

CASE 4217: Appli. of TAMARACK
FOR A WATERFLOOD PROJECT, LEA
COUNTY, NEW MEXICO.

Case Number

4217

Application

Transcripts

Small Exhibits

ETC.

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SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
1120 SIMMAS BLDG. • P. O. BOX 1092 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 10, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Tamarack Petroleum
Company, Inc. for a unit agreement,
Lea County, New Mexico.

)
)
)
) Case No. 4216
)
)

Application of Tamarack Petroleum
Company, Inc. for a waterflood
project, Lea County, New Mexico.

)
) Case No. 4217
)
)

BEFORE: Daniel Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: Case 4216.

MR. HATCH: Case 4216. Application of Tamarack Petroleum Company, Inc. for a unit agreement, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, Cases 4216 and 4217 both pertain to the same area and some of the testimony will be overlapping and for that reason I would like to move that they be consolidated for the purposes of the record with a separate order to be entered in the cases.

MR. NUTTER: We will call the next Case 4217.

MR. HATCH: Case 4217. Application of Tamacrack Petroleum Company, Inc. for a waterflood project, Lea County, New Mexico.

MR. NUTTER: For purposes of testimony and making the record, Cases 4216 and 4217 will be consolidated.

MR. KELLAHIN: If the Examiner please, Jason Kellahin appearing for the Applicant. We have two witnesses I would like to have sworn.

(Witnesses sworn.)

(Whereupon, Applicant's Exhibits 1 through 4 were marked for identification.)

MR. KELLAHIN: Call as our first witness Mr.

Albert Metcalfe.

ALBERT METCALFE

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Albert Metcalfe.

Q How do you spell that, Mr. Metcalfe?

A M-e-t-c-a-l-f-e.

Q By whom are you employed and in what position?

A Tamarack Petroleum Company, vice-president.

Q Have you testified before the Oil Conservation Commission and made your qualifications a matter of record?

A Yes, I have.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir, they are.

Q (By Mr. Kellahin) Mr. Metcalfe, are you familiar with the application of Tamarack Petroleum Company in Cases 4216 and 4217 presently before the Commission?

A Yes, I am.

Q Briefly, what is proposed by the Applicant in these two cases?

A We propose to form a unit, the Northeast Pearl Queen Unit in Lea County, New Mexico, for a secondary recovery by waterflooding.

Q Have you formed a unit -- entered into a unit agreement?

A Yes, sir, we have.

Q Referring to what has been marked as Exhibit No. 1 in Case 4216, would you identify that exhibit?

A That's the unit agreement for the Northeast Pearl Queen Unit, Lea County, New Mexico.

Q Is that in the form which has been approved by this Commission and by the Commissioner of Public Lands in other cases?

A Yes, it is. We have received preliminary approval from the land office.

Q Now, are there any federal lands included within the unit boundary?

A No, sir.

Q Does it all consist of state and fee lands?

A Yes.

Q Can you give the percentages of state and fee lands involved?

A There are 920 acres in the unit area of which 400 acres are fee land and 520 acres are state land.

Q Now, have all of the working interest owners agreed to this unit agreement?

A Yes, they have.

Q Referring to what has been marked as Exhibit No. 2, would you identify that exhibit, please?

A Exhibit 2 is a unit operating agreement between the working interest owners in the unit area.

Q That is the operating agreement under which this unit will be operated?

A Yes, sir, it is.

Q Is there any particular provision in the -- either of the unit or operating agreement that you want to point out to the Commission?

A Pardon me?

Q Are there any particular provisions within either one of these instruments that you want to point out to the Examiner?

A No, sir.

Q Now, have all the working interest owners agreed

to the operating agreement?

A Yes, sir.

Q Referring to what has been marked as Exhibit No. 3, would you identify that exhibit?

A Exhibit 3 are the ratification sheets by which the royalty owners and the working interest owners have agreed to be bound by these two instruments.

Q Now, as to the state lands, of course, the State of New Mexico is a royalty owner and you say you have preliminary approval from the State?

A Yes, sir.

Q What is the status of the ratifications from the other royalty owners?

A The royalty owners --

Q Are you referring to what has been marked as Exhibit No. 4 at this time?

A Yes, sir, I am. Exhibit 4 is a schedule showing the per cent royalty ownership that has ratified the agreement at this time.

In connection with that there are four royalty owners who have not signed. There are five royalty owners who have not signed, pardon me; Texaco, Jake L. Hammond, Jack McClellan, David Kite and Inez R. Reese.

Q Have you contacted all of those individuals or companies?

A Yes, we have. All of those have agreed to sign the unit agreement, but we have not received a ratification sheet at this time. We are in the process of purchasing the Inez R. Reese interest so we will own that entirely.

We anticipate that before the effective date of this unit all of the royalties will be signed with the exception of one Helen M. Crow, who we have been unable to locate.

Q How much interest does she own?

A She owns 1.17188 interest in tract number 6.

Q What percentage is covered by tract number 6?

A Our tract number 6 is a 40-acre tract. It is the northwest quarter of the southwest quarter of Section 24.

Q That's the only one you have been unable to contact, is that correct?

A That's correct.

Q Who is designated as the unit operator?

A Tamarack Petroleum Company.

Q Were Exhibits 1 through 4 prepared by you or under your supervision?

A Yes, they were.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 through 4 inclusive.

MR. NUTTER: Tamarack's Exhibits 1 through 4 will be admitted in evidence.

MR. KELLAHIN: That's all I have of this witness.

CROSS EXAMINATION

BY MR. NUTTER:

Q Now, Mr. Metcalfe, as I understand you, all working interest has been signed?

A Yes, sir.

Q And all royalty interest with the exception of about five there you mentioned have been signed?

A Yes, sir.

Q All of them have agreed that they will sign it with the exception of this Mrs. or Miss, whichever, Helen Crow, and you haven't been able to locate her; but prior to the effective date of the unit you expect to have everyone else signed?

A That's correct.

MR. NUTTER: I believe that's all. Are there any other questions of Mr. Metcalfe? He may be excused.

(Witness excused.)

(Whereupon, Applicant's Exhibits
1 and 2 were marked for
identification.)

MR. KELLAHIN: We call Mr. Williamson.

ROY C. WILLIAMSON, JR.

called as a witness, having been first duly sworn, was
examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Roy C. Williamson, Jr.

Q What business are you engaged in, Mr. Williamson?

A I am petroleum consultant.

Q What firm are you associated with?

A Bailey, Sikes, Williamson and Runyan, Incorporated.

Q Have you testified before the Oil Conservation
Commission and made your qualifications a matter of record?

A Yes, I have.

MR. KELLAHIN: Are the witness' qualifications
acceptable?

MR. NUTTER: Yes, they are.

Q (By Mr. Kellahin) Mr. Williamson, in connection
with your work as consulting engineer, have you done any
work for Tamacrack Petroleum Company in connection with

their proposed Pearl Queen Unit and waterflood project?

A Yes, I have.

Q What did you do in connection with this proposal?

A We have prepared an engineering study and a parameter study and a proposed plan of operations for conducting waterflood operations in the proposed unit.

Q Now referring to what has been marked as Exhibit No. 1 in Case 4217, is that the parameter study to which you referred?

A That is correct.

Q Would you go through the various portions of that exhibit and discuss them, please?

A Yes. The letter itself merely outlines the unit area and a description of the zones that will be considered for a waterflooding. The zones in this area in the Queen formation are normally designated as zones 1 through 7. There are only three of these that will be considered in this waterflood project.

These are zones 4, 5, and 7. On the third sheet of the parameter study we have a table which outlines the various parameters describing the proposed unit area. Might point out that the cumulative production from the proposed unit area as of 2-1-'69 was 653,723 barrels.

The producing rate shown in the columns 8 and 9 for the six-month period ending 2-1-'69 averaged 3,380 barrels per month from the unit area. We have a remaining primary reserve as of 2-1-'69 of 34,036 barrels. We estimate that the ultimate recovery under waterflood operation, in other words incremental waterflood recovery, will be 1,218,000 barrels. This is a slight change from the numbers we had talked about. I made a new calculation.

Q Now, would you consider this area to be at an advanced stage of depletion at the present time?

A Yes, I would.

Q Do you feel that it lends itself to secondary recovery by water injection?

A Yes, it does by means of success of other similar formation units in the area.

Q As you have completed your discussion of Exhibit No. 1, would you identify the other sheets that are attached to that exhibit?

A Right. We have figure number 1 which is an outline of the proposed unit which shows the tract numbers. Figure number 2 is a net effective pay isopach map of the fourth zone; figure number 3 is an effective pay isopach of the fifth zone; figure 4 is the effective pay isopach

of the seventh zone.

Q Now referring to what has been marked as Exhibit No. 2, would you identify that exhibit, please, and discuss it?

A Yes. Exhibit 2 is a proposed plan of operation for the proposed Northeast Pearl Queen Unit. We have outlined here the proposed injection wells, the zones into which we plan to inject, the estimated injection rate and the actual location of the well.

The first well is the -- known as the Gulf B of No. 2. We will inject into the five and seven zone. We estimate 150 barrels of water per day; it is located in unit J. of Section 23.

These are all in Township 29 South, Range 35 East. The second proposed injection well is the Texaco Hammond No. 1. We will inject into zone 5; estimate 75 barrels of water per day; it's located in unit B. of Section 23.

Next injection well is Texaco Hammond No. 2; inject into zones 5 and 7; estimate 150 barrels per day; it's located in unit G. of Section 23.

Next well is Texaco Hammond A. No. 1; zones 5 and 7; estimate 125 barrels per day injection; it's

located in unit E. of Section 24. Next injection well Texaco Moran No. 1; inject into zones 5 and 7; estimate 125 barrels of water per day; it's located in unit A. of Section 22.

Next proposed injection well Union State No. 2, zones 4 and 5; estimate 150 barrels of water per day; it's located in unit K. of Section 15. There are two current injection wells in the area which have been approved by this Commission. They are the Cabot-Carbon No. 2 in zone 5; estimate 350 barrels of water per day; located in unit P. of Section 15.

The other current injection well Texaco Moran No. 2, zones 4, 5 and 7; 350 barrels of water per day. It's located in unit H. of Section 22.

Q Now, is the Applicant presently injecting water into the Cabot-Carbon No. 2 and Texaco Moran No. 2 Wells?

A Yes.

Q Has there been any response from this injection up at the present time?

A We feel there has been some response either from this injection or from adjacent injections in Shell's East Pearl Queen Unit.

Q Now referring to figure one of Exhibit 2, would you identify that exhibit?

A Yes. Figure one outlines the proposed Northeast Pearl Queen Unit. It is colored in yellow. The current injection wells are designated by the blue dots which are the Cabot-Carbon No. 2 and Texaco Moran No. 2 in the proposed injection wells that we mentioned before are designated by a red dot.

Q Now, do you have any cooperative injection program with leases lying outside the unit area?

A No. There is no proposed cooperative injection because of the fact there is no development to the north, west or south of the unit area and the East Pearl Queen Unit is already under injection.

We do not contemplate any official cooperative injection program.

Q What is the injection program to the east?

A It is essentially a five-spot pattern.

Q Now --

MR. NUTTER: That would be to the west, I think?

THE WITNESS: West.

MR. KELLAHIN: West.

Q (By Mr. Kellahin) Who is the operator of that?

A Shell.

Q Now, you do not have a five-spot pattern as appears by your figure one, do you?

A No, we do not. Due to the well locations and protecting the producing ability of the best wells, we were not able to incorporate a five-spot pattern. We have essentially an abbreviated line drive pattern.

Q Based on your examination of this area, in your opinion will this be an effective injection pattern for the Pearl Queen formation?

A Yes, it will.

Q Now referring to figure two of Exhibit 2, would you discuss that exhibit?

A Yes. This figure, again, is the net effective pay isopach map for zone 4 showing the current injection well which is the Texaco Moran No. 2, designated by the blue dots and the proposed injection well, the Union State No. 2 designated by the red dot.

Q The next exhibit?

A Figure No. 3 is the net effective pay isopach

map for the zone 5, again showing the current injection wells in blue and the proposed injection wells in red. Figure 4 is again the net effective pay isopach map for zone 7 showing the current injection wells in blue, the proposed in red.

Q Now, turning to the series of exhibits, B-5 through -- figures five through ten, what are those?

A These are the diagramatic sketches of the proposed injection wells. We have outlined information relating to the surface casing, the depth at which the casing is set, the sacks of cement utilized, which was circulated to the surface.

We also show that the injection tubing will be plastic-lined, show our estimated setting of the packer; we show the current perforations; we show the setting of the oil casing -- oil string casing and the amount of cement used to cement this casing.

We also have shown the estimated top of the cement on the oil string. Since this is a diagramatic sketch the location of where the top of the cement is appears that we would have cement up in the surface casing, but that is not the case on this exhibit.

We have a top of the cement at 3701 and we show our estimated packer setting at 4891. So, we are well above our proposed packer setting and this will be the format on the other wells also.

Q Is there any surface water in this area to your knowledge?

A There is some water, apparently, all above a depth of 100 feet below the surface.

Q So, your surface string would fully protect the water zones, is this correct?

A That is correct.

Q Will your cementing and casing program on your oil string fully protect any producing zones?

A Yes, it will.

Q Are the perforations as shown on these exhibits present perforations in these wells?

A Yes. We show the present perforations in two cases. We have some proposed perforations on the Texaco Hammond A. No. 1. We estimate proposed perfs in the five zone at 4940 to 4959. And in the Union State No. 2 we estimate additional perforations at the top of the five zone which is estimated to occur at 4970. We do not have

a log at this time that logs this zone, although the records show the well was drilled below the top of the five zone.

Q Now in each case you will be injecting through plastic-lined tubing under a packer and through perforations, is that correct?

A That is correct.

Q Will you fill the casing tubing annulus with an inert fluid?

A Yes. I think that is correct.

Q Will you install a pressure gauge or leave the annulus open at the surface?

A We will install a pressure gauge to observe any leakage that might occur.

Q Now, the next six pages of Exhibit No. 2, are those logs of the injection wells?

A That is correct. We have there shown the current perforated intervals and the sand designations in the right margin.

Q Now, I believe you have testified as to the rate of water injection in the individual wells. What pressure do you anticipate you will encounter on this?

A We anticipate that a maximum surface pressure of

2500 pounds will be required.

Q Does that agree with the experience on the Shell waterflood project?

A That is correct.

Q What is your source of water?

A The source of water is a water line jointly owned by Shell, Gulf and Tamarack, which supplies an Ogallala water from a source of approximately seven miles to the northeast of the proposed unit area.

Q That water is presently available, is that correct?

A That is correct.

Q And the line is already in?

A That is correct. It is supplying water to other units in the area currently.

Q Will you reinject produced water?

A Yes, we will.

Q Were Exhibits 1 and 2 prepared by you or under your supervision?

A Yes, they were.

Q I believe you testified, Mr. Williamson, that you would anticipate an additional oil recovery of what figure?

A Approximately 1,218,000 barrels of oil. This represents a recovery of approximately two to one of the expected primary recovery.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 and 2.

MR. NUTTER: Tamaracks Exhibits 1 and 2 in Case 4217 will be admitted in evidence.

MR. KELLAHIN: That's all I have on direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Williamson, that figure 1,218,000 does not appear on table number 1 as such?

A No. This was not included in the parameter study; it was not to be utilized in forming the unit. This was arrived at by an engineering study that we performed earlier in the unit area.

Since some of the injection wells preclude actually ultimate recovery from a particular tract, it was not felt that this would be representative of true equity in a unit.

Q How does the recovery compare by these three zones in here? I presume zone number five has contributed

more oil than any other area?

A Zone five is the major zone, yes.

Q That is the zone that will have eight injection wells affecting it?

A That is correct.

Q Whereas zone seven is going to require five?

A Right.

Q Little zone four there is only going to need two injection wells?

A That is correct.

MR. NUTTER: Are there any further questions of Mr. Williamson?

One more question, Mr. Williamson.

Q (By Mr. Nutter) This rate of 350 barrels per day, that has been the past injection rate into the Cabot-Carbon No. 2 and Texaco Moran No. 2. Will that be the future rate of injection also?

A It will probably be reduced after we have the other wells capable of injecting.

Q Actually, this was utilized as a means of getting rid of water until you got this waterflood going?

A Right. That is correct. This is produced water that is being disposed of.

Q I note that all the other injection rates are considerably less than that. So, these will probably be tailored to that rate also?

A Right; so we can get an orderly advance of our flood front.

Q I see.

MR. NUTTER: If there are no further questions of the witness, he may be excused again.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That's all, Mr. Examiner.

MR. NUTTER: Does anyone have anything they wish to offer in Cases 4216 and 4217? If not, we will take the cases under advisement and call Case 4181.

I N D E X

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STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, GLENDA BURKS, Court Reporter in and for the
 County of Bernalillo, State of New Mexico, do hereby
 certify that the foregoing and attached Transcript of
 Hearing before the New Mexico Oil Conservation Commission
 was reported by me; and that the same is a true and correct
 record of the said proceedings to the best of my knowledge,
 skill and ability.

Glenda Burks
 Notary Public

My Commission Expires:

March 12, 1973

I do hereby certify that the foregoing is
 a complete record of the proceedings in
 the Examiner hearing of Case No. 4216-17
 heard by me on 9/10 1969.

Glenda Burks Examiner
 New Mexico Oil Conservation Commission

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 a complete record of the proceedings in
 the Examiner hearing of Case No. 4216-17
 heard by me on 9/10 1969.

Glenda Burks Examiner
 New Mexico Oil Conservation Commission

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 4217
Order No. R-3837

APPLICATION OF TAMARACK PETROLEUM
COMPANY, INC., FOR A WATERFLOOD
PROJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 10, 1969, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 12th day of September, 1969, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Tamarack Petroleum Company, Inc., seeks permission to institute a waterflood project in the Northeast Pearl-Queen Unit Area, Pearl-Queen Pool, by the injection of water into the Queen formation through eight injection wells in Sections 15, 22, 23, and 24, Township 19 South, Range 35 East, NMPM, Lea County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

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CASE No. 4217

Order No. R-3837

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tamarack Petroleum Company, Inc., is hereby authorized to institute a waterflood project in the Northeast Pearl-Queen Unit Area, Pearl-Queen Pool, by the injection of water into the Queen formation through the following-described wells in Township 19 South, Range 35 East, NMPM, Lea County, New Mexico:

| Unit Operator | Well | Unit | Section |
|------------------|-----------------------------|------|---------|
| Tamarack | Union State Well No. 2 | K | 15 |
| Tamarack | Cabot Carbon Well No. 2 | P | 15 |
| Tamarack | Texaco Moran Well No. 1 | A | 22 |
| Tamarack | Texaco Moran Well No. 2 | H | 22 |
| Tamarack | Texaco Hamon Well No. 1 | B | 23 |
| Tamarack | Texaco Hamon Well No. 2 | G | 23 |
| Tamarack | Gulf "BF" Well No. 2 | J | 23 |
| Tamarack | Texaco Hamon "A" Well No. 1 | E | 24 |

(2) That the subject waterflood project is hereby designated the Tamarack Northeast Pearl Queen Unit Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That Commission Orders Nos. R-3674, R-3718, and R-3772, which previously authorized water injection into certain wells in the Northeast Pearl-Queen Unit Area, are hereby superseded.

