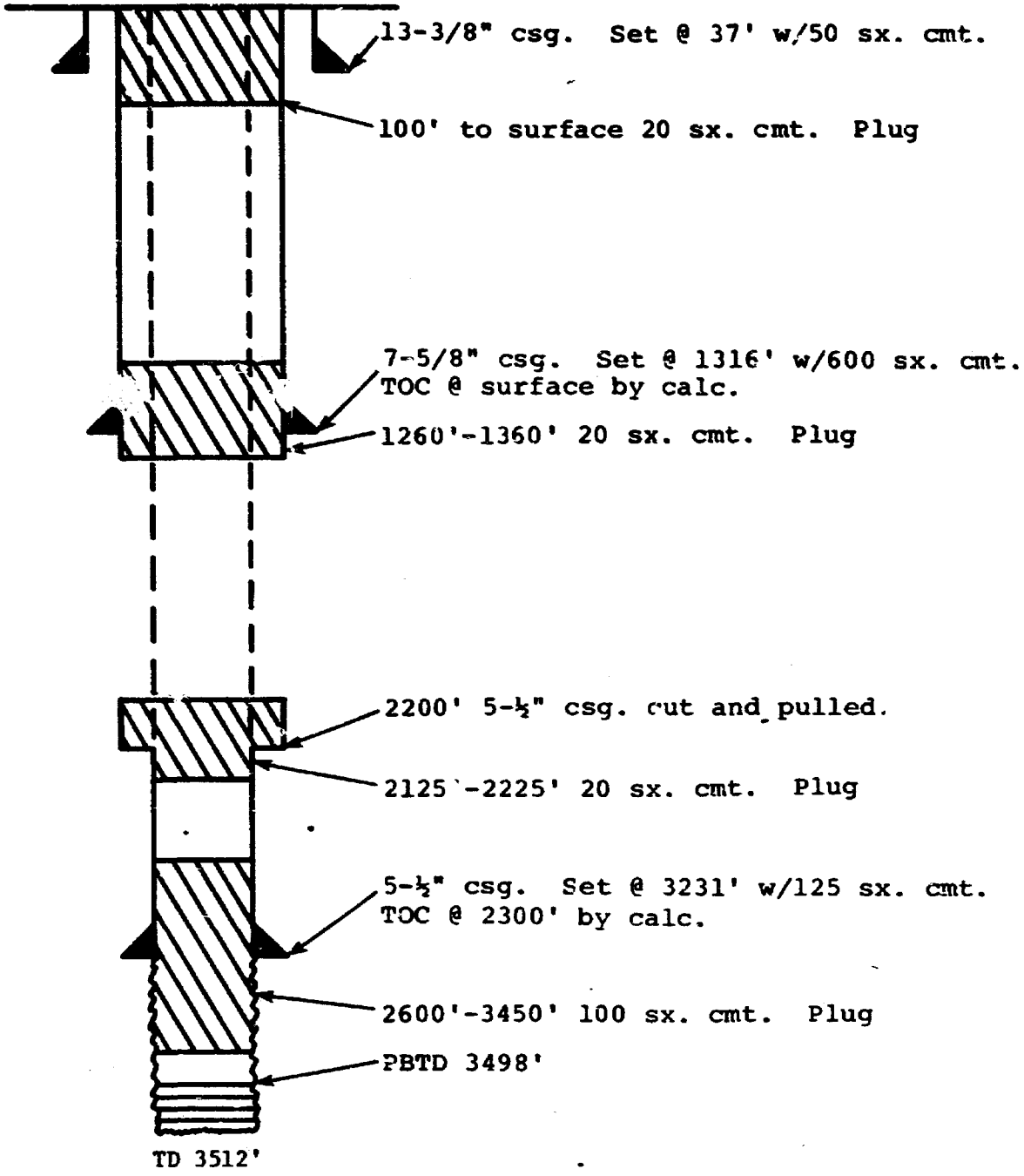


EXHIBIT NO. 3A
CASE 7629
AUG. 4, 1982

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 3A
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

Diagrammatic Sketch Showing

ARNOTT-RAMSAY (NCT-E) WELL NO. 3

615' FSL & 705' FWL
UNIT M, SEC. 16, T-25-S, R-37-E
LEA COUNTY, NEW MEXICO
GULF OIL CORPORATION
P & A (8-2-76)

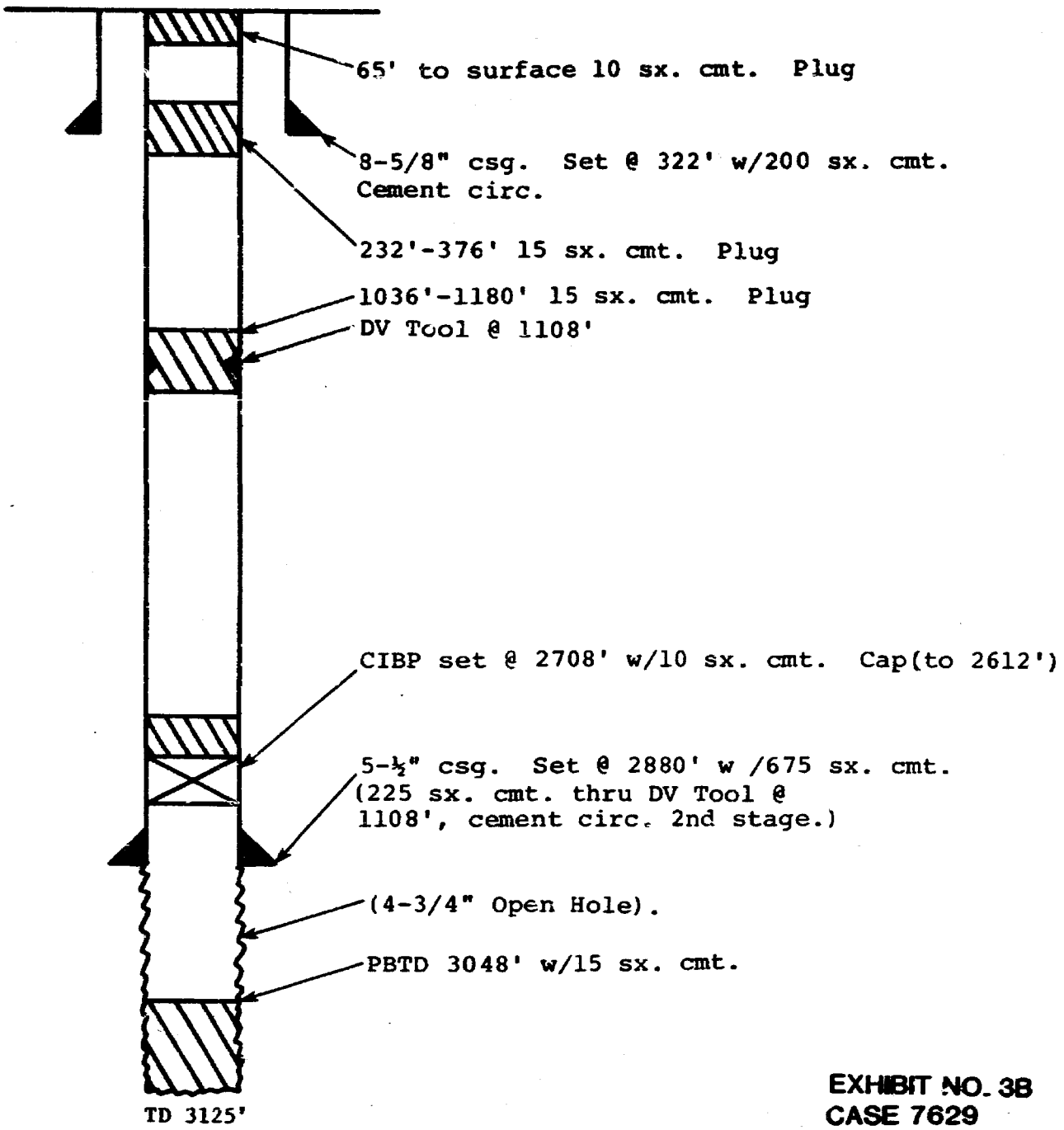


EXHIBIT NO. 3B
CASE 7629
AUG. 4, 1982

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 38
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

Diagrammatic Sketch Showing

ARNOTT-RAMSAY (NCT-E) WELL NO. 4

1980' FSL & 660' FWL
UNIT L, SEC. 16, T-25-S, R-37-E
LEA COUNTY, NEW MEXICO
GULF OIL CORPORATION
P & A (7-31-60)

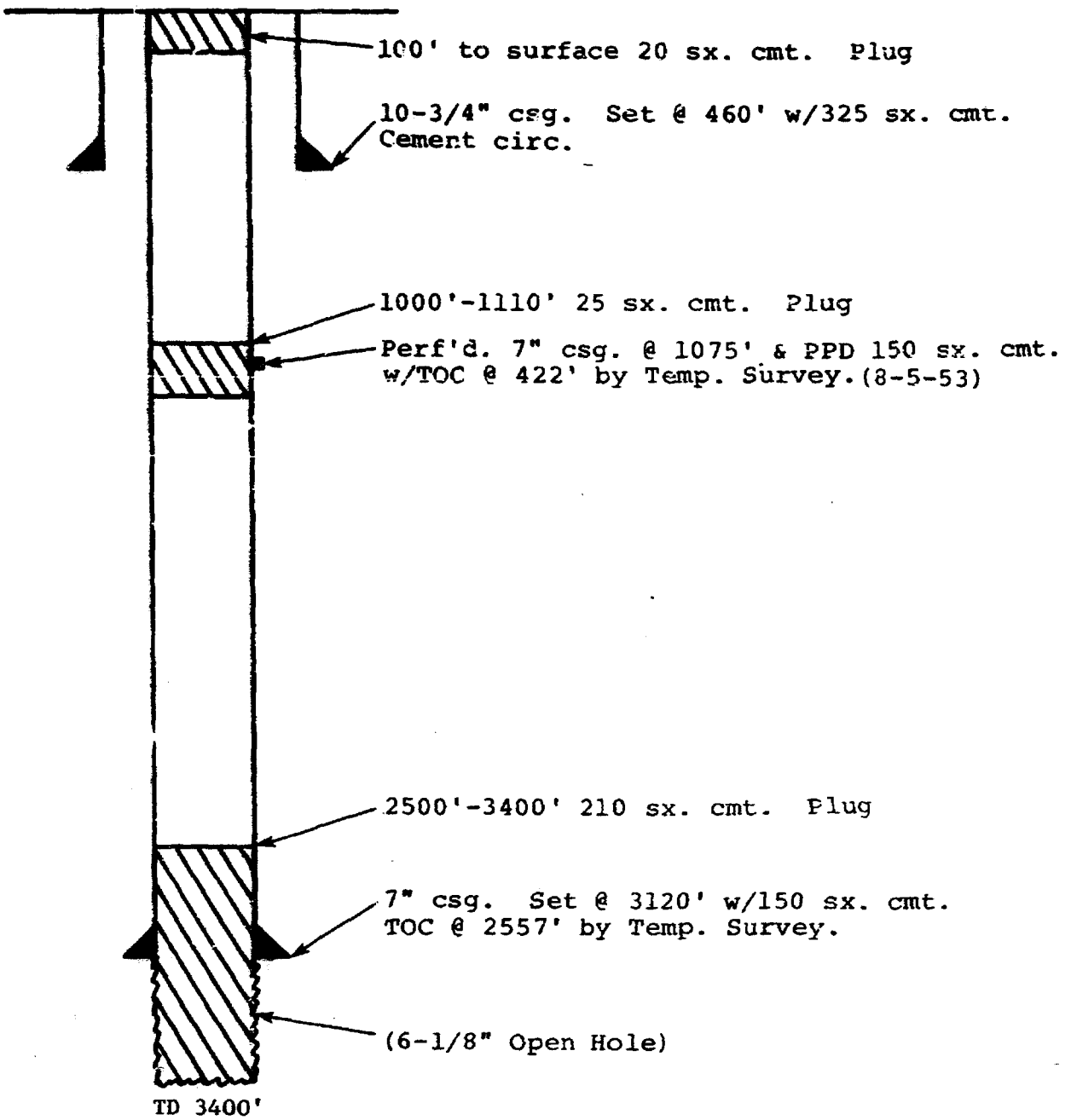


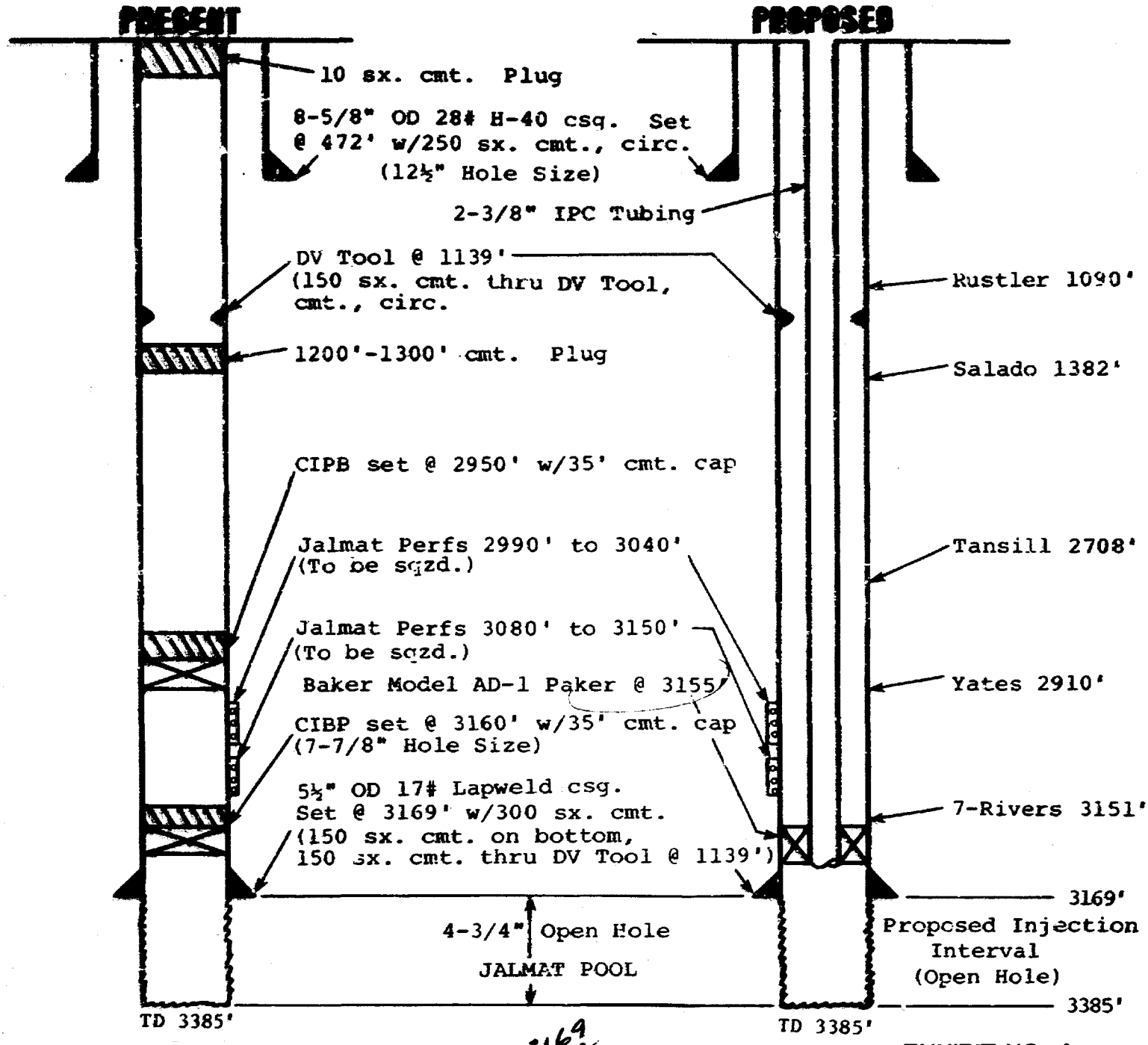
EXHIBIT NO. 3C
CASE 7629
AUG. 4, 1982

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 3c
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

Ref. Item #1 of C-108

Diagrammatic Sketch Showing

PRESENT & PROPOSED INSTALLATION
ARNOTT RAMSAY (NCT-E) WELL NO. 6 SWD
UNIT E, SEC. 16, T-25-S, R-37-E
LEA COUNTY, NEW MEXICO
GULF OIL CORPORATION



3169½
3538

EXHIBIT NO. 4
CASE 7629
AUG. 4, 1982
Page 1 of 2

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 4
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

TABULAR SUMMARY
INJECTION WELL DATA SHEET
GULF OIL CORPORATION
ARNOTT-RAMSAY (NCT-E) WELL NO. 5

A(1) Well Name and Location:

Gulf Oil Corporation
Arnott-Ramsay State (NCT-E) Lease
Arnott-Ramsay (NCT-E) Well No. 5
Unit E, Section 16, T-25-S, R-37-E
1980' FNL & 560' FWL of Section

A(2) Casing Strings:

(1) 8-5/8" O.D., 28#, H-40 casing set in a 12-1/2" hole at a depth of 472' with 250 sacks of cement. TOC at surface, determined by circulation.
(2) 5-1/2" O.D., 17#, Lapweld casing set in a 7-7/8" hole at a depth of 3169' with 150 sacks of cement on bottom and 150 sacks of cement through a DV Tool at 1139'. 1st stage TOC at 2436', determined by calculation. 2nd stage TOC at surface, determined by circulation.

