

CASE 4856: Application of GULF OIL  
FOR A WATERFLOOD PROJECT, EDDY  
COUNTY, NEW MEXICO.

Case Number

4856

Application

Transcripts.

Small Exhibits

ETC.

dearnley, meier & mc cormick reporting service, inc.

200 SIMMS BLDG., P.O. BOX 1092, PHONE 243-6691, ALBUQUERQUE, NEW MEXICO 87103  
1216 FIRST NATIONAL BANK BLDG. EAST, ALBUQUERQUE, NEW MEXICO 87109

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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
OIL CONSERVATION COMMISSION CONFERENCE ROOM,  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO  
Tuesday, November 14, 1972

EXAMINER HEARING

IN THE MATTER OF:

Application of Gulf Oil Corporation for a  
waterflood project, Eddy County, New  
Mexico.

Case No. 4856

BEFORE: Daniel S. Nutter,  
Examiner

TRANSCRIPT OF HEARING

1 MR. NUTTER: Call Case 4856, application of Gulf  
2 Oil Corporation for a waterflood project, Eddy County, New  
3 Mexico.

4 MR. KASTLER: If the Examiner please, I'm Bill  
5 Kastler appearing on behalf of Gulf and Mr. Kalteyer, who was  
6 sworn in the previous case, will be our only witness in this  
7 case.

8 MR. NUTTER: Mr. Kalteyer is still under oath.

9 MR. KASTLER: Are Mr. Kalteyer's qualifications  
10 acceptable, without further questions?

11 MR. NUTTER: Yes, they are. Please proceed.

12 CHARLES KALTEYER,  
13 a witness, having been previously duly sworn according to law,  
14 upon his oath, testified further as follows:

15 DIRECT EXAMINATION

16 BY MR. KASTLER:

17 Q Mr. Kalteyer, are you familiar with Gulf's application in  
18 Case No. 4856?

19 A Yes, sir, I am.

20 Q Please explain what Gulf is seeking in this application?

21 A We are asking for authority to initiate a waterflood  
22 project on the east half of our Littlefield "AB" Federal  
23 Lease in the Shugart, Yates, Seven Rivers, Queen, and  
24 Grayburg Pools. Injection is proposed into the Queen  
25 member, which is the only producing interval in this

1 portion of the lease.

2 Q Do you have a plat showing the Littlefield "AB" Federal  
3 Lease?

4 A Yes, sir, it's marked Exhibit 1. The Littlefield "AB"  
5 Federal Lease comprises all of Section 22. The project  
6 area is outlined in red and the seven wells within the  
7 project area are color coded to identify the three  
8 injectors and four producers.

9 Q What else is shown on Exhibit 1?

10 A The Shugart Pool completions within a two-mile radius of  
11 the project area are shown. The injection wells are  
12 colored yellow, the diagonal line symbol through the  
13 well location indicates a well has been temporarily  
14 abandoned.

15 Well locations with no colored circles are current  
16 producers. The completions, injectors, and producers,  
17 are not identified as to separate members of the Shugart  
18 Pools. The Commission includes four members, the Yates,  
19 Seven Rivers, Queen, and Grayburg in the Shugart Pool.

20 The plat also shows other waterflood projects in the  
21 pool.

22 Q In connection with that, is there a waterflood project on  
23 a line directly offsetting this area?

24 A Yes, sir, the Atlantic Richfield Panco Federal.

25 Q All right. Is Exhibit 2 a structure map of the Unit Area?

1 A Yes, sir. The structure map is contoured on top of the  
2 Queen member, using a contour interval of 25 feet. The  
3 structure is a gentle 80-foot per mile dip in the  
4 southeast, across our lease. The trapping mechanism for  
5 the reservoir is a permeability pinch-out updip to the  
6 west.

7 Q What are the geological characteristics of the reservoir  
8 to be waterflooded?

9 A The Queen pay is a gray fine-grain sandstone with varying  
10 amounts of Dolomite matrix.

11 Q Will you now please refer to Exhibit Number 3 and say  
12 what is shown on that?

13 A Exhibit 3 is an east-west cross section of four wells  
14 indicated as A-A' on Exhibit 2, the structure map.

15 Q Exhibit 2 and 3 are, in that effect, coordinated?

16 A Yes.

17 Q Do you have a well location showing the proposed  
18 injection interval?

19 A Yes, sir. They are designated as Exhibit 4, which the  
20 Examiner has, which is a Gamma Ray Neutron Log of the  
21 Littlefield Federal "AB" Well No. 9 located in Unit H  
22 of Section 22, Township 21, Range 37. The top of the  
23 Queen and the proposed injection interval are shown.

24 Q Mr. Kalteyer, have you prepared an exhibit showing the  
25 production history and present status of the wells in this

1 proposed unit?

2 A Yes, sir, Exhibit 5 shows the performance of the seven  
3 wells producing from the Queen pay of the Shugart Pool  
4 of the Littlefield "AB" Federal. If you will note that  
5 production began in February of '70 and reached a peak  
6 in June of '70 of approximately 268 barrels of oil per  
7 day; and as of September, '72, the oil rate has declined  
8 to 75 barrels per day, and approximately 37 barrels of  
9 water per day.

10 Q What's the average production per well?

11 A It's not shown. Currently, production is approximately  
12 ten barrels.

13 Q All right. Have you a tabulation of the performance data  
14 depicted in Exhibit 5?

15 A Yes, sir. Exhibit 6 is a tabulation of the monthly oil  
16 and water of the seven producers. Cumulative production  
17 from these wells is 132,702 barrels as of October 1, 1972.

18 Q Now, you have as your next exhibit, Exhibits 7-a, 7-b,  
19 and 7-c. Would you go through each of these exhibits  
20 separately and explain what they show that's pertinent  
21 to this case?

22 A All right, sir. These exhibits, 7-a, b, and c, are  
23 schematic diagrams of the proposed, or the three proposed  
24 water-injection wells. They are the Littlefield Federal  
25 Wells 9, 10, and 14.

Water will be injected into the perforated intervals of the Queen Section through internally plastic-coated 2 3/8" tubing under a packer.

Referring to Exhibit 7-a, Well No. 9, 8 5/8" casing was set at 738 feet with 350 sacks of cement circulated. The total depth was reached of 3,499 and a four and a half inch casing was set with 425 sacks of cement. The perforated interval is 3,376 to 81 and 3,388 to 93, two 1/2" jet holes per foot. The 2 3/8" tubing internally plastic-coated, as I mentioned before, we set on a packer with the tubing, the casing-tubing annulus loaded with inhibited water.

And, similarly, Well No. 10, we have 8 5/8" casing set at 719 feet, cemented with 350 sacks of cement circulated. The total depth of 3,445 with 5 1/2" casing was reached, set with 300 sacks of cement. The top of the cement is at 1,900 feet, and the Queen Section is perforated from 3,336 to 40 and 3,364 to 70, with two 1/2" jet holes per foot. A 3 1/2" internally plastic-coated tubing was set on the packer and the annulus is to be loaded with inhibited water.

And also, with Well No. 14, 8 5/8" casing set at 744 feet, cemented with 350 sacks circulated. A total depth of 3,435 with 4 1/2" casing cemented with 450 sacks of cement. The top of the cement is at 1,938 feet.

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1 The perforations are from 3,372 to 84 with two 1/2"  
2 jet holes per foot. 2 5/8" plastic tubing is to be  
3 set on the packer with the casing-tubing annulus loaded  
4 with inhibited water.

5 Q All three wells will be constructed in the same manner,  
6 then?

7 A Yes, sir.

8 Q And your injection interval will be substantially the  
9 same depth, but definitely into the Queen member of this  
10 formation?

11 A Yes, sir.

12 Q What will be the source of Gulf's injection water?

13 A Produced water from our Littlefield "AB" Federal Lease,  
14 and Ogallala water from the Eagle water system. The  
15 water currently produced on our lease amounts to 85  
16 barrels per day.

17 Q What injection rates and surface pressure do you  
18 anticipate?

19 A The intital injection rate is anticipated to be  
20 approximately 500 barrels per day per well and a surface  
21 pressure of approximately 1200 PSI.

22 Q What results are expected?

23 A We believe that the proposed waterflood will result in  
24 additional oil recovery of some 57 per cent of ultimate  
25 primary. In terms of barrels, this increased recovery

1 due to waterflooding should be on the order of 100,000  
2 barrels.

3 Q Why are you proposing this project and what are your  
4 recommendations?

5 A The Shugart Pool underlying Gulf's Federal "AB" Lease  
6 produces by a solution gas-drive mechanism and, as a  
7 result, a considerable quantity of oil will remain  
8 unrecovered at the end of primary depletion unless some  
9 type of secondary recovery project is initiated. To  
10 increase the ultimate oil recovery, an engineering  
11 study has been made which indicates the feasibility of  
12 this waterflood project. Other waterflood projects have  
13 been undertaken in this area and have indicated a  
14 reasonable amount of success; and in view of the above,  
15 Gulf Oil Corporation respectfully requests the Oil  
16 Conservation Commission approve the installation of the  
17 proposed waterflood facilities and grant such oil  
18 allowables as are earned by the wells in the project area  
19 as provided in Rule 701-E.