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

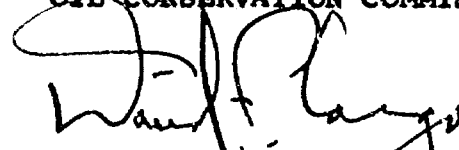
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CASE No. 4217

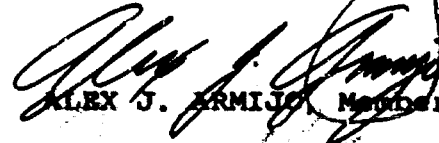
Order No. R-3837

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

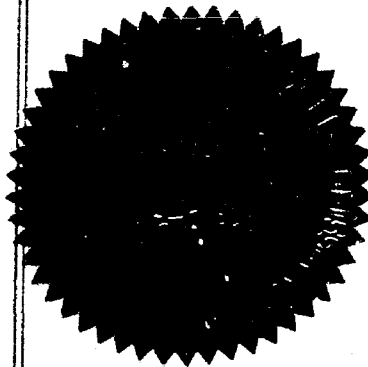


DAVID F. CARGO, Chairman



ALEX J. HERMIDA, Member

A. L. PORTER, Jr., Member & Secretary



esr/

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

September 12, 1969

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

Dear Sir:

Enclosed herewith is Commission Order No. R-3837, entered in Case No. 4217, approving the Tamarack Northeast Pearl Queen Unit Waterflood Project.

Injection is to be through the eight authorized water injection wells, each of which is to be equipped with plastic-lined tubing set in a packer. Packers shall be located approximately 50 feet above the uppermost perforation. The casing-tubing annulus in each well shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge at the surface to facilitate detection of leakage in the packer, tubing, or casing.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 924 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

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Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Santa Fe, New Mexico

C Your cooperation in keeping the Commission so informed as to the
status of the project and the wells therein will be appreciated.

Very truly yours,

O
A. L. PORTER, Jr.
Secretary-Director

P Enclosure

ALP/DSN/ir

cc: Oil Conservation Commission
Hobbs, New Mexico

Y Mr. D. E. Gray, State Engineer Office
Santa Fe, New Mexico

ROUGH DRAFT FOR WATERFLOOD LETTERS

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

Dear Sir:

Enclosed herewith is Commission Order No. R-3837, entered in Case No. 4217, approving the Tamarack Northeast Pearl Green Unit Waterflood Project.

Injection is to be through the eight authorized water injection wells, each of which is to be equipped with plastic-lined tubing set in a packer. Packers shall be located approximately 50 feet above the uppermost perforation. The casing-tubing annulus in each well shall be loaded with a corrosion-inhibiting fluid, and equipped with a pressure gauge at the surface to facilitate detection of leakage in the packer, tubing, or casing.

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In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

cc: OCC: Hobbs x
Artesia
Aztec

USGS

~~Mr. Frank Leby~~, State Engineer Office, Santa Fe, New Mexico

Mr. D. E. Gray

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CASE No. 4142
Order No. R-3772

be attached to the annulus at the surface in order to determine leakage in the casing, tubing, or packer.

(5) 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, Tamarack Petroleum Company, Inc., is hereby authorized to utilize its Cabot 15 State Well No. 2, located in Unit P of Section 15, Township 19 South, Range 35 East, NMPM, Pearl-Queen Pool, Lea County, New Mexico, to dispose of produced salt water into the Queen formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 4900 feet, with injection into the perforated interval from approximately 4946 feet to 4963 feet;

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

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

ALEX J. ARMIJO, Member

S E A L

esr/

A. L. PORTER, Jr., Member & Secretary

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 4142
Order No. R-3772

APPLICATION OF TAMARACK PETROLEUM
COMPANY, INC., FOR SALT WATER
DISPOSAL, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 21, 1969,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 28th day of May, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

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

(2) That the applicant, Tamarack Petroleum Company, Inc.,
is the owner and operator of the Cabot 15 State Well No. 2,
located in Unit P of Section 15, Township 19 South, Range 35
East, NMPM, Pearl-Queen Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to
dispose of produced salt water into the Queen formation, with
injection into the perforated interval from approximately
4946 feet to 4963 feet.

(4) That the injection should be accomplished through
2 3/8-inch plastic-lined tubing installed in a packer set at
approximately 4900 feet; that the casing-tubing annulus should
be filled with an inert fluid; and that a pressure gauge should

-2-

CASE No. 4085
Order No. R-3718

be attached to the annulus at the surface in order to determine leakage in the casing, tubing, or packer.

(5) 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, Tamarack Petroleum Corporation, Inc., is hereby authorized to utilize its Cabot 23 State Well No. 2, located in Unit C of Section 23, Township 19 South, Range 35 East, NMPM, Pearl-Queen Pool, Lea County, New Mexico, to dispose of produced salt water into the Queen formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 4900 feet, with injection into the perforated interval from approximately 4948 feet to 5043 feet;

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

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

esr/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 4035
Order No. R-3718

APPLICATION OF TAMARACK PETROLEUM
CORPORATION, INC., FOR SALT WATER
DISPOSAL, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on March 26, 1969,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 1st day of April, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

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

(2) That the applicant, Tamarack Petroleum Corporation, Inc.,
is the owner and operator of the Cabot 23 State Well No. 2, located
in Unit C of Section 23, Township 19 South, Range 35 East, NMPM,
Pearl-Queen Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to
dispose of produced salt water into the Queen formation, with
injection into the perforated interval from approximately
4948 feet to 5043 feet.

(4) That the injection should be accomplished through
2 3/8-inch plastic-lined tubing installed in a packer set at
approximately 4900 feet; that the casing-tubing annulus should
be filled with an inert fluid; and that a pressure gauge should

BAILEY, SIPES & WILLIAMSON, INC.

CONSULTING ENGINEERS

SUCCESSOR TO LLC&C ENGINEERING, INC.

ROBERT F. BAILEY, P.E., PRESIDENT
L. D. SIPES, JR., P.E.
ROY C. WILLIAMSON, JR., P.E.
T. SCOTT HICKMAN, P.E.

June 5, 1969

1100 V & J TOWER
MIDLAND, TEXAS 79701
915 683-1841

Mr. Albert Metcalfe
Tamarack Petroleum Company, Inc.
910 Building of The Southwest
Midland, Texas 79701

Dear Mr. Metcalfe:

Subject: Parameter Study for Proposed Northeast
Pearl Queen Unit, Pearl Queen Field,
Lea County, New Mexico

In accordance with your request, we have prepared parameter data for the proposed unit area. Table No. 1 lists the parameters by tract. The attached Figure No. 1 shows the proposed unit outline and the tract numbers. Figures No. 2, 3 and 4 are net effective pay isopach maps for Zones IV, V and VII respectively.

A secondary recovery project is planned for the proposed unit area incorporating Queen Zones IV, V and VII. Zone IV is found only under the western portion of the proposed unit area. Shell is flooding the Queen Zone in their East Pearl Unit to the west in Zones I through IV. A production response has already occurred in the proposed Northeast Pearl Queen Unit tracts No. 2, 5 and 9, presumably as a result of Shell's offset injection into Zone IV.

The following comments describe each parameter by column, as shown on Table No. 1, and give the bases for determination thereof.

Column

- (2) Lists the number of currently usable wells.
- (4) Lists the total oil cumulative as of 2/1/69 from all producing Queen Zones.
- (6) Lists the oil production from all producing Queen Zones for the period 11/1/67 to 11/1/68.

Mr. Albert Metcalfe

June 5, 1969

Page 2

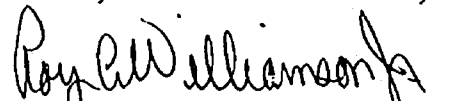
- (8) Lists the oil production from all producing Queen Zones for the period 8/1/68 to 2/1/69.
- (10) Lists the remaining primary reserves determined from extrapolation of decline curves ignoring the production response that has occurred presumably from Zone IV.
- (12) Lists primary ultimate recoveries ignoring the production response that has occurred presumably from Zone IV.
- (14) Lists the remaining reserves under current conditions; i. e., these are the reserves that will be obtained from the tracts including the effect of the production response presumably coming from Zone IV.
- (16) Lists ultimate recoveries under current conditions including the production response presumably coming from Zone IV.
- (18) Lists the net acre-feet for Zones V and VII combined.
- (20) Lists the net acre-feet for Zone IV only.
- (22) Lists the net acre-feet for Zones IV, V and VII combined.

It is felt that these various parameters adequately describe the tracts and that a participation formula using some combination of these parameters should result in equitable ownership in the proposed Northeast Pearl Queen Unit production.

We are happy to have been of service in preparing this study. We are retaining the backup data in our files; these data are available for review if needed. Please call if we can be of further service.

Very truly yours,

BAILEY, SIPES, WILLIAMSON & RUNYAN, INC.


Roy C. Williamson, Jr., P. E.

/pw

Attachments

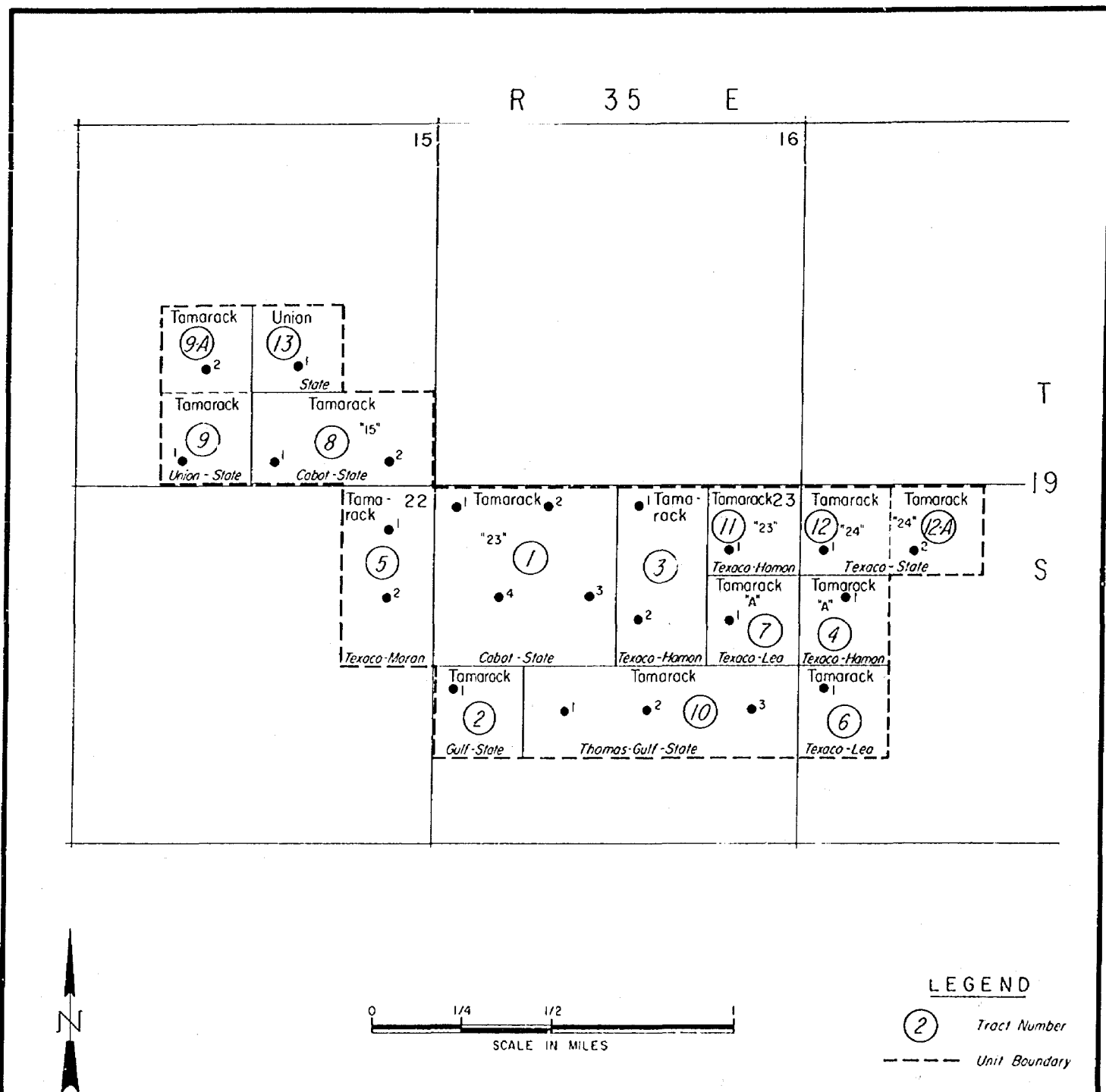
TABLE NO. 1
PARAMETER STUDY
PROPOSED NORTHEAST PEARL QUEEN UNIT - PEARL QUEEN FIELD
LEA COUNTY, NEW MEXICO

| TR. NO. | WELLS NO. | % OF TOTAL | CUMULATIVE PRODUCTION AS OF 2/1/69 | | CURRENT PRODUCTION 11/1/67 TO 11/1/68 | | CURRENT PRODUCTION 8/1/68 TO 2/1/69 | | REMAINING PRIMARY RESERVES* 2/1/69 | | PRIMARY ULTIMATE* | | REMAINING RESERVES CURRENT CONDITIONS 2/1/69 | | ULTIMATE RECOVERIES UNDER CURRENT CONDITIONS | | NET ACRE-FEET ZONES V AND VII | | NET ACRE-FEET ZONE IV | | TOTAL NET ACRE-FEET ZONES IV, V & VII | |
|---------|-----------|------------|------------------------------------|------------|---------------------------------------|------------|-------------------------------------|------------|------------------------------------|------------|-------------------|------------|--|------------|--|------------|-------------------------------|------------|-----------------------|------------|---------------------------------------|------------|
| | | | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | AC-FT | % OF TOTAL | AC-FT | % OF TOTAL | AC-FT | % OF TOTAL |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) |
| 1 | 4 | 18.1818 | 81,945 | 12.5351 | 1,278 | 2.6637 | 844 | 4.1578 | 0 | 0 | 81,945 | 13.4556 | 0 | 0 | 81,945 | 11.1291 | 2,464.4 | 27.5137 | 17.4 | 3.6100 | 2,481.8 | 26.2931 |
| ** 2 | 1 | 4.5455 | 45,675 | 6.9869 | 1,948 | 4.0601 | 2,370 | 11.6755 | 0 | 0 | 41,216 | 6.7678 | 29,925 | 36.2326 | 75,600 | 10.2673 | 290.9 | 3.2477 | 16.5 | 3.8382 | 309.4 | 3.2779 |
| 3 | 2 | 9.0909 | 69,193 | 10.5845 | 3,148 | 6.5612 | 1,428 | 7.0348 | 2,857 | 8.3940 | 72,050 | 11.8309 | 2,857 | 3.4592 | 72,050 | 9.7852 | 858.1 | 9.5802 | 0 | 0 | 858.1 | 9.0910 |
| 4 | 1 | 4.5455 | 34,380 | 5.2591 | 1,108 | 2.3093 | 594 | 2.9263 | 0 | 0 | 34,380 | 5.6453 | 0 | 0 | 34,380 | 4.6692 | 305.2 | 3.4074 | 0 | 0 | 305.2 | 3.2334 |
| ** 5 | 2 | 9.0909 | 47,140 | 7.2110 | 1,117 | 2.3281 | 704 | 3.4681 | 0 | 0 | 34,282 | 5.6292 | 0 | 0 | 47,140 | 6.4022 | 925.3 | 10.3305 | 127.7 | 26.4938 | 1,053.0 | 11.1559 |
| 6 | 1 | 4.5455 | 27,534 | 4.2119 | 2,688 | 5.6024 | 1,185 | 5.8377 | 696 | 2.0449 | 28,230 | 4.6355 | 696 | 0.8427 | 28,230 | 3.8340 | 60.7 | 0.6777 | 0 | 0 | 60.7 | 0.6431 |
| 7 | 1 | 4.5455 | 28,696 | 4.3896 | 1,593 | 3.3202 | 690 | 3.3992 | 376 | 1.1047 | 29,072 | 4.7737 | 376 | 0.4553 | 29,072 | 3.9483 | 525.8 | 5.8703 | 0 | 0 | 525.8 | 5.5705 |
| 8 | 2 | 9.0909 | 91,287 | 13.9642 | 5,169 | 10.7735 | 490 | 1.9705 | 11,813 | 34.7074 | 103,100 | 16.9294 | 11,813 | 14.3030 | 103,100 | 14.0022 | 848.1 | 9.4686 | 12.4 | 2.5726 | 860.5 | 9.1164 |
| ** 9 | 1 | 4.5455 | 63,026 | 9.6411 | 14,584 | 30.3966 | 6,227 | 30.6764 | 0 | 0 | 15,939 | 2.6172 | 17,190 | 20.8134 | 80,216 | 10.8942 | 143.0 | 1.5965 | 194.3 | 40.3112 | 337.3 | 3.5734 |
| ** 9-A | 1 | 4.5455 | 26,501 | 4.0538 | 1,257 | 2.6199 | 300 | 1.4779 | 0 | 0 | 12,147 | 1.9946 | 1,440 | 1.7435 | 27,941 | 3.7947 | 110.6 | 1.2348 | 102.0 | 21.1618 | 212.6 | 2.2524 |
| 10 | 3 | 13.6363 | 76,315 | 11.6739 | 5,916 | 12.3304 | 1,807 | 8.9019 | 0 | 0 | 76,315 | 12.5312 | 0 | 0 | 76,315 | 10.3645 | 1,126.6 | 12.5779 | 0 | 0 | 1,126.6 | 11.9356 |
| 11 | 1 | 4.5455 | 25,716 | 3.9338 | 2,979 | 6.2090 | 1,342 | 6.6112 | 6,731 | 15.7761 | 32,447 | 5.3279 | 6,731 | 8.1498 | 32,447 | 4.4067 | 256.6 | 2.8648 | 0 | 0 | 256.6 | 2.7185 |
| 12 | 1 | 4.5455 | 16,799 | 2.5697 | 1,785 | 3.7204 | 935 | 4.6061 | 3,793 | 11.1441 | 20,573 | 3.3782 | 3,793 | 4.5925 | 20,573 | 2.7941 | 480.4 | 5.3634 | 0 | 0 | 480.4 | 5.0895 |
| 12-A | 1 | 4.5455 | 19,516 | 2.9854 | 3,409 | 7.1052 | 1,473 | 7.2566 | 7,770 | 22.8288 | 27,305 | 4.4835 | 7,770 | 9.4078 | 27,305 | 3.7083 | 491.0 | 5.4817 | 0 | 0 | 491.0 | 5.2018 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70.3 | 0.7848 | 9.7 | 2.0124 | 80.0 | 0.8475 |
| TOTALS | 22 | 100.0003 | 653,723 | 100.0000 | 47,979 | 100.0000 | 20,299 | 100.0000 | 34,036 | 100.0000 | 609,001 | 100.0000 | 82,591 | 100.0000 | 736,314 | 100.0000 | 8,957.0 | 100.0000 | 482.0 | 100.0000 | 9,439.0 | 100.0000 |

