

CASE 3378: Application of SOCONY-  
MOBIL OIL CO. for a waterflood  
project, Eddy County, N.M.

2051

ASE No.

3378

Application,  
Transcripts,  
Small Exhibits  
ETC.

BEFORE THE OIL CONSERVATION COMMISSION OF  
NEW MEXICO

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IN THE MATTER OF THE APPLICATION OF  
SOCONY-MOBIL OIL COMPANY, INC. FOR  
AUTHORITY TO INSTITUTE A WATERFLOOD  
PROJECT WITHIN THE WEST HENSHAW PREMIER  
UNIT AREA, CONTAINING 2400 ACRES, MORE  
OR LESS, IN EDDY COUNTY, NEW MEXICO,  
SAID PROJECT TO BE OPERATED IN ACCORD-  
ANCE WITH RULE 701 OF THE COMMISSION.

Case No. 3378

APPLICATION

1. Socony-Mobil Oil Company, Inc. hereby makes applica-  
tion for authority for the injection of water into the Premier  
(basal Grayburg) Formation underlying an area designated as the  
West Henshaw Premier Unit Area in Eddy County, New Mexico.  
Attached to this Application as Exhibit 1 is a plat showing the  
location of proposed injection wells and the location of all other  
wells within a radius of two miles of the proposed injection wells.  
The plat also shows leasehold ownership within said two-mile  
radius. Exhibit 2 attached to this Application is a map of the  
proposed injection pattern.

2. There is attached as Exhibit 3 to this Application a  
typical log of proposed injection wells. Also attached as Ex-  
hibits 4, A through Z, are diagrammatic sketches of injection well  
completion data showing casing strings, cement programs and other  
pertinent information as required by Rule 701 of this Commission.

3. It is proposed that the interval to be affected by  
the proposed water injection is that found and defined as the  
continuous stratigraphic interval occurring between a point 100  
feet above the top of the Premier Zone and the base of the Grayburg  
Formation, said interval having been penetrated between 2,733 feet  
and 2,860 feet and the top of the Premier Zone having been found

DOCKET MAILED

Date 2-11-66

at 2,833 feet beneath the derrick floor in the Little Lucky Lake Unit, Shell Well No. 1, located in Lot Nine (9) of Section Three (3), Township 16 South, Range 30 East, N.M.P.M., Eddy County, New Mexico, as said interval is shown in the log of the last well named, which log is attached hereto and marked Exhibit 3.

4. Water for injection purposes will be obtained from a commercial water company operating in the area and, in addition, produced water will be injected as it is available and produced. Initial injection rate is proposed at a total of 6,500 barrels per day into the twenty-six (26) injection wells.

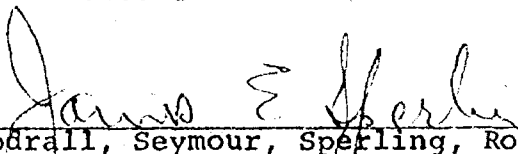
5. It is not now contemplated that additional wells in the Unit area will be converted to injection wells. However, if flood performance indicates the need for additional injection wells, it is requested that the Order sought herein make provision for the granting of administrative approval and authorization for such additional wells under the provisions of Rule 701e(5) of this Commission following application therefor.

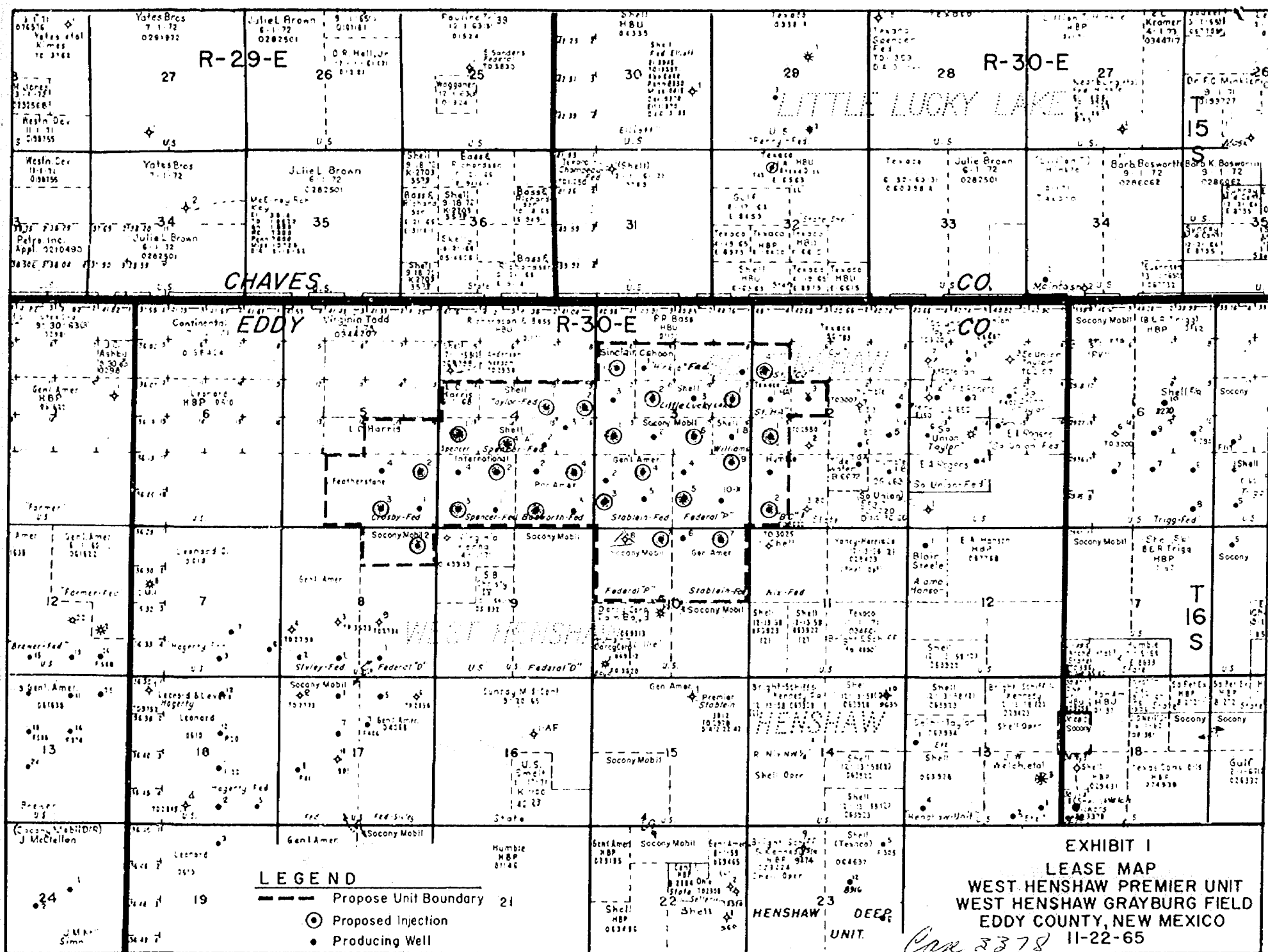
6. A copy of this Application, complete with Exhibits, has been sent to the Office of the State Engineer, Santa Fe, New Mexico.

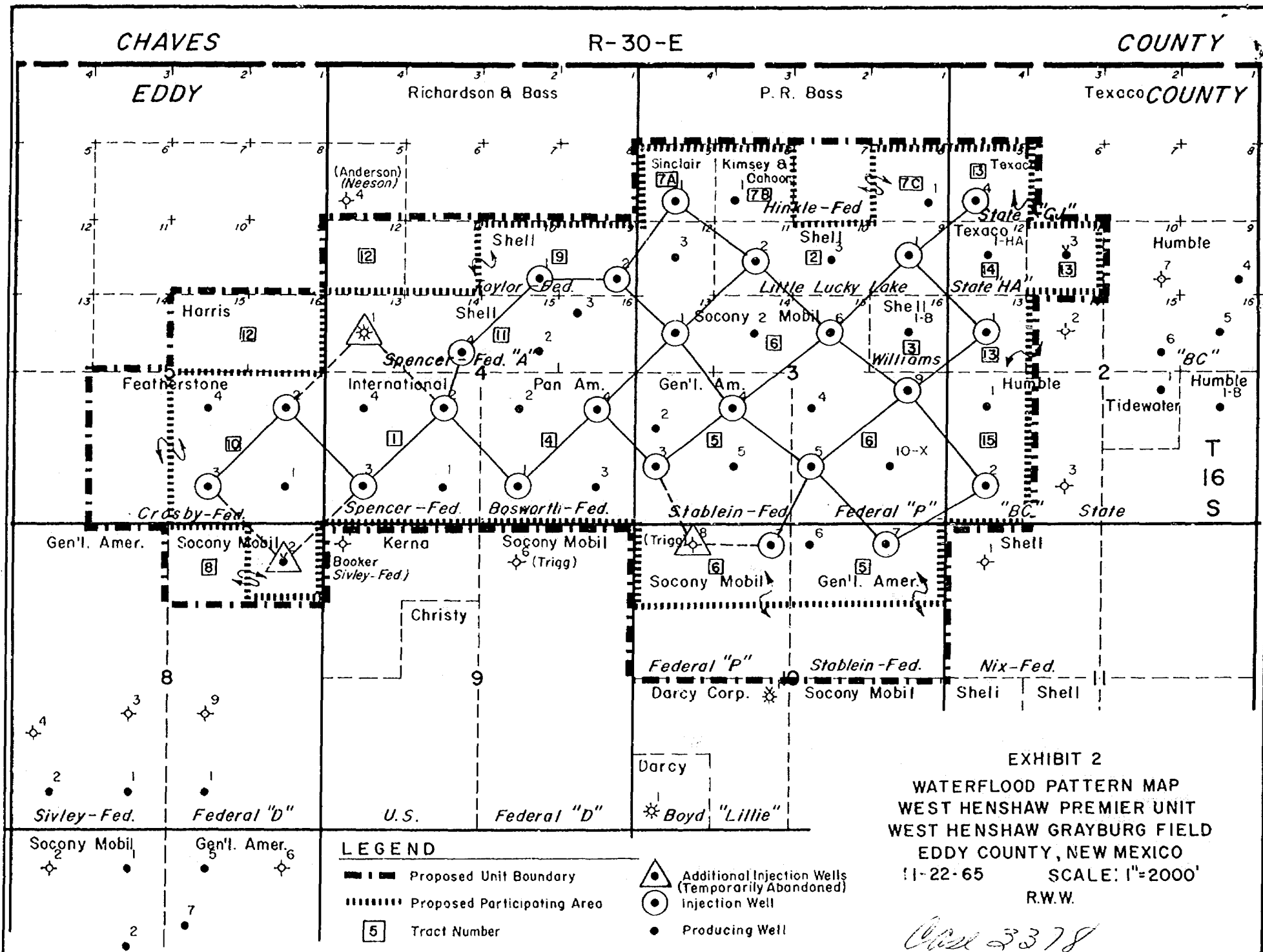
Applicant respectfully requests that the Commission issue its Order granting approval and authorizing institution of the waterflood project as proposed herein.

Respectfully submitted,

SOCONY-MOBIL OIL COMPANY, INC.

By   
Modrall, Seymour, Sperling, Roehl & Harris  
Its Attorneys  
1200 Simms Building, Post Office Box 466  
Albuquerque, New Mexico



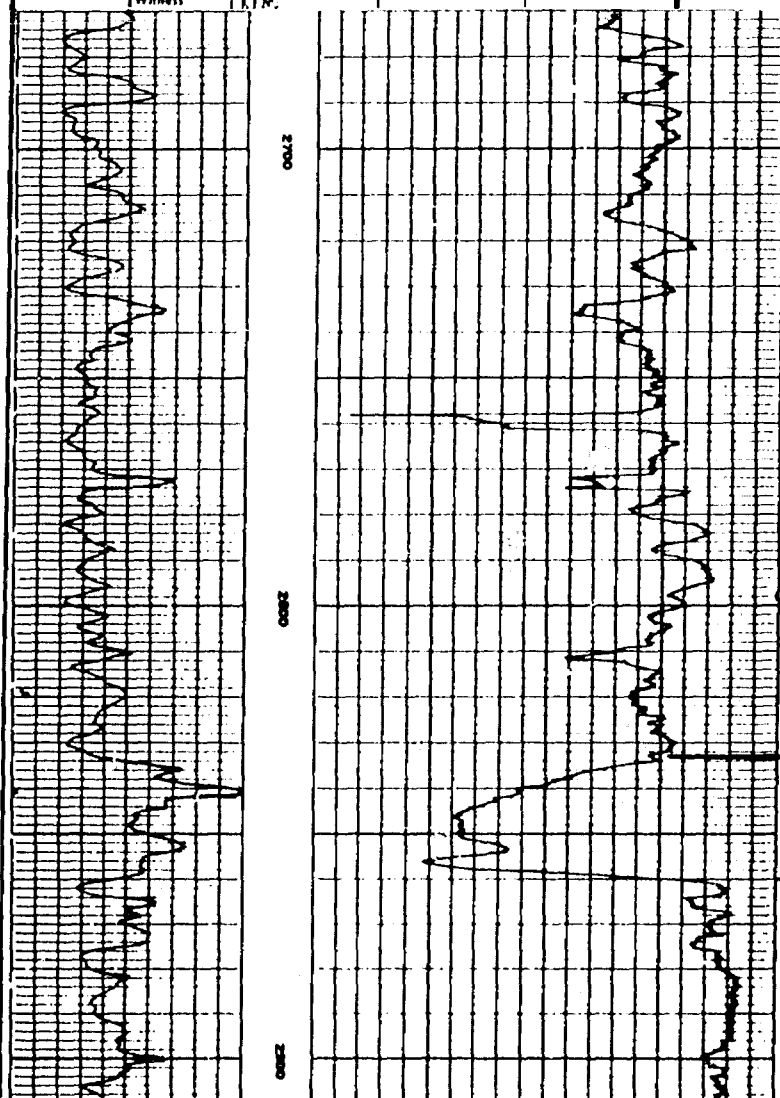


**SCHLUMBERGER WELL SURVEYING CORPORATION**  
 10/14/65

COUNTY WEST HENSHAW FIELD LOCATION WEST HENSHAW WELL UNIT #1 COMPANY TEXAS-SHELL	COMPANY TEXAS-SHELL	Other: Surveys LL, HLL
	WELL LITTLE LUCKY	Location of Well 4620' FSL 660' FEL
	WIDE UNIT #1	
	FIELD W. HENSHAW G. BURR	
	LOCATION SEC 3-65-30E	
	COUNTY EDDY	Elevation K.B. D.F. 3201 or G.L.
	STATE NEW MEXICO	

Log Depths Measured From 10.20 Ft. above C.L.

RUN No.	GR
Date 1-28-69	
First Reading 2360	2968
Last Reading 1300	0
First Measured 1260	2968
Cat. Schlum.	
Cat. Driller 423	
Depth Reached 2964	
Bottom Driller 2960	
Mud Not 5311 GFL	
Dens. Visc. 10.4 33	
Mud Resist. 0.59 70	
" Res. BHT 0.41 9	
" pH	
" Wtr. Loss 10 CC 30 min	
" Fml 0.06 12	
Bit Size 7 7/8	
Spgr.	
1" ID To 2800	Yo
3" ID To 1300	Yo
Op. Rig Time 3 HRS	
Truck No. 2522-Whiz	
Recorded By ROPJINS	
Witness R.M.	



UNITIZED INTERVAL

TOP PREMIER

EXHIBIT 3  
 UNITIZED FORMATION  
 WEST HENSHAW PREMIER UNIT  
 WEST HENSHAW GRAYBURG FIELD  
 EDDY COUNTY, NEW MEXICO  
 R.W.W. 11-22-65

# EXHIBIT 4-A

## INJECTION WELL COMPLETION DATA

FEATHERSTONE CROSBY FED 2  
 OPERATOR LEASE WELL NO.

LOCATION 9 - SEC 5 - T16S - R30E  
 WEST HENSHAW UNIT, EDDY CO, N.M.

8 5/8" 24 #/ft Casing  
 @ 495 ft. cemented  
 with 75 Sacks  
 of Neat Cement

cement Circulated

5 1/2" 14 #/ft Casing  
 @ 2815 ft cemented  
 with 100 Sacks  
 of Neat Cement

Cement Top @ 2200 ft

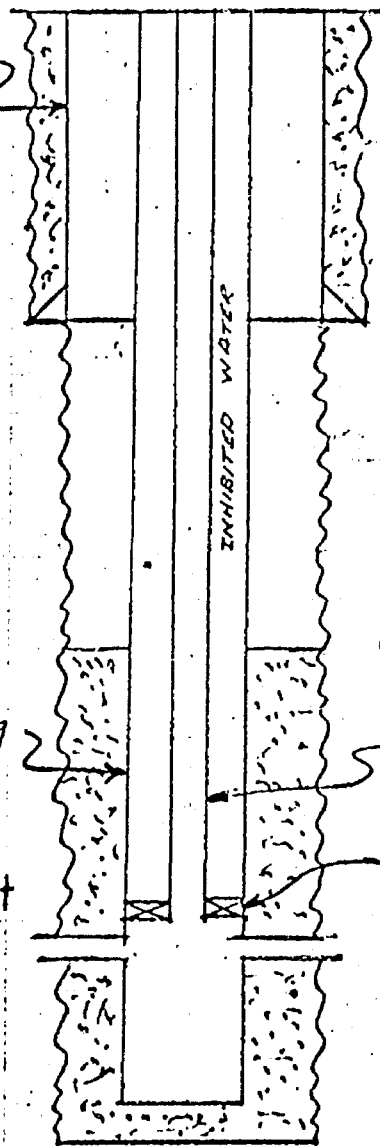
2 3/8" cement Lined Tubing  
 @ 2734

Tension Packer

Premier Perforation:  
~~on open hole~~  
 from 2760 ft  
 to 2800 ft

Plug back T.D. \_\_\_\_\_ ft

Total Depth 2815 ft

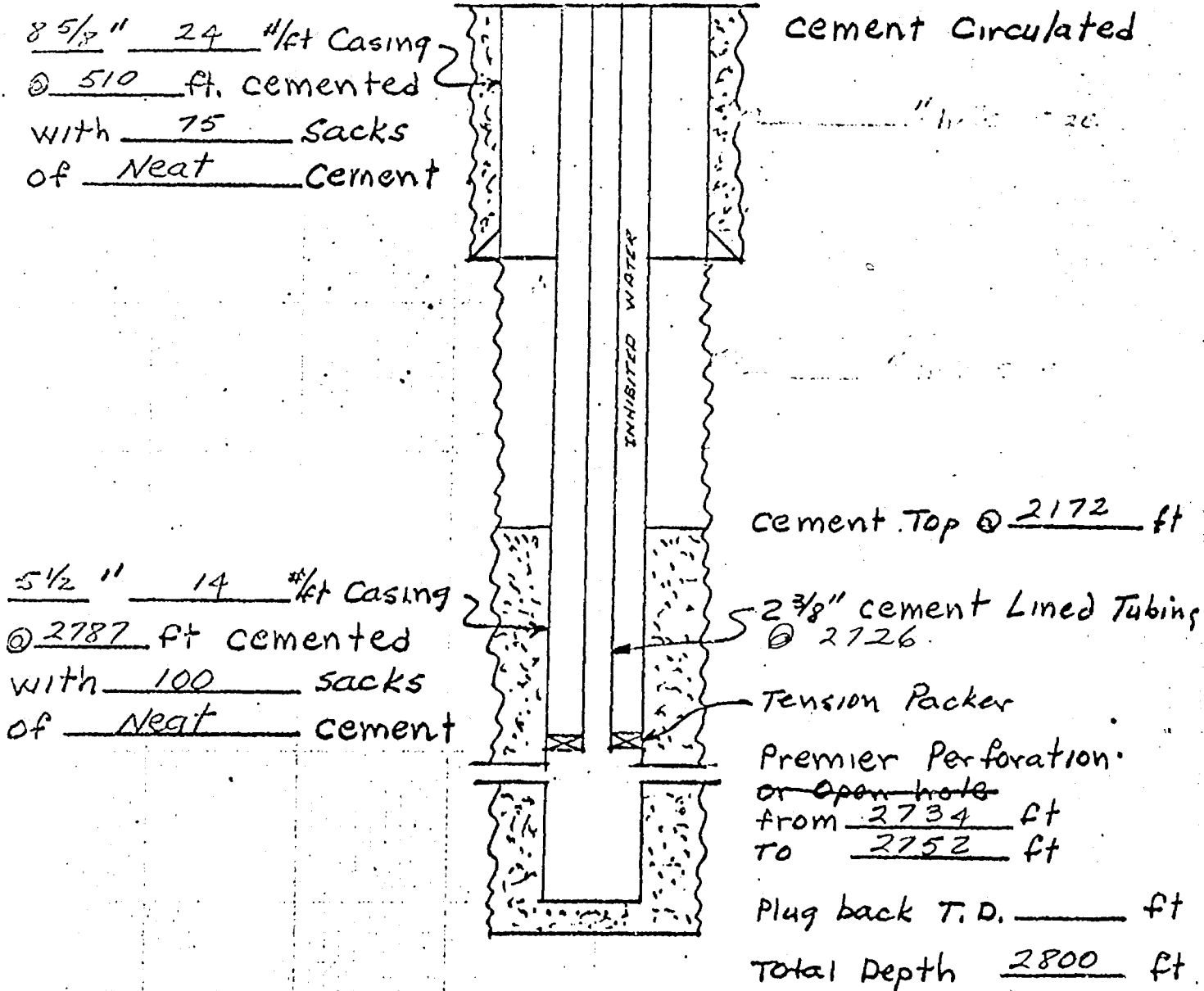




# EXHIBIT 4-B

## INJECTION WELL COMPLETION DATA

FEATHERSTONE CROSBY FED 3  
 OPERATOR LEASE WELL NO.  
 LOCATION W - SEC 3 - T16S - R30E  
 WEST HENSHAW UNIT, EDDY CO., N.M.



# EXHIBIT 4-C

## INJECTION WELL COMPLETION DATA

GENERAL AMERICAN STABLEIN

7

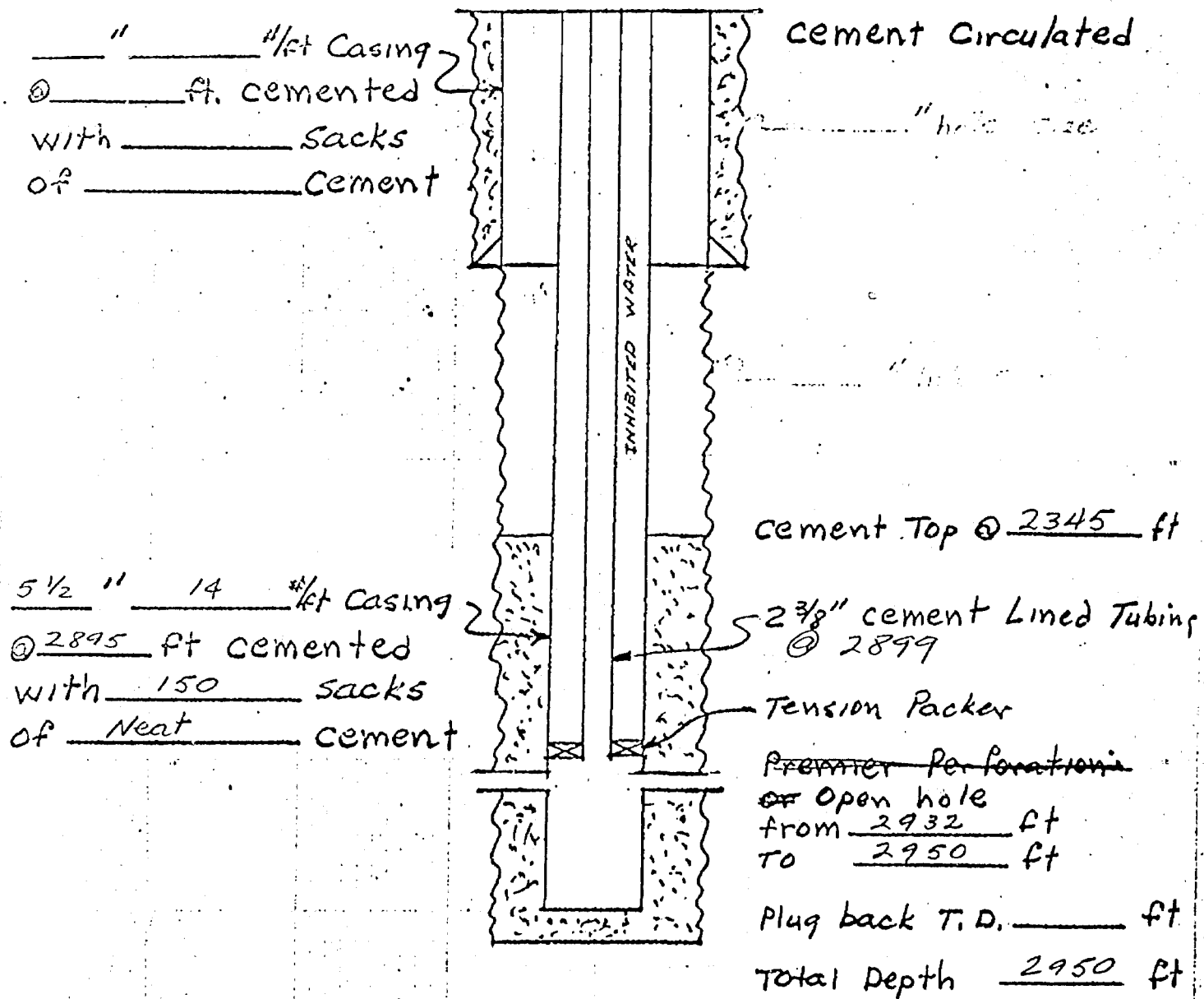
OPERATOR

LEASE

WELL NO.

LOCATION Q- SEC 10-T16S-R30E

WEST HENSHAW UNIT, EDDY CO., N.M.



# EXHIBIT 4-D

## INJECTION WELL COMPLETION DATA

GENERAL AMERICAN STABLEIN FED 3  
 OPERATOR LEASE WELL NO.  
 LOCATION U- SEC 3-T16S-R30E  
 WEST HENSHAW UNIT, EDDY CO., N.M.