A(3) Tubing:

2-3/8" Internally Plastic Coated tubing set at 3155'.

A(4) Packer:

A nickel-plated Baker Model AD-1 packer (or equivalent) set at 3155'.

B(1) Injection Formations:

Comprised of the Seven Rivers formation in the Jalmat Pool.

B(2) Injection Interval:

The approximate open hole interval from 3169' to 3385'.

B(3) Original Purpose:

The well was originally drilled as an oil producer in June, 1953.

B(4) Other Perforated Intervals:

This well was originally completed in the open hole interval from 3169' to 3385' on August 1, 1953. It potentialed for 6 barrels of oil, 3 barrels of water, and 156 MCF gas per day. In October, 1955 a CIBP was set at 3160', plugging off the open hole interval, and the 5-1/2" casing was selectively perforated from 2990'-3040' and 3080'-3150' in the Jalmat Gas. This zone was potentialed on October 21, 1955 with an estimated open flow of 8,800 MCF gas per day. Due to low gas volume and pressure, the Arnott-Ramsay (NCT-E) Well No. 5 was plugged and abandoned on March 8, 1981.

B(5) Other Producing Zones:

There are no known overlying hydrocarbon producing zones in the area. The next underlying producing zone is the Langlie Mattix Pool at approximately 3403'.

EXHIBIT NO. 4
CASE 7629
August 4, 1982

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 2 of 2 EXHIBIT NO. 4
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

Ref: Item VII of C-108

DATA ON PROPOSED OPERATION OF GULF OIL CORPORATION ARNOTT-RAMSAY (NCT-E) WELL NO. 5

1. Proposed average and maximum daily rate and volume of fluids to be injected:

   Average daily rate of 150 B/D
   Maximum daily rate of 800 B/D

2. System is closed.

3. Proposed average and maximum injection pressures:

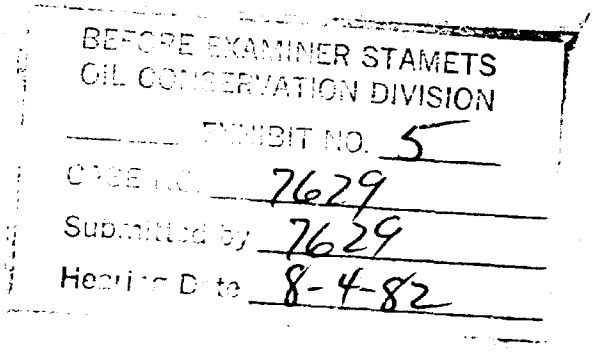
   Average injection pressure of 400 psi.
   Maximum injection pressure of 650 psi.*

4. The source of injection fluids will be from Gulf Oil Corporation's Arnott-Ramsay State (NCT-E) Lease.

5. The zone of disposal is productive of oil and gas within one mile of the proposed disposal well.

*Until fracture gradient is determined, maximum injection pressure will be based on a .2 psi/foot gradient.

EXHIBIT NO. 5
Case 7629
August 4, 1982


BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 5
CASE NO. 7629
Submitted by 7629
Hearing Date 8-4-82

TRETOLITE DIVISION
369 Marshall Avenue / Saint Louis, Missouri 63119
(314) WO 1-3588/TWX 910-760-1660/Telex 44-2417

WATER ANALYSIS REPORT

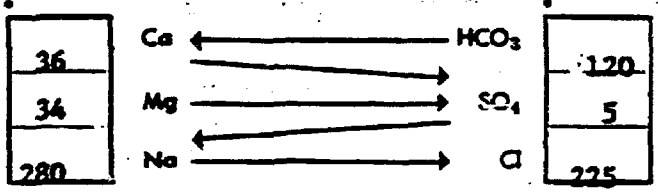
COMPANY Gulf Oil Co. ADDRESS Jal, NM DATE: 7-15-82

SOURCE Arnott Ramsey B #8 DATE SAMPLED 7-15-82 ANALYSIS NO.

Analysis		Mg/L		*Meq/L	
1. pH	8				
2. H_2S (Qualitative)	140				
3. Specific Gravity	1.050				
4. Dissolved Solids		22940			
5. Suspended Solids					
6. Phenolphthalein Alkalinity ($CaCO_3$)		=0=			
7. Methyl Orange Alkalinity ($CaCO_3$)		6000			
8. Bicarbonate (HCO_3)		HCO_3 7320	÷61	120	HCO_3
9. Chlorides (Cl)		Cl 8000	÷35.5	225	Cl
10. Sulfates (SO_4)		SO_4 250	÷48	5	SO_4
11. Calcium (Ca)		Ca 720	÷20	36	Ca
12. Magnesium (Mg)		Mg 413	÷12.2	34	Mg
13. Total Hardness ($CaCO_3$)		3500			
14. Total Iron (Fe)		2.5			
15. Barium (Qualitative)					
16. Strontium					

*Milli equivalents per liter

PROBABLE MINERAL COMPOSITION



Compound	Equiv. Wt.	X Meq/L	= Mg/L
$Ca(HCO_3)_2$	81.04	36	2917
$CaSO_4$	68.07	34	2314
$CaCl_2$	55.50		
$Mg(HCO_3)_2$	73.17		
$MgSO_4$	60.19		
$MgCl_2$	47.62		
$NaHCO_3$	84.00	50	4200
Na_2SO_4	71.03	5	355
NaCl	58.46	225	13154

Saturation Values Distilled Water 20°C

$CaCO_3$	13 Mg/L
$CaSO_4 \cdot 2H_2O$	2,090 Mg/L
$MgCO_3$	103 Mg/L

REMARKS Langlie Mattix Formation

EXHIBIT NO. 6A
Case 7629
August 4, 1982

Respectfully submitted
TRETOLITE COMPANY

STAMETS
DIVISION
EXHIBIT NO. 6A
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

TRETOLITE DIVISION
300 Marshall Avenue / Saint Louis, Missouri 63119
(314) WO 1-5288/TWX 910-760-1660/Telex 44-2417

WATER ANALYSIS REPORT

COMPANY Gulf Oil Co. ADDRESS Jal, NM DATE: 7-15-82

SOURCE Arnott Ramsey B #11 DATE SAMPLED 7-15-82 ANALYSIS NO.

	Analysis	Mg/l		*Meq/l	
1.	pH	7.6			
2.	H_2S (Qualitative)	170 ppm			
3.	Specific Gravity	1.050			
4.	Dissolved Solids	15,025			
5.	Suspended Solids				
6.	Phenolphthalein Alkalinity ($CaCO_3$)				
7.	Methyl Orange Alkalinity ($CaCO_3$)	5100			
8.	Bicarbonate (HCO_3)	6222	÷61	102	HCO_3
9.	Chlorides (Cl)	24000	÷35.5	676	Cl
10.	Sulfates (SO_4)	2500	÷48	52	SO_4
11.	Calcium (Ca)	600	÷20	30	Ca
12.	Magnesium (Mg)	1580	÷12.2	130	Mg
13.	Total Hardness ($CaCO_3$)	8000			
14.	Total Iron (Fe)	2.5			
15.	Barium (Qualitative)				
16.	Strontium				

*Milli equivalents per liter

PROBABLE MINERAL COMPOSITION

30	Ca ⟵	HCO_3 ⟵ 102
130	Mg ⟶	SO_4 ⟵ 52
670	Na ⟶	Cl ⟶ 676

Compound	Equiv. Wt.	X Meq/l =	Mg/L
$Ca(HCO_3)_2$	81.04	30	2431
$CaSO_4$	68.07		
$CaCl_2$	55.50		
$Mg(HCO_3)_2$	73.17	72	5261
$MgSO_4$	60.19	52	3130
$MgCl_2$	47.62	6	286
$NaHCO_3$	84.00		
Na_2SO_4	71.03		
NaCl	58.46	670	3917

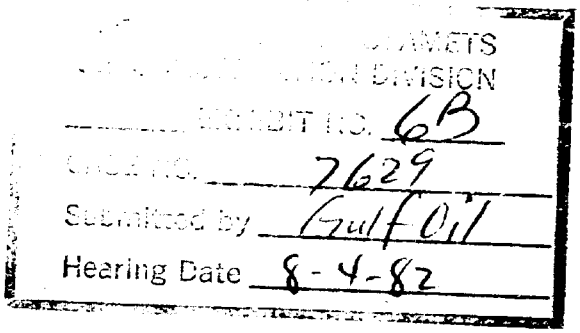
Saturation Values Distilled Water 20°C

$CaCO_3$	13 Mg/l
$CaSO_4 \cdot 2H_2O$	2,090 Mg/l
$MgCO_3$	103 Mg/l

REMARKS Jal Mar Formation

EXHIBIT NO. 6B
Case 7629
August 4, 1982

Respectfully submitted
TRETOLITE COMPANY


DIVISION
EXHIBIT NO. 6B
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

[redacted]

TRETOLITE DIVISION
369 Marshall Avenue / Saint Louis, Missouri 63119
(314) [illegible] / TWX [illegible] / Telex 44-2417

WATER ANALYSIS REPORT

COMPANY Gulf Oil Co. ADDRESS Jal, NM DATE 7-15-82

SOURCE Arnold Ramsey B #8 & 11 DATE SAMPLED 7-15-82 ANALYSIS NO.

Analysis		Mg/L		*Meq/L	
1. pH	7.8				
2. H_2S (Qualitative)	160				
3. Specific Gravity	1.050				
4. Dissolved Solids		36,787			
5. Suspended Solids		/			
6. Phenolphthalein Alkalinity ($CaCO_3$)		-0-			
7. Methyl Orange Alkalinity ($CaCO_3$)		5700			
8. Bicarbonate (HCO_3)	HCO_3	4954	÷61	116	HCO_3
9. Chlorides (Cl)	Cl	16,000	÷35.5	451	Cl
10. Sulfates (SO_4)	SO_4	1100	÷48	23	SO_4
11. Calcium (Ca)	Ca	640	÷20	32	Ca
12. Magnesium (Mg)	Mg	777	÷12.2	64	Mg
13. Total Hardness ($CaCO_3$)		4600			
14. Total Iron (Fe)		2.5			
15. Barium (Qualitative)					
16. Strontium					

*Milli equivalents per liter

PROBABLE MINERAL COMPOSITION

32	Ca ←	→ HCO_3
64	Mg →	→ SO_4
492	Na ←	→ Cl

116
23
451

Compound	Equiv. Wt.	X Meq/L =	Mg/L
$Ca(HCO_3)_2$	81.04	32	2593
$CaSO_4$	68.07		
$CaCl_2$	55.50		
$Mg(HCO_3)_2$	73.17	64	4683
$MgSO_4$	60.19		
$MgCl_2$	47.62		
$NaHCO_3$	84.00	18	1512
Na_2SO_4	71.03	23	1634
NaCl	58.46	451	26365

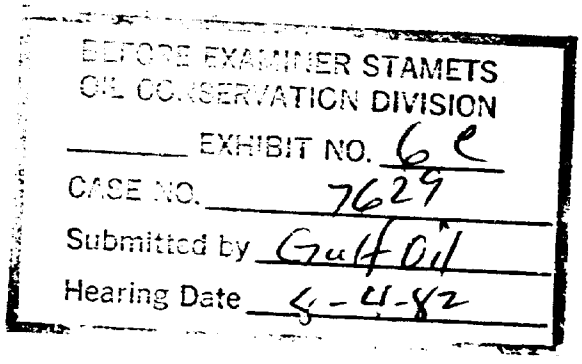
Saturation Values Distilled Water 20°C

$CaCO_3$	13 Mg/L
$CaSO_4 \cdot 2H_2O$	2,090 Mg/L
$MgCO_3$	103 Mg/L

REMARKS 50/50 Jalmat & Langlie Mattix Through visual and analytical tests, these waters should be compatible at this time.

Respectfully submitted
TRETOLITE COMPANY

EXHIBIT NO. 6C
Case 7629
August 4, 1982


BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 6
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 5-4-82

Ref: Item IX of C-108

PROPOSED STIMULATION PROGRAM
FOR GULF OIL CORPORATION'S
ARNOTT-RAMSAY (NCT-E) WELL NO. 5

It is proposed to clean out the gross interval from 3169'-3385' with 20% HCL acid. The volume of acid will be determined at the time of the work.

EXHIBIT NO. 7
Case 7629
August 4, 1982

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 7
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

Ref: Item XI of C-108

CHEMICAL ANALYSIS OF FRESH WATER WITHIN ONE-MILE OF GULF OIL CORPORATION'S ARNOTT-RAMSAY (NCT-E) Well No. 5

Two known fresh water sources within approximately one-mile of the proposed injection well are:

Name and Location	Date Sampled	Chlorides (mg/l)	Total Dissolved Solids (mg/l)
Bowington House Water Well Unit A, Section 21, T-25-S, R-37-E	5-14-82	8800	14,312
Meaders House Water Well Unit M, Section 9, T-25-S, R-37-E	5-14-82	800	5,182

Copies of the Analysis Reports for each well are attached as pages 2 and 3 of this Exhibit.

EXHIBIT NO. 8
Case 7629
August 4, 1982
Page 1 of 3

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 1 of 3 EXHIBIT NO. 8
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

TRETOLITE DIVISION
369 Marshall Avenue / Saint Louis, Missouri 63119
(314) WO 1-3500 / TWX 910-760-1660 / Telex 44-2417

WATER ANALYSIS REPORT

COMPANY Gulf Oil ADDRESS _____ DATE: 5-19-82

SOURCE Bowington Ralph Bolington House DATE SAMPLED 5-14-82 ANALYSIS NO. _____

Analysis		Mg/L		*Meq/L	
1. PH	6.7				
2. H_2S (Qualitative)	-0-				
3. Specific Gravity					
4. Dissolved Solids		14312			
5. Suspended Solids					
6. Phenolphthalein Alkalinity ($CaCO_3$)					
7. Methyl Orange Alkalinity ($CaCO_3$)		300			
8. Bicarbonate (HCO_3)	HCO_3	366	÷61	6	HCO_3
9. Chlorides (Cl)	Cl	8800	÷35.5	248	Cl
10. Sulfates (SO_4)	SO_4	648	÷48	14	SO_4
11. Calcium (Ca)	Ca	1200	÷20	60	Ca
12. Magnesium (Mg)	Mg	1701	÷12.2	139	Mg
13. Total Hardness ($CaCO_3$)		10,000			
14. Total Iron (Fe)		4.8			
15. Barium (Qualitative)					
16.					

*Milli equivalents per liter

PROBABLE MINERAL COMPOSITION

60	Ca ⟵	HCO_3 ⟵ 6
139	Mg ⟶	SO_4 14
69	Na ⟶	Cl 248

Compound	Equiv. Wt.	X Meq/L	= Mg/L
$Ca(HCO_3)_2$	81.04	6	486
$CaSO_4$	68.07	14	953
$CaCl_2$	55.50	40	2220
$Mg(HCO_3)_2$	73.17		
$MgSO_4$	60.19		
$MgCl_2$	47.62	139	6619
$NaHCO_3$	84.00		
Na_2SO_4	71.03		
NaCl	58.46	69	4034

Saturation Values Distilled Water 20°C

$CaCO_3$	13 Mg/L
$CaSO_4 \cdot 2H_2O$	2,090 Mg/L
$MgCO_3$	103 Mg/L

REMARKS _____

EXHIBIT NO. 8
Case 7623
August 4, 1982
Page 2 of 3

Respectfully submitted
TRETOLITE COMPANY

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 2 of 3 EXHIBIT NO. 8
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

TRETOLITE DIVISION
369 Marshall Avenue / Saint Louis, Missouri 63119
(314) WO 1-3600 / TWX 910-760-1660 / Telex 44-2417

WATER ANALYSIS REPORT

COMPANY Gulf Oil ADDRESS _____ DATE: 5-19-82

SOURCE Dennis Meeder's House DATE SAMPLED 5-14-82 ANALYSIS NO. _____

	Analysis	Mg/L		*Meq/L	
1.	PH	8.2			
2.	H_2S (Qualitative)	-0-			
3.	Specific Gravity				
4.	Dissolved Solids	5182			
5.	Suspended Solids				
6.	Phenolphthalein Alkalinity ($CaCO_3$)	-0-			
7.	Methyl Orange Alkalinity ($CaCO_3$)	2100			
8.	Bicarbonate (HCO_3)	HCO_3 2560	÷61	42	HCO_3
9.	Chlorides (Cl)	Cl 800	÷35.5	23	Cl
10.	Sulfates (SO_4)	SO_4 288	÷48	6	SO_4
11.	Calcium (Ca)	Ca 640	÷20	32	Ca
12.	Magnesium (Mg)	Mg 24	÷12.2	2	Mg
13.	Total Hardness ($CaCO_3$)	1700			
14.	Total Iron (Fe)	2.5			
15.	Barium (Qualitative)				
16.					

