

CASE 3753: Application of AMERADA
PETROLEUM CORP. for a waterflood
expansion, Lea County.

Spec. letter

as attached

Case Number
3753

Application
Transcripts.

Small Exhibits

ETC.

State of New Mexico
Oil Conservation Commission



STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

April 29, 1968

Re: Case No. 3753
Order No. R-3407
Applicant:
AMERADA PETROLEUM CORP.

Enclosed herewith is a copy of the above-referenced Commission order recently entered in the subject case. Letter pertaining to conditions of approval and maximum allowable to follow.

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

Hobbs OCC x
 Artesia OCC
 Aztec OCC
 State Engineer x

Other _____

DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 2088
SANTA FE

April 30, 1969

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

Dear Sir:

Reference is made to Commission Order No. R-3407, recently entered in Case No. 3753, approving the expansion of Amerada's Langlie Mattix Woolworth Unit Waterflood Project.

Injection into the one newly authorized water injection well shall be through 2-inch plastic-lined tubing set in a packer at approximately 3450 feet. The casing-tubing annulus shall be loaded with a corrosion-inhibited fluid and left open at the surface or equipped with a pressure gauge to facilitate detection of leakage in the tubing or packer.

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, as expanded, will be eligible to receive under the provisions of Rule 701-E-3 is 1904 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

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

April 30, 1968

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

ALP/DSN/ir

cc: Oil Conservation Commission, Hobbs, New Mexico

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

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 3753
Order No. R-3407

APPLICATION OF AMERADA PETROLEUM
CORPORATION FOR A WATERFLOOD EXPAN-
SION, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 24, 1968,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 29th day of April, 1968, 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, Amerada Petroleum Corporation,
seeks permission to expand its Langlie Mattix Woolworth Unit
Waterflood Project in the Langlie-Mattix pool by the injection
of water into the Seven Rivers-Queen formation through an
injection well to be drilled at an unorthodox location 75 feet
from the North line and 2635 feet from the West line of Section
27, Township 24 South, Range 37 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 expansion of the waterflood project
should result in the recovery of otherwise unrecoverable oil,
thereby preventing waste.

-2-

CASE No. 3753
Order No. R-3407

(5) That the subject application should be approved and the expanded 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, Amerada Petroleum Corporation, is hereby authorized to expand its Langlie Mattix Woolworth Unit Waterflood Project in the Langlie-Mattix Pool by the injection of water into the Seven Rivers-Queen formation through an injection well to be drilled at an unorthodox location 75 feet from the North line and 2635 feet from the West line of Section 27, Township 24 South, Range 37 East, NMPM, Lea County, New Mexico.

(2) That the expanded waterflood project 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 expanded waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1126 of the Commission Rules and Regulations.

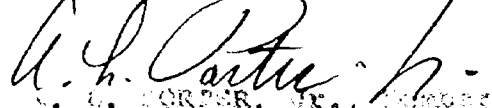
(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

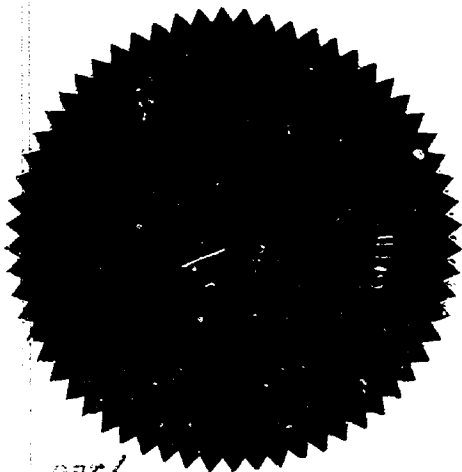
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


DAVID E. CARSON, Chairman


GUYTON B. HAYS, Member


A. J. PORTER, Jr., Secretary



car/

DOCKET: EXAMINER HEARING- WEDNESDAY - APRIL 24, 1968

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 3750: Application of Pan American Petroleum Corporation for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 104 C II to permit the drilling of its State "AZ" Well No. 4 at an unorthodox gas well location 990 feet from the North and East lines of Section 34, Township 12 South, Range 34 East, West Ranger Lake-Devonian Pool, Lea County, New Mexico. The E/2 of said Section 34 would be dedicated to said well.
- CASE 3751: Application of Pennzoil Company for a dual completion and tubing exception, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Hudson Federal 29 Well No. 1 located in Unit B of Section 29, Township 18 South, Range 33 East, South Corbin Field, Lea County, New Mexico, in such a manner as to produce oil from the Wolfcamp formation through 1.38-inch ID tubing and gas from the Morrow formation through 2-inch tubing. Further, applicant seeks an exception to the tubing requirements of Commission Rule 107 in that said 1.38-inch tubing would set more than 250 feet above the uppermost Wolfcamp perforation.
- CASE 3752: Application of Sunray DX Oil Company for a pilot waterflood project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project in the Chaveroo-San Andres Pool by the injection of water into the San Andres formation through its New Mexico "X" Federal Well No. 5 located in Unit G of Section 10, Township 8 South, Range 33 East, Chaves County, New Mexico.
- CASE 3753: Application of Amerada Petroleum Corporation for a waterflood expansion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its Langlie Mattix Woolworth Waterflood Project by the injection of water into the Seven Rivers-Queen formation through an injection well to be drilled at an unorthodox location 75 feet from the North line and 2635 feet from the West line of Section 27, Township 24 South, Range 37 East, Langlie Mattix Pool, Lea County, New Mexico.
- CASE 3754: Application of Continental Oil Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of two existing

Wednesday, April 24, 1968 Examiner Hearing

-2-

(Case 3754 continued)

non-standard gas proration units into one 280-acre unit comprising the SW/4, W/2 SE/4, and SE/4 SE/4 of Section 35, Township 23 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, to be dedicated to its Stevens A-35 Wells Nos. 1 and 2 located in Units J and L, respectively, of said Section 35. Said Well No. 1 is presently dedicated to a 120-acre unit comprising the W/2 SE/4 and SE/4 SE/4 of said Section 35, and said Well No. 2 is presently dedicated to a 160-acre unit comprising the SW/4 of said Section 35.

CASE 3755: Application of Dugan Production Corporation for the creation for an oil pool and for special pool rules, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the creation of the North Shiprock-Dakota Oil Pool comprising the NE/4 of Section 14, Township 30 North, Range 18 West, San Juan County, New Mexico, and the establishment of special pool rules therefor providing for development on 2 1/2-acre spacing with a provision that each 40-acre tract be subject to a single Northwest New Mexico normal unit allowable.

GENERAL OFFICE
Box 2040
TULSA, OKLA. 74102

AMERADA PETROLEUM CORPORATION
Box 668
HOBBS, NEW MEXICO 88240

April 4, 1968

Case 3753

68 APR 4 AM 8 32

Mr. A. L. Porter, Secretary Director
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico

Re: Langlie Mattix Woolworth Unit,
Sections 27, 28, 33 and 34,
T-24-S, R-37-E, Lea County,
New Mexico.