10 3/4" 32.75 #/ft Casing  
 @ 430 ft. cemented  
 with 50 Sacks  
 of Neat Cement

Cement Circulated  
 Top @ 270 ft.  
 hole size

7" 23 #/ft Casing  
 @ 2848 ft cemented  
 with 100 Sacks  
 of Neat Cement

Cement Top @ 2228 ft

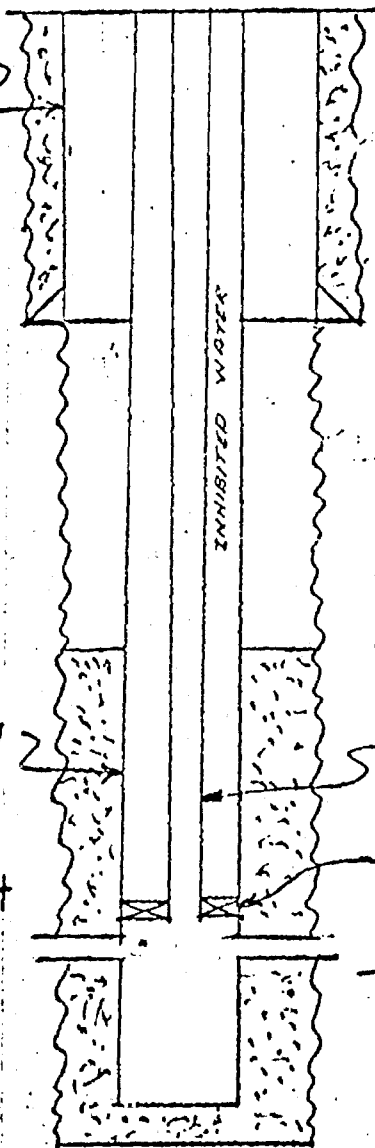
2 3/8" cement Lined Tubing  
 @ 2822

Tension Packer

~~Perforation~~  
 or Open hole  
 from 2848 ft  
 to 2899 ft

Plug back T.D. ft

Total Depth 2899 ft



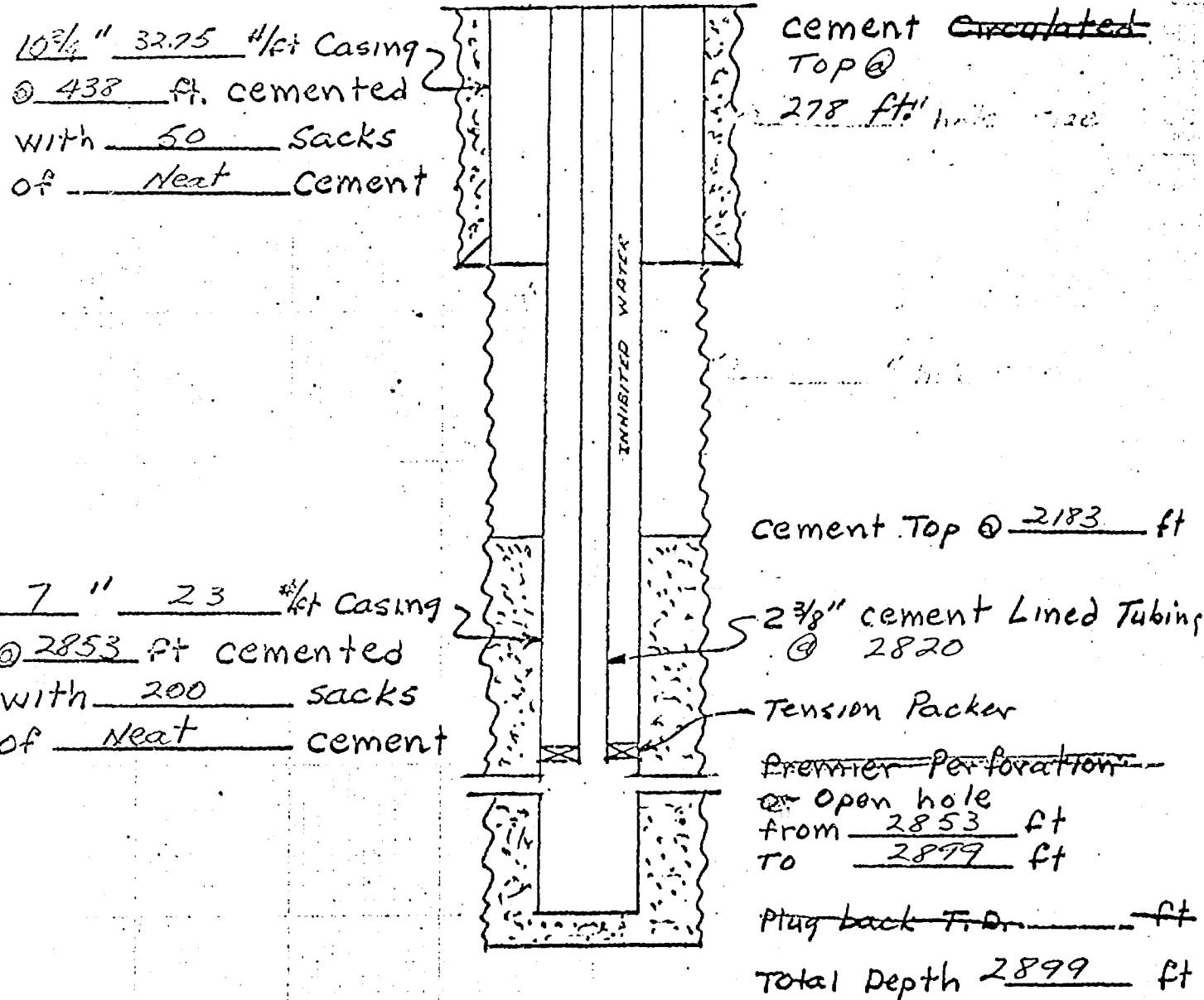
# EXHIBIT 4-E

## INJECTION WELL COMPLETION DATA

GENERAL AMERICAN STABLEIN FED 4  
 OPERATOR LEASE WELL NO.

LOCATION S - SEC 3 - T14S - R30E

WEST HENSIAH UNIT, EDDY CO, N.M.



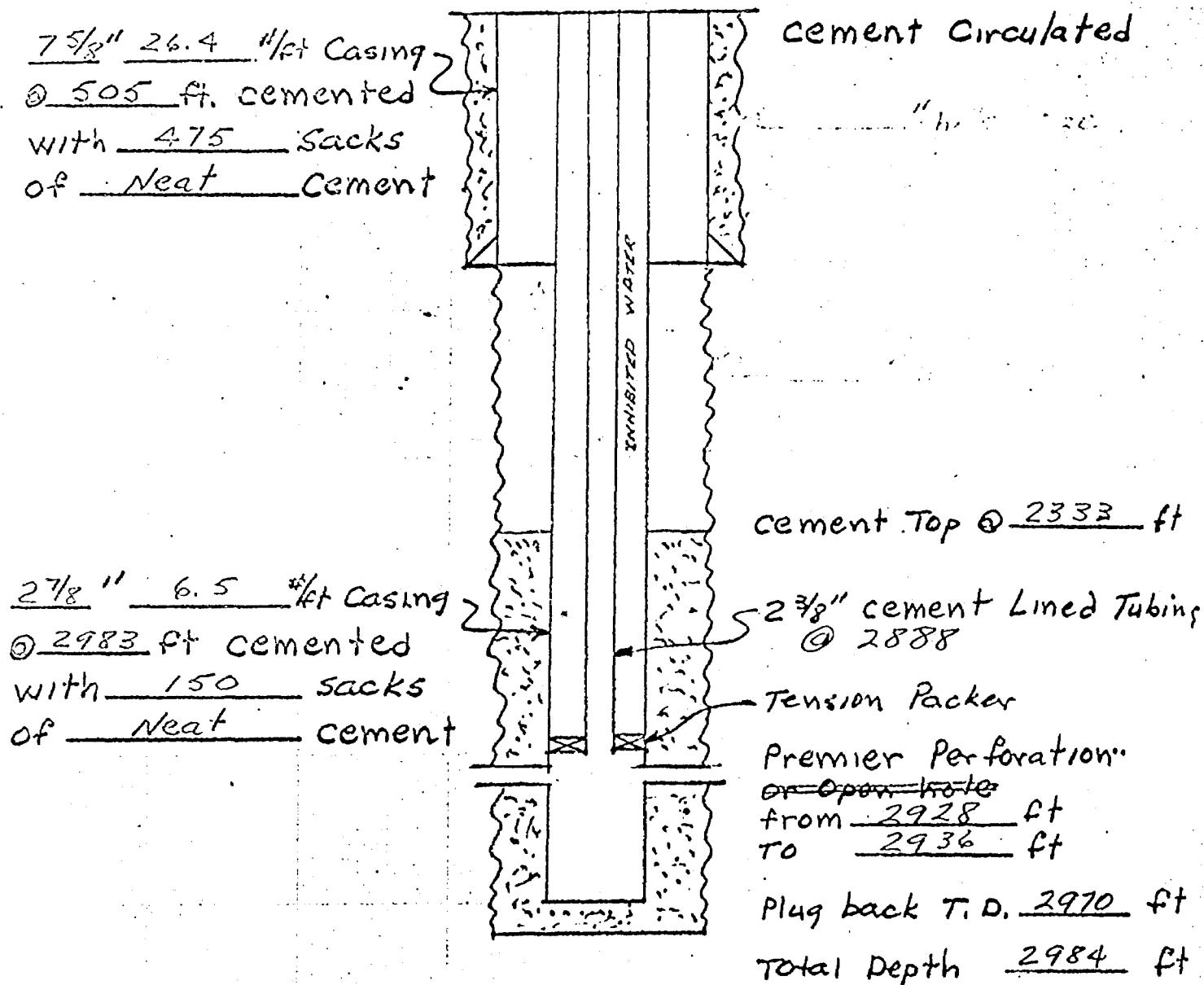
# EXHIBIT 4-F

## INJECTION WELL COMPLETION DATA

HUMBLE STATE BC 2  
 OPERATOR LEASE WELL NO.

LOCATION u - Sec 2 - T 16 S - R 30 E

WEST HENSHAW UNIT, EDDY CO., N.M.



# EXHIBIT 4-G

## INJECTION WELL COMPLETION DATA

INTERNATIONAL SPENCER FED 2  
 OPERATOR LEASE WELL NO.  
 " LOCATION S - SEC 4 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.

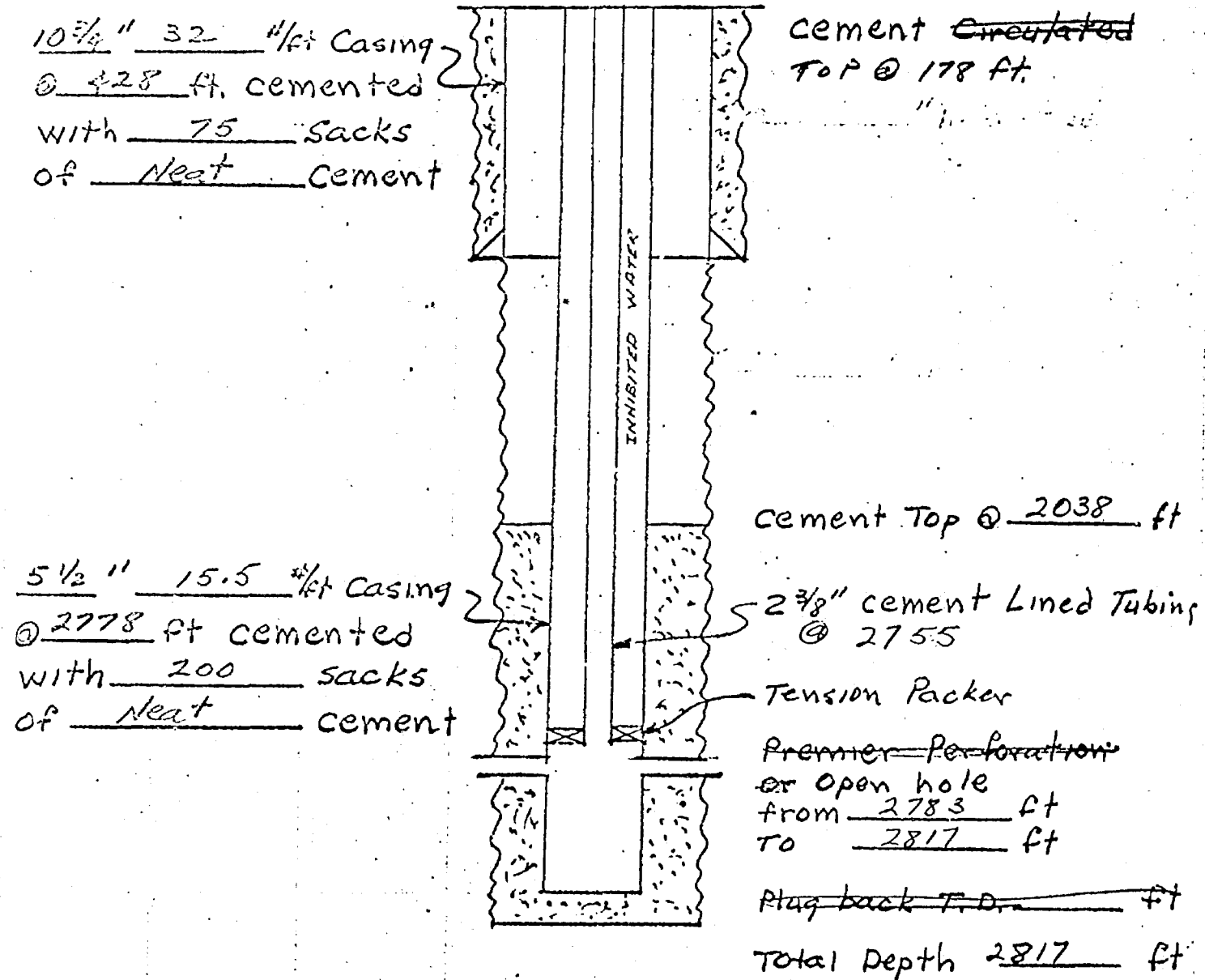
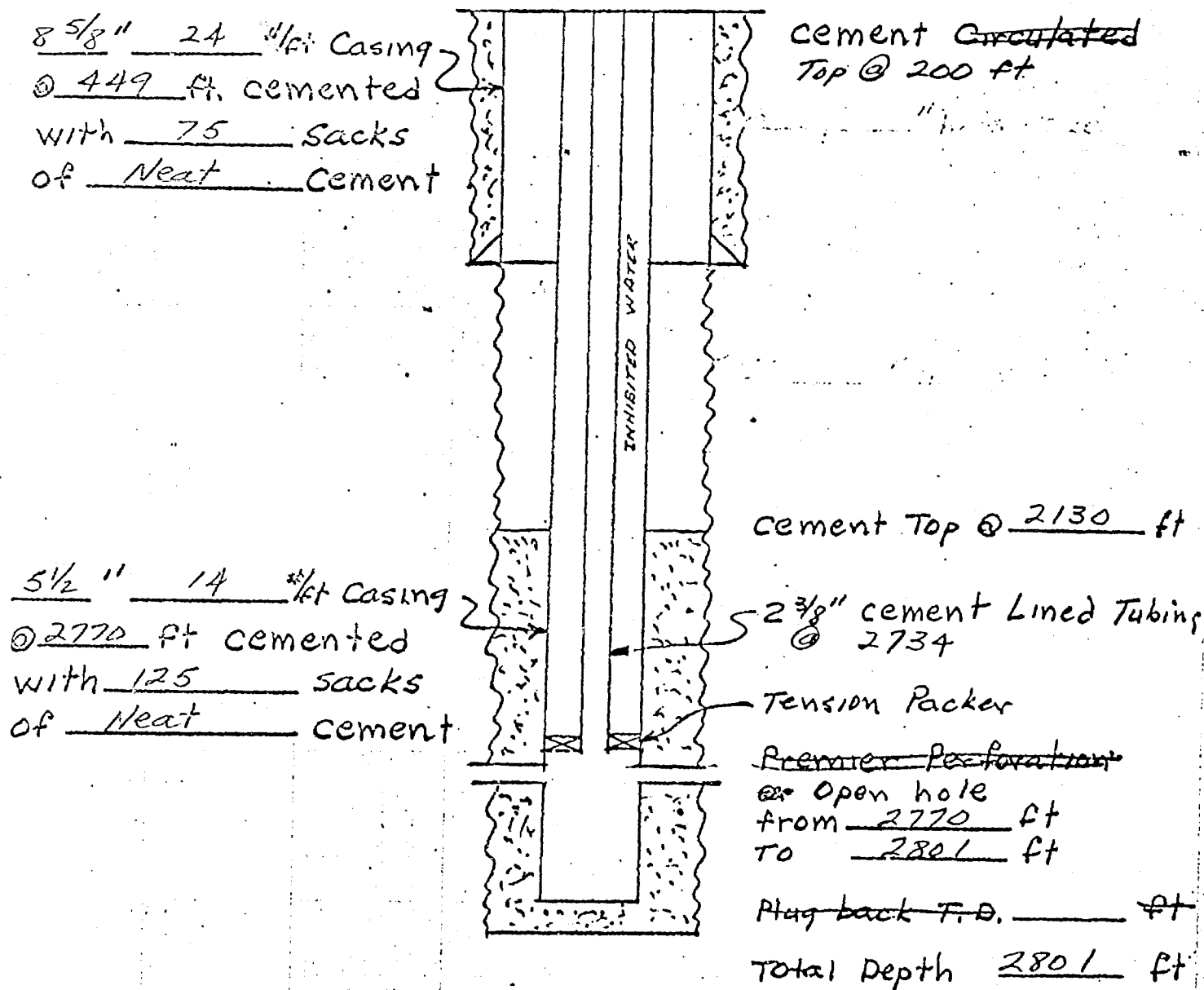


EXHIBIT 4-H  
INJECTION WELL COMPLETION DATA

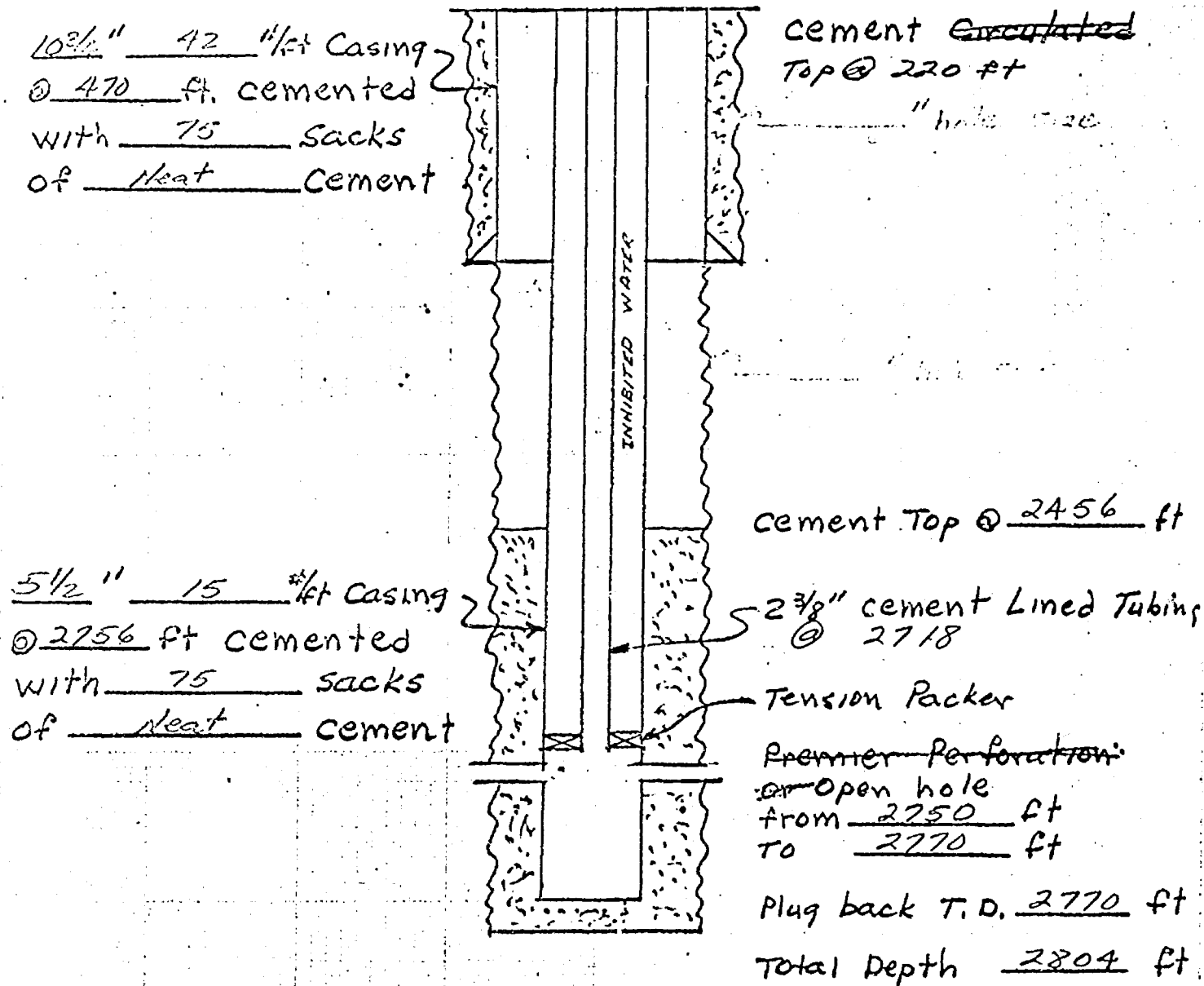
<u>INTERNATIONAL</u>	<u>SPENCER FED</u>	<u>3</u>
OPERATOR	LEASE	WELL NO.
LOCATION <u>U-SEC 4-T16S-R30E</u>		
WEST HENSHAW UNIT, EDDY CO, N.M.		



# EXHIBIT 4-I

## INJECTION WELL COMPLETION DATA

MOBIL FED. D 2  
 OPERATOR LEASE WELL NO.  
 LOCATION A - SEC 8 - T14S - R30E  
WEST HENSHAW UNIT, EDDY CO., N.M.

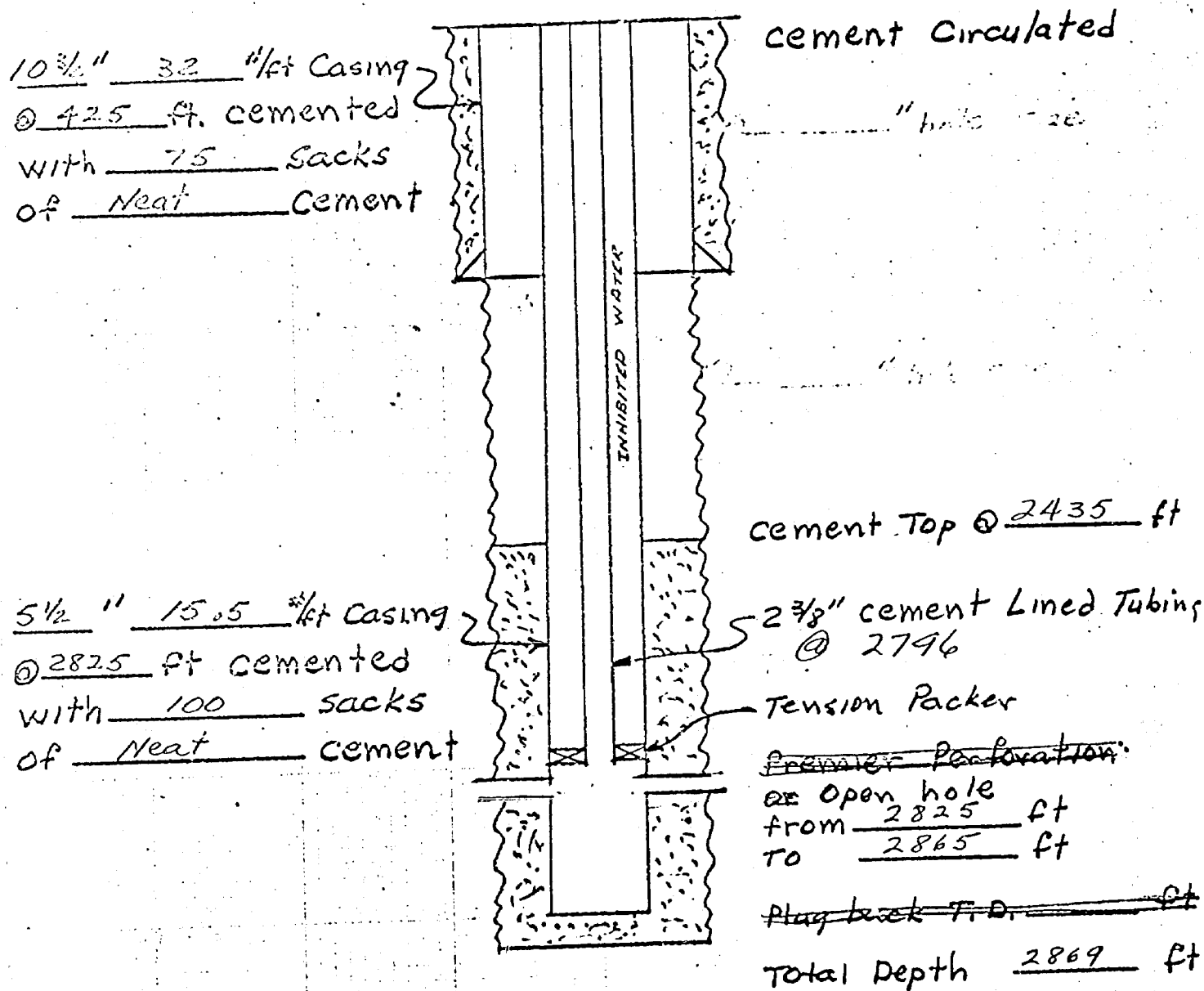




# EXHIBIT 4-J

## INJECTION WELL COMPLETION DATA

MOBIL Feet P 1  
 OPERATOR LEASE WELL NO.  
 LOCATION M - SEC 3 - T16 S - R 30E  
WEST HENSHAW UNIT, EDDY CO, N.M.



## EXHIBIT 4-K

## INJECTION WELL COMPLETION DATA

MOBILFED. P5

OPERATOR

LEASE

WELL NO.

LOCATION W - SEC 3 - T16S - R30EWEST HENSHAW UNIT, EDDY CO, N.M.

10 3/4" 32 #/ft Casing  
 @ 485 ft. cemented  
 with 75 Sacks  
 of Neat Cement

Cement ~~circulated~~  
 Top @ 235 ft.

5 1/2" 14 #/ft Casing  
 @ 2867 ft cemented  
 with 100 sacks  
 of Neat cement

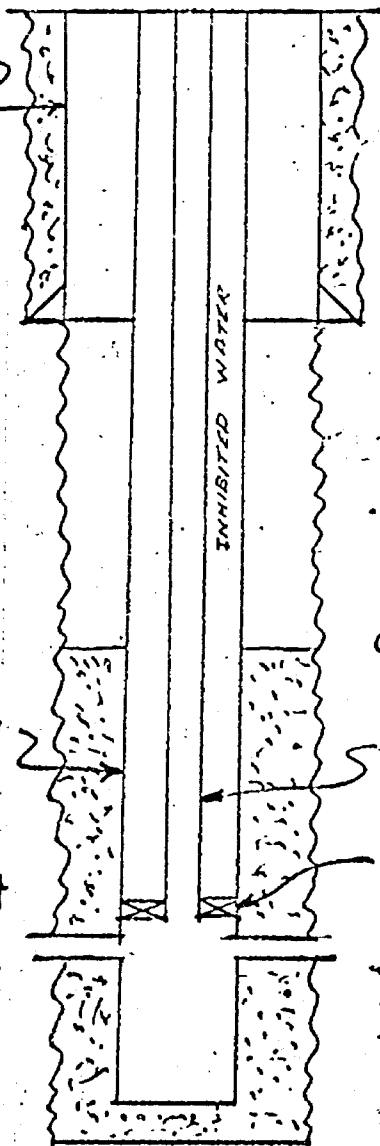
Cement Top @ 2217 ft

2 3/8" cement Lined Tubing  
 @ 2839

Tension Packer

~~Perforation~~

Open hole  
 from 2867 ft  
 to 2909 ft

Plug back T.D. ftTotal Depth 2909 ft

# EXHIBIT 4-L

## INJECTION WELL COMPLETION DATA

MOBIL

FED. P.

6

OPERATOR

LEASE

WELL NO.

LOCATION O SEC 3 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO., N.M.

10 3/4" 32 #/ft Casing  
@ 432 ft cemented  
with 75 Sacks  
of Neat Cement

Cement ~~encased~~  
Top @ 180 ft.

5 1/2" 14 #/ft Casing  
@ 2833 ft cemented  
with 90 Sacks  
of Neat Cement

Cement Top @ 2243 ft

2 3/8" cement Lined Tubing  
@ 2802

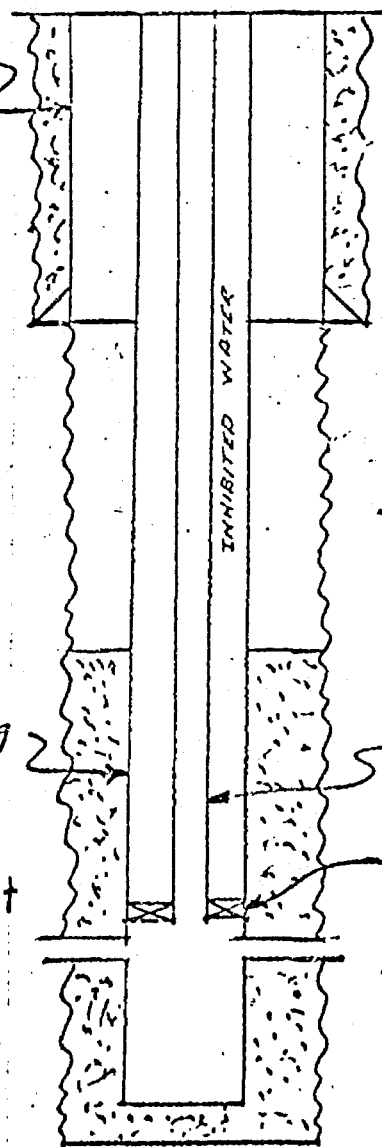
Tension Packer

~~Perforation~~

Open hole  
from 2833 ft  
to 2861 ft

Plug back T.D. ft

Total Depth 2861 ft



# EXHIBIT 4-M

## INJECTION WELL COMPLETION DATA

MOBIL FED P 9  
 OPERATOR LEASE WELL NO.