20 Q With this being a Federal Lease, did you contact the  
21 Department of Interior concerning this proposed  
22 waterflood project?

23 A Yes, sir, we did. Exhibit 8 is a copy of the letter of  
24 the approval from that department.

25 Q Were other operators in the Shugart Pool notified of your

1 application?

2 A Yes, sir, they were. All operators within a two-mile  
3 radius were notified by copy of our letter of October  
4 16th to the Commission.

5 Q That was your letter of application?

6 A Yes, sir.

7 Q In your opinion, will the granting of this request aid  
8 in prevention of waste?

9 A Yes, sir. This project should recover oil which would  
10 otherwise be left in the reservoir unrecovered, except  
11 by some means of secondary recovery.

12 Q Were Exhibits 1 through 7 prepared by you, or at your  
13 direction and under your supervision?

14 A Yes, sir.

15 Q And is Exhibit 8 a true copy of a letter received by  
16 Gulf from the U. S. Department of Interior?

17 A Yes, sir.

18 MR. KASTLER: At this time, I'd like to move that  
19 Exhibits 1 through 8 be admitted into evidence and this  
20 concludes my questions on Direct Examination.

21 MR. NUTTER: Gulf's Exhibits 1 through 8 will be  
22 admitted in evidence.

23 CROSS EXAMINATION

24 BY MR. NUTTER:

25 Q Mr. Kalteyer, you estimate that you will recover

1 approximately 57 per cent of ultimate primary, or about  
2 100,000 barrels. What is your estimated ultimate  
3 primary?

4 A I'll have to back into that by calculation. I don't have  
5 that figure readily available.

6 Q You have produced 132,000 barrels to date?

7 A Yes. This calculates approximately 175,000 barrels,  
8 total recovery.

9 Q In other words, you would have about 40,000 left on  
10 primary, then?

11 A Yes, sir.

12 Q And by instituting the secondary recovery, you will gain  
13 100,000?

14 A Yes, sir.

15 Q Now, I note that the perforated interval in one well,  
16 I believe it was the No. 9, with only a single zone and  
17 the other two had two zones of perforations in them.  
18 Will that well, being perforated in only one zone,  
19 adequately flood the Queen Formation?

20 A Certain areas of the Queen --

21 Q I believe it was the 9. The No. 9 has only one zone  
22 open.

23 A Yes, sir. The porosity varies from well to well and  
24 there are certain wells that have more than one zone  
25 that appears to be productive. And Well No. 9 has

1 indicated to have only one permeability zone, which was  
2 completed there.

3 Q Well, now, on your Exhibit 1 you indicated that the  
4 yellow wells to the north were injection wells by offset  
5 operators; so, actually, your No. 9, your No. 8 is a  
6 producer, and it will be in between three injection wells,  
7 two of yours and one of an offset operator's?

8 A Yes, sir.

9 MR. NUTTER: Are there any other questions of Mr.  
10 Kalteyer?

11 (No response.)

12 MR. NUTTER: He may be excused.

13 Do you have anything further, Mr. Kastler?

14 MR. KASTLER: Nothing further, thank you.

15 MR. NUTTER: Does anyone have anything they wish  
16 to offer in Case Number 4856?

17 (No response.)

18 MR. NUTTER: We will take the case under  
19 advisement and call the next case.

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1 STATE OF NEW MEXICO )  
2 ) ss  
3 COUNTY OF BERNALILLO )

4 I, JOHN DE LA ROSA, a Court Reporter, in and for the  
5 County of Bernalillo, State of New Mexico, do hereby certify  
6 that the foregoing and attached Transcript of Hearing before  
7 the New Mexico Oil Conservation Commission was reported by me;  
8 and that the same is a true and correct record of the said  
9 proceedings to the best of my knowledge, skill and ability.

10   
11 COURT REPORTER

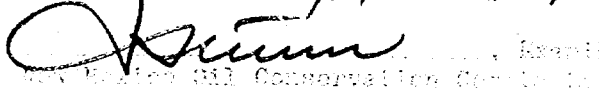
12 I N D E X

13 <u>WITNESS</u>	14 <u>PAGE</u>
15 CHARLES KALTEYER	
16 Direct Examination by Mr. Kastler	3
17 Cross Examination by Mr. Nutter	10

18 E X H I B I T S

19	20 <u>ADMITTED</u>	21 <u>OFFERED</u>
22 Gulf's Exhibits #1 through #8	10	10

23 I do hereby certify that the foregoing  
24 is a true and correct record of the proceedings of  
25 the Examiner hearing of Case No. 4856  
heard by me on 11/14 1972

  
John De la Rosa, Reporter  
New Mexico Oil Conservation Commission



## OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO  
P. O. BOX 2088 - SANTA FE  
87501

GOVERNOR  
BRUCE KING  
CHAIRMAN  
LAND COMMISSIONER  
ALEX J. ARMIJO  
MEMBER  
STATE GEOLOGIST  
A. L. PORTER, JR.  
SECRETARY - DIRECTOR

November 17, 1972

Mr. Bill Kastler  
Gulf Oil Corporation  
Post Office Drawer 1150  
Midland, Texas 79701

Re: Case No. 4856  
Order No. R-4438  
Applicant:  
Gulf Oil Corporation

Dear Sir:

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

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x  
Artesia OCC x  
Aztec OCC           

Other State Engineer Office

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. 4656  
Order No. R-4438

APPLICATION OF GULF OIL  
CORPORATION 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 November 14, 1972, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 16th day of November, 1972, 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, Gulf Oil Corporation, seeks authority to institute a waterflood project on its Littlefield "AB" Federal Lease, Shugart Yates-Seven Rivers, Queen-Grayburg Pool, by the injection of water into the Queen formation through three injection wells in Section 22, 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.



-2-  
Case No. 4856  
Order No. R-4438

IT IS THEREFORE ORDERED:

(1) That the applicant, Gulf Oil Corporation, is hereby authorized to institute a waterflood project in the Shugart Yates-Seven Rivers, Queen-Grayburg Pool by the injection of water into the Queen formation through the following-described wells in Section 22, Township 18 South, Range 31 East, NMPM, Eddy County, New Mexico:

Federal "AB" Littlefield Well No. 9, Unit H  
Federal "AB" Littlefield Well No. 10, Unit B  
Federal "AB" Littlefield Well No. 14, Unit O

(2) That injection in each of the aforesaid wells shall be through internally plastic-coated tubing set in a packer located as near as is practicable to the uppermost perforation; that the casing-tubing annulus of each injection well shall be loaded with an inert fluid and equipped with a pressure gauge at the surface.

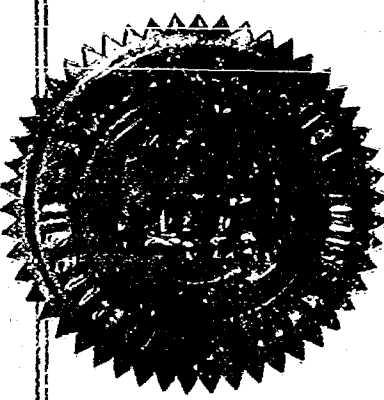
(3) That the subject waterflood project is hereby designated the Gulf Littlefield Shugart Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(4) 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.

(5) 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 herein-above designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION



*Bruce King*  
BRUCE KING, Chairman

*Alex J. Armiijo*  
ALEX J. ARMIJO, Member

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

S E A L

dr/

# Gulf Oil Company - U.S.

EXPLORATION AND PRODUCTION DEPARTMENT  
MIDLAND DISTRICT

W. B. Hopkins  
DISTRICT MANAGER  
J. A. Hord  
DISTRICT EXPLORATION  
MANAGER  
J. L. Pike  
DISTRICT PRODUCTION  
MANAGER  
M. B. Moseley  
DISTRICT SERVICES MANAGER

P. O. Drawer 1150  
Midland, Texas 79701

October 20, 1972

Oil Conservation Commission  
State of New Mexico  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Attention: Mr. George Hatch

Re: Application of Gulf Oil Corporation  
to Initiate a Waterflood Project in  
the Shugart (Y.SR.Q.G.) Pool,  
Eddy County, New Mexico

Dear Mr. Hatch:

Gulf filed the captioned application with the Commission on October 16, 1972. It has come to our attention that Paragraph (4) has been incorrectly stated. We have enclosed three corrected copies of Page 2 of the application. We would certainly appreciate it if you would replace Page 2 of our application with the corrected page.

Yours very truly,

*R. O. BOBO*

R. O. BOBO  
District Proration Engineer

ROB:jmc  
Attachment

cc: New Mexico Oil Conservation Commission  
P. O. Drawer "DD"  
Artesia, New Mexico 88210

James A. Knauf  
United States Geological Survey  
Drawer "U"  
Artesia, New Mexico 88210



A DIVISION OF GULF OIL CORPORATION

DOCKET MAILED

Date 11-2-72

October 16, 1972

- (4) The applicant plans to use produced Shugart Pool water from the lease and purchased Ogallala water from the Eagle Water System. Plans are to inject up to 500 barrels of water per day per input well into the Queen member of the Shugart Pool.
- (5) The Littlefield "AB" Federal Lease has Federal Lease No. NM 014103. It carries a November 20, 1945 KGS Classification, North Shugart Pool. The United States Geological Survey is being furnished a copy of this application and are being asked to furnish a letter of approval for the project.
- (6) The attached list of operators in the Pool within a two mile radius of the proposed injection wells are being furnished a copy of the application.