Dear Sir:

The New Mexico Oil Conservation Commission authorized a pilot injection project utilizing six (6) wells on Amerada Petroleum Corporation's Langlie Mattix Woolworth Unit by Order No. R-2197 dated March 14, 1962. Water injection in the pilot area began during May, 1963. The project was expanded to include seven (7) additional injection wells by Order WFX No. 238 dated August 23, 1966.

Administrative approval is sought to drill an additional injection well to be located 75' FNL, 2635' FWL, Section 27, T-24-S, R-37-E. This well is to be drilled to a total depth of approximately 3490'. The 7-5/8" surface casing will be set at 250' with sufficient cement to circulate. The 4-1/2" casing will be set at approximately 3490' and cemented to the base of the salt section at approximately 2400'. Injection will be through 2-3/8" tubing set with a tension packer immediately above the perforations. A log will be submitted upon completion of the well.

None of the offset producing wells have responded to water injection. It is, however, a reasonable extension of the original waterflood pattern. Responses in the pilot area have been sufficient to warrant expansion to the entire unit area. Unit production has increased from 100 barrels per day to 1200 barrels per day as a result of waterflooding.

DOCKET MAILED

Date 4-10-68

April 4, 1968

Page 2

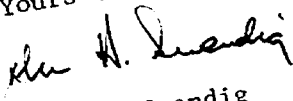
Mr. A. L. Porter

The injection water is from the Santa Rosa Formation located at a depth of approximately 900'. Produced water is commingled with the Santa Rosa water and re-injected. It is anticipated that the injection volume will be 500 barrels per day.

The following attachments accompany this request in compliance with 701-B:

- (1) Plat showing proposed injection well and all other wells within two (2) miles radius.
- (2) Diagrammatic sketch of the proposed area.

Yours very truly,

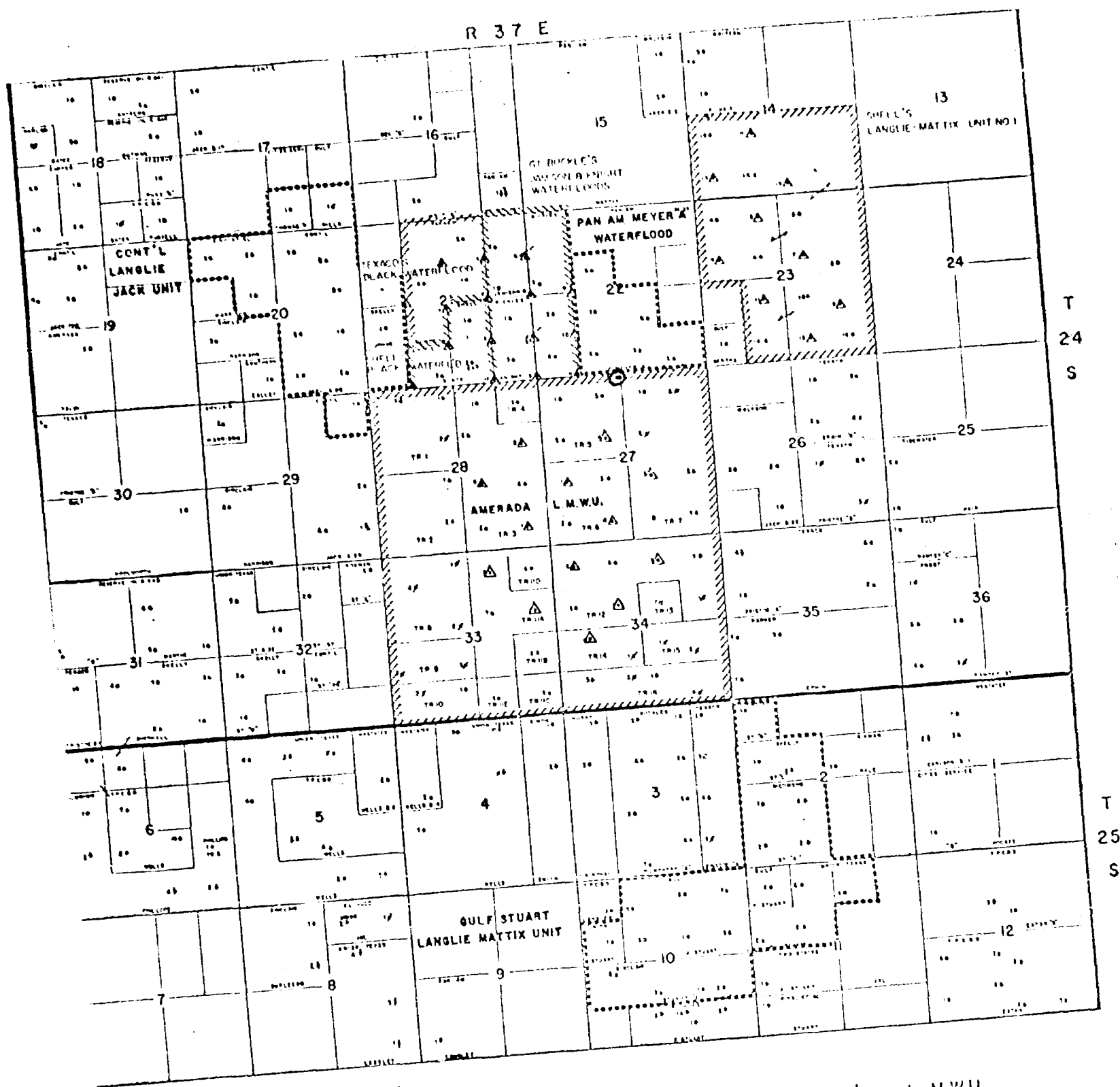

John H. Swendig

JHS/lh

cc: N.M.O.C.C. - P.O. Box 2088 - Santa Fe, New Mexico (2)
N.M.O.C.C. - P.O. Box 1980 - Hobbs, New Mexico
New Mexico State Engineer - P.O. Box 1079 - Santa Fe, New Mexico
Pan American Petroleum Corp. - P.O. Box 68 - Hobbs, New Mexico

ATTACHMENTS

Case 3753



△ PRESENT INJECTION WELLS

○ PROPOSED INJECTION WELLS

AMERADA'S L.M.W.U.