*Milli equivalents per liter

PROBABLE MINERAL COMPOSITION

32	Ca ←	→ HCO_3
2	Mg →	→ SO_4
37	Na →	→ Cl

42	
6	
23	

Compound	Equiv. Wt.	X Meq/L =	Mg/L
Ca $(HCO_3)_2$	81.04	32	2593
Ca SO_4	68.07		
Ca Cl_2	55.50		
Mg $(HCO_3)_2$	73.17	2	146
Mg SO_4	60.19		
Mg Cl_2	47.62		
Na HCO_3	84.00	8	672
$Na_2 SO_4$	71.03	6	426
Na Cl	58.46	23	1345

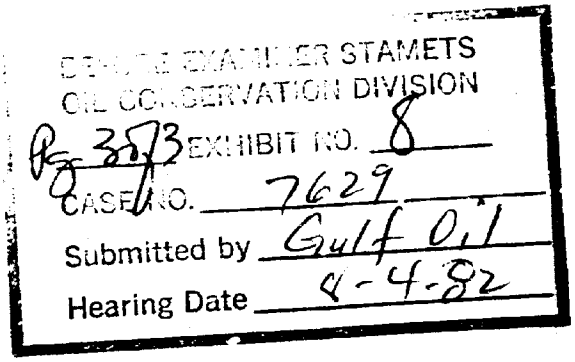
Saturation Values Distilled Water 20°C

Ca CO_3	13 Mg/L
Ca $SO_4 \cdot 2H_2O$	2,090 Mg/L
Mg CO_3	103 Mg/L

REMARKS _____

EXHIBIT NO. 8
Case 7629
August 4, 1982
Page 3 of 3

Respectfully submitted
TRETOLITE COMPANY


BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 8
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 4-4-82

Gulf Oil Exploration and Production Company

J. M. Thacker
GENERAL MANAGER PRODUCTION
SOUTHWEST DISTRICT

P. O. Drawer 1150
Midland, TX. 79702

July 21, 1982

Surface Owner and
Offset Operators

Re: Application for Authorization to
Inject into Arnott-Ramsay (NCT-E)
Well No. 5, Lea County, New Mexico.

Gentlemen:

Pursuant to Rule 701, Order No. R-6702, of the State of New Mexico OCD Rules and Regulations, Gulf Oil Corporation is notifying you that it proposes to convert Arnott-Ramsay (NCT-E) Well No. 5 to a salt water disposal well. The application for authority to dispose of produced water into this well is scheduled to be presented at the Examiner Hearing of August 4, 1982 in Santa Fe.

The location of our Arnott-Ramsay (NCT-E) Well No. 5 is 1980' FNL & 560' FWL of Section 16, T-25-S, R-37-E, Jalmat Pool, Lea County, New Mexico. We will be requesting for authority to inject produced saltwater into this well over the approximate open hole interval from 3169' to 3385' of the Yates and Seven Rivers formations.

We request that each offset operator, if he has no objections, execute a letter of waiver and forward it to the Oil Conservation Division in Santa Fe with a copy to Gulf Oil Corporation, Proration Unit, in Midland, Texas. Waivers and stamped addressed envelopes are attached for your convenience.

Yours very truly,

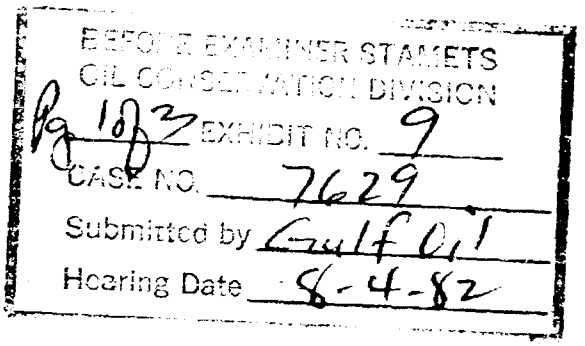
for F. H. Martin
Technical Manager

AWB/da
Attachments

cc: Campbell, Byrd and Black
P.O. Box 2208
Santa Fe, New Mexico 87501
Attn: Mr. William F. Carr

W. V. Kastler - Gulf - Houston
R. C. Anderson - Gulf - Hobbs

EXHIBIT NO. 9
Case 7629
August 4, 1982
Page 1 of 3


BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 1 of 2
EXHIBIT NO. 9
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

SURFACE OWNER

Commissioner of Public Lands
P.O. Box 1148
Santa Fe, New Mexico 87501
Attn: Mr. Ray Graham

LEASEHOLD OPERATORS WITHIN ONE-HALF MILE

AMOCO PRODUCTION COMPANY
P.O. Box 3092
Houston, Texas 77001
Attn: Mr. Jim Allen

ARCO OIL AND GAS COMPANY
P.O. Box 1610
Midland, Texas 79702

UNION TEXAS PETROLEUM CORPORATION
1300 Wilco Building
Midland, Texas 79702

EXHIBIT NO. 9
Case 7629
August 4, 1982

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Bg 203 EXHIBIT NO. 9
CASE NO. 7629
Submitted by Gulf O.I.
Hearing Date 8-4-82

Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one).
- [X] Show to whom and date delivered ..... ¢
- [ ] Show to whom, date, and address of delivery ..... ¢
- [ ] RESTRICTED DELIVERY
  Show to whom and date delivered ..... ¢
- [ ] RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery. $
  (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:

AMOCO PRODUCTION COMPANY
Attn: Mr. Jim Allen

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	28999	

(Always obtain signature of addressee or agent)

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

4. DATE OF DELIVERY: JUL 23 1982 | POSTMARK: HOUSTON, TX JUL 23 1982 USPO

5. ADDRESS (Complete only if requested)

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

Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one).
- [X] Show to whom and date delivered ..... ¢
- [ ] Show to whom, date, and address of delivery ..... ¢
- [ ] RESTRICTED DELIVERY
  Show to whom and date delivered ..... ¢
- [ ] RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery. $
  (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:

UNION TEXAS PETROLEUM CORPORATION

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	28998	

(Always obtain signature of addressee or agent)

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

4. DATE OF DELIVERY | POSTMARK: JUL 29 1982

5. ADDRESS (Complete only if requested)

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

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

1. The following service is requested (check one).
- [X] Show to whom and date delivered ..... ¢
- [ ] Show to whom, date, and address of delivery ..... ¢
- [ ] RESTRICTED DELIVERY
  Show to whom and date delivered ..... ¢
- [ ] RESTRICTED DELIVERY.
  Show to whom, date, and address of delivery. $
  (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:

ARCO OIL AND GAS COMPANY

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	28997	

(Always obtain signature of addressee or agent)

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

4. DATE OF DELIVERY | POSTMARK: DEC 3 1982

5. ADDRESS (Complete only if requested)

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

EXHIBIT NO. 9
Case 7629
August 4, 1982
Page 3 of 3

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
Pg 3 of 3 EXHIBIT NO. 9
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

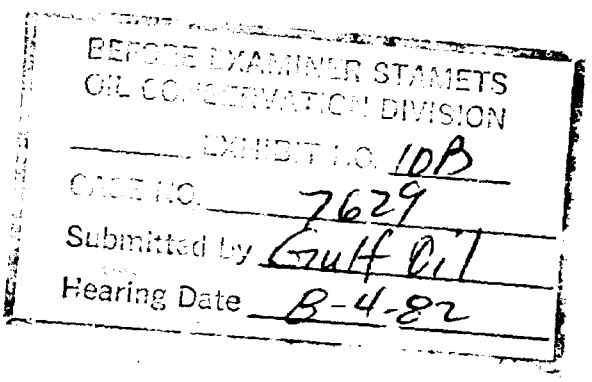
Ref: Item VIII of C-108

GEOLOGICAL DATA
INJECTION ZONES
FOR
GULF OIL CORPORATION'S
ARNOTT-RAMSAY (NCT-E) WELL NO. 5

Seven Rivers (Jalmat Pool) - 3151'-3385' (T.D.), 234'

Dolomite, shaly dolomite with anhydrite and sand stringers. Anhydrite stringers at 3260'-3270' and 3325'-3335'. Porous sands at 3184'-3187', 3274'-3289' and 3350'-3364'.

EXHIBIT NO. 10B
Case 7629
August 4, 1982


BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 10B
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

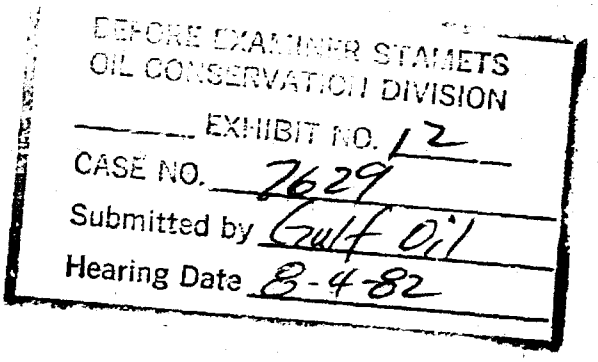
GEOLOGICAL DATA
FRESH WATER AQUIFERS
IN THE AREA OF
GULF OIL CORPORATION'S
ARNOTT-RAMSAY (NCT-E) WELL NO. 5

The Arnott-Ramsay (NCT-E) Well No. 5 is located approximately one mile northeast of the town of Jal in Lea County, New Mexico. In this area, a division between aquifers of differing geological age exists.

The subject well is located very near this division but within the area of the Ogallala formation (Tertiary Age) or Quaternary Age aguifers. To the west and southwest, aquifers produce from the Chinle and Santa Rosa (Triassic Age) aquifers of the Dockum Group.

The top of the Red Beds is estimated at 50 feet by Gamma Ray Log correlation with nearby wells.

EXHIBIT NO. 12
Case 7629
August 4, 1982


BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 12
CASE NO. 7629
Submitted by Gulf Oil
Hearing Date 8-4-82

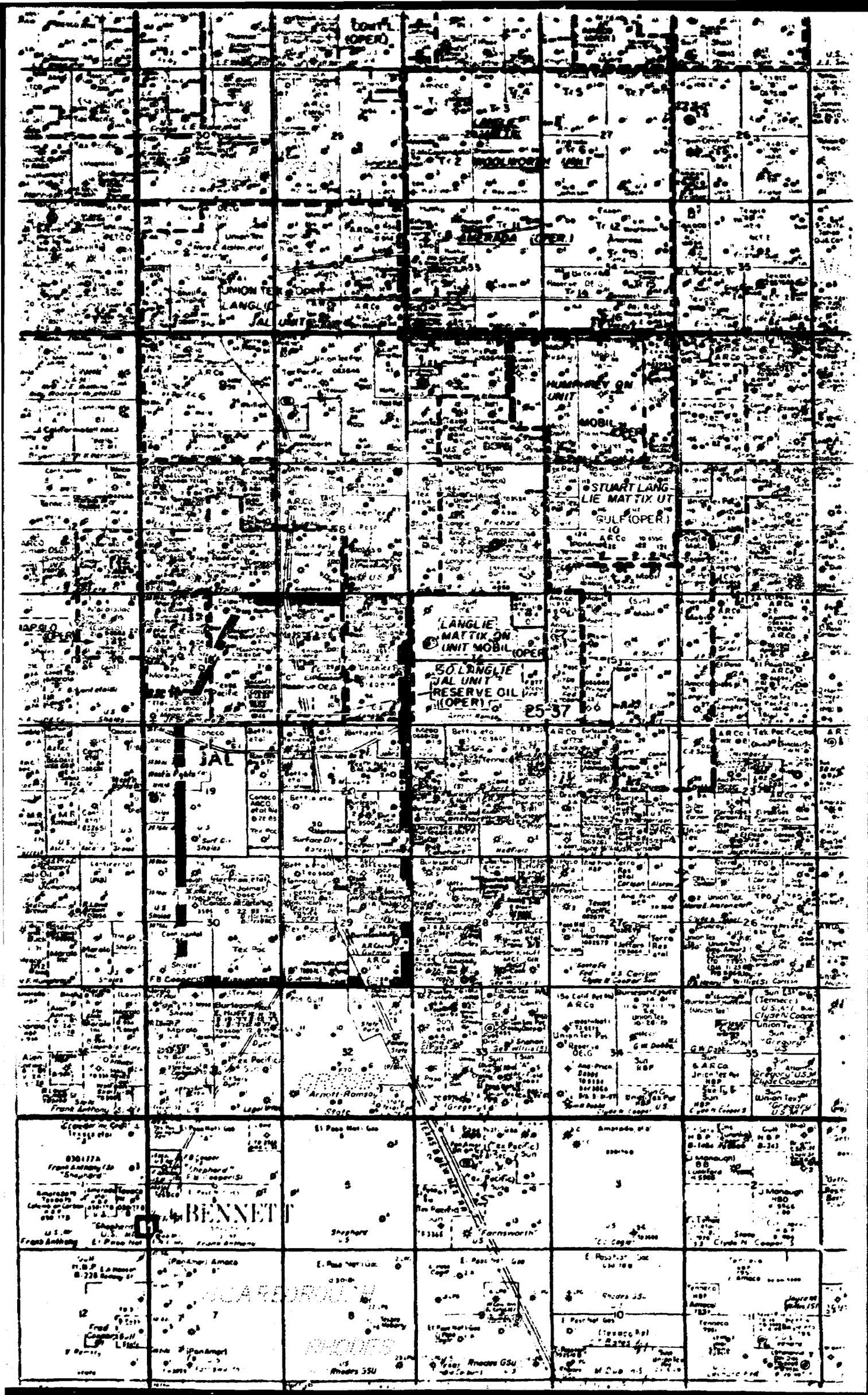
Ref: Item XII of C-108

GULF OIL CORPORATION
ARNOTT-RAMSAY (NCT-E) WELL NO. 5
UNIT E OF SECTION 16, T-25-S, R-37-E
LEA COUNTY, NEW MEXICO

AFFIRMATIVE STATEMENT

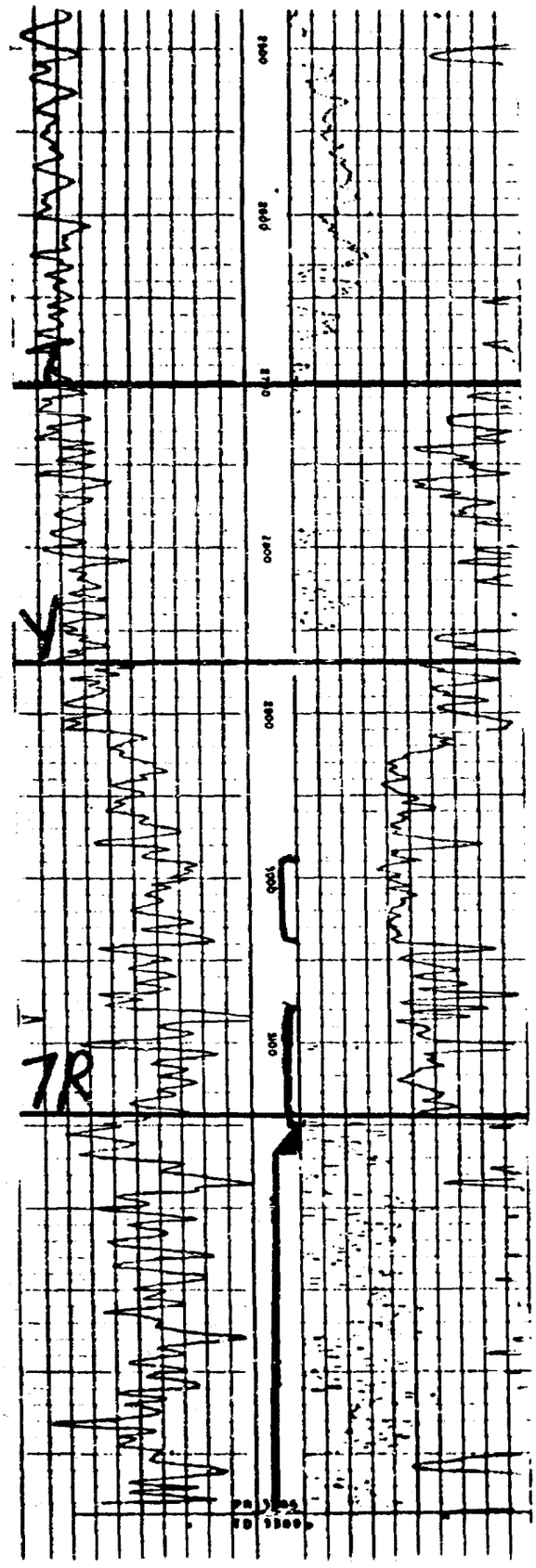
Gulf Oil Corporation has examined available geological and engineering data and finds no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

