

CASE 3408; Application of MARATHON  
OIL CO. for a waterflood project, \_\_\_\_\_  
Eddy County, New Mexico.

---

ASE No.

3408

Application,  
Transcripts,

Mail Exhibits

ETC.

OIL CONSERVATION COMMISSION  
P. O. BOX 871  
SANTA FE, NEW MEXICO

July 7, 1966

C  
O  
P  
Y  
Mr. Warren B. Leach, Jr.  
Marathon Oil Company  
Southern National Bank Building  
Post Office Box 3128  
Houston, Texas 77001

Dear Sir:

Reference is made to Commission Order No. R-3072 recently entered in Case No. 3408 approving the Marathon Shugart Johnson Water-flood Project.

Injection is to be through the three authorized water injection wells which shall be equipped with internally coated tubing and packers, with the packers being set within 50 feet of the uppermost perforation.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which the Johnson A Lease will be eligible to receive under the provisions of Rule 701-E-3 is 168 barrels per day, and the maximum for the Johnson B Lease is 84 barrels per day.

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

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

-2-

Mr. Warren B. Leach, Jr.  
Houston, Texas

July 7, 1966

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

ALP/DSN/ir

cc: Mr. Frank Irby  
State Engineer Office  
Santa Fe, New Mexico

Oil Conservation Commission - Artesia, New Mexico

GOVERNOR  
JACK M. CAMPBELL  
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

June 1, 1966

Mr. Warren B. Leach, Jr.  
Marathon Oil Company  
Southern National Bank Building  
Post Office Box 3128  
Houston, Texas 77001

Re: Case No. 3408  
Order No. R-3072  
Applicant:

Marathon Oil Company

Dear Sir:

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.

Very truly yours,

A handwritten signature in cursive script, reading "A. L. Porter, Jr.", followed by a flourish.

A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x  
Artesia OCC x  
Aztec OCC           

Other Mr. Frank Irby

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. 3408  
Order No. R-3072

APPLICATION OF MARATHON OIL COMPANY  
FOR A WATERFLOOD PROJECT, EDDY COUNTY,  
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 25, 1966,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 1st day of June, 1966, 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, Marathon Oil Company, seeks permis-  
sion to institute a waterflood project in the Shugart Pool by the  
injection of water into the Queen formation through three injec-  
tion wells in Sections 10 and 15, Township 18 South, Range 31  
East, NMPM, Eddy 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.
- (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.

CASE No. 3408  
Order No. R-3072

**IT IS THEREFORE ORDERED:**

(1) That the applicant, Marathon Oil Company, is hereby authorized to institute a waterflood project in the Shugart Pool by the injection of water into the Queen formation through the following-described wells in Township 18 South, Range 31 East, NMPM, Eddy County, New Mexico:

Marathon's Federal Johnson A Well No. 2, located  
in the SW/4 SE/4 of Section 10;

Marathon's Federal Johnson A Well No. 4, located  
in the NE/4 SE/4 of Section 10;

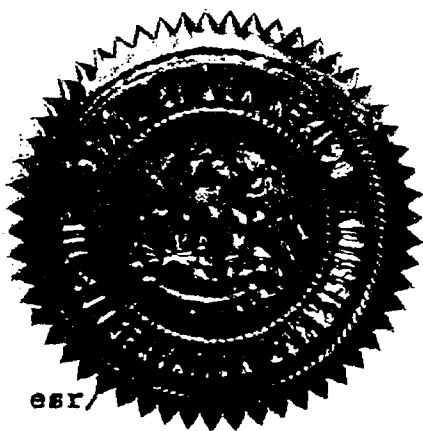
Marathon's Federal Johnson B A/C 2 Well No. 2,  
located in the NE/4 NW/4 of Section 15.

(2) That the subject waterflood project is hereby designated the Shugart Johnson 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.



STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

*Jack M. Campbell*  
JACK M. CAMPBELL, Chairman

*Guyton B. Hays*  
GUYTON B. HAYS, Member

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

ATWOOD & MALONE  
LAWYERS

P. O. DRAWER 700  
TELEPHONE 505 822-6221  
SECURITY NATIONAL BANK BUILDING  
ROSWELL, NEW MEXICO  
88201

MAIL ROOM OFFICE 000

'66 MAY 18 AM 8 02

JEFF D. ATWOOD (1963-1960)  
ROSS L. MALONE  
CHARLES F. MALONE  
RUSSELL D. MANN  
PAUL A. COOTER  
BOB F. TURNER  
ROBERT A. JOHNSON  
JOHN W. BASSETT, JR.

May 16, 1966

Oil Conservation Commission  
State Capitol  
Santa Fe, New Mexico

Re: Case No. 3408 - Application of Marathon  
Oil Company to Institute Waterflood Project.

Gentlemen:

We enclose herewith our Entry of Appearance in Case No. 3408 on  
the Commission Docket for May 25, 1966, as co-counsel with Warren  
B. Leach, Jr., of Houston, Texas, for Marathon Oil Company.

Very truly yours,

ATWOOD & MALONE

RAJ:md

By:



encl.

cc: Warren B. Leach, Jr., Esquire



BEFORE THE OIL CONSERVATION COMMISSION  
STATE OF NEW MEXICO

MAIN OFFICE

'66 MAY 18 AM 8 02

IN THE MATTER OF THE HEARING ON  
THE APPLICATION OF MARATHON OIL  
COMPANY TO INSTITUTE A WATERFLOOD  
PROJECT IN THE SHUGART POOL, EDDY  
COUNTY, NEW MEXICO. No. 3408


ENTRY OF APPEARANCE

Atwood & Malone, Post Office Drawer 700, Roswell, New Mexico,  
a firm of attorneys, all of whom are duly licensed to practice law in the  
State of New Mexico, hereby enters its appearance as co-counsel with  
Warren B. Leach, Jr., Esquire, of Houston, Texas, as counsel for  
Marathon Oil Company in the above styled and number case.

DATED at Roswell, New Mexico, this 16 day of May, 1966.

ATWOOD & MALONE

By

  
Post Office Drawer 700  
Roswell, New Mexico

dearnley-meier reporting service, inc.

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

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PAGE 1

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
May 25, 1966

EXAMINER      HEARING

IN THE MATTER OF:

Application of Marathon Oil Company for a  
waterflood project, Eddy County, New Mexico

Case No. 3408

BEFORE:

Daniel S. Nutter, Chief Engineer

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case 3408. Application of Marathon Oil Company for a waterflood project, Eddy County, New Mexico.

MR. LEACH: Warren Leach, Jr., an attorney representing Marathon Oil Company. I believe your file will show that Robert Malone made an appearance in this case.

MR. NUTTER: We have a letter of appearance on your behalf.

MR. LEACH: I have one witness, Mr. Paxton.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 9 marked for identification.)

\* \* \*

JOHN W. PAXTON, a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LEACH:

Q For the record, Mr. Paxton, will you state your full name, by whom you are employed, and in what capacity?

A John W. Paxton, employed by Marathon Oil Company as a Petroleum Engineer in Midland, Texas. I'm in charge of our waterflooding engineering in that office.

Q Mr. Paxton, have you testified before the New Mexico Oil Conservation Commission before?

A I have not.

Q Will you state your educational background and experience, please, sir?

A Graduated from the University of Texas with a B.S. Degree in Engineering in 1951. I have been employed as a petroleum engineer with the Stanlan Oil and Gas, now Pan American, regional engineer for Plymouth Oil Company for four years, and I have been with Marathon for the past four years. I have fifteen years experience in petroleum engineering in the Permian Basin.

Q Did you state what school you graduated from, sir?

A University of Texas.

Q You received there a degree in Petroleum Engineering?

A Mechanical Engineering.

Q You have had experience with these companies in the field of Petroleum Engineering?

A Petroleum Engineering.

MR. LEACH: Are the witness' qualifications satisfactory?

MR. NUTTER: They are.

Q (By Mr. Leach) Mr. Paxton, are you familiar with the Shugart Field and Marathon's application in this case?

A Yes, I am.

Q In connection with this application, have you

prepared or had prepared under your supervision and direction a number of exhibits?

A Yes, I have.

Q These are the exhibits that have been marked for identification as 1 through 6, those included in the brochure and three logs, Exhibits 7, 8 and 9, is that correct?