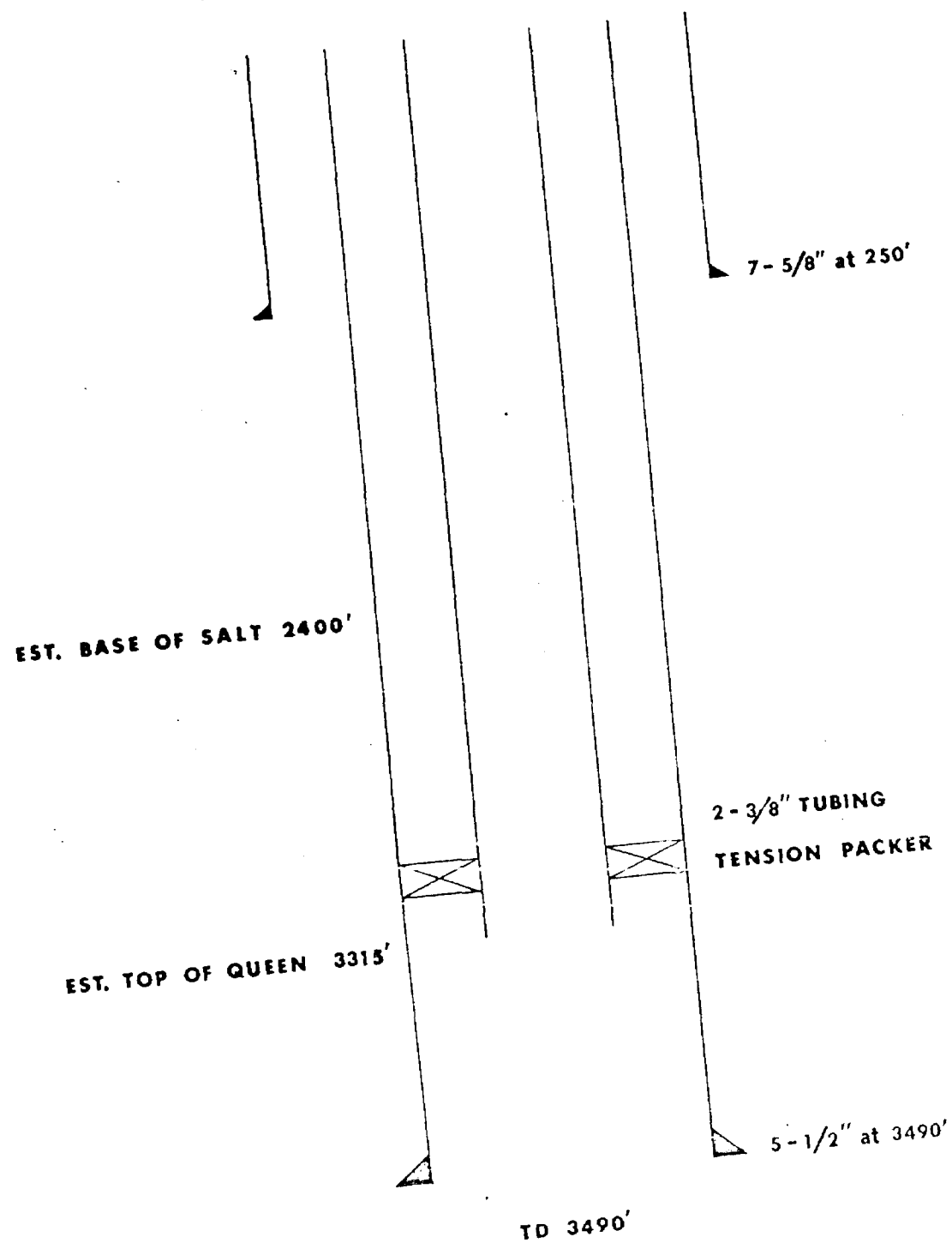
LANGLIE-MATTIX POOL

LEA CO., NEW MEXICO

AJH 8-17-68

Cor 3753
AMERADA PETROLEUM CORPORATION

**LANGLIE MATTIX WOOLWORTH UNIT
TRACT 5 WELL NO. 5**



dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6491 • ALBUQUERQUE, NEW MEXICO



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 24, 1968
EXAMINER HEARING

IN THE MATTER OF:

Application of Amerada Petroleum
Corporation for a waterflood
expansion, Lea County, New Mexico.

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) Case 3753
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BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We'll call next Case 3753.

MR. HATCH: Case 3753. Application of Amerada Petroleum Corporation for a waterflood expansion, Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin of Kellahin & Fox, Santa Fe, appearing for the Applicant. I have one witness I would like to have sworn.

(Witness sworn)

(Whereupon, Applicant's
Exhibits 1 through 6
marked for identification)

JOHN SWENDIG

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 John Swendig.

Q By whom are you employed and in what capacity?

A Amerada Petroleum Corporation as District Engineer at Hobbs, New Mexico.

MR. NUTTER: How do you spell your last name?

A S-w-e-n-d-i-g.

Q (By Mr. Kellahin) Have you ever testified

before the Oil Conservation Commission and made your qualifications a matter of record?

A Yes, sir, I have.

MR. KELLAHIN: Are the witness's qualifications acceptable?

MR. NUTTER: Yes, they are.

Q Mr. Swendig, are you familiar with the application of Amerada Petroleum Corporation in Case 3753?

A Yes, sir, I am.

Q Briefly what does Amerada propose to do in this case?

A Amerada proposes to drill an injection well on the north lease line of the Langlie Mattix Woolworth Unit to be located 75 feet from the north line and 23 -- 2635 from the west line of Section 27 Range 37 East, 24 South.

Q Now, is that area presently under a waterflood project?

A Yes, sir, it's covered by a waterflood project, but this would be an expansion of a waterflood area.

Q Has there been a response in the area where this well is located?

A No, sir, there has not been.

Q Now, referring to what has been marked as Exhibit

No. 1, would you describe the information shown on that exhibit, please?

A On Exhibit 1 is a map of the Langlie Mattix Woolworth Unit and shows what will be labeled as Tract 5 Well No. 5 and it's not marked very clearly on there, but it is spotted on the map.

Q It's right up on the north lease line, is that correct?

A Yes, sir, directly offsetting Pan American Myers acreage.

Q Now, have you entered into an agreement with Pan American in regard to the drilling of this well?

A Yes, sir, we have.

Q The other wells shown on the Exhibit are by conventional symbols shown as waterflood wells and producing wells, is that correct?

A Six wells shown connected by the dashed lines ~~were~~ the original six pilot injection wells. This last year we expanded it to include seven additional wells shown by triangles outside this area.

Q Now, in connection with your Well No. 5, will Pan American -- Does Pan American plan to put another well on injection offsetting that well?

A Yes, sir, they will convert their C Myers "A" No. 2 to injection in return for this well.

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

A Exhibit No. 2 is a schematic of the proposed well. We plan to set seven and five-eighths inch casing at 250 feet which is sufficiently deep enough to protect all fresh water in the area, the five and a half inch casing will then be set at 3,490 which will be approximately 75 feet into the Penrose section. This five and a half inch casing will be cemented back to the base of the salt at approximately 2,400 feet, two and three-eighths inch plastic-coated tubing will be run and set on a packer immediately above the perforations.