EXHIBIT NO. 13
Case 7629
August 4, 1982


LANGLIE MATTIX UNIT (OPER.)
STUART LANGLIE MATTIX UT
GULF (OPER.)
LANGLIE MATTIX UNIT MOBIL (OPER.)
SO. LANGLIE JAL UNIT RESERVE OIL (OPER.)
25-37
JAL
BENNETT
Armott-Ramsey
Farnsworth

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 1
CASE NO. 7629
Submitted by Doyle Hartman
Hearing Date 8/4/82

GULF OIL CORPORATION
Arnott Ramsey (NCT-E) No. 5
E-16-25S-37E



COMPANY	Gulf Oil Corporation
WELL	Arnott-Ramsey (NCT-E) No. 5
FIELD	Langlie Mattix
LOCATION	1980 FNL & 560 FWL (E)
	Section 16, T-25-S, R-37-E
COUNTY	Lea
STATE	New Mexico
ELEVATIONS: KB	
DF	3141
GL	

COMPLETION RECORD

SPUD DATE	6-3-53	COMP. DATE	7-28-53
TD	3385	PBTD	3385
CASING RECORD	8-5/8 @ 472 w/250		
	5-1/2 @ 3169 w/450		
PERFORATING RECORD	OH: 3169-3385		
STIMULATION	A/4000		
	Shot w/250 qts		
	(3265-3365)		
IP	IPP= 6 BOPD + 3 BWPD		
GOR		GR	
TP		CP	
CHOKE		TUBING 2 3/8	@ 3377
DST RECORD			
REMARKS			

GULF---Abbott Ramsey No. 5 #3

PRODUCTION SHEET

YR 19	WELLS	OIL OR CONDENSATE - Bbl			(MONTHLY AVG) WATER - Bbl	GAS OR CSG - MCF		GOR (MCF-Bbl) LIQ (Bbl/MM)
		ALLOWABLE	(MONTHLY AVG) PRODUCTION	CUMULATIVE	MID-POINT CUM.	(MONTHLY AVG) PRODUCTION	CUMULATIVE	
53			687	687				
54			348	935				
55		SI	JAN. 1955					
56		6-54				179.900	179.900	
57						315.543	495.443	
58						357.925	853.368	
59						269.340	1.122.708	
60						333.170	1.455.878	
61						248.616	1.704.494	
62						182.844	1.887.338	
63						222.179	2.109.517	
64						203.618	2.313.135	
65						266.421	2.579.556	
66						88.155	2665.711	
67						102.471	2768.182	
68						207.896	2.976.078	
69						161.857	3.137.935	
70						94.985	3.232.920	
71						21.287	3.254.207	
72						53.762	3.307.969	
73						38.741	3.346.710	
74						7.437	3.354.147	

LAST PRODUCTION 8-74

MALCO REFINERIES, Inc.
SCOUT REPORT

Field _____
Scout Dist. No. _____
COMPANY _____ WELL NO. 5 FARM Conrad Ranch "F"
Sec. 15 Twp. 4-S Rge. 27-E
County Lynn State Texas
Loc. 1480 FN _____ FE _____ FE 330 FW
Elev. 3-29-65 Comp. 10-1-65
OTD 3385' PB 10,000' SCHD. 11,500 TD 10,000-10,500
MB/SCZ SP 12,500 ID: F 4170 MCF/D
ETP 100°
Contractor _____ Method _____
El. D. F. _____ Gr. _____

FORMATIONS: Penetrated

TA	
TE	
BE	
TTL	
TTB	
TQ	
TQb	
TPA	
TCI	
TCP	
T. Tubb	
T. Abo	
T. Hueco	
T. Penn.	
T. Miss.	
T. Dev.	
T. Ellen.	
T. Simp.	
T. McKee	
T. Ell.	
T. Pre-Cam.	

S/
S/
S/
S/
S/
S/

Geol. _____ GOR _____
PCP _____ SICP _____
FTP _____ SITP _____

The Subsurface Library
P. O. Box 942
Midland, Texas

CASING & CEMENT

Size	Depth	Sax

COMPLETION RECORD

T. D. _____ PB _____
T. P. _____
IPTT _____
Tubing _____ Cs. _____ @ _____
Packer _____
Perf. _____

SHOOTING RECORD

Qts. _____ From _____
Qts. _____ From _____
Qts. _____ From _____
Results _____

ACIDIZING RECORD

Gal. _____ Zone _____
Gal. _____ Zone _____
Gal. 2000 Zone _____
Results _____

MALCO REFINERIES, Inc.
SCOUT REPORT

Field Jalmat-Phillips (S.R.)
Scout Dist. No.

COMPANY Gulf WELL NO. 5 FARM Arnott-Ramsay

County Lea State N.M. Sec. 16 Twp. 25S Rge. 37E

Spud 6-8-53 Comp. 7-24-53 Loc. 1980' FN 560' FW

Contractor Method 1400' Test. Inc.

El. D. F. 3111 Gr. W.C. 3350 Ft

FORMATIONS: Prognosed

TA 1020	
TR	
BR 2680	
TTL 3195	(-216)
TPR	
TB	
TCh	
TFA	
TGl	
TCP	
T. Tubbs	
T. Abo	
T. Ecno	
T. Penn.	
T. Miss.	
T. Dev.	
T. Mont.	
T. Simp.	
T. McKee	
T. Ell.	
T. Pre-Cam.	

DST
DST
DST
DST
DST
DST

Cmpr. 56 GOR
FCP SICP
FTP SITP

Form No. 15-(24-10-52-M)

Dec 3218-3223 op lm sm. LC Stain
DST 3202-3214 op lm brn
Ac 750 w/ 1 gal/sx NE
Ac 1000 w/ 1 gal/sx NE
Ac 10 3365 f
Ac 10 3365 f
Ac 500 3365 f
Ac 500 3365 f
Ac 500 3365 f
2-25-53 3365 f Set Jay Jumpstart
Ac 1000 3365 f

The Subsurface Library
P. O. Box 1142
Midland, Texas

CASING & CEMENT

Size	Depth	Sax
5½	3163	300

COMPLETION RECORD

T. D. 3225 PB
T. P. 3203
IPF 6 Bo+36 BW/D
Tubing — Pkr. @ 3177
Packer
Perf.

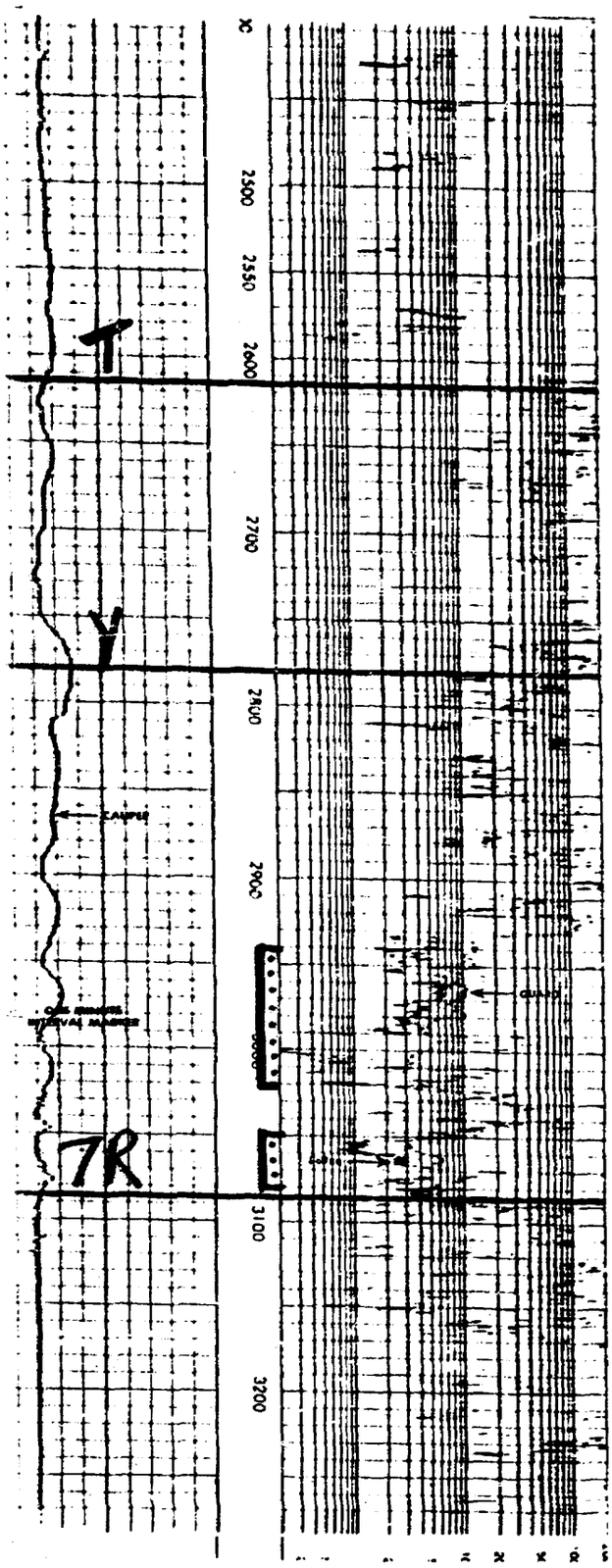
SHOOTING RECORD

Qts. From
Qts. From
Qts. From
Results

ACIDIZING RECORD

Gal. Zone
Gal. Zone
Gal. Zone
Results

DOYLE HARTMAN
El Paso-Pritchard Federal No. 1
J-9-25S-37E



COMPANY	Doyle Hartman
WELL	El Paso - Prichard Federal No. 1
FIELD	Jalmat (Gas)
LOCATION	1980 FSL & 1980 FEL (J)
	Section 9, T-25-S, R-37-E
COUNTY	Lea
STATE	New Mexico
ELEVATIONS: KB	3146
DF	
GL	

COMPLETION RECORD

SPUD DATE	7-24-79 COMP. DATE 8-9-79
TD	3280 PBTD 3250
CASING RECORD	13-3/8 @ 30 w/17
	8-5/8 @ 813 w/450
	5-1/2 @ 3280 w/575
PERFORATING RECORD	2942 - 3082 w/17
STIMULATION	A/5000
	SWF/61,000 + 101,500
IP	IPF = 357 MCFPD
GOR	GR
TP	CP 153
CHOKE	20/64 TUBING 2-3/8 @ 2992
DST RECORD	
REMARKS	

GAS PRODUCTION HISTORY

Date 2-7-80 Page 1 of 2

Operator: Doyle Hartman

Well: El Paso Prichard No. 1

Location: J-9-25-37

Pool: Jalmat (Gas)

Spud Date: Original Completion Date:

Completion Interval (Gas):

Completion Date (Gas): First Production (Gas): 8-79

Remarks: 8-79 First Production.

Year	No. of Mos.	Annual Gas Production (MCF)	Avg. Gas Rate (MCF/mo.)	Cum. Gas Production (MMCF)	Annual SIP (psia)		
~~1979~~	~~5~~	~~52683~~	~~10537~~	~~52.7~~	~~N/A~~		
	(From HARTMAN'S OFFICE)						
1979		40,695		40.695			
1980		107565		148260			
1981		85903		234163			
1982		35887		270.052			

19____ Detail Summary

Jan.		July	
Feb.		Aug.	
March		Sept.	
April		Oct.	
May		Nov.	
June		Dec.	

19 79 Detail Summary

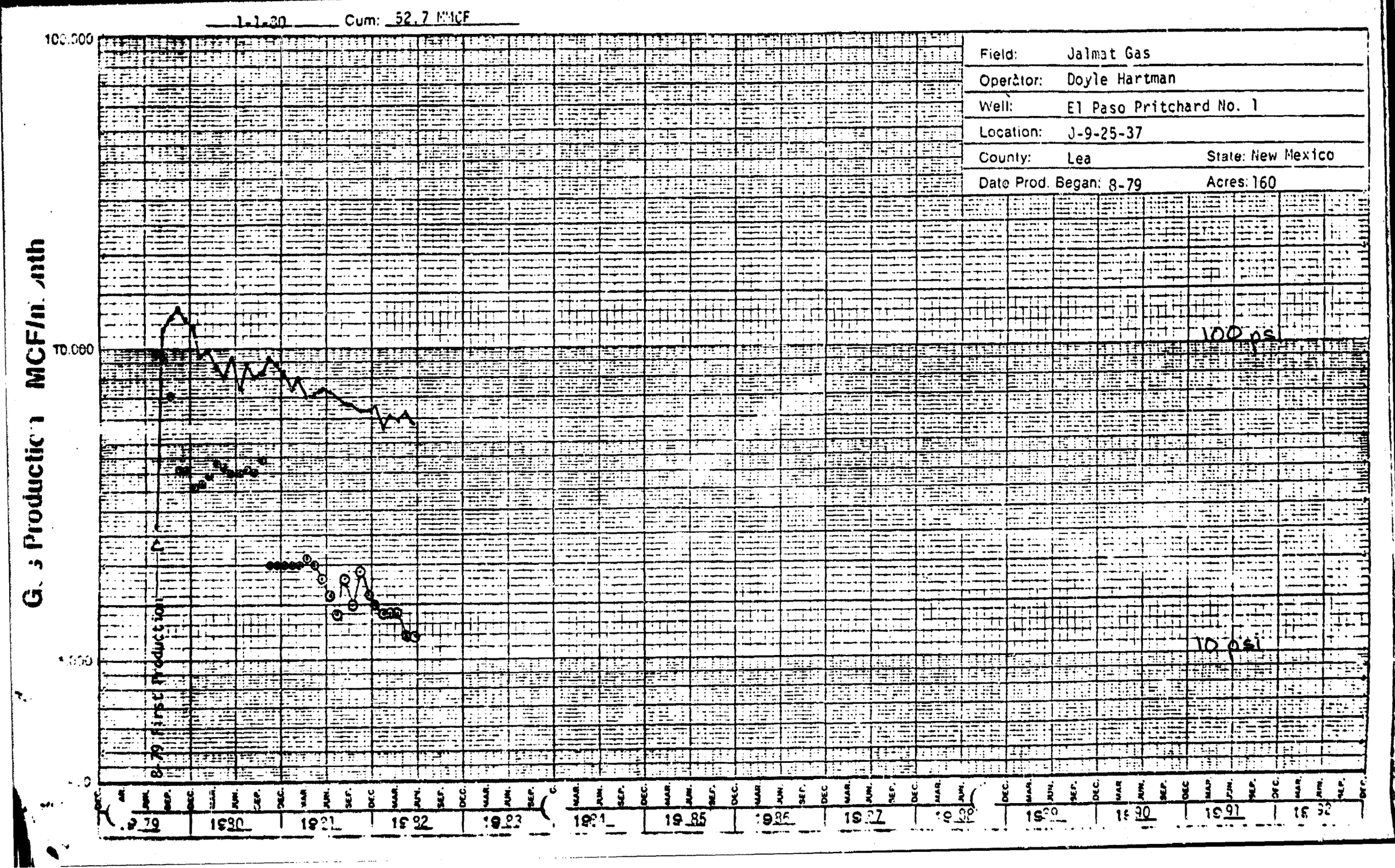
Jan.		July	
Feb.		Aug.	~~2694~~ 2627
March		Sept.	~~11611~~ 5981
April		Oct.	12593 7043
May		Nov.	13498 13161
June		Dec.	12187 11883