A That is correct.

Q Referring to Exhibit 1 in your brochure, Mr. Paxton, will you describe what that plat depicts?

A Exhibit 1 is a plat showing the project area and all the wells within a two-mile radius of this waterflood project. It also shows the lessees in this area and in yellow is Marathon's acreage. The wells covered in this application are those designated by the red circles. The green wells are wells that have been approved for injection into the Queen for Hudson and Hudson, and they are not yet converted to injection. In wells with the arrow drawn through them are injection wells in an active project where the Queen Sand has been flooded.

Q These are wells owned by other operators, is that correct?

A By other operators. All the wells on this plat are in the Shugard Yates Seven Rivers Queen Grayburg Pool except those noted which are two wells in the Northeast portion of the

map and designated in Tamano Field. There are two wells with a circle around them at the South end in the center of the map which are in the Shugart Delaware Pool.

Q This is Marathon's application, then, to waterflood the Queen Sand of the Shugart Field, is that correct?

A That is correct.

Q And our application to convert the three wells shown by red circles as the injection wells for the project?

A That is correct.

Q What sort of pattern is proposed and is planned for this sand, Mr. Paxton?

A This is an 80 acre 5-spot pattern--

Q All right.

A --in cooperation with Hudson and Hudson.

Q Are there any other things concerning this plat that you would like to call to the Examiner's attention?

A I think that's all that's pertinent on this plat.

Q Have you prepared an exhibit reflecting the manner in which Marathon proposes to recomplete the wells in this project?

A Exhibits 2, 3 and 4 are schematic diagrams showing the manner in which -- this shows the surface casing, the size of the surface casing, the depth at which it is set, the amount of cement used, and the fact that the cement circulated in all

cases. In each case the surface pipe is set below 800 feet, adequate to protect all fresh water strata. We show here the oil string casing, its size, the depth, and the amount of the cement used, the casing perforations in the Grayburg Zone, and in the Queen zone is shown the total depth, the plug back total depth and the top of the cement behind the oil string.

We also show the proposed completion manner which will consist of a string of 2-3/8" O.D. tubing which will be internally plastic coated, a packer set at approximately 3300 feet above the Queen perforation, a bridge plug at approximately 3400 feet below the Queen perforation, and they will be capped with cement. This will prevent water entering any formation other than the Queen.

The completion picture is essentially the same for all three of these injection wells, show the same information.

Q It is your professional opinion then that this manner of completing the three injection wells will protect fresh water and prevent the water from entering other hydrocarbon protective zones?

A Yes, it will.

Q These three injection wells, they have been drilled, they are not to be drilled for this purpose, are they?

A They are drilled and producing wells.



Q And the producing wells in the project area are also presently drilled wells?

A Producing wells.

Q All right. Have you logs of the three injection wells, Mr. Paxton?

A Yes, I have logs of the three injection wells which we have marked Exhibits 7, 8, and 9. These show the top and bottom of the Queen Sand and the perforations in the Queen. The perforated interval in the Queen is marked on these logs.

Q Will you describe, Mr. Paxton, the proposed water injection operation in this area?

A The water will come from the Double Eagle Corporation, it will be fresh Ogallala water. We expect to inject on the order of 200 barrels of water per day.

Q What do you plan to reinject, produced water in this operation, Mr. Paxton?

A We hope to do so.

Q With regard to the water that is to be used, is this the same water that is being used by Hudson and Hudson and the other operators in this area for their waterflood projects?

A That's right, this is the same water that will be used in these other injection wells.

Q All right. What, in your opinion, Mr. Paxton, is the present stage of depletion of the Queen Sand underlying



Marathon's leases in this area?

A The Queen Sand is more than 90 percent depleted of its primary reserve.

Q Do you have an exhibit reflecting the production history of Marathon's wells in the reservoir?

A I do. Exhibit 5 is a production history graph of the Marathon Federal Johnson A Lease on which there are four pumping wells. We have plotted oil production each month since the first production on the lease. The maximum rate was achieved in 1957 where the average per well producing rate was 42 barrels of oil per day. This graph shows the decline to a current level averaging 7 barrels of oil per day per well with all wells pumping. The maximum rate that was achieved was from only the Queen Zone, the Grayburg not being open at that time. We see a production stimulus in the later part of 1961 where production increased from approximately 600 barrels per month to some 1700 barrels per month. This is a result of a workover in which the Grayburg Zone was open in the Well Number 4. Cumulative production as of April 1st, 1966 from both zones was 189,753 barrels with the estimate that 2/3 of this is coming from the Queen, which is undoubtedly in a stripper stage of production.

Q This graph, it does show production from both the Queen and Grayburg Sand, is that correct?

A It does. Both zones are comingled in the well bore. They were originally separated but were combined in 1959 by Order of the Commission, Number R-1355, they were combined in the one pool at that time.

Q In your opinion, the Marathon's wells in this area, their completions in the Queen Sand are stripper wells at this time?

A Yes, they are.

Q Mr. Paxton, in your opinion will the waterflooding of the Queen Sand permit recovery of hydrocarbons from the Queen Sand that would not otherwise be recovered?

A Yes.

Q And in this manner will prevent waste?

A Right.

Q How much additional recovery do you anticipate will be gained from this waterflood project?

A We expect to get at least a hundred thousand barrels of oil, additional production over and above that which would be recovered through primary.

Q Mr. Paxton, referring back to Exhibit 1, the plat, this plat reflects that the two quarter sections involved in this waterflood are both Federal Leases, is that correct?

A That is correct.

Q Is Marathon securing the approval of the U.S.G.S. for

this project?

A The approval of the U.S.G.S. has been applied for.

Q Are the overriding royalty interests under these two quarter sections the same, Mr. Paxton?

A They are not. There are overriding interests over on the Federal Johnson A Lease but there are none under the Federal Johnson B Lease.

Q Is Marathon securing the approval or consent of an overriding royalty to institute the waterflood?

A Marathon plans to secure the approval of these overriding interests.

Q All right.

MR. LEACH: Mr. Examiner, I believe that's all except that I would like the record to show that the State Engineer, by letter, has waived objection to Marathon's application in this case, and at the same time I would like to offer Marathon's Exhibits in evidence.

(Whereupon, Applicant's Exhibits 1 through 9 offered into evidence.)

MR. NUTTER: Marathon's Exhibits 1 through 9 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 9 admitted into evidence.)

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



MR. IRBY: Yes, sir, I have one.

CROSS-EXAMINATION

BY MR. IRBY:

Q You stated that your injection rate would be approximately 200 barrels per day?

A Per well.

Q Per well?

A Yes.

Q And can you give me the injection pressure?

A We don't expect the injection pressure to exceed 2,000 psi.

Q Thank you.

CROSS-EXAMINATION

BY MR. NUTTER:

Q You stated that the overriding royalty under the A and B lease is slightly different and that you're getting the consent of these overriding royalties for the flooding. Do you expect to actually pool them?

A No.

Q In other words, the two leases will have to stand on their own as far as allowable is concerned?

A Yes, sir.

Q You will have four wells on your Johnson A project and two wells on your Johnson B project?

A That is correct.

Q Now, has Hudson and Hudson put on their flood as yet?

A They have not. They will probably start sometime in the very near future.

Q It's anticipated that you would put your wells on at the same time they put their wells on?

A Yes, we plan to utilize joint facilities for the injection.

Q Now, I'm not sure I got the figure. I think you said you had had 186,000 barrels of cumulative production here?

A I believe that's correct, from the Federal Johnson A Lease, 189,753.

Q 189, --

A Yes, sir.

Q -- 753?

A That's the Federal Johnson A Lease. The Federal Johnson B Account 2 Lease had produced 32,630 barrels on April 1st, 1966.

Q I believe I also understood you to say 2/3 of the production had been from the Queen?

A Yes, sir.

Q Is that from both the leases?

A That is true, from both leases, coincidentally.

Q This hundred thousand barrels of oil as secondary, does that apply to both the leases?

A That applies to the Federal Johnson A Lease. There is some doubt as to whether our Federal Johnson B Number 1 will produce from the Queen; that it failed to produce on the initial test of the Queen Zone, and it was completed in the Grayburg. Of course, the Federal Johnson B Number 2 will be an injection well.