Q Is that a type of completion that has been used in this waterflood project?

A Yes, sir, this is the standard type of completion.

Q What is your source of water?

A Water will be Santa Rosa which is located about 750 feet plus recycled produced water.

Q Now, the Santa Rosa water is fresh water, is it not?

A Essentially fresh, yes, sir.

Q But the recycled water would be corrosive to some extent, is that correct?

A Yes, sir, it will be corrosive water.

Q And that's the reason you are using a plastic-lined tubing?

A Yes, sir.

Q What volumes of water do you anticipate will be injected in the No. 5 Well?

A About 500 barrels a day.

Q That would be compatible with the waterflood project presently under way?

A Yes, it will, putting approximately 500 barrels a day in each of the injection wells.

Q Have you had a response from this waterflood?

A Yes, sir. Exhibit 3 is line curve on one of the original pilot producing wells, Tract 3 Well No. 4, which is the northernmost well in the pilot area and you will notice on here that there is a scale shift, that this production has gone from about 15 barrels per month up to about 11,000 barrels per month as a result of waterflooding.

Q You would say that was a response, wouldn't you?

A Then the other pilot well is Strike 6 No.
2. It went from approximately 150 barrels per month
to approximately 9,000 barrels per month.

Q Is that shown on Exhibit 4?

A Yes, sir, that would be Exhibit No. 4.

Q So the flood has had a substantial response
in the area of the injection wells, is that correct?

A Yes, sir.

Q Unless you do get approval for the line
well which you do propose, do you anticipate that water
would be driven off of the project?

A Yes, sir.

Q Oil, rather.

A Oil would be driven off the project, yes, sir.
Exhibit 5 is the performance curve on the total unit,
it also shows the type of response we have had as a result
of injection.

Q In addition to the response shown on Exhibit
5, what other information do you show on that exhibit?

A We show the monthly injection volumes,
produced water volumes, and the average gas-oil ratio.

Q And the GOR has declined substantially?

A Yes, sir, it has declined very rapidly as soon

as we started getting response. This was the first indication of response to the flood, was decrease in gas-oil ratio.

Q Now, referring to what has been marked Exhibit No. 6, would you identify that exhibit?

A Exhibit 6 is the lease line agreement between Pan American and Amerada to drill Tract 5 No. 5 and the conversion of Pan American's Myers "A" No. 2.

Q Mr. Swendig, in your opinion, would the approval of this application result in a more efficient and economical operation of the Langlie Mattix waterflood project?

A Yes, sir, it would. It would help enclose additional areas that need backup to the waterflood project.

Q Were Exhibits 1 through 5 prepared by you or under your supervision?

A Yes, sir, they were.

Q And Exhibit No. 6 is an agreement entered into between Amerada and Pan American Petroleum Corporation?

A Yes, sir, that's true.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 through 6.

MR. NUTTER: Amerada's Exhibits 1 through 6
will be admitted in evidence.

(Whereupon, Applicant's Exhibits
1 through 6 were offered and
admitted in evidence)

MR. KELLAHIN: That's all I have on Direct
Examination, Mr. Nutter.

MR. NUTTER: Are there any questions of Mr.
Swendig?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Swendig, I believe you stated that the seven
and five-eighths inch pipe would be cemented with cement
to the surface?

A No, sir, I didn't say it, but it will be circulated,
yes, sir.

Q What will the approximate perforated interval
be?

A From the top of the Queen which is marked at
3,315 or estimated at 3,315 to about 3,460.

Q In other words, the shoe will be down below
the pay?

A Yes, sir.

Q The tubing will be plastic-lined. What about the

annulus between the tubing and the casing?

A The annulus will be filled with an inhibited fresh water or inhibited water.

Q And will the annulus be left open at the surface or equipped with a gauge?

A It will be equipped with a gauge.

MR. NUTTER: Are there any other questions of Mr. Swendig? You may be excused.

(Witness excused)

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

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

MR. NUTTER: Does anyone have anything they wish to offer in Case 3753? We'll take the case under advisement.

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

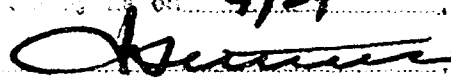
I, KAY EMBREE, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings,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

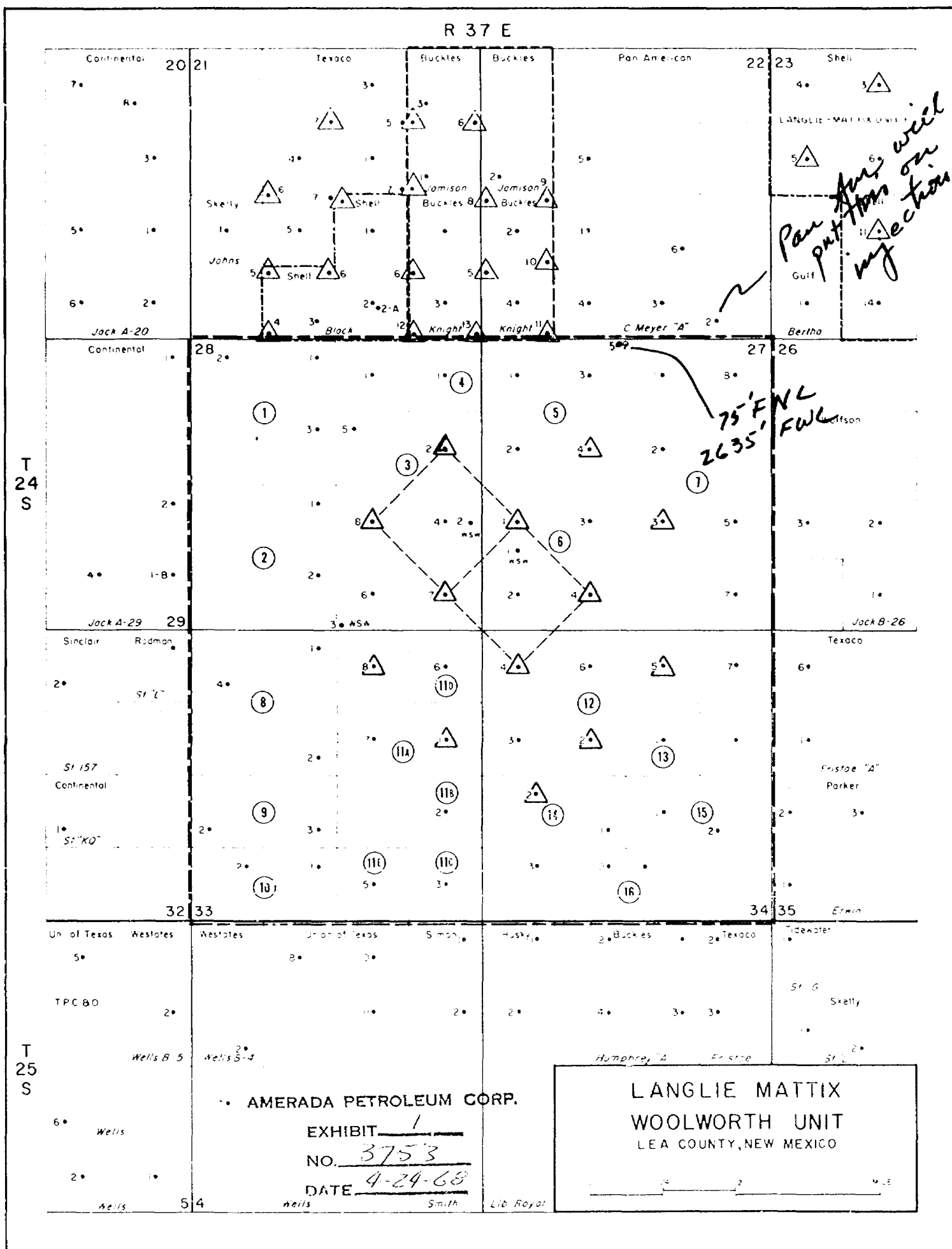
Witness my Hand and Seal this 29th day of April, 1968.