Respectfully submitted,

GULF OIL CORPORATION

BY R. O. Bobo

R. O. BOBO District Proration Engineer

ROB:jmc  
Enclosures

cc: New Mexico Oil Conservation Commission  
Drawer "DD"  
Artesia, New Mexico 88210

James A. Knauf  
United States Geological Survey  
Drawer "U"  
Artesia, New Mexico 88210


Operators shown on attached list

October 16, 1972

- (4) The applicant plans to use produced Shugart Pool water from the lease and purchased Ogallala water from the Eagle Water System. Plans are to inject up to 500 barrels of water per day per input well into the Queen member of the Shugart Pool.
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Respectfully submitted,

GULF OIL CORPORATION

BY   
R. O. BOBO District Proration Engineer

ROB:jmc  
Enclosures

cc: New Mexico Oil Conservation Commission  
Drawer "DD"  
Artesia, New Mexico 88210

James A. Knauf  
United States Geological Survey  
Drawer "U"  
Artesia, New Mexico 88210

Operators shown on attached list

October 16, 1972

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- (5) The Littlefield "AB" Federal Lease has Federal Lease No. NM 014103. It carries a November 20, 1945 KGS Classification, North Shugart Pool. The United States Geological Survey is being furnished a copy of this application and are being asked to furnish a letter of approval for the project.
- (6) The attached list of operators in the Pool within a two mile radius of the proposed injection wells are being furnished a copy of the application.

Respectfully submitted,

GULF OIL CORPORATION

BY R. O. BOBO  
R. O. BOBO District Proration Engineer

ROB:jmc  
Enclosures

cc: New Mexico Oil Conservation Commission  
Drawer "DD"  
Artesia, New Mexico 88210

James A. Knauf  
United States Geological Survey  
Drawer "U"  
Artesia, New Mexico 88210

Operators shown on attached list

DOCKET: EXAMINER HEARING - TUESDAY - NOVEMBER 14, 1972

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:

- ALLOWABLE: (1) Consideration of the allowable production of gas for December, 1972, from seventeen prorated pools in Lea, Eddy, Roosevelt, and Chaves Counties, New Mexico.
- (2) Consideration of the allowable production of gas from nine prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico for December, 1972.
- (3) Consideration of purchasers' nominations for the one-year period beginning January 1, 1973, for both of the above areas.

CASE 4608: (Reopened) (Continued from October 4, 1972)

In the matter of Case 4608 being reopened pursuant to the provisions of Order No. R-4213 which order established special rules and regulations for the Haystack Siluro-Devonian Pool, Chaves County, New Mexico, including a provision for 80-acre spacing units. All interested persons may appear and show cause why said pool should not be developed on 40-acre spacing units.

CASE 4855: Application of Gulf Oil Corporation for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of oil production from the Cary-Montoya and South McCormack-Silurian Oil Pools in the wellbore of its R. E. Cole (NCT-A) Well No. 10 in Unit E of Section 16, Township 22 South, Range 37 East, Lea County, New Mexico.

CASE 4856: Application of Gulf Oil Corporation for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Shugart Pool, Eddy County, New Mexico, by the injection of water into the Queen formation through three wells on its Federal Littlefield "AB" Lease in Section 22, Township 18 South, Range 31 East, Eddy County, New Mexico.

CASE 4857: Application of Perry R. Bass for an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for an unorthodox gas well location for his Big Eddy Well No. 7 located 660 feet from the South line and 1980 feet from the East line of Section 19, Township 20 South, Range 31 East, Maroon Cliffs-Morrow Gas Pool, Eddy County, New Mexico, with the E/2 of said Section 19 to be dedicated to the well.

CASE 4858: Application of Continental Oil Company for two non-standard gas proration units, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the two following Blinebry Gas Pool non-standard gas proration units in Township 21 South, Range 37 East:

A 120-acre unit comprising the N/2 SW/4 and the SW/4 SW/4 of Section 21, to be dedicated to applicant's M. E. Wantz Well No. 11 located in Unit L of said Section 21, and a 160-acre unit comprising the NW/4 SE/4, S/2 SE/4 and SE/4 SW/4 of Section 21, to be dedicated to applicant's M. E. Wantz Well No. 8 located in Unit O of said Section 21.

CASE 4859: Application of Continental Oil Company for two non-standard gas proration units, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the two following Blinebry Gas Pool non-standard proration units in Township 21 South, Range 37 East:

An 80-acre unit comprising the SW/4 NW/4 of Section 13 and the SE/4 NE/4 of Section 14, to be dedicated to applicant's Lockhart B-14 "A" Well No. 1 located in Unit H of Section 14, and a 160-acre unit comprising the NW/4 SE/4, N/2 SW/4, and SW/4 SW/4 of Section 13, to be simultaneously dedicated to applicant's Lockhart B-13 "A" Wells Nos. 1 and 8 located in Units M and L, respectively, of said Section 13.

CASE 4860: Application of Craig Folsom for an unorthodox oil well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a well to test the Queen formation at an unorthodox oil well location 1340 feet from the South line and 1300 feet from the East line of Section 12, Township 13 South, Range 31 East, Caprock-Queen Pool, Chaves County, New Mexico.

CASE 4861: Application of Cities Service Oil Company for the amendment of Order R-4239, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-4239, which order pooled all mineral interests in the South Carlsbad-Morrow Gas Pool underlying the N/2 of Section 19, Township 22 South, Range 27 East, Eddy County, New Mexico, to be dedicated to a well to be drilled at an unorthodox location 2173 feet from the North line and 1200 feet from the East line of said Section 19 and provided \$60.00 per month as the charge for supervision (combined fixed rates). Applicant proposes that said order be amended to provide for the drilling of a well on the pooled unit at a standard well location and that \$200.00 a month be established as the charge for supervision.

CASE 4862: Application of Adobe Oil Company for a non-standard gas proration unit and an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 520-acre non-standard

(Case 4862 continued from Page 2)

gas proration unit comprising the NE/4, SE/4, E/2 SW/4, N/2 NW/4, and SE/4 NW/4 of Section 11, Township 23 South, Range 24 East, Rock Tank-Upper Morrow and Rock Tank-Lower Morrow Gas Pools in Eddy County, New Mexico, to be dedicated to a well to be drilled at an unorthodox location 320 feet from the South and East lines of said Section 11.

CASE 4863: Application of C & K Petroleum Inc. for a non-standard gas proration unit and an unorthodox location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 225.59-acre non-standard West Atoka-Morrow gas proration unit in Section 18, Township 18 South, Range 26 East, comprising the SW/4, the SW/4 SE/4, and that portion of the NW/4 SE/4 described as follows:

Beginning at the Northwest corner of said NW/4 SE/4, thence South 1320 feet, thence East 1193.4 feet, thence North 639 feet, thence West 242.2 feet, thence North 30 degrees West, 452.6 feet, thence West 267 feet, thence North 8 degrees East, 267 feet to the North line of said NW/4 SE/4, thence West 507.4 feet to the point of beginning.

Applicant further seeks authority to drill a well for said unit at an unorthodox location 990 feet from the South and West lines of said Section 18.

CASE 4864: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Chaves, Eddy and Lea Counties, New Mexico.

(a) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Canyon production and designated as the South Carlsbad-Canyon Gas Pool. The discovery well is the Phillips Petroleum Company Drag B No. 1 located in Unit K of Section 18, Township 23 South, Range 27 East, NMPM. Said pool described as:

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM  
Section 18: S/2

(b) Create a new pool in Lea County, New Mexico, classified as a gas pool for Morrow production and designated as the Hat Mesa-Morrow Gas Pool. The discovery well is the Phillips Petroleum Company Hat Mesa No. 1 located in Unit G of Section 11, Township 21 South, Range 32 East, NMPM. Said pool described as:

TOWNSHIP 21 SOUTH, RANGE 32 EAST, NMPM  
Section 11: E/2



(Case 4864 continued from Page 3)

(c) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Rocky Arroyo-Morrow Gas Pool. The discovery well is the El Paso Natural Gas Company Rocky Arroyo No. 1 located in Unit J of Section 8, Township 22 South, Range 22 East, NMPM. Said pool described as:

TOWNSHIP 22 SOUTH, RANGE 22 EAST, NMPM  
Section 8: E/2  
Section 17: N/2

(d) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Wolfcamp production and designated as the Rocky Arroyo-Wolfcamp Gas Pool. The discovery well is the El Paso Natural Gas Company Rocky Arroyo No. 1 located in Unit J of Section 8, Township 22 South, Range 22 East, NMPM. Said pool described as:

TOWNSHIP 22 SOUTH, RANGE 22 EAST, NMPM  
Section 8: SE/4

(e) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Lower Pennsylvanian production and designated as the South Sand Dunes-Lower Pennsylvanian Gas Pool. The discovery well is the El Paso Natural Gas Company Sundance Federal No. 1 located in Unit F of Section 4, Township 24 South, Range 31 East, NMPM. Said pool described as:

TOWNSHIP 24 SOUTH, RANGE 31 EAST, NMPM  
Section 4: N/2

(f) Create a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Winchester-Morrow Gas Pool. The discovery well is the Penroc Oil Corporation Dero Federal No. 1 located in Unit P of Section 35, Township 19 South, Range 28 East, NMPM. Said pool described as:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM  
Section 35: S/2

(g) Extend the Blinebry Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM  
Section 25: SW/4

(h) Extend the Buffalo Valley-Pennsylvanian Gas Pool in Chaves County, New Mexico, to include therein:

(Case 4864, Paragraph (h) continued from Page 4)

TOWNSHIP 15 SOUTH, RANGE 28 EAST, NMPM  
Section 7: S/2  
Section 18: N/2

(i) Extend the South Carlsbad-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 27 EAST, NMPM  
Section 18: S/2

(j) Extend the East Chisum-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 11 SOUTH, RANGE 28 EAST, NMPM  
Section 16: NW/4 NE/4

(k) Extend the North Eunice-San Andres Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 37 EAST, NMPM  
Section 17: NW/4  
Section 18: NE/4

(l) Extend the Grayburg Jackson Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 30 EAST, NMPM  
Section 7: SE/4

(m) Extend the Haystack-Cisco Gas Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 6 SOUTH, RANGE 27 EAST, NMPM  
Section 9: All  
Section 16: N/2

(n) Extend the Penasco Draw San Andres-Yeso Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 25 EAST, NMPM  
Section 5: SW/4  
Section 6: S/2

(o) Extend the Red Lake Queen-Grayburg-San Andres Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 27 EAST, NMPM  
Section 23: SE/4 NW/4, NE/4 SW/4, and  
N/2 SE/4  
Section 24: SE/4 and N/2 SW/4

Examiner Hearing - Tuesday - November 14, 1972  
-6-

Docket No. 26-72

(Case 4864 continued from Page 5)

(p) Extend the East Shoebar-Devonian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 36 EAST, NMPM  
Section 29: NW/4

(q) Extend the Shugart Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 30 EAST, NMPM  
Section 36: NW/4

(r) Extend the West Tres Papalotes-Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 34 EAST, NMPM  
Section 30: NE/4

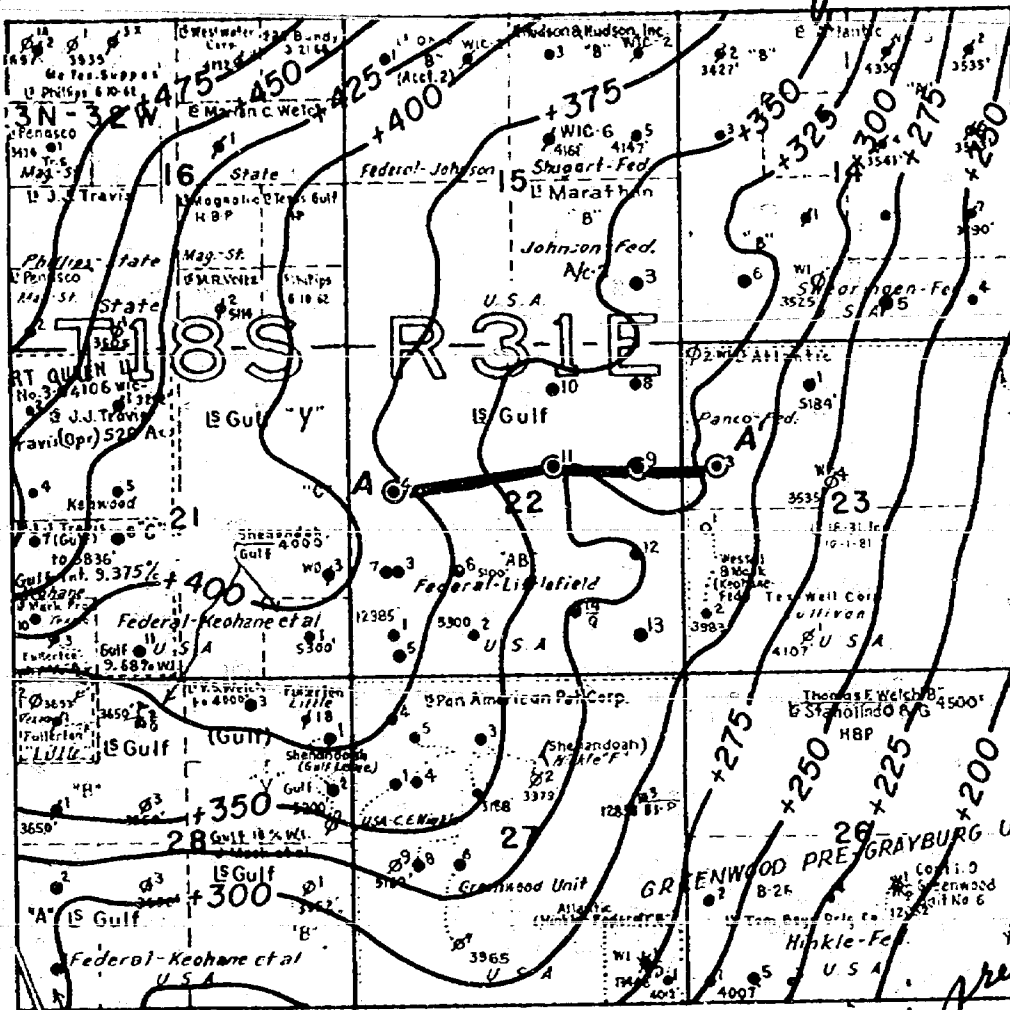
(s) Extend the Washington Ranch-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 26 SOUTH, RANGE 24 EAST, NMPM  
Section 2: W/2  
Section 11: All

(t) Extend the White City-Pennsylvanian Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 26 EAST, NMPM  
Section 32: All

*drat trap  
dip 80' / mile  
perme pinchout  
up-dip to west*



SHUGART FIELD  
EDDY COUNTY, NEW MEXICO

CASE NO. 4856

EXHIBIT NO. 2  
STRUCTURE MAP - TOP QUEEN  
CONTOUR INTERVAL 25'  
MAP SCALE: 1"=3000'  
CROSS SECTION A-A'

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 2  
CASE NO. 4856  
Submitted by GULF  
Hearing Date 11/14/72

NOVEMBER 14, 1972

*estimated  
ultimate  
primary =  
about*

*will use 1 prevd well  
(now about 85 BPD)  
+ Ogallala water from  
+ will inject  
500 BPD/well  
at about  
1200 psi surf  
res recs will yield  
57% of ultimate  
primary or  
about 100,000  
barrels*

*Under Eagle & Co.*

EXHIBIT NO. 5  
CASE NO. 4856

— PRODUCTION HISTORY —  
WELLS WITHIN  
PROPOSED WATERFLOOD PROJECT AREA  
LITTLEFIELD "AB" FEDERAL LEASE  
EDDY COUNTY, NEW MEXICO  
GULF OIL CORP. MIDLAND DISTRICT

**OIL PRODUCTION**

**WATER PRODUCTION**

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 5  
CASE NO. 4856  
Submitted by 6467  
Flooring Date 11/14/72  
about 10 BOPD/well

Month	Oil Production (BOPD)	Water Production (BOPD)
Jan. 1970	1.0	0.2
Feb. 1970	3.0	0.5
Mar. 1970	4.0	0.3
Apr. 1970	6.0	0.8
May 1970	8.0	1.0
June 1970	7.0	1.0
July 1970	6.0	1.0
Aug. 1970	5.5	1.0
Sept. 1970	5.5	1.0
Oct. 1970	5.0	1.0
Nov. 1970	4.5	1.2
Dec. 1970	5.5	1.0
Jan. 1971	5.0	1.6
Feb. 1971	5.0	1.5
Mar. 1971	5.0	1.7
Apr. 1971	5.0	1.7
May 1971	4.5	1.7
June 1971	4.0	1.7
July 1971	3.5	1.7
Aug. 1971	3.0	1.8
Sept. 1971	3.0	1.8
Oct. 1971	2.5	1.7
Nov. 1971	2.5	1.7
Dec. 1971	2.5	1.7
Jan. 1972	2.0	1.6
Feb. 1972	1.5	1.5
Mar. 1972	1.5	1.5
Apr. 1972	1.5	1.5
May 1972	1.5	1.5
June 1972	1.5	1.5
July 1972	1.5	1.5
Aug. 1972	1.5	1.5
Sept. 1972	1.5	1.5
Oct. 1972	1.5	1.5
Nov. 1972	1.5	1.5
Dec. 1972	1.5	1.5
Jan. 1973	1.5	1.5
Feb. 1973	1.5	1.5
Mar. 1973	1.5	1.5
Apr. 1973	1.5	1.5
May 1973	1.5	1.5
June 1973	1.5	1.5
July 1973	1.5	1.5
Aug. 1973	1.5	1.5
Sept. 1973	1.5	1.5
Oct. 1973	1.5	1.5
Nov. 1973	1.5	1.5
Dec. 1973	1.5	1.5
Jan. 1974	1.5	1.5
Feb. 1974	1.5	1.5
Mar. 1974	1.5	1.5
Apr. 1974	1.5	1.5
May 1974	1.5	1.5
June 1974	1.5	1.5
July 1974	1.5	1.5
Aug. 1974	1.5	1.5
Sept. 1974	1.5	1.5
Oct. 1974	1.5	1.5
Nov. 1974	1.5	1.5