LOCATION SEC 3 - T14S - R30E

WEST HENSHAW UNIT, EDDY CO, N.M.

10 3/4" 32 #/ft Casing  
 @ 449 ft. cemented  
 with 75 Sacks  
 of Neat Cement

~~Cement Cemented~~  
 Top @ 200 ft.

5 1/2" 14 #/ft Casing  
 @ 2879 ft cemented  
 with 90 Sacks  
 of Neat Cement

Cement Top @ 2289 ft

2 3/8" cement Lined Tubing  
 @ 2852

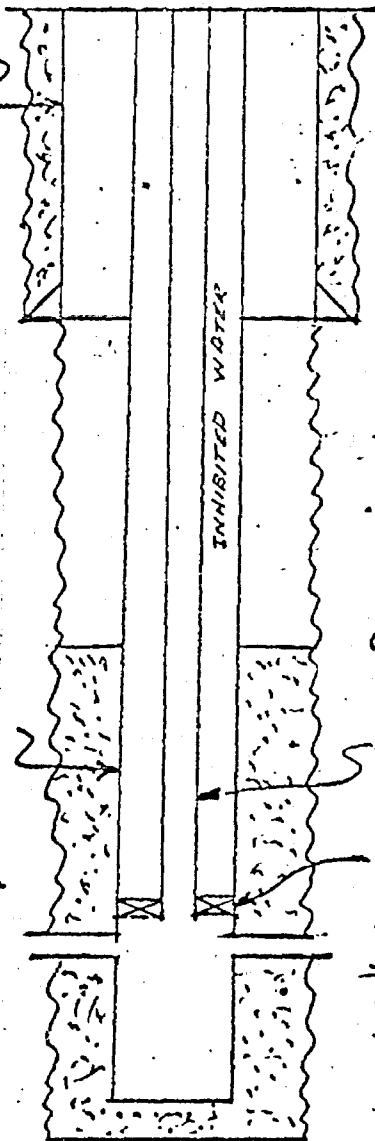
Tension Packer

~~Premier Perforation~~

~~or~~ Open hole  
 from 2879 ft  
 to 2906 ft

Plug back T.D. ft

Total Depth 2906 ft



# EXHIBIT 4-N

## INJECTION WELL COMPLETION DATA

MOBIL Fed P 7  
 OPERATOR LEASE WELL NO.  
 LOCATION C- SEC 10 - T16S - R30E  
 WEST HENSHAW UNIT, EDDY CO, N.M.

10  $\frac{3}{4}$ " 32 #/ft Casing  
 @ 483 ft, cemented  
 with 75 Sacks  
 of Neat Cement

Cement ~~Circulated~~  
 Top  
 @ 242 ft

5  $\frac{1}{2}$ " 14 #/ft Casing  
 @ 2847 ft cemented  
 with 100 Sacks  
 of Neat Cement

Cement Top @ 2440 ft

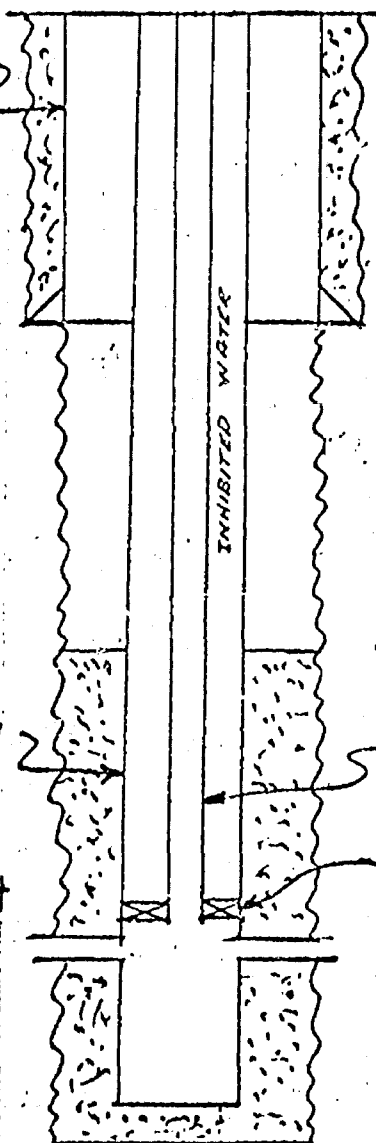
2  $\frac{3}{8}$ " cement Lined Tubing @ 2810

Tension Packer

~~Premier Perforations~~  
 or Open hole  
 from 2847 ft  
 to 2908 ft

Plug back T.D. ft

Total Depth 2910 ft



# EXHIBIT 4-0

## INJECTION WELL COMPLETION DATA

MOBIL

FEDERAL D

8

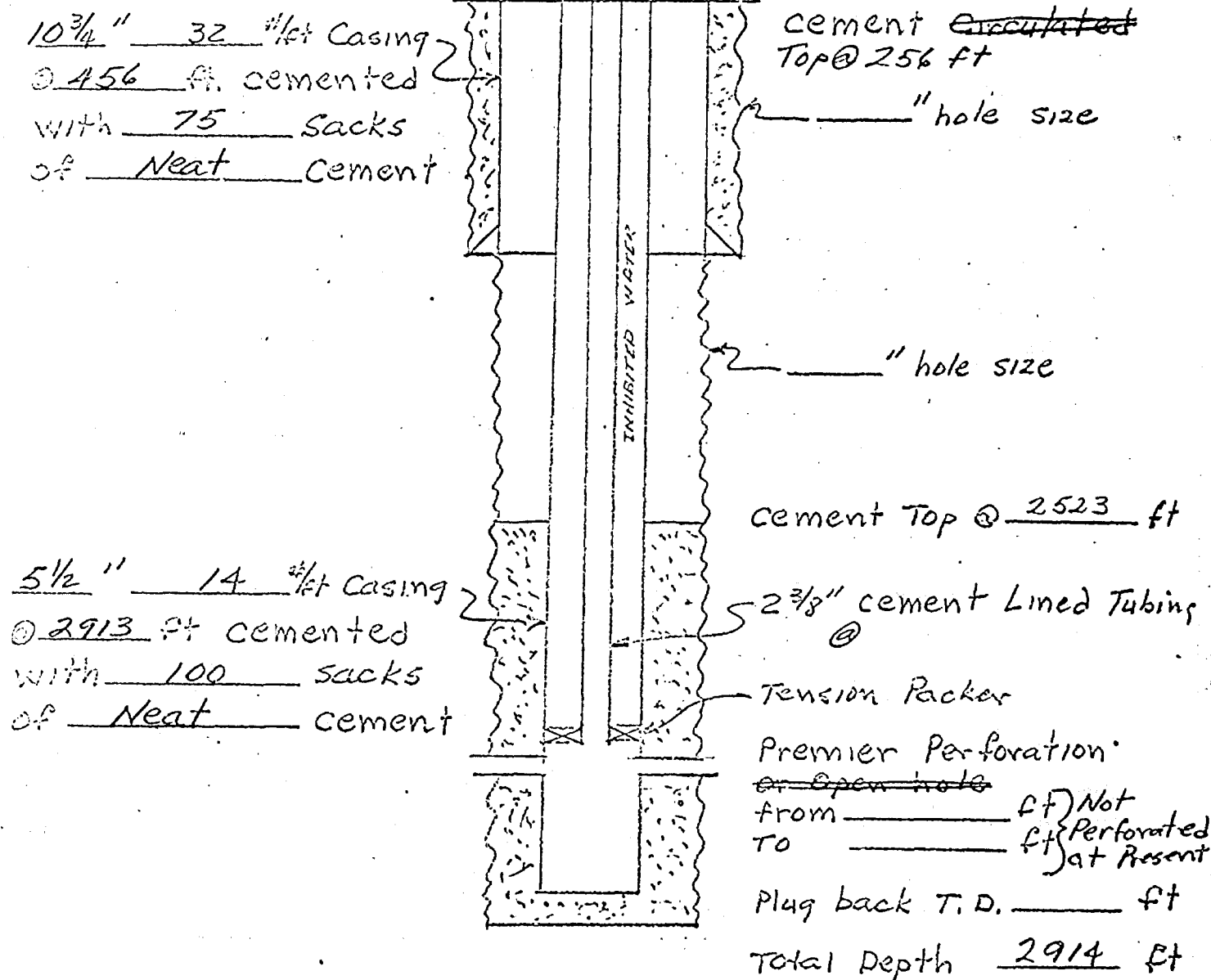
OPERATOR

LEASE

WELL NO.

LOCATION d-SEC 10-T165-R30E

WEST HENSHAW UNIT, EDDY CO, N.M.



# EXHIBIT 4-P

## INJECTION WELL COMPLETION DATA

PAN. AMERICAN BOSWORTH FED 1  
 OPERATOR LEASE WELL NO.

LOCATION W - SEC 4 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.

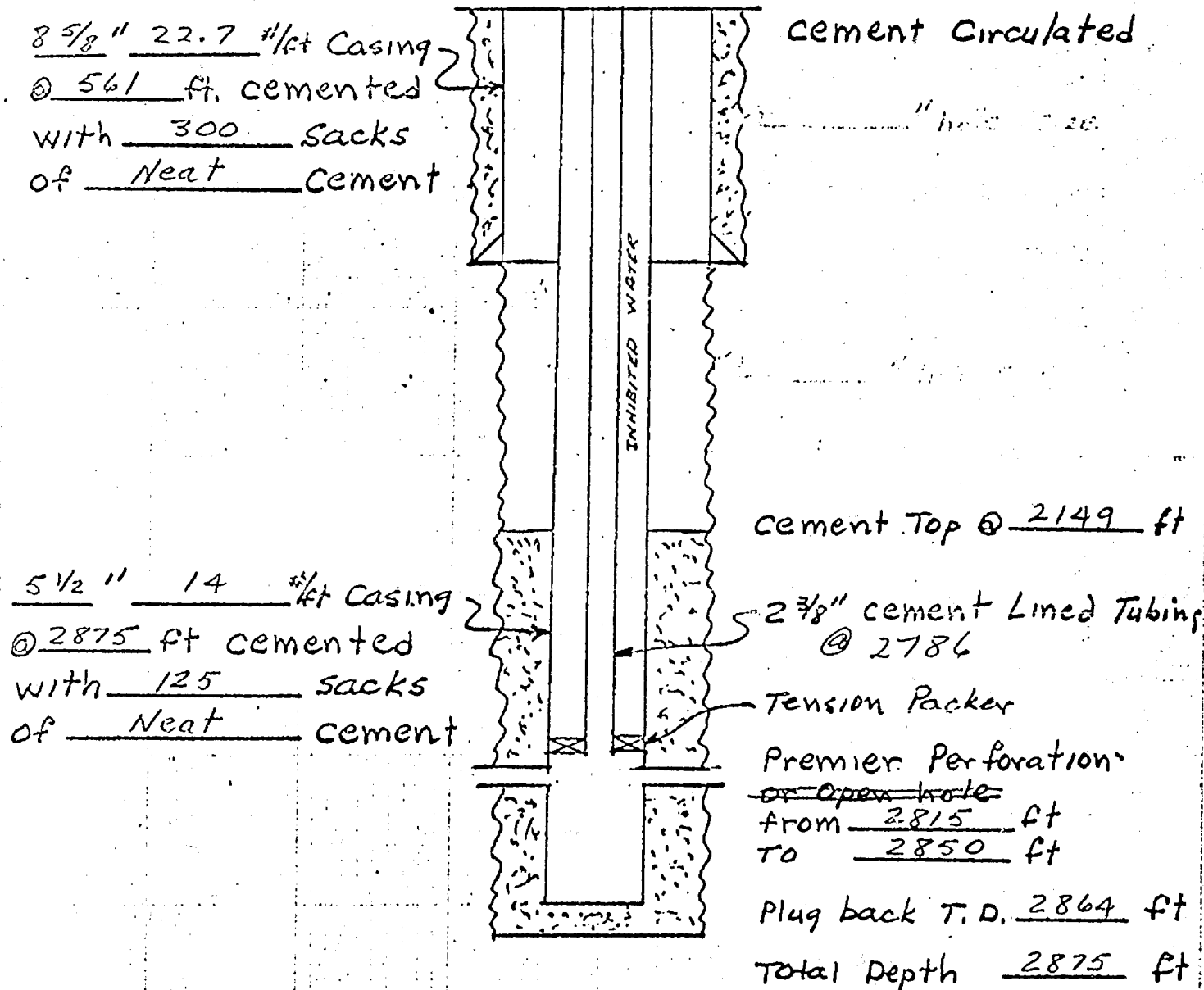
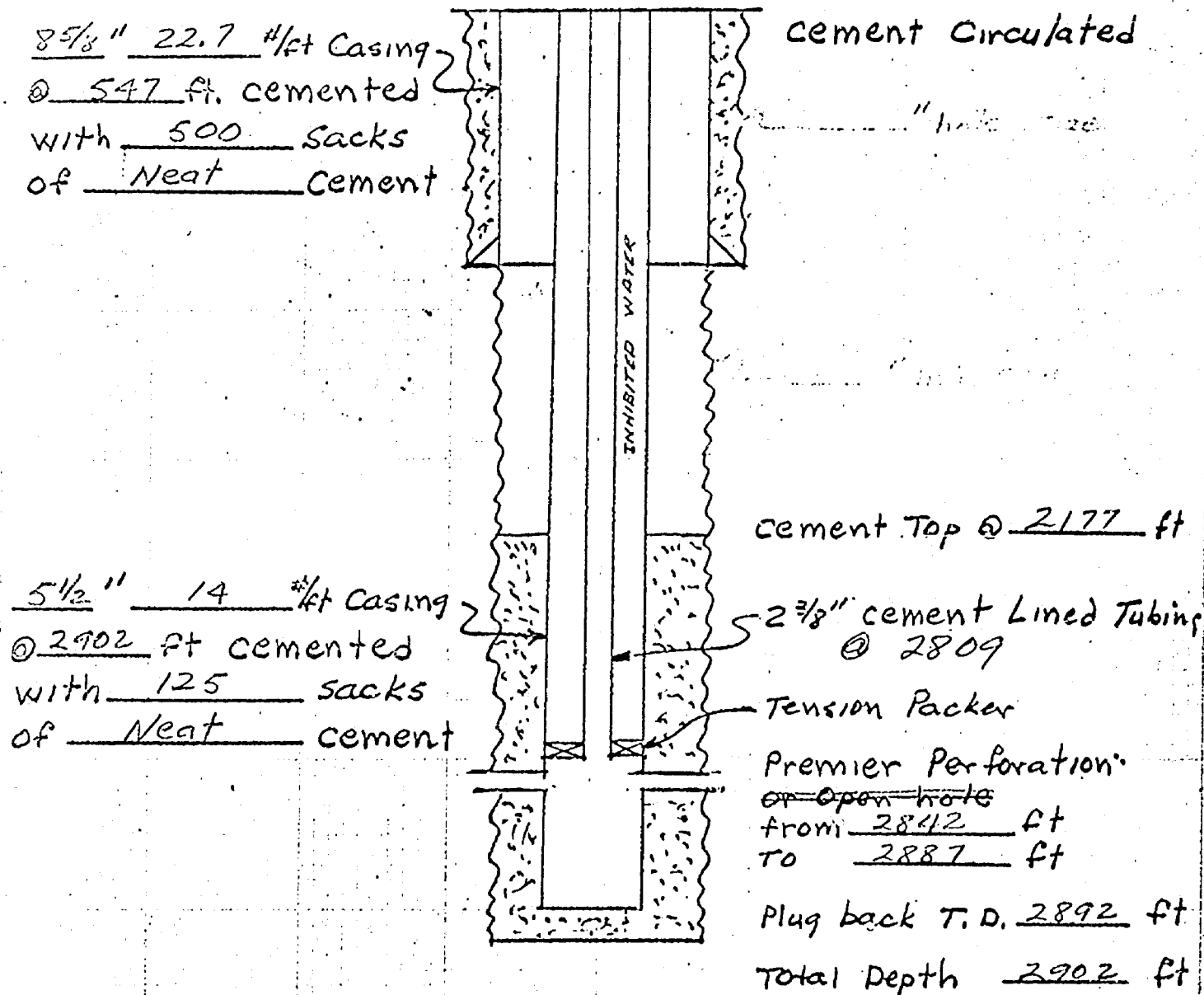


EXHIBIT 4-Q  
INJECTION WELL COMPLETION DATA

<u>PAN-AMERICAN</u>	<u>BOSWORTH FED</u>	<u>4</u>
OPERATOR	LEASE	WELL NO.
LOCATION <u>Q-SEC 4-T16S-R30E</u>		
WEST HENSHAW UNIT, EDDY CO, N.M.		





# EXHIBIT 4-R

## INJECTION WELL COMPLETION DATA

SHELL LITTLE LUCKY LAKE UNIT 1

OPERATOR LEASE WELL NO.           

LOCATION Sec 3 - T16S - R30E

WEST HENSHAW UNIT EDDY CO, N.M.

8 5/8" 32 #/ft Casing  
@ 425 ft. cemented  
with 250 Sacks  
of Neat Cement

Cement Circulated

5 1/2" 15.5 #/ft Casing  
@ 2958 ft cemented  
with 200 sacks  
of Neat cement

Cement Top @ 1798 ft

2 3/8" cement Lined Tubing  
@ 2811

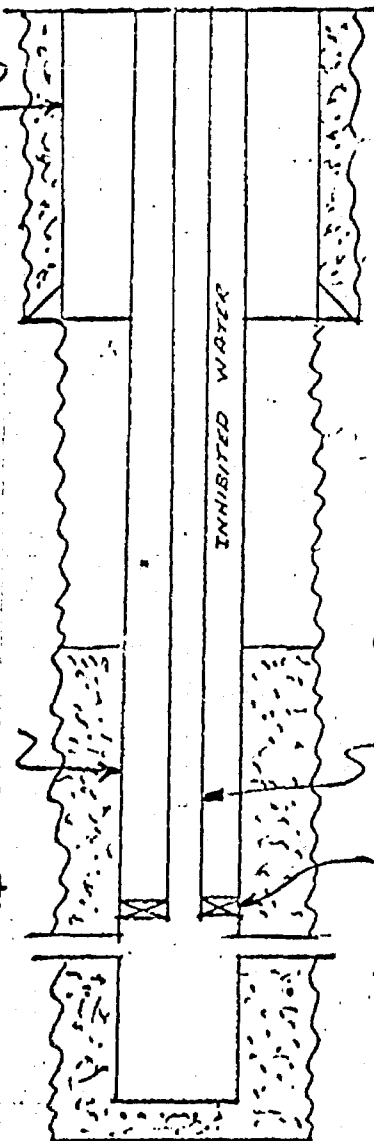
Tension Packer

Premier Perforation

~~or open hole~~  
from 2841 ft  
to 2857 ft

Plug back T.D. 2942

Total Depth 2960 ft



# EXHIBIT 4-S

## INJECTION WELL COMPLETION DATA

SHELL LITTLE LUCKY LAKE UNIT 2

OPERATOR LEASE WELL NO.

LOCATION K - SEC 2 - T14S - R 30E

WEST HENSHAW UNIT, EDDY CO, N.M.

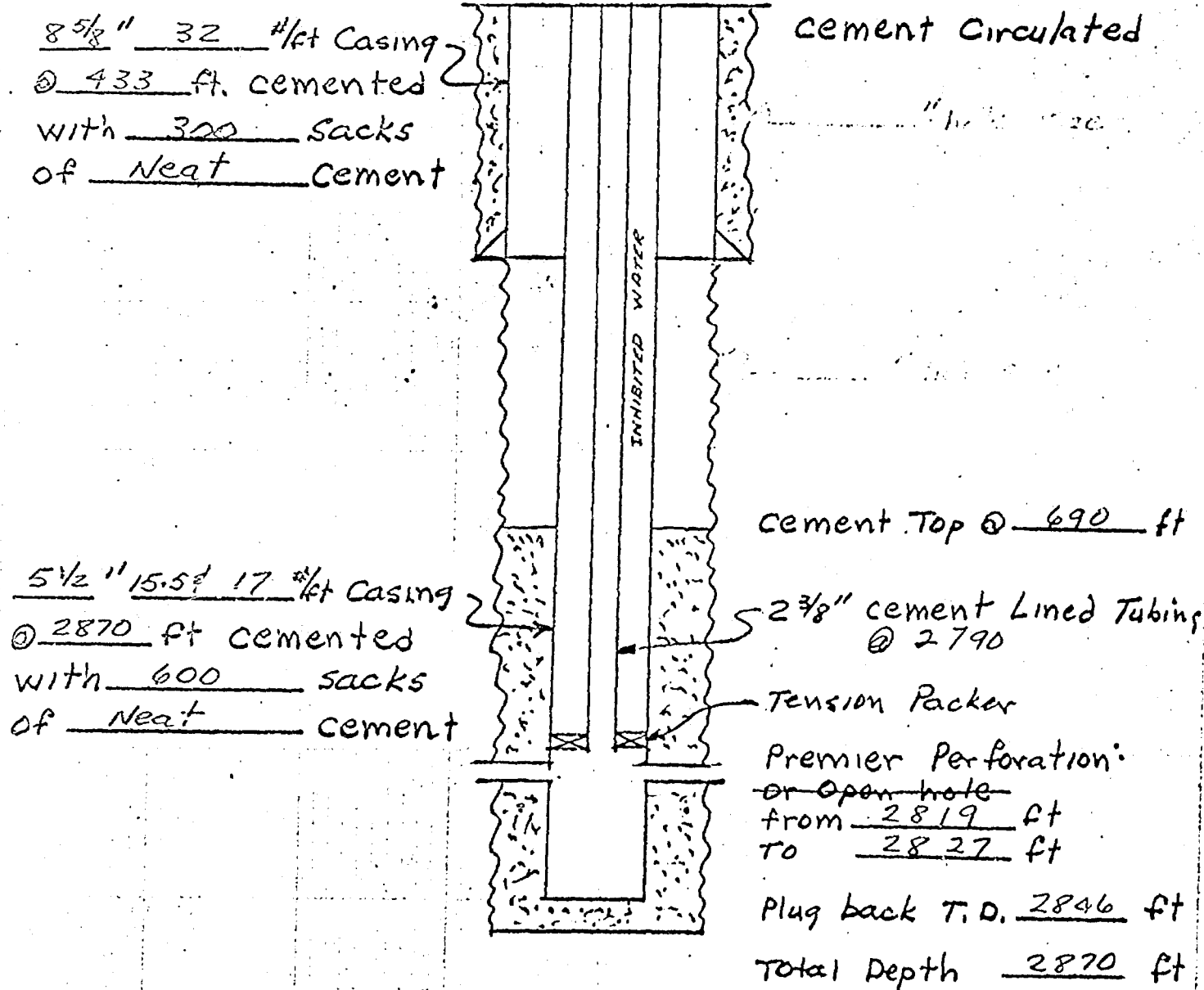
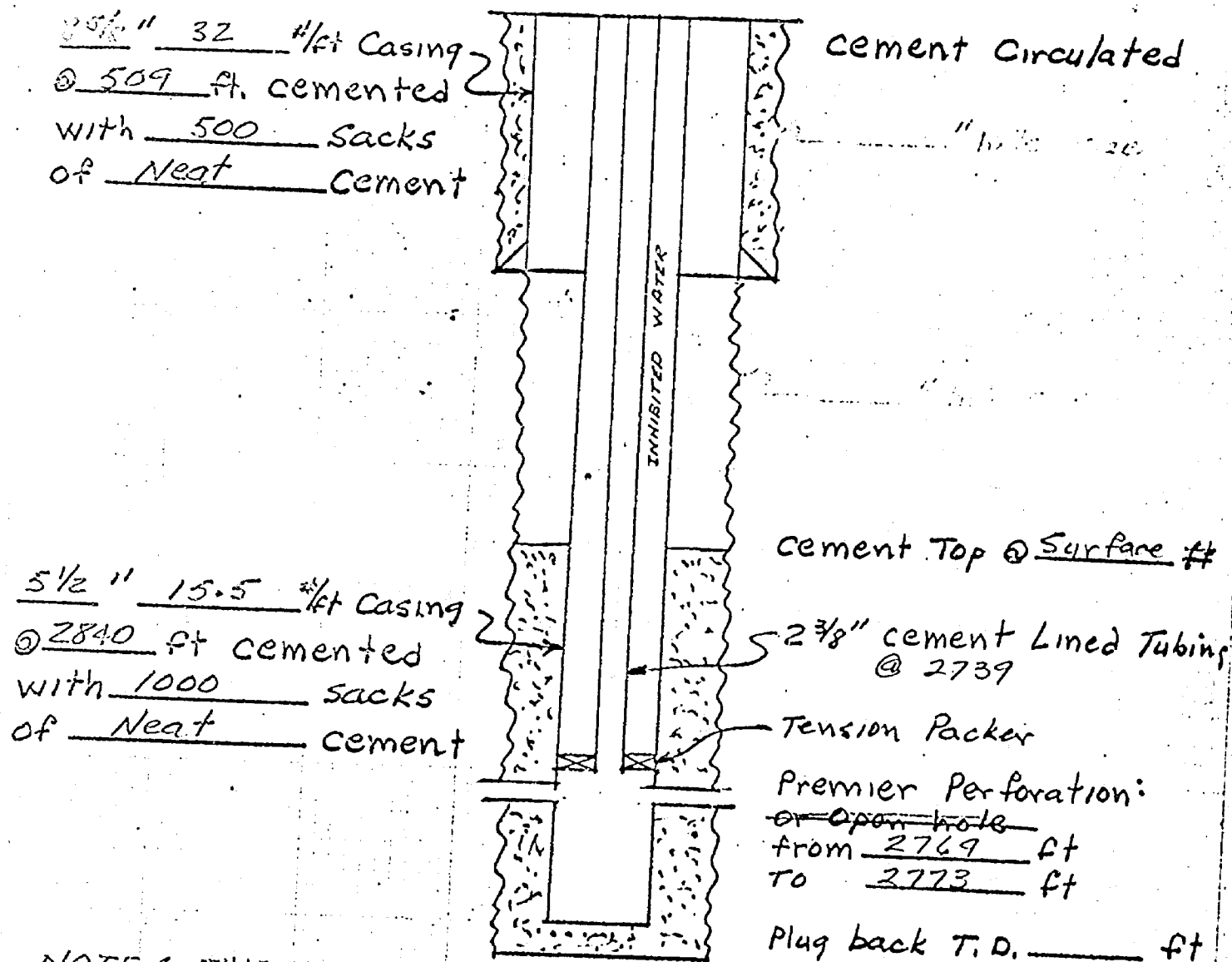


EXHIBIT 4 - T  
INJECTION WELL COMPLETION DATA  
SHELL SPENCER FED A 1  
OPERATOR LEASE WELL NO.  
LOCATION T<sub>M</sub> - SEC 4 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.