Q That B Number 1 is perforated in the Queen?

A No, it is not, presently.

Q Do you plan to open it up in the Queen?

A I think that on response to injection from other wells we would find it necessary to determine if this well did respond.

Q Your initial plans don't call for any producing well on the B Lease --

A No, sir.

Q --until such time there has been a response from somewhere else, and then you might touch the B?

A That's true.

Q Your estimate of a hundred thousand barrels additional recovery would come slowly from the A Lease then?

A That is true.

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PAGE 14

Q Is the Grayburg being permanently abandoned as far as production is concerned?

A No, sir, the Grayburg will be only temporarily abandoned by this bridge plug so we can return to the Grayburg if so desired.

MR. NUTTER: Are there any other questions? Do you have anything further, Mr. Leach?

MR. LEACH: No, sir.

MR. NUTTER: Is there anything further to be offered in Case 3408? I would like to state for the record that we do have the report from the State Engineers Office, Mr. Leach.

MR. LEACH: Thank you.

MR. NUTTER: If there is nothing further the case will be taken under advisement.



I N D E X

<u>WITNESS:</u>	<u>PAGE</u>
JOHN W. PAXTON	
Direct Examination by Mr. Leach	2
Cross-Examination by Mr. Irby	11
Cross-Examination by Mr. Nutter	11

E X H I B I T S

<u>NUMBER</u>	<u>MARKED FOR IDENTIFICATION</u>	<u>OFFERED</u>	<u>ADMITTED</u>
Applt's. 1	2	10	10
Applt's. 2	2	10	10
Applt's. 3	2	10	10
Applt's. 4	2	10	10
Applt's. 5	2	10	10
Applt's. 6	2	10	10
Applt's. 7	2	10	10
Applt's. 8	2	10	10
Applt's. 9	2	10	10





STATE OF NEW MEXICO )  
 ) ss  
COUNTY OF BERNALILLO)

Witness my Hand and Seal this 9th day of June, 1966.

Bobby J. Davis  
NOTARY PUBLIC

March 13, 1969.

5/25 3408  
66  
Sumner



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS  
STATE ENGINEER

May 13, 1966

ADDRESS CORRESPONDENCE TO:  
STATE CAPITOL  
SANTA FE, NEW MEXICO 87501

Mr. A. L. Porter, Jr.  
Secretary-Director  
Oil Conservation Commission  
Santa Fe, New Mexico

MAIN OFFICE

'66 MAY 16 AM 8 25

Dear Mr. Porter:

Reference is made to the application of Marathon Oil Company which seeks authority to commence waterflood operations in the Queen Sand of the Shugart Pool by injection of water into the following wells:

- (1) Marathon's Federal Johnson A, Well No. 2, located in the SW $\frac{1}{4}$  of the SE $\frac{1}{4}$  of Section 10.
- (2) Marathon's Federal Johnson A, Well No. 4, located in the NE $\frac{1}{4}$  of the SE $\frac{1}{4}$  of Section 10.
- (3) Marathon's Federal Johnson B, A/C 2, Well No. 2, located in the NE $\frac{1}{4}$  of the NW $\frac{1}{4}$  of Section 15.

all in Township 18 South, Range 31 East.

Examination of the diagrammatic sketches submitted with the application for the 3 wells indicates that injection will be down internally protective coated tubing under a tension packer at approximately 3300' in each well. Thirty-three hundred feet is well below the top of the cement in each case. From this, it appears that no threat of contamination will result from the operation. Therefore, this office offers no objection to the granting of the application.

FEI/ma  
cc-Marathon Oil Co.  
F. H. Hennighausen

Yours truly,

*Frank E. Irby*  
Frank E. Irby, Chief,  
Water Rights Division

MAY 25, 1966, EXAMINER HEARING

CASE 3002 - Continued:

said gas pool and the amendment of the special pool rules to include the classification of oil and gas wells in said pool, a provision for 80-acre spacing for oil wells, and the establishment of a limiting gas-oil ratio of 6000 to 1.

CASE 3407: Application of Midwest Oil Corporation for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the Upper Pennsylvanian formation through its Harris State Well No. 1, located in Unit N, Section 29, Township 13 South, Range 34 East, Nonombre-Upper Pennsylvanian Pool, Lea County, New Mexico.

CASE 3408: Application of Marathon Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Queen formation through three wells in Sections 10 and 15, Township 18 South, Range 31 East, Shugart Pool, Eddy County, New Mexico.

CASE 3409: Application of Dr. Sam G. Dunn for a secondary recovery project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a secondary recovery project by the injection of air into the Upper San Andres formation through three wells located in Section 26, Township 7 South, Range 26 East, Leslie Spring-San Andres Pool, Chaves County, New Mexico. Applicant further seeks an administrative procedure to place additional wells on air injection if necessary.



## MARATHON OIL COMPANY

PRODUCTION - UNITED STATES AND CANADA

HOUSTON DIVISION

J. O. TERRELL COUCH  
DIVISION ATTORNEY

JOHN H. BEVAN, JR.  
WARREN B. LEACH, JR.  
ALLEN McMURREY  
ATTORNEYS

SOUTHERN NATIONAL BANK BUILDING  
P. O. BOX 3128  
HOUSTON, TEXAS 77001

May 2, 1966

*File 3408*

New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico

ATTENTION: Mr. A. L. Porter, Jr.  
Secretary-Director

RE: Marathon Oil Company's Waterflood Project  
in the Queen Sand of the Shugart (Yates-  
Seven Rivers-Queen-Grayburg) Pool, Eddy  
County, New Mexico

Gentlemen:

Marathon Oil Company requests New Mexico Oil Conservation Commission approval and authorization for Marathon to commence waterflood operations in the Queen Sand of the Shugart Pool by injecting water into the following wells on Marathon Oil Company's Federal Johnson A and Federal Johnson B, A/C 2, leases in Sections 10 and 15, Township 18 South, Range 31 East, N.M.P.M., Eddy County, New Mexico:

- (1) Marathon's Federal Johnson A, Well No. 2, located in the SW/4 of the SE/4 of Section 10.
- (2) Marathon's Federal Johnson A, Well No. 4, located in the NE/4 of the SE/4 of Section 10.
- (3) Marathon's Federal Johnson B, A/C 2, Well No. 2, located in the NE/4 of the NW/4 of Section 15.

In accordance with New Mexico Oil Conservation Commission Rule 701B, please find attached hereto in support of this application the following:

- (1) Plat showing the location of the proposed injection wells mentioned above, the location of all other wells within a radius of two miles from the proposed injection well and the formation from which such wells are producing. Such

DOCKET MAILED

Date May 3 1966

May 2, 1966

plat also shows the names of the lessees within the area shown.

- (2) Copies of radioactive logs of each of the proposed injection wells.
- (3) Diagrammatic sketches showing the manner in which Marathon proposes to complete each injection well.
- (4) Statement setting forth the name and depth of the formation to be waterflooded, kind of injection fluid, volumes of water to be injected, source of the injection fluid and other pertinent information with regard to the proposed waterflood.
- (5) Copy of Marathon's letter this date mailed by registered mail to the State Engineer transmitting to him a copy of this application and all attachments hereto.

Marathon will show that its wells within the waterflood project area are "stripper" wells and that the proposed waterflood project will permit the recovery of hydrocarbons not otherwise recoverable from the Queen Sand, thus preventing waste. Such waterflood project will be operated in accordance with applicable rules and regulations of the New Mexico Oil Conservation Commission.

Marathon respectfully requests that this application be set for hearing, that notice thereof be given as required by law and the rules of the Commission, that such hearing be held before an Examiner, and that following such hearing the Commission enter its order approving the waterflood project described herein and authorizing the use of the wells mentioned above as water injection wells.

The names and addresses of all interested parties so far as same are known to Marathon are listed in an attachment hereto.

Respectfully submitted,

MARATHON OIL COMPANY

*Warren B. Leach, Jr.*

Warren B. Leach, Jr.

WBL:CH  
Encs.