**— PRODUCTION HISTORY —**  
WELLS WITHIN  
PROPOSED WATERFLOOD PROJECT AREA  
LITTLEFIELD "AB" FEDERAL LEASE  
EDDY COUNTY, NEW MEXICO  
GULF OIL CORP. MIDLAND DISTRICT

Hearing Date 11/14

about 10 BOPD/well

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 6

EXHIBIT NO. 6

CASE NO. 4856

NOVEMBER 14, 1972

CASE NO. 4856

Submitted by GUFF

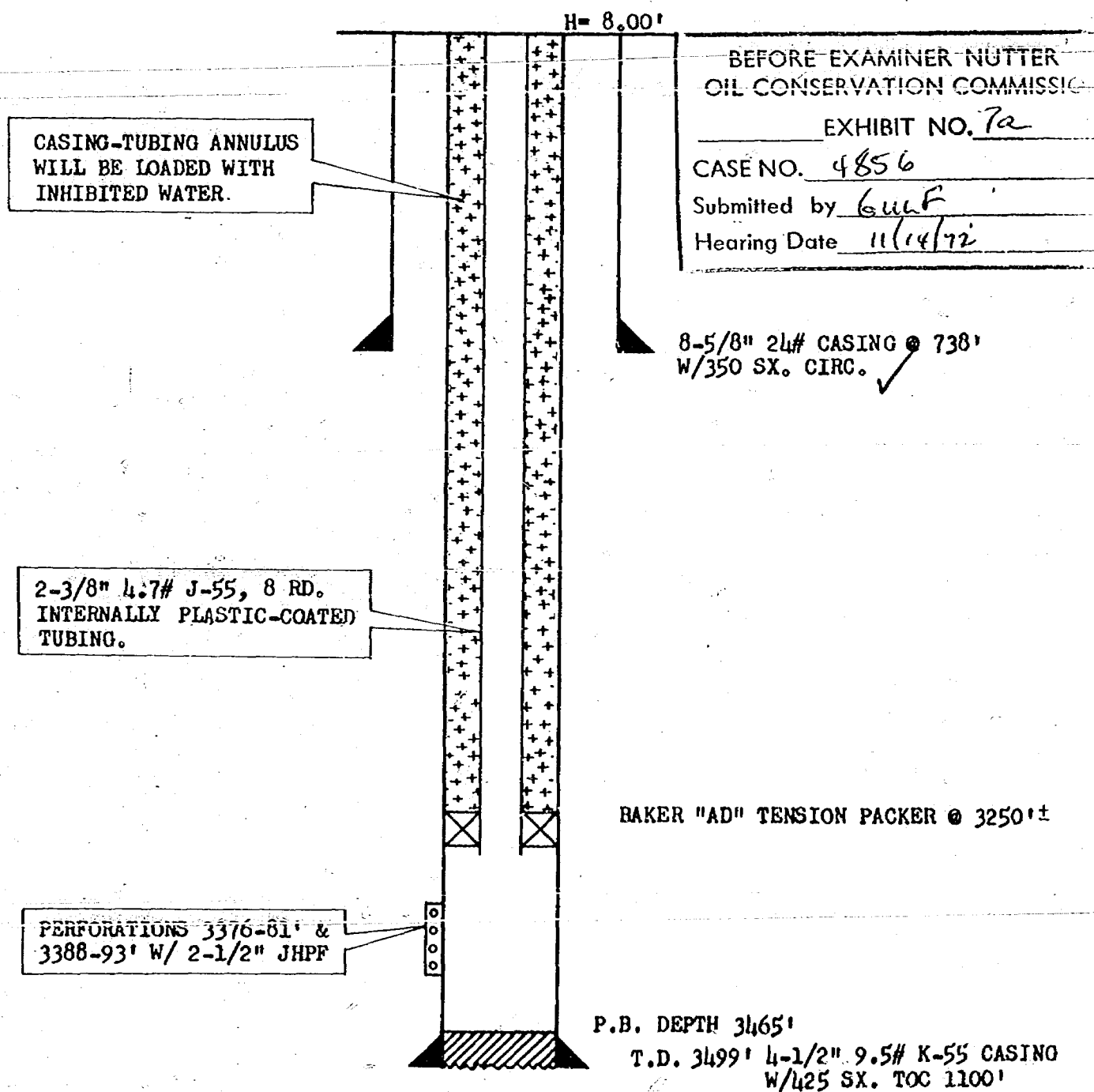
Exhibiting Date 11/14/72

MONTHLY OIL, WATER AND GAS PRODUCTION  
WELLS WITHIN PROPOSED WATERFLOOD PROJECT AREA  
LITTLEFIELD "AB" FEDERAL LEASE

YEAR MONTH	NO. WELLS	OIL BARRELS	WATER BARRELS	GAS MCF
1970				
Jan.	--	--	--	-
Feb.	1	893	192	TSIM
Mar.	1	2,302	520	TSIM
Apr.	2	3,553	248	TSIM
May	5	6,081	890	TSIM
June	5	8,037	1,060	TSIM
July	5	7,126	1,040	TSIM
Aug.	5	6,186	1,040	TSIM
Sep.	5	5,610	1,015	TSIM
Oct.	5	5,697	1,025	TSIM
Nov.	5	5,383	1,180	TSIM
Dec.	5	4,301	1,020	TSIM
1971				
Jan.	6	5,874	1,620	TSIM
Feb.	6	5,430	1,560	TSIM
Mar.	6	5,260	1,670	TSIM
Apr.	6	5,244	1,670	TSIM
May	7	5,213	1,686	TSIM
June	7	4,328	1,700	TSIM
July	7	4,557	1,745	TSIM
Aug.	7	3,897	1,740	TSIM
Sep.	7	3,663	1,770	TSIM
Oct.	7	3,679	1,770	TSIM
Nov.	7	3,489	1,680	TSIM
Dec.	7	3,429	1,645	TSIM
1972				
Jan.	7	3,401	1,645	TSIM
Feb.	7	3,132	1,515	TSIM
Mar.	7	2,871	1,515	TSIM
Apr.	7	2,579	1,515	TSIM
May	7	2,498	1,515	TSIM
June	7	2,284	1,430	TSIM
July	7	2,308	1,250	TSIM
Aug.	7	2,212	1,150	TSIM
Sep.	7	2,185	1,100	TSIM

**SCHEMATIC DIAGRAM  
PROPOSED WATER INJECTION WELL**

LITTLEFIELD "AB" FEDERAL WELL # 9  
SECTION 22, T-18-S, R-31-E  
EDDY COUNTY, NEW MEXICO



NOTE: 1. WELL FRACED ON COMPLETION W/240 BBIS. 3# SPG, 20-40  
SAND ISIP 1700#, INITIAL BREAKDOWN 2500#, AIR 25.5  
BPM.

EXHIBIT NO. 7-A  
CASE NO. 4856  
NOVEMBER 14, 1972

SCHEMATIC DIAGRAM  
PROPOSED WATER INJECTION WELL

LITTLEFIELD "AB" FEDERAL WELL # 10  
SECTION 22, T-18-S, R-31-E  
EDDY COUNTY, NEW MEXICO

H= 9.00'

CASING-TUBING ANNULUS  
WILL BE LOADED WITH  
INHIBITED WATER

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 7-B

CASE NO. 4856

Submitted by GULF

Hearing Date 11/14/72

8-5/8" CASING @ 719'  
W/350 SX. CIRC. ✓

2-3/8" 4.7# J-55, 8 RD.  
INTERNALLY PLASTIC-COATED  
TUBING.

BAKER "AD" TENSION PACKER @ 3225' ±

PERFORATIONS 3336-40' &  
3364-70' W/2-1/2" JHPF

P.B. DEPTH 3410'

T.D. 3449' 5-1/2" CASING W/300 SX.  
TOC 1900'

NOTE: 1. WELL FRACED ON COMPLETION W/300 BBIS. 3# SPG, 20-40  
SAND ISIP 1650#, INITIAL BREAKDOWN 2050#, AIR 27.5 BPM.

EXHIBIT NO. 7-B  
CASE NO. 4856  
NOVEMBER 14, 1972



SCHEMATIC DIAGRAM  
PROPOSED WATER INJECTION WELL

LITTLEFIELD "AB" FEDERAL WELL # 14  
SECTION 22, T-18-S, R-31-E  
EDDY COUNTY, NEW MEXICO

H = 8.00'

CASING-TUBING ANNULUS  
WILL BE LOADED WITH  
INHIBITED WATER,

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 7c

CASE NO. 4856

Submitted by GULF

Hearing Date 11/14/72

8-5/8" CASING @ 744'  
W/350 SX. CIRC.

2-3/8" 4.7# J-55, 8 RD.  
INTERNALLY PLASTIC-COATED  
TUBING.