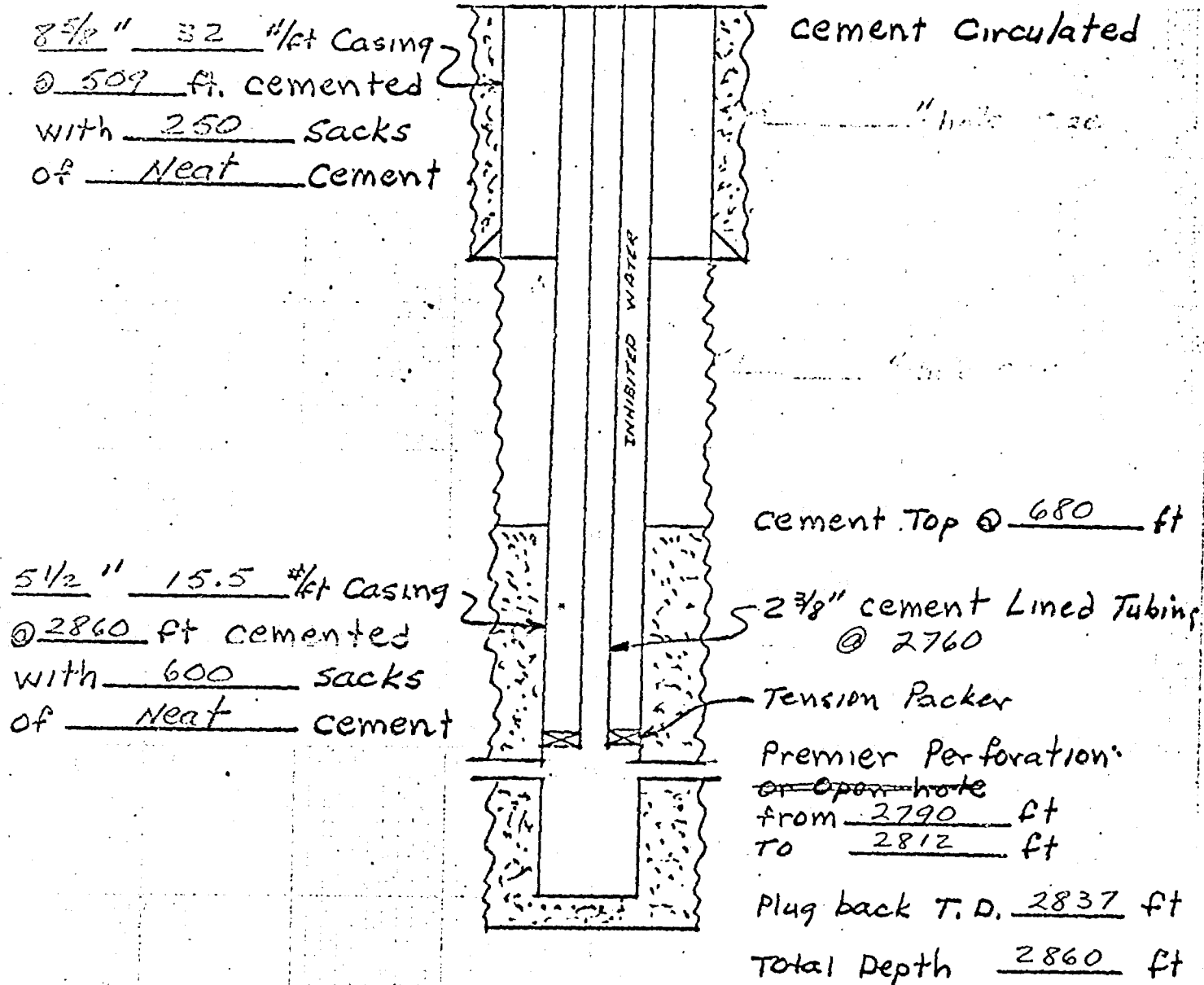


NOTE: THIS WELL IS  
PRESENTLY COMPLETED IN  
THE QUEEN SAND AS A  
WATER SOURCE WELL. IT  
WILL BE RECOMPLETED IN  
THE PREMIER.

EXHIBIT 4-U  
INJECTION WELL COMPLETION DATA

SHELL SPENCER FEDA 4  
OPERATOR LEASE WELL NO.

LOCATION N - SEC 4 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO., N.M.



# EXHIBIT 4-V

## INJECTION WELL COMPLETION DATA

SHELL      TAYLOR FED      1  
 OPERATOR      LEASE      WELL NO.  
 LOCATION J - SEC 4 - T16S - R 30E  
WEST HENSHAW UNIT, EDDY CO, N.M.

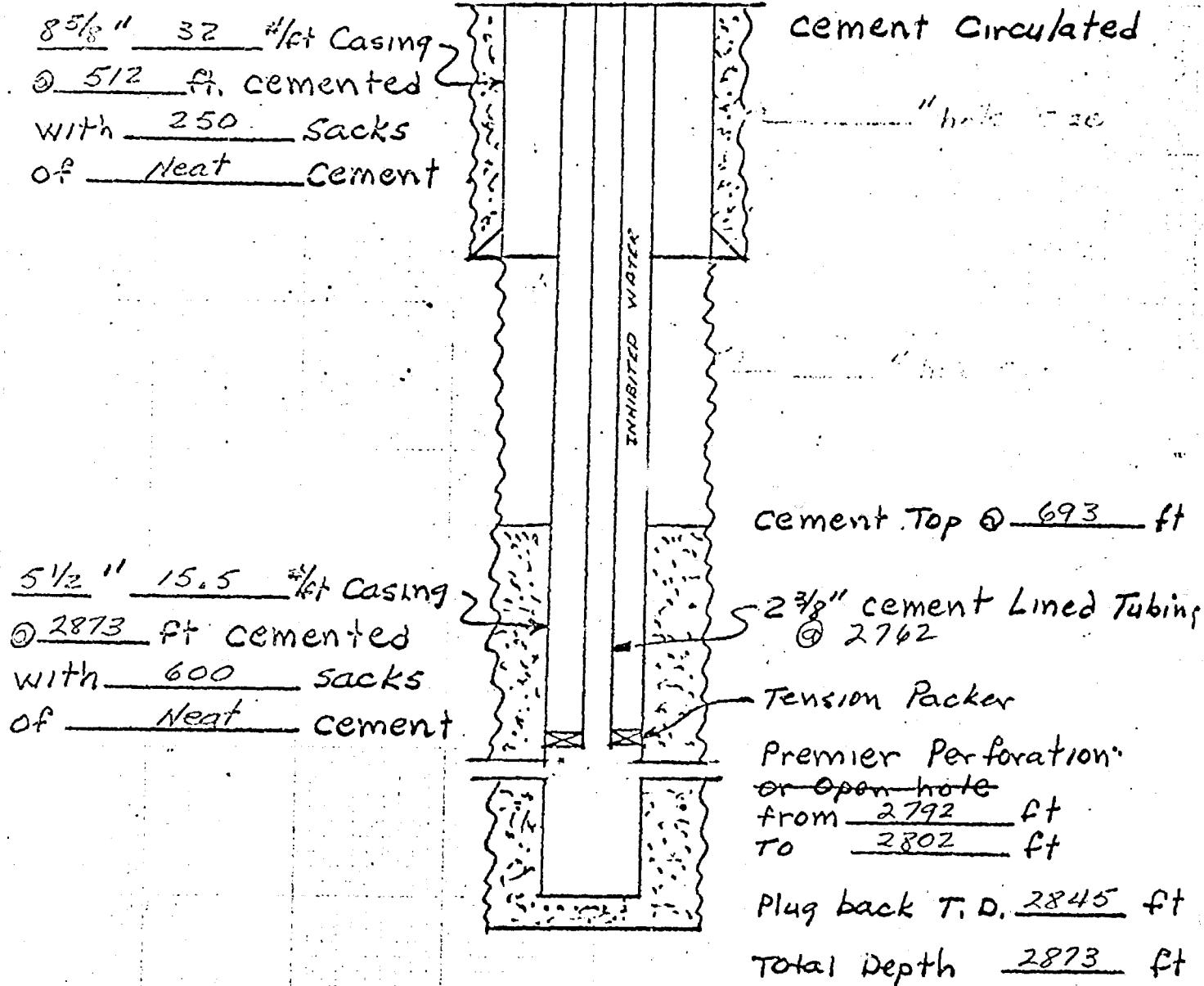
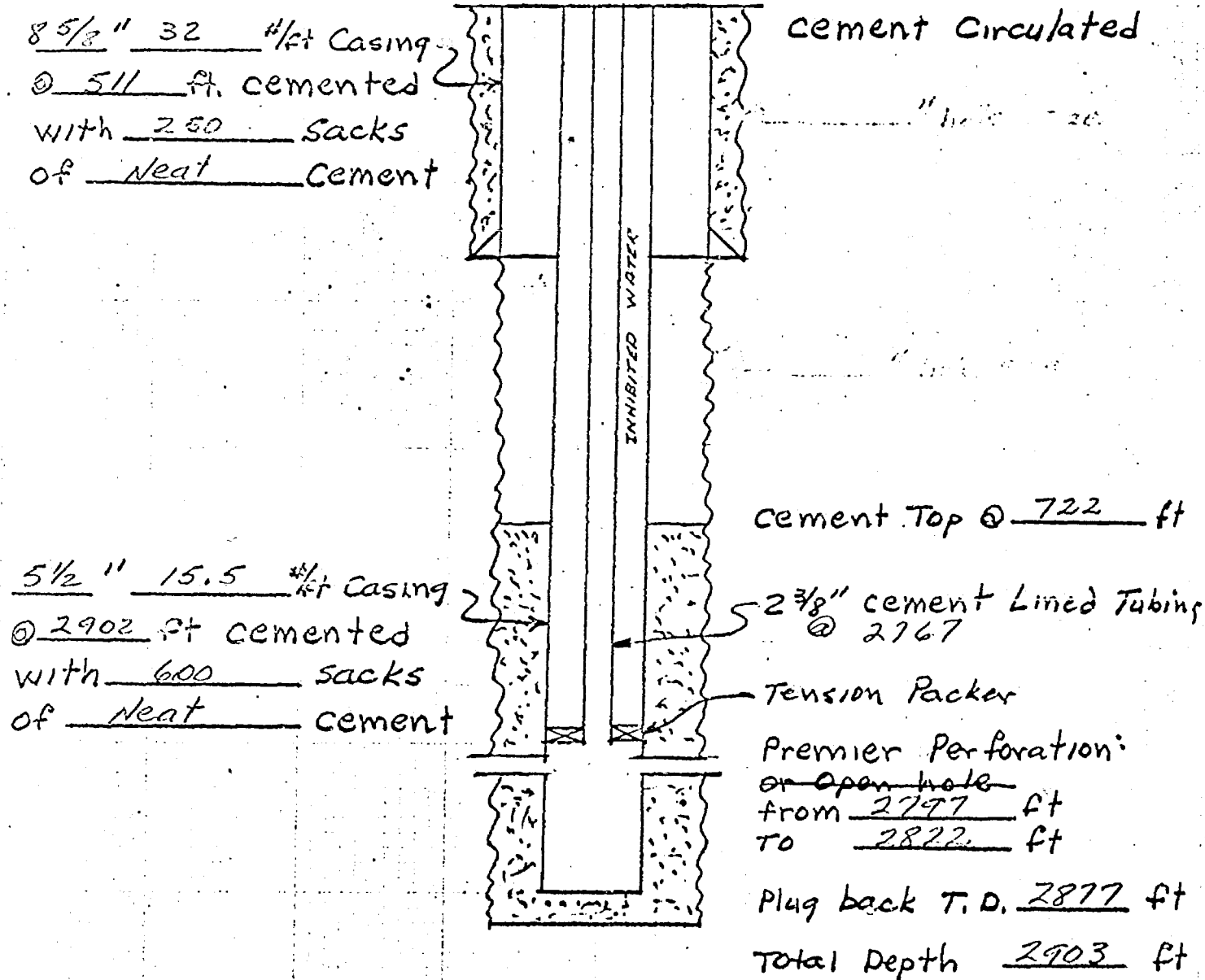


EXHIBIT 4-W  
INJECTION WELL COMPLETION DATA

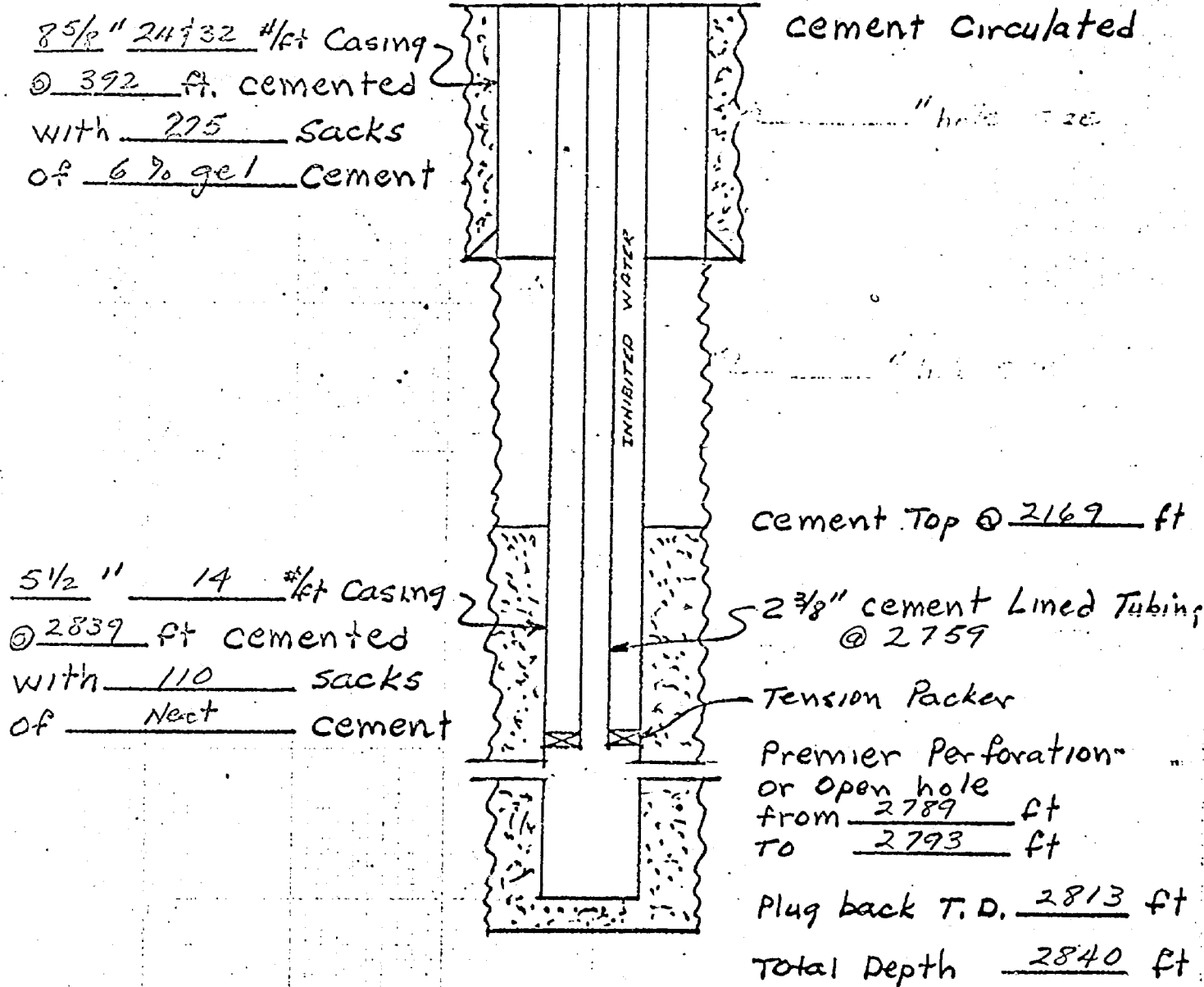
<u>SHELL</u>	<u>TAYLOR-FED</u>	<u>2</u>
OPERATOR	LEASE	WELL NO.
LOCATION <u>N - SEC 4 - T16S - R30E</u>		
<u>WEST HENSHAW UNIT, EDDY CO, N.M.</u>		



# EXHIBIT 4-X

## INJECTION WELL COMPLETION DATA

SINCLAIR BASS FED P 1  
 OPERATOR LEASE WELL NO.  
 LOCATION E - SEC 3 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO., N.M.



# EXHIBIT 4 - Y

## INJECTION WELL COMPLETION DATA

TEXACO STATE CJ 1  
 OPERATOR LEASE WELL NO.

LOCATION M - Sec 2 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO., N.M.

8 5/8" 24 #/ft Casing  
 @ 450 ft cemented  
 with 40 Sacks  
 of Neat Cement

Cement ~~Circulated~~  
 TOP @  
340 ft,

4 1/2" 11.6 #/ft Casing  
 @ 2965 ft cemented  
 with 300 Sacks  
 of Neat Cement

Cement Top @ 1055 ft

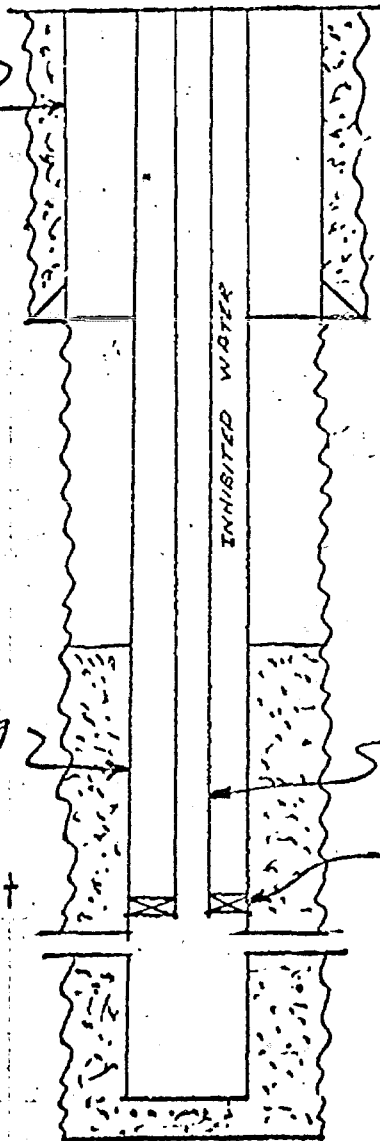
2 3/8" cement Lined Tubing  
 @ 2882

Tension Packer

Premier Perforation:  
~~or open hole~~  
 from 2912 ft  
 to 2921 ft

Plug back T.D. 2949 ft

Total Depth 2965 ft





# EXHIBIT 4-Z

## INJECTION WELL COMPLETION DATA

TEXACO

STATE CJ

4

OPERATOR

LEASE

WELL NO.

LOCATION E- SEC 2 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO, N.M.

11 3/4" 23.72 #/ft Casing  
@ 515 ft cemented  
with 500 Sacks  
of Neat Cement

Cement Circulated

8 5/8" 24 #/ft Casing  
@ 2871 ft cemented  
with 900 Sacks  
of Neat Cement

Cement Top @ Surface ft

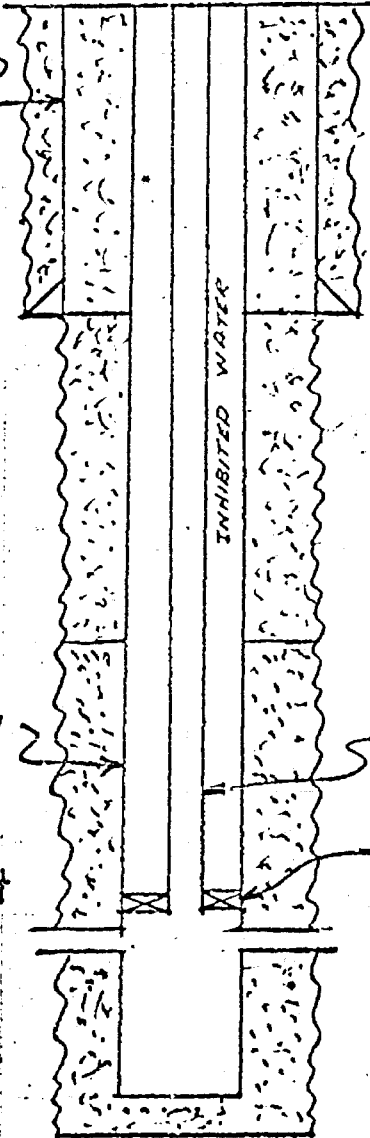
2 3/8" cement Lined Tubing  
@ 2820

Tension Packer

Premier Perforation  
~~or Open hole~~  
from 2850 ft  
to 2855 ft

Plug back T.D. 2870 ft

Total Depth 10,100 ft



GOVERNOR  
EDWIN L. MECHAM  
CHAIRMAN

State of New Mexico  
Oil Conservation Commission



LAND COMMISSIONER  
JOHN WALKER  
MEMBER

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

P. O. BOX 2088  
SANTA FE  
87501

*If* injection is to be through the 26, of  
authorized water injection wells, <sup>sacks</sup> which  
shall ~~not~~ be equipped with a packer and  
with tubing, with the casing-tubing annulus  
filled with inhibited water to prevent  
corrosion.

Mr. James E. Sperling  
Modrall, Seymour, Sperling, Roehl &  
Harris  
Attorneys at Law  
Post Office Box 466  
Albuquerque, New Mexico

Gentlemen:

*Reference is made to*  
As issued herewith is Commission Order No. R- 3045, <sup>recently</sup> entered in Case  
No. 33 8, approving the *Second Mobil West Henshaw Premier*  
Water Flood Project.

*As to allowable, indicate that when all*  
According to our calculations, when all of the authorized injection  
wells have been placed on active injection, the maximum allowable which this  
project will be eligible to receive under the provisions of Rule 701-E-3  
is 1974 barrels per day. *At present 7B should be limited to*

*the unit later, this allowable should be increased to 2016 barrels*  
Please report any error in this calculated maximum allowable immediately,  
both to the Santa Fe office of the Commission and the appropriate District  
proration office.

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

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,

cc: Mr. Frank Irby  
OCC - Artesia  
Booker Kelly

A. L. PORTER, Jr.  
Secretary-Director

1974  
42  
2016

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

March 7, 1966

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Y

Mr. James E. Sperling  
Modrell, Seymour, Sperling, Roehl & Harris  
Attorneys at Law  
Post Office Box 466  
Albuquerque, New Mexico

Dear Mr. Sperling:

Reference is made to Commission Order No. R-3045, recently entered in Case No. 3378, approving the Socony Mobil West Henshaw Premier Water-flood Project.

Injection is to be through the 26 authorized water injection wells, each of which shall be equipped with a packer and with tubing, with the casing-tubing annulus filled with inhibited water to prevent corrosion.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 1974 barrels per day. If Tract 7B, Lot 6 of Section 3, should be committed to the unit later, this maximum allowable would be increased to 2016 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 notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

- 2 -

March 7, 1966

Mr. James E. Sperling  
Albuquerque, New Mexico

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:DSW:sg

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

Mr. Booker Kelly  
Lincoln Building  
Santa Fe, New Mexico

Oil Conservation Commission  
Drawer D D  
Artesia, New Mexico

C  
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DRAFT  
JMD/esr

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

CF Subj. \_\_\_\_\_

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

CASE No. 3378

Order No. R- 3045

APPLICATION OF SOCONY/MOBIL OIL  
COMPANY, INC., FOR A WATERFLOOD  
PROJECT, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 ~~o'clock~~ a.m. on  
February 23, 1966, at Santa Fe, New Mexico, before Examiner  
Daniel S. Nutter.

NOW, on this March day of February, 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, Socony/Mobil Oil Company, Inc.,  
seeks permission to institute a waterflood project in the West  
Henshaw Premier Unit Area, West Henshaw-Grayburg Pool, by the  
injection of water into the Premier formation through twenty-six  
wells in Sections 2, 3, 4, 5, 8, and 10, Township 16 South, Range  
30 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, Socony Mobil Oil Company, Inc., is hereby authorized to institute a waterflood project in the West Henshaw Premier Unit Area, West Henshaw-Grayburg Pool, by the injection of water into the Premier formation through the following-described wells in Township 16 South, Range 30 East, NMPM, Eddy County, New Mexico:

<u>Operator and Lease</u>	<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
Texaco State CJ	4	E	2
Texaco State CJ	1	M	2
Humble State BC	2	U	2
Sinclair Bass Federal	1	E	3
Shell Little Lucky Lake Unit	2	K	3
Shell Little Lucky Lake Unit	1	I	3
Mobil Federal P	1	M	3
Mobil Federal P	6	O	3
General American Stablein Federal	4	S	3
Mobil Federal P	9	Q	3
General American Stablein Federal	3	U	3
Mobil Federal P	5	W	3
Shell Taylor-Federal	1	J	4
Shell Taylor-Federal	2	I	4
Shell Spencer-Federal A	1	M	4
Shell Spencer-Federal A	4	N	4
International Spencer-Federal	2	S	4
Pan American Bosworth-Federal	4	Q	4
International Spencer-Federal	3	U	4
Pan American Bosworth-Federal	1	W	4
Featherstone Crosby-Federal	2	Q	5
Featherstone Crosby-Federal	3	W	5
Mobil Federal P	2	A	8
Mobil Federal P	8	D	10
Mobil Federal P	7	C	10
General American Stablein-Federal	7	A	10

(2) That the subject waterflood project is hereby designated the West Humber Basin 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.

J. R. MODRALL  
AUGUSTUS T. SEYMOUR  
JAMES E. SPERLING  
JOSEPH E. ROEHL  
GEORGE T. HARRIS, JR.  
DANIEL A. SISK  
LELAND S. SEDBERRY, JR.  
ALLEN C. DEWEY, JR.  
FRANK H. ALLEN, JR.  
JAMES P. SAUNDERS, JR.

JAMES A. PARKER  
HENRY G. COORS  
JOHN R. COONEY  
KENNETH L. HARRIGAN

LAW OFFICES OF  
**MODRALL, SEYMOUR, SPERLING, ROEHL & HARRIS**  
SIMMS BUILDING  
P. O. BOX 466  
ALBUQUERQUE, NEW MEXICO 87103

JOHN F. SIMMS (1885-1954)

TELEPHONE 243-4511  
AREA CODE 505

January 26, 1966

*Case 3378*

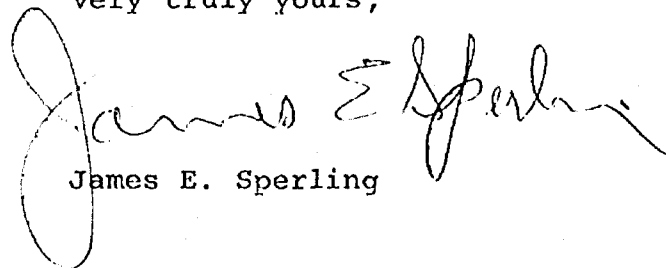
Mr. A. L. Porter, Jr., Director  
Oil Conservation Commission  
State Land Office Building  
Santa Fe, New Mexico

Dear Sir:

We submit herewith Application of Socony-Mobil Oil Company, Inc. for authority to institute a waterflood project within the area to be designated as the West Henshaw Premier Unit, Eddy County, New Mexico, containing 2,400 acres, more or less, said waterflood project to be operated in accordance with Rule 701 of the Commission; a copy of this Application has been forwarded to the Office of the State Engineer.

We also submit herewith Application of Socony-Mobil Oil Company, Inc. for approval of Unit Agreement for the area to be designated as the West Henshaw Premier Unit, Eddy County, New Mexico, with copy of Unit Agreement attached thereto.

Very truly yours,

  
James E. Sperling

JES:fm  
Enclosures  
cc: Office of State Engineer  
Attention: Mr. Frank Irby

DOCKET MAILED

Date 2-11-66

*PC*



DOCKET: EXAMINER HEARING - WEDNESDAY - FEBRUARY 23, 1966

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

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

CASE 3377: Application of Socony-Mobil Oil Company for a unit agreement,  
Eddy County, New Mexico. Applicant, in the above-styled cause,  
seeks approval of the of the West Henshaw Premier Unit Area  
comprising 2,400 acres of State and Federal lands in Township  
16 South, Range 30 East, Eddy County, New Mexico.

CASE 3378: Application of Socony-Mobil Oil Company for a waterflood project,  
Eddy County, New Mexico. Applicant, in the above-styled cause,  
authority to institute a waterflood project in its West Henshaw  
Premier Unit Area by the injection of water into the Premier  
formation through twenty-six wells in Sections 2, 3, 4, 5, 8, and  
10, Township 16 South, Range 30 East, West Henshaw Grayburg Pool,  
Eddy County, New Mexico.

CASE 3379: Application of Texaco Inc. for force-pooling, Lea County, New Mexico.  
Applicant, in the above-styled cause, seeks an order force-pooling  
all mineral interests in the Justis-Paddock Gas Pool underlying  
the S/2 of Section 35, Township 24 South, Range 37 East, Lea County,  
New Mexico.

CASE 3380: Application of Texaco Inc. for force-pooling, Lea County, New Mexico.  
Applicant, in the above-styled cause, seeks an order force-pooling  
all mineral interests in the Justis-Paddock Gas Pool underlying the  
N/2 of Section 35, Township 24 South, Range 37 East, Lea County,  
New Mexico.

CASE 3187 (Reopened):

In the matter of Case No. 3187 being reopened pursuant to the pro-  
visions of Order No. R-2861, which order established 80-acre  
spacing units for the North Sawyer-Devonian Pool, Roosevelt County,  
New Mexico, for a period of one year. All interested parties may  
appear and show cause why said pool should not be developed on 40-  
acre spacing units.