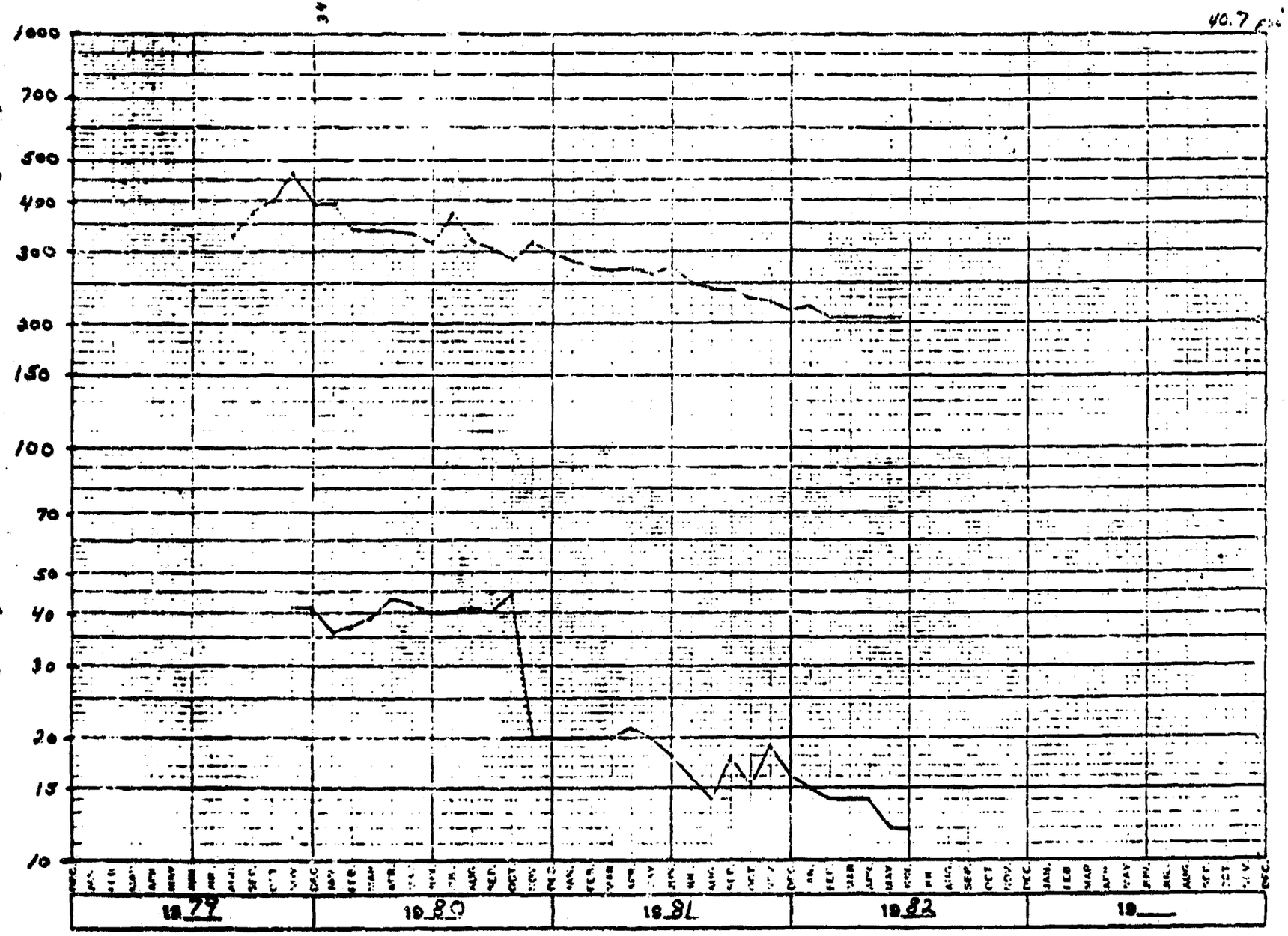
Production (Y-T-D) ~~52683 MCF~~ 40695

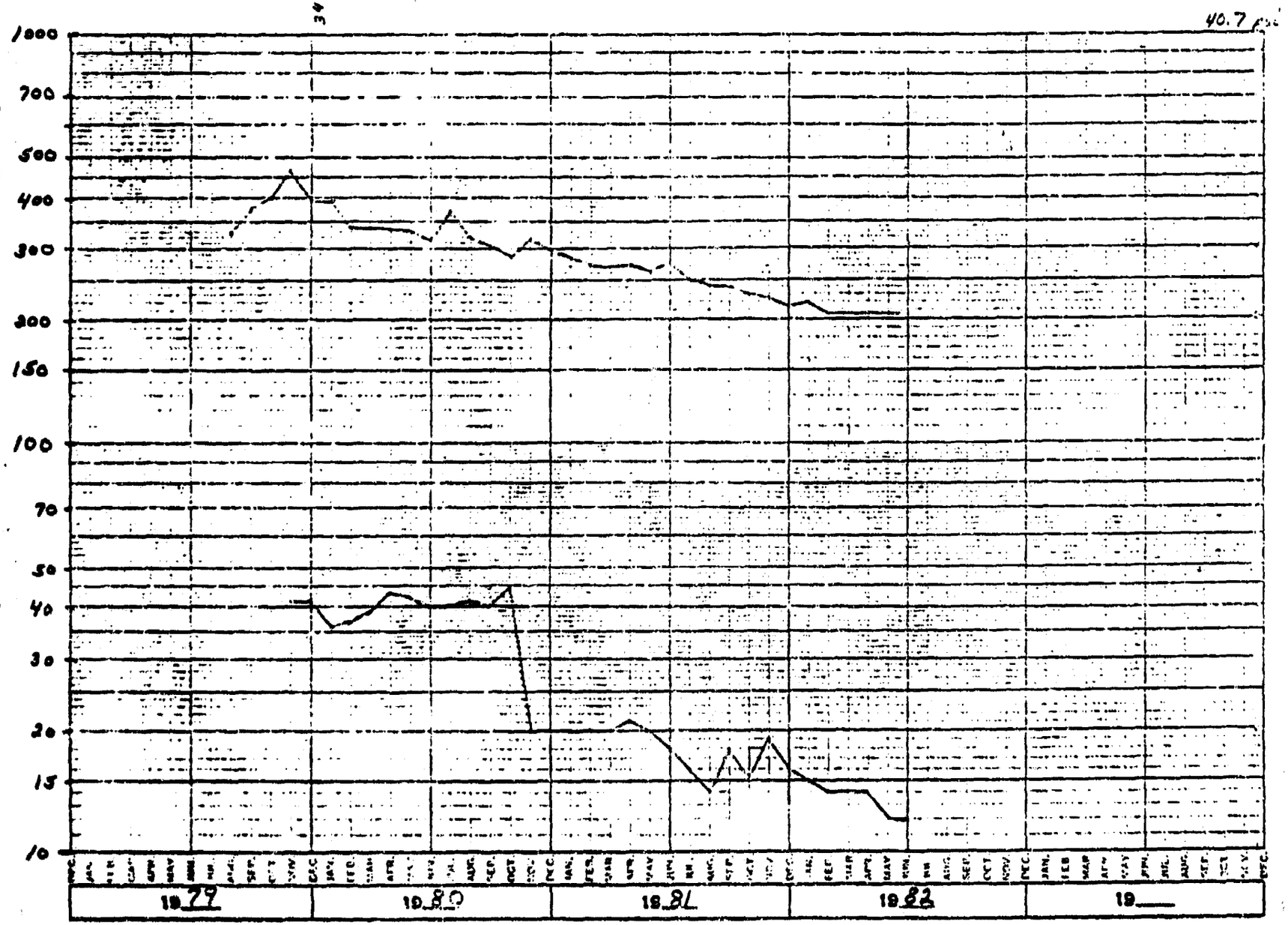
Avg. Rate (Y-T-D) ~~10537 MCF/mo.~~

Days or Months (Y-T-D) 5 mos.

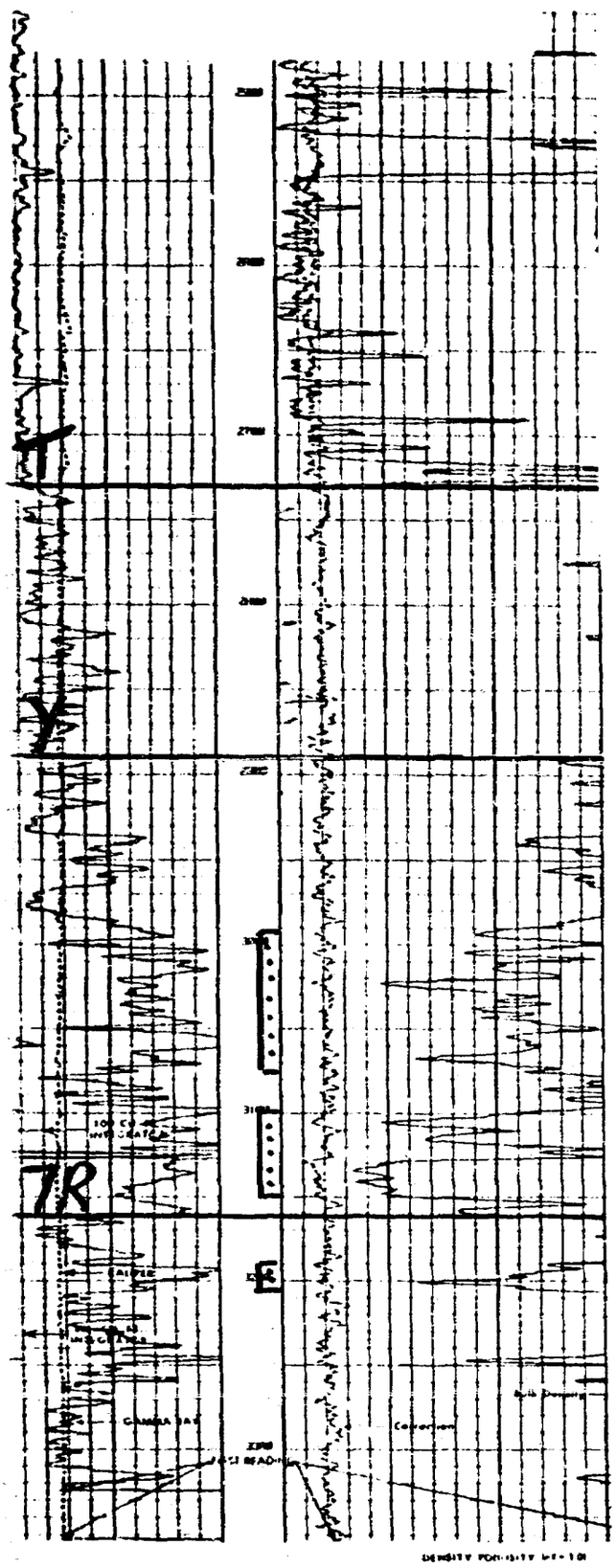
1-1-30 Cum: 52.7 MMCF




PRODUCTION (MCF)
PRESSURE (PSI)
1000
700
500
400
300
200
150
100
70
50
40
30
20
15
10
1979
1980
1981
1982
19___


PRODUCTION (MCF)
PRESSURE (PSI)
1000
700
500
400
300
200
150
100
70
50
40
30
20
15
10
19 79
19 80
19 81
19 82
19 ___

DOYLE HARTMAN
Husky-Woolworth No. 1
M-33-25S-37E



COMPANY Doyle Hartman

WELL Husky-Woolworth No. 1

FIELD Jalmat (Gas)

LOCATION 330 FSL & 430 FWL (M)
Section 33, T-25-S, R-37-E

COUNTY Lea

STATE New Mexico

ELEVATIONS: KB 3262
DF
GL

COMPLETION RECORD

SPUD DATE 9-26-81 COMP. DATE 10-12-81

TD 3550 PBTD 3274

CASING RECORD 9-5/8 @ 412 w/225
7 @ 3350 w/500

PERFORATING RECORD 2993-3202 w/17

STIMULATION A/4500
SWF/72,000 + 158,000

IP IPF = 146 MCFPD

GOR GR

TP CP 73

CHOKE 15/64 TUBING 2-3/8 @ 3246

DST RECORD (8-1/2 x 54 x 1-1/4)

REMARKS

GAS PRODUCTION HISTORY

Date 5-11-82 Page 1 of 1

Operator: Doyle Hartman

Well: Husky-Woolworth No. 1

Location: M-33-24S-37E

Pool: Jalmat (Gas)

Spud Date: 9-26-81 Original Completion Date:

Completion Interval (Gas): 2993-3202

Completion Date (Gas): First Production (Gas): 11-11-81

Remarks:

Year	No. of Mos.	Annual Gas Production (MCF)	Avg. Gas Rate (MCF/mo.)	Cum. Gas Production (MMCF)	Annual SIP (psia)		
1981	2	14362	7181	14.4	N/A		
1982	4	31917	7979	46.3	N/A		

19 81 Detail Summary

Jan.		July	
Feb.		Aug.	
March		Sept.	
April		Oct.	
May		Nov.	5483
June		Dec.	8879

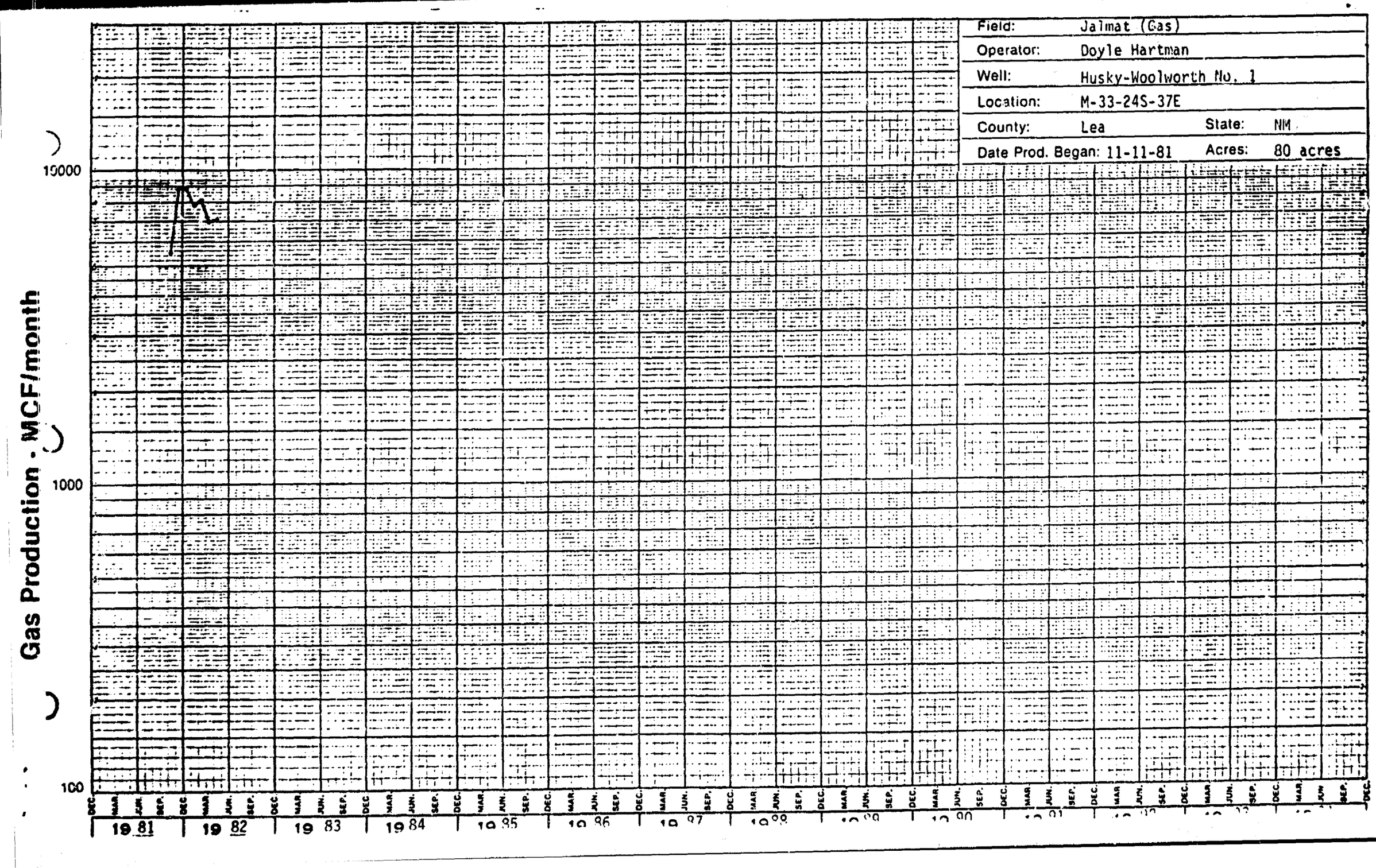
19 82 Detail Summary

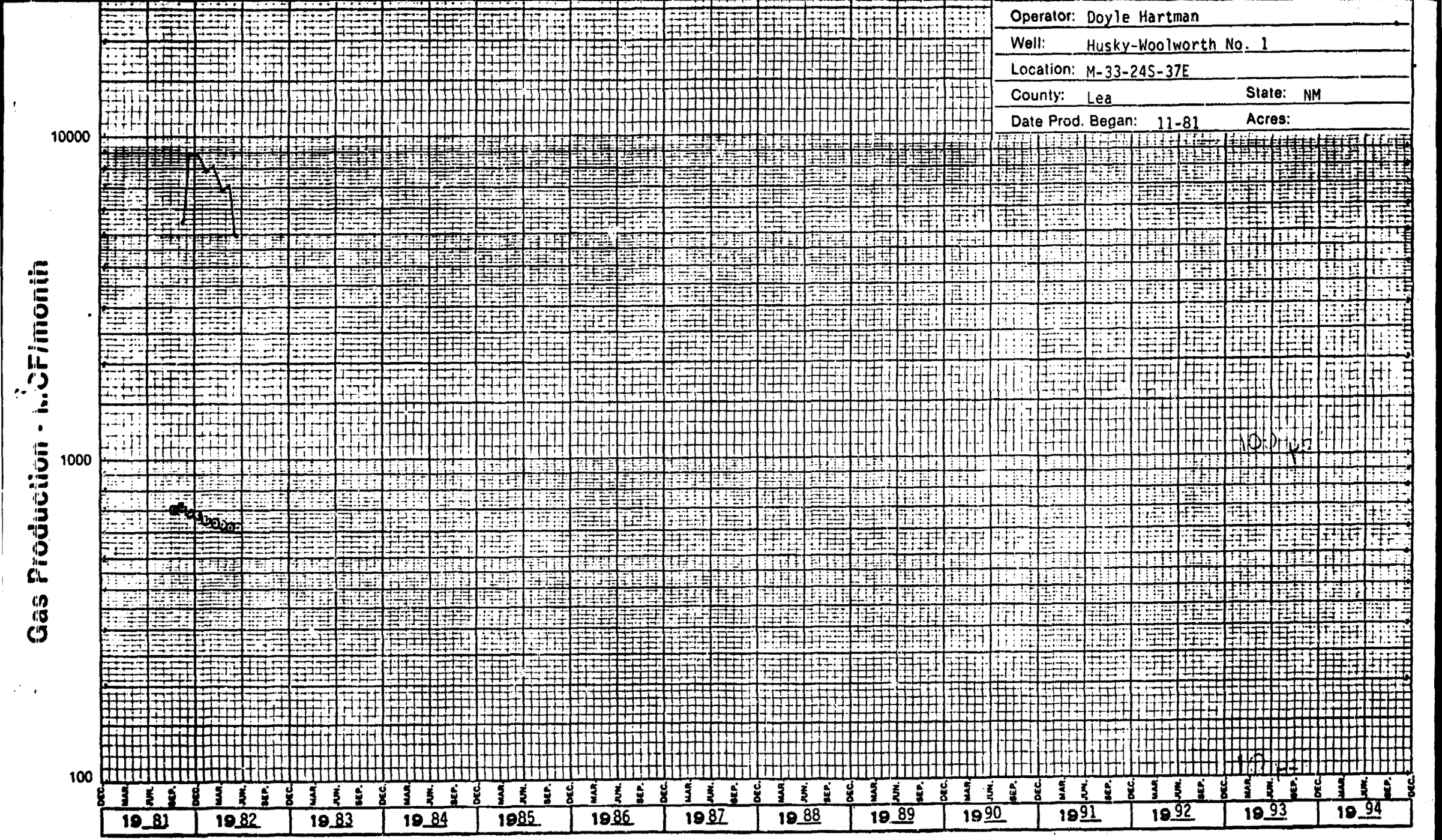
Jan.	8866	July	
Feb.	7883	Aug.	
March	8183	Sept.	
April	6985	Oct.	
May		Nov.	
June		Dec.	