 NOTARY PUBLIC

My Commission Expires:

November 19, 1971

I do hereby certify that the foregoing is
 a correct record of the proceedings in
 the above captioned case No. 3753
 and was on 4/24, 1968.

 Notary Public
 New Mexico Oil Conservation Commission



AMERADA PETROLEUM CORPORATION

LANGLIE MATTIX WOOLWORTH UNIT

TRACT 5 WELL NO. 5

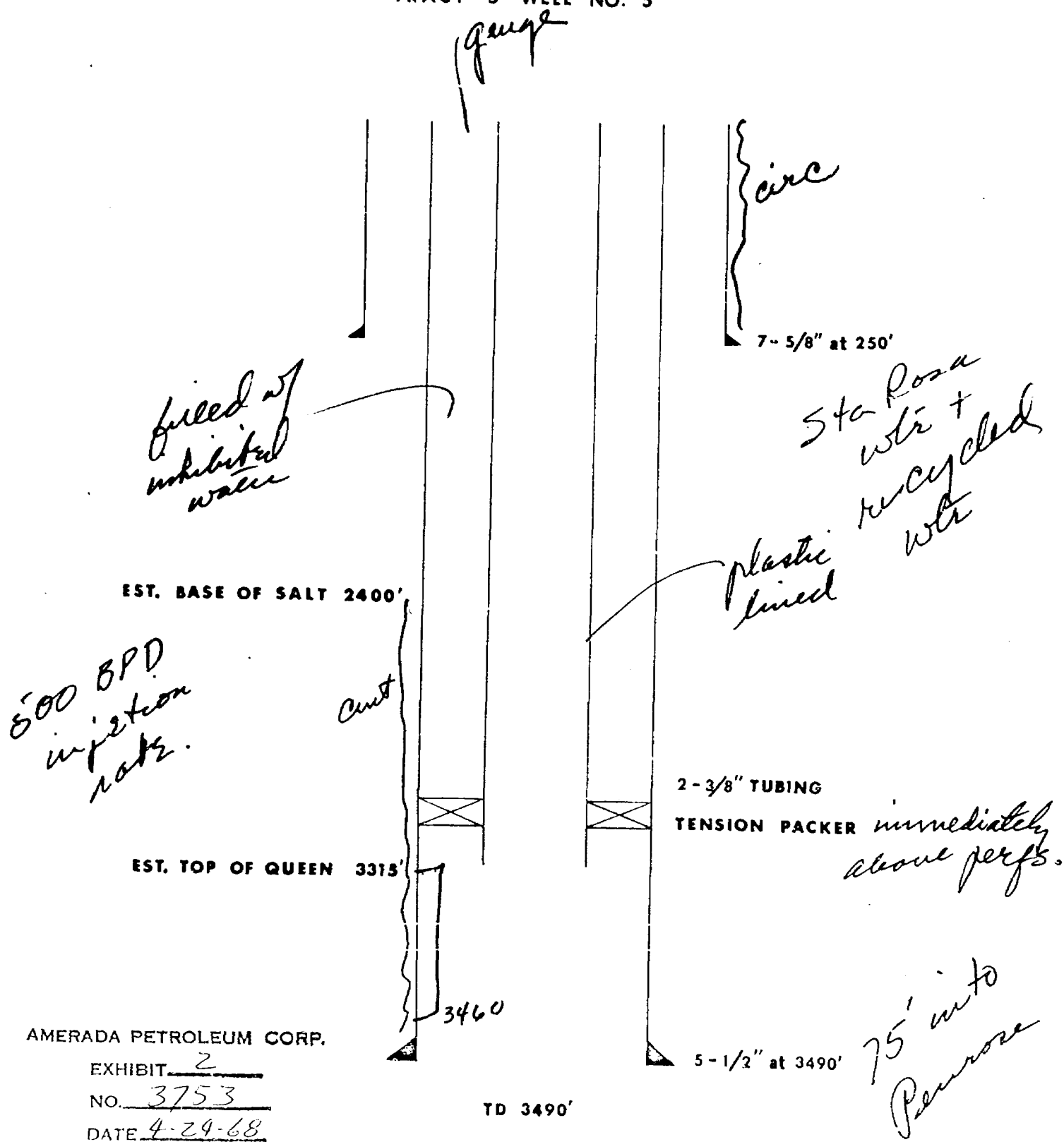


EXHIBIT 3

NO. 5758

DATE 9 28 68

1

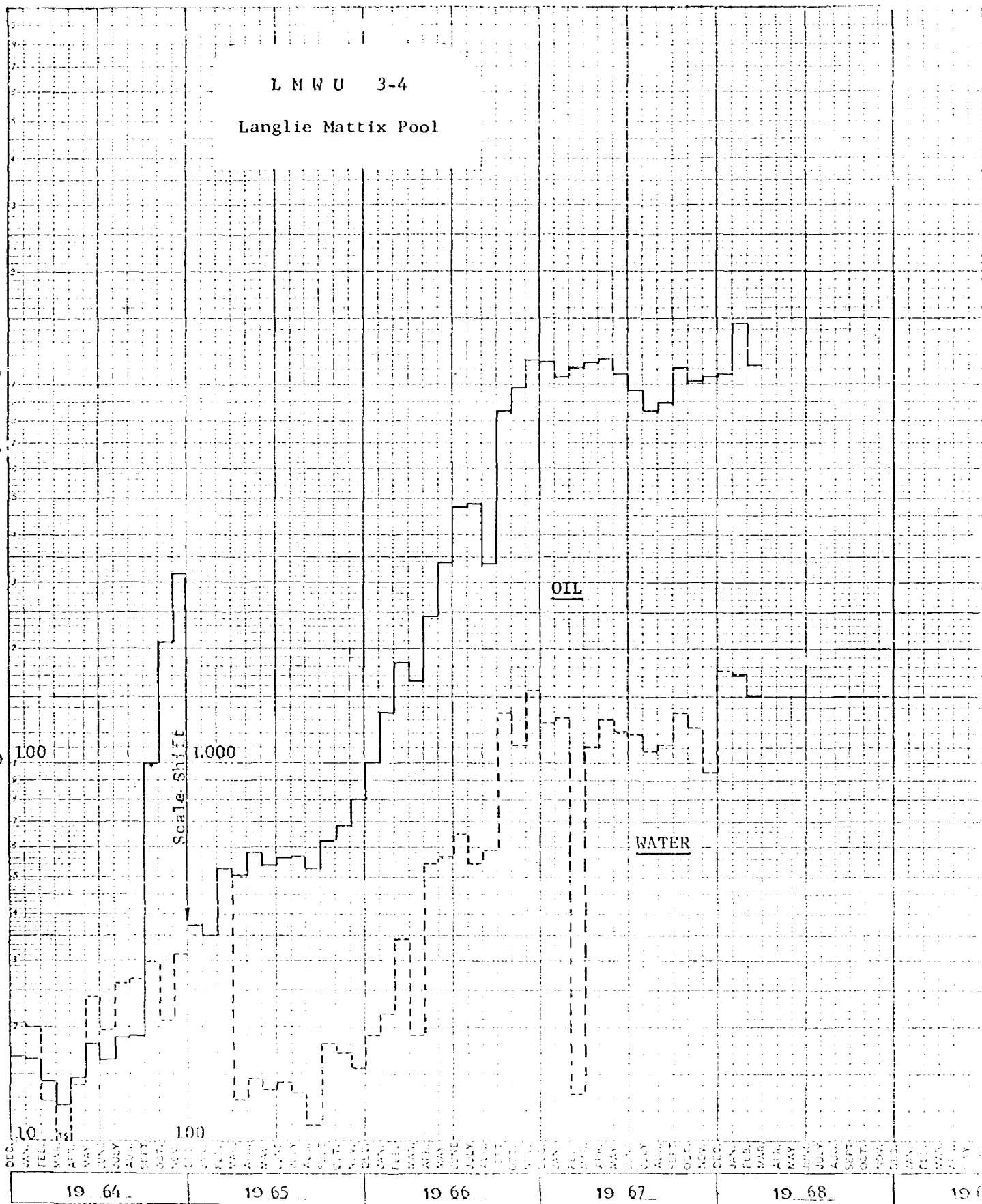
1

100,000

10,000

MONTHLY PRODUCTION - BBLs.

1,000

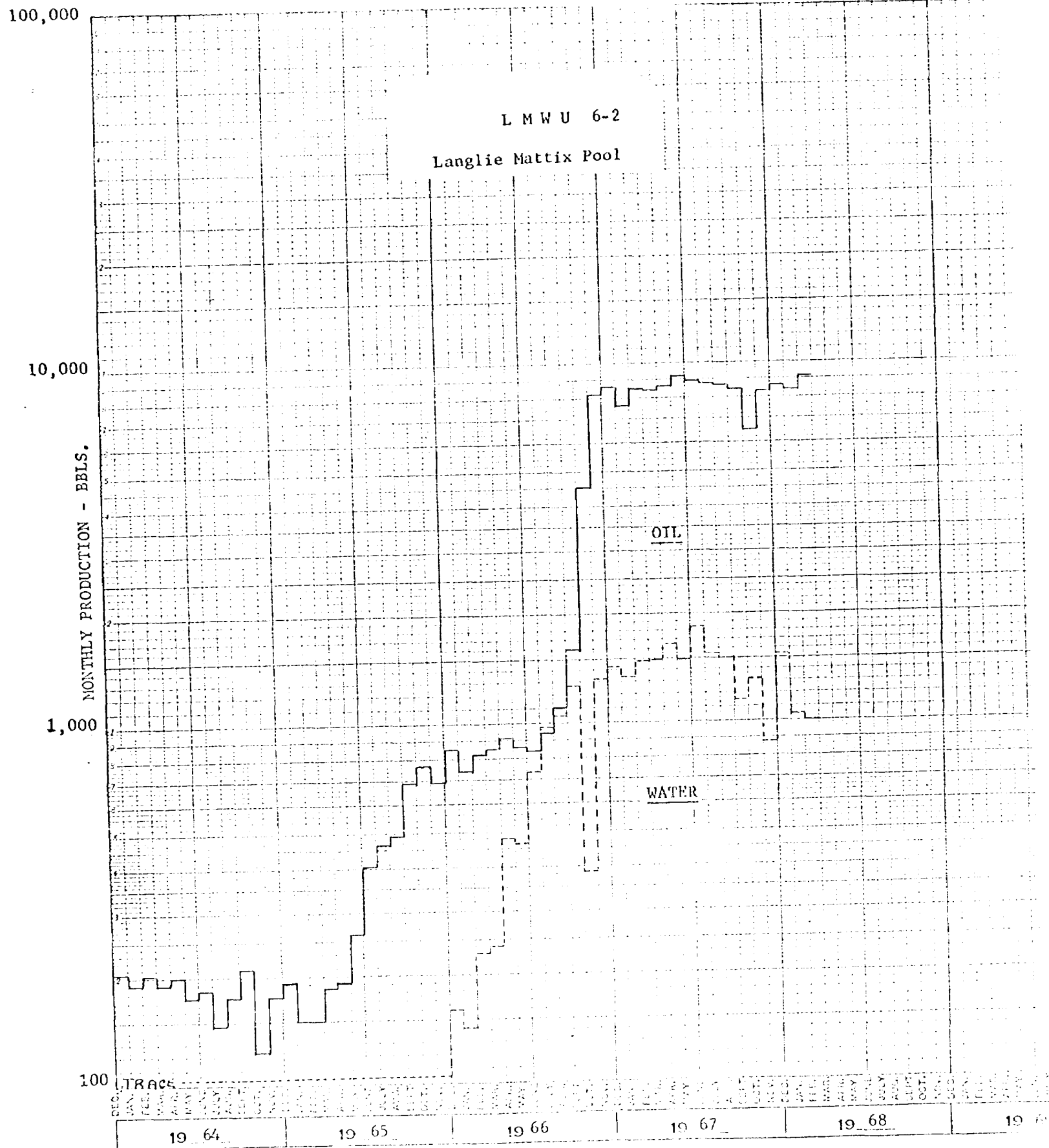


AMERADA PETROLEUM CORP.

