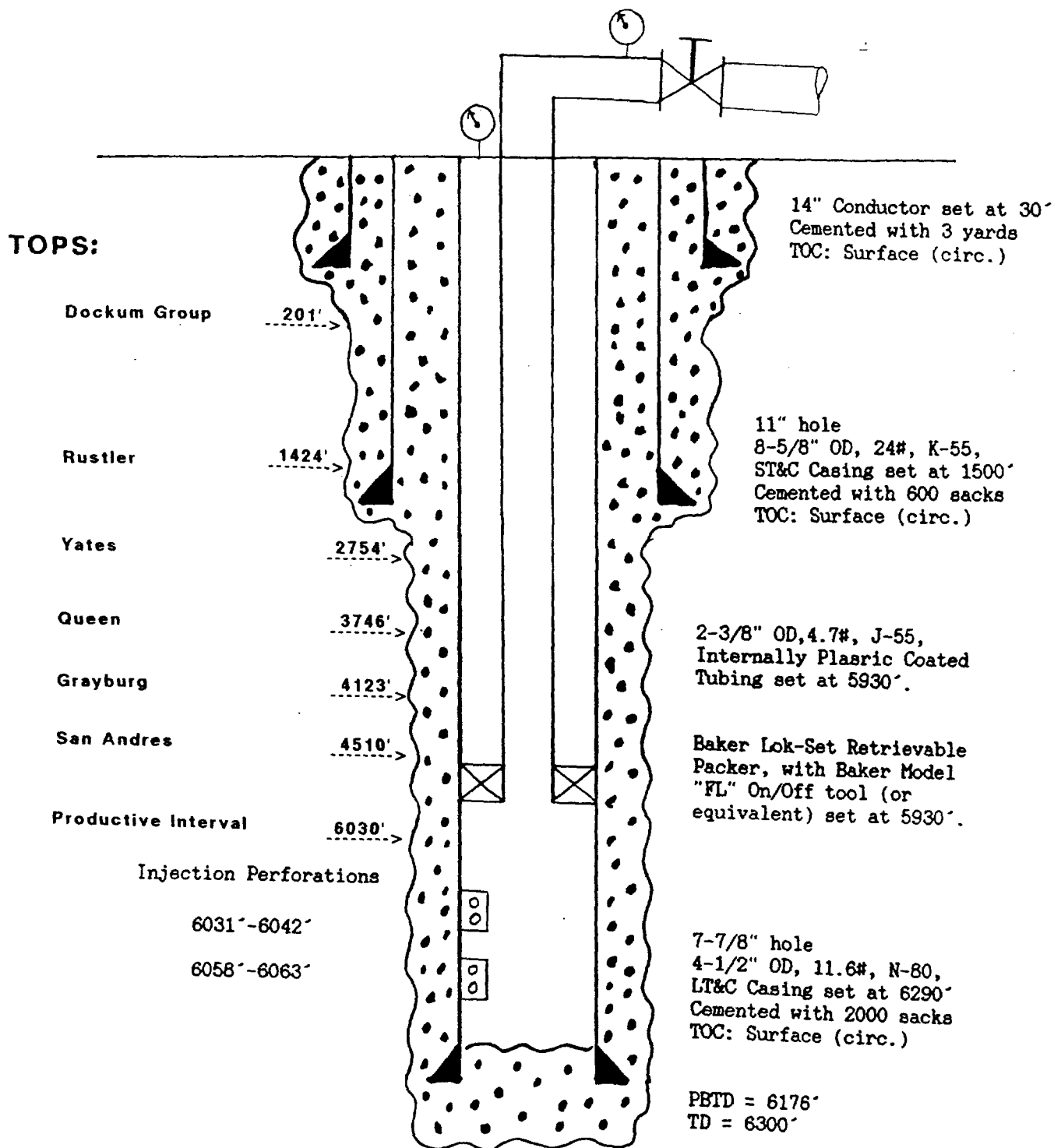


PROPOSED INJECTION WELL

PHILLIPS PETROLEUM COMPANY

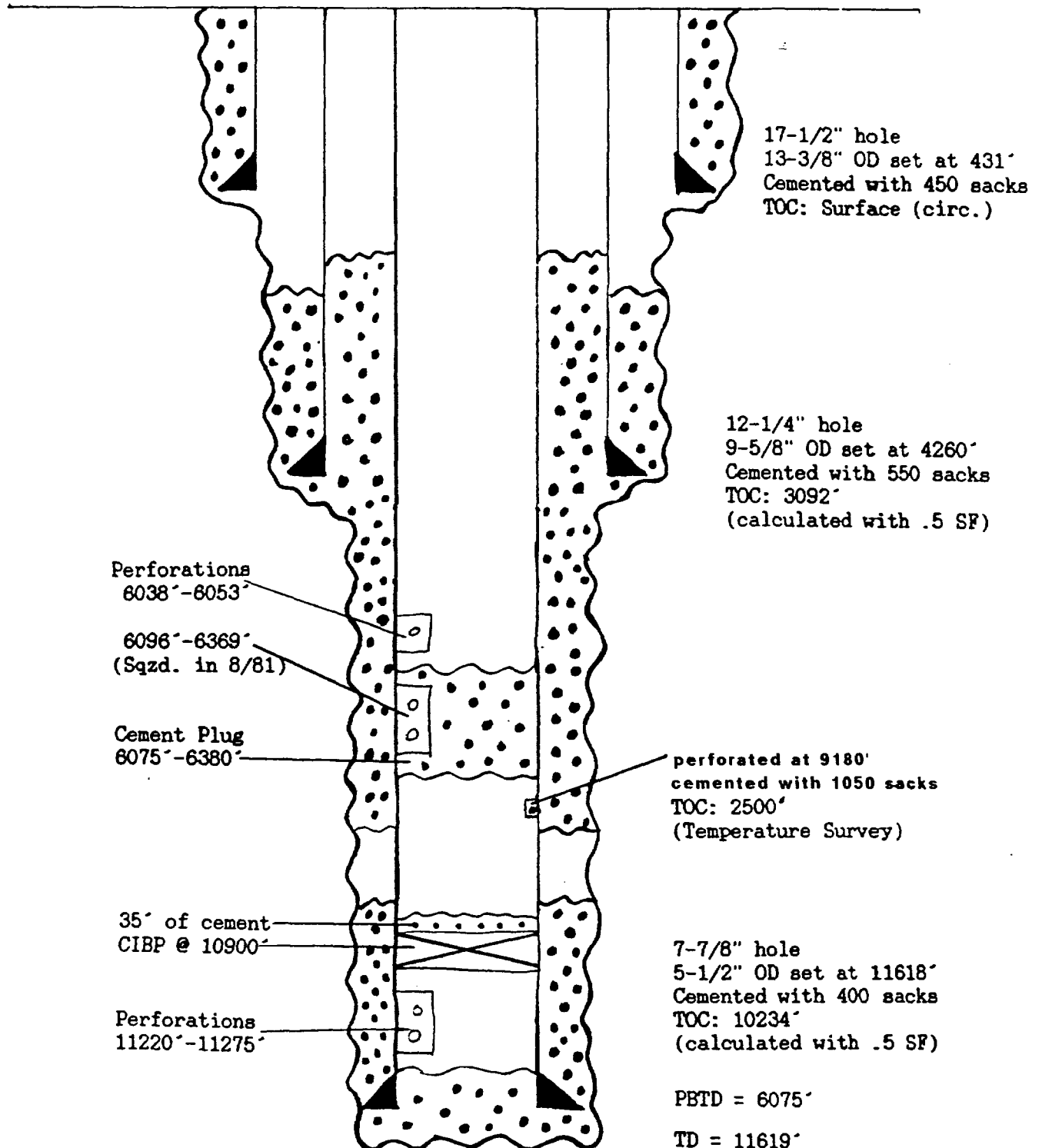
Leamex Well No. 26
660' FSL & 990' FWL
Section 22, T-17-S, R-33-E
Lea County, New Mexico