BAKER "AD" TENSION PACKER @ 3275'±

PERFORATIONS 3372-3384'  
W/2-1/2" JHPF

P.B. DEPTH 3400'

T.D. 3435' 4-1/2" CASING W/450 SX.  
TOC 1398'

NOTE: 1. WELL FRACED ON COMPLETION W/120 BBLs. 3# SPG, 20-40  
SAND ISIP 1600#, INITIAL BREAKDOWN 3000 #, AIR 25BPM.

EXHIBIT NO. 7-C  
CASE NO. 4856  
NOVEMBER 14, 1972



# United States Department of the Interior

## GEOLOGICAL SURVEY

P. O. Drawer U  
Artesia, New Mexico 88210

Gulf Oil Corporation  
Post Office Drawer 1150  
Midland, Texas 79701

Gentlemen:

Your letter of October 20, 1972, requests approval to operate a waterflood of the Queen formation on that portion of oil and gas lease New Mexico 014103 described as E $\frac{1}{2}$  sec. 22, T. 18 S., R. 31 E., N.M.P.M., Eddy County, New Mexico.

The flood pattern would be non-symmetrical, and the plan proposes to convert the following wells to water injection:

Well Number	Location Description
9-Littlefield "AB"	SE $\frac{1}{4}$ NE $\frac{1}{4}$ section 22
10-Littlefield "AB"	NW $\frac{1}{4}$ NE $\frac{1}{4}$ section 22
14-Littlefield "AB"	SW $\frac{1}{4}$ SE $\frac{1}{4}$ section 22

The plan for operating the above described waterflood project as proposed in the application is satisfactory to this office and hereby approved subject to New Mexico Oil Conservation Commission approval and the following:

1. This project will be operated in compliance with the New Mexico Oil Conservation Commission regulations governing waterflood operations.
2. Duplicate copies of a monthly progress report (N.M.O.C.C. form C-120 acceptable) are to be submitted to this office showing the volume of water injected and average pressure for the injection wells and production for the producing wells in the project area.
3. This approval does not preclude the necessity for further approval when the project is expanded to include other wells and/or leases or the necessity to submit the usual notices and reports on wells involved.

Exhibit No. 8

Case No. 4856  
November 14, 1972

Sincerely yours,

Robert L. Beckman  
Assistant District Engineer

October 25, 1972  
BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 8  
CASE NO. 4856  
Submitted by GULF

PROPOSED

LITTLEFIELD 'AB' FEDERAL LEASE

WATERFLOOD PROJECT

SHUGART POOL

EDDY COUNTY, NEW MEXICO

CASE 4856

TUESDAY, NOVEMBER 14, 1972

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION

EXHIBIT NO. 9

CASE NO. 4872

Submitted by GULF

Hearing Date 11/14/72

Operator Gulf Oil Corporation Date November 15, 1972  
Project Littlefield "AB" Federal Lease Waterflood  
Pool Shugart (Yates; Seven Rivers, Queen, Grayburg) County Lea  
Reservoir Queen Member

I. RESERVOIR CHARACTERISTICS

A. Information on Reservoir

1. Name of Reservoir Queen Member of Shugart Pool
2. Composition Gray, fine-grained sandstone with varying amounts of dolomite as matrix.
3. Structure Gentle (78-80' per mile) southeast dip across our lease. Trapping mechanism-permeability pinch-out up dip.

B. Information on Proposed Project Area

1. Number of Productive Acres in Project Area to be Flooded Approximately 320 acres
2. Average Depth to Top of Pay 3338'
3. Estimated Average Net Thickness 12'
4. Estimated Average Effective Porosity 13.7%

II. PRIMARY PRODUCTION HISTORY AND PRESENT STATUS OF PROJECT AREA.

- A. Date First Well Completed in Project Area February, 1970
- B. Oil and Water Production History by Months shown as Exhibit 6.
- C. Type of Depletion Solution gas drive
- D. Original Reservoir Pressure None available
- E. Oil Gravity 36.9°
- F. Stage of Depletion of Project Area Late
- G. Number of Wells in Project Area Seven (4 Producers and 3 Proposed injection wells)
- H. Average Daily Oil Production Per Well at Present Time 10.4 Ebbs.

- I. Cumulative Oil Production as of 10-1-72 132,702 bbls.
- J. Estimated Remaining Primary Reserves from 10-1-72 40,000 bbls.

### III. INJECTION INFORMATION

- A. Source of Injected Water Produced lease water and purchased fresh water from Eagle Water System
- B. Type of Water Shugart Pool produced water and Ogallala water from Eagle Water System
- C. Treatment of Injected Water None is anticipated; however, if later in the life of the project, treatment is deemed necessary, appropriate action will be taken.
- D. Pattern and Spacing Non-symmetrical 40 acre pattern
- E. Estimated Injection Pressure Maximum of 1200 psi at the wellhead. Injection plant will be designed for 1500 psi maximum pressure.
- F. Estimated Initial Per Well Rate of Injection Up to 500 barrels of water per day per input well
- G. Additional Injection and Producing Wells to be Drilled None
- H. Injection Well Geometry Water will be injected through internally plastic coated tubing below a packer located in the casing as shown on Exhibits No. 7a, 7b, and 7c

### IV. RESULTS EXPECTED

It is believed that the proposed waterflood will provide recovery of additional oil in the magnitude of 57% of the reservoir's ultimate primary recovery. In terms of barrels, the increased recovery due to waterflooding should be on the order of 100,000 barrels of oil.

### V. REASONS AND RECOMMENDATIONS

The Shugart (Queen Member) Pool underlying Gulf's Littlefield "AB" Federal lease produces by a solution gas drive mechanism and, as a result,

a considerable quantity of oil will remain unrecovered at the end of primary depletion unless some type of fluid injection project is initiated to increase the ultimate oil recovery. An engineering study indicates waterflooding would be the most economical and effective secondary recovery method to initiate. Therefore, Gulf Oil Corporation respectfully requests the Oil Conservation Commission approve the installation of the proposed waterflood facilities and grant such oil allowable as earned by the wells in the project area as provided in Rule 701 (E) Subparagraph 3, as amended, of the Commission Rules and Regulations.

# Gulf Oil Company - U.S.

EXPLORATION AND PRODUCTION DEPARTMENT  
MIDLAND DISTRICT

W. B. Hopkins  
DISTRICT MANAGER

J. A. Hord  
DISTRICT EXPLORATION  
MANAGER

J. L. Pike  
DISTRICT PRODUCTION  
MANAGER

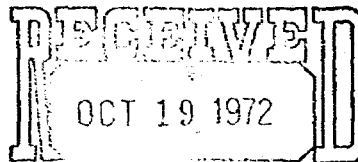
M. B. Moseley  
DISTRICT SERVICES MANAGER

P. O. Drawer 1150  
Midland, Texas 79701

October 16, 1972

*Case 4856*

Oil Conservation Commission  
State of New Mexico  
P. O. Box 2088  
Santa Fe, New Mexico 87501



Attention: Mr. A. L. Porter, Jr.

OIL CONSERVATION COMM.  
Santa Fe

Re: Application of Gulf Oil Corporation to  
Initiate a Waterflood Project in the  
Shugart (Y.SR.Q.G) Pool, Eddy County,  
New Mexico

Gentlemen:

Gulf Oil Corporation requests an Examiner Hearing to consider its application to initiate a waterflood project on its Littlefield "AB" Federal Lease in the Shugart (Yates, Seven Rivers, Queen, Grayburg) Pool, Eddy County, New Mexico.

In support of this application the following facts are submitted:

- (1) The applicant is the owner and operator of the Littlefield "AB" Federal Lease covering all of Section 22, T-18-S, R-31-E, Eddy County, New Mexico, as more fully shown on the attached plat. The proposed project, however, will comprise only the East half consisting of 320 acres. The reservoir to be flooded, Queen member, has insufficient porosity development on the West half of the lease to be conducive to flooding.
- (2) The average daily production for the wells in the proposed project area has declined to approximately 14.8 barrels oil per day per well, and all wells have reached an advance stage of depletion as described in Rule 701(E) (1).
- (3) The applicant initially proposes to convert three wells to water injection wells. The wells are identified on the attached plat. A schematic diagram giving pertinent well information for each of the proposed injection wells are enclosed. Also enclosed is a copy of a typical injection well log.



A DIVISION OF GULF OIL CORPORATION

October 16, 1972

- (4) The applicant plans to use produced Shugart Pool water from the Eagle Water System. Plans are to inject up to 500 barrels of water per day per input well into the Queen member of the Shugart Pool.
- (5) The Littlefield "AB" Federal Lease has Federal Lease No. NM 014103. It carries a November 20, 1945 KGS Classification, North Shugart Pool. The United States Geological Survey is being furnished a copy of this application and are being asked to furnish a letter of approval for the project.
- (6) The attached list of operators in the Pool within a two mile radius of the proposed injection wells are being furnished a copy of the application.