Page 3408

NAMES & ADDRESSES OF INTERESTED PARTIES  
MARATHON APPLICATION TO WATERFLOOD  
QUEEN SAND SHUGART  
(YATES, SEVEN RIVERS, QUEEN, GRAYBURG) POOL  
EDDY COUNTY, NEW MEXICO

American Petrofina Company of Texas  
Box 1311  
Big Spring, Texas

Amax Petroleum Company  
(Address Unknown)

Apco  
(Address Unknown)

Atlantic Refining Company  
Box 1978  
Roswell, New Mexico

P. C. Bundy  
(Address Unknown)

Canadian Kenwood  
(Address Unknown)

Chase Petroleum Company  
308 Gulf Building  
Midland, Texas

Chem. Exp. Suppes  
(Address Unknown)

Collier  
(Address Unknown)

Gulf Oil Corporation  
Box 1938  
Roswell, New Mexico

B. M. Keohane  
(Address Unknown)

Hudson, William A. & Edward R.  
1510 First National Bank Building  
Fort Worth, Texas

Hondo Drilling Company  
Box 116  
Midland, Texas

McClurg  
(Address Unknown)

Me-Tex  
(Address Unknown)

Mobil Oil Company  
Box 633  
Midland, Texas

Pan American Petroleum Corporation  
Box 68  
Hobbs, New Mexico

Sibert  
(Address Unknown)

Skelly Oil Company  
Box 730  
Hobbs, New Mexico

Texaco, Inc.  
Box 728  
Hobbs, New Mexico

Texas American Oil Company  
1012 Midland Savings Building  
Midland, Texas

J. J. Travis  
Box 873  
Midland, Texas

Paul E. Haskins  
1408 Maberry  
Midland, Texas

J. C. Maxwell  
2107 Continental National Bank Bldg  
Fort Worth, Texas

## MARATHON OIL COMPANY

PRODUCTION - UNITED STATES AND CANADA

HOUSTON DIVISON

J. O. TERRELL COUCH  
DIVISION ATTORNEY

JOHN H. BEVAN, JR.  
WARREN B. LEACH, JR.  
ALLEN McMURREY  
ATTORNEYS

SOUTHERN NATIONAL BANK BUILDING  
P. O. BOX 3128  
HOUSTON, TEXAS 77001

May 2, 1946

New Mexico State Engineer  
Capitol Building  
Santa Fe, New Mexico

RE: Marathon Oil Company's Waterflood  
Project in the Queen Sand of the  
Shugart (Yates-Seven Rivers-Queen-  
Grayburg) Pool, Eddy County, New Mexico

Dear Sir:

Marathon Oil Company has this date mailed to the New Mexico  
Oil Conservation Commission its application for authority to com-  
mence waterflood operations in the Queen Sand of the Shugart (Yates-  
Seven Rivers-Queen-Grayburg) Pool, Eddy County, New Mexico. Please  
find enclosed herewith a copy of Marathon Oil Company's application,  
together with all attachments thereto.

Very truly yours,

MARATHON OIL COMPANY

*Warren B. Leach, Jr.*  
Warren B. Leach, Jr.

WEL:CH  
Encs.

REGISTERED MAIL

3908

STATEMENT OF PERTINENT INFORMATION

MARATHON OIL COMPANY'S WATERFLOOD  
PROJECT--SHUGART (YATES-SEVEN RIVERS-  
QUEEN-GRAYBURG) POOL, EDDY COUNTY,  
NEW MEXICO

Formation	Queen Sand
Depth	3,300' (approximate)
Average per well producing rate	6 BOPD
Source of injection water	Double Eagle Water Company
Type of injection water	fresh
Estimated daily per well injection rate	200 BWPD