ATTACHMENT NO. 2

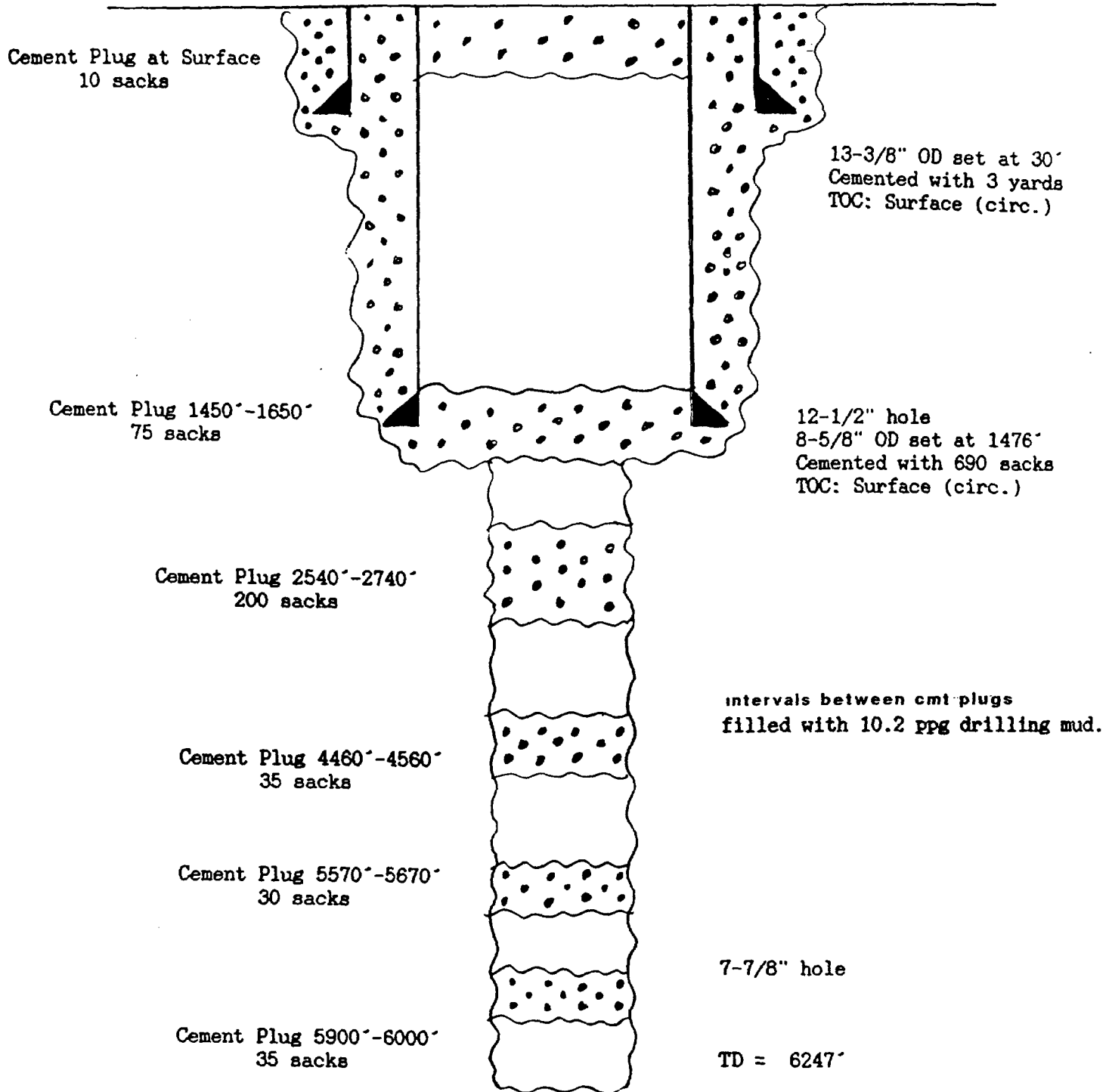
PHILLIPS PETROLEUM COMPANY

Devon State Well No. 2
 660' FSL & 2130' FEL
 Section 22, T-17-S, R-33-E
 Lea County, New Mexico