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. 3378  
Order No. R-3045

APPLICATION OF SOCONY MOBIL OIL COMPANY,  
INC., 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 February 23, 1966,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 1st day of March, 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, Socony Mobil Oil Company, Inc.,  
seeks permission to institute a waterflood project in the West  
Henshaw Premier Unit Area, West Henshaw-Grayburg Pool, by the  
injection of water into the Premier formation through twenty-six  
wells in Sections 2, 3, 4, 5, 8, and 10, Township 16 South, Range  
30 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.

-2-

CASE No. 3378

Order No. R-3045

(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, Socony Mobil Oil Company, Inc., is hereby authorized to institute a waterflood project in the West Henshaw Premier Unit Area, West Henshaw-Grayburg Pool, by the injection of water into the Premier formation through the following-described wells in Township 16 South, Range 30 East, NMPM, Eddy County, New Mexico:

<u>Operator and Lease</u>	<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
Texaco State CJ	4	E	2
Texaco State CJ	1	M	2
Humble State BC	2	U	2
Sinclair Bass Federal	1	E	3
Shell Little Lucky Lake Unit	2	K	3
Shell Little Lucky Lake Unit	1	I	3
Mobil Federal P	1	M	3
Mobil Federal P	6	O	3
General American Stablein-Federal	4	S	3
Mobil Federal P	9	Q	3
General American Stablein-Federal	3	U	3
Mobil Federal P	5	W	3
Shell Taylor-Federal	1	J	4
Shell Taylor Federal	2	I	4
Shell Spencer-Federal A	1	M	4
Shell Spencer-Federal A	4	N	4
International Spencer-Federal	2	S	4
Pan American Bosworth-Federal	4	Q	4
International Spencer-Federal	3	U	4
Pan American Bosworth-Federal	1	W	4
Featherstone Crosby-Federal	2	Q	5
Featherstone Crosby-Federal	3	W	5
Mobil Federal D	2	A	8
Mobil Federal P	8	D	10
Mobil Federal P	7	C	10
General American Stablein-Federal	7	A	10

(2) That the subject waterflood project is hereby designated the West Henshaw Premier Waterflood Project and shall be governed

-3-

CASE No. 3378

Order No. R-3045

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.

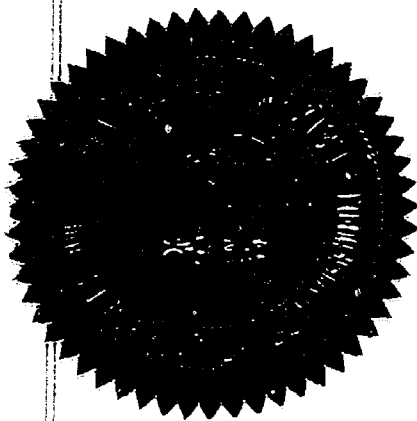
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

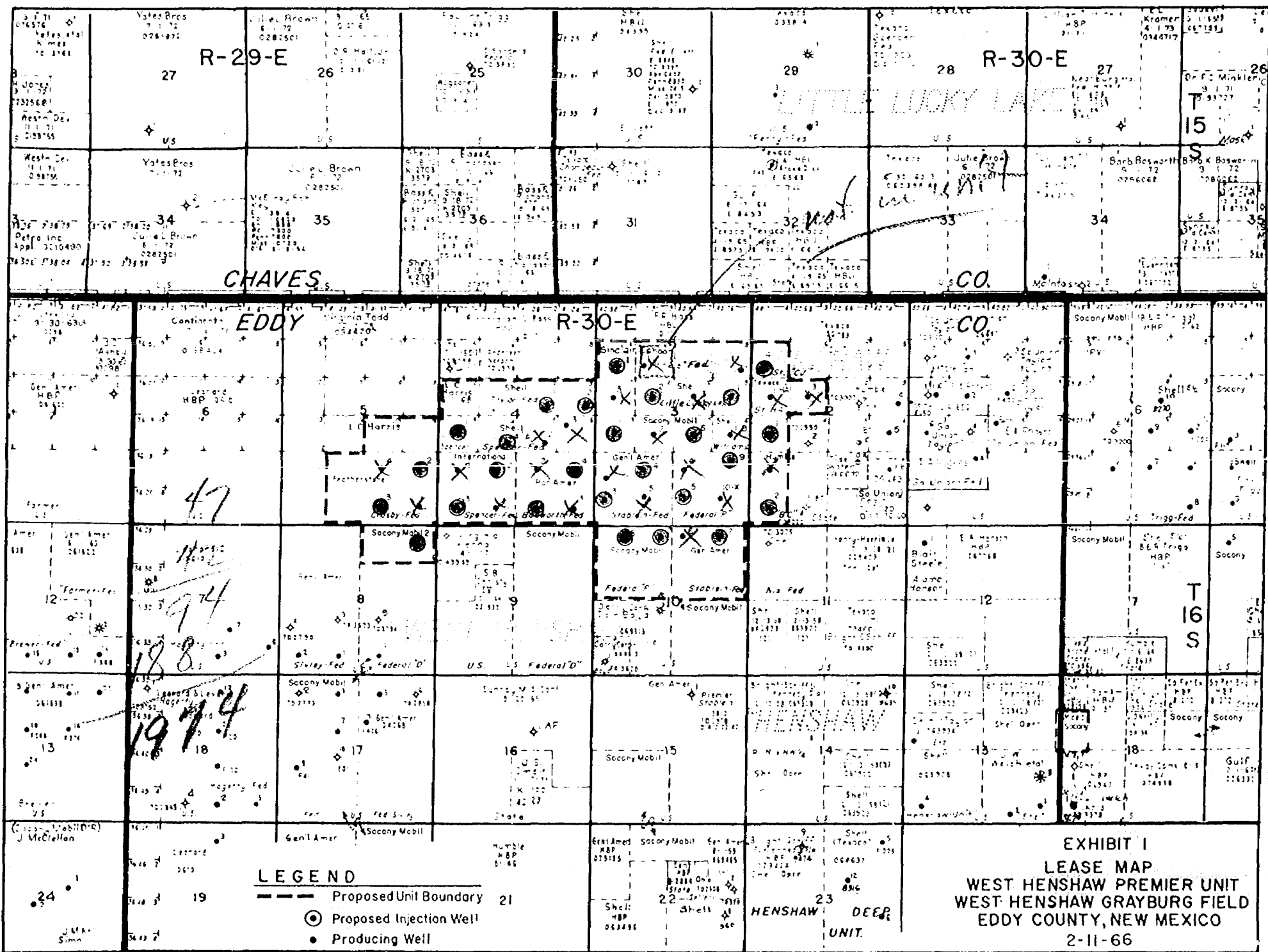
*Jack M. Campbell*  
JACK M. CAMPBELL, Chairman

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

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



esr/



# EXHIBIT 4 - Y

## INJECTION WELL COMPLETION DATA

TEXACO

STATE CJ

1

OPERATOR

LEASE

WELL NO.

LOCATION M - Sec 2 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO., N.M.

8 5/8" 24 #/ft Casing  
@ 450 ft cemented  
with 40 Sacks  
of Neat Cement

Cement ~~Circulated~~

TOP @

340 ft.

(est. by Volumetric fill up calc.)

12 1/2" hole

6 3/4" hole

4 1/2" 11.6 #/ft Casing  
@ 2965 ft cemented  
with 300 Sacks  
of Neat Cement

Cement Top @ 1055 ft

(est by Volumetric fill up calculation)

2 7/8" cement Lined Tubing  
@ 2882

Tension Packer

Premier Perforation.

~~on open hole~~

from 2912 ft

to 2921 ft

Plug back T.D. 2949 ft

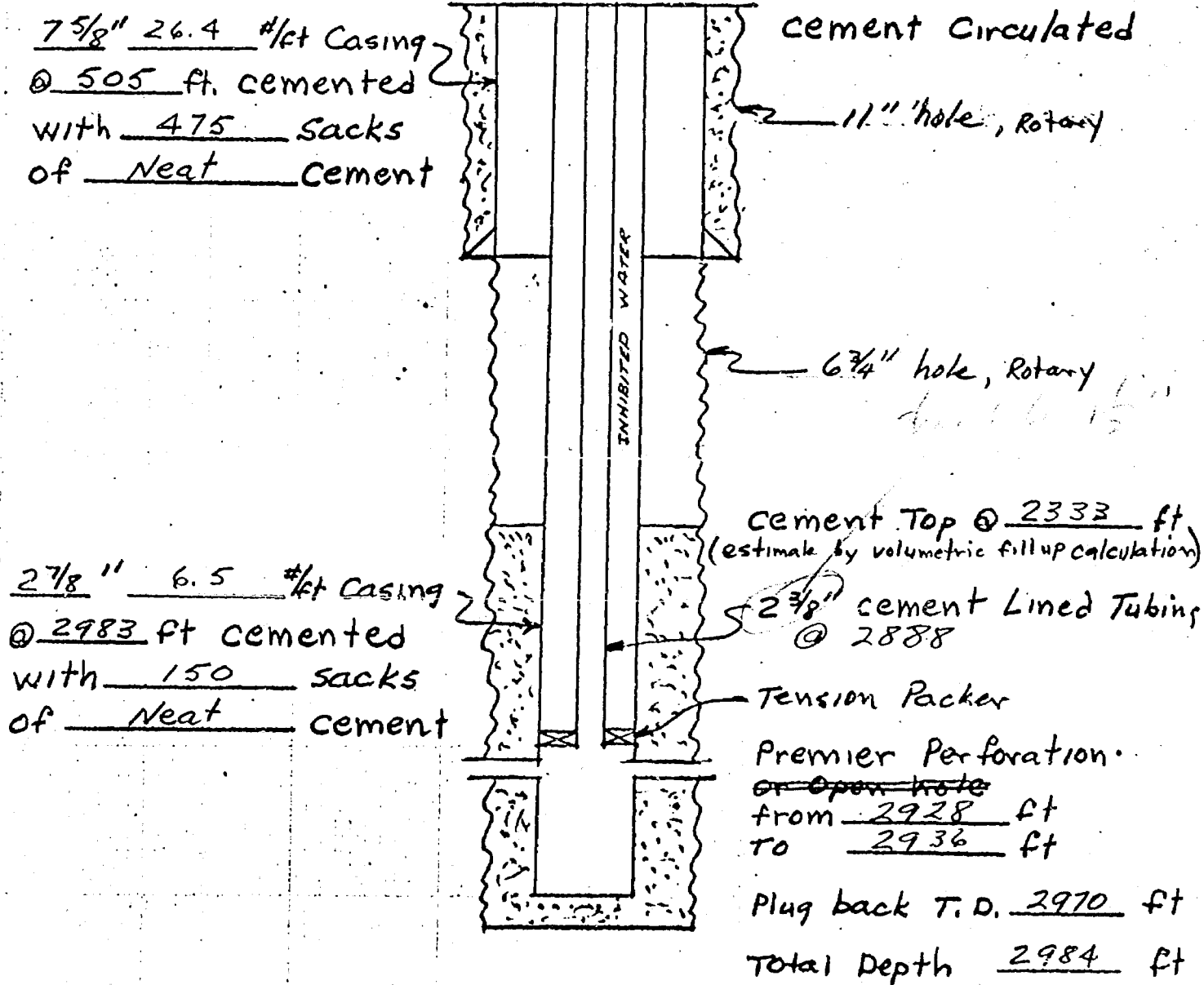
Total Depth 2965 ft

R.W. White 2-11-66

# EXHIBIT 4-F

## INJECTION WELL COMPLETION DATA

HUMBLE STATE BC 2  
 OPERATOR LEASE WELL NO.  
 LOCATION u - Sec 2 - T 16 S - R 30 E  
 WEST HENSHAW UNIT, EDDY CO., N.M.

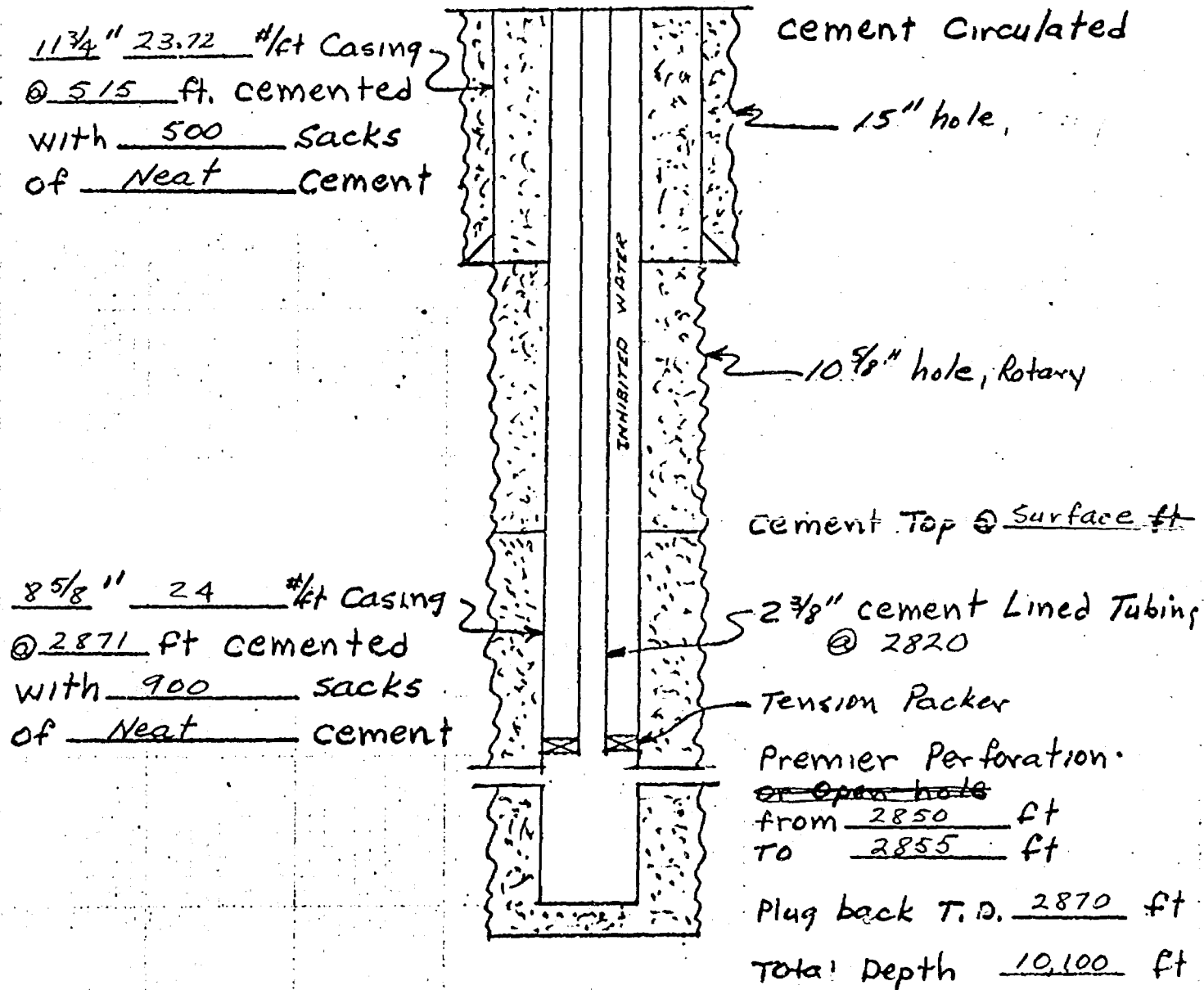


R.W. White 2-11-66

# EXHIBIT 4-Z

## INJECTION WELL COMPLETION DATA

TEXACO      STATE CJ      4  
 OPERATOR      LEASE      WELL NO.  
 LOCATION E - Sec 2 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.



R.W. white 2-11-66



# EXHIBIT 4-X

## INJECTION WELL COMPLETION DATA

SINCLAIR

BASS FED

1

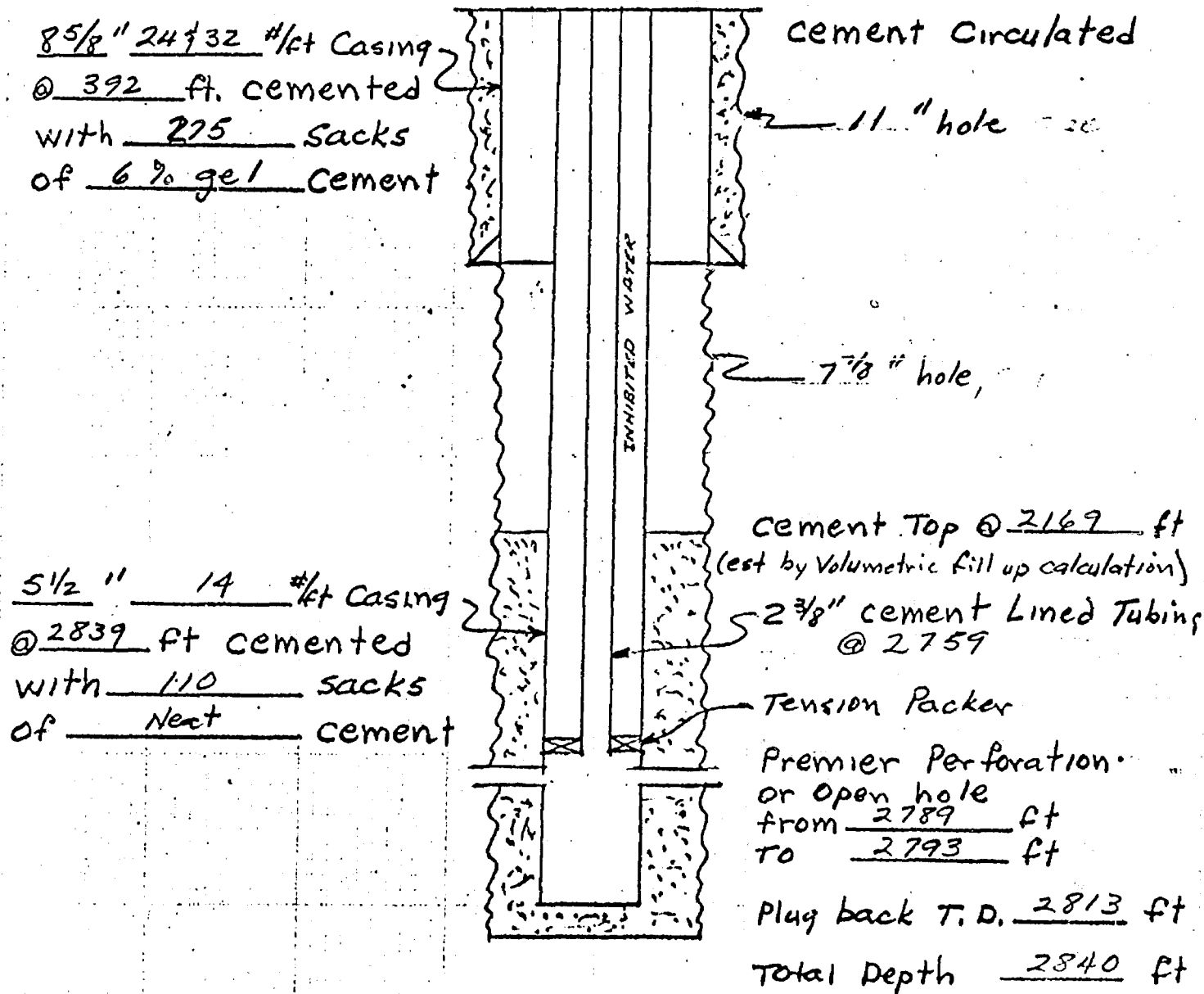
OPERATOR

LEASE

WELL NO.

LOCATION E - SEC 3 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO., N.M.



R.W. White 2-11-66

# EXHIBIT 4-S

## INJECTION WELL COMPLETION DATA

SHELL LITTLE LUCKY LAKE UNIT 2

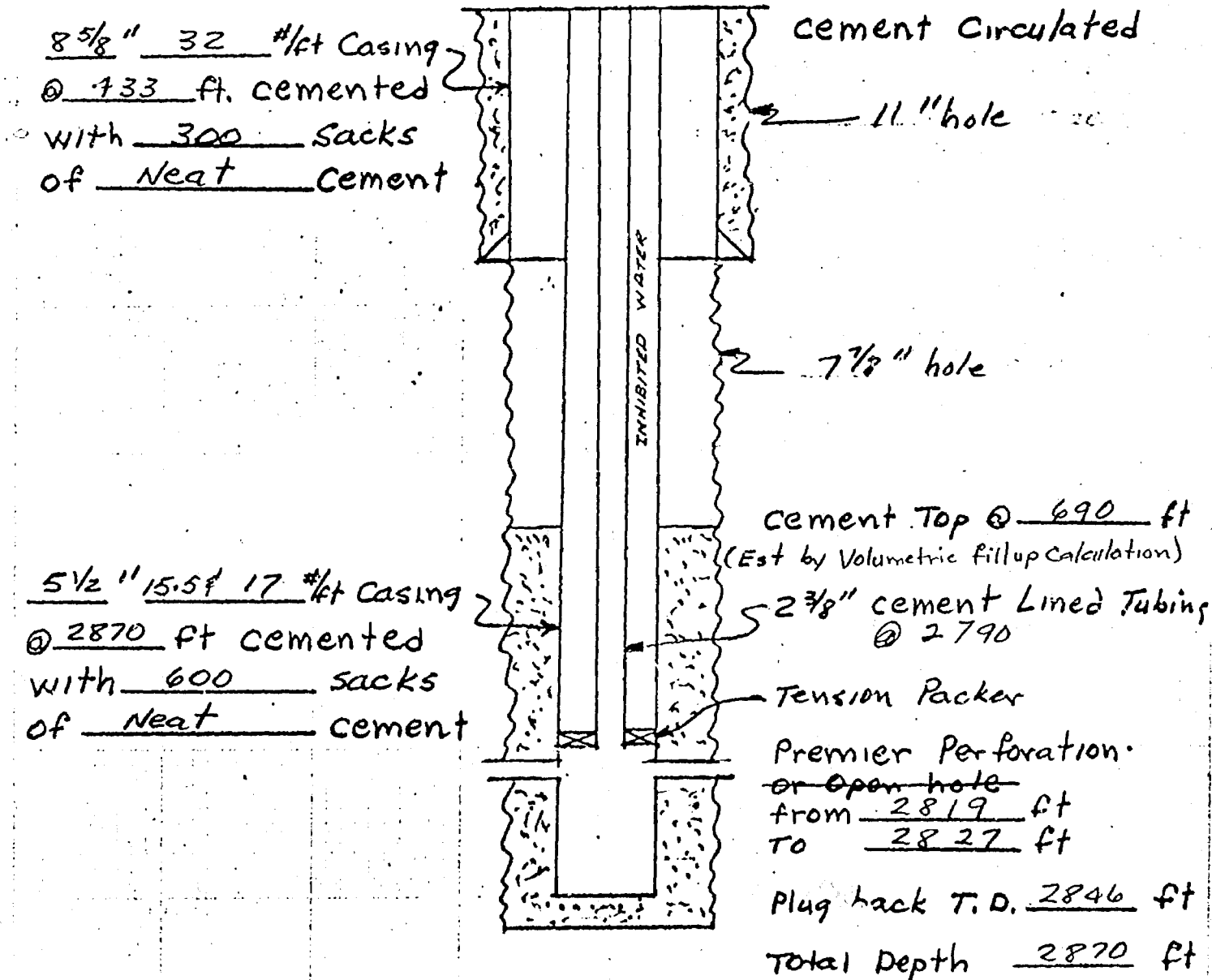
OPERATOR

LEASE

WELL NO.

LOCATION K - SEC 3 - T14S - R 30E

WEST HENSHAW UNIT, EDDY CO, N.M.



R.W. White 2-11-66

# EXHIBIT 4-R

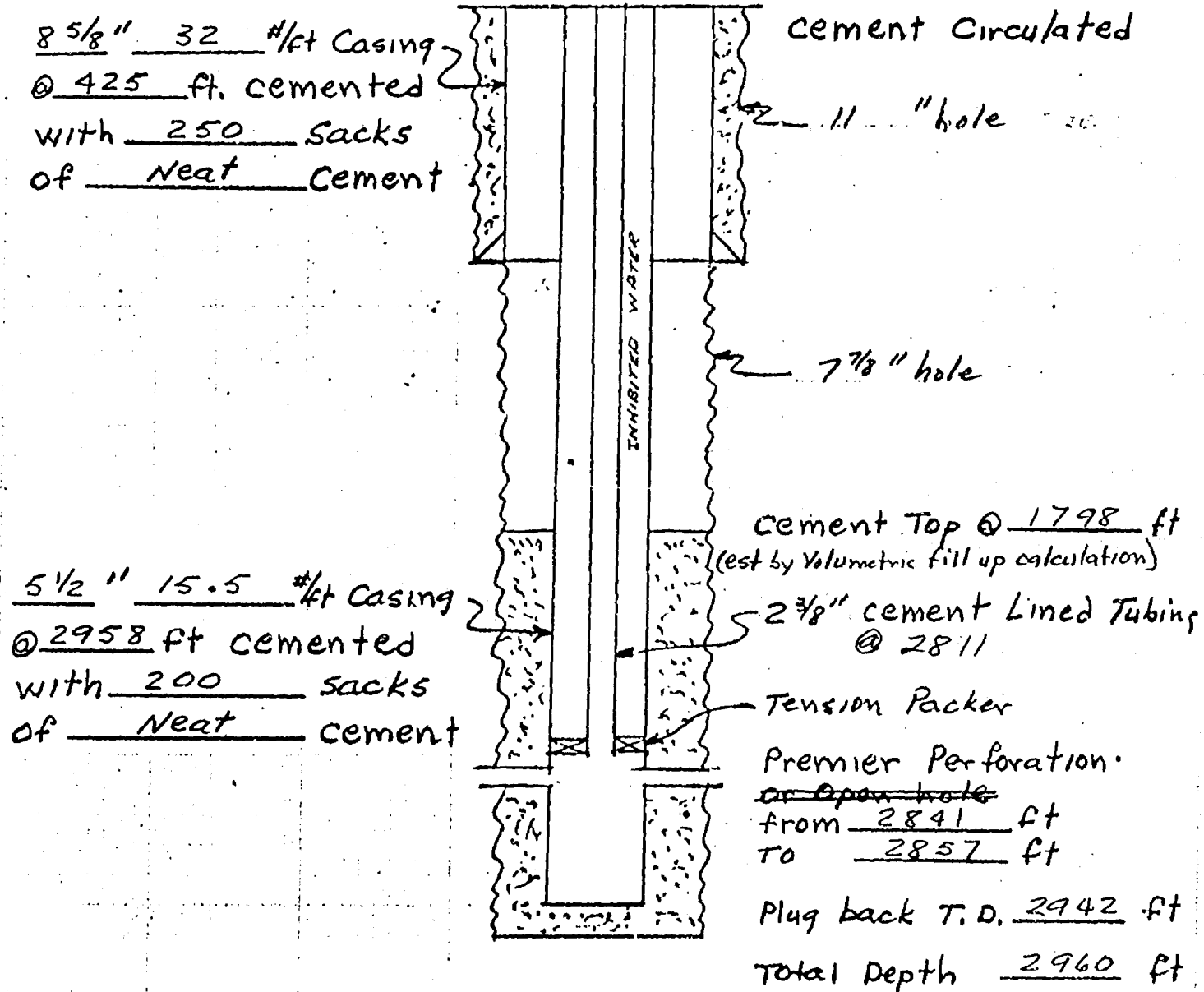
## INJECTION WELL COMPLETION DATA

SHELL LITTLE LUCKY LAKE UNIT 1

OPERATOR LEASE WELL NO.

LOCATION 1 - SEC 3 - T16S - R30E

WEST HENSHAW UNIT EDDY CO, N.M.