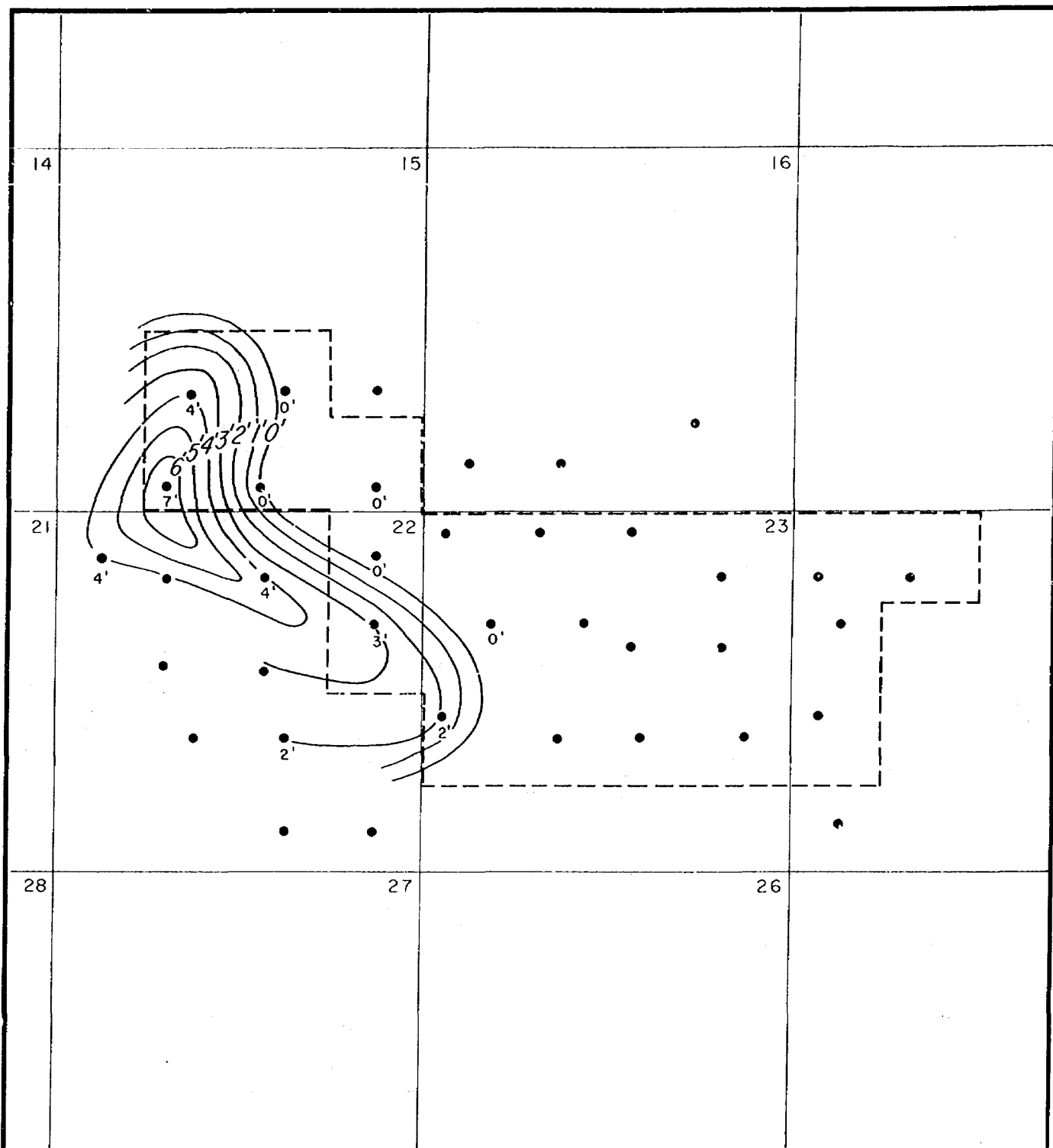
* Ignores Flood Response in Zone IV

** Received Response from Zone IV Waterflood.

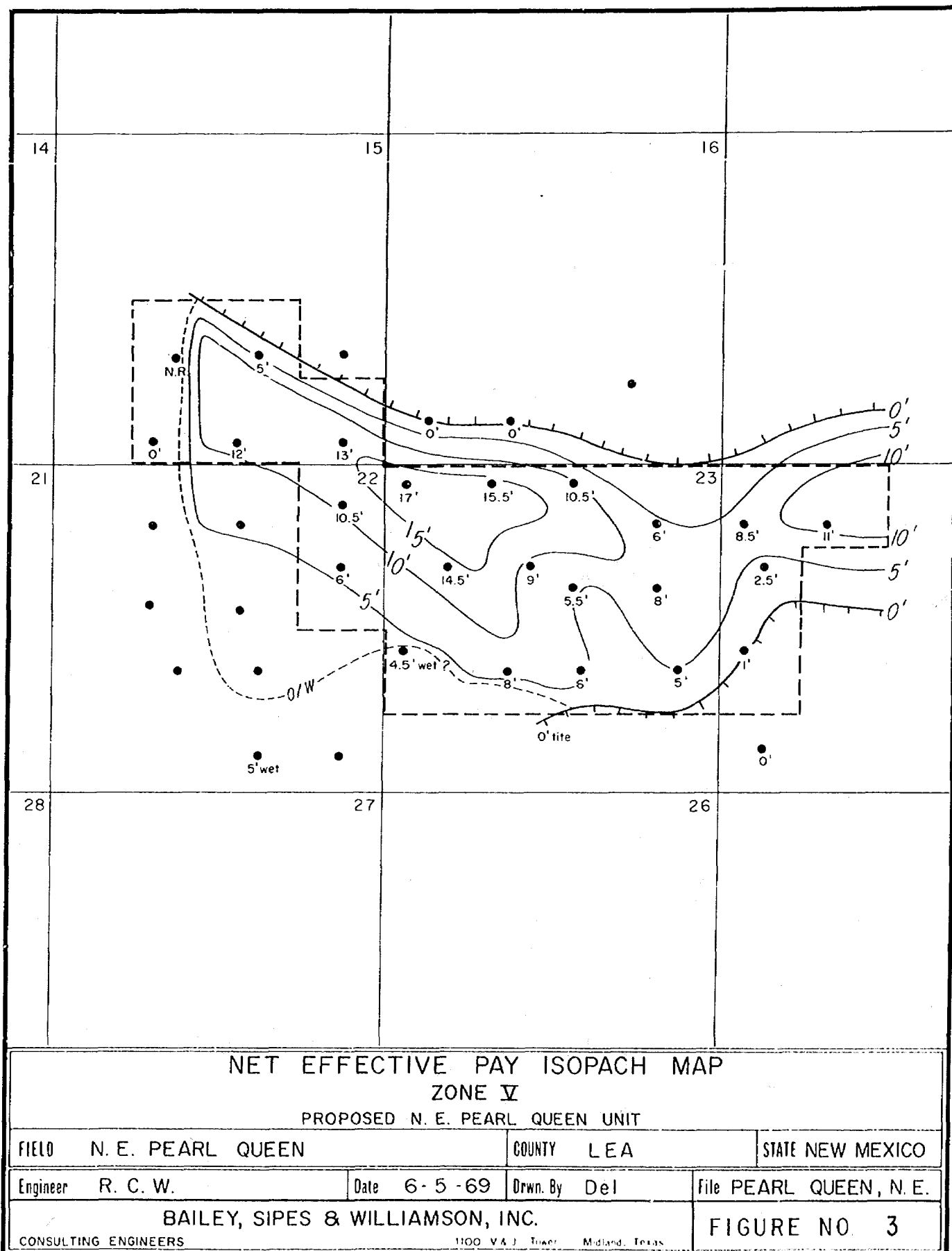
BAILEY, SITES, WILLIAMSON & RUNYAN, INC.
1100 V & J Tower MIDLAND, TEXAS 79701
ROY C. WILLIAMSON, JR., P.E. 6/5/69

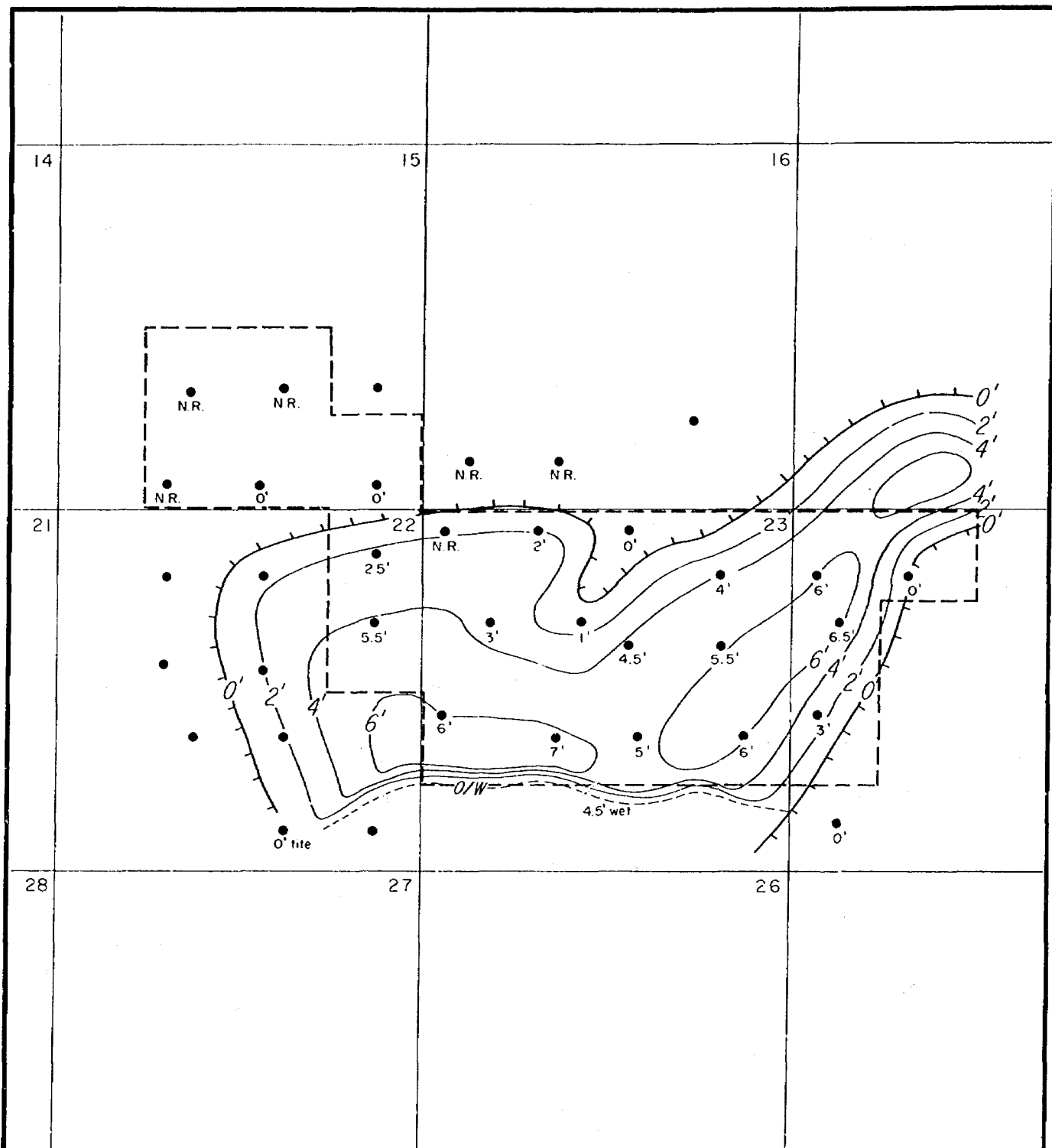


| OUTLINE OF PROPOSED N. E. PEARL QUEEN UNIT | | | |
|---|-------------|---------------------------------|--------|
| FIELD | PEARL QUEEN | COUNTY | LEA |
| STATE | NEW MEXICO | DATE | 6-5-69 |
| ENGINEER | R. C. W. | DRWN. BY | DEL |
| FILE | PEARL QUEEN | FIGURE NO. | 1 |
| BAILEY, SIPES, WILLIAMSON & RUNYAN INC. | | 1100 V & J TOWER MIDLAND, TEXAS | |
| CONSULTING ENGINEERS | | | |



| | | | |
|----------------------------------|-----------------|---------------------------------|-------------------------|
| NET EFFECTIVE PAY ISOPACH MAP | | | |
| ZONE IV | | | |
| PROPOSED N. E. PEARL QUEEN UNIT | | | |
| FIELD N. E. PEARL QUEEN | | COUNTY LEA | STATE NEW MEXICO |
| Engineer R. C. W. | Date 6 - 5 - 69 | Drwn. By Del | File PEARL QUEEN, N. E. |
| BAILEY, SIPES & WILLIAMSON, INC. | | | FIGURE NO. 2 |
| CONSULTING ENGINEERS | | 1100 V & J Tower Midland, Texas | |





NET EFFECTIVE PAY ISOPACH MAP

ZONE VII

PROPOSED N. E. PEARL QUEEN UNIT

| | | | | | |
|----------------------------------|-------------------|--------|--------|----------|-------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEXICO |
| Engineer | R. C. W. | Date | 6-5-69 | Drawn By | Del |
| BAILEY, SIPES & WILLIAMSON, INC. | | | | | FIGURE NO 4 |
| CONSULTING ENGINEERS | | | | | |

Docket No. 25-69

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 10, 1969

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

The following cases will be heard before Daniel S. Nutter, Examiner, or
Elvis A. Utz, Alternate Examiner:

CASE 4210: Application of Mobil Oil Corporation for a special gas-oil ratio limitation, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio in excess of the existing ratio of 2000 cubic feet of gas per barrel of oil in the Lightcap (Devonian) Pool, Chaves County, New Mexico.

CASE 4211: Application of Mobil Oil Corporation for a special gas-oil ratio limitation, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio in excess of the existing ratio of 2000 cubic feet of gas per barrel of oil in the Lightcap-Pennsylvanian Pool, Chaves County, New Mexico.

CASE 3857: (Reopened)

In the matter of Case No. 3857 being reopened pursuant to the provisions of Order No. R-3504, which order established 160-acre spacing units and 80-acre proportional factors of 4.77 for the Tulk-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on less than 160-acre spacing units and why the 80-acre proportional factor of 4.77 should or should not be retained.

CASE 4212: Application of General American Oil Company of Texas for an unorthodox oil well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its Maddren "B" Well No. 12, a producing oil well, at an unorthodox location 1295 feet from the West line and 1815 feet from the South line of Section 27, Township 17 South, Range 30 East, as an infill well in its Grayburg Jackson Premier Unit Waterflood Project area, Grayburg-Jackson Pool, Eddy County, New Mexico.

CASE 4213: Application of Texo Oil Company for pool redelineation, creation of a new gas pool, an unorthodox gas well location, and non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the redelineation of the vertical limits of the South Corbin-Queen Pool to permit the

(Case 4213 continued)

creation of a new basal Penrose gas pool for its Buffalo unit Well No. 11 located at an unorthodox gas well location 2310 feet from the South line and 330 feet from the West line of Section 35, Township 18 South, Range 33 East, Lea County, New Mexico. Applicant further seeks approval of an 80-acre non-standard gas proration unit comprising the N/2 SW/4 of said Section 35, to be dedicated to the above-described well.

CASE 4214: Application of Amerada Hess Corporation for approval of an unorthodox injection well location and the amendment of Order No. R-2197, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an unorthodox water injection well location for its Langlie-Mattix Woolworth Unit Well No. 710 at a point 1950 feet from the North line and 50 feet from the East line of Section 27, Township 24 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico. Applicant also seeks further amendment of Order No. R-2197 to provide for an administrative procedure whereby additional injection wells might be approved at locations no closer than 50 feet to the outer boundary of the unit area.

CASE 4215: Application of Standard Oil Company of Texas to directionally drill, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to directionally drill its Smith Federal Well No. 1, a wildcat located 1650 feet from the South and East lines of Section 34, Township 20 South, Range 24 East, Eddy County, New Mexico. Said well was drilled to a total depth of 7845 feet. Applicant proposes to plug the well back to approximately 5500 feet, set a whipstock at said depth and directionally drill to a depth of approximately 7800 feet to bottom said well in the Cisco formation at a point approximately 200 feet East of the present bottom hole location.

CASE 4216: Application of Tamarack Petroleum Company, Inc. for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Northeast Pearl-Queen Unit Area comprising 920 acres, more or less, of State and fee lands in Sections 15, 22, 23, and 24, Township 19 South, Range 35 East, Pearl-Queen Pool, Lea County, New Mexico.

Examiner Hearing - September 10, 1969

-3-

Docket No. 25-69

CASE 4217: Application of Tamarack Petroleum Company, Inc. for a water-flood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a water-flood project in its Northeast Pearl-Queen Unit Area by the injection of water into the Queen formation through eight wells located in Sections 15, 22, 23, and 24, Township 19 South, Range 35 East, Pearl-Queen Pool, Lea County, New Mexico.

CASE 4181: (Continued from the August 6, 1969, Examiner Hearing)

Application of J. M. Huber Corporation for a dual completion and salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete it Stoltz Federal Well No. 1 located in Unit J of Section 12, Township 15 South, Range 34 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Morton-Wolfcamp Pool and the disposal of produced salt water through the 8 5/8 X 4 1/2-inch casing-casing annulus into the San Andres, Tubb, Abo, and possibly other formations in the open-hole interval from approximately 4330 feet to 9750 feet.

BAILEY, SIPES & WILLIAMSON, INC.

CONSULTING ENGINEERS

SUCCESSOR TO LLC&C ENGINEERING, INC.