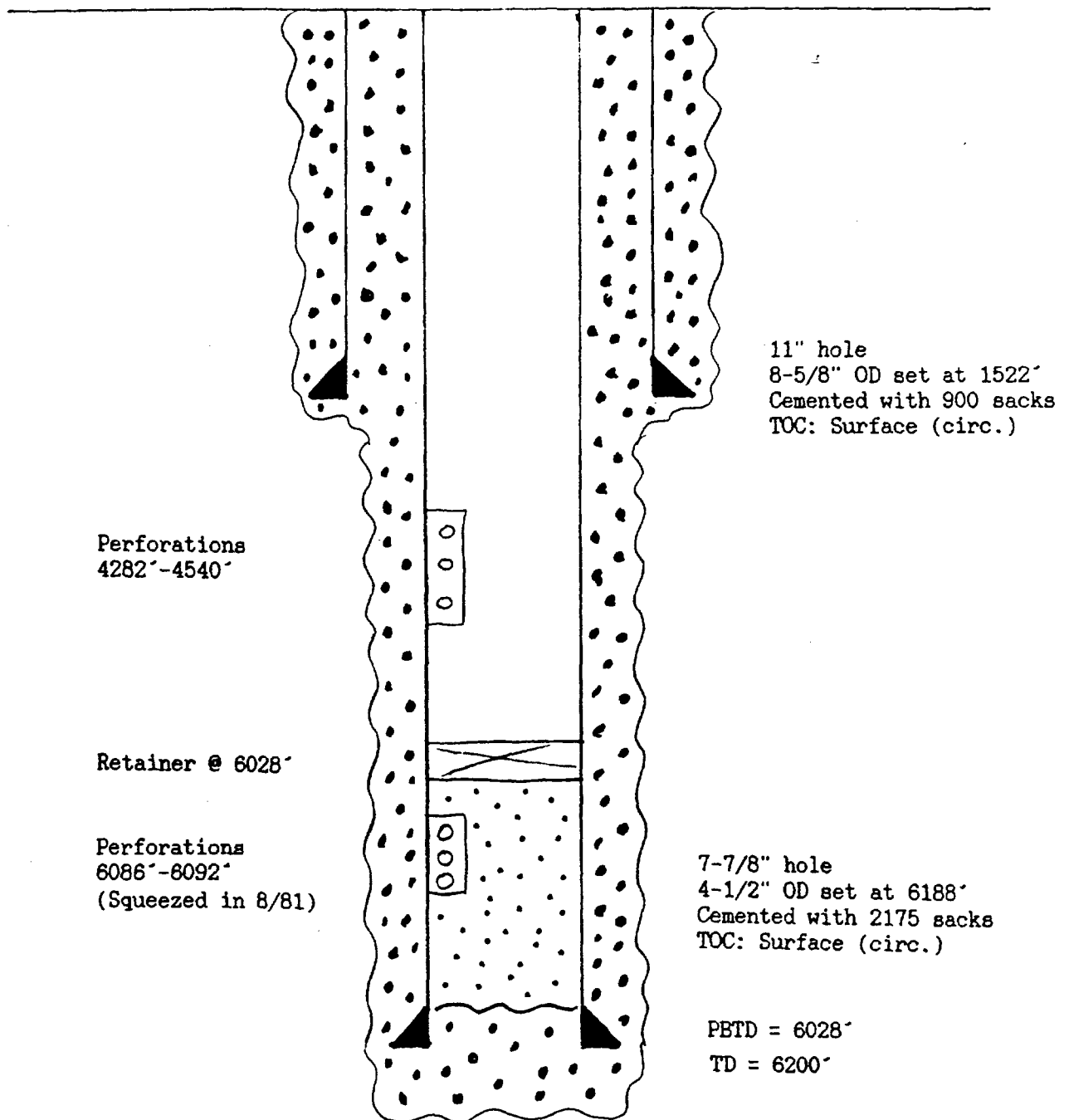
PHILLIPS PETROLEUM COMPANY

Devon State Well No. 3
1710' FSL & 2300' FEL
Section 22, T-17-S, R-33-E
Lea County, New Mexico