2 67-3408

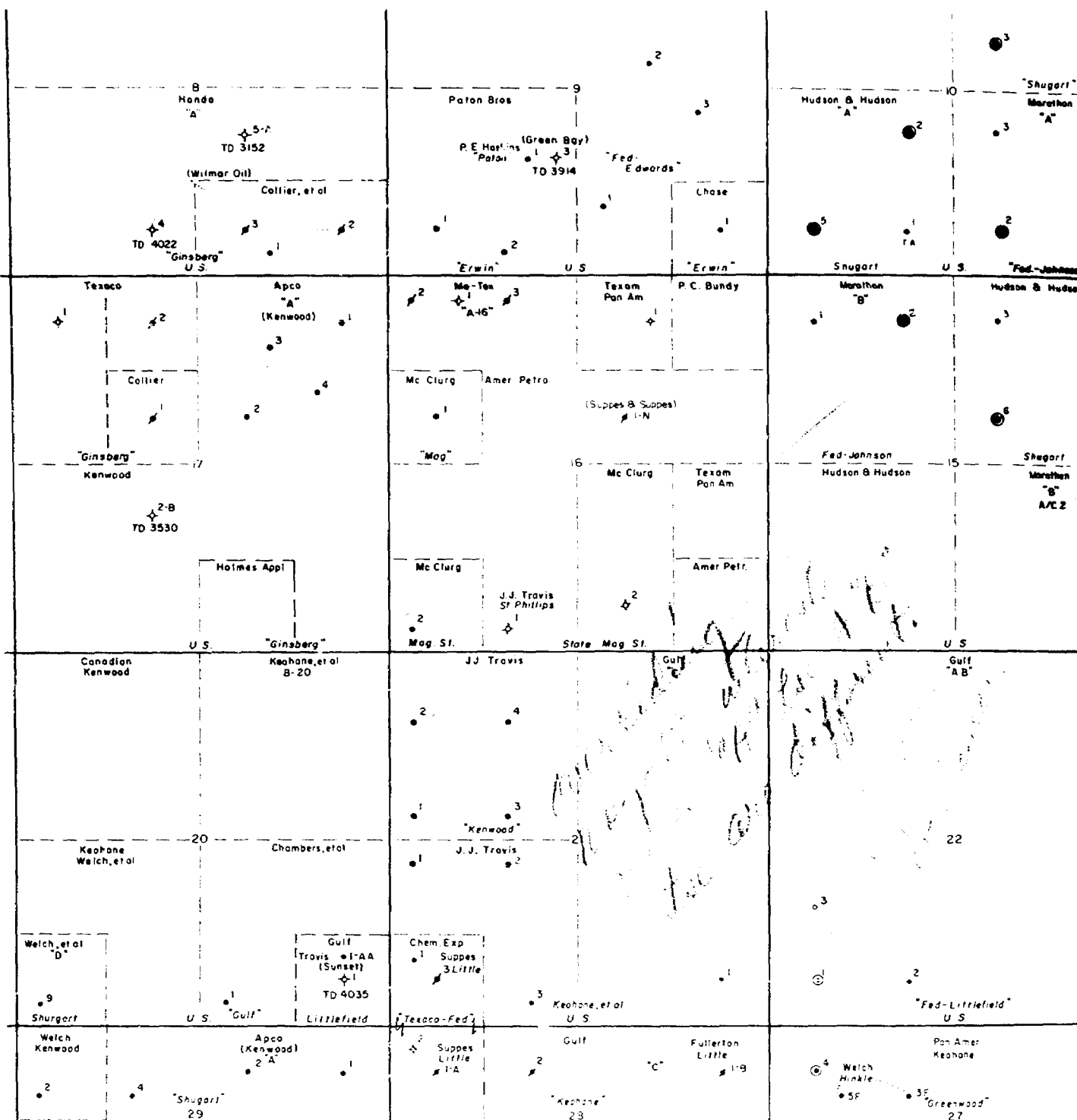


EXHIBITS FOR  
WATERFLOOD HEARING  
MARATHON OIL COMPANY  
SHUGART POOL  
EDDY COUNTY, NEW MEXICO

Prepared by  
J. W. Paxton  
Petroleum Engineer

May, 1966

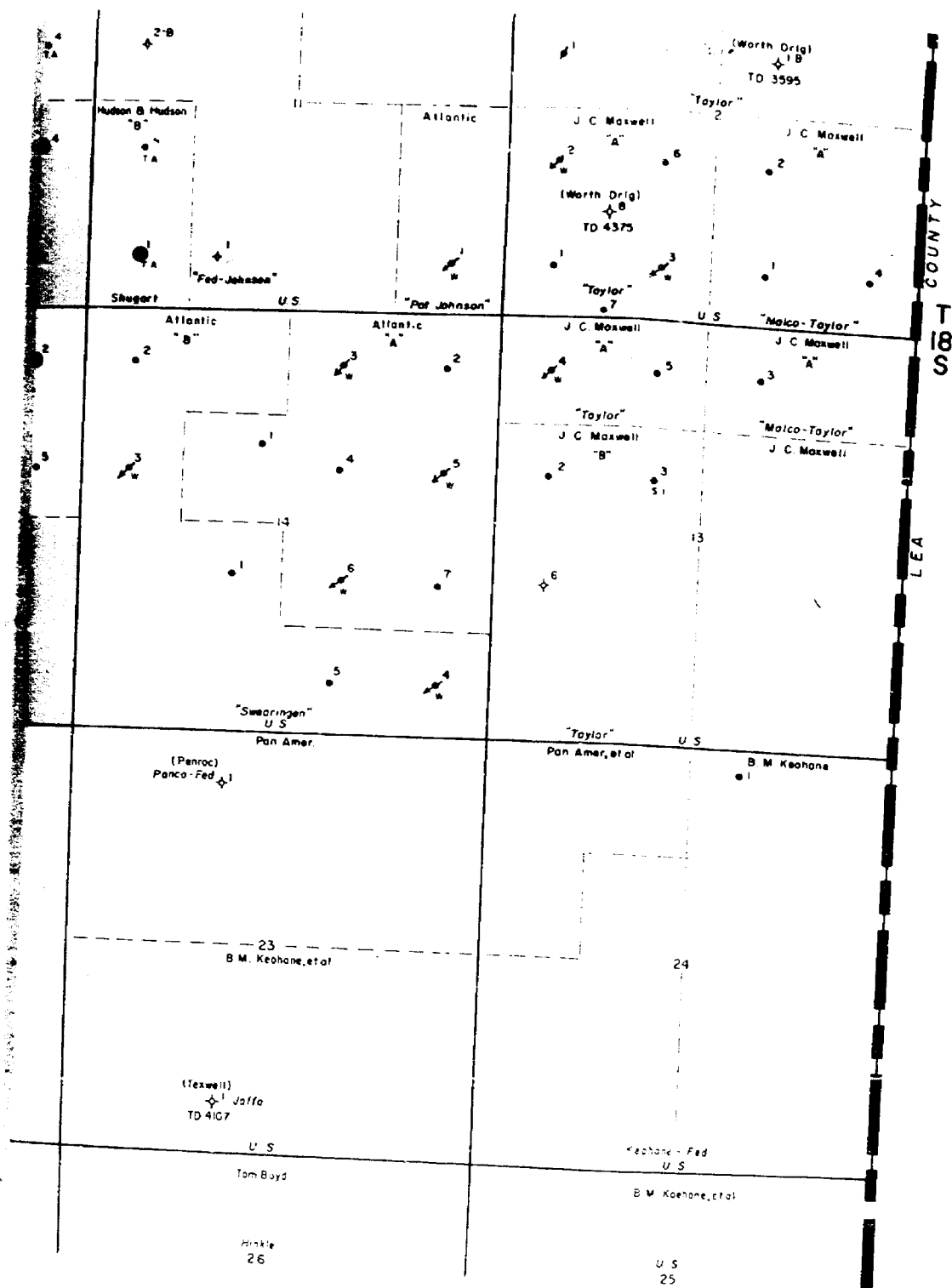
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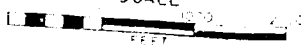
LEGEND

- SHUGART YATES SEVEN RIVERS QUEEN GRAYBURG
- ⊙ SHUGART DELAWARE
- ⊙ WATER INJECTION WELL
- ⊙ WELLS APPROVED FOR INJECTION (HUDSON)
- PROPOSED INJECTION WELLS (MARATHON)



SHUGART FIELD  
EDDY COUNTY, NEW MEXICO

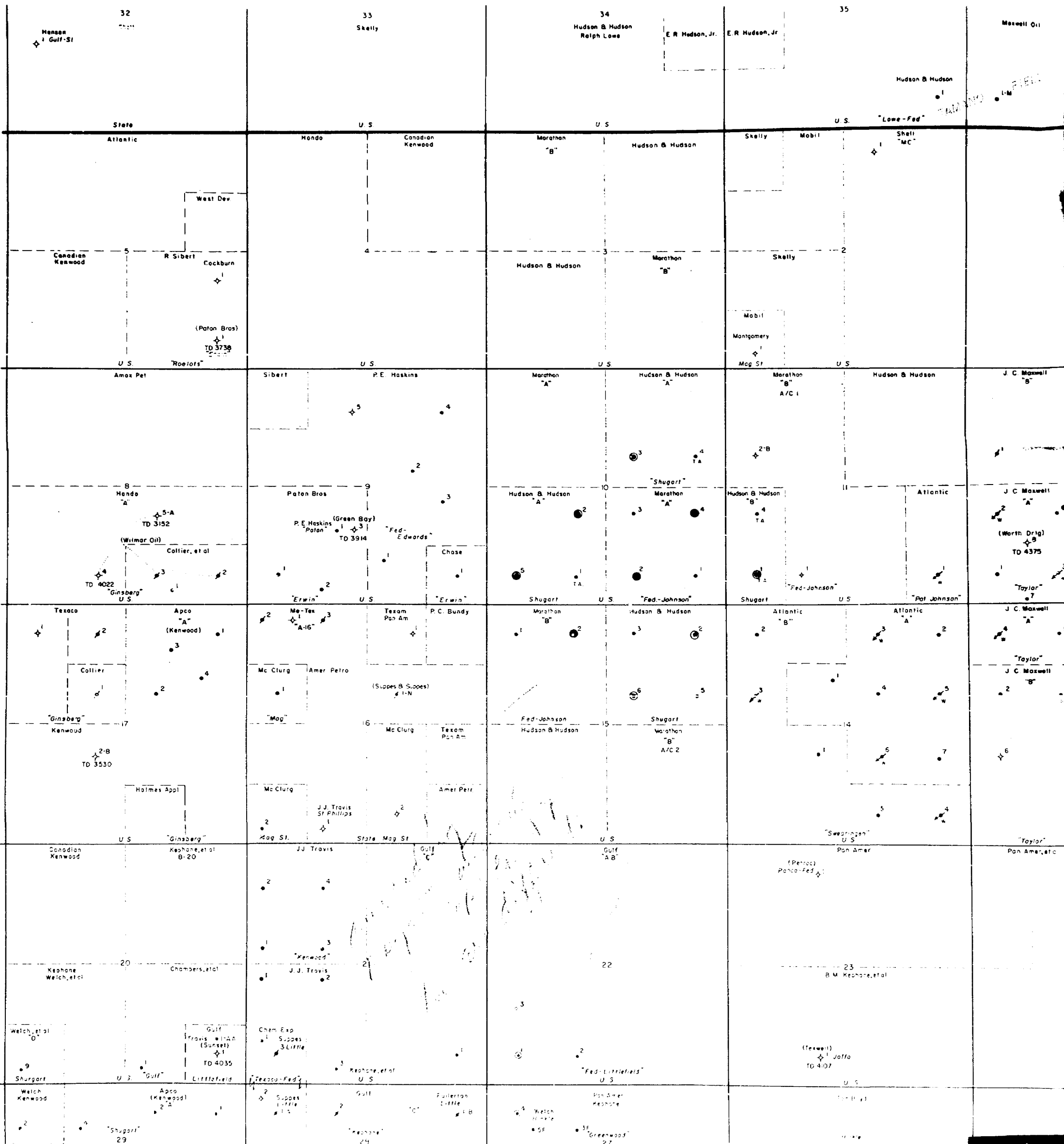
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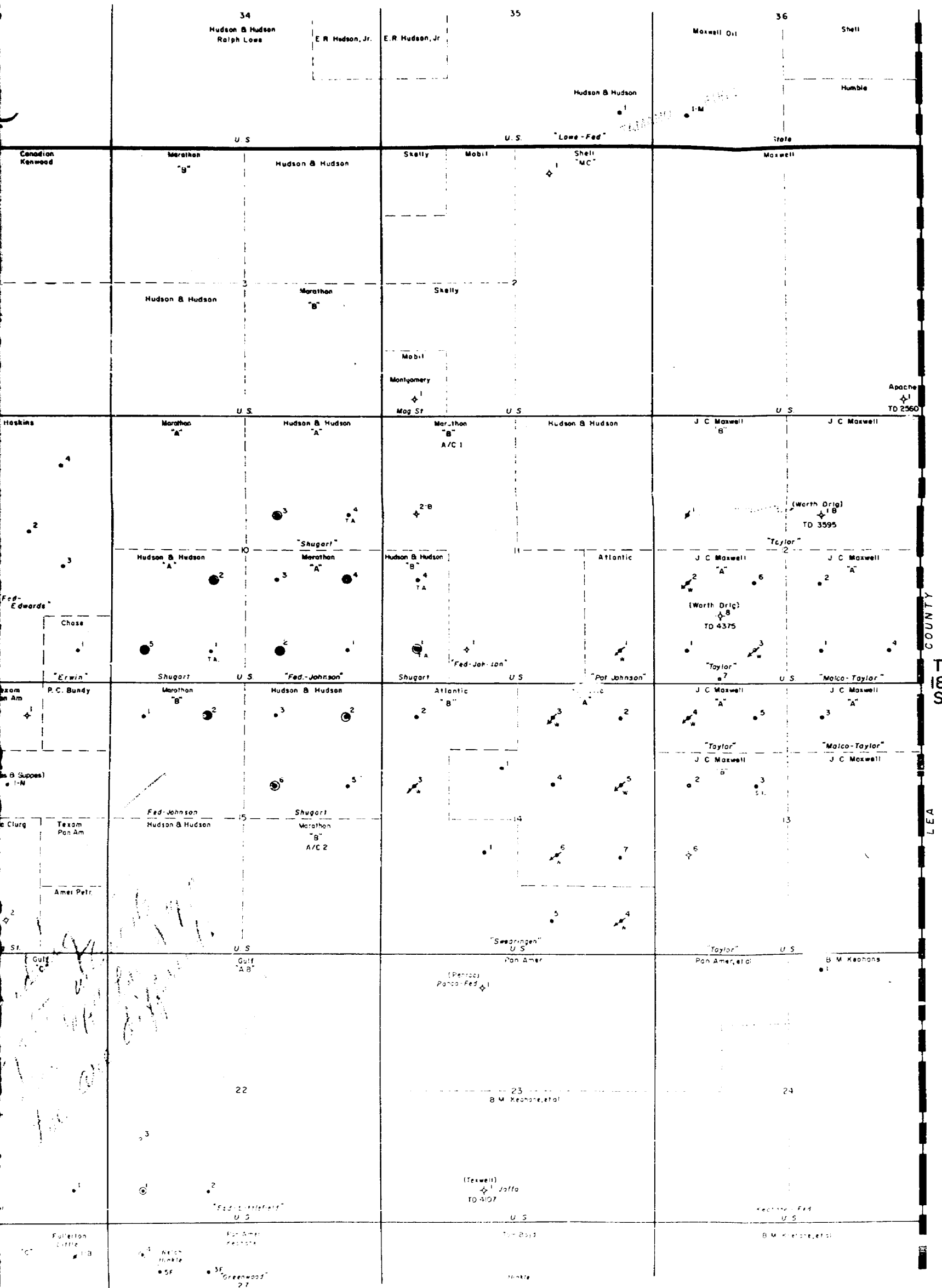
MARATHON OIL COMPANY — MIDLAND, TEXAS