Respectfully submitted,

GULF OIL CORPORATION

By

R. O. BOBO

District Production Engineer

ROB:jmc  
Enclosures

cc: New Mexico Oil Conservation Commission  
Drawer "DD"  
Artesia, New Mexico 88210

James A. Knauf  
United States Geological Survey  
Drawer "J"  
Artesia, New Mexico 88210

Operators shown on attached list

*See  
revised  
p 2*



SHUGART POOL OPERATORS  
(2 Mile Radius of Gulf's Littlefield "AB" Federal Lease)

Amarillo Oil Company  
P. O. Box 234  
Farmington, New Mexico 87401

APCO Oil Corporation  
P. O. Box 1027  
Odessa, Texas 79760

Atlantic Richfield Company  
P. O. Box 1610  
Midland, Texas 79701

Tom Boyd & Tom Boyd Drilling Company, Inc.  
510 West Texas Avenue  
Artesia, New Mexico 88210

George A. Chase  
P. O. Box 637  
Artesia, New Mexico 88210

R. D. Collier  
P. O. Box 798  
Artesia, New Mexico 88210

Wm. A. and Edward R. Hudson  
1000 First National Bldg.  
Fort Worth, Texas 76102

Keohane & Saunders et al  
P. O. Box 1120  
Roswell, New Mexico 88201

Marathon Oil Company  
P. O. Box 2409  
Hobbs, New Mexico 88240

Maxwell Oil Company  
2017 Continental Natl. Bank Bldg.  
Fort Worth, Texas 76102

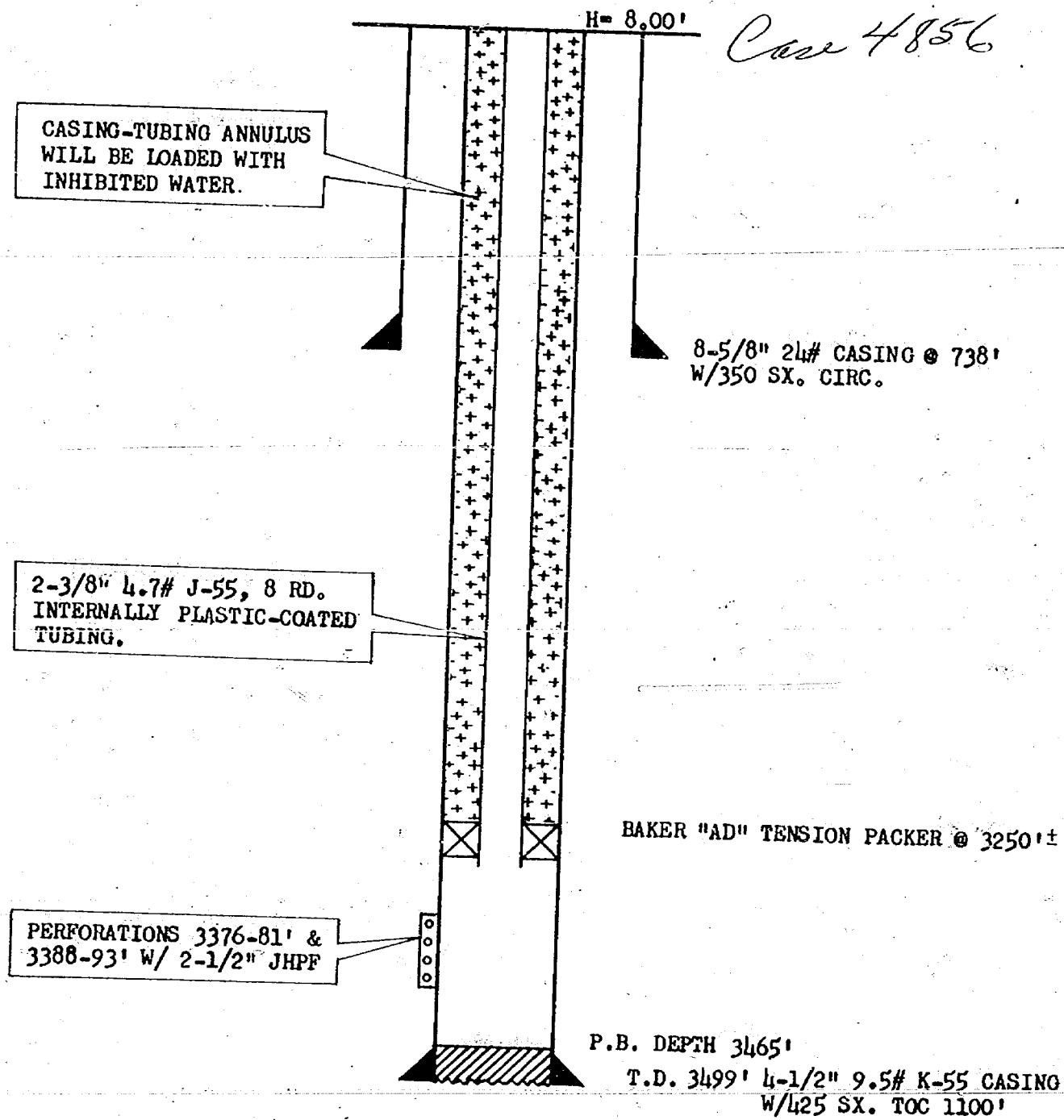
Paton Brothers  
P. O. Box 667  
Artesia, New Mexico 88210

Shenandoah Oil Corporation  
1500 Commerce Building  
Fort Worth, Texas 76102

J. J. Travis  
P. O. Box 873  
Midland, Texas 79701

SCHEMATIC DIAGRAM  
PROPOSED WATER INJECTION WELL

LITTLEFIELD "AB" FEDERAL WELL # 9  
SECTION 22, T-18-S, R-31-E  
EDDY COUNTY, NEW MEXICO



NOTE: 1. WELL FRACED ON COMPLETION W/240 BBLs. 3# SPG, 20-40  
SAND ISIP 1700#, INITIAL BREAKDOWN 2500#, AIR 25.5  
BPM.

SCHEMATIC DIAGRAM  
PROPOSED WATER INJECTION WELL

LITTLEFIELD "AB" FEDERAL WELL # 10  
SECTION 22, T-18-S, R-31-E  
EDDY COUNTY, NEW MEXICO

H= 9.00'

*Case 4856*

CASING-TUBING ANNULUS  
WILL BE LOADED WITH  
INHIBITED WATER

8-5/8" CASING @ 719'  
W/350 SX. CIRC.

2-3/8" 4.7# J-55, 8 RD.  
INTERNALLY PLASTIC-COATED  
TUBING.

BAKER "AD" TENSION PACKER @ 3225' ±

PERFORATIONS 3336-40' &  
3364-70' W/2-1/2" JHPF

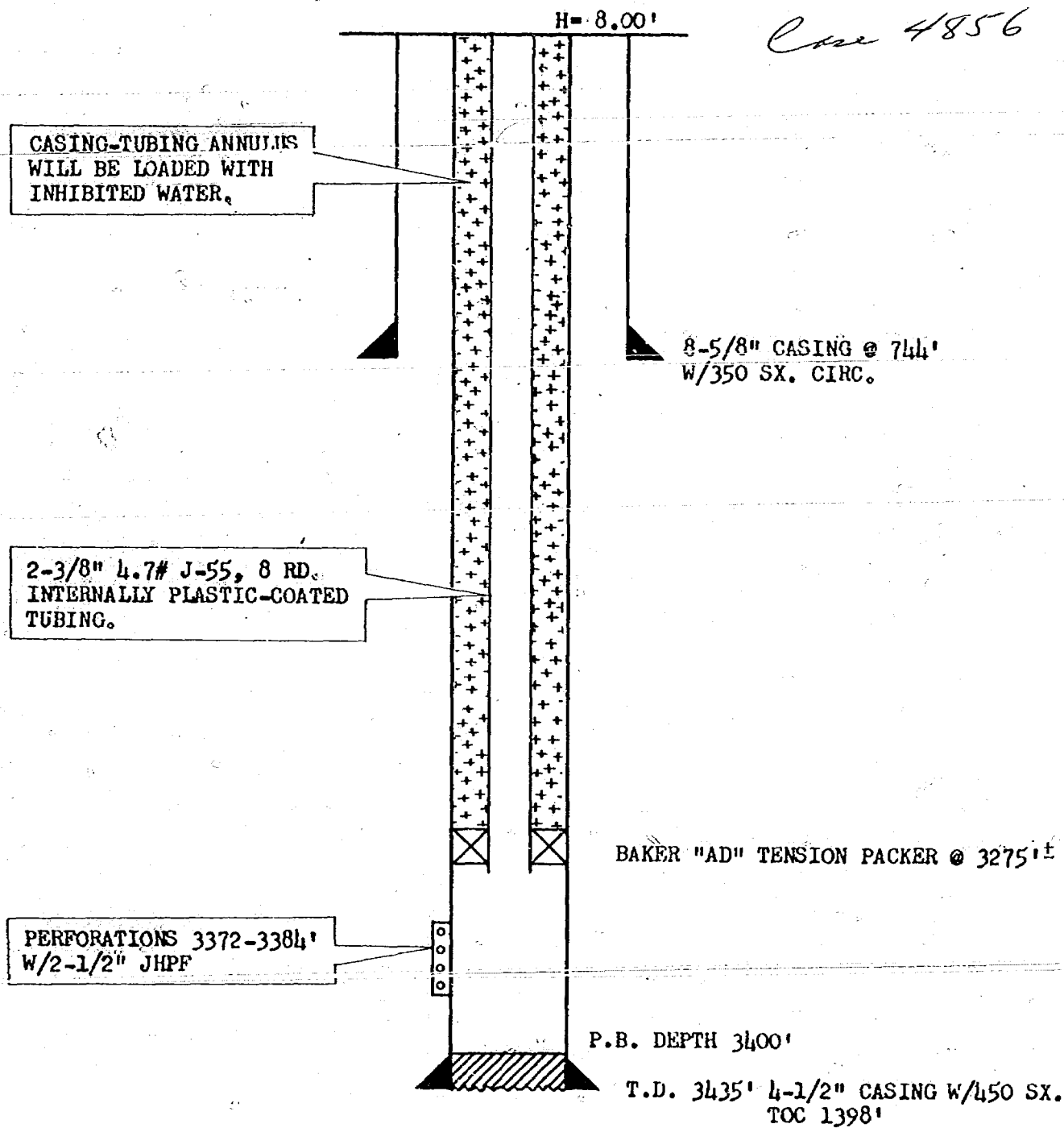
P.B. DEPTH 3410'