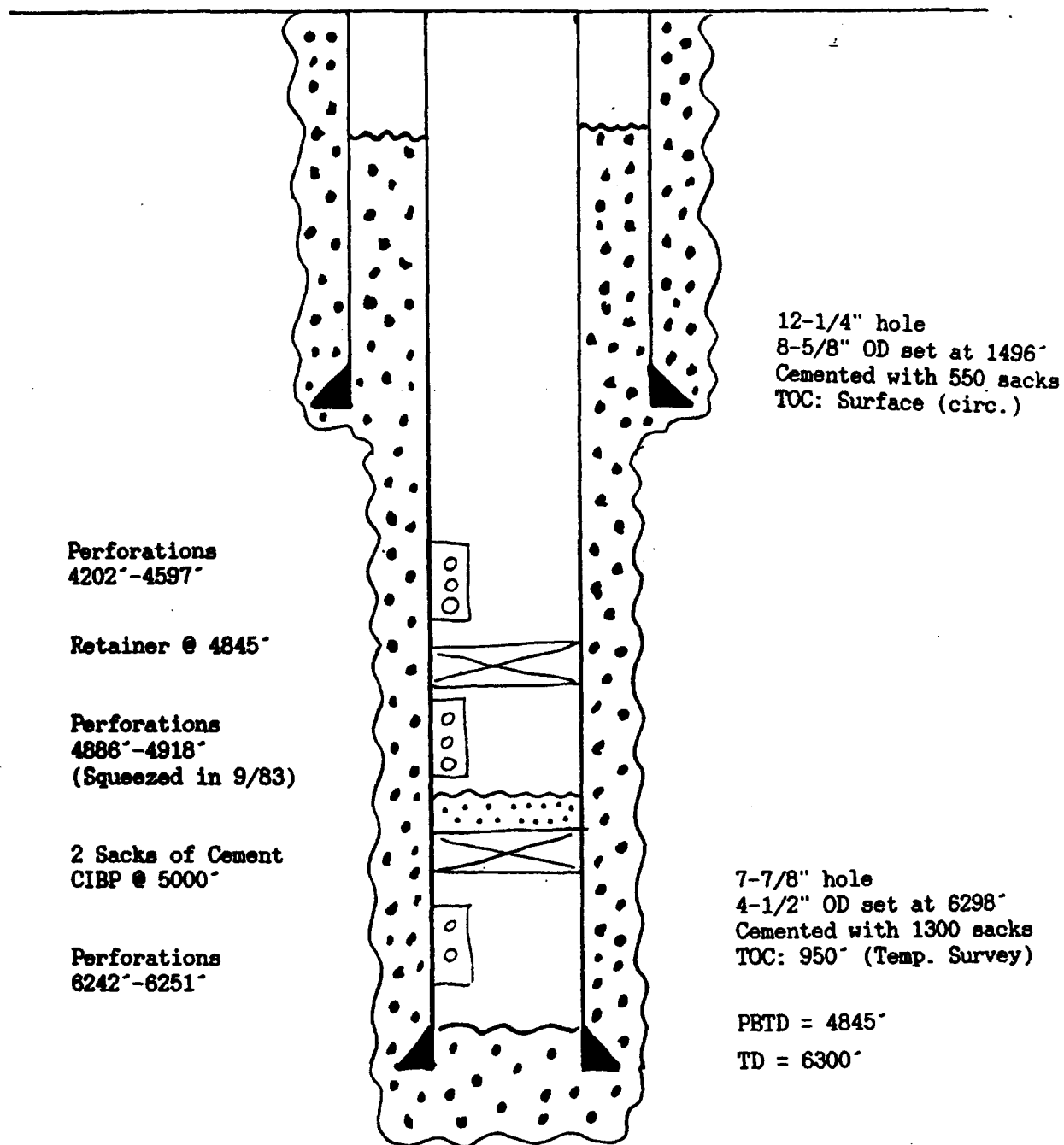
PHILLIPS PETROLEUM COMPANY

Leamex Well No. 30
660' FSL & 660' FEL
Section 21, T-17-S, R-33-E
Lea County, New Mexico