EXHIBIT NO. 1

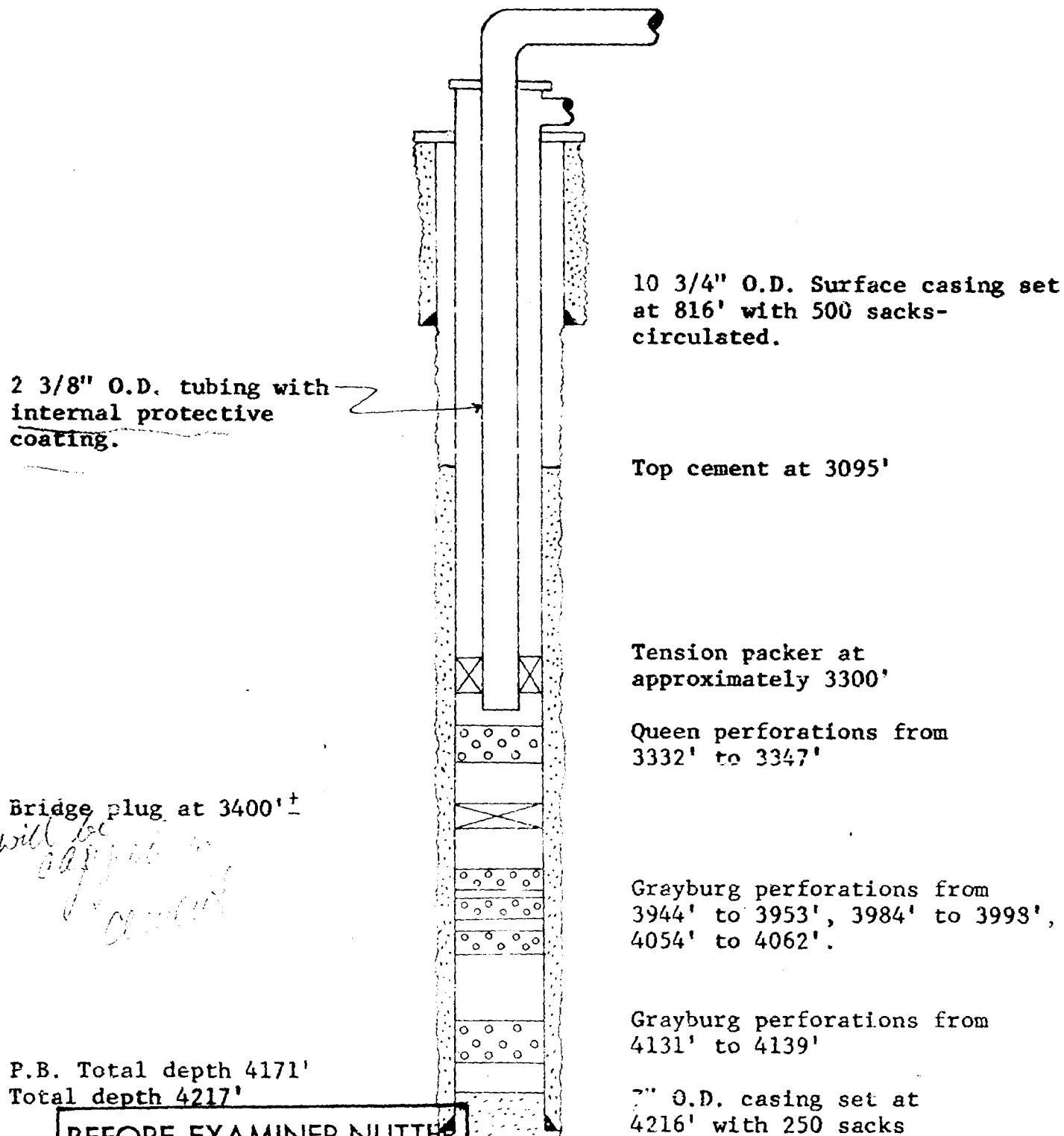
BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
App. EXHIBIT NO. 1  
CASE NO. 3408



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SCHEMATIC INJECTION WELL COMPLETION  
FEDERAL JOHNSON "A" NO. 2  
SHUGART FIELD  
EDDY COUNTY, NEW MEXICO