Production (Y-T-D) 31917 MCF Avg. Rate (Y-T-D) 7979 MCF/mo.

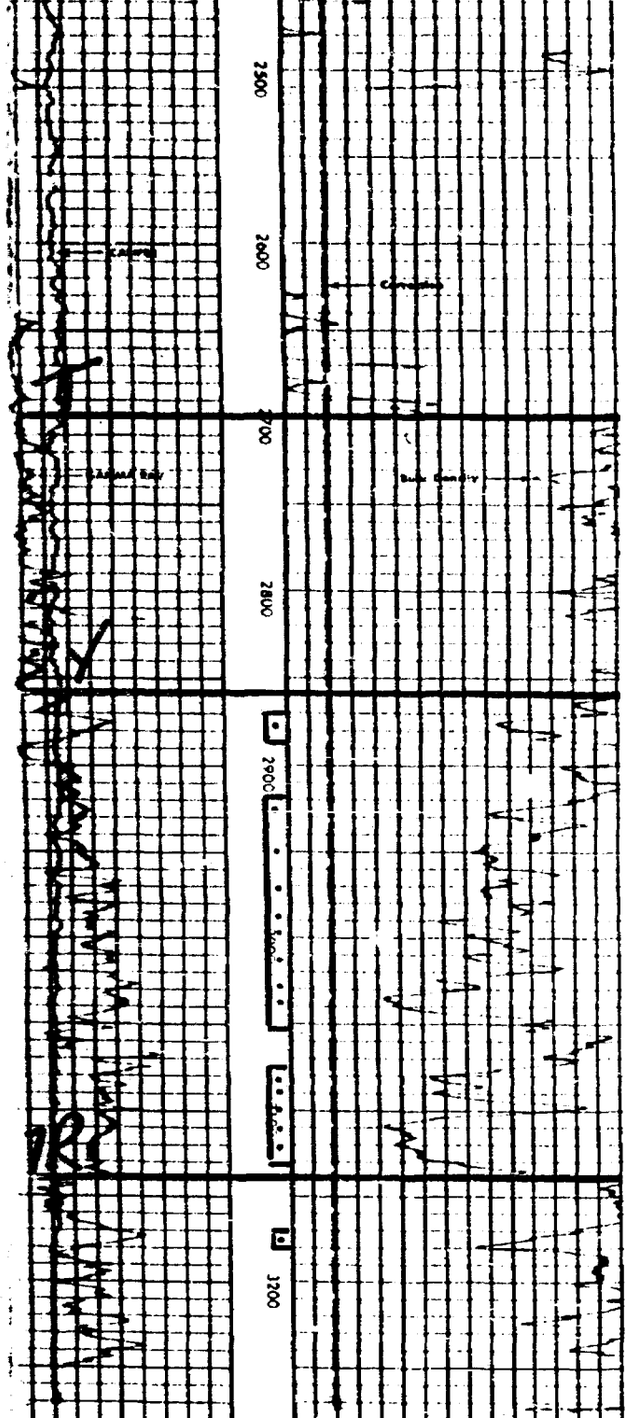
Days or Months (Y-T-D) 4 mos.

M-33-24S-37E


Field: Jalmat (Gas)
Operator: Doyle Hartman
Well: Husky-Woolworth No. 1
Location: M-33-24S-37E
County: Lea
State: NM
Date Prod. Began: 11-11-81
Acres: 80 acres
Gas Production - MCF/month
10000
1000
100
DEC.
MAR.
JUN.
SEP.
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991


Operator: Doyle Hartman
Well: Husky-Woolworth No. 1
Location: M-33-24S-37E
County: Lea
State: NM
Date Prod. Began: 11-81
Acres:
Gas Production - MCF/month
10000
1000
100
DEC. MAR. JUN. SEP.
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994

DOYLE HARTMAN
Langlie Jal Federal No. 1
A-8-25S-37E



COMPANY	Doyle Hartman
WELL	Langlie Jal Federal No. 1
FIELD	Jalmat (Gas)
LOCATION	330 FNL & 330 FEL (A)
	Section 8, T-25-S, R-37-E
COUNTY	Lea
STATE	New Mexico
ELEVATIONS: KB	3209
DF	
GL	

COMPLETION RECORD

SPUD DATE	4-2-77	COMP. DATE	4-19-77
TD	3274	PBTD	3244
CASING RECORD	8-5/8 @ 824 w/575		
	4-1/2 @ 3274 w/950		
PERFORATING RECORD	2875-3177 w/15		
STIMULATION	A/4000		
	SWF/50,000 + 90,000		
IP	IPF= 374 MCFPD		
GOR		GR	
TP		CP	110
CHOKE	24/64 TUBING 2-3/8	@	2966
DST RECORD			
REMARKS			

GAS PRODUCTION HISTORY

Date 12-5-79 Page 1 of 2

Operator: Doyle Hartman

Well: Langlie Jal Fed. No. 1

Location: A-8-25-37

Pool: Jalmat Gas

Spud Date: Original Completion Date:

Completion Interval (Gas):

Completion Date (Gas): First Production (Gas):

Remarks: 4-77 First Production

Year	No. of Mos.	Annual Gas Production (MCF)	Avg. Gas Rate (MCF/mo.)	Cum. Gas Production (MMCF)	Annual SIP (psia)
1979	12	154955	12913	482.6	N/A
1978	12	159999	13333	327.7	112.2
1977	9	167734	18637	167.7	N/A

19 78 Detail Summary

Jan.	18903	July	13029
Feb.	15189	Aug.	14339
March	16492	Sept.	10957
April	16013	Oct.	7705
May	14751	Nov.	8528
June	14765	Dec.	9328

19 79 Detail Summary

Jan	10065	July	14539
Feb.	8771	Aug.	13713
March	12507	Sept.	13102
April	14445	Oct.	14111
May	12017	Nov.	14003
June	13267	Dec.	14415

Production (Y-T-D) 154955 MCF

Avg. Rate (Y-T-D) 12913 MCF/mo.

Days or Months (Y-T-D) 12 mos.

GAS PRODUCTION HISTORY

Date 12-12-80 Page 2 of 2

Operator: Doyle Hartman

Well: Langlie Jal Fed. No. 1

Location: A-8-25-37

Pool: Jalmat (Gas)

Spud Date: Original Completion Date:

Completion Interval (Gas):

Completion Date (Gas): First Production (Gas):

Remarks: First Production 4-77.

Year	No. of Mos.	Annual Gas Production (MCF)	Avg. Gas Rate (MCF/mo.)	Cum. Gas Production (MMCF)	Annual SIP (psia)		
1980	11	140258	12751	622.9	N/A		
1981		151519		634207			
1982		38622					

19 80 Detail Summary

Jan.	14000	July	11141
Feb.	13244	Aug.	12281
March	13964	Sept.	12129
April	13918	Oct.	12822
May	12656	Nov.	12159
June	11944	Dec.	11261

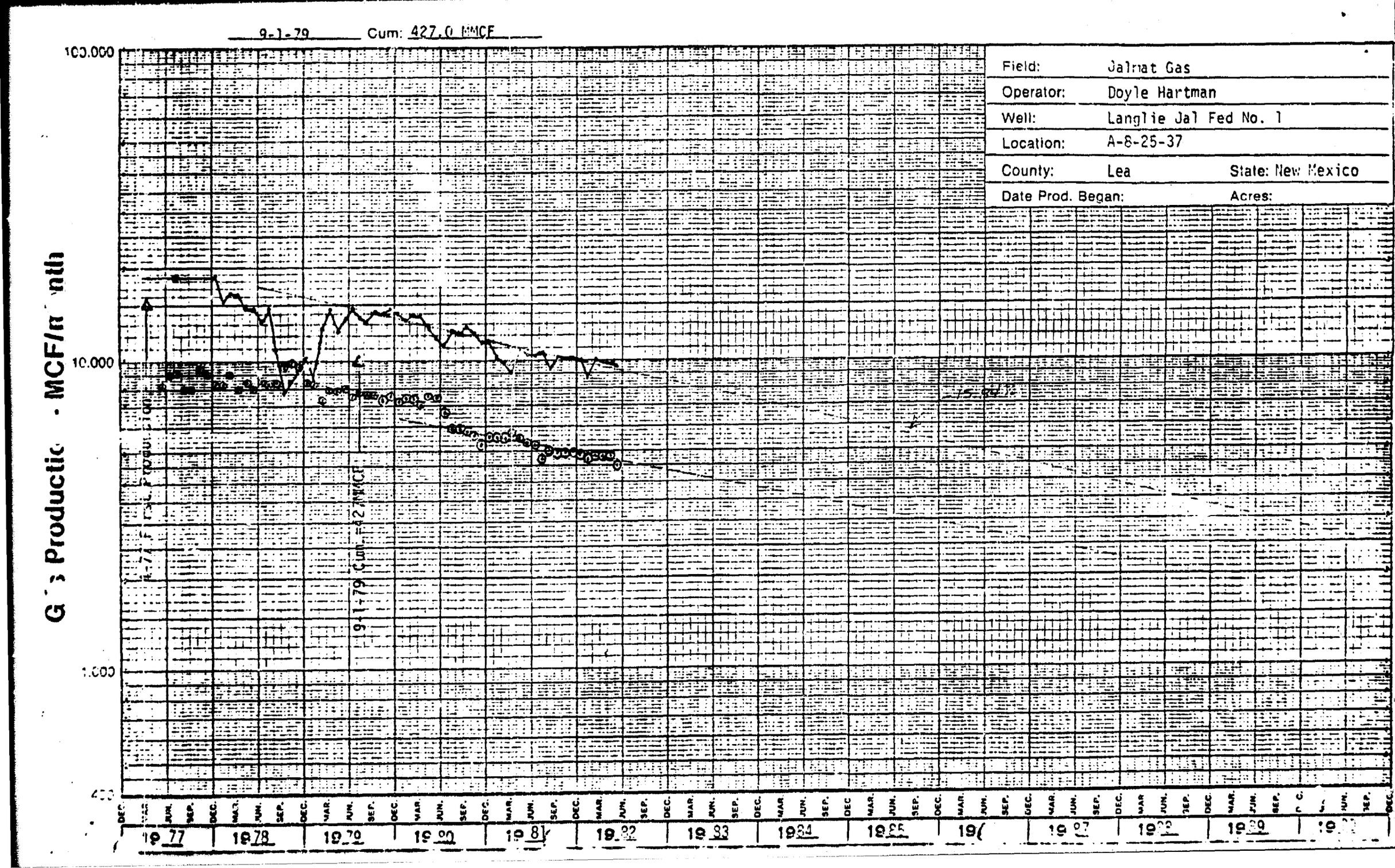
19 Detail Summary

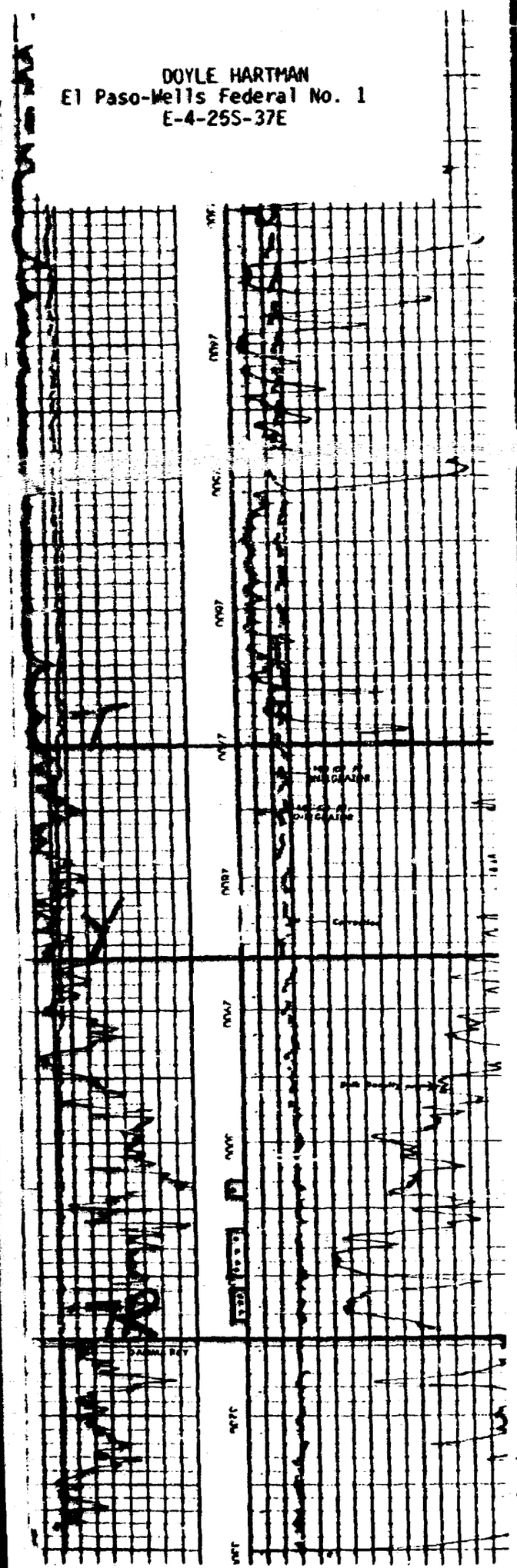
Jan.		July	
Feb.		Aug.	
March		Sept.	
April		Oct.	
May		Nov.	
June		Dec.	

Production (Y-T-D) 140258 MCF Avg. Rate (Y-T-D) 12751 MCF/mo.

Days or Months (Y-T-D) 11 mos.

9-1-79 Cum: 427.0 MMCF





COMPANY Doyle Hartman

WELL El Paso-Wells Federal No. 1

FIELD Jalmat (Gas)

LOCATION 1980 FNL & 660 FWL (E)
Section 4, T-25-S, R-37-E

COUNTY Lea

STATE New Mexico

ELEVATIONS: KB 3230
DF
GL 3220

COMPLETION RECORD

SPUD DATE 8-25-80 COMP. DATE 9-15-80

TD 3304 PBTD 3278

CASING RECORD 8 5/8 @ 431 w/300
5 1/2 @ 3304 w/600

PERFORATING RECORD Perf: 3036-3133 w/16
(Yates)

STIMULATION A/4000
SWF/60,000 + 127,000

IP IPF= 326 MCFPD

GOR GR

TP CP 69

CHOKE 28/64 TUBING @

DST RECORD

REMARKS NOTE: El Paso Natural Gas Co.'s Wells "B-4" No. 1 located D-4-25-37 was the previous Jalmat (Gas) well located on the 150-acre proration unit consisting of NW/4 Section 4. The Wells "B-4" No. was abandoned in the Jalmat and recompleted to Langlie Mattix 3-21-72.