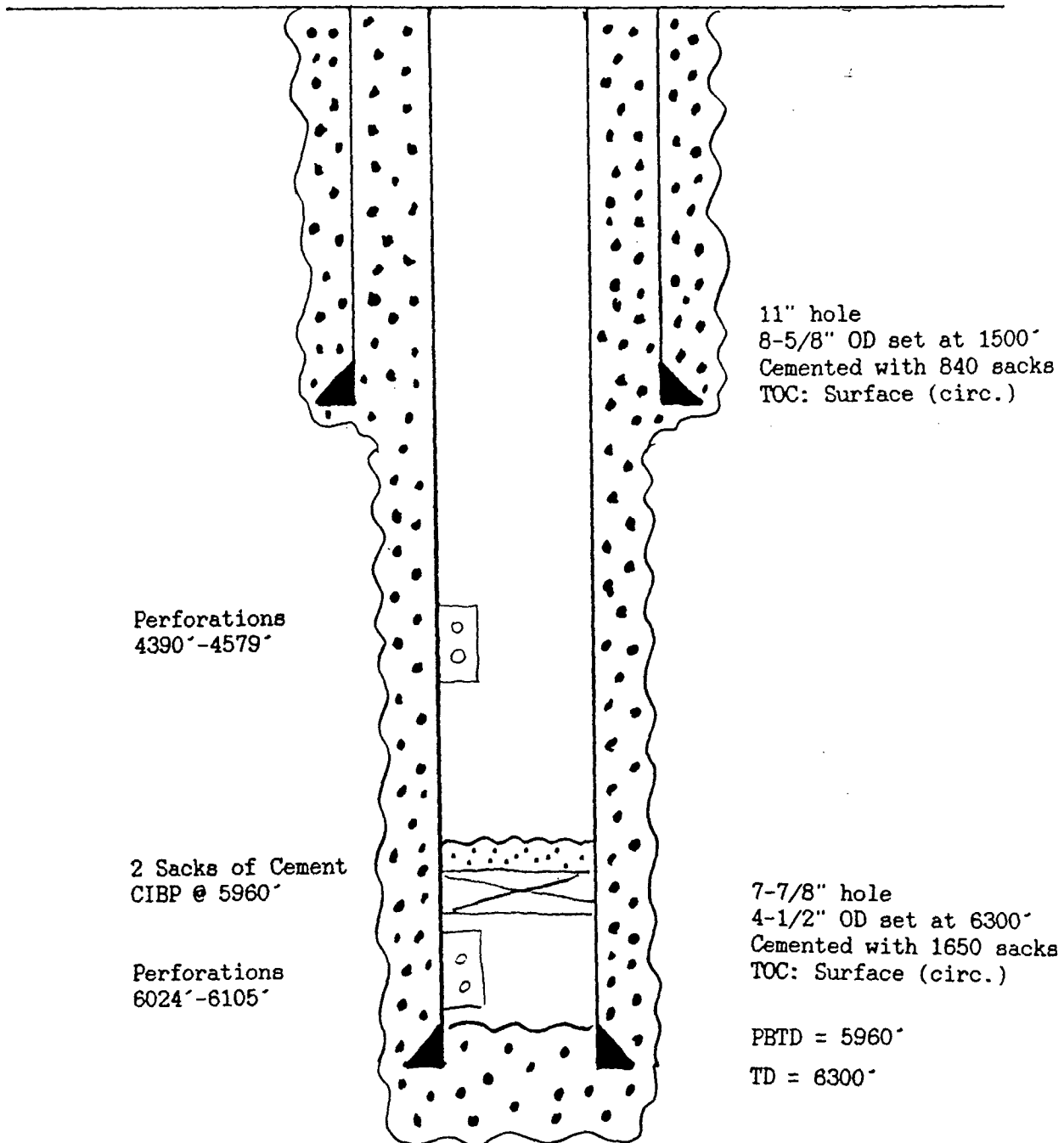
PHILLIPS PETROLEUM COMPANY

Leamex Well No. 35
2130' FSL & 1980' FWL
Section 22, T-17-S, R-33-E
Lea County, New Mexico