T.D. 3449' 5-1/2" CASING W/300 SX.  
TOC 1900'

NOTE: 1. WELL FRACED ON COMPLETION W/300 BBLs. 3# SPG, 20-40  
SAND ISIP 1650#, INITIAL BREAKDOWN 2050#, AIR 27.5 BPM.

SCHEMATIC DIAGRAM  
PROPOSED WATER INJECTION WELL

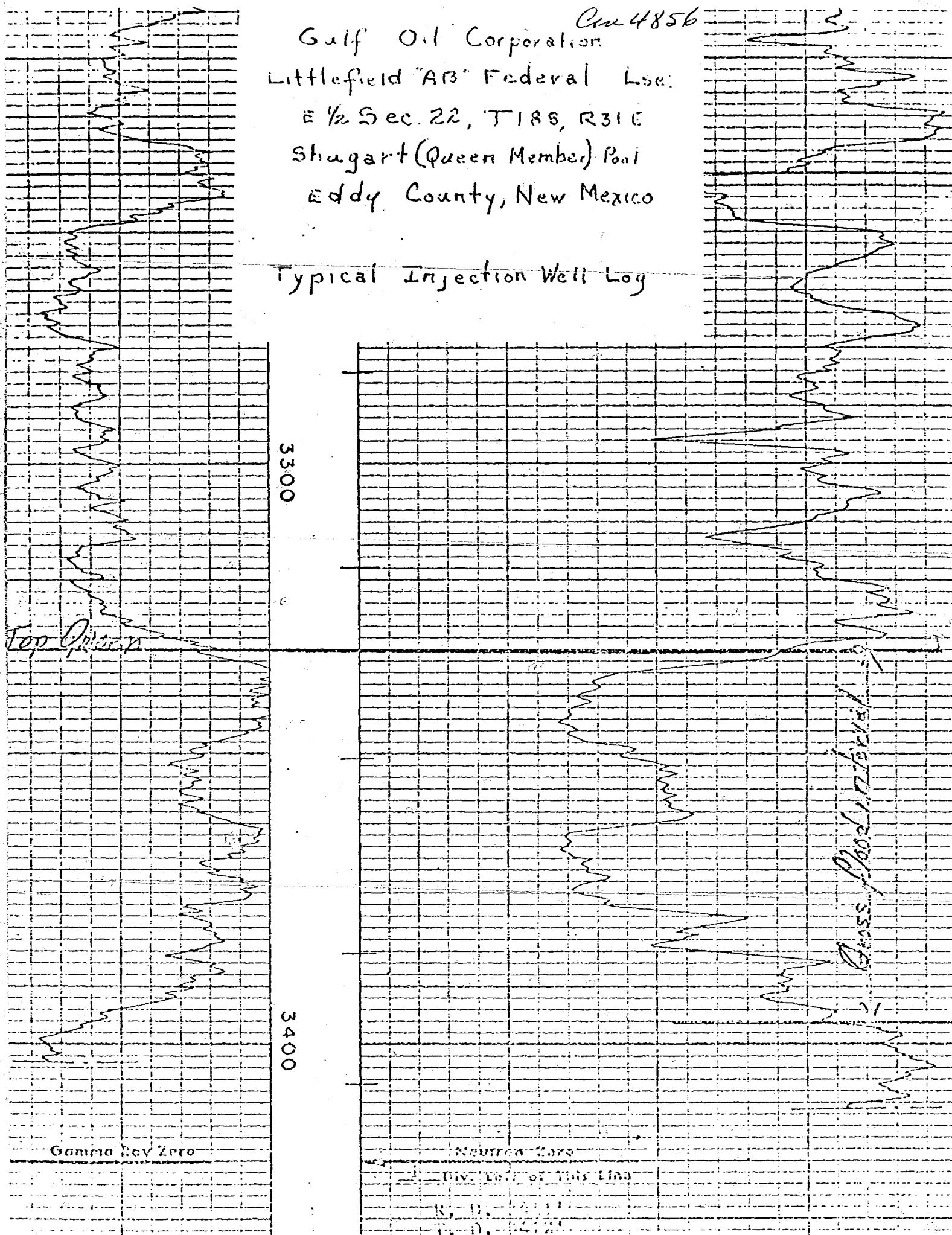
LITTLEFIELD "AB" FEDERAL WELL # 14  
SECTION 22, T-18-S, R-31-E  
EDDY COUNTY, NEW MEXICO



NOTE: 1. WELL FRACED ON COMPLETION W/120 BBLS. 3# SPG, 20-40  
SAND ISIP 1600#, INITIAL BREAKDOWN 3000 #, AIR 25BPM.

Cm 4856  
Gulf Oil Corporation  
Littlefield "AB" Federal Lse.  
E 1/2 Sec. 22, T18S, R31E  
Shugart (Queen Member) Pool  
Eddy County, New Mexico

Typical Injection Well Log





# United States Department of the Interior

GEOLOGICAL SURVEY  
P. O. Drawer U  
Artesia, New Mexico 88210

OCT 25 1972

Gulf Oil Corporation  
Post Office Drawer 1150  
Midland, Texas 79701

Gentlemen:

Your letter of October 20, 1972, requests approval to operate a waterflood of the Queen formation on that portion of oil and gas lease New Mexico 014103 described as E $\frac{1}{2}$  sec. 22, T. 18 S., R. 31 E., N.M.P.M., Eddy County, New Mexico.

The flood pattern would be non-symmetrical, and the plan proposes to convert the following wells to water injection:

Well Number	Location Description
9-Littlefield "AB"	SE $\frac{1}{4}$ NE $\frac{1}{4}$ section 22
10-Littlefield "AB"	NW $\frac{1}{4}$ NE $\frac{1}{4}$ section 22
14-Littlefield "AB"	SW $\frac{1}{4}$ SE $\frac{1}{4}$ section 22

The plan for operating the above described waterflood project as proposed in the application is satisfactory to this office and hereby approved subject to New Mexico Oil Conservation Commission approval and the following:

1. This project will be operated in compliance with the New Mexico Oil Conservation Commission regulations governing waterflood operations.
2. Duplicate copies of a monthly progress report (N.M.O.C.C. form C-120 acceptable) are to be submitted to this office showing the volume of water injected and average pressure for the injection wells and production for the producing wells in the project area.
3. This approval does not preclude the necessity for further approval when the project is expanded to include other wells and/or leases or the necessity to submit the usual notices and reports on wells involved.

Sincerely yours,

Robert L. Beekman  
Assistant District Engineer

cc: N.M.O.C.C., Santa Fe  
Roswell - Accounts - Files

DRAFT

dr/

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. 4856

Order No. R- 4438

APPLICATION OF GULF OIL CORPORATION  
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 November 14, 1972,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this        day of November, 1972, 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, Gulf Oil Corporation,  
seeks authority to institute a waterflood project in the on its  
Littlefield "AB" Federal Lease Unit Area, Shugart John-Swan Rivers, Queen-Cryburg  
Pool,  
by the injection of water into the Queen formation  
through three injection wells in Section 22,  
Township 18 North, South, Range 31 West, 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.

IT IS THEREFORE ORDERED:

(1) That the applicant, Gulf Oil Corporation,  
is hereby authorized to institute a waterflood project in the  
~~Shugart~~ Yates-San Juan River, Queen - Mayburg  
~~Pool~~  
by the injection of water into the Queen formation  
through the following-described wells in Township 18  
Section 22,  
North, South, Range 31 ~~West~~, East, NMPM, Eddy  
County, New Mexico:

~~Section 22,~~

Federal "AB" Littlefield Well No. 9, Unit H  
Federal "AB" Littlefield Well No. 10, Unit B  
Federal "AB" Littlefield Well No. 14, Unit O

(2) That the subject waterflood project is hereby designated  
the Gulf Littlefield Shugart 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 accor-  
dance with Rules 704 and 1120 of the Commission Rules and Regula-  
tions.

(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.

(2) That injection shall be through internally plastic-coated  
tubing set in a packer located as near as is practicable to  
the uppermost perforation; that the casing-tubing annulus of each  
injection well shall be loaded with an inert fluid and equipped  
at the surface.