BEFORE EXAMINER NUTTER

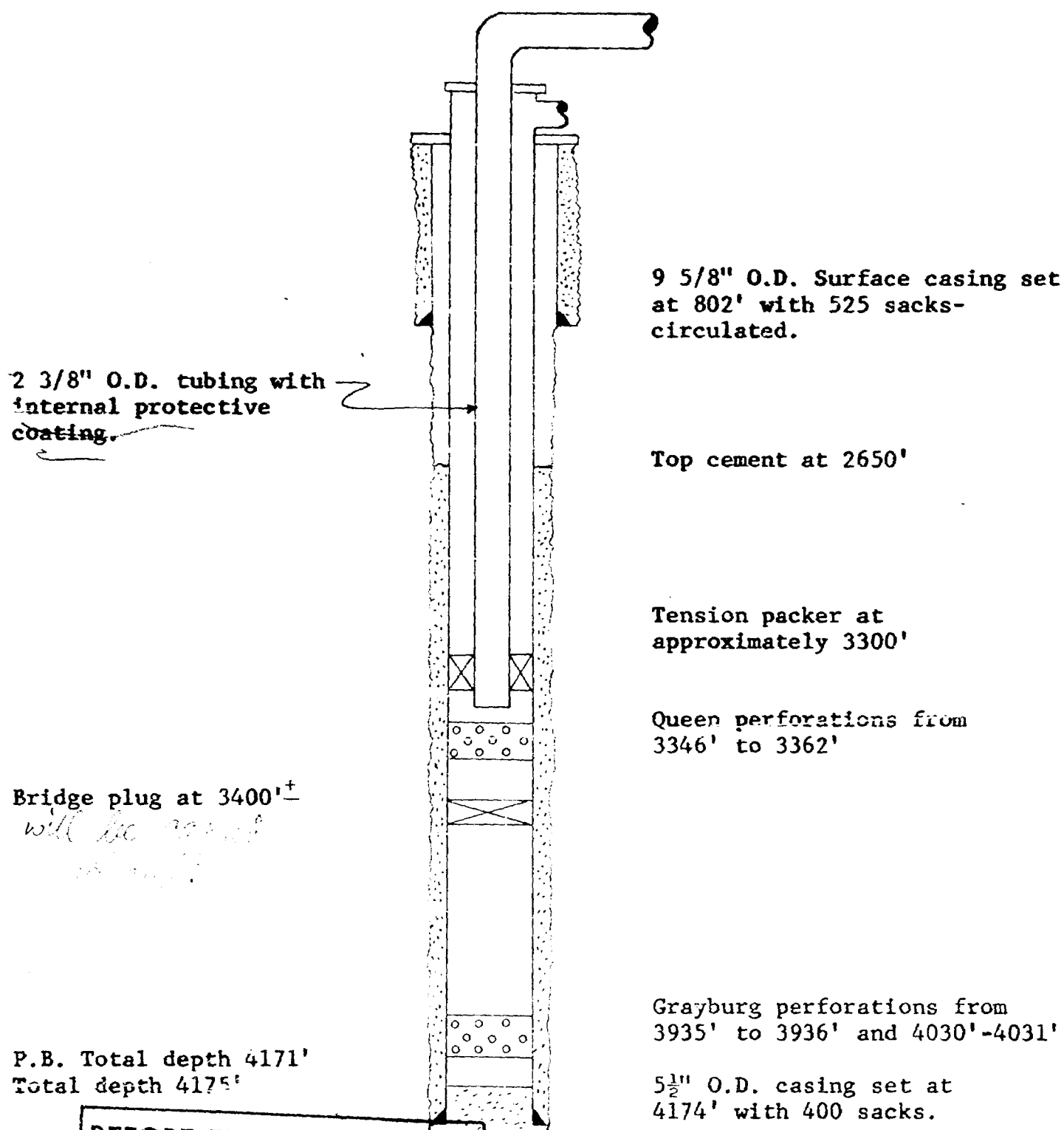
OIL CONSERVATION COMMISSION

*Appl* EXHIBIT NO. *2*

CASE NO. *3408*

EXHIBIT NO. *2*

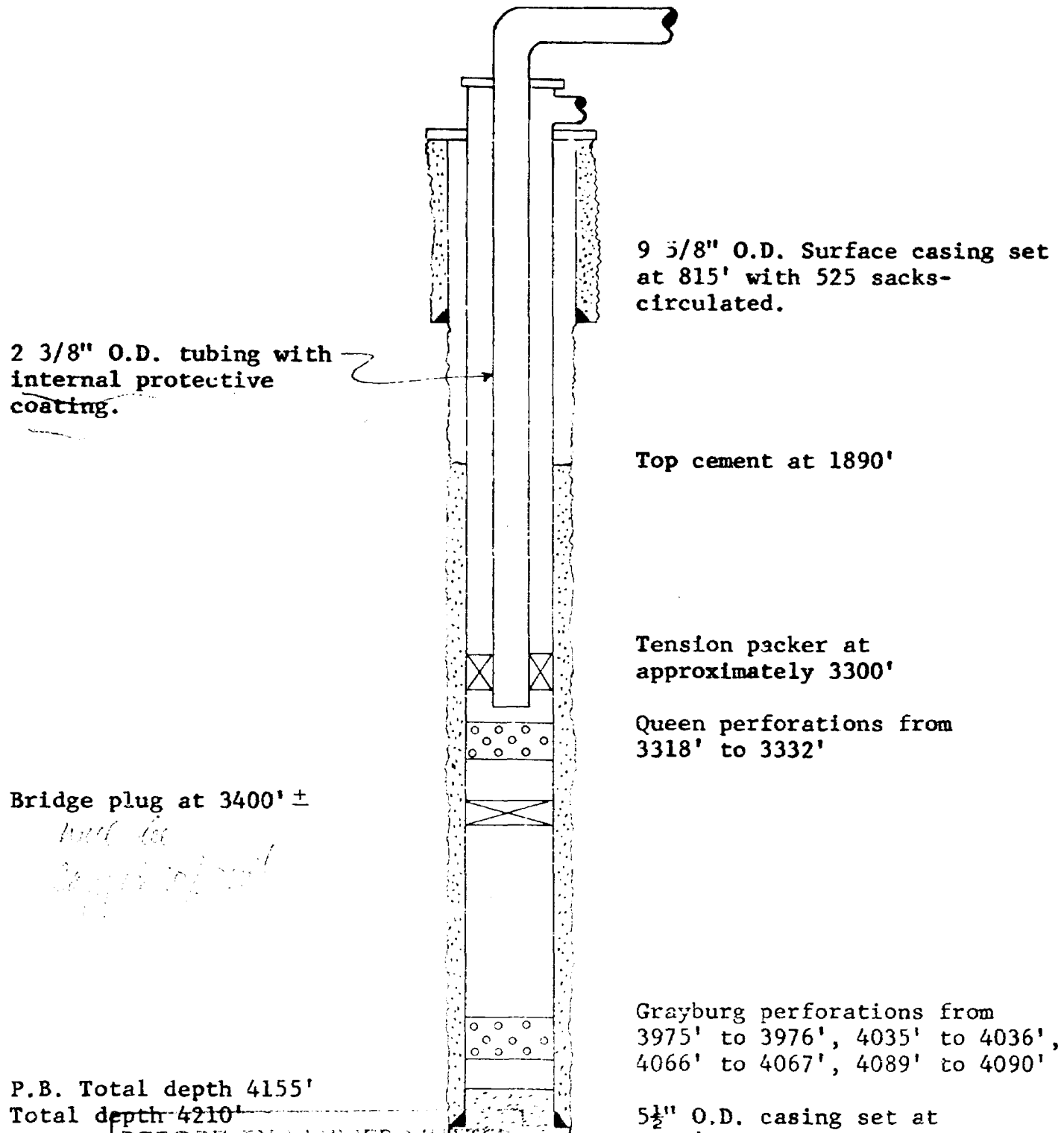
SCHEMATIC INJECTION WELL COMPLETION  
FEDERAL JOHNSON "A" NO. 4  
SHUGART FIELD  
EDDY COUNTY, NEW MEXICO



BEFORE EXAMINER NUTTER  
OIL CONSERVATION COM.  
*Appl* EXHIBIT NO. 3  
CASE NO. 3408

EXHIBIT NO. 3

**SCHEMATIC INJECTION WELL COMPLETION  
FEDERAL JOHNSON "B" A/C 2 NO. 2  
SHUGART FIELD  
EDDY COUNTY, NEW MEXICO**



2 3/8" O.D. tubing with  
internal protective  
coating.

9 5/8" O.D. Surface casing set  
at 815' with 525 sacks-  
circulated.