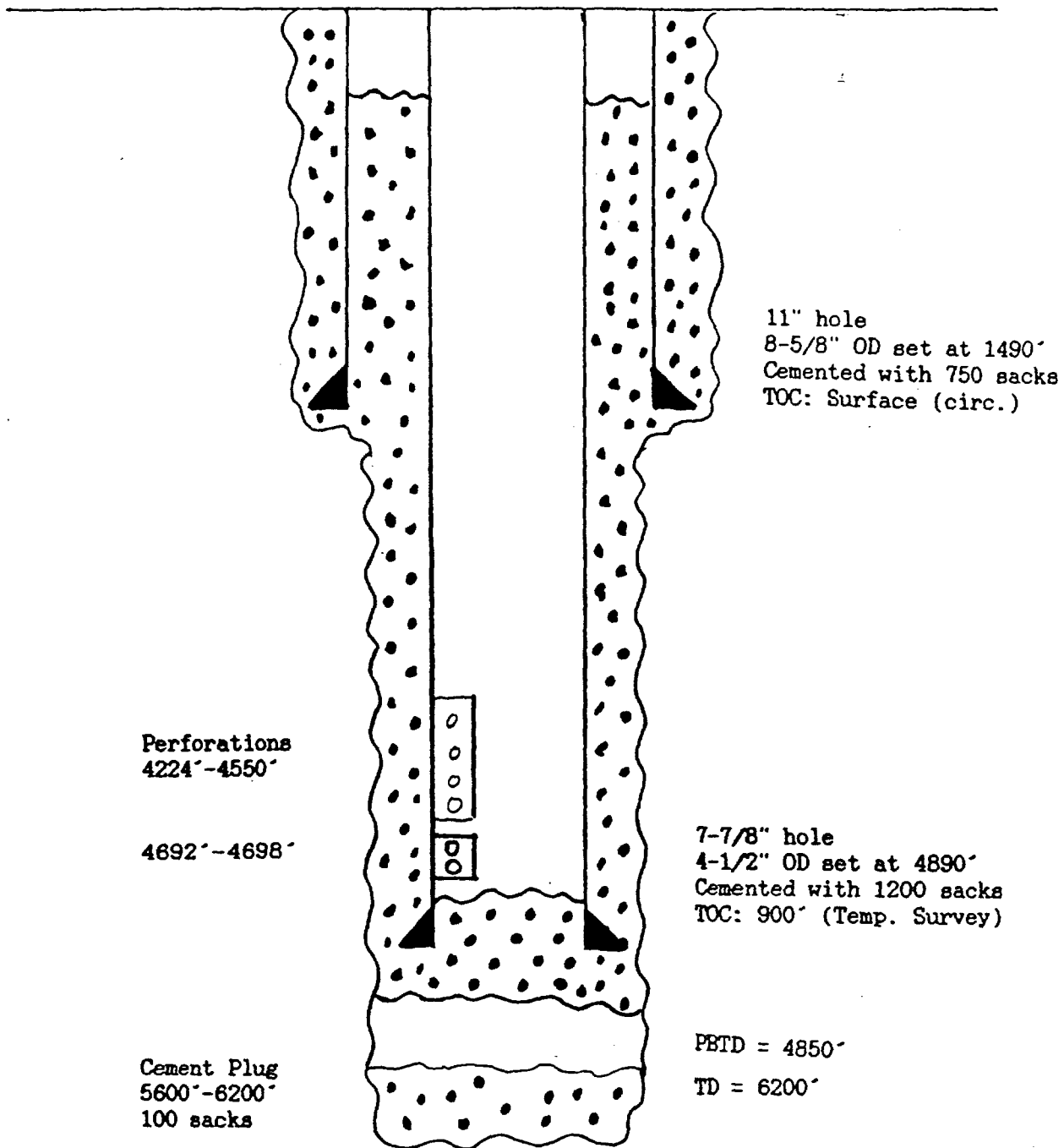
PHILLIPS PETROLEUM COMPANY

Philmex Well No. 13
330' FNL & 1980' FEL
Section 27, T-17-S, R-33-E
Lea County, New Mexico