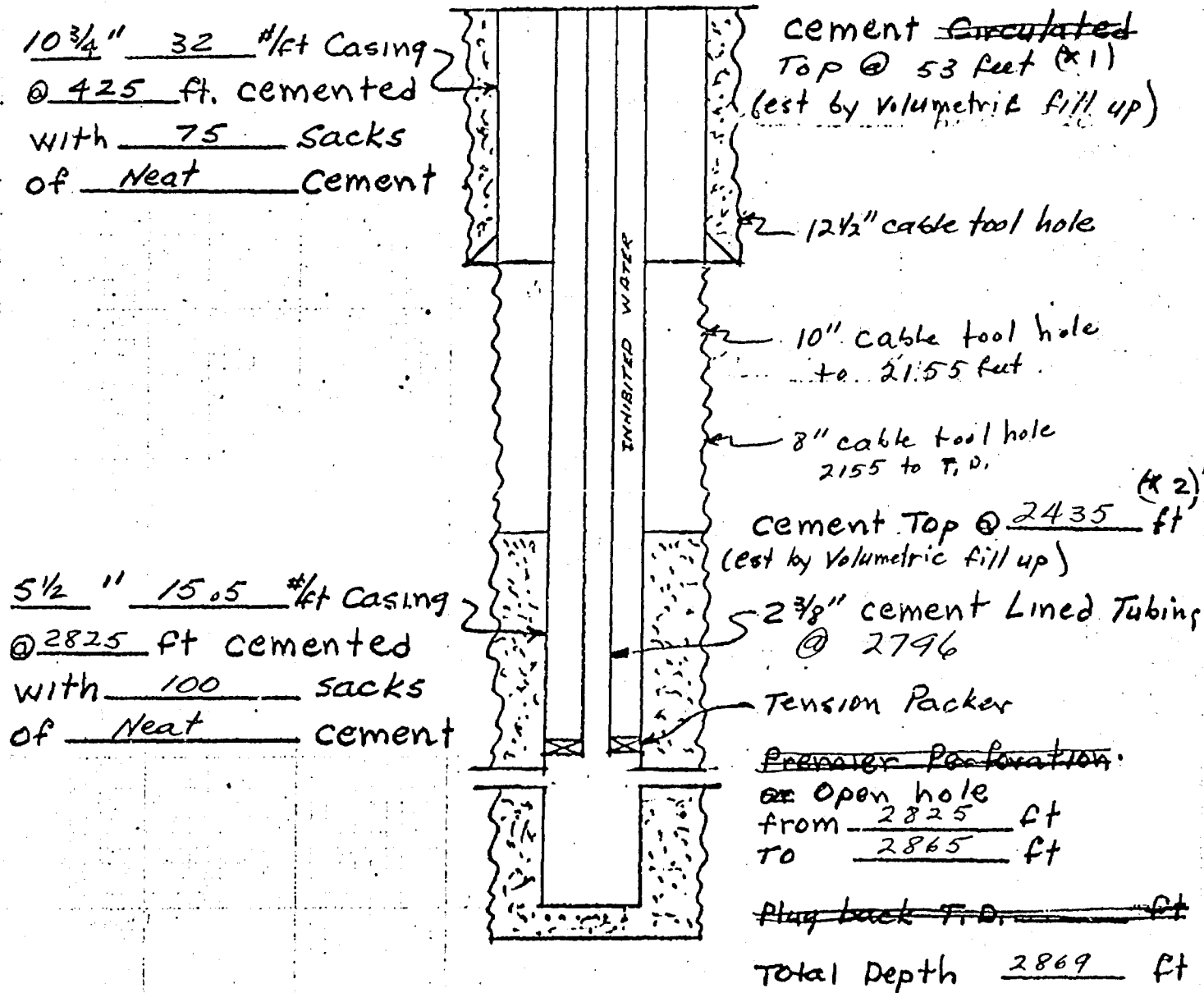


R.W. White 2-11-66

# EXHIBIT 4-J

## INJECTION WELL COMPLETION DATA

MOBIL Fed P 1  
 OPERATOR LEASE WELL NO.  
 LOCATION M - SEC 3 - T14 S - R 30 E  
WEST HENSHAW UNIT, EDDY CO, N.M.



\*1 - For Gage hole and No cement loss.

\*2 - For Gage hole and No cement loss  
 Cement Top would be 2227 feet.

R.W. White 2-11-66

# EXHIBIT 4-L

## INJECTION WELL COMPLETION DATA

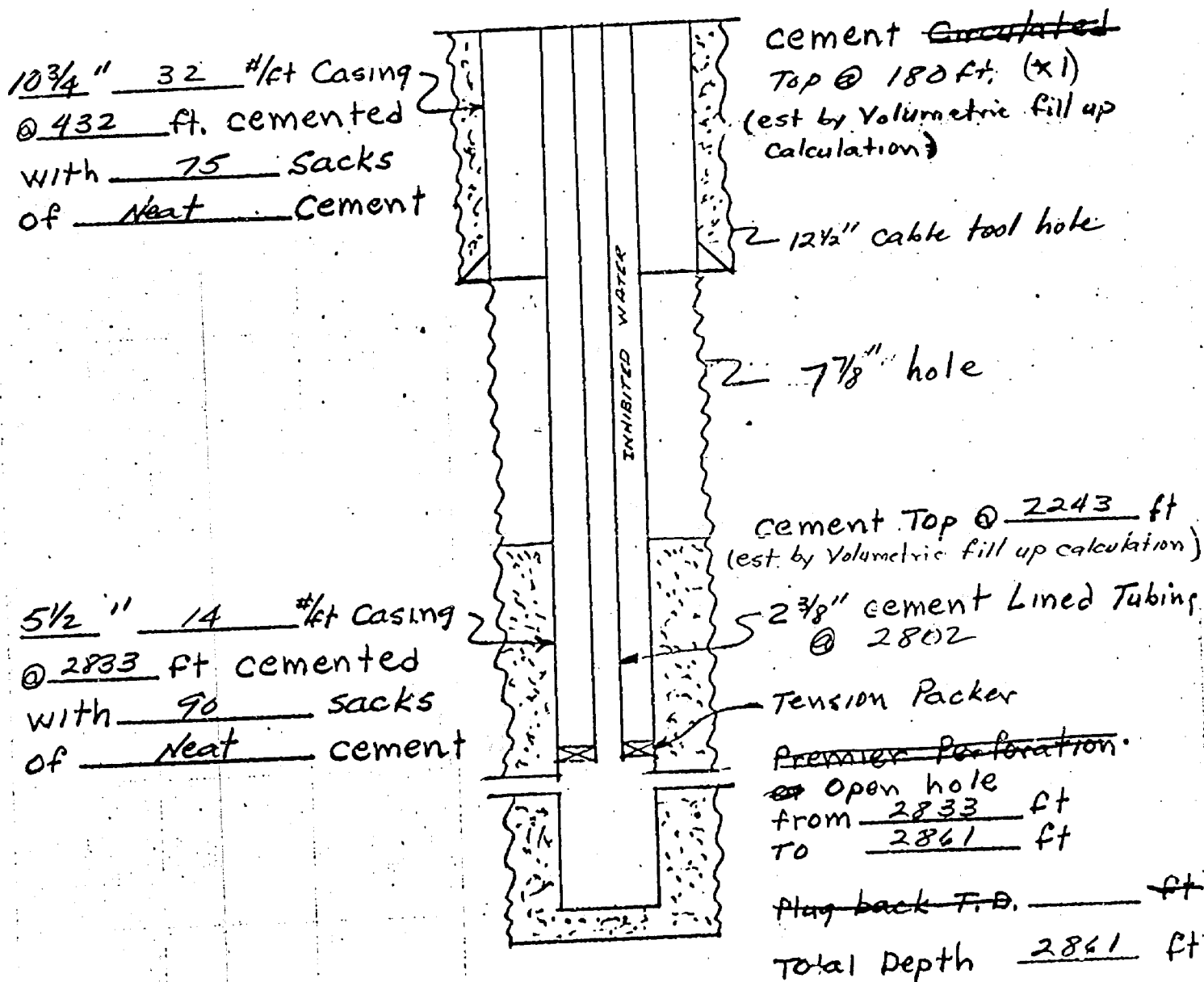
MOBIL  
OPERATOR

FED. P.  
LEASE

6  
WELL NO.

LOCATION 0 SEC 3 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO., N.M.



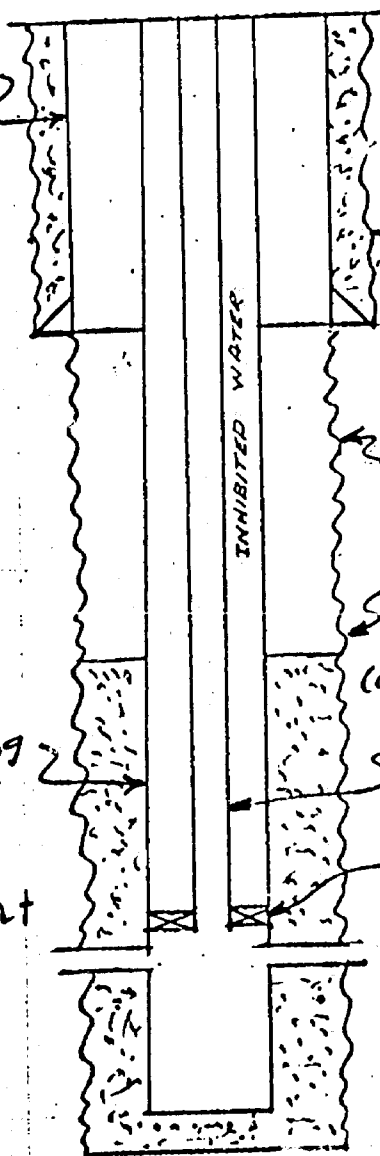
\*1 For Gauge hole and No cement loss  
Top of cement would be 60 feet

R.W. White 2-11-66

**EXHIBIT 4-E**  
**INJECTION WELL COMPLETION DATA**  
 GENERAL AMERICAN STABLEIN FED 4  
 OPERATOR LEASE WELL NO.  
 LOCATION S-SEC 3-T16S-R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.

10 3/4" 32.75 #/ft Casing  
 @ 438 ft. cemented  
 with 50 Sacks  
 of Neat Cement

7" 23 #/ft Casing  
 @ 2853 ft cemented  
 with 200 Sacks  
 of Neat cement



~~Cement Circulated~~  
 Top @ (\*) 1  
278 ft.  
 (est by volumetric fill up calculation)  
 @ 35% cement loss,  
 12 1/2" cable tool hole

10" hole, cable tool  
 438 ft to 2853 ft

8" hole 5 1/2", cable tool (\*) 2  
2190 ft to 2853 ft  
 Cement Top @ 2183 ft  
 (est by volumetric fill up calculation)

2 3/8" cement Lined Tubing  
 @ 2820

Tension Packer

~~Premier Perforation~~  
 or Open hole  
 from 2853 ft  
 to 2899 ft

~~Plug back T.D.~~ ft  
 Total Depth 2899 ft

(\*) 1 For a gauge hole and no cement loss,  
 estimated top would be 192 feet

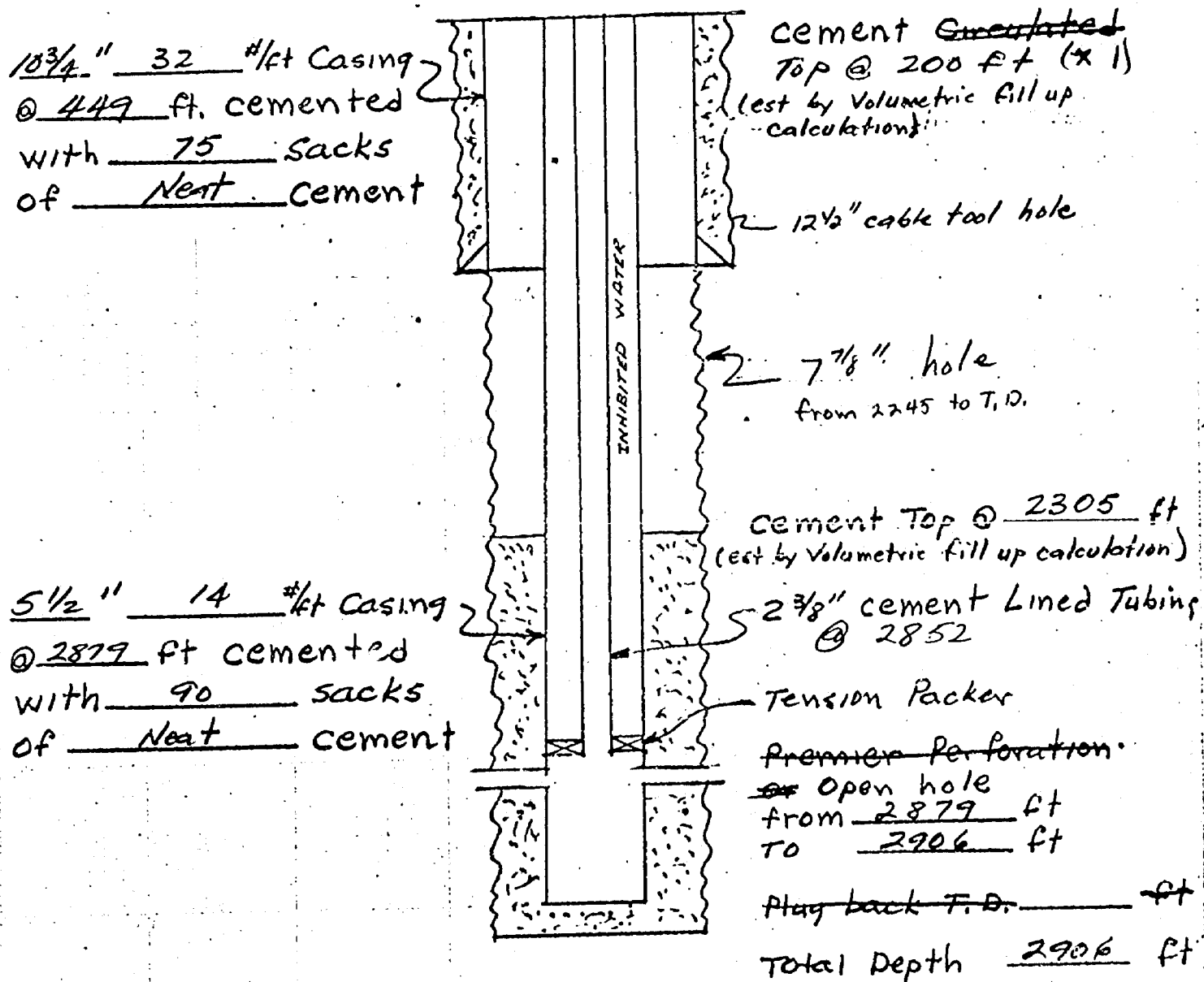
(\*) 2 For a gauge hole and no cement loss,  
 estimated cement top would be 1598 feet.

R.W. White 2-11-66

# EXHIBIT 4-M

## INJECTION WELL COMPLETION DATA

MOBIL FED P 9  
 OPERATOR LEASE WELL NO.  
 LOCATION & SEC 3 - T16S - R30E  
 WEST HENSHAW UNIT, EDDY CO, N.M.



R.W. White 2-11-66

# EXHIBIT 4-D

## INJECTION WELL COMPLETION DATA

GENERAL AMERICAN STABLEIN FED

3

OPERATOR

LEASE

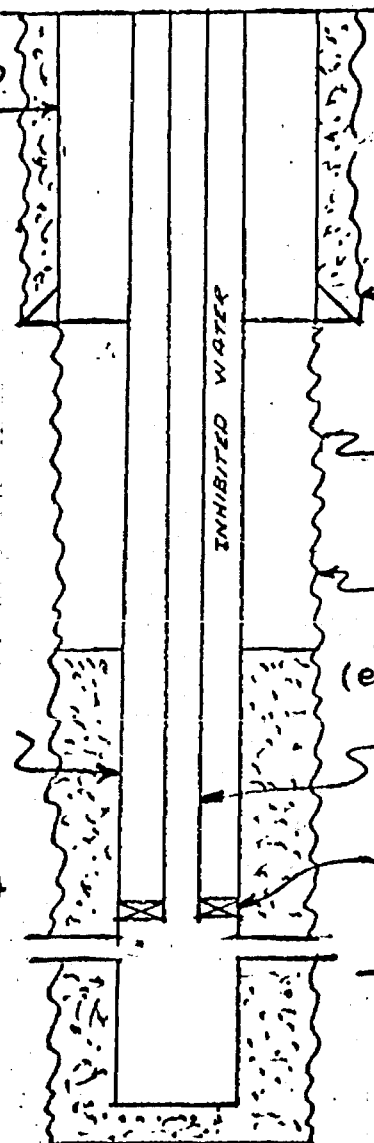
WELL NO.

LOCATION U- SEC 3-T14S-R30E

WEST HENSHAW UNIT, EDDY CO., N.M.

10 3/4" 32.75 #/ft Casing  
@ 430 ft. cemented  
with 50 Sacks  
of Neat Cement

7" 23 #/ft Casing  
@ 2848 ft cemented  
with 100 Sacks  
of Neat Cement



Cement ~~circulated~~

Top @ \*1 (below)

270 ft.  
(est. by volumetric calculations  
and 35% cement loss)

5 1/2" cable tool hole

10" hole, cable tool  
430 ft to 2175 ft.

8" hole, cable tool (\*2)  
2175' to 2848'

Cement Top @ 2228 ft  
(est by volumetric fill up calculation)

2 3/8" cement Lined Tubing  
@ 2822

Tension Packer

~~Premier Perforation~~

Open hole  
from 2848 ft  
to 2899 ft

Plug back T.D. \_\_\_\_\_ ft

Total Depth 2899 ft

(\*1) Conservative Estimate - For a gauge hole and No cement loss  
estimated Top would be 184 feet.

(\*2) Conservative Estimate - For a gauge hole and No cement loss  
estimated Top would be 1978 feet

R.W. White 2-14-66



# EXHIBIT 4-K

## INJECTION WELL COMPLETION DATA

MOBIL FED. P 5  
 OPERATOR LEASE WELL NO.

LOCATION W - SEC 3 - T16S - R30E  
WEST HENSLEY UNIT, EDDY CO, N.M.

10 3/4" 32 #/ft Casing  
 @ 485 ft. cemented  
 with 75 Sacks  
 of Neat Cement

Cement ~~circulated~~  
 Top @ 235 ft. (\*1)  
 (Est by Volumetric fill up Calculation)

12 1/2" cable tool hole

10" hole to 2230

8" cable tool hole  
 2230 to T.D.

5 1/2" 14 #/ft Casing  
 @ 2867 ft cemented  
 with 100 Sacks  
 of Neat Cement

Cement Top @ 2277 ft  
 (Est by Volumetric fill up Calculation)

2 3/8" cement Lined Tubing  
 @ 2839

Tension Packer

~~Premier Perforation~~

Open hole  
 from 2867 ft  
 to 2909 ft

Plug back T.D. ft

Total Depth 2909 ft

\*1 For Gauge hole and No cement loss  
 Top of cement would be 113 feet.

R.W. White 2-11-66

# EXHIBIT 4-V

## INJECTION WELL COMPLETION DATA

SHELL  
OPERATOR

TAYLOR FED  
LEASE

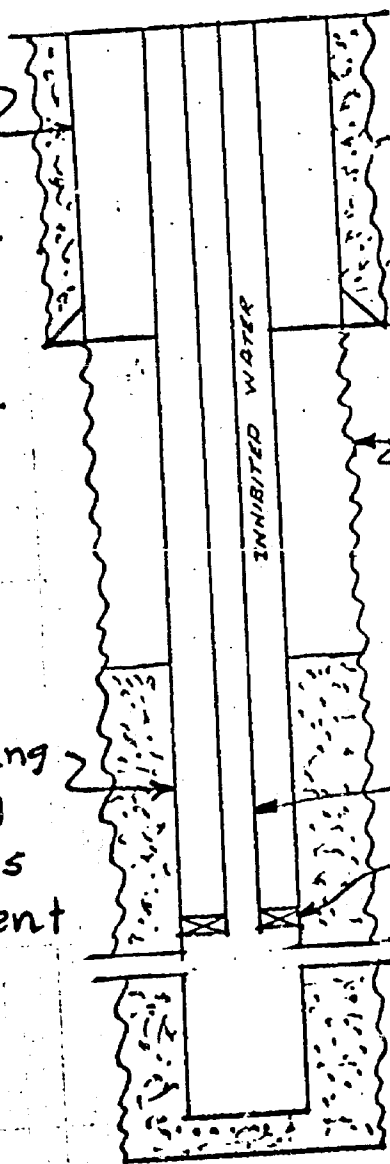
1  
WELL NO.

LOCATION J - SEC 4 - T16S - R 30E

WEST HENSHAW UNIT, EDDY CO, N.M.

8 5/8" 32 #/ft Casing  
@ 512 ft. cemented  
with 250 Sacks  
of Neat Cement

5 1/2" 15.5 #/ft Casing  
@ 2873 ft cemented  
with 600 Sacks  
of Neat cement



ciment Top @ 693 ft  
(est by Volumetric fill up calculation)  
2 3/8" cement Lined Tubing  
@ 2762

Tension Packer

Premier Perforation  
or open hole  
from 2792 ft  
to 2802 ft

Plug back T.D. 2845 ft  
Total Depth 2873 ft

R.W. White 2-11-66

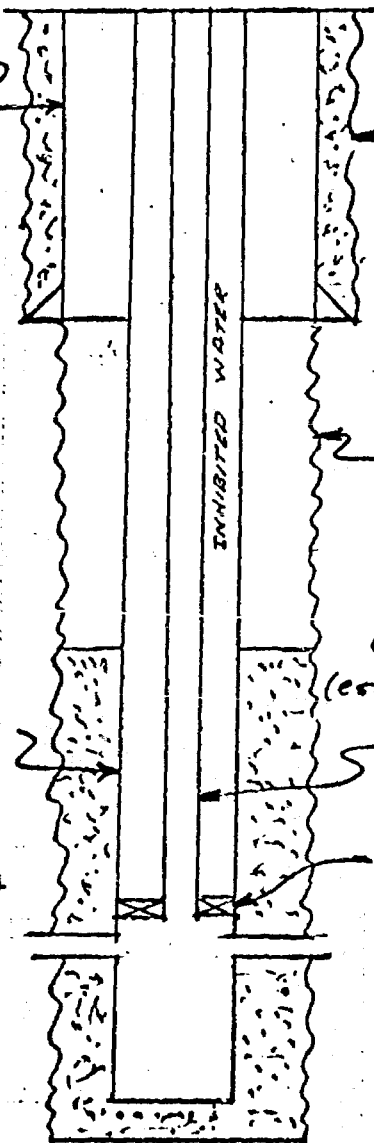
# EXHIBIT 4-W

## INJECTION WELL COMPLETION DATA

SHELL TAYLOR-FED 2  
 OPERATOR LEASE WELL NO.  
 LOCATION N - SEC 4 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.

8 5/8" 32 #/ft Casing  
@ 511 ft cemented  
with 250 Sacks  
of Neat Cement

5 1/2" 15.5 #/ft Casing  
@ 2902 ft cemented  
with 600 Sacks  
of Neat Cement



cement Circulated

11" hole

7 7/8" hole

cement Top @ 722 ft  
 (est by Volumetric fill up calculation)

2 3/8" cement Lined Tubing  
 @ 2767

Tension Packer

Premier Perforation  
 or Open hole  
 from 2797 ft  
 to 2822 ft

Plug back T.D. 2877 ft

Total Depth 2903 ft

R.W. White 2-11-66

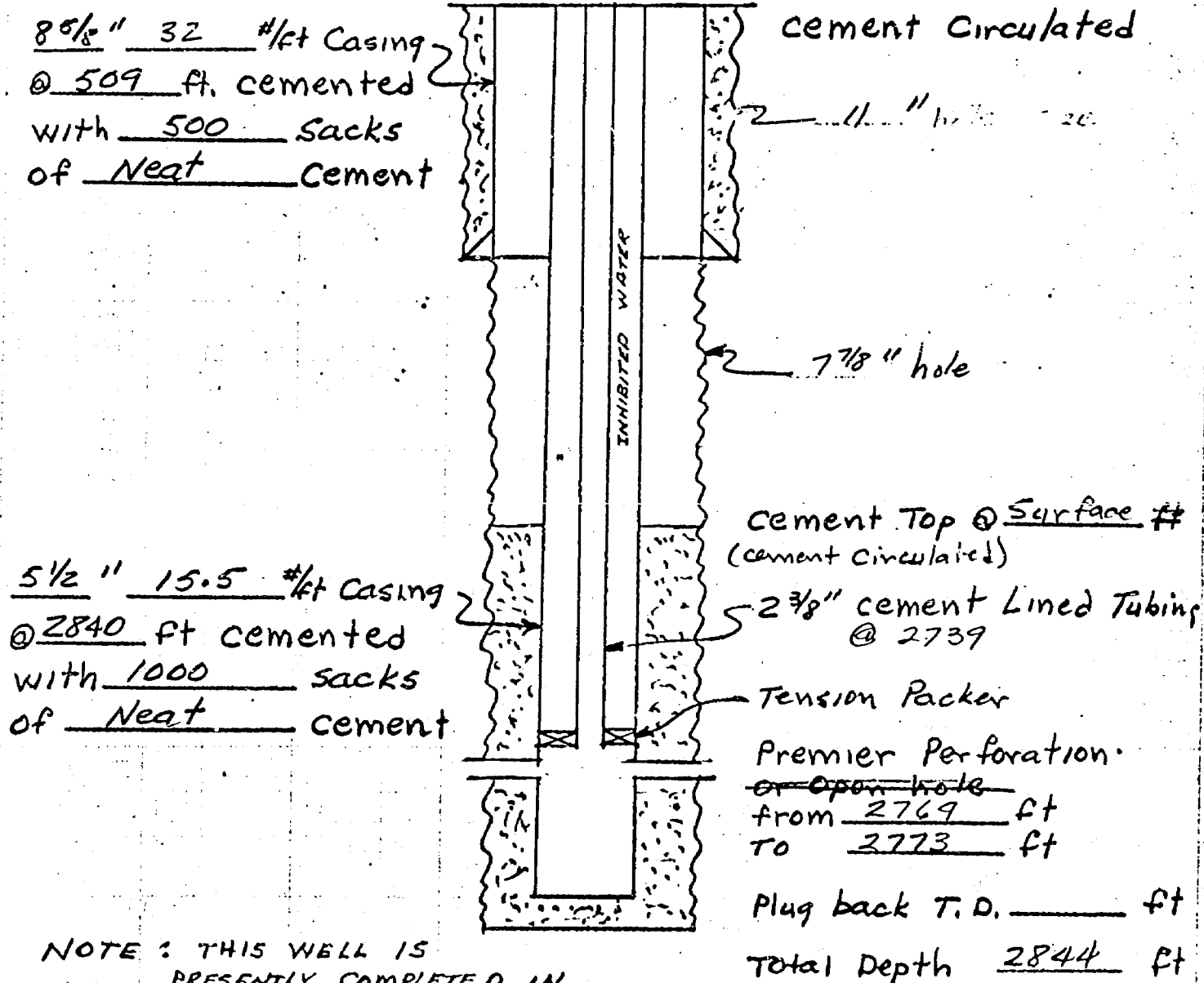
# EXHIBIT 4 - T

## INJECTION WELL COMPLETION DATA

SHELL SPENCER FED A 1  
 OPERATOR LEASE WELL NO.

LOCATION M - SEC 4 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO, N.M.