ROBERT F. BAILEY, P.E., -PRESIDENT

L. D. SIPES, JR., P.E.

ROY C. WILLIAMSON, JR., P.E.

T. SCOTT HICKMAN, P.E.

June 5, 1969

1100 V & J TOWER
MIDLAND, TEXAS 79701
915 683-1941

Mr. Albert Metcalfe
Tamarack Petroleum Company, Inc.
910 Building of The Southwest
Midland, Texas 79701

Dear Mr. Metcalfe:

Subject: Parameter Study for Proposed Northeast
Pearl Queen Unit, Pearl Queen Field,
Lea County, New Mexico

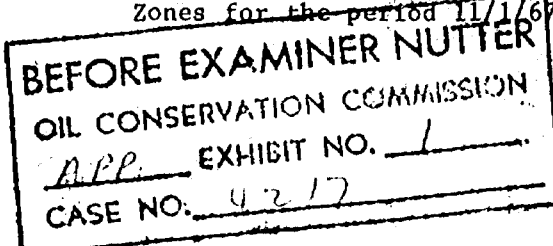
In accordance with your request, we have prepared parameter data for the proposed unit area. Table No. 1 lists the parameters by tract. The attached Figure No. 1 shows the proposed unit outline and the tract numbers. Figures No. 2, 3 and 4 are net effective pay isopach maps for Zones IV, V and VII respectively.

A secondary recovery project is planned for the proposed unit area incorporating Queen Zones IV, V and VII. Zone IV is found only under the western portion of the proposed unit area. Shell is flooding the Queen Zone in their East Pearl Unit to the west in Zones I through IV. A production response has already occurred in the proposed Northeast Pearl Queen Unit tracts No. 2, 5 and 9, presumably as a result of Shell's off-set injection into Zone IV.

The following comments describe each parameter by column, as shown on Table No. 1, and give the bases for determination thereof.

Column

- (2) Lists the number of currently usable wells.
- (4) Lists the total oil cumulative as of 2/1/69 from all producing Queen Zones.
- (6) Lists the oil production from all producing Queen Zones for the period 11/1/67 to 11/1/68.



Mr. Albert Metcalfe
June 5, 1969
Page 2

- (8) Lists the oil production from all producing Queen Zones for the period 8/1/68 to 2/1/69.
- (10) Lists the remaining primary reserves determined from extrapolation of decline curves ignoring the production response that has occurred presumably from Zone IV.
- (12) Lists primary ultimate recoveries ignoring the production response that has occurred presumably from Zone IV.
- (14) Lists the remaining reserves under current conditions; i. e., these are the reserves that will be obtained from the tracts including the effect of the production response presumably coming from Zone IV.
- (16) Lists ultimate recoveries under current conditions including the production response presumably coming from Zone IV.
- (18) Lists the net acre-feet for Zones V and VII combined.
- (20) Lists the net acre-feet for Zone IV only.
- (22) Lists the net acre-feet for Zones IV, V and VII combined.

It is felt that these various parameters adequately describe the tracts and that a participation formula using some combination of these parameters should result in equitable ownership in the proposed Northeast Pearl Queen Unit production.

We are happy to have been of service in preparing this study. We are retaining the backup data in our files; these data are available for review if needed. Please call if we can be of further service.

Very truly yours,

BAILEY, SIPES, WILLIAMSON & RUNYAN, INC.

Roy C. Williamson, Jr.
Roy C. Williamson, Jr., P. E.

/pw

Attachments

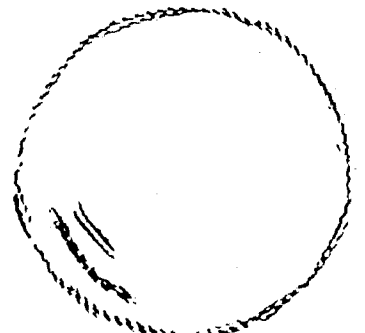
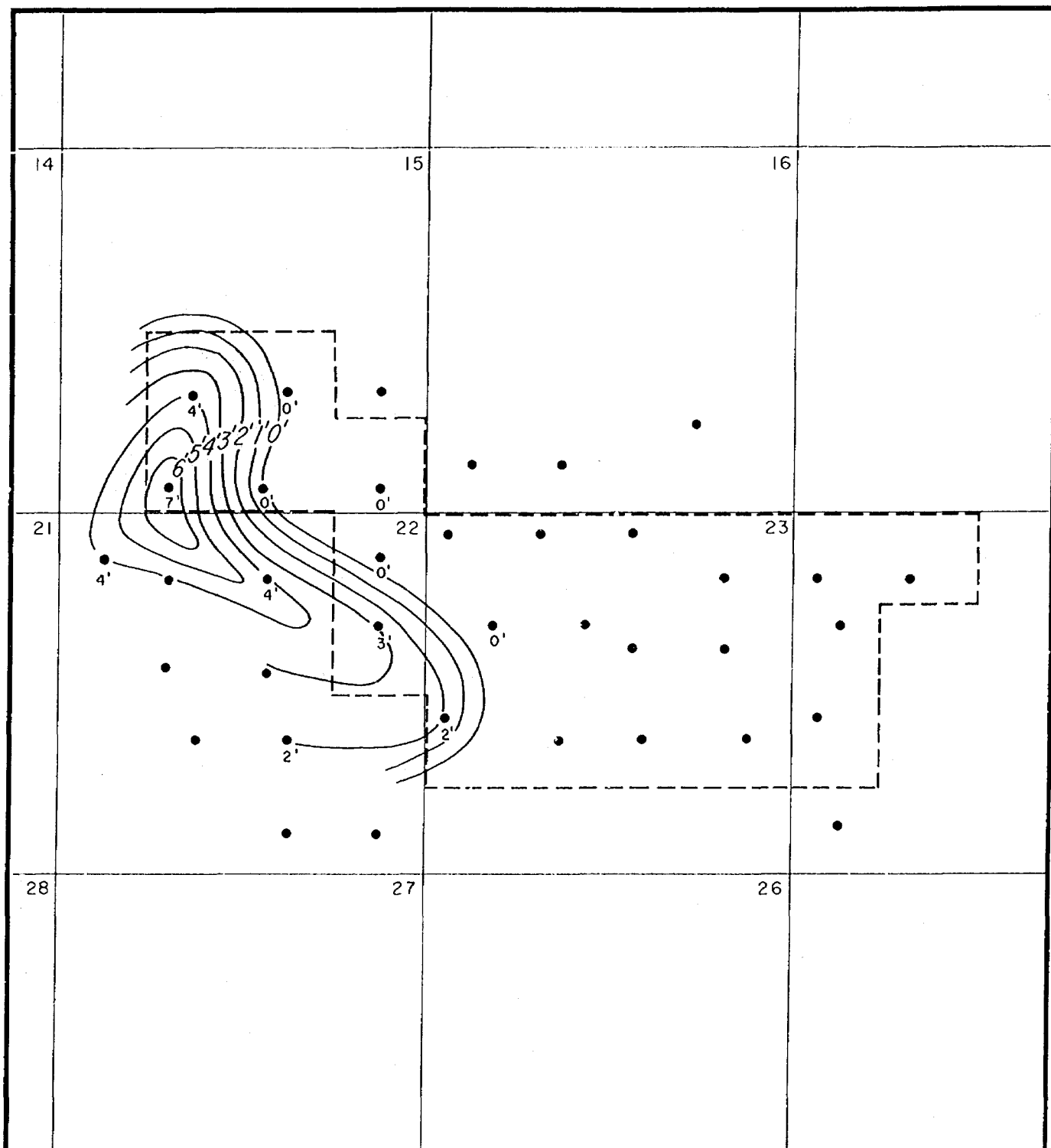


TABLE NO. 1
PARAMETER STUDY
PROPOSED NORTHEAST PEARL QUEEN UNIT - PEARL QUEEN FIELD
LEA COUNTY, NEW MEXICO

| TR. NO. | WELLS NO. | % OF TOTAL | CUMULATIVE PRODUCTION AS OF 2/1/69 | | CURRENT PRODUCTION 11/1/67 TO 11/1/68 | | CURRENT PRODUCTION 8/1/68 TO 2/1/69 | | REMAINING PRIMARY RESERVES* 2/1/69 | | PRIMARY ULTIMATE* | | REMAINING RESERVES CURRENT CONDITIONS 2/1/69 | | ULTIMATE RECOVERIES UNDER CURRENT CONDITIONS | | NET ACRE-FEET ZONES V AND VII | | NET ACRE-FEET ZONE IV | | TOTAL NET ACRE-FEET ZONES IV, V & VII | |
|------------|--------------|---------------|--|---------------|--|---------------|---|---------------|--|---------------|-------------------|---------------|--|---------------|--|---------------|----------------------------------|---------------|--------------------------|---------------|---|---------------|
| | | | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | BBL OIL | % OF TOTAL | AC-FT | % OF TOTAL | AC-FT | % OF TOTAL | AC-FT | % OF TOTAL |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) |
| 1 | 4 | 18.1818 | 81,945 | 12.5351 | 1,278 | 2.6637 | 844 | 4.1578 | 0 | 0 | 81,945 | 13.4556 | 0 | 0 | 81,945 | 11.1291 | 2,464.4 | 27.5137 | 17.4 | 3.6100 | 2,481.8 | 26.2931 |
| ** 2 | 1 | 4.5455 | 45,675 | 6.9869 | 1,948 | 4.0601 | 2,370 | 11.6755 | 0 | 0 | 41,216 | 6.7678 | 29,925 | 36.2328 | 75,600 | 10.2673 | 290.9 | 3.2477 | 18.5 | 3.8382 | 309.4 | 3.2779 |
| 3 | 2 | 9.0909 | 69,193 | 10.5845 | 3,148 | 6.5612 | 1,428 | 7.0348 | 2,857 | 8.3940 | 72,050 | 11.8309 | 2,857 | 3.4592 | 72,050 | 9.7852 | 858.1 | 9.5802 | 0 | 0 | 858.1 | 9.0910 |
| 4 | 1 | 4.5455 | 34,380 | 5.2591 | 1,108 | 2.3093 | 594 | 2.9263 | 0 | 0 | 34,380 | 5.6453 | 0 | 0 | 34,380 | 4.6692 | 305.2 | 3.4074 | 0 | 0 | 305.2 | 3.2334 |
| ** 5 | 2 | 9.0909 | 47,140 | 7.2110 | 1,117 | 2.3281 | 704 | 3.4681 | 0 | 0 | 34,282 | 5.6292 | 0 | 0 | 47,140 | 6.4022 | 925.3 | 10.3305 | 127.7 | 26.4938 | 1,053.0 | 11.1559 |
| 6 | 1 | 4.5455 | 27,534 | 4.2119 | 2,688 | 5.6024 | 1,185 | 5.8377 | 696 | 2.0449 | 28,230 | 4.6355 | 696 | 0.8427 | 28,230 | 3.8340 | 60.7 | 0.6777 | 0 | 0 | 60.7 | 0.6431 |
| 7 | 1 | 4.5455 | 28,696 | 4.3896 | 1,593 | 3.3202 | 690 | 3.3992 | 376 | 1.1047 | 29,072 | 4.7737 | 376 | 0.4553 | 29,072 | 3.9483 | 525.8 | 5.8703 | 0 | 0 | 525.8 | 5.5705 |
| 8 | 2 | 9.0909 | 91,287 | 13.9642 | 5,169 | 10.7735 | 400 | 1.9705 | 11,813 | 34.7074 | 103,100 | 16.9294 | 11,813 | 14.3030 | 103,100 | 14.0922 | 848.1 | 9.4686 | 12.4 | 2.5726 | 860.5 | 9.1164 |
| ** 9 | 1 | 4.5455 | 63,026 | 9.6411 | 14,584 | 30.3966 | 6,227 | 30.6764 | 0 | 0 | 15,939 | 2.6172 | 17,190 | 20.8134 | 80,216 | 10.8942 | 143.0 | 1.5965 | 194.3 | 40.3112 | 337.3 | 3.5734 |
| ** 9-A | 1 | 4.5455 | 26,501 | 4.0538 | 1,257 | 2.6199 | 300 | 1.4779 | 0 | 0 | 12,147 | 1.9946 | 1,440 | 1.7435 | 27,941 | 3.7947 | 110.6 | 1.2348 | 102.0 | 21.1618 | 212.6 | 2.2524 |
| 10 | 3 | 13.6363 | 76,315 | 11.6739 | 5,916 | 12.3304 | 1,807 | 8.9019 | 0 | 0 | 76,315 | 12.5312 | 0 | 0 | 76,315 | 10.3645 | 1,126.6 | 12.5779 | 0 | 0 | 1,126.6 | 11.9356 |
| 11 | 1 | 4.5455 | 25,716 | 3.9338 | 2,979 | 6.2090 | 1,342 | 6.6112 | 6,731 | 19.7761 | 32,447 | 5.3279 | 6,731 | 8.1498 | 32,447 | 4.4067 | 256.6 | 2.8648 | 0 | 0 | 256.6 | 2.7185 |
| 12 | 1 | 4.5455 | 16,795 | 2.5697 | 1,785 | 3.7204 | 935 | 4.6061 | 3,793 | 11.1441 | 20,573 | 3.3782 | 3,793 | 4.5925 | 20,573 | 2.7941 | 480.4 | 5.3634 | 0 | 0 | 480.4 | 5.0895 |
| 12-A | 1 | 4.5455 | 19,516 | 2.9854 | 3,409 | 7.1052 | 1,473 | 7.2566 | 7,770 | 22.8288 | 27,305 | 4.4835 | 7,770 | 9.4078 | 27,305 | 3.7083 | 491.0 | 5.4817 | 0 | 0 | 491.0 | 5.2018 |
| 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70.3 | 0.7848 | 9.7 | 2.0124 | 80.0 | 0.8475 |
| TOTALS | 22 | 100.0003 | 653,723 | 100.0000 | 47,979 | 100.0000 | 20,299 | 100.0000 | 34,036 | 100.0000 | 609,001 | 100.0000 | 82,591 | 100.0000 | 736,314 | 100.0000 | 8,957.0 | 100.0000 | 482.0 | 100.0000 | 9,439.0 | 100.0000 |

* Ignores Flood Response in Zone IV
** Received Response from Zone IV Waterflood.