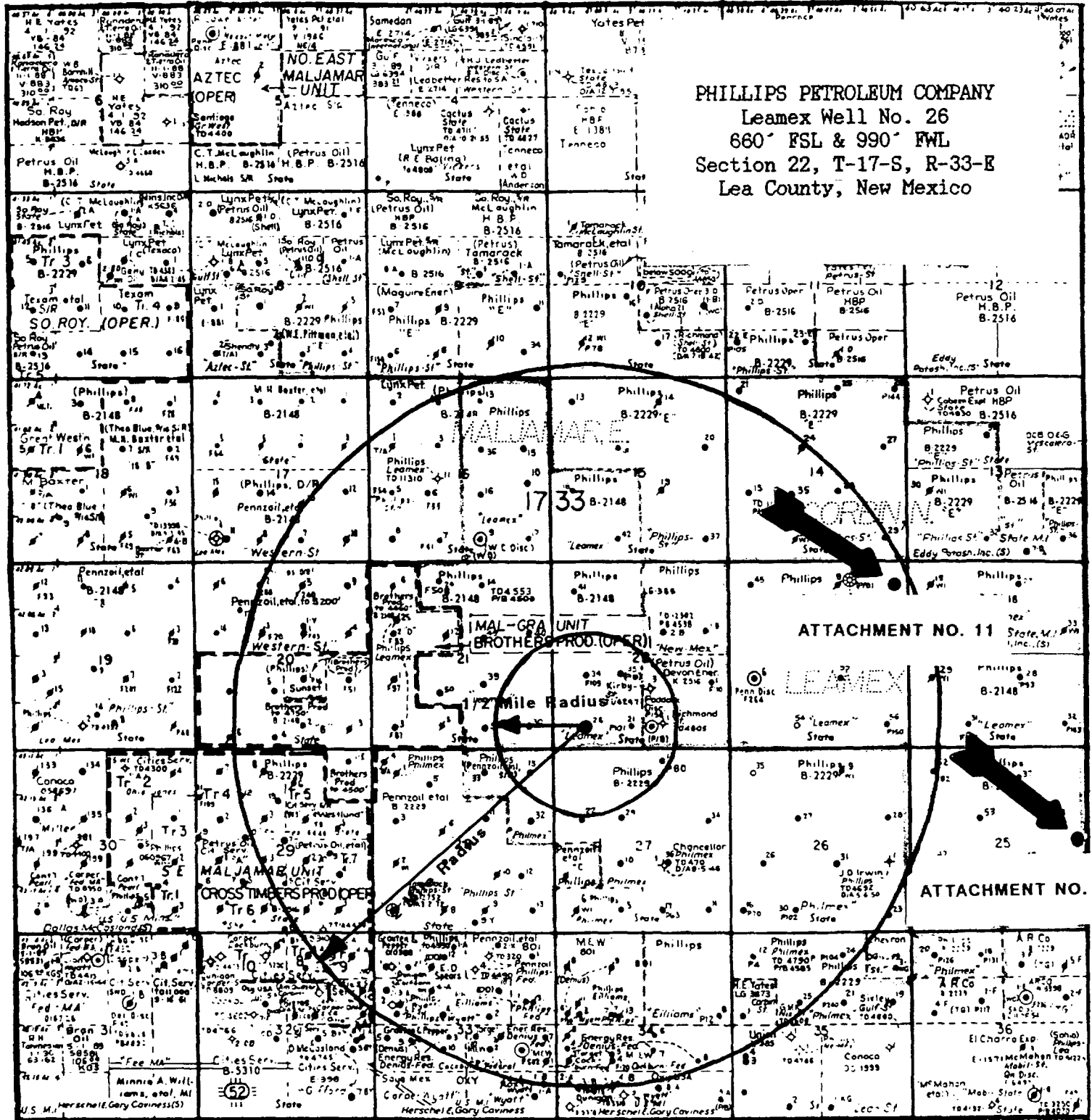


PHILLIPS PETROLEUM COMPANY

Philmex Well No. 15
660' FNL & 660' FEL
Section 28, T-17-S, R-33-E
Lea County, New Mexico



Fresh Water Well Locations



ATTACHMENT NO. 9

Acreage belonging
to Phillips
Petroroleum Co.

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM
 Date : 05-02-1989
 Location: AMEX #1 (on 05-02-1989)

	<u>Sample 1</u>
Specific Gravity:	1.000
Total Dissolved Solids:	345
pH:	7.05
IONIC STRENGTH:	0.007

<u>CATIONS:</u>		<u>me/liter</u>	<u>mg/liter</u>
Calcium	(Ca ⁺²)	2.80	56.0
Magnesium	(Mg ⁺²)	1.30	15.8
Sodium	(Na ⁺¹)	0.538	12.4
Iron (total)	(Fe ⁺²)	0.018	0.500

<u>ANIONS:</u>			
Bicarbonate	(HCO ₃ ⁻¹)	3.60	220
Carbonate	(CO ₃ ⁻²)	0	0
Hydroxide	(OH ⁻¹)	0	0
Sulfate	(SO ₄ ⁻²)	0.333	16.0
Chloride	(Cl ⁻¹)	0.705	25.0