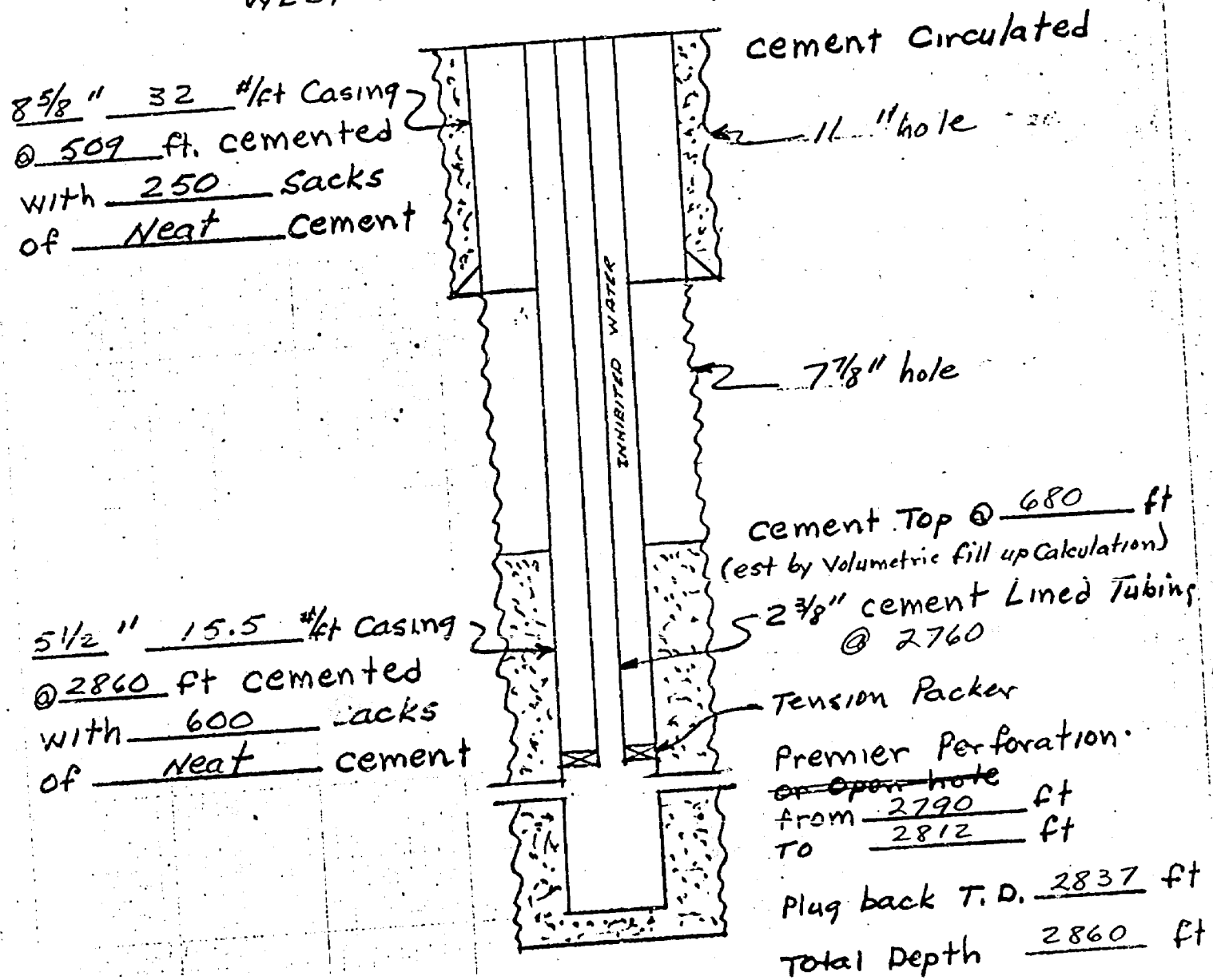


NOTE : THIS WELL IS  
 PRESENTLY COMPLETED IN  
 THE QUEEN SAND AS A  
 WATER SOURCE WELL. IT  
 WILL BE RECOMPLETED IN  
 THE PREMIER.

R.W.white 2-11-66

EXHIBIT 4-U  
INJECTION WELL COMPLETION DATA

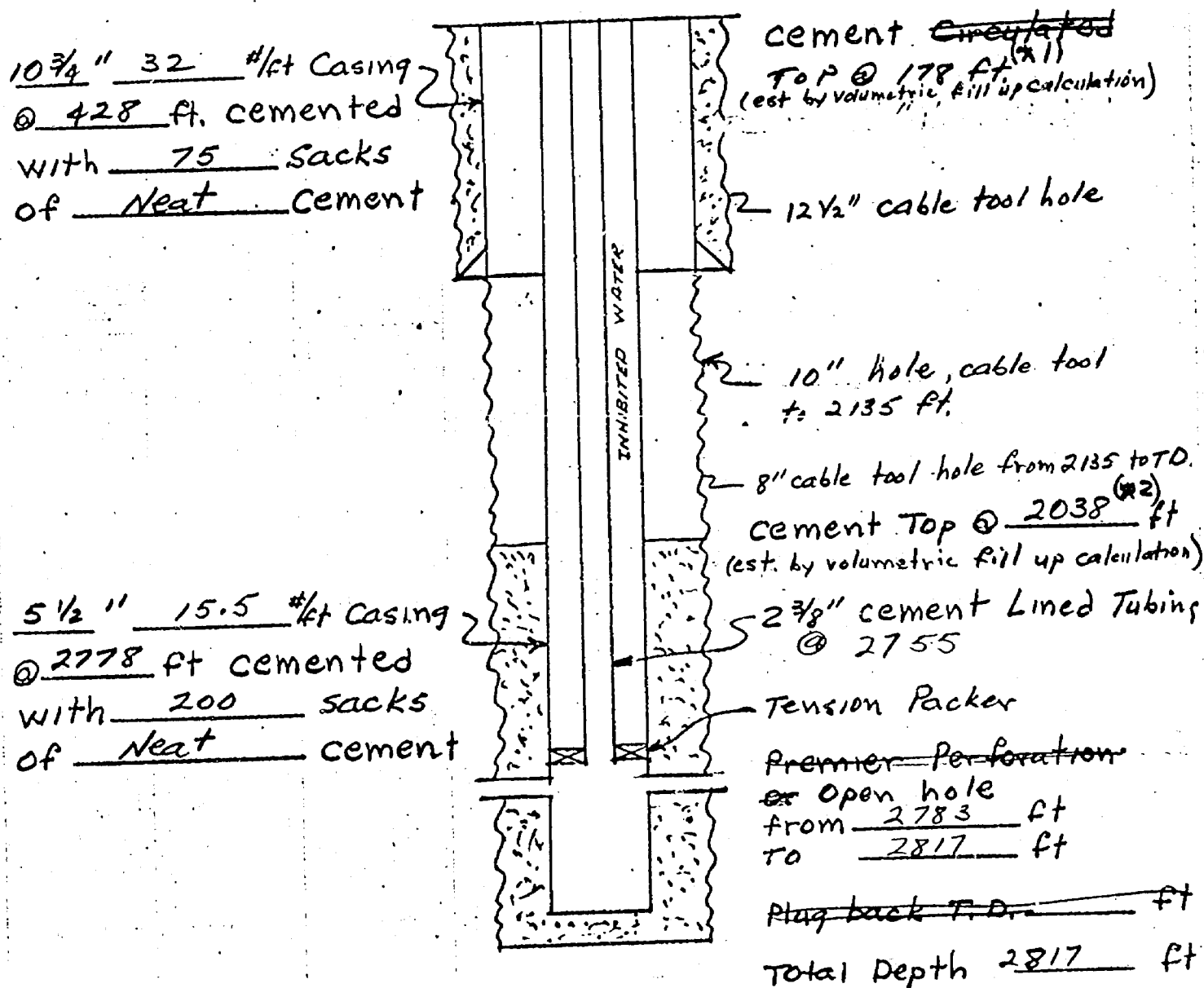
SHELL SPENCER FEDA 4  
OPERATOR LEASE WELL NO.  
LOCATION N - SEC 4 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO., N.M.



R.W. White 2-11-66

**EXHIBIT 4-G**  
**INJECTION WELL COMPLETION DATA**

<u>INTERNATIONAL</u>	<u>SPENCER FED</u>	<u>2</u>
OPERATOR	LEASE	WELL NO.
LOCATION <u>S - SEC 4 - T16S - R30E</u>		
WEST HENSHAW UNIT, EDDY CO, N.M.		



\*1 For a Gauge hole and no cement loss top of cement would be @ 56 feet.

\*2 For a Gauge hole and no cement loss top of cement would be @ 1856 ft.

R.W. White 2-11-66

# EXHIBIT 4-Q

## INJECTION WELL COMPLETION DATA

PAN AMERICAN BOSWORTH FFD

4

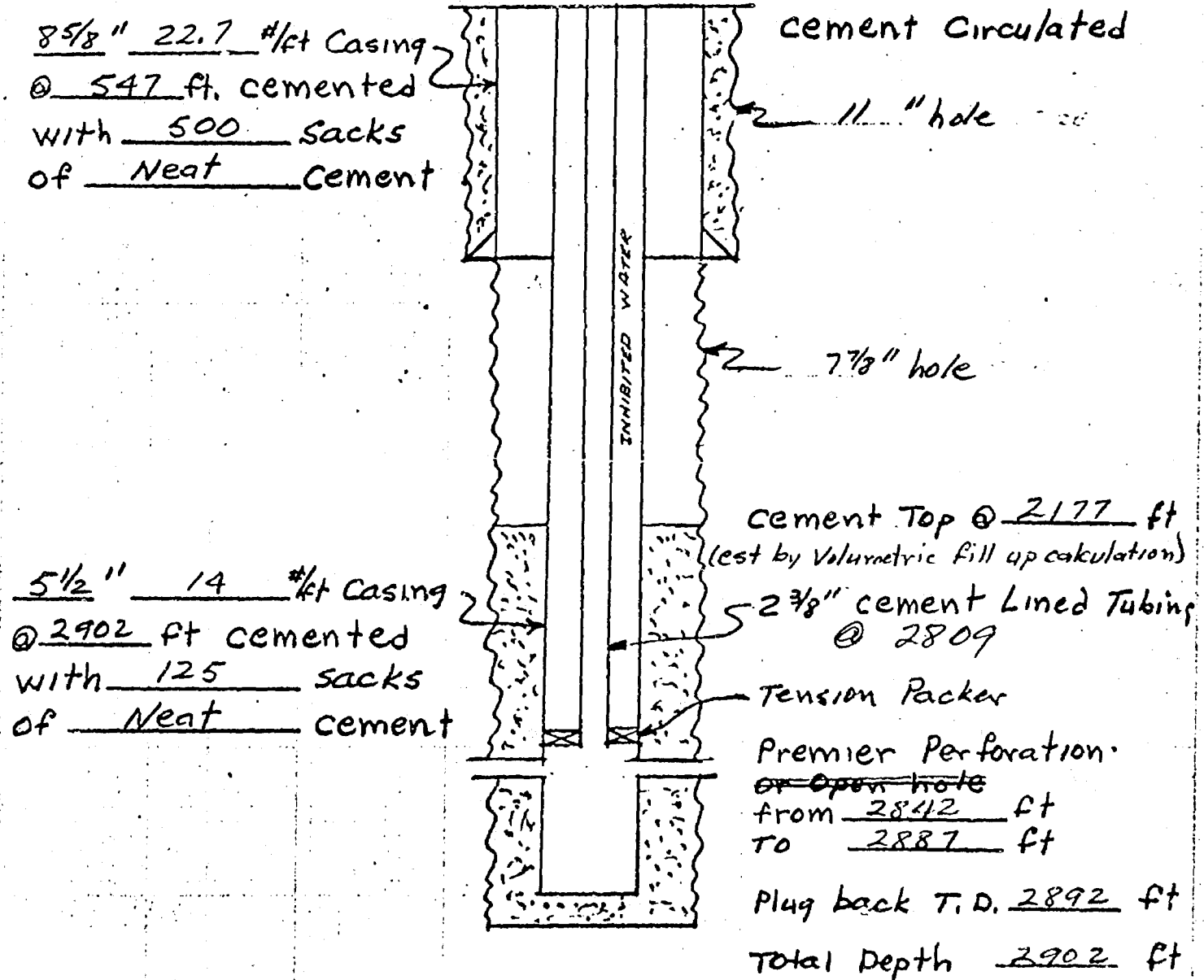
OPERATOR

LEASE

WELL NO.

LOCATION 9-SEC 4-T16S-R30E

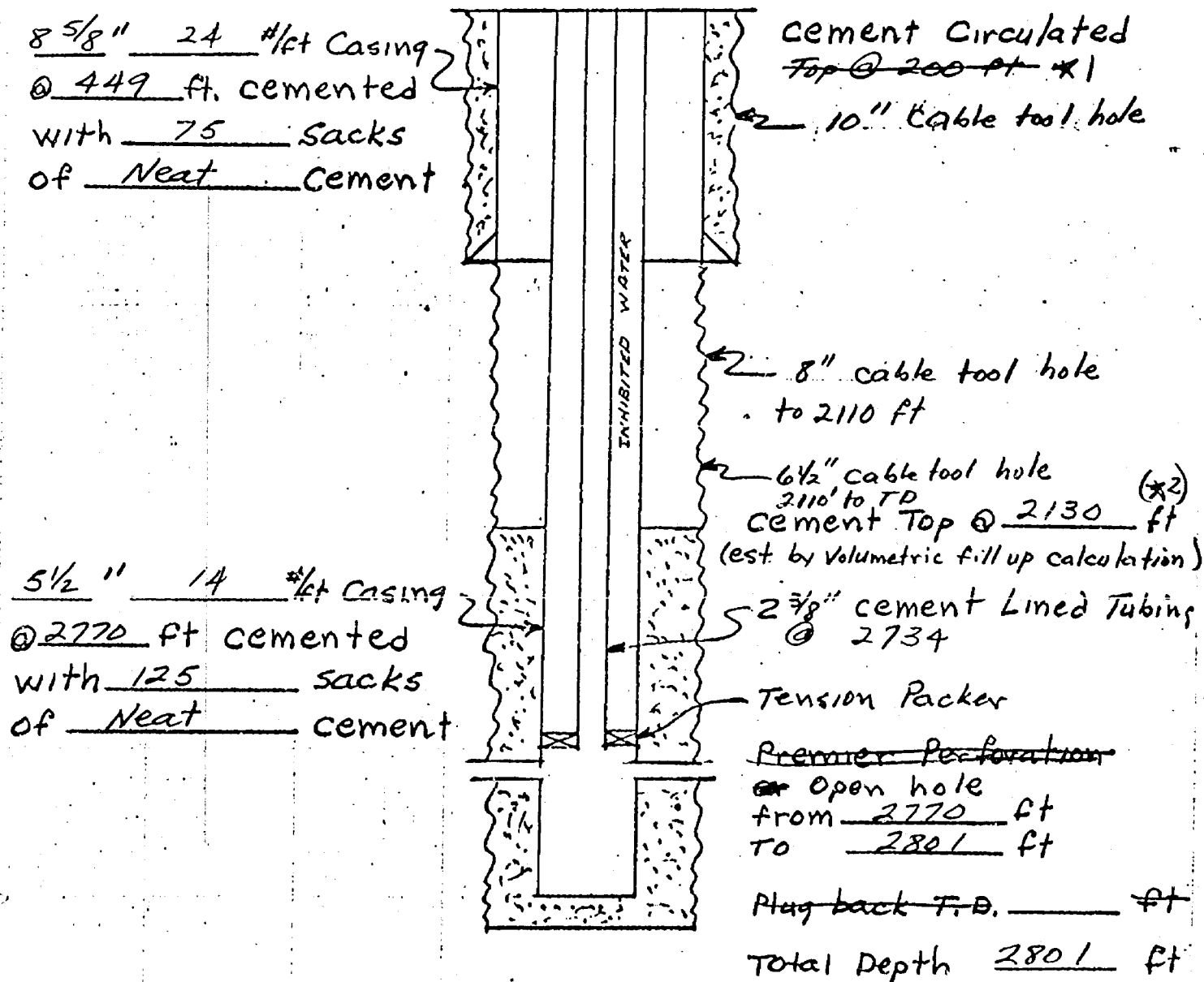
WEST HENSHAW UNIT, EDDY CO, N.M.



R.W. White 2-11-66

**EXHIBIT 4 - H**  
**INJECTION WELL COMPLETION DATA**

<u>INTERNATIONAL</u>	<u>SPENCER FED</u>	<u>3</u>
OPERATOR	LEASE	WELL NO.
LOCATION <u>U - SEC 4 - T16S - R30E</u>		
WEST HENSHAW UNIT, EDDY CO, N.M.		



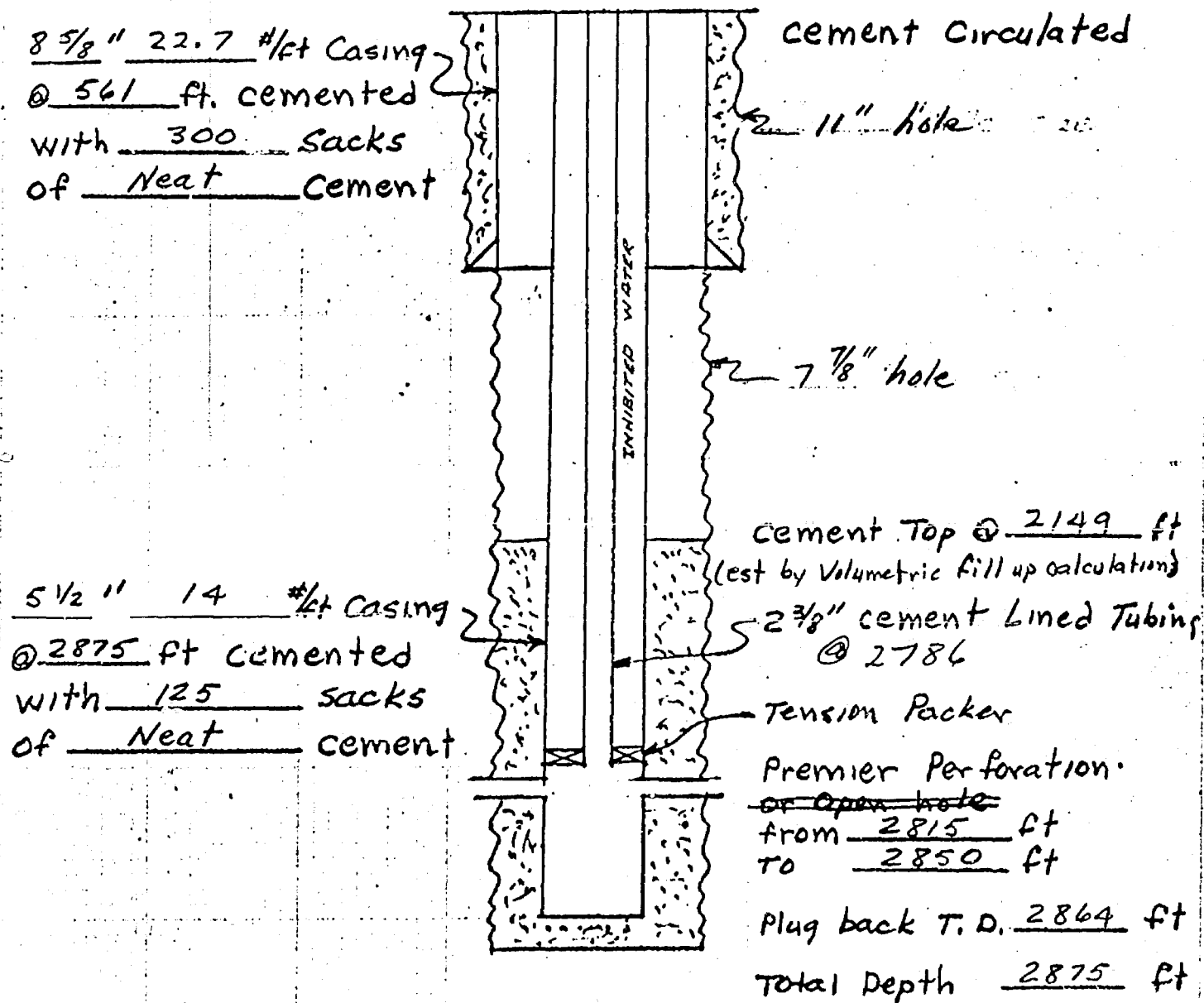
\*1 Volumetric fill up Calculations for Gauge hole.  
 and 20% cement loss indicate cement would circulate

#2 Conservative Estimate - For gauge hole and No cement  
 loss Top of cement would be 1453 feet.

R.W. White 2-11-66



**EXHIBIT 4-P**  
**INJECTION WELL COMPLETION DATA**  
PAN. AMERICAN   BOSWORTH FED   1  
**OPERATOR**   **LEASE**   **WELL NO.**  
**LOCATION**   W - SEC 4 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.



R.W. White 2-11-66

EXHIBIT 4-A  
INJECTION WELL COMPLETION DATA

FEATHERSTONE CROSBY FED  
OPERATOR LEASE

2  
WELL NO.

LOCATION 9 - SEC 5 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO, N.M.

8 5/8" 24 #/ft Casing  
@ 495 ft. cemented  
with 75 Sacks  
of Neat Cement

Cement Circulated  
(estimated from volumetric  
fill up calculations)

10" cable tool hole

7 7/8" cable tool hole  
to 2740

6 3/4" cable tool hole  
from 2740 to TD

Cement Top @ 2200 ft  
(Estimated from volumetric  
fill up calculation)

2 7/8" cement Lined Tubing  
@ 2734

Tension Packer

Premier Perforation

~~or open hole~~  
from 2760 ft  
to 2800 ft

Plug back T.D. \_\_\_\_\_ ft

Total Depth 2815 ft

5 1/2" 14 #/ft Casing  
@ 2815 ft cemented  
with 100 sacks  
of Neat cement

BEFORE EXAMINER NUTTER  
CIL CONSERVATION COMMISSION  
Appl. EXHIBIT NO. 4a-3  
CASE NO. 3378

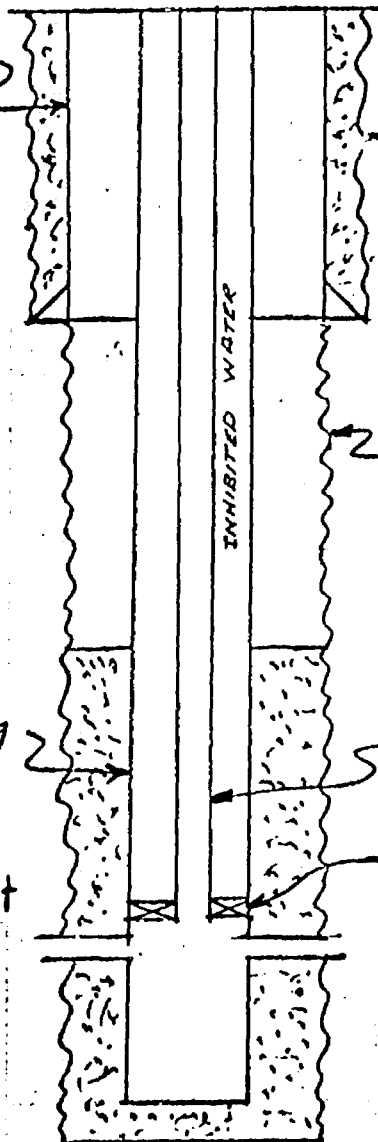
# EXHIBIT 4-B

## INJECTION WELL COMPLETION DATA

FEATHERSTONE    CROSBY FED    3  
 OPERATOR                  LEASE                  WELL NO.  
 LOCATION W - SEC 5 - T16S - R30E  
 WEST HENSHAW UNIT, EDDY CO., N.M.

8 5/8" 24 #/ft Casing  
@ 510 ft. cemented  
 with 75 Sacks  
 of Neat Cement

5 1/2" 14 #/ft Casing  
@ 2787 ft cemented  
 with 100 sacks  
 of Neat cement



Cement Circulated  
 (estimated from volumetric  
 fill up calculations)  
 10" cable tool hole

7 7/8" cable tool hole

Cement Top @ 2172 ft  
 (estimated from volumetric  
 fill up calculations)  
 2 7/8" cement Lined Tubing  
 @ 2726

Tension Packer

Premier Perforation  
 or ~~Open hole~~  
 from 2734 ft  
 to 2752 ft

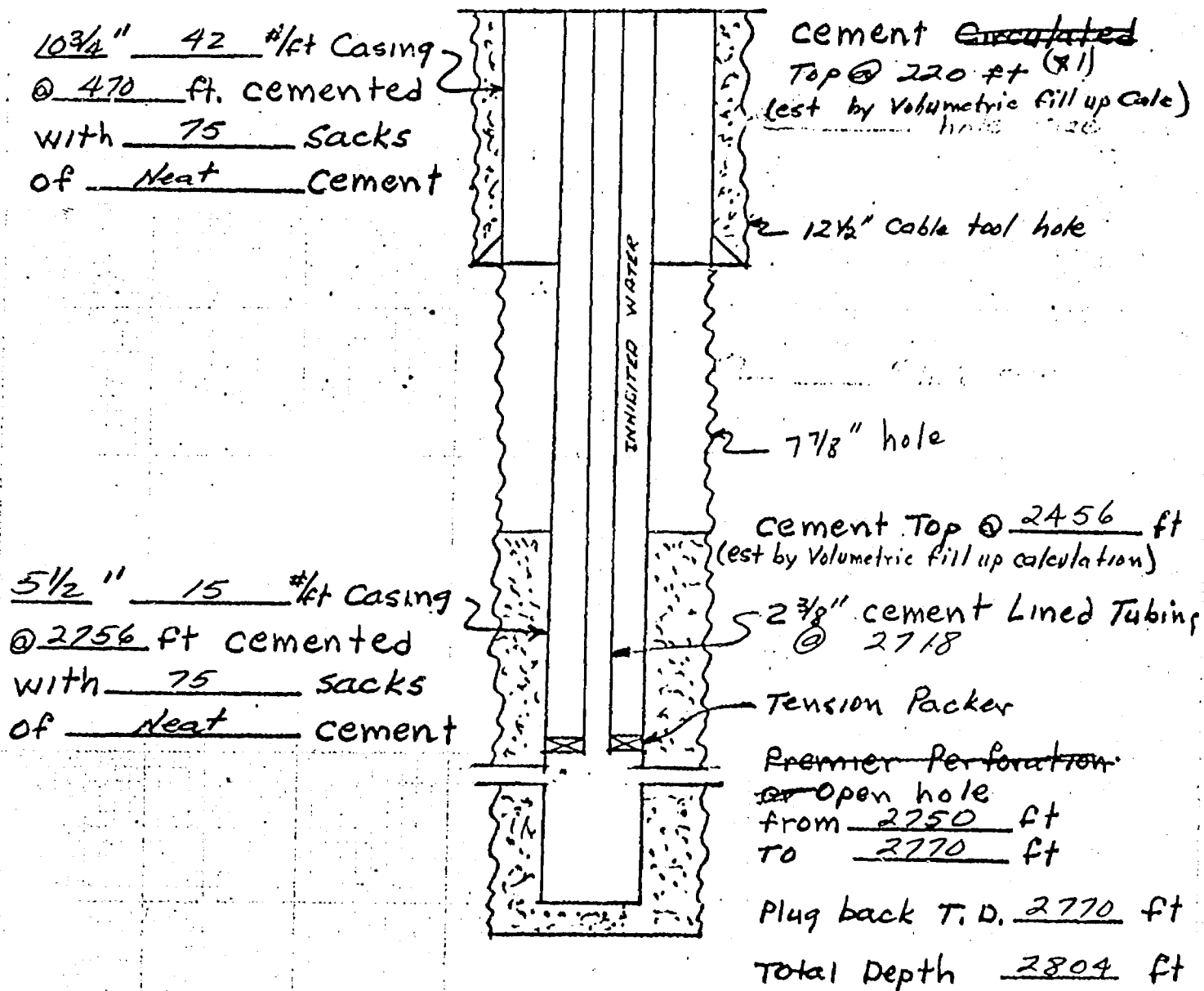
Plug back T.D. \_\_\_\_\_ ft

Total Depth 2800 ft

# EXHIBIT 4-I

## INJECTION WELL COMPLETION DATA

MOBIL FED. D 2  
 OPERATOR LEASE WELL NO.  
 LOCATION A - SEC 8 - T16S - R30E  
WEST HENSHAW UNIT, EDDY CO., N.M.



\*1 For Gauge hole and No cement loss  
 Cement Top would be 98 ft.