BAILEY, SIPES, WILLIAMSON & RUNYAN, INC.
1100 V & J Tower MIDLAND, TEXAS 79701
ROY C. WILLIAMSON, JR., P.E. 6/5/69

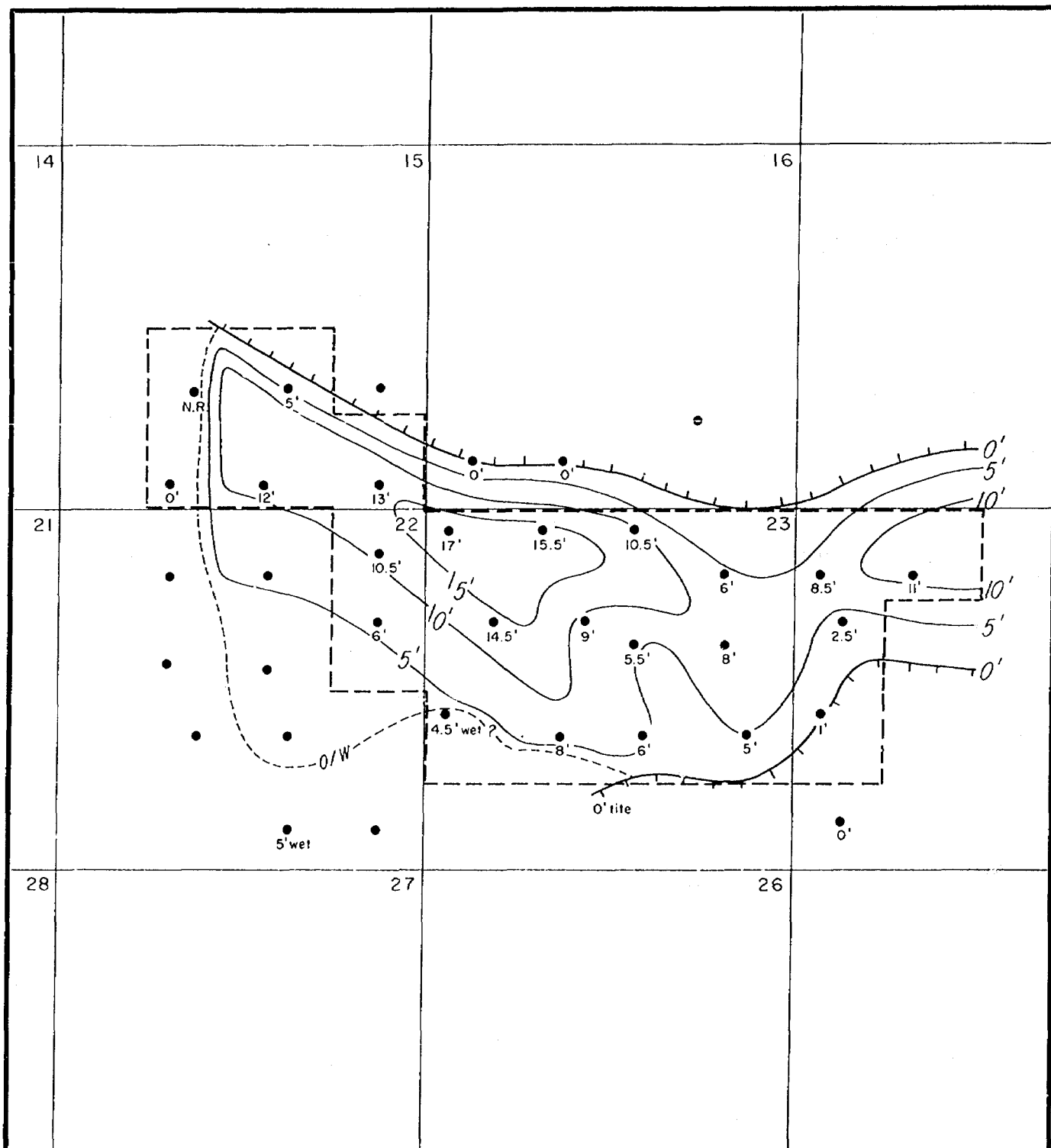


NET EFFECTIVE PAY ISOPACH MAP

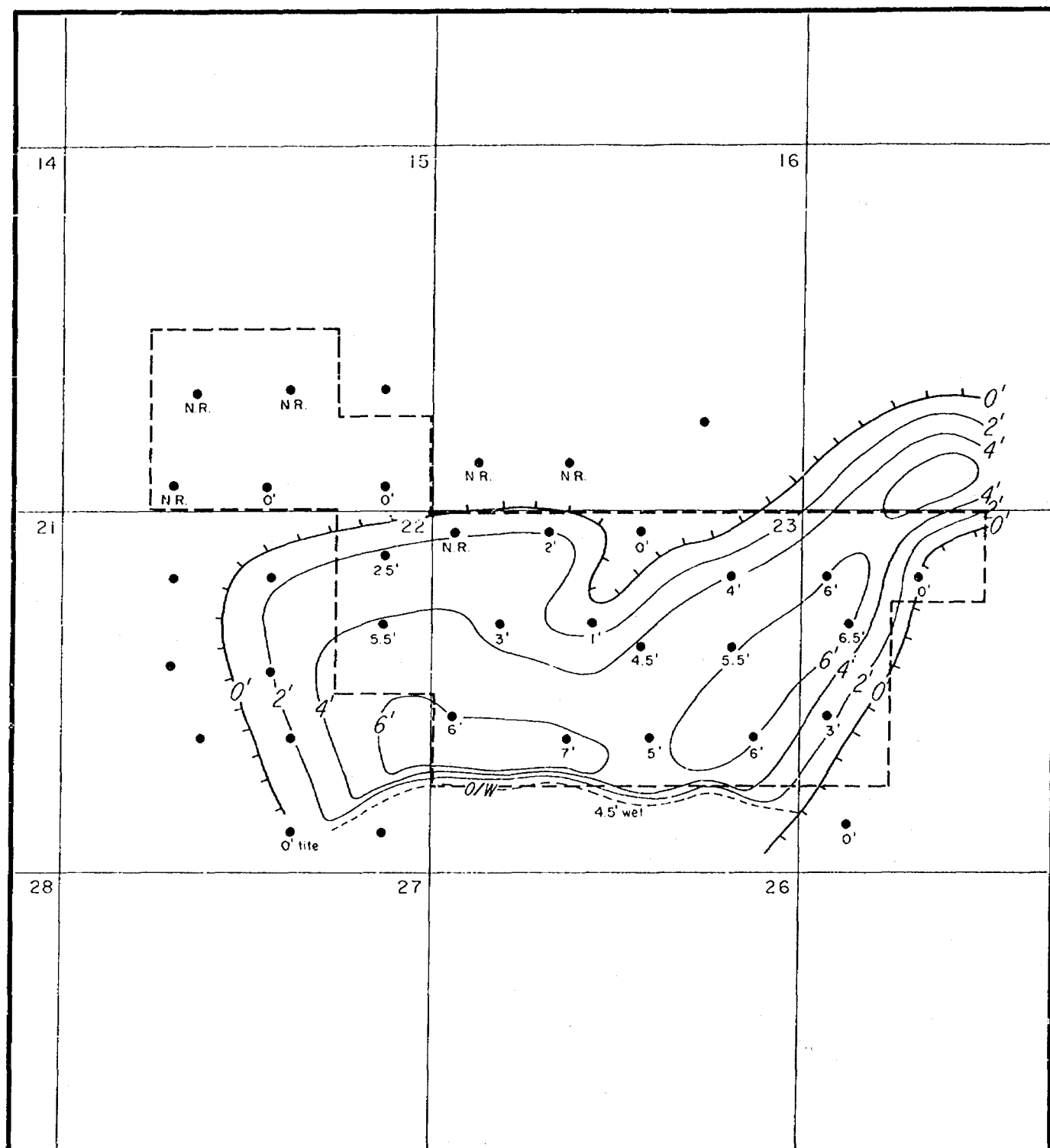
ZONE IV

PROPOSED N. E. PEARL QUEEN UNIT

| | | | |
|----------------------------------|-----------------|----------------------------------|-------------------------|
| FIELD N. E. PEARL QUEEN | | COUNTY LEA | STATE NEW MEXICO |
| Engineer R. C. W. | Date 6 - 5 - 69 | Drwn. By Del | File PEARL QUEEN, N. E. |
| BAILEY, SIPES & WILLIAMSON, INC. | | | FIGURE NO 2 |
| CONSULTING ENGINEERS | | 1100 V & J. TRACY Midland, Texas | |



| NET EFFECTIVE PAY ISOPACH MAP | | | |
|----------------------------------|--------------------|------------------------------------|--------|
| ZONE V | | | |
| PROPOSED N. E. PEARL QUEEN UNIT | | | |
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA |
| STATE | NEW MEXICO | DATE | 6-5-69 |
| ENGINEER | R. C. W. | DRWN. BY | DEL |
| FILE | PEARL QUEEN, N. E. | FIGURE NO | 3 |
| BAILEY, SIPES & WILLIAMSON, INC. | | 1100 V. A. J. Tower Midland, Texas | |
| CONSULTING ENGINEERS | | | |



NET EFFECTIVE PAY ISOPACH MAP ZONE VII

PROPOSED N. E. PEARL QUEEN UNIT

| | | | | | |
|----------------------------------|-------------------|--------|--------|-------------|--------------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEXICO |
| Engineer | R. C. W. | Date | 6-5-69 | Drawn By | Del |
| BAILEY, SIPES & WILLIAMSON, INC. | | | | File | PEARL QUEEN, N. E. |
| CONSULTING ENGINEERS | | | | FIGURE NO 4 | |

BAILEY, SIPES, WILLIAMSON & RUNYAN, INC.

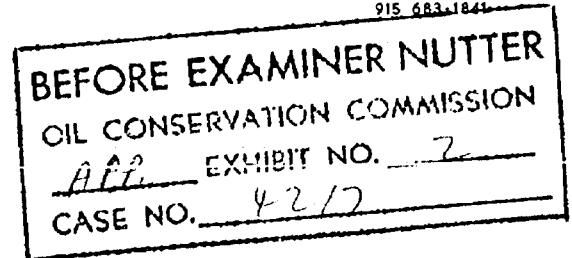
CONSULTING ENGINEERS

SUCCESSOR TO LLC&C ENGINEERING, INC.

ROBERT F. BAILEY, P.E. - PRESIDENT
L. D. SIPES, JR., P.E.
ROY C. WILLIAMSON, JR., P.E.
E. E. RUNYAN, P.E.
T. SCOTT HICKMAN, P.E.

September 3, 1969

1100 V & J TOWER
MIDLAND, TEXAS 79701
915 683-1841



Mr. Albert Metcalfe
Tamarack Petroleum Co., Inc.
910 Building of The Southwest
Midland, Texas 79701

Dear Mr. Metcalfe:

Subject: Proposed Northeast Pearl Queen Unit
Pearl Queen Field, Lea County, New Mexico

The attached Figure No. 1 shows the outline of the proposed Northeast Pearl Queen Unit. Figures 2, 3 and 4 are net effective pay isopach maps of pay zones designated as IV, V and VII respectively. All figures show current injection wells in blue and proposed injection wells in red within the unit area. Also attached are down hole diagrammatic sketches and logs of proposed injection wells. The logs show pay designations and perforations.

The following described land constitutes the proposed unit area.

| | | |
|-----------------------|---------|--|
| <u>T-19-S, R-35-E</u> | Sec. 15 | E/2 of SW/4, W/2 of SE/4 and SE/4 of SE/4 |
| | Sec. 22 | E/2 of NE/4 |
| | Sec. 23 | N/2 and N/2 of S/2 |
| | Sec. 24 | W/2 of NW/4, NE/4 of NW/4 and NW/4 of SW/4 |

The following tables show the injection wells, the injection zones and the anticipated injection rates.

Proposed Injection Wells

| Well | Zones | Injection Rates Bbls of Water/Day |
|--------------------|---------|--------------------------------------|
| Gulf "BF" No. 2 | V & VII | 150 J 23 ✓ |
| Texaco Hamon No. 1 | V | 75 B 23 ✓ |

Expect max press of 2500 psi
will get wtr from wtr P.L.

Mr. Albert Metcalfe
Tamarack Petroleum Co., Inc.
September 3, 1969
Page 2

| | | | |
|------------------------|---------|-----|--------|
| Texaco Hamon No. 2 | V & VII | 150 | G 23 ✓ |
| Texaco Hamon "A" No. 1 | V & VII | 125 | E 24 |
| Texaco Moran No. 1 | V & VII | 125 | A 22 ✓ |
| Union State No. 2 | IV & V | 150 | K 15 ✓ |

Current Injection Wells

| <u>Well</u> | <u>Zones</u> | <u>Injection Rates</u> <u>Bbls of Water/Day</u> | |
|--------------------|--------------|--|--------|
| Cabot Carbon No. 2 | V | 350 | P 15 ✓ |
| Texaco Moran No. 2 | IV, V & VII | 350 | H 22 ✓ |

No cooperative injection program is anticipated with leases lying outside the unit area. There is no development to the north, east or south of the unit and the East Pearl Unit to the west of this proposed unit is already under injection.

If further information is required, please give us a call.

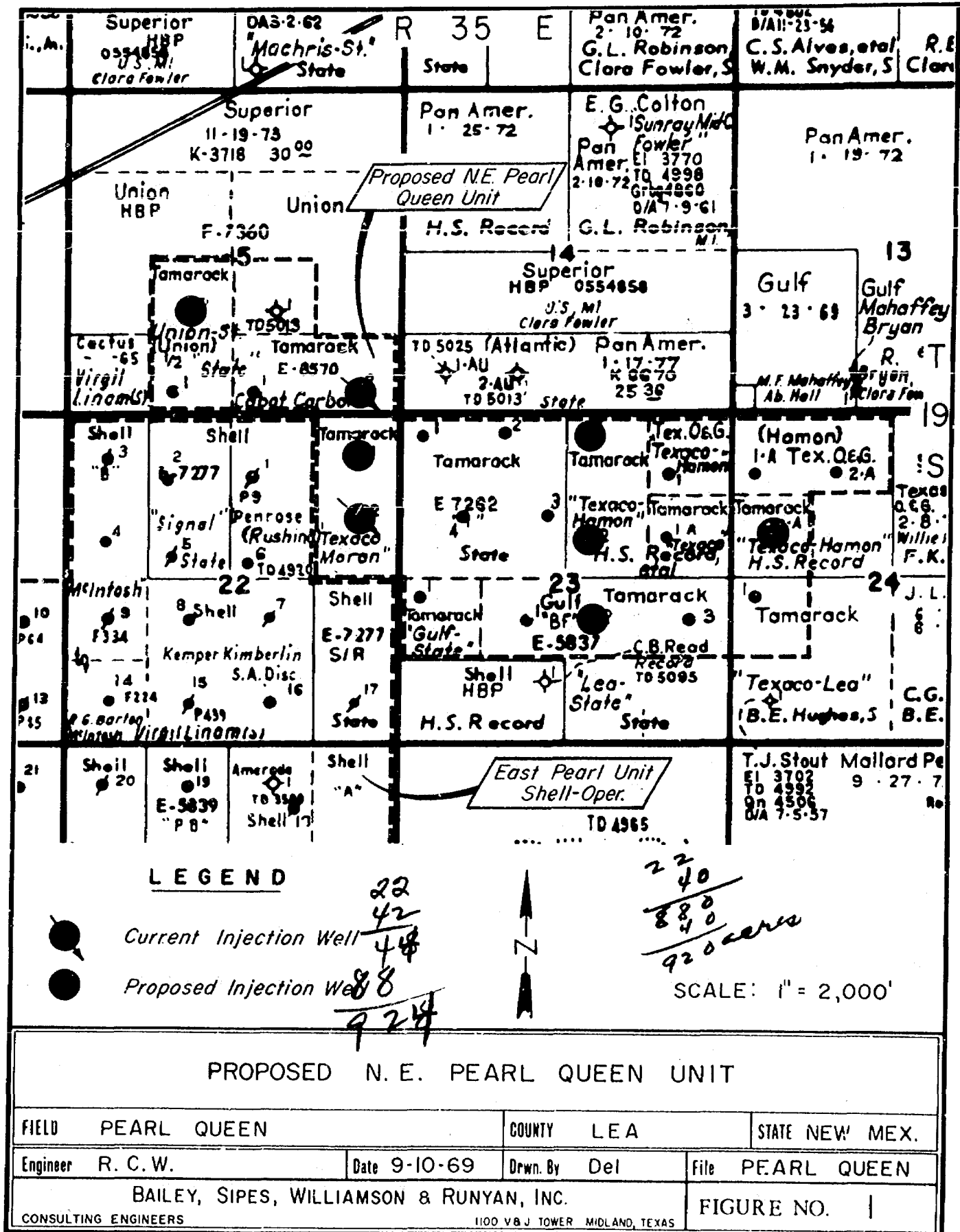
Very truly yours,

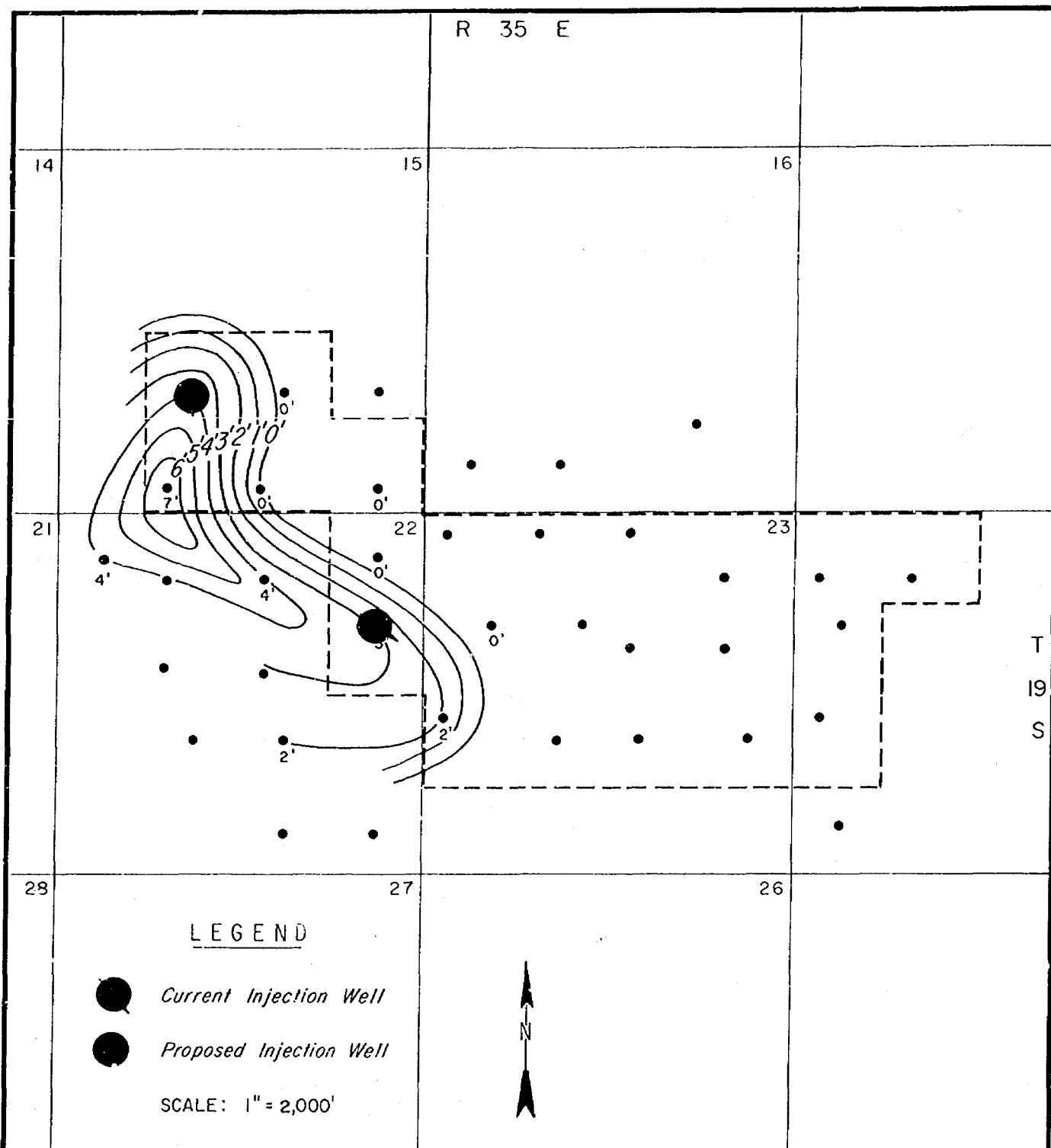
BAILEY, SIPES, WILLIAMSON & RUNYAN, INC.


Roy C. Williamson, Jr., P. E.