SCALING INDEX (positive value indicates scale)

	<u>Temperature</u>	<u>Calcium</u>	<u>Calcium</u>
86°F	30°C	<u>Carbonate</u>	<u>Sulfate</u>
		-0.34	-18

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM
 Date : 05-02-1989
 Location: DUVAL (on 05-02-1989)

Specific Gravity:
 Total Dissolved Solids:
 pH:
 IONIC STRENGTH:

Sample 1
 1.000
 322
 7.08
 0.007

<u>CATIONS:</u>		<u>me/liter</u>	<u>mg/liter</u>
Calcium	(Ca ⁺²)	2.80	56.0
Magnesium	(Mg ⁺²)	1.40	17.0
Sodium	(Na ⁺¹)	0.205	4.71
Iron (total)	(Fe ⁺²)	0.021	0.600
<u>ANIONS:</u>			
Bicarbonate	(HCO ₃ ⁻¹)	3.20	195
Carbonate	(CO ₃ ⁻²)	0	0
Hydroxide	(OH ⁻¹)	0	0
Sulfate	(SO ₄ ⁻²)	0.500	24.0
Chloride	(Cl ⁻¹)	0.705	25.0

SCALING INDEX (positive value indicates scale)

<u>Temperature</u>		<u>Calcium</u>	<u>Calcium</u>
		<u>Carbonate</u>	<u>Sulfate</u>
86°F	30°C	-0.36	-18

Application for Authorization to Inject

PHILLIPS PETROLEUM COMPANY
LEAMEX WELL NO. 26

III. WELL DATA (con't):

- B. 3. Original Intent: Well was drilled for oil production.
4. Productive Zones
Higher: Maljamar-Grayburg/San Andres at 4100'
- Lower: Leamex-Penn at 11600'
(2160' to the east)

VI. WELLS WITHIN AREA OF INTEREST
(see page 4)

V. AREA OF REVIEW
(See Attachment No. 1)

VII. PROPOSED CO₂ INJECTION OPERATIONS

1. Rates: Estimated Average-380 mcfpd
Estimated Maximum-1000 mcfpd
2. System: Closed
3. Pressures: Average - 1720 psi
Maximum - 1800 psi
4. Fluid: CO₂ Source from McElmo Dome in Colorado; transported by Shell in the Cortez line and by Big Three in the Llano pipeline.

VIII. GEOLOGICAL DATA

- A. Injection zone: Injection will be into the Paddock Formation, a member of the Yeso Group. Although the Paddock is approximately 400' thick, the injection

Application for Authorization to Inject

PHILLIPS PETROLEUM COMPANY
LEAMEX WELL NO. 26

VIII. GEOLOGICAL DATA (con't):

- A. interval is the upper 60'.
The lithology of the Paddock
is primarily dolomite with
occasional shales. The pay
intervals are porous dolo-
mites.
- B. Fresh Water Sources: Ogallala - base at 202'
Santa Rosa - base at 1285'

IX. PROPOSED STIMULATION PROGRAM

The injection perforations will be treated with 4500
gallons of 15% NEFE HCl. The treating rate for this
job will be 2-4 bpm.

X. LOGGING DATA

Well logs were submitted after the well's completion
in 1980; the well name has not changed since that
time.

XI. FRESH WATER ANALYSES

(No fresh water wells within 1 mile radius)

Fresh Water Well Locations -- See Attachment No. 10
Fresh Water Analyses -- See Attachments No. 11 & 12

APPLICATION FOR AUTHORIZATION TO INJECT

PHILLIPS PETROLEUM COMPANY
LEANEX WELL NO 26

VI. WELLS WITHIN THE AREA OF INTEREST
(radius of investigation = $\pm 1/2$ mile)

Operator	Well Name	Location	Date Completed (Orig. Intent)	Original TO Present TO	Size (in)	Depth (ft)	Cement (cu)	Size (in)	Depth (ft)	Cement (cu)	Size (in)	Depth (ft)	Cement (cu)	TOC (ft)	Initial Completion (zone)	Current Completion (zone)
PHILLIPS PETR. COMPANY	Devon State #2	640' FSL & 2130' FEL Section 22-17S-33E Lea County, MN	06 Jan. 1975 (oil)	11618' 6075'	13-3/8	431	450	9-5/8	4260	550	5-1/2	11618	400	2500 *	11220'-11275' Leanex-Penn	6038'-6053' Leanex-Paddock (Attachment No. 3)
	Devon State #3	1710' FSL & 2300' FEL Section 22-17S-33E Lea County, MN	06 March 1977 (oil)	6247' Plugged	13-3/8	30	3 Yds	8-5/8	1476	690	None				Dry Hole	Dry Hole (Attachment No. 