GAS PRODUCTION HISTORY

Date 12-15-80 Page 1 of 1

Operator: Doyle Hartman

Well: El Paso Wells Federal No. 1

Location: E-4-25-37

Pool: Jalmat (Gas)

Spud Date: Original Completion Date:

Completion Interval (Gas):

Completion Date (Gas): First Production (Gas):

Remarks: First Production 10-80.

Year	No. of Mos.	Annual Gas Production (MCF)	Avg. Gas Rate (MCF/mo.)	Cum. Gas Production (MMCF)	Annual SIP (psia)		
1980	2	21756	10878	21.8	N/A		
1981	12	101343					
1982	2	21743		144.842			
		LAST PROD. 2-82					

19 80 Detail Summary

Jan.		July	
Feb.		Aug.	
March		Sept.	
April		Oct.	10647
May		Nov.	11109
June		Dec.	

19 Detail Summary

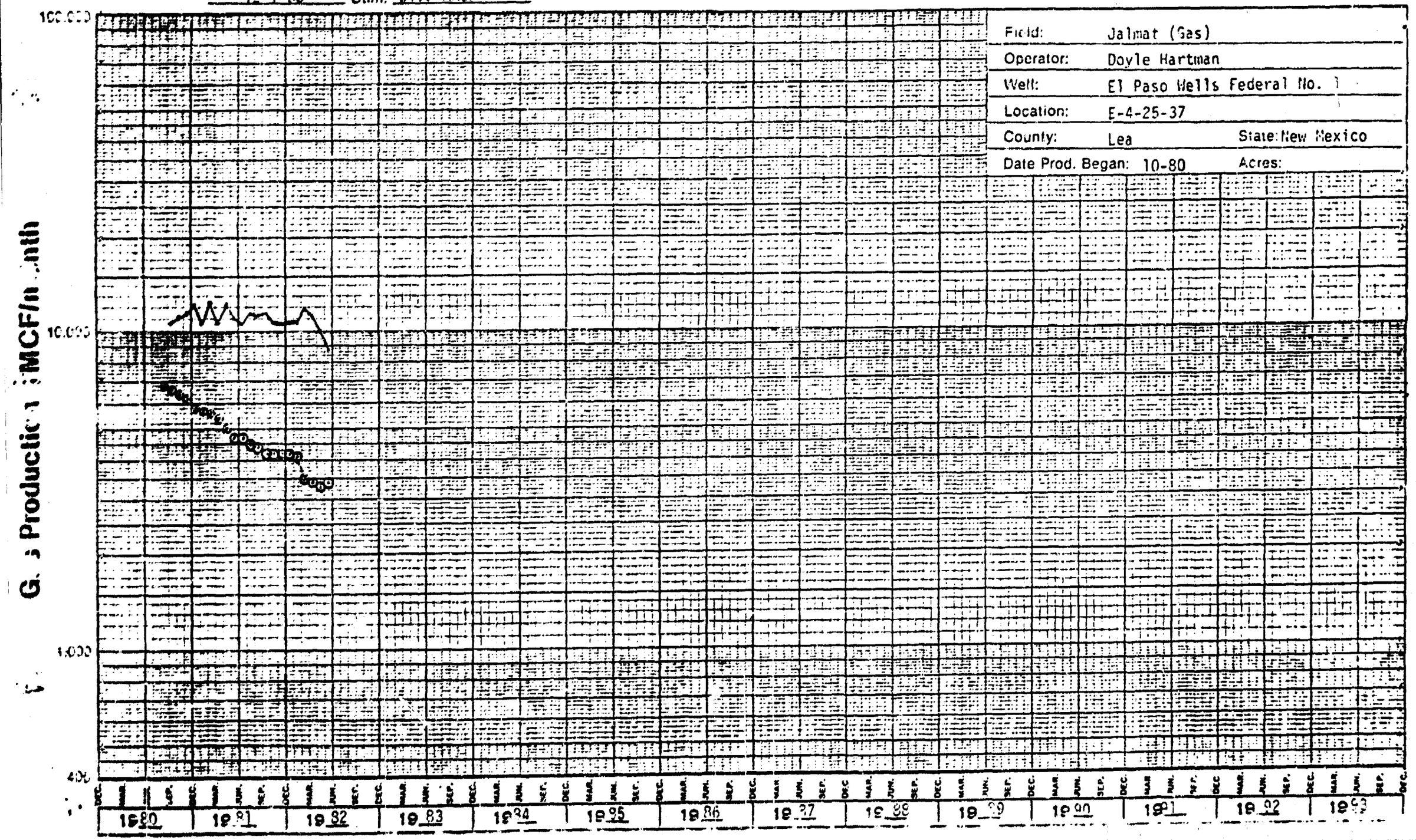
Jan.		July	
Feb.		Aug.	
March		Sept.	
April		Oct.	
May		Nov.	
June		Dec.	

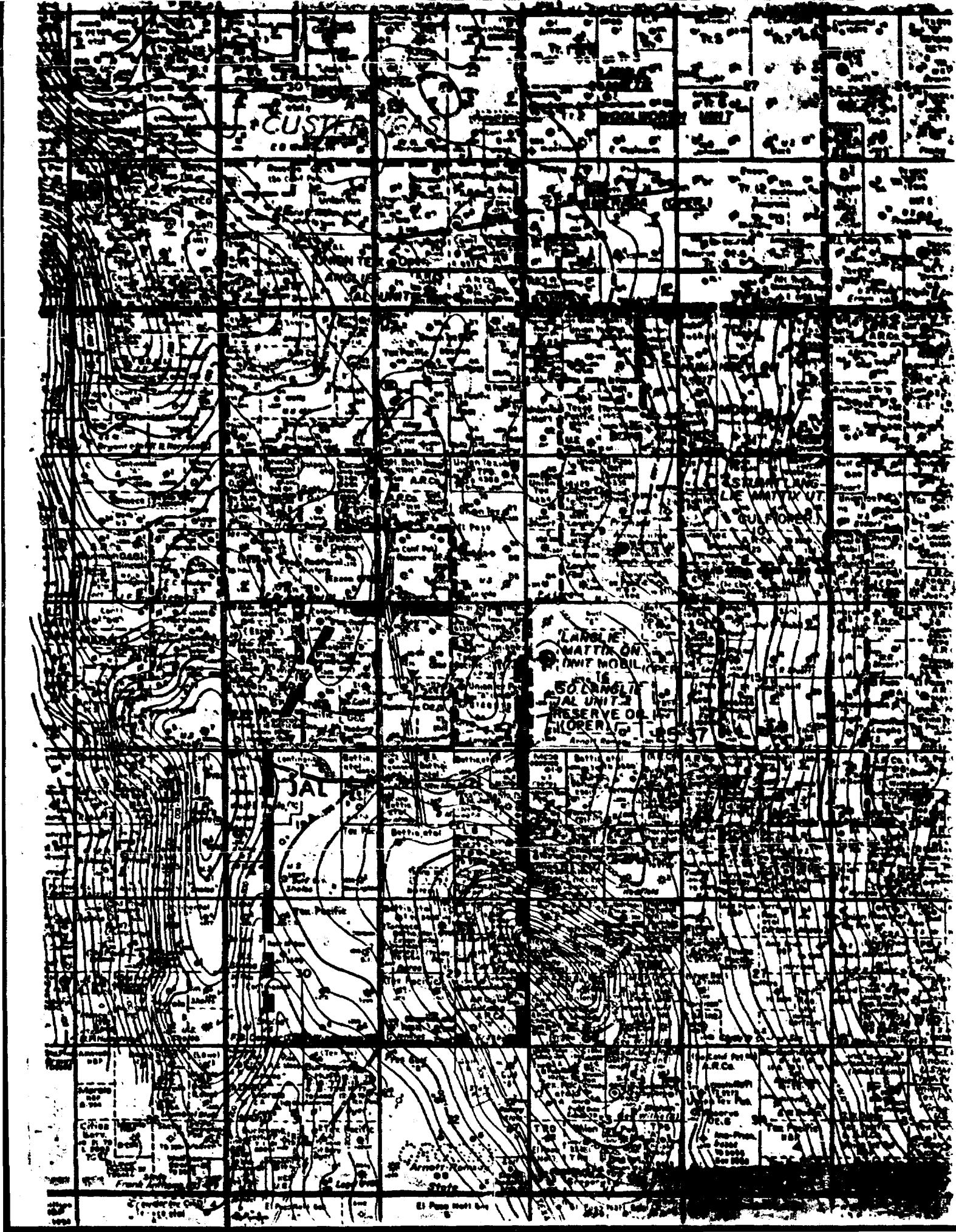
Production (Y-T-D) 21756 MCF

Avg. Rate (Y-T-D) 10878 MCF/mo.

Days or Months (Y-T-D) 2 mos.

12-1-80 Cum: 21.8 MMCF




CUSTER
JAL
LANGLIE
MATTIX ON
UNIT MOBIL
16
50 LANGLIE
AL UNIT 2
RESERVE OF
(LOWER)
ESTAMPLING
LIE MATTIX UT
GU (LOWER)

DOYLE HARTMAN
Oil Operator
500 N. MAIN
P. O. BOX 10426
MIDLAND, TEXAS 79702
(915) 684-4011

BEFORE EXAMINER STAMETS
OIL CONSERVATION DIVISION
EXHIBIT NO. 3
CASE NO. 7629
Submitted by Doyle Hartman
Hearing Date 8/4/82

July 27, 1982

Gulf Oil Exploration & Production Co.
Post Office Box 1150
Midland, Texas 79702

Attention: Mr. Charles F. Kalteyer

Re: Case 7629
NMOCD Docket 25-82
for August 4, 1982

Gentlemen:

Reference is made to the above noted NMOCD case wherein Gulf requests permission to dispose of salt water into the "Yates and Seven Rivers Formation" in its Arnott-Ramsay (NCT-E) No. 5 Well located in Unit E, Section 16, T-25-S, R-37-E, Lea County, New Mexico.

We fully understand the problem that an operator has in disposing of salt water and are very sympathetic with Gulf regarding this situation.

The problem however presented by Gulf's proposed application before the NMOCD is that the proposed injection zone is commercially productive of gas. We believe that to inject water into this zone would create waste and not be in the interest of conservation. Furthermore, we operate an offset 160 acre Jalmat proration being the SE/4 of Section 9, T-25-S, R-37-E (Doyle Hartman No.1 Prichard).

As an alternative solution in this matter, we would like to propose the following:

1) Gulf to farmout its Jalmat (Yates-Seven Rivers) zone in the N/2 of Section 16, T-25-S, R-37-E. Doyle Hartman to drill a 3400' Jalmat (Yates-Seven Rivers) "Infill" well on the above tract with Gulf to retain 1/8 of 8/8 override absorbing all present royalty and burdens out of this override so that the operator would be assigned a 75% net revenue interest;

2) As additional consideration for the farmout, Doyle Hartman at his risk and expense to deepen the above noted Gulf Arnott-Ramsay (NCT-E) No. 5 well to the lower Langlie Mattix zone for Gulf's use as a water disposal well.

Our proposed solution to this problem would prevent waste of a scarce natural resource as well as provide Gulf with a means of disposing of produced water from its lease.

Thank you for your consideration and please let us hear from you.

Very truly yours,

DOYLE HARTMAN

DH/be

cc: Mr. Joe D. Ramey
New Mexico Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Mr. Richard L. Stamets
New Mexico Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

Mr. Larry Turner
Vice President
Gulf Oil Exploration & Production Co.
Post Office Box 1150
Midland, Texas 79702

Mr. David H. Messer
Division Landman
Gulf Oil Exploration & Production Co.
Post Office Box 1150
Midland, Texas 79702

Mr. Wm. P. Aycock
308 Wall Towers West
Midland, Texas 79701

Mr. Wm. F. Carr
Attorney at Law
Post Office Box 2208
Santa Fe, New Mexico 87501

Dockets Nos. 26-82 and 27-82 are tentatively set for August 18 and September 1, 1982. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 4, 1982
9 A.M. - MORGAN HALL, OIL CONSERVATION DIVISION
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 7627: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Sandi Production, Inc., United States Fidelity and Guaranty Company and other interested parties to appear and show cause why the El Poco Well No. 1 located in Unit L, Section 26, and the Pound Ranch C Well No. 14 located in Unit C, Section 14, both in Township 28 North, Range 1 East, Rio Arriba County, should should not be plugged and abandoned in accordance with a Division-approved plugging program.

CASE 7628: Application of Wiser Oil Company for an unorthodox well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a Penrose-Skelly oil well to be drilled 1345 feet from the South line and 660 feet from the West line of Section 32, Township 21 South, Range 37 East, the NW/4 SW/4 of said Section 32 to be dedicated to the well.

CASE 7629: Application of Gulf Oil Corporation for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Yates and Seven Rivers formation in the open hole interval from 3169 feet to 3385 feet in its Arnott-Ramsay (NCT-E) Well No. 5, located in Unit E, Section 16, Township 25 South, Range 37 East, Jalmat Pool.

CASE 7630: Application of Ralph Nix for an oil treating plant permit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority for the construction and operation of an oil treating plant for the purpose of treating and reclaiming sediment oil at a site in the SW/4 NE/4 of Section 18, Township 19 South, Range 26 East.

CASE 7631: Application of Merrion Oil & Gas Corporation for a non-standard proration unit, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 160-acre non-standard proration unit comprising the N/2 SE/4 and SW/4 SE/4 of Section 5 and the NW/4 NE/4 of Section 8, Township 23 North, Range 6 West, Nageezi-Gallup Area.

CASE 7632: Application of Aztec Energy Corporation for a non-standard proration unit, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 160-acre non-standard proration unit comprising the SE/4 SE/4 of Section 5, and the E/2 NE/4 and SW/4 NE/4 of Section 8, Township 23 North, Range 6 West, Nageezi-Gallup Area.

CASE 7458: (Continued from June 23, 1982, Examiner Hearing)

Application of Marks & Garner Production Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of salt water into the Bough C formation in the perforated interval from 9596 feet to 9616 feet in its Batenbough Well No. 2, located in Unit N of Section 12, Township 9 South, Range 35 East.

CASE 7620: (Continued from July 21, 1982, Examiner Hearing)

Application of Mesa Petroleum Company for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in all formations from the surface through the base of the Abo formation underlying the SW/4 of Section 8, Township 5 South, Range 25 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 7633: Application of T. H. McElvain, Jr. for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface through the base of the Abo formation underlying the SW/4 of Section 8, Township 5 South, Range 25 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 7634: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating, abolishing, and extending certain pools in Chaves, Eddy, Lea, and Roosevelt Counties, New Mexico.