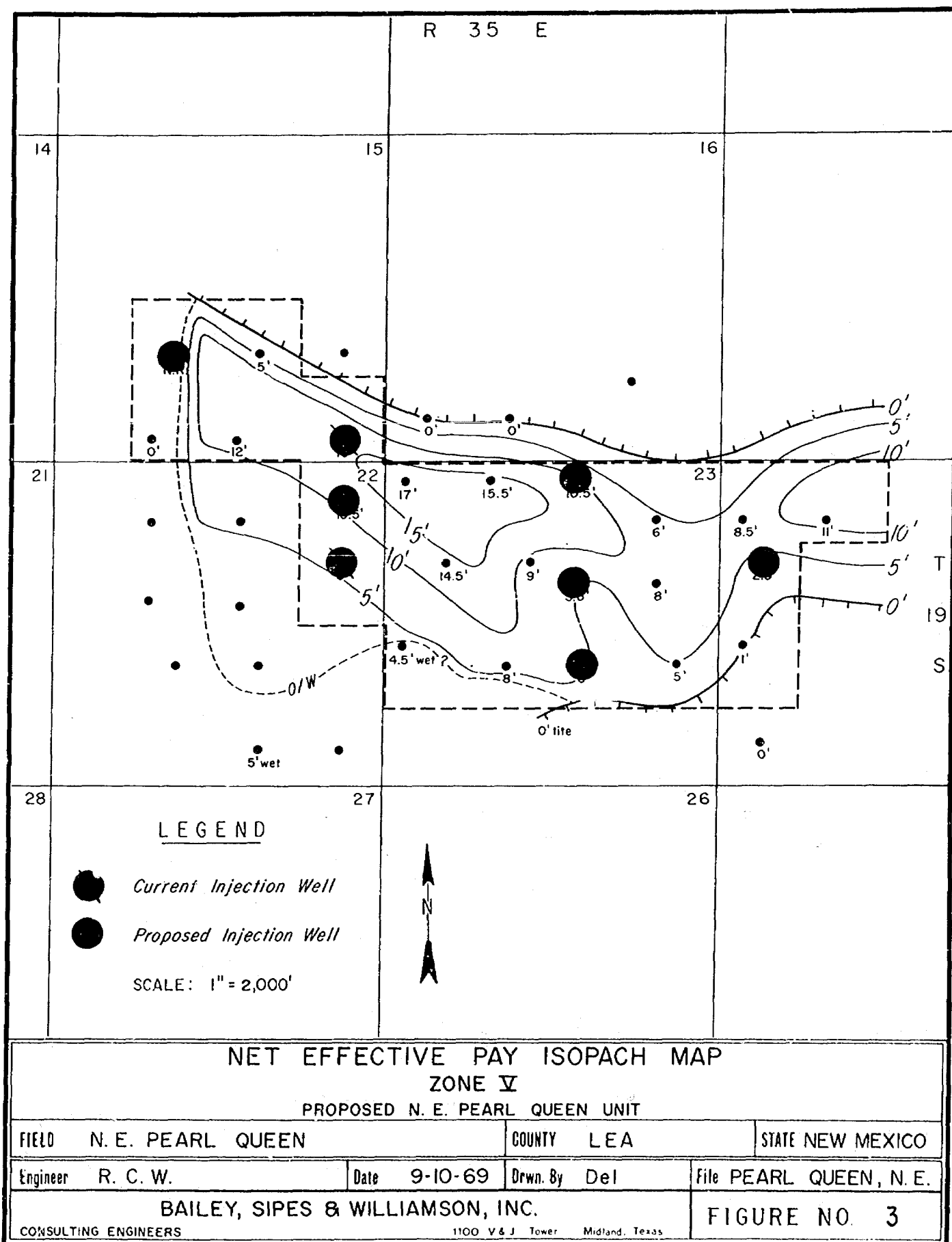
/pw

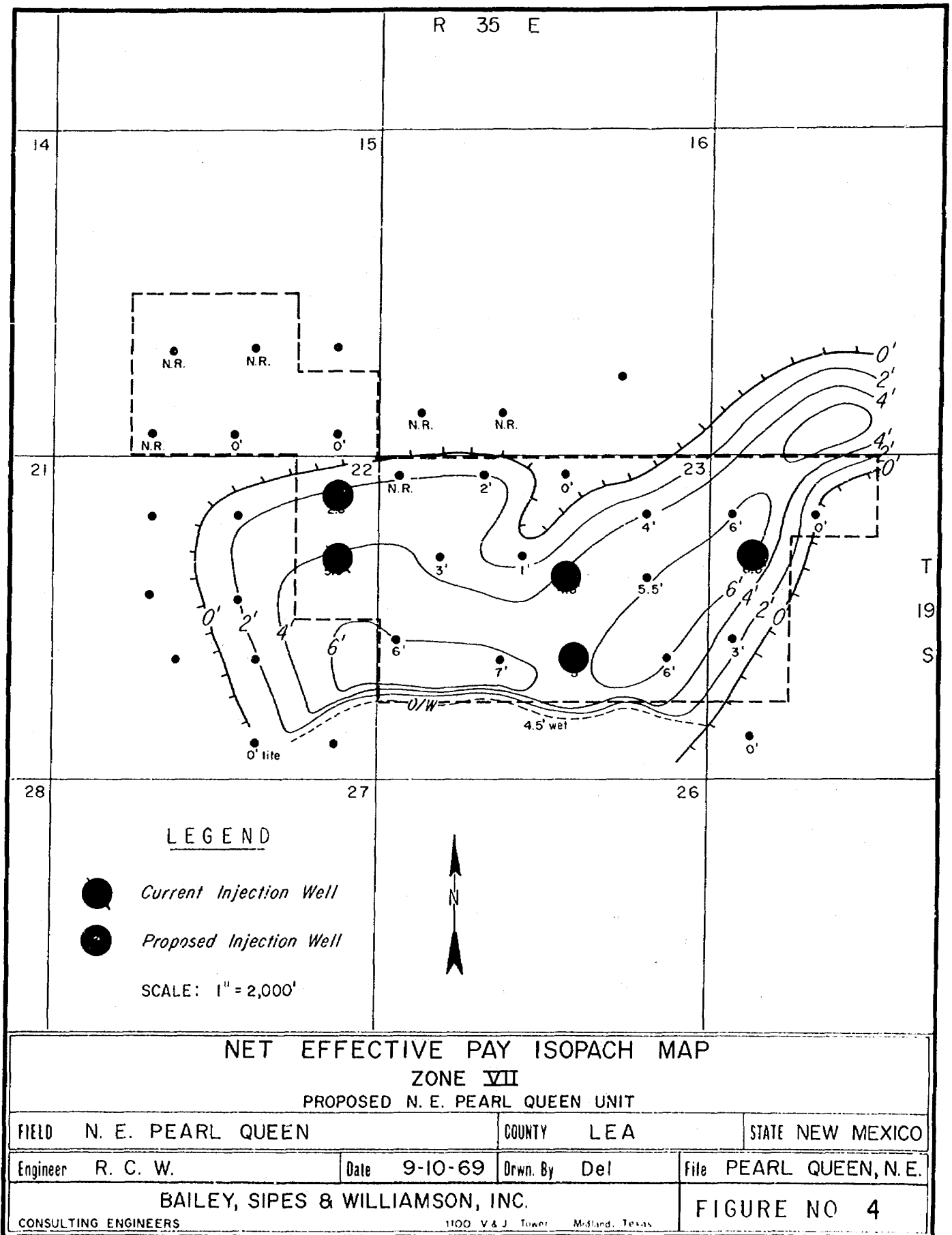
Attachments

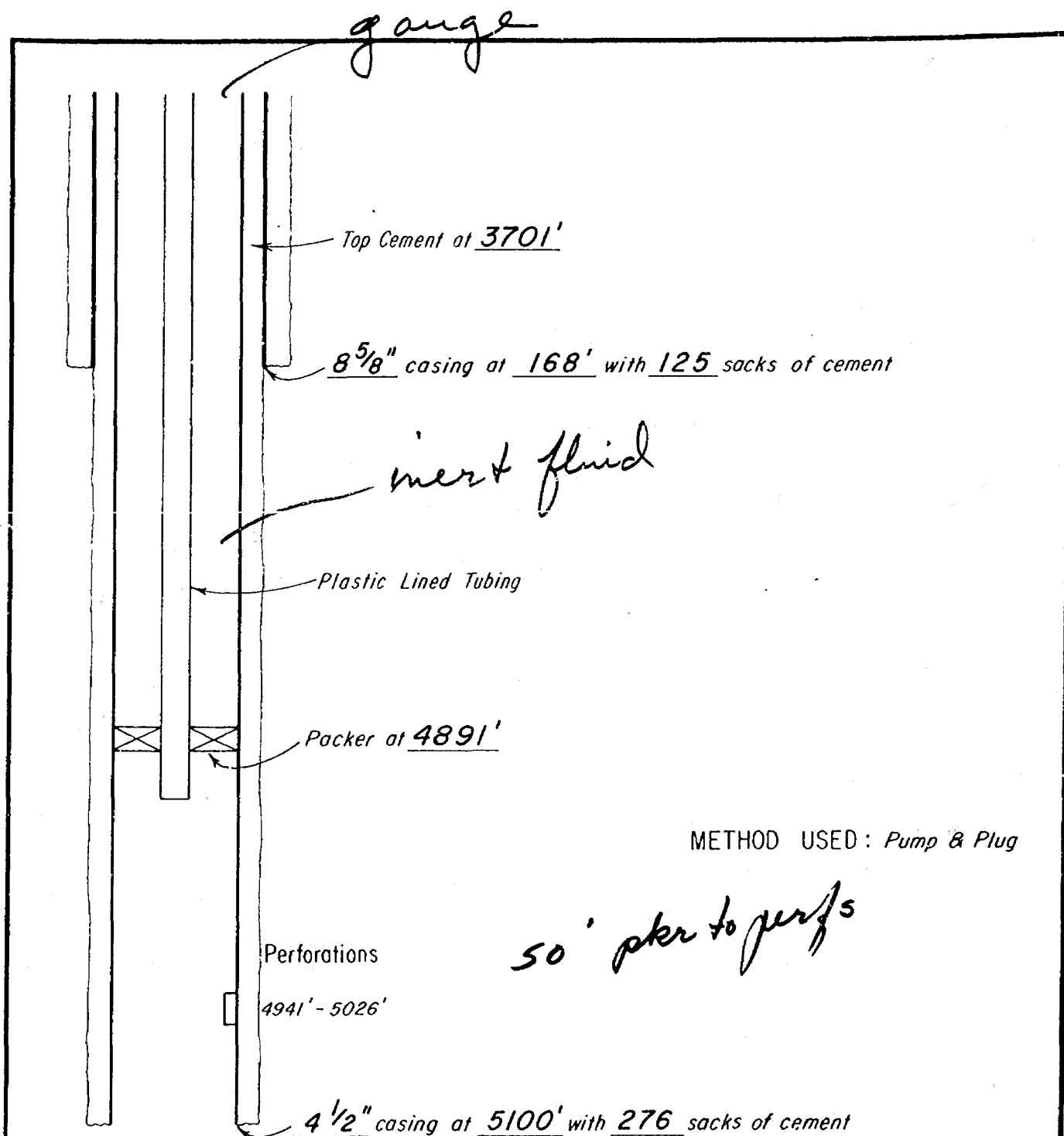




| NET EFFECTIVE PAY ISOPACH MAP | | | |
|----------------------------------|--------------|---------------------------------|-------------------------|
| ZONE IV | | | |
| PROPOSED N. E. PEARL QUEEN UNIT | | | |
| FIELD N. E. PEARL QUEEN | | COUNTY LEA | STATE NEW MEXICO |
| Engineer R. C. W. | Date 9-10-69 | Drwn. By Del | File PEARL QUEEN, N. E. |
| BAILEY, SIPES & WILLIAMSON, INC. | | | FIGURE NO. 2 |
| CONSULTING ENGINEERS | | 1100 V & J Tower Midland, Texas | |

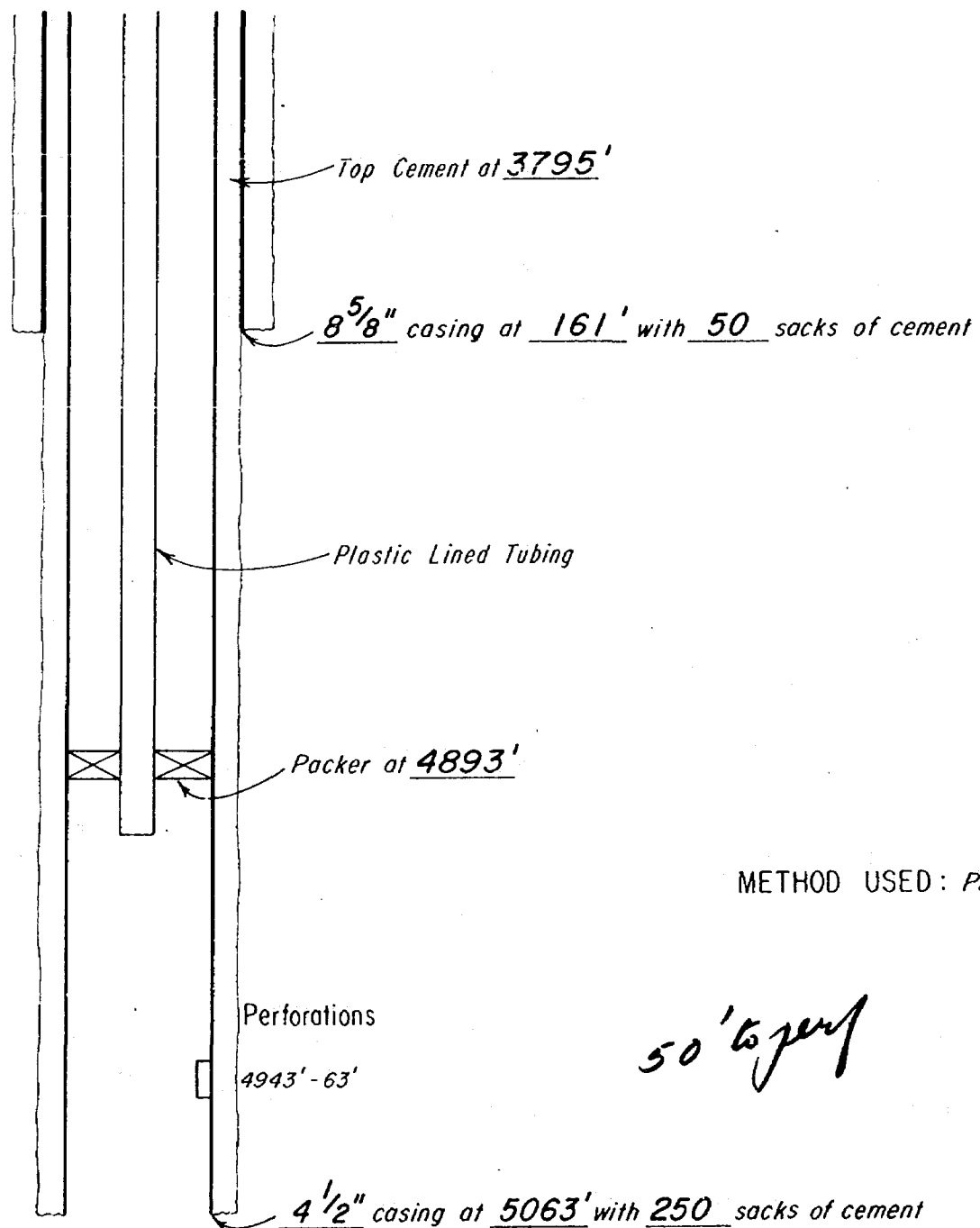






DIAGRAMMATIC SKETCH OF PROPOSED INJECTION WELL
GULF "BF" NO. 2

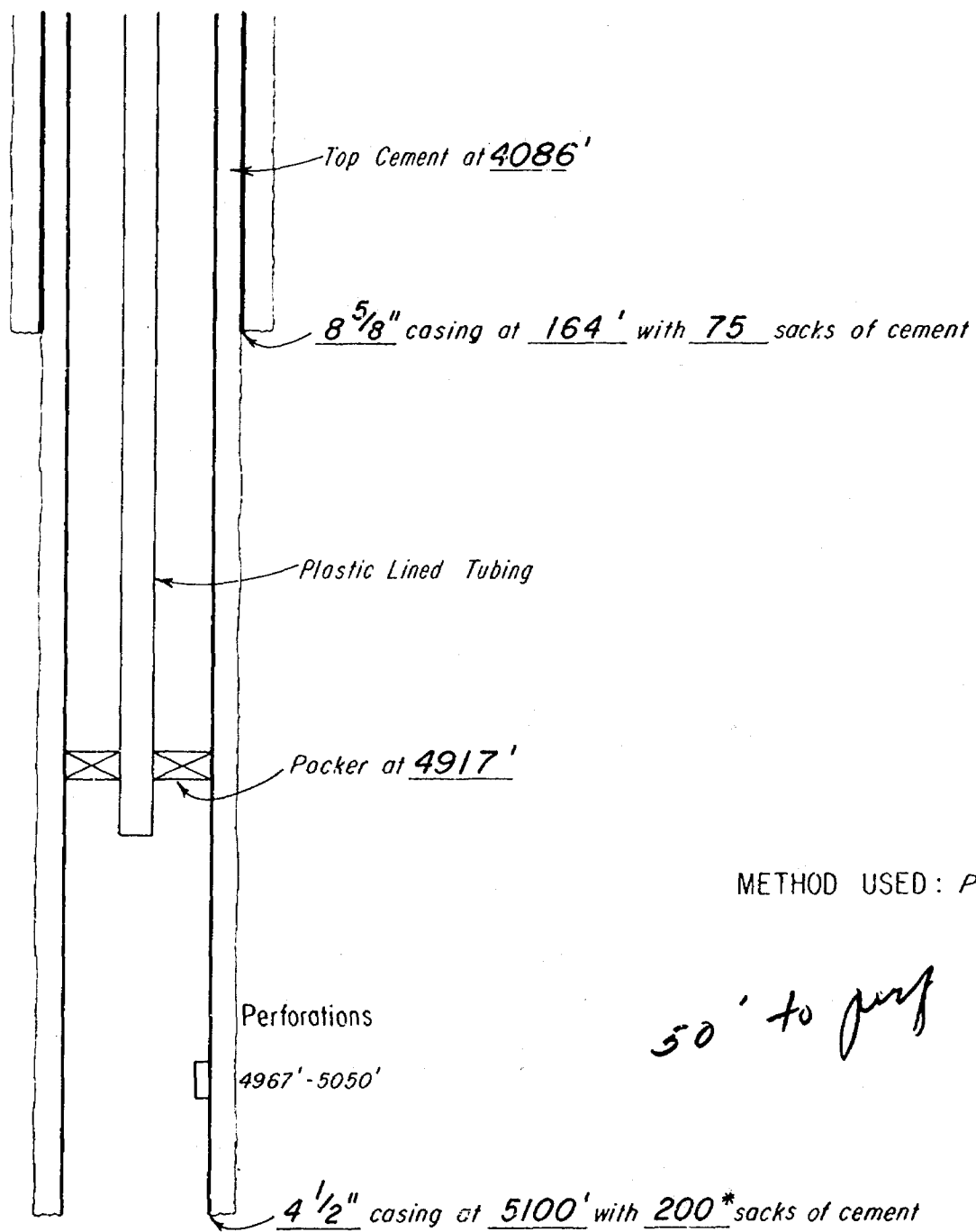
| | | | | | |
|--|-------------------|--------|------------|----------|-------------------------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEX. |
| Engineer | R. C. W. | Date | 8 - 5 - 69 | Drwn. By | Del |
| | | | | File | PEARL QUEEN, N. E. |
| BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. | | | | | FIGURE NO. |
| CONSULTING ENGINEERS | | | | | 1100 V&J TOWER MIDLAND, TEXAS |



METHOD USED: *Pump & Plug*

DIAGRAMMATIC SKETCH OF PROPOSED INJECTION WELL TEXACO HAMON NO. 1

| | | | | | |
|--|-------------------|--------|------------|----------|-------------------------------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEX. |
| Engineer | R. C. W. | Date | 8 - 5 - 69 | Drwn. By | Del |
| | | | | File | PEARL QUEEN, N. E. |
| BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. | | | | | FIGURE NO. |
| CONSULTING ENGINEERS | | | | | 1100 V. B. J. TOWER, MIDLAND, TEXAS |