R.W. White 2-11-66

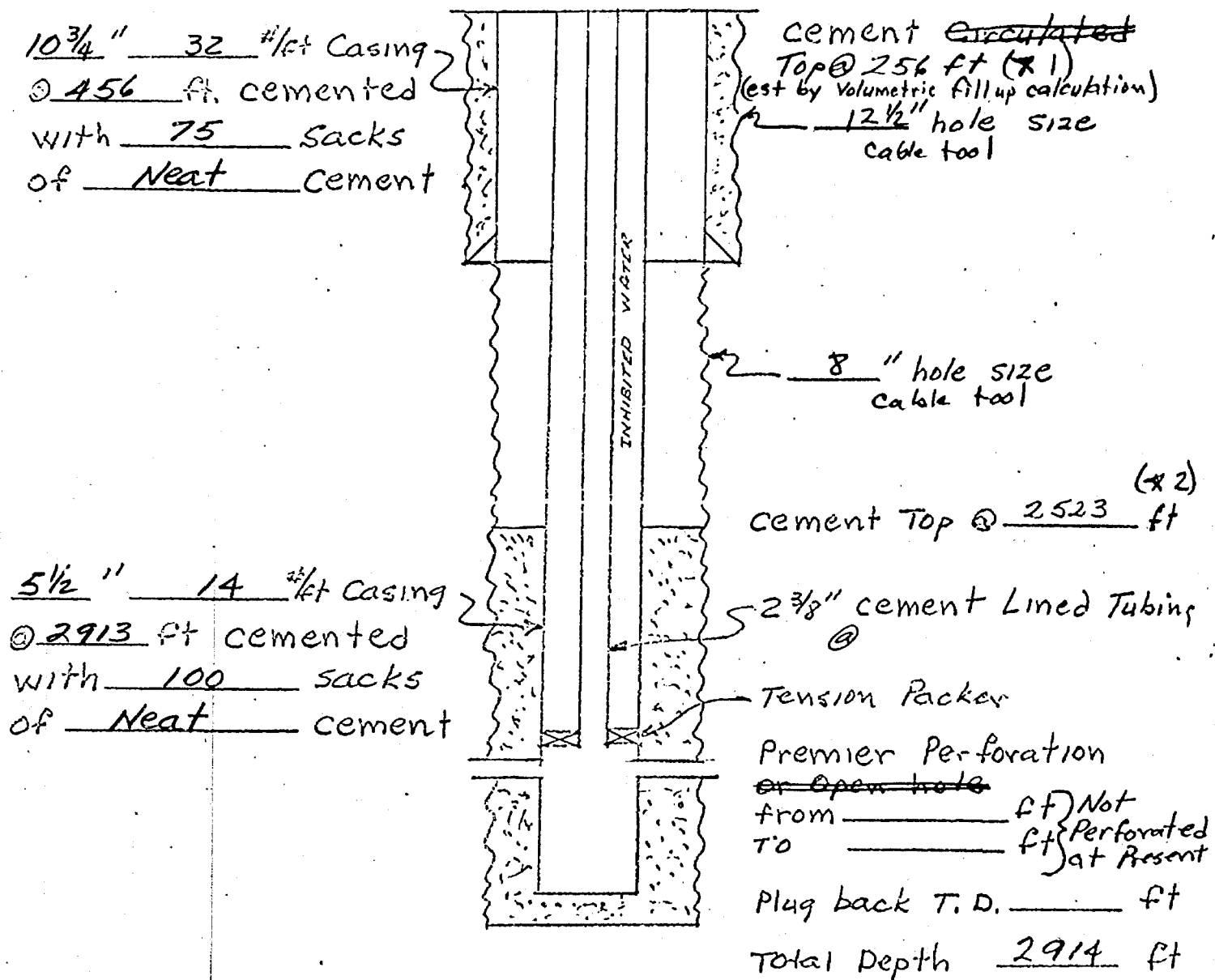
# EXHIBIT 4-O

## INJECTION WELL COMPLETION DATA

MOBIL FEDERAL P 8  
 OPERATOR LEASE WELL NO.

LOCATION d-SEC 10-T16S-R30E.

WEST HENSHAW UNIT, EDDY CO, N.M.



\*1 - For Gauge hole and No cement loss  
 Top of cement would be 84 feet

\*2 - For Gauge hole and No cement loss  
 Top of cement would be 2315 feet

R.W. White 2-11-66

# EXHIBIT 4-N

## INJECTION WELL COMPLETION DATA

MOBIL Fed P 7  
 OPERATOR LEASE WELL NO.

LOCATION C- SEC 10 - T16S - R30E

WEST HENSHAW UNIT, EDDY CO, N.M.

10 3/4" 32 #/ft Casing  
 @ 483 ft. cemented  
 with 75 Sacks  
 of Neat Cement

Cement ~~circulated~~  
 Top  
 @ 242 ft (\*1)  
 (est. from Volumetric fill up  
 calculation)

12 1/2" cable tool hole

8" cable tool hole

5 1/2" 14 #/ft Casing  
 @ 2847 ft cemented  
 with 100 Sacks  
 of Neat cement

Cement Top @ 2450 ft  
 (est from volumetric fill up calculation)

2 3/8" cement Lined Tubing  
 @ 2810

Tension Packer

~~Premier Perforations~~  
 or open hole  
 from 2847 ft  
 to 2908 ft

Plug back T.D. ft

Total Depth 2910 ft

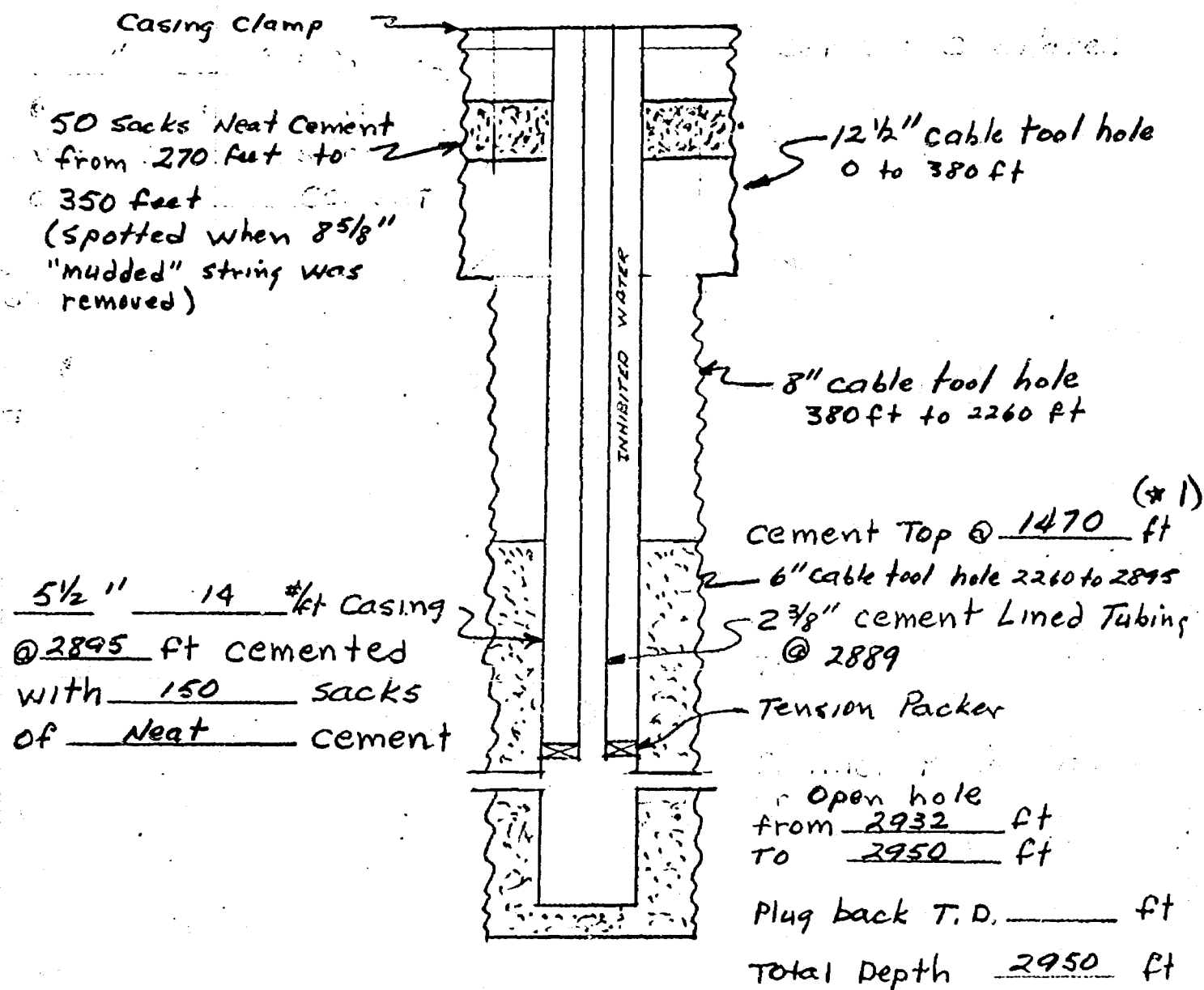
\*1 For Gauge hole and no cement loss  
 Top of Cement would be 111 feet

R.W. White 2-11-66

# EXHIBIT 4-C

## INJECTION WELL COMPLETION DATA

GENERAL AMERICAN STABLEIN Fed 7  
 OPERATOR LEASE WELL NO.  
 LOCATION A - SEC 10 - T16S - R 30E  
 WEST HENSHAW UNIT, EDDY CO., N.M.



R.W. White 2-11-66

CHAVES

R-30-E

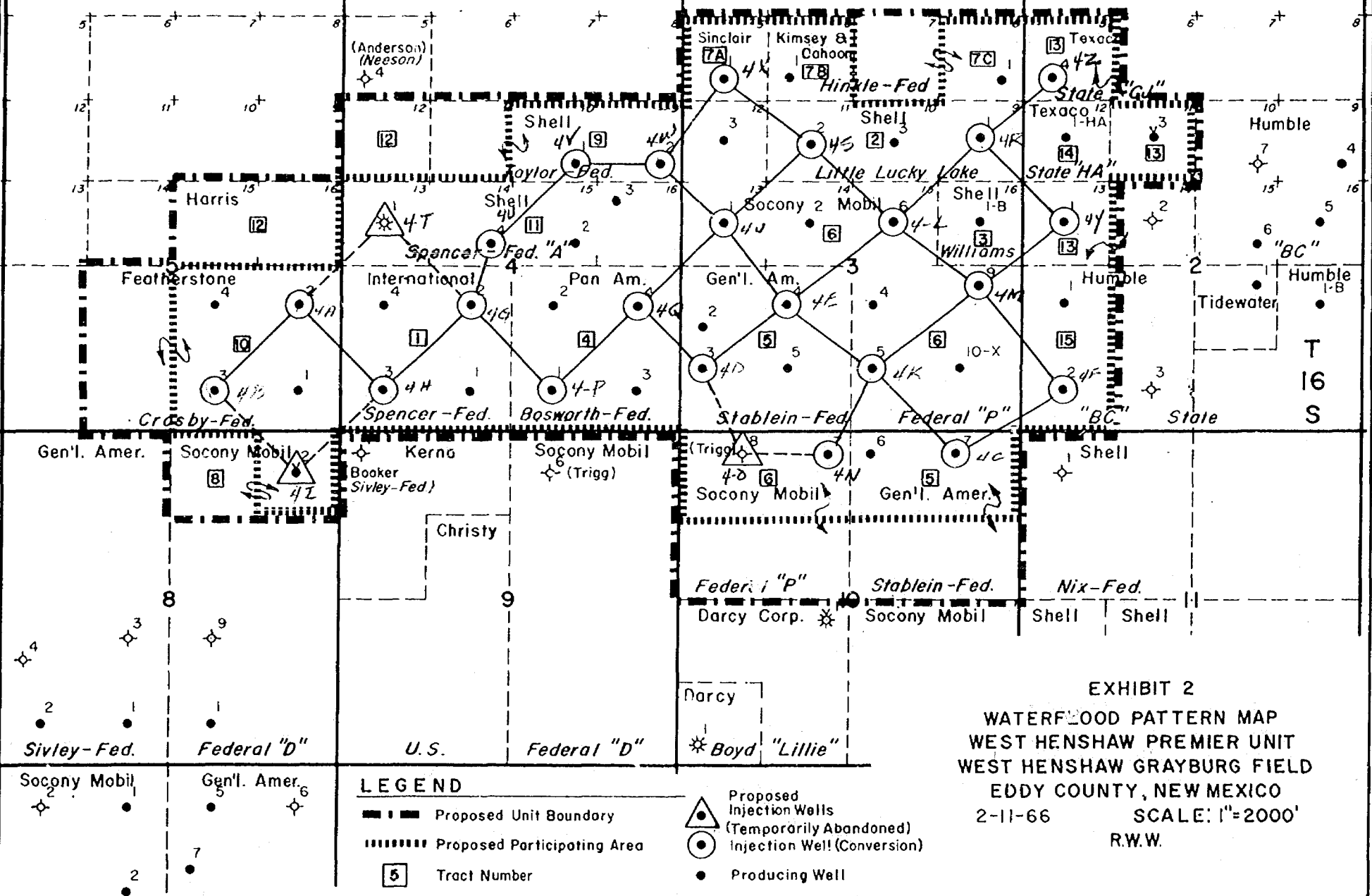
COUNTY

EDDY

Richardson &amp; Bass

P. R. Bass

Texaco COUNTY





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EXAMINER                      HEARING

Application of Socony-Mobil Oil  
Company for a unit agreement, Eddy  
County, New Mexico.

Application of Socony-Mobil Oil  
Company for a waterflood project,  
Eddy County, New Mexico.

Case No. 3378

TRANSCRIPT OF HEARING

## NEW MEXICO OIL CONSERVATION COMMISSION

## EXAMINER HEARING

SANTA FE, NEW MEXICOREGISTER

HEARING DATE

FEBRUARY 23, 1966

TIME:

9 A.M.

NAME:	REPRESENTING:	LOCATION:
HARLEY REAVIS	Hennrich Oil & Ref Co	Midland, TEX
J. T. JOHNAPELUS	TEXACO INC	Midland, TEXAS
J. E. Sperling	Mobil Oil Co	Albuquerque
R. W. White	Mobil Oil Co.	Hobbs, N. M.
John D Russell	Jim Ingram	Roswell, N. M.
Bob Kely	Texas Co with - blank - blank	S F.
N. D. Dierme	Ed Byram & Co	SF.
Frank E. Doby	State Engineer	Santa Fe
Ralph L. Gray	Tom Ingram	Artesia
John L. Loney	Mobil Oil Co	Albuquerque
Tom L. Ingram	Tom L. Ingram	Roswell

MR. NUTTER: The hearing will come to order. The first case this morning will be Case 3377.

MR. DURRETT: Application of Socony-Mobil Oil Company for a unit agreement, Eddy County, New Mexico.

MR. SPERLING: J. E. Sperling and John Cooney of Modrall, Seymour, Sperling, Roehl and Harris, Albuquerque, appearing for the applicant. We would like to ask that for the purposes of the testimony that Case 3377 be combined with Case 3378.

MR. NUTTER: We will call next Case 3378.

MR. DURRETT: Application of Socony-Mobil Oil Company for a waterflood project, Eddy County, New Mexico.

MR. NUTTER: Cases 3377 and 3378 will be consolidated for the purposes of testimony. Would you proceed, please?

MR. SPERLING: We have one witness, Mr. White, if he may be sworn.

MR. NUTTER: Stand and be sworn, please.

(Witness sworn.)

ROBERT W. WHITE

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q Would you state your name, please?

A Robert W. White, Senior Production Engineer, Mobil Oil Company, Hobbs, New Mexico.

Q Mr. White, are you familiar with the application which has been filed on behalf of Socony-Mobil Oil Company in Case No. 3377, which is for approval of a unit agreement?

A Yes, I am.

(Whereupon, Exhibit No. 1 in Case 3377 was marked for identification.)

Q Now, submitted with the application as originally filed with the Commission was a copy of the unit agreement. We have had marked as Exhibit 1 in Case 3377 a unit agreement which has been designated as the unit agreement for the West Henshaw Premier Unit, Eddy County, New Mexico. In what respects, if any, did this unit agreement vary from the unit agreement which was submitted with the application?

A It is the same.

Q It's content is the same?

A The exhibits have been added to this agreement that may have not been submitted with the original, the exhibits A, B and C in the attachment.

Q What do those exhibits consist of?

A They consist of a map of the unit area, which is Exhibit A, and Exhibit B to the unit agreement is the description of the tract and ownership, and Exhibit C is the tract participation.

Q Can you tell us whether or not the unit agreement

has been submitted to the United States Geological Survey and to the Commissioner of Public Lands for the State of New Mexico and what the status of approval is?

A Yes. We have submitted and received tentative approval from the United States Geological Survey and from the State Land Commissioner.

Q I assume that the unit agreement has been circulated among the operators which are shown on the exhibits to the unit agreement as interest owners in the unit area?

A Yes, it has.

Q Can you tell us what the status of sign-up is insofar as royalty interest is concerned, overrides and working interest?

A The royalty interest is all state and federal lands. The working interest, we have received or have indicated seventy-two percent approval on the unit agreement.

Q Do you anticipate total approval by all of the interest owners in the unit area?

A There is a one-well tract shown on Exhibit A as Tract 7-B, Kemsee and Cahoun Hinkle Federal No. 1 that has indicated that they will not joint the unit.

Q Is that a 40-acre tract?

A Yes, it is.

Q Is this unit agreement of the usual form required

by the United States Geological Survey in connection with proposed unit operations as contemplated by the agreement?

A Yes, it is. It has been circulated in the local office and in Washington and in conference between the United States Geological Survey and the State Land Commission the unit agreement was discussed and received tentative approval from both agencies.

Q This was a joint conference between Mobil as the proposed operator, the Commissioner of Public Lands' representative and the United States Geological Survey?

A Yes.

Q As a result of that conference were certain changes made in the form as originally proposed?

A Some modifications to the agreement were made. They have been encompassed in this unit agreement as presented.

Q What is the purpose of the unit agreement? What does it contemplate?

A The unit agreement is to provide for the most efficient waterflood secondary operation in the West Henshaw reservoir.

Q And the West Henshaw reservoir is made up of approximately what area acreagewise?

A It's made up of approximately 2400 acres that is included in the unit boundary located in Sections 2, 3, 4, 5, 8,

9 and 10, Township 16 South, Range 30 East.

Q And the unit area is, of course, described as well as depicted on the map of the unit area which is contained as an exhibit to the agreement?

A Yes, it is. It's described in the body and shown in Exhibit A.

Q What is the unitized substance?

A The unitized interval is the Premier interval. The unitized formation is defined as that portion of the Grayburg formation underlying the unit area, which includes the continuous stratigraphic interval, occurring between a point one hundred feet above the top of the Premier zone and the base of the Grayburg formation, said interval having been penetrated between 2733 feet and 2860 feet, and the top of the Premier zone having been found at 2833 feet beneath the derrick floor in the Little Lucky Lake Unit Shell Well No. 1, located in Lot 9 of Section 3, Township 16 South, Range 30 East, NMPM, Eddy County, New Mexico, as recorded on the sonic log and Laterolog, said well dated May 28, 1959.

Q Mr. White, in your opinion would the approval of the unit agreement by the Commission be in the best interest of the prevention of waste and protection of correlative rights?

A Yes, it would.

MR. SPERLING: I think that's all I have.

MR. NUTTER: Does anyone have any questions of this witness? The same witness is going to appear in the waterflood case?

MR. SPERLING: Yes.

MR. NUTTER: Go ahead with your waterflood case then.

(Whereupon, Exhibits No. 1 through 3 and 4a through 4z were marked for identification)

Q (By Mr. Sperling) Now, Mr. White, would you refer to what has been marked as Exhibit 1 in Case 3378 and tell us what that shows and what it is?

A Exhibit 1 is the lease map of the West Henshaw Premier area showing all the wells and leases within a two-mile radius of the proposed injection. The unit boundary is outlined and the proposed injection wells are shown on Exhibit 1. Exhibit 2 is an enlargement of Exhibit 1, showing more detail of the pattern. The proposed pattern is a five-spot with certain modifications because of irregular spacing on 40 acres.

Q Well, then, the Exhibit 2 is simply a larger scale indication of the unit area with the injection wells indicated as shown by the legend to the exhibit?

A Yes, it is. There will be twenty-six injection wells in the proposed area.

Q Now, I believe you stated in connection with the



unit agreement the unitized interval which is proposed to this waterflood, I assume that Exhibit 3 is a representative log of the typical injection well as proposed for the project?

A Yes. It's a representative log which shows the unitized interval and the top of the Premier zone, which will be the flooded interval.

Q Would you point out what well the log represents?

A Yes. The log represents the Shell Little Lucky Lake Unit No. 1 well located in Lot 9 of Section 3, Township 16 South, Range 30 East. That will become Tract 2, Well 1.

Q And that is shown on Exhibit 2?

A Yes, it is.

Q Now, would you please refer to Exhibit 4 and tell us what those in combination represent? I believe they're identified as Exhibits 4a through z, is that correct?

A Yes. Exhibits 4a through z are schematic diagrams of the proposed injection well. There's one diagram for each well. In general the wells show the casing size and depth, the number of sacks of cement used, the cement tops, the perforated interval of the Premier or the open hole interval and the tubing string set just to the top of the injection formation set with tension packers. It is proposed that 2-3/8ths inches of cement-lined tubing will be used as the injection string <sup>and</sup> ~~in~~ the annulus between the injection

string and the casing will be filled with inhibited water. All of the sketches are similar or identical with the exception of Exhibit 4c.

Q In what respect does it differ from the others?

A Exhibit 4c represents the completion technique that was used with the cable tool drilling operation with this well at this particular time and it's significant difference is in effect that 8-5/8ths surface string was mudded during the drilling operations and then pulled from the well and fifty sacks of cement were dumped around the top of the 5-1/2 inch casing string. The annulus was then packed off at the surface and a cement sill was placed and the casing was swung from a casing clamp on the cement sill at the surface.

Q Well, within this interval are there any fresh water zones encountered or any water of any kind?

A There is some local water at some sites at about 250 feet to 300 feet above an anhydrite section that indicates to be of minor aerial extent.

Q Is any use being made of this water that you think is present on a rather local restricted area?

A Not to my knowledge.

Q What do you propose to use as a source of water for injection?

A It is proposed to buy fresh water from commercial

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water companies operating in the area and likely will be the Double Eagle Corporation of New Mexico for whom we will purchase makeup water for the initial fillup period of the waterflood and as soon as produced water becomes available it will be included and used in the waterflood operation.

Q Would you give us some of the history of this particular reservoir? Is it in an advanced stage of depletion?

A Yes, it is. The field was discovered in 1957. The unit area of production for September 1965 was 3,475 barrels of oil from 39 wells, which is an average daily oil production of about three barrels per well per day. In addition to the 39 wells there are seven wells which are shut in and two temporarily abandoned.

Now the unit area has reached the advanced stage of depletion. Now the original bottom hole pressure has declined from an original of a thousand and thirty pounds to less than two hundred pounds at the present. The cumulative production from the unit area was 1,717,000 barrels of oil as of January 1, 1966, which represents 99 percent of the estimated unit area ultimate primary of 1,730,000 barrels.

Q I don't believe we covered the proposed tract participation which is set forth, I believe, in Exhibit 1 in Case 3377. What was the basis used for tract participation?

A Tract participation will be on two-phase formula,

phase 1 will be 100 percent current production based on the current production interval from September 1962 to February 29, 1964 which is an eighteen-month period. Phase 2 will be on the basis of 100 percent ultimate primary. Phase 1 will be in effect until a total ultimate primary of 1,750,000 barrels has been produced from the unit area.

Q What is your estimate of the primary recovery which has been recovered?

A To date there has been 1,717,000 barrels produced and the ultimate primary based on a reasonable economic limit is 1,730,000 barrels. It is estimated that the proposed waterflood will recover an additional two million barrels of oil over the remaining primary.

Q At what rate do you propose to inject water initially?

A It is proposed to initiate injection at a total rate of 6,500 barrels of water per day into 26 injection wells, which is at the rate of 250 barrels per well. The well-head pressure after 50 percent fillup is anticipated to be approximately 1800 pounds. Injection equipment will be designated for a well-head working pressure of 2,000 pounds. All the injection facilities will be internally coated.

Q What is the drive mechanism as far as this reservoir is concerned?

A The reservoir produced primarily from solution gas drive with some slight gas cap of minor importance being present. There is no indication of any active water influx. There is no water production from any wells within the unit area.

Q I believe you mentioned that there had been a substantial decline in bottom hole pressure in this reservoir. Did you give the figures on that?

A Yes, I did.

Q Have you made an analysis of the properties of the reservoir?

A The rock and fluid properties of the reservoir from a volumetric standpoint might be summarized as follows: The average depth of Premier production is 2900 feet. The estimated oil-productive area is 1880 acres. The estimated average pay thickness is 11 feet. The estimated average porosity is fifteen and a half percent; the connate water saturation is estimated at 35 percent. The original formation volume factor of the crude is estimated to have been 1.176 barrels per barrel.

Q What completion methods were used in this field in its primary development?

A Some of the wells were drilled by cable tool and the Premier section was open hole completed, others were

completed by the techniques of setting the oil string through and perforating the Premier interval. The individual completions are shown on Exhibit 4a through z.

Q Is there anything further you would like to add, Mr. White?

A No.

Q Do you feel that the approval of this application in 3378 would be in the best interest of prevention of waste and the protection of correlative rights?

A Yes, I do.

MR. SPERLING: I believe that's all.

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

MR. IRBY: I would like to ask a couple of questions.

MR. NUTTER: Okay.

MR. IRBY: Frank Irby, State Engineer's Office.

CROSS EXAMINATION

BY MR. IRBY:

Q Mr. White, referring to your Exhibit 4 nought which is your Mobil Federal "P" No. 8 well --

A Yes.

Q -- where will the packer on the end of the tubing be set with respect to the cement top surrounding the 5-1/2 inch casing?

A It will be set approximately 30 feet above the interval to be perforated, which has not been picked at this date. It would be at approximately 2650 feet or 2750 feet.

Q Then you'd say it would be better than 200 feet below the top of the cement that I asked you about?

A Yes, sir.

Q Now, referring to your Exhibit 4f, which is your Humble State "BC" No. 2, is the casing in that hole actually 2-7/8ths inch?

A Yes, it is.

Q And you intend to put 2-3/8ths inch tubing inside that?

A No, sir, we'll have to use a smaller diameter tubing. That 2-3/8ths inch is incorrect as shown on this sketch and should be corrected to 1-1/2 inch.

MR. IRBY: That's all the questions I have. Thank you.

BY MR. NUTTER:

Q Now, you stated, Mr. White, that there was some water in the range from 250 to 300 feet. I haven't had a chance to look at all of these exhibits, but in each case, with the exception of that one well, is there surface pipe set and cemented below that water?

A Yes, there is.

Q Also in each case you have your production string down there near the pay, either at the top of the pay or through the pay, and perforations and cement on that. Now, what is the minimum height that that cement comes on these wells above the shoe of the casing?

A Minimum would be 250 to 300 feet.

Q And in each one of these cases you are going to run a string of tubing in these injection wells and you are going to set a packer down, within what interval from the casing shoe?

A Within 30 feet of the casing shoe within one joint.

Q Or the perforation?

A Yes, sir.

Q Within 30 feet. That would be on the bottom joint of casing you might say?

A Yes, sir.

Q In each case you will also have inhibited water behind the tubing?

A Yes, sir, we will.

Q I missed the figure that you gave. You said in September of 1965 you produced 3,475 barrels and that was from how many wells?

A That was from 39 wells.

Q For an average of three barrels per well per day?



A Yes.

Q And you've recovered 1,717,000 barrels out of an estimated ultimate primary of 1,730,000?

A Yes.

Q And you estimate two million barrels on secondary?

A Yes, sir.

MR. NUTTER: Are there any other questions of Mr. White? He may be excused.

(Witness excused.)

MR. SPERLING: Mr. Examiner, I would like to offer Exhibit 1 in Case 3377 and Exhibits 1 through 4 in Case 3378.

MR. NUTTER: Exhibit 1 in Case 3377 will be admitted, Exhibits 1 through 3 and 4a through 4z in Case 3378 will be admitted in evidence.

(Whereupon, Exhibit 1 in Case 3377 and Exhibits 1 through 3 and 4a through 4z were offered and admitted in evidence.)

MR. NUTTER: Do you have anything further in either case, Mr. Sperling?

MR. SPERLING: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in either of these cases?

MR. KELLY: Texaco is a working interest owner and they would like to concur in the cases.

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MR. NUTTER: Thank you, Mr. Kelly. Anything further? We will take the cases under advisement.

STATE OF NEW MEXICO )  
 ) SS  
COUNTY OF BERNALILLO )

I, ADA DEARNLEY, 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 24th day of February, 1966.

*Ada Dearnley*  
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner Hearing of Case No. 3377, 3378 heard by me on 2/23, 1966.  
*W. J. [Signature]*, Examiner  
New Mexico Oil Conservation Commission

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