EXHIBIT 4

NO. 5/53

DATE 4 28 68



PERFORMANCE CURVE

LARGLIE-MATTIX WOOLWORTH UNIT

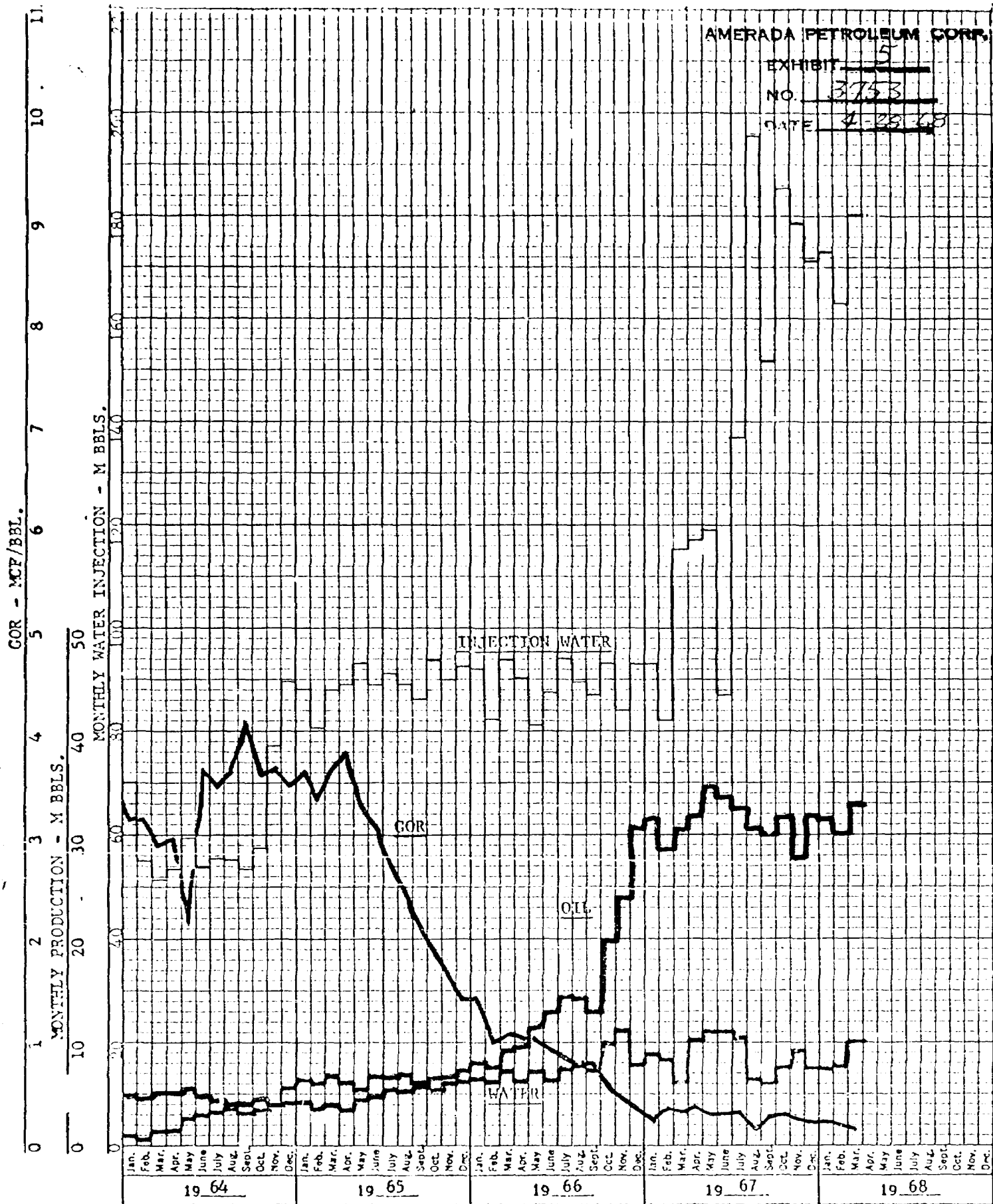


EXHIBIT 6NO. 3753DATE 4-28-68

STATE OF NEW MEXICO)
COUNTY OF LEA)

COOPERATIVE WATERFLOOD AGREEMENT

THIS AGREEMENT, entered into and effective as of _____
between Amerada Petroleum Corporation, hereinafter sometimes referred to as
"Amerada"; and PAN AMERICAN PETROLEUM CORPORATION, hereinafter sometimes referred
to as "Pan American";

W I T N E S S E T H :

WHEREAS, Amerada is the Operator of the Langlie Mattix Woolworth Unit
which covers among other lands, Section 27, T-24-S, R-37-E, Lea County, New
Mexico.

WHEREAS, Pan American is the Operator of their Myers "A" Federal
Lease which covers among other lands, Section 22, T-24-S, R-37-E, Lea County,
New Mexico.

WHEREAS, Amerada and Pan American each in their indicated capacity
of the unit and lease operator wish to continue to operate their respective
properties above described but desire to cooperate with one another in a water-
flood operation to the extent and in the manner hereinafter provided, it being
the opinion of the parties hereto that by so doing each of said properties will
be benefited by an increase in the production of crude oil from the Langlie
Mattix formation (as described by the New Mexico Oil Conservation Commission)
underlying said properties, and the correlative rights of all of the owners of
said properties will be protected;

NOW, THEREFORE, it is agreed as follows:

1. Amerada agrees to drill, equip, maintain and operate one well
for water injection in the Langlie Mattix formation in the manner hereinafter
provided, such well being located as follows:

Langlie Mattix Woolworth Unit Well No. 5-5, NE/4 of the
NW/4 of Section 27, T-24-S, R-37-E, Lea County, New Mexico,

and being shown circled in red on the plat attached hereto as Exhibit "A".

Pan American agrees to convert, equip, maintain, and operate one well
for water injection in the Langlie Mattix formation in the manner hereinafter
provided, such well being located as follows:

Myers "A" Federal Well No. 2, SE/4 of the SE/4 of Section 22,
T-24-S, R-37-E, Lea County, New Mexico.

and being shown circled in green on the plat attached hereto as Exhibit "A".

2. Each party hereto agrees, at its sole risk and expense, to convert,
equip, maintain and operate its water input well so that water may be injected
into the Langlie Mattix formation in the manner hereinafter provided, each
of said water input wells to be converted and equipped to take injection water
within sixty (60) days after the effective date of this agreement, or as soon
thereafter as it is agreed it is practical.