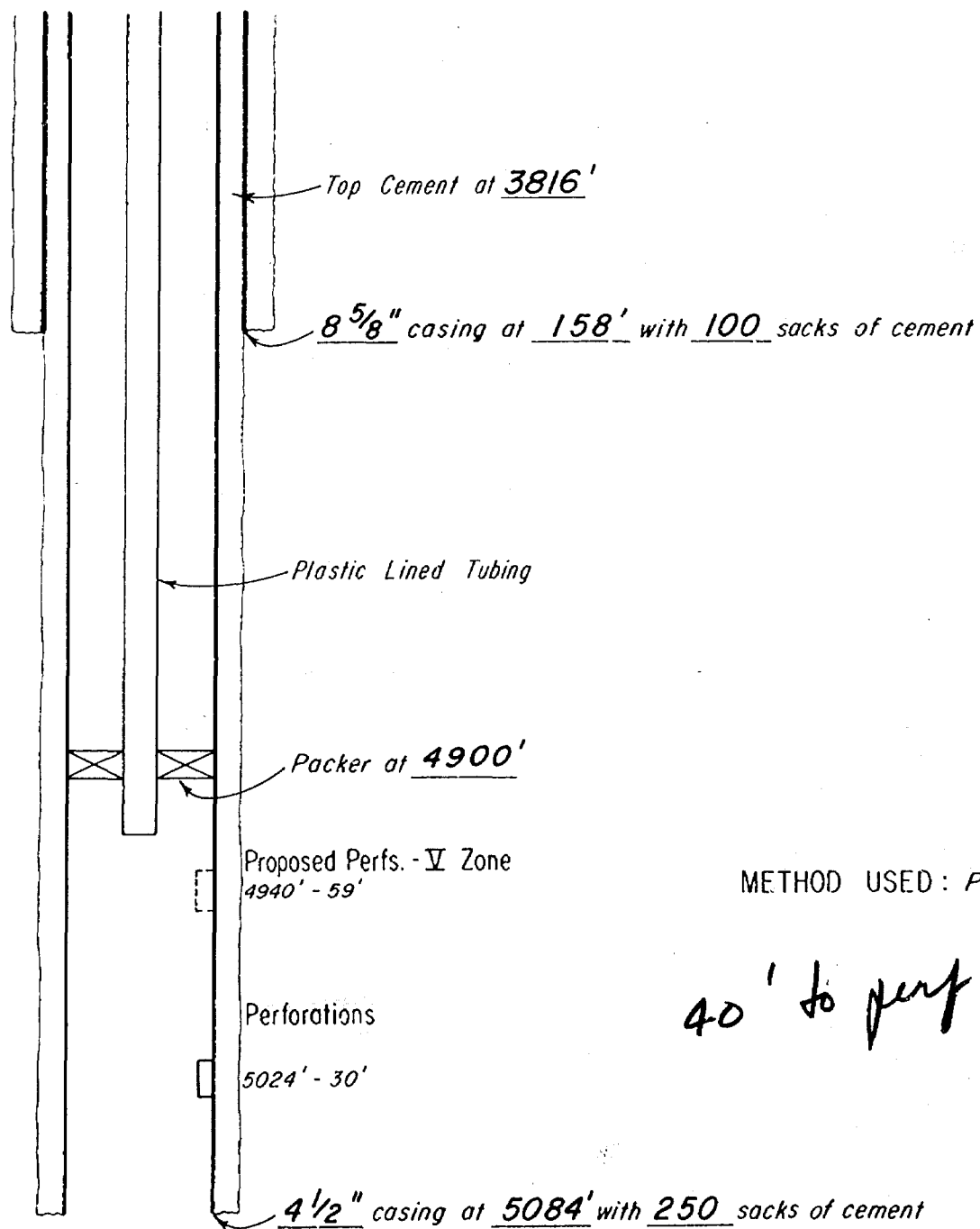
METHOD USED: Pump & Plug

50' to perf

* Plus 45 gallons of Latex

DIAGRAMMATIC SKETCH OF PROPOSED INJECTION WELL TEXACO HAMON NO 2

| | | | | | |
|--|-------------------|--------|------------|----------|-------------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEX. |
| Engineer | R. C. W. | Date | 8 - 5 - 69 | Drwn. By | Del |
| BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. | | | | | FILE |
| CONSULTING ENGINEERS | | | | | PEARL QUEEN, N.E. |
| TIOU VB. TOWER MIDLAND, TEXAS | | | | | FIGURE NO. |



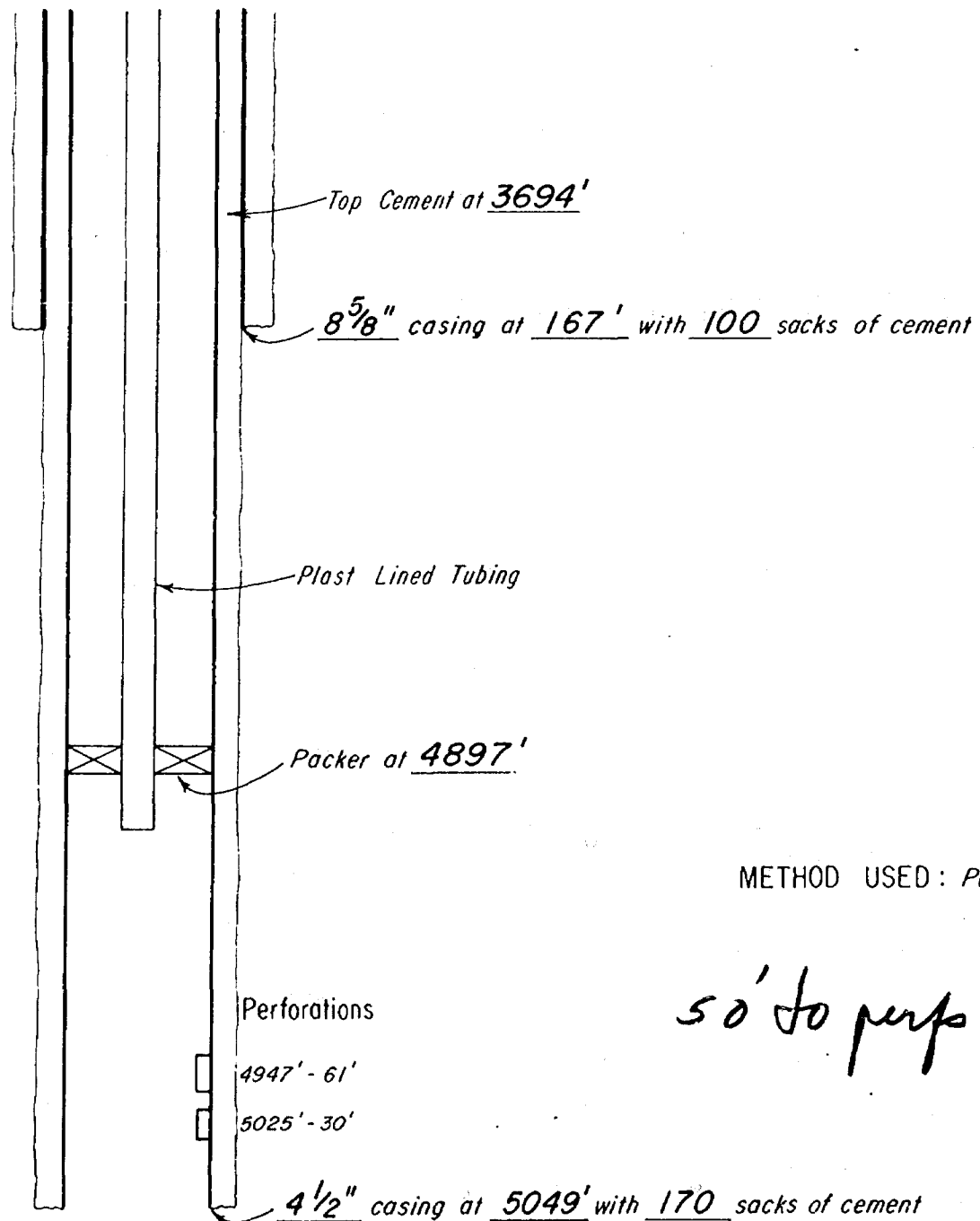
METHOD USED: Pump & Plug

40' to perf

DIAGRAMMATIC SKETCH OF PROPOSED INJECTION WELL TEXACO HAMON "A" NO. 1

| | | | | | |
|--|-------------------|--------|------------|------------|--------------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEX. |
| Engineer | R. C. W. | Date | 8 - 5 - 69 | Drwn. By | Del |
| BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. | | | | File | PEARL QUEEN, N. E. |
| CONSULTING ENGINEERS | | | | FIGURE NO. | |

1100 V.B.J. TOWER, MIDLAND, TEXAS



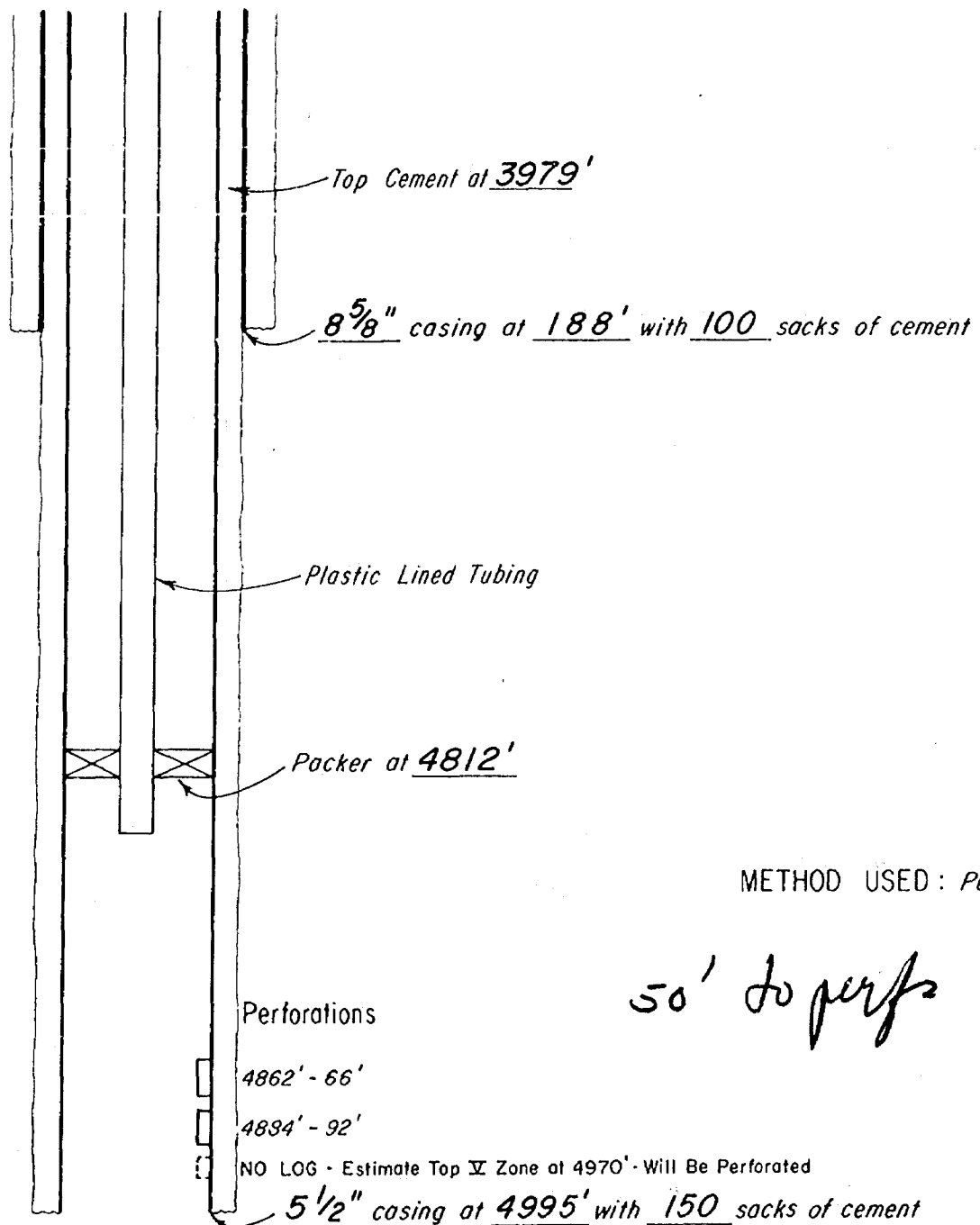
METHOD USED: *Pump & Plug*

50' to perp

DIAGRAMMATIC SKETCH OF PROPOSED INJECTION WELL TEXACO MORAN NO. 1

| | | | | | |
|--|-------------------|--------|------------|------------|-------------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEX. |
| Engineer | R. C. W. | Date | 8 - 5 - 69 | Drwn. By | Del |
| BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. | | | | File | PEARL QUEEN, N.E. |
| CONSULTING ENGINEERS | | | | FIGURE NO. | |

1100 V.B.J. TOWER, MIDLAND, TEXAS



METHOD USED : *Pump & Plug*

50' to perfs

DIAGRAMMATIC SKETCH OF PROPOSED INJECTION WELL UNION STATE NO. 2

| | | | | | |
|--|-------------------|--------|------------|----------|--------------------|
| FIELD | N. E. PEARL QUEEN | COUNTY | LEA | STATE | NEW MEX. |
| Engineer | R. C. W. | Date | 8 - 5 - 69 | Drwn. By | Del |
| | | | | File | PEARL QUEEN, N. E. |
| BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. CONSULTING ENGINEERS | | | | | FIGURE NO. |

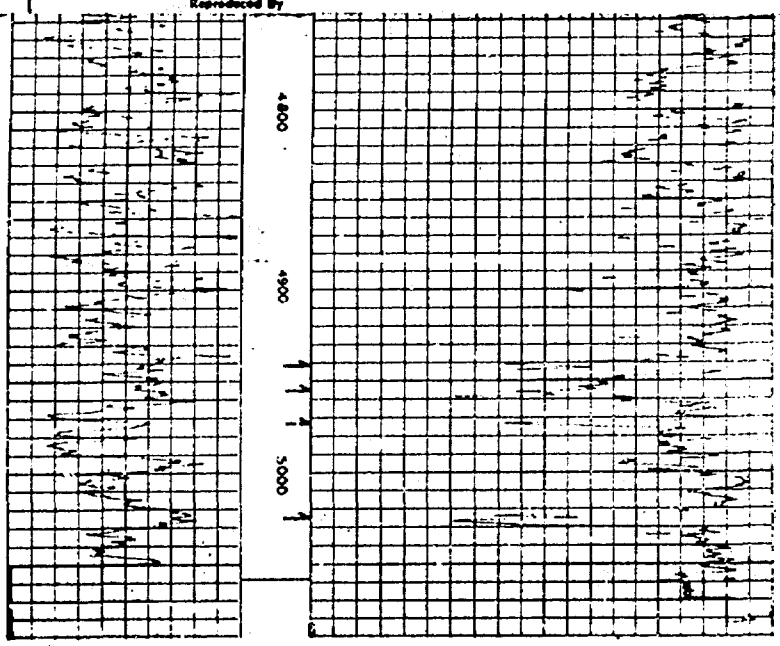
400 - S. J. TOAER, MIDLAND, TEXAS

B50472

LEA, N. M.

| RANGE ATLAS CORP. | | | |
|---|------------------------------|--------------------|-----------|
| PGAC | | Acoustic-Gamma Log | |
| REF NO. | COMPANY GULF OIL CORPORATION | | |
| | WELL LEA STATE "BF" # 2 | | |
| | FIELD PEARL QUEEN | | |
| | COUNTY LEA | STATE NEW MEXICO | |
| LOCATION: 1980' FSL & 1180' FEL | | Other Services | |
| MC 23 TWP 19-S RGE 35-E | | | |
| Permanent Datum GROUND LEVEL Elev. 3742 | | Elevations: | |
| Log Measured from K.B. 11' R. Above Permanent Datum | | KB 3758 | |
| Drilling Measured from K.B. | | DB 3757 | |
| | | GA 3747 | |
| Date | 11/19/62 | | |
| Run No. | ONE | | |
| Total Depth Driller | 5100 | | |
| Total Depth Logger | 5085 | | |
| Casing Driller | 170 | | |
| Casing Logger | | | |
| Loggage Logged | 4959 | | |
| Mud Type | SALT GEL | | |
| Density (g/cc) | 10.2 | 36 | |
| Max. Temp. (°F) | 98°F | | |
| Direction | UP | | |
| Sec. To Rec. Spacing | 1' | | |
| Trans. To Rec. Spg. | 4' | | |
| Logging Instrument | TLAS-53-22-6381 | | |
| Equip. No. | 6-25 | | |
| Recorded By | CARLY | | |
| Witnessed By | MR. MUSSETT | | |
| BORE HOLE RECORD | | CASING RECORD | |
| Bit Size | From To | Cas. Size | Cas. Wt. |
| 12 1/8 | SURF. 170 | 8 5/8 | From |
| 7 7/8 | 170 5100 | | SURF. 170 |

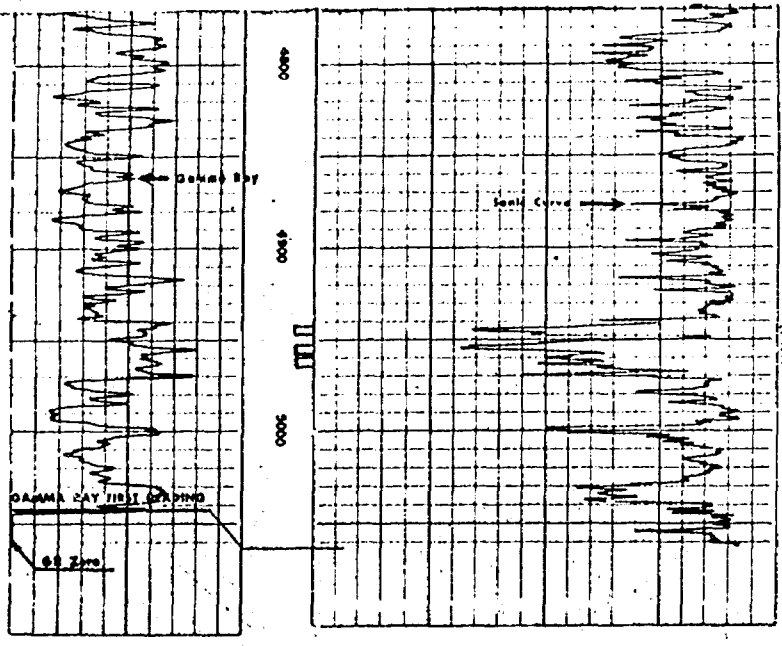
Reproduced By



IV Sand
VII Sand

LEA N.M.

| SCHLUMBERGER | | SOUND LOG | |
|--|----------------------------|----------------------|------------------|
| COUNTY FIELD LOCATION WELL COMPANY | COMPANY EARL S. COLTON | | Other Surveys |
| | WELL EL PASO-HANON | | Location of Well |
| | STATE N.M. | | 330' FROM NW |
| | FIELD PEARL QUEEN | | 2710' FROM E/E |
| | LOCATION SEC. 22, 19S, 35E | | |
| COUNTY LEA | | Elevation: K.B. 3293 | |
| STATE NEW MEXICO | | D.F. _____ | |
| | | or G.L. 1180 | |
| Log Depth Measured From KB 11 ft. above RL | | | |
| RUN No. | ONE | | |
| Date | 1-17-62 | | |
| First Reading | 5063 | | |
| Last Reading | 0 | | |
| Feet Measured | 5063 | | |
| Ctg. Schlum. | | | |
| Ctg. Driller | 165 | | |
| Depth Reached | 5067 | | |
| Bottom Driller | 5065 | | |
| Mud Nat. | SAL I | | |
| Dens. Visc. | 10.7 @ 58 | | |
| Mud Resist. | 0.55 @ 77 | | |
| Res. BHT | 0.42 @ 95 | | |
| pH | @ 95 | | |
| Wtr. Loss | 0.36 @ 30 min | | |
| pH | @ 95 | | |
| Bit Size | 7 1/8" | | |
| Spacing | | | |
| 1 1/2" - 1 1/2" | 1000 To 5063 | Yes | Yes |
| 1 1/2" - 3/4" | 400 To 1000 | Yes | Yes |
| Opn. Rig Time | 2520 HOURS | | |
| Truck No. | WILSON | | |
| Recorded By | WILSON | | |
| Witness | JOHN | | |



| | | | |
|--|--------------------------------|------------|--|
| SCHLUMBERGER | | SUNNY SIDE | |
| COUNTY LEA FIELD NO. LOCATION PEARL QUEEN WELL TEXACO HARMON # 2 COMPANY EARL G. COLTON | COMPANY EARL G. COLTON | | Other Surveys |
| | WELL TEXACO HARMON # 2 | | Location of Well 1980' FROM N/1 2310' FROM E/1 |
| | FIELD PEARL QUEEN | | |
| | LOCATION SEC. 23-19S-15E | | |
| | COUNTY LEA STATE NEW MEXICO | | Elevation: K.B., 3787 D.F., or G.L., 3774 |
| Log Depths Measured From KB 13 Ft. above GL | | | |
| RUN No. | ONE | | |
| Date | 7-9-62 | | |
| First Reading | 5097 | | |
| Last Reading | 0 | | |
| Feet Measured | 5097 | | |
| Csg. Schum. | | | |
| Cig. Driller | 179 | | |
| Depth Reached | 5105 | | |
| Bottom Driller | 5103 | | |
| Mud No. | SAL 1-GRS-011 | | |
| Dens. Visc. | 9.2 16 | | |
| Mud Resist. | .045 81 | | |
| Res. BHT | | | |
| pH | | | |
| Wtr. Loss | 20 CC 30 min | | |
| Wtr. Loss | | | |
| Bit Size | 7 7/8" | | |
| Spooling | | | |
| T. R. L. R. | CSG. 10 TO | | |
| T. R. R. | 10 | | |
| Opp. Log Time | 1 HOUR | | |
| Truck No. | 3701-HOBBS | | |
| Recorded By | OWEN | | |
| Witness | THOMAS | | |

LEA New Mexico

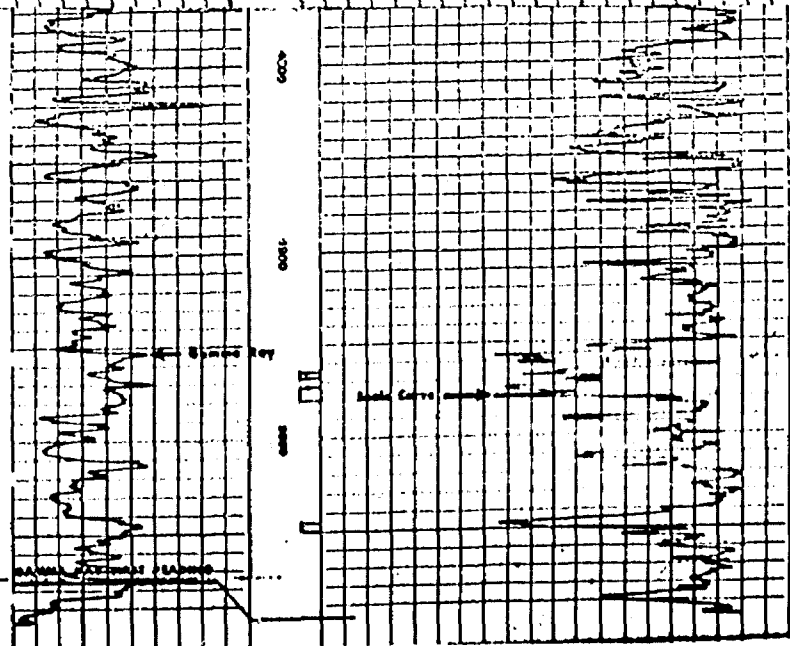
Reproduced By
West Texas Electrical Log Service
Dallas 9, Texas

★ **STRUCTURMAPS, LTD.**
REFERENCE N4991G

12 COMPLETION RECORD

| | |
|------------|--|
| SPUD DATE | |
| COMP DATE | |
| OST RECORD | |

| | | | |
|-------------------------------------|-----------|----------------------------|---|
| SPONTANEOUS-POTENTIAL millivolts | GAMMA RAY | G API UNITS 125 125 250 | INTERVAL TRANSIT TIME microseconds per foot T-30, L-4 |
| | | | 100 70 40 |



V Sand
VII Sand

LEA. N.M.

| | | | |
|---|--------------------------|----------------------|------------------|
| SCHLUMBERGER | | SOUND LOG | |
| COUNTY LEA LOCATION OF WELL WELL NO. COMPANY NO. | COMPANY TARIFF NO. | | Other Surveys |
| | WELL TEXACO-HAYDON | | Location of Well |
| | STATE A. J. | | 1810' FROM W/L |
| | FIELD PEARL QUEEN | | 660' FROM W/L |
| | LOCATION S.E. 24 12S-35E | | |
| COUNTY LEA | | Elevation: K.B. 3751 | |
| STATE NEW MEXICO | | D.F. 2450 | |
| | | or G.L. 2218 | |
| Log Depths Measured From KB 11 ft. above G.L. | | | |
| RUN No. | ONE | | |
| Date | 4-11-62 | | |
| First Reading | 5083 | | |
| Last Reading | 0 | | |
| Feet Measured | 5083 | | |
| Csg. Schlum. | 5 5/8" x 160' | | |
| Csg. Driller | 5080 | | |
| Depth Reached | 5085 | | |
| Bottom Driller | SALT | | |
| Mud No. | 10, 7 | | |
| Dens. Visc. | 10, 7 | | |
| Mud Resist. | 10, 7 | | |
| Res. BHT | 10, 7 | | |
| W/L loss | 10, 7 | | |
| Rmf | 10, 7 | | |
| Bit Size | 7 7/8" | | |
| Spacing | 1 3/8" 0 To 1155 | To | To |
| | 1 1/2" 1155 To 5083 | To | To |
| Op. Rig Time | 4 HOURS | | |
| Truck No. | 2526 HOBBS | | |
| Recorded By | WILSON | | |
| Witness | JOHN | | |

Reproduced By
West Texas Electrical Log Service
Dallas 2, Texas

STRUCTURMAPS, LTD.

REFERENCE W3079H

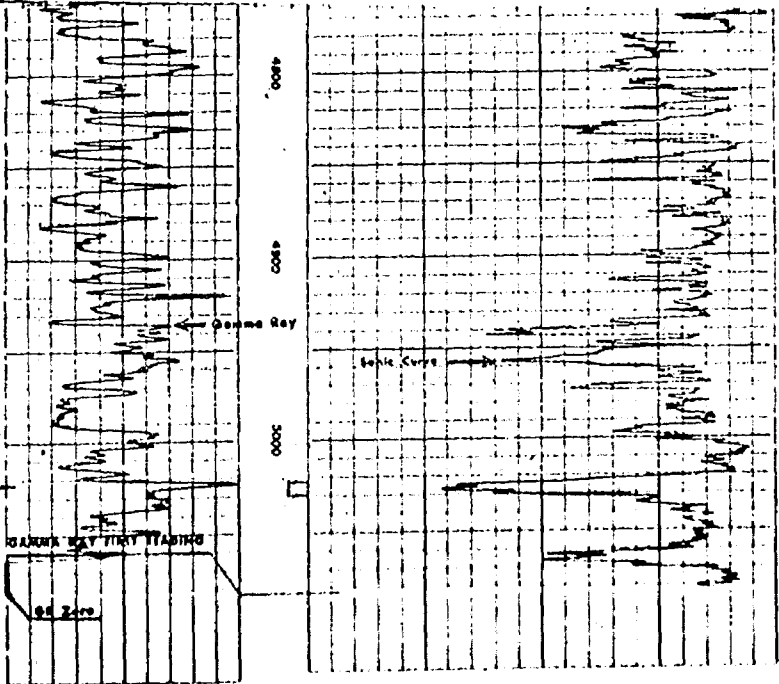


12 COMPLETION RECORD

SPUD DATE

COMP DATE

DST RECORD



V Sand

VII Sand

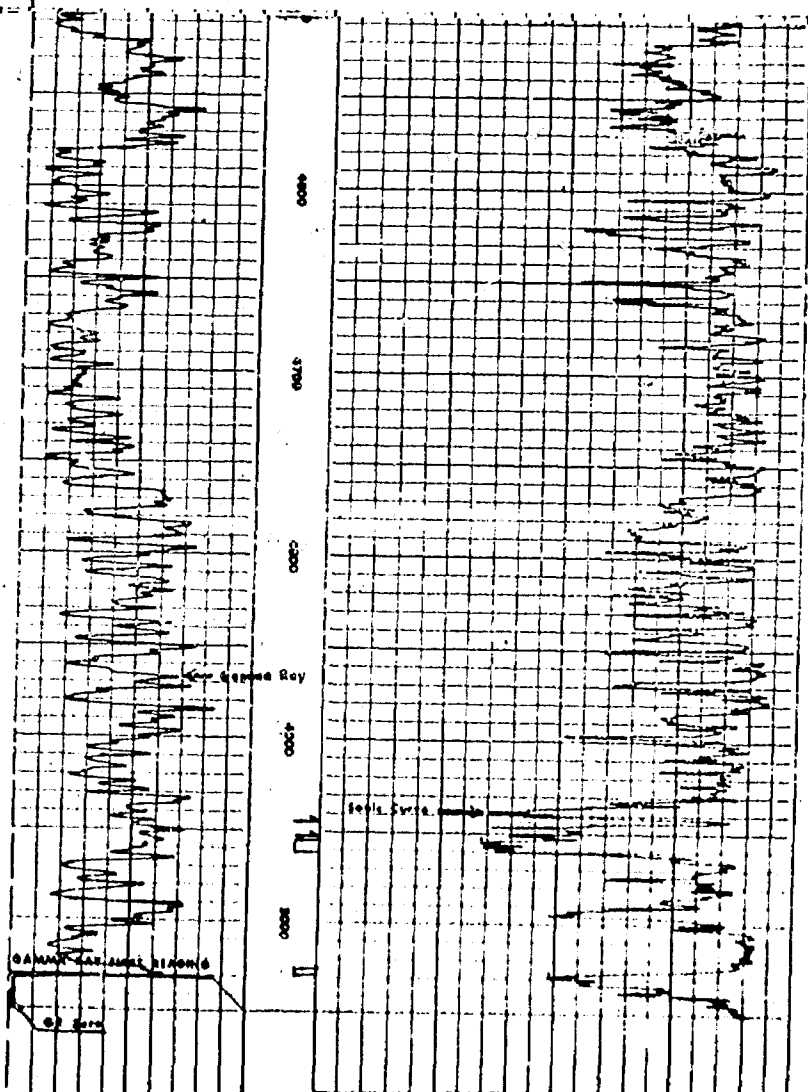
| | | | |
|--|--------------------------|------------------|---|
| SCHLUMBERGER | | SUNNY LOG | |
| COUNTY LEA FIELD or LOCATION WELL COMPANY | COMPANY LAB. G. L. LUTUN | | Other Surveys NONE |
| | WELL <u>PEARL QUEEN</u> | | Location of Well 660' FROM NEE/L |
| | FIELD PEARL QUEEN | | |
| | LOCATION SEC. 22 19S-15E | | |
| | COUNTY LEA | | Elevation: K.B. 3791 O.P. 3790 or O.L. 3778 |
| STATE NEW MEXICO | | | |
| Log Depth Measured From <u>KB</u> 11 Ft. above GL | | | |
| RUN No. | 091 | | |
| Date | 10-26-61 | | |
| First Reading | 5050 | | |
| Last Reading | 0 | | |
| Feet Measured | 5050 | | |
| Cig. Schlum. | 180 | | |
| Depth Reached | 5054 | | |
| Bottom Driller | 5050 | | |
| Mud Not. | 5051 | | |
| Dens. Visc. | 10.2 4.1 | | |
| Mud Resist. | 4.6 75 48 | | |
| Res. BHT | 4.5 | | |
| Wit. Loss | 4.5 | | |
| Bit Size | 5" | | |
| Spacing: | | | |
| T. R. 1st | 180 To 4400 | To | To |
| T. R. 2nd | 4400 To 5050 | To | To |
| Op. Rig Time | 3 HOURS | | |
| Truck No. | 2526-HOBBS | | |
| Recorded By | WILSON | | |
| Witness | JOHN | | |

LEA New Mexico

Reproduced By
West Texas Electrical Log Service

Office & Town
* **STRUCTURMAPS, INC.** *
REFERENCE W16551

9 COMPLETION RECORD



⌵ Sand

— VII Sand

| SCHLUMBERGER WELL SURVEYING CORPORATION | | | |
|--|------------|----------------------|--|
| COUNTY FIELD LOCATION WELL | COMPANY | Other Surveys | |
| | WELL | Location of Well | |
| | FIELD | 1650' FROM S/L | |
| | LOCATION | 1980' FROM W/L | |
| | COUNTY | Elevation: K.B. 3270 | |
| STATE | NEW MEXICO | D.F. 1 | |
| Log Depths Measured From K.B. 11 Ft. above G.L. | | | |
| RUN No. ONE Date 5-2-6 First Reading 4.00 Last Reading 0.00 Feet Measured 4.00 Cig. Schlum Cig. Driller Depth Reached 4.00 Bottom Driller Mud Npt. 5.00 Mud Visc. 10 Mud Resist. 0.2 Res. BHT 0.2 pH 5.5 Wt. loss 10.0 Rmt 0.2 Bit Size 2 7/8 Spacing Y 1 R. 3 R. SURF To 4400 Y 1 R. 1 R. 4400 To 1 R. Op. Up Time 1 HOURS Truck No. 2526-10885 Recorded By SCHAEFFER Witness COLTON | | | |

LEA NEW MEXICO

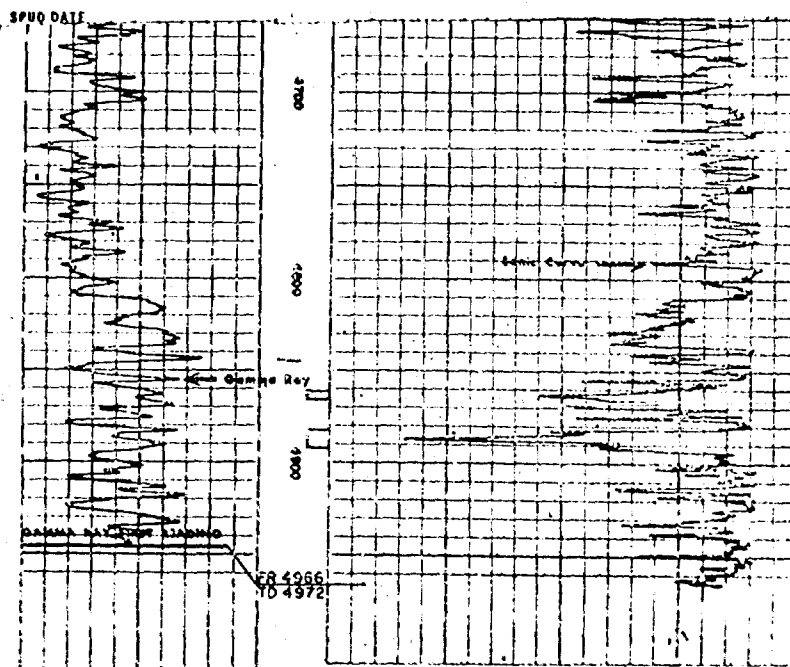
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Dallas 2, Texas

REFERENCE W1230L



COMPLETION RECORD



(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tamarack Petroleum Company, Inc., is hereby authorized to institute a waterflood project in the Northeast Pearl-Queen Unit Area, Pearl-Queen Pool, by the injection of water into the Queen formation through the following-described wells in Township 19 ~~North~~ South, Range 35 ~~West~~ East, NMPM, Lea

County, New Mexico:

| Unit Operator | Well | Unit | Section |
|---------------|-----------------------------|------|---------|
| Tamarack | Union State Well No. 2 | K | 15 ✓ |
| Tamarack | Cabot Carbon Well No. 2 | P | 15 ✓ |
| Tamarack | Texaco Homer Well No. 1 | A | 22 ✓ |
| Tamarack | Texaco Homer Well No. 2 | H | 22 ✓ |
| Tamarack | Texaco Hamon Well No. 1 | B | 23 ✓ |
| Tamarack | Texaco Hamon Well No. 2 | G | 23 ✓ |
| Tamarack | Hugh "BF" Well No. 2 | J | 23 ✓ |
| Tamarack | Texaco Homer "A" Well No. 1 | E | 24 ✓ |

(2) That the subject waterflood project is hereby designated the Tamarack Northeast Pearl Queen Unit Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

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

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

(A) That Commission Orders Nos. R-3674, R-3718, and R-3772, which previously authorized water injection into certain of the wells in the Northeast Pearl Queen Unit Area, are hereby superseded.

DRAFT


GMH/esr

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 4217

Order No. R- 3837

 APPLICATION OF TAMARACK PETROLEUM COMPANY, INC.,
FOR A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

 ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 10, 1969,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this day of September, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

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

(2) That the applicant, Tamarack Petroleum Company, Inc.,
seeks permission to institute a waterflood project in the
Northeast Pearl-Queen Unit Area, Pearl-Queen Pool, by
the injection of water into the Queen formation
through eight injection wells in Sections 15, 22, 23, and 24,
Township 19 ~~North~~ South, Range 35 ~~West~~ East, NMPM,
Lea County, New Mexico.

(3) That the wells in the project area are in an advanced
state of depletion and should properly be classified as "stripper"
wells.

(4) That the proposed waterflood project should result in
the recovery of otherwise unrecoverable oil, thereby preventing
waste.

CASE 4218:

SOUTHEASTERN NEW MEXICO
NOMENCLATURE