(a) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Atoka production and designated as the West Indian Flats-Atoka Gas Pool. The discovery well is the Perry R. Bass Big Eddy Unit Well No. 79Y located in Unit J of Section 21, Township 21 South, Range 28 East, NMPM. Said pool would comprise:

TOWNSHIP 21 SOUTH, RANGE 28 EAST, NMPM
Section 21: E/2

(b) CREATE a new pool in Roosevelt County, New Mexico, classified as an oil pool for San Andres production and designated as the South Bluitt-San Andres Pool. The discovery well is the Ike Lovelady, Inc. Lignum Well No. 1 located in Unit A of Section 35, Township 8 South, Range 37 East, NMPM. Said pool would comprise:

TOWNSHIP 8 SOUTH, RANGE 37 EAST, NMPM
Section 35: NE/4

(c) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Permo-Pennsylvanian production and designated as the Boyd Permo-Pennsylvanian Gas Pool. The discovery well is Yates Petroleum Corporation Rio Pecosco MF Federal Com Well No. 1 located in Unit F of Section 11, Township 19 South, Range 25 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 25 EAST, NMPM
Section 2: S/2
Section 3: E/2
Section 11: N/2

(d) CREATE a new pool in Chaves County, New Mexico, classified as a gas pool for Pre-Permian production and designated as the Foor Ranch Pre-Permian Gas Pool. The discovery well is Plains Radio Broadcasting Camel Well No. 1 located in Unit F of Section 7, Township 9 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 9 SOUTH, RANGE 26 EAST, NMPM
Section 1: E/2
Section 12: E/2
Section 13: All

TOWNSHIP 9 SOUTH, RANGE 27 EAST, NMPM
Section 7: W/2
Section 18: W/2

(e) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Yates and Seven Rivers production and designated as the House Yates-Seven Rivers Gas Pool. The discovery well is the MGF Oil Corporation J. Wright Well No. 1 located in Unit D of Section 5, Township 20 South, Range 39 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 39 EAST, NMPM
Section 31: SE/4
Section 32: SW/4

TOWNSHIP 20 SOUTH, RANGE 39 EAST, NMPM
Section 5: NW/4

(f) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Wolfcamp production and designated as the Pollock-Wolfcamp Pool. Further, to assign approximately 46,910 barrels of discovery allowable to the discovery well, the Reading and Bates Company Dickinson Cattle Company 33 Well No. 1 located in Unit N of Section 33, Township 14 South, Range 38 East, NMPM. Said pool would comprise:

TOWNSHIP 14 SOUTH, RANGE 38 EAST, NMPM
Section 33: SW/4

(g) CREATE a new pool in Lea County, New Mexico, classified as a gas pool for Wolfcamp production and designated as the West Red Hills-Wolfcamp Gas Pool. The discovery well is the BTA Oil Producers Mesa 8105 JV-P Well No. 1 located in Unit I of Section 1, Township 26 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 26 SOUTH, RANGE 32 EAST, NMPM
Section 1: E/2

(h) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Abo production and designated as the Townsend-Abo Pool. The discovery well is the Charles B. Gillespie, Jr. Exxon Townsend Well No. 1 located in Unit B of Section 9, Township 16 South, Range 35 East, NMPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM
Section 9: NE/4

(i) ABOLISH the East Tannehill-Cisco Pool in Roosevelt County, New Mexico, as heretofore classified, defined, and described:

TOWNSHIP 6 SOUTH, RANGE 34 EAST, NMPM
Section 8: SE/4

(j) EXTEND the Bluitt-San Andres Associated Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 37 EAST, NMPM
Section 23: E/2

(k) EXTEND the Carson-Morrow Gas Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 31 EAST, NMPM
Section 3: S/2

(l) EXTEND the Crow Flats-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 28 EAST, NMPM
Section 31: W/2

(m) EXTEND the Empire-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 28 EAST, NMPM
Section 3: S/2

(n) EXTEND the High Lonesome-Queen Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 29 EAST, NMPM
Section 19: SE/4 NE/4

(o) EXTEND the North Loving-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM
Section 7: W/2
Section 18: All
Section 19: W/2
Section 30: W/2

(p) EXTEND the West Madina-Blinebry Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM
Section 5: NW/4
Section 8: SW/4

(q) EXTEND the Pecos Slope-Abo Gas Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 4 SOUTH, RANGE 24 EAST, NMPM
Section 26: W/2

TOWNSHIP 5 SOUTH, RANGE 24 EAST, NMPM
Section 3: E/2

TOWNSHIP 6 SOUTH, RANGE 24 EAST, NMPM
Section 15: All
Section 16: All
Section 17: All
Section 18: E/2

TOWNSHIP 7 SOUTH, RANGE 26 EAST, NMPM
Section 27: All
Section 33: All
Section 34: All

TOWNSHIP 8 SOUTH, RANGE 25 EAST, NMPM
Section 13: S/2

TOWNSHIP 8 SOUTH, RANGE 26 EAST, NMPM
Section 3: All
Section 4: All
Section 5: All
Section 6: E/2

(r) EXTEND the South Peterson-Pennsylvanian Associated Pool in Roosevelt County, New Mexico, to include therein:

TOWNSHIP 6 SOUTH, RANGE 34 EAST, NMPM
Section 7: S/2
Section 8: S/2

(s) EXTEND the West Sawyer-San Andres Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 37 EAST, NMPM
Section 32: SW/4

(t) EXTEND the Square Lake Grayburg-San Andres Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 30 EAST, NMPM
Section 11: S/2

(u) EXTEND the Tomahawk-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 7 SOUTH, RANGE 31 EAST, NMPM
Section 36: NE/4

TOWNSHIP 8 SOUTH, RANGE 31 EAST, NMPM
Section 1: N/2

(v) EXTEND the Turkey Track-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 29 EAST, NMPM
Section 3: N/2

(w) EXTEND the Twin Lakes-San Andres Associated Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 9 SOUTH, RANGE 28 EAST, NMPM
Section 12: SE/4

TOWNSHIP 9 SOUTH, RANGE 29 EAST, NMPM
Section 18: N/2

(x) EXTEND the Willow Lakes-Bone Spring Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 28 EAST, NMPM
Section 32: N/2 N/2
Section 33: N/2 NW/4

ARCO Oil and Gas Company
Permian District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 684 0100

August 2, 1982

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention Mr. Joe D. Ramey

Dear Sir:

Gulf Exploration and Production Company
Arnott Ramsey (NCT-E) #5 SWD

ARCO Oil and Gas Company has been advised that Gulf Oil Company has applied for approval to dispose of salt water into the subject well, which is located 1980' FNL and 550' FWL of Section 16, T-25-S, R-37-E, Lea County, New Mexico.

ARCO is the operator of Woolworth WN #1, a Jalmat, Yates, gas well located approximately 1400' NW of Gulf's well. Production from this well is 1 BOPD plus 110 MCFPD through perforations 2963'-3120' and open hole 3199'-3217'. Since Gulf plans to inject into open hole 3159'-3385', the open hole section in Woolworth WN #1 will be open in both wells, and may lead to early intrusion of water into the wellbore with resulting loss of reserves in the ground. ARCO's Woolworth WN #1 is located 990' FNL and 330' FEL, Section 17, T-25-S, R-37-E, Lea County, New Mexico.

It is not ARCO's wish to prevent Gulf from disposing of salt water into their well, so we respectfully request that the following provisions be made part of the approval to inject salt water:

1. In the event water production increases in ARCO's Woolworth WN #1, Gulf Exploration and Production Company will immediately stop injection into their Arnott Ramsey (NCT-E) #5 and will cooperate with ARCO to determine if the source of the water is Gulf's well.

2. If the source of the water is determined to be Gulf's Arnott Ramsey No. 5, Gulf will not resume injection until the cause of the water breakthrough has been corrected.

Yours very truly,

B. L. Stokely

B. L. Stokely
Senior Engineer

BLS:dmm

Diagrammatic Sketch Showing

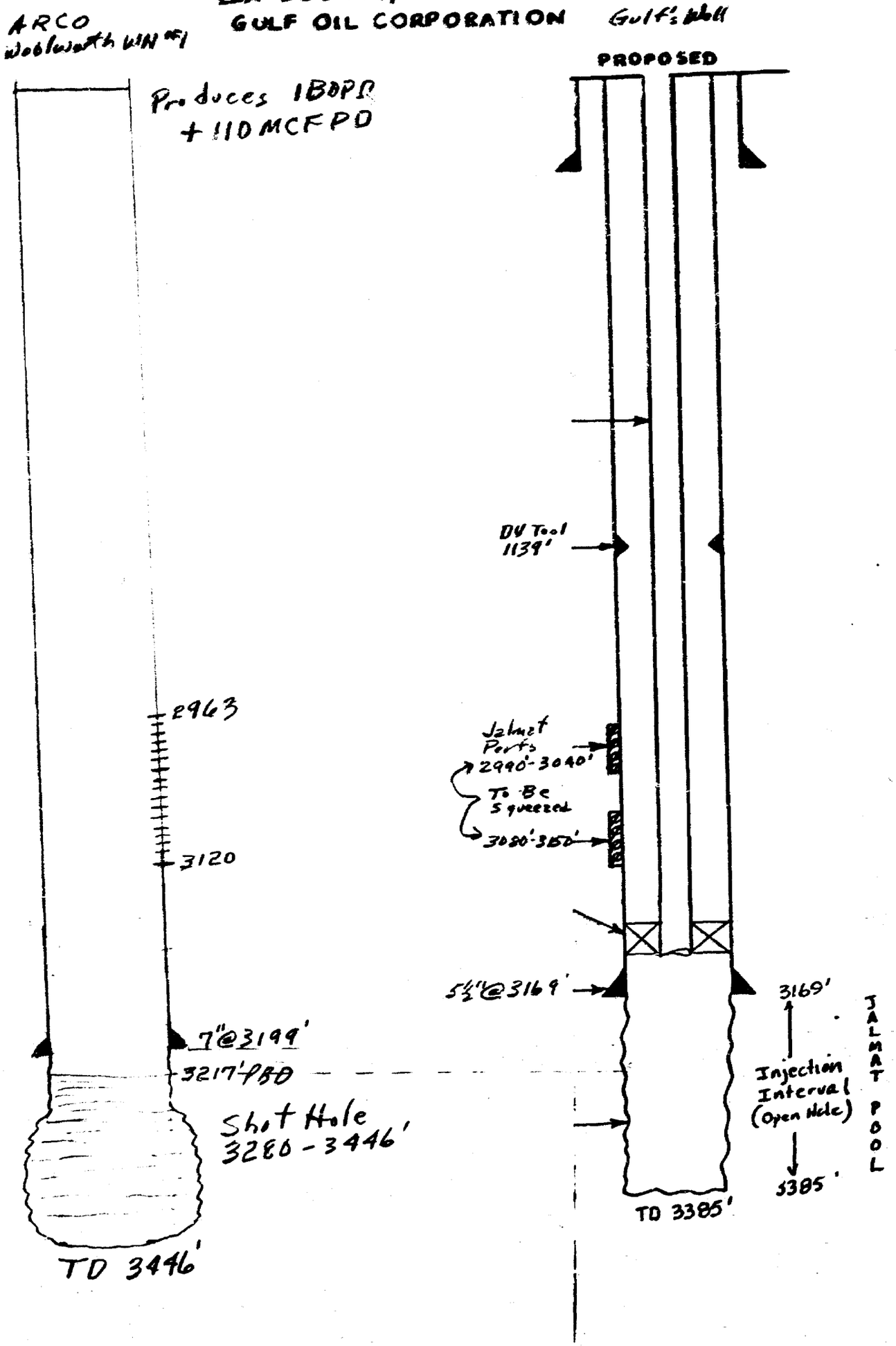
PRESENT & PROPOSED INSTALLATION

ARNOTT RAMSAY (NCT-E) WELL NO. 5 SWD

UNIT E, SEC. 16, T-25-S, R-37-E

LEA COUNTY, NEW MEXICO

GULF OIL CORPORATION



DOYLE HARTMAN
Oil Operator
500 N. MAIN
P. O. BOX 10426
MIDLAND, TEXAS 79702
(915) 684-4011

July 27, 1982

Gulf Oil Exploration & Production Co.
Post Office Box 1150
Midland, Texas 79702

Attention: Mr. Charles F. Kalteyer

Re: Case 7629
NMOCD Docket 25-82
for August 4, 1982

Gentlemen:

Reference is made to the above noted NMOCD case wherein Gulf requests permission to dispose of salt water into the "Yates and Seven Rivers Formation" in its Arnott-Ramsay (NCT-E) No. 5 Well located in Unit E, Section 16, T-25-S, R-37-E, Lea County, New Mexico.

We fully understand the problem that an operator has in disposing of salt water and are very sympathetic with Gulf regarding this situation.

The problem however presented by Gulf's proposed application before the NMOCD is that the proposed injection zone is commercially productive of gas. We believe that to inject water into this zone would create waste and not be in the interest of conservation. Furthermore, we operate an offset 160 acre Jalmat proration being the SE/4 of Section 9, T-25-S, R-37-E (Doyle Hartman No.1 Prichard).

As an alternative solution in this matter, we would like to propose the following:

1) Gulf to farmout its Jalmat (Yates-Seven Rivers) zone in the N/2 of Section 16, T-25-S, R-37-E. Doyle Hartman to drill a 3400' Jalmat (Yates-Seven Rivers) "Infill" well on the above tract with Gulf to retain 1/8 of 8/8 overrride absorbing all present royalty and burdens out of this override so that the operator would be assigned a 75% net revenue interest;

2) As additional consideration for the farmout, Doyle Hartman at his risk and expense to deepen the above noted Gulf Arnott-Ramsay (NCT-E) No. 5 well to the lower Langlie Mattix zone for Gulf's use as a water disposal well.

Our proposed solution to this problem would prevent waste of a scarce natural resource as well as provide Gulf with a means of disposing of produced water from its lease.

Thank you for your consideration and please let us hear from you.

Very truly yours,

DOYLE HARTMAN

DH/be

cc: Mr. Joe D. Ramey
New Mexico Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

Mr. Richard L. Stamets
New Mexico Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

Mr. Larry Turner
Vice President
Gulf Oil Exploration & Production Co.
Post Office Box 1150
Midland, Texas 79702

Mr. David H. Messer
Division Landman
Gulf Oil Exploration & Production Co.
Post Office Box 1150
Midland, Texas 79702

Mr. Wm. P. Aycock
308 Wall Towers West
Midland, Texas 79701

Mr. Wm. F. Carr
Attorney at Law
Post Office Box 2208
Santa Fe, New Mexico 87501

RECEIVED

Jul 30 10 17 AM '82

STATE
SANTA

Waiver

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Attention: Mr. Joe D. Ramey, Director

Gentlemen:

This is to advise that the undersigned has been given due notice that Gulf Oil Corporation is making Application for Authorization to Inject into its Arnott-Ramsay (NCT-E) Well No. 5 over the approximate open hole interval from 3169' to 3385' of the Yates and Seven Rivers formations.

We hereby waive any objection to the granting of this application for Well No. 5. This well is located 1980' FNL & 560' FWL of Section 16, T-25-S, R-37-E, Lea County, New Mexico.

Executed this 2nd day of August, 1982.

Yours very truly,

Commissioner of Public Lands
Name of Company

By: J. Lloyd Le Bauer

Title: Assistant Director
Oil and Gas Division

AWB/da

BEFORE THE

OIL CONSERVATION DIVISION

NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

IN THE MATTER OF THE APPLICATION OF GULF OIL CORPORATION FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO

CASE 7629

ENTRY OF APPEARANCE

Comes now Campbell, Byrd & Black, P.A. and hereby enters its appearance in the above-styled cause for Amoco Production Company.

CAMPBELL, BYRD & BLACK, P.A.

By William F. Carr

William F. Carr
Post Office Box 2208
Santa Fe, New Mexico 87501
Attorneys for Gulf Oil Corporation

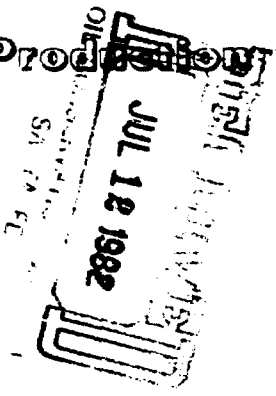
JUL 28 1982

Gulf Oil Exploration and Production Company

J. M. Theeler
GENERAL MANAGER PRODUCTION
SOUTHWEST DISTRICT

P. O. Drawer 1150
Midland, TX. 79702

July 6, 1982



State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

Case 7629

Attention: Mr. Joe D. Ramey, Director

Re: Examiner Hearing / August 4, 1982

Gentlemen:

Gulf Oil Corporation requests the scheduling of the following on your Examiner Hearing Docket of August 4, 1982.

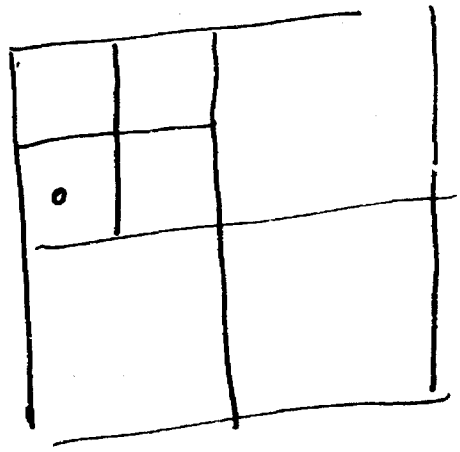
Disposal of produced saltwater in the approximate open hole interval from 3169' to 3385' of the Yates and Seven Rivers formations in the Arnott-Ramsay (NCT-E) Well No. 5 located 1980' FNL & 560' FWL of Section 16, T-25-S, R-37-E, Jalmat Pool, Lea County, New Mexico.

Yours very truly,

F. H. Martin
Technical Manager

AWB/da

cc: New Mexico Oil Conservation Division
P.O. Box 1980
Hobbs, New Mexico 88240



ORDERS

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. 7629

Order No. R- 7053

APPLICATION OF GULF OIL CORPORATION
FOR SALT WATER DISPOSAL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on August 4, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

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

FINDS:

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

(2) That the applicant, Gulf Oil Corporation, is the owner and operator of the Arnott-Ramsay (NCT-E) Well No. 5, located in Unit E of Section 16, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the ~~Yates and~~ Seven Rivers formation, with injection into the open hole interval from approximately 3169 feet to 3385 feet.

(4) That the injection should be accomplished through 2 7/8-inch - plastic lined tubing installed in a packer set at approximately 3155 feet; that the ~~Jalmat perforations from 2990 to 3160 should be squeezed~~; ~~that the~~ casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 635 psi.

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

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

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

(9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Gulf Oil Corporation, is hereby authorized to utilize its Arnott-Ramsay (NCT-E) Well No. 5, located in Unit E of Section 16, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico, to dispose of produced salt water into the ~~Yates and~~ Seven Rivers formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 3155 feet, with injection into the open hole interval from approximately 3169 feet to 3385 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that ~~Salmat~~ perforations from 2990 feet to 3150 feet shall be squeezed; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 635 psi.

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

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

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

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 702, 703, 704, 705, 706, 708, and 1120 of the Division Rules and Regulations.

(7) 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.