3. Each party hereto agrees to commence the injection of water into
its water input well not later than sixty (60) days after the effective date of
this agreement, or as soon thereafter as it is agreed it is practical, and
thereafter to inject water through its water input well into the Langlie Mattix
formation at rates mutually agreed upon, it being agreed that the parties hereto
will endeavor to control their respective operations in such manner that water
will be injected into each water input well at a uniform rate, so that the volume
injected into each well in any month will be equal to that injected into each
other well covered hereby, as nearly as it is possible to do so; provided, however,
in no event shall either party inject water into its respective water input well
at wellhead pressures in excess of the formation fracture pressure determined by
rate-pressure tests without the mutual agreement of both parties. In the event
that mutual agreement on injection rates is not reached, then each party agrees
to inject a minimum daily volume of water into each lease line input well of

100 barrels of water per day provided that the formation fracture pressure is not exceeded at this rate. In order that the volumes of water injected into the input wells covered hereby shall be equal, insofar as practicable, at all times, each party agrees to furnish monthly reports to the other party showing the volumes and pressures of water injected into its water input well. Also, it is understood that oil and water production information on the properties covered hereby will be exchanged between the parties, as may be mutually agreed upon from time to time. The parties hereto, at their sole risk, shall have access to the premises subject to this agreement at all reasonable hours and the right to inspect pertinent records in connection therewith at all such times.

Each party hereto shall promptly perform any workover or remedial work necessary on its water input well, in order that said wells will take water at the rate and volume and under the pressure limitation herein provided, so as to effectively carry out the waterflood operations to be performed under this agreement.

It is further agreed that each party hereto shall carry on waterflood operations in the manner herein provided, until the property it operates no longer derives any reasonable benefit from same. It is the intention of the parties hereto that nothing herein contained shall be construed to require either party hereto to continue to operate any water input well if such operation is no longer economically profitable to it.

4. At any time either of the parties hereto shall determine that water injection into any of its water input wells is no longer economically profitable to it, then said party shall have the right to cease injection into said well or wells upon giving thirty (30) days written notice to the other party of such intention. The other party hereto may then, at its sole risk and expense, take over and operate said well or wells. In such event, the party taking over said well or wells is hereby granted, without warranty expressed or implied, the right of ingress and egress and all rights-of-way and easements necessary for

continued operation of said well or wells, insofar as it is possible for the party electing not to continue operation of said well or wells to make such a grant. The parties further agree to execute and deliver such additional instruments, as may be required to accomplish the foregoing. The party taking over said well or wells shall pay for the equipment taken over on the basis of its current salvage value in place, and when said party wishes to discontinue its waterflood operation, said party shall plug and abandon said well or wells at its sole risk and expense and salvage all equipment in and on said well or wells for its sole account. The party taking over said well or wells hereby agrees to indemnify and hold the other party hereto harmless from all damages and any liability to any third party, caused as a result of its subsequent operations.

5. Subject to the limitations of time expressed in Section 4 hereinabove, the term of this agreement shall commence as of the date hereto and extend for ninety (90) days from said date and as long thereafter as the properties covered hereby derive any reasonable benefit from the waterflood operations provided for herein.

6. Under no circumstances shall this agreement be construed as creating a partnership, agency or any other type of association between the parties hereto. The liability of the parties hereto shall be several and not joint or collective. Each party shall be responsible only for its obligations and shall be liable only for the costs incurred and the risks assumed in connection with reworking and operating its separate water input well.

7. Each party hereto hereby agrees that this agreement shall not constitute a partnership, as defined in the Internal Revenue Code, and specifically elects to be excluded from the application of all of Subchapter K of the Internal Revenue Code of 1954 pursuant to Section 761 thereof.

8. Any sale, assignment, unitization or transfer of any interest of any party hereto in the leases and lands covered hereby shall be made expressly subject to this agreement, and any party acquiring any such interest shall assume the obligations hereof and be entitled to the benefits accruing

hereunder. In the event any party not a signatory party to this contract thereafter shall acquire any interest subject to this contract by assignment, operation of law, or otherwise, such party shall forthwith furnish to all other parties having an interest subject to this contract evidence of the acquisition of such interest. Failure to comply herewith shall constitute a waiver by such party as to any notice required or permitted hereunder, and said party shall be deemed to have received any such notice where such notice was given to such party's predecessor in title and any action taken or any notice received by such party's predecessor in title shall be binding upon any such party.

9. All terms and provisions herein shall be subject to all valid orders, rules and regulations of the New Mexico Oil Conservation Commission and all other applicable State and Federal laws, rules and regulations.

10. If any party to this agreement is rendered unable, in whole or in part, by force majeure to carry out its obligations under this agreement, then such obligations, so far as they are affected by the force majeure, shall be suspended during, but no longer than, the continuance of the force majeure; provided, however, all reasonable efforts shall be made to remove the force majeure as quickly as possible. The term "force majeure", as employed herein, shall mean an act of God, strike, lockout or other industrial disturbance, act of the public enemy, war, blockade, public riot, lightning, earthquake, storm, flood, explosions, governmental restraint, unavailability of equipment, failure of water supply and any other cause, whether or not of the character above enumerated, which is not reasonably within the control of the party claiming suspension. It is understood that the settlement of strikes or lockouts shall be entirely within the discretion of the party concerned, and the requirement that all reasonable efforts shall be made to remedy the force majeure promptly, shall not require the settlement of strikes or lockouts contrary to its wishes.

11. This agreement and all terms, covenants and conditions hereof shall extend to and be binding upon the parties hereto, their successors and assigns, respectively, and shall constitute covenants running with the lands and leasehold estates affected hereby.

THIS AGREEMENT, executed as of the day and year first above written.

PAN AMERICAN PETROLEUM CORPORATION

by J. J. Haydel
Attorney-in-Fact



ATTEST:

J. J. Humphreys
asst Corporate Secretary

AMERADA PETROLEUM CORPORATION

by [Signature]

Call ERB
JOH
RES
EX 270

THE STATE OF TEXAS }
COUNTY OF TARRANT }

BEFORE ME, a Notary Public in and for said county and state, on this day personally appeared A. L. HOYT, JR., known to me to be the person whose name is subscribed to the foregoing instrument as Attorney in Fact for PAN AMERICAN PETROLEUM CORPORATION, a corporation, and acknowledged to me that he executed the same as the act of such corporation for the purposes and consideration therein expressed, and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this 20th day of January, 1968.

My Commission expires:

June 1, 1969

Dorothy E. Middleton
Notary Public in and for Tarrant County,
Texas. DOROTHY E. MIDDLETON

THE STATE OF _____ }
COUNTY OF _____ }

BEFORE ME, a Notary Public in and for said county and state, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of _____, a corporation, and as the _____ thereof, and for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 1968.

Notary Public in and for _____
County, _____.

THE STATE OF _____ }
COUNTY OF _____ }

BEFORE ME, a Notary Public in and for said county and state, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of _____, a corporation, and as the _____ thereof, and for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 1968.

Notary Public in and for _____
County, _____.

THE STATE OF _____ }
COUNTY OF _____ }

BEFORE ME, a Notary Public in and for said county and state, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as the act and deed of _____, a corporation, and as the _____ thereof, and for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 1968.

Notary Public in and for _____
County, _____.

EXHIBIT "A"