Top cement at 1890'

Tension packer at  
approximately 3300'

Queen perforations from  
3318' to 3332'

Bridge plug at 3400' ±

Grayburg perforations from  
3975' to 3976', 4035' to 4036',  
4066' to 4067', 4089' to 4090'

P.B. Total depth 4155'  
Total depth 4210'

5 1/2" O.D. casing set at  
4157' with 500 sacks

BEFORE EXAMINER NOTED

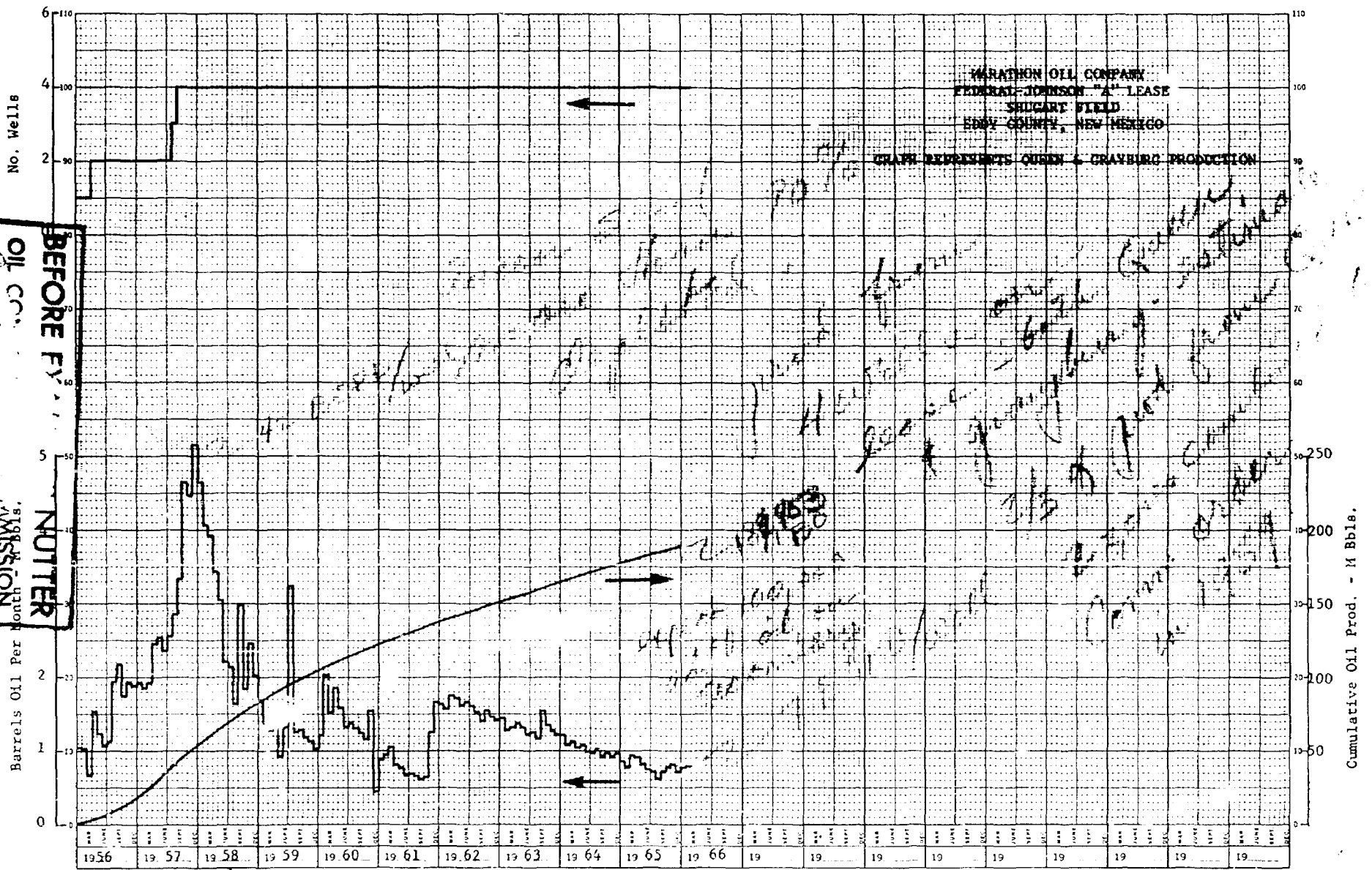
OIL CONSERVATION COMMISSION

*Appl* EXHIBIT NO. *4*

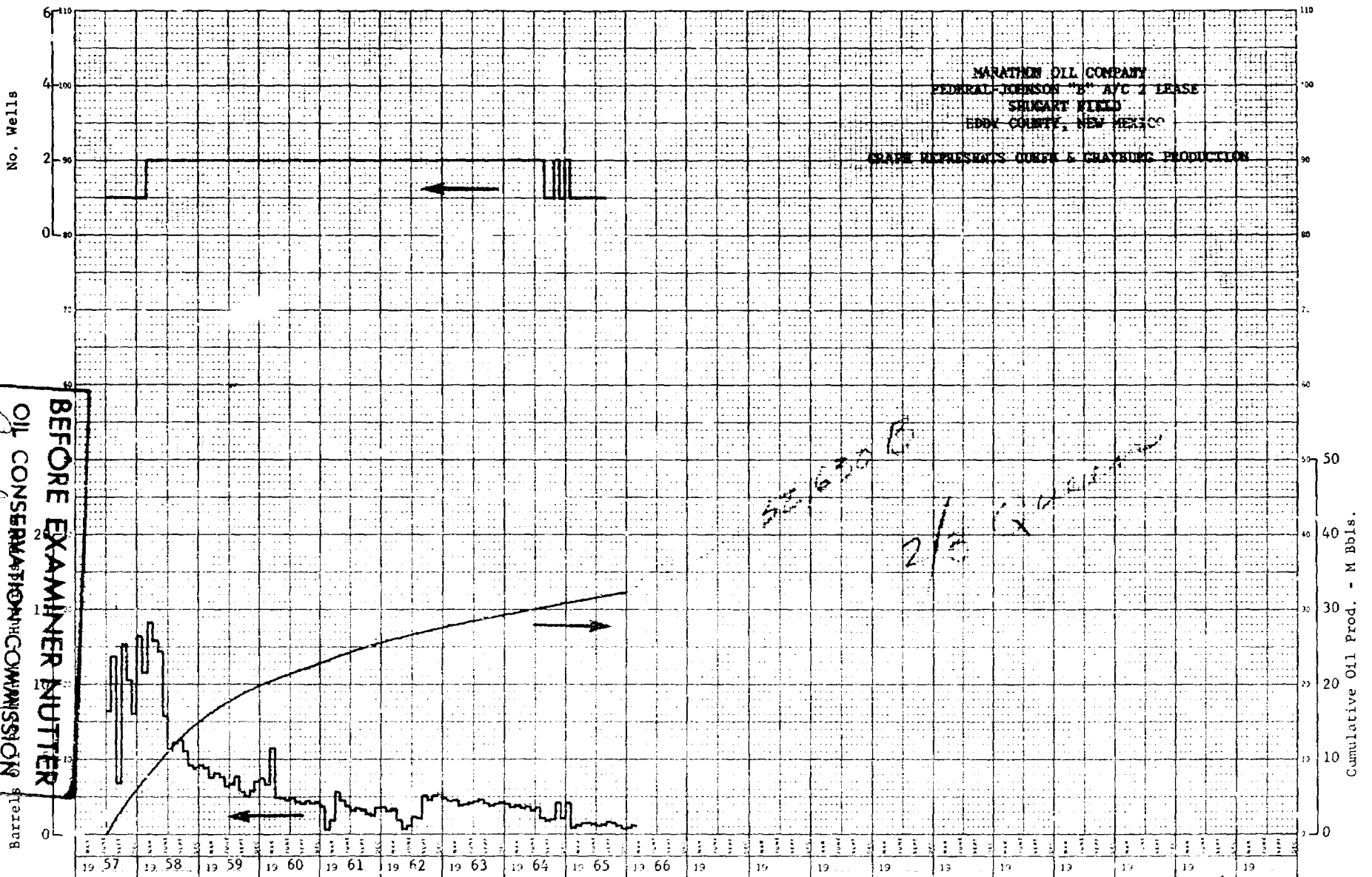
CASE NO. *3408*

EXHIBIT NO. *4*





OIL CO.  
 CASE NO. 3400  
 II NO. 5  
 COMMISSION  
 BEFORE F.Y. 1958  
 NOTER



BEFORE EXAMINER MUTTER  
 OIL CONSERVATION COMMISSION  
 CASE NO. 3100  
 EXHIBIT NO. 6

EXHIBIT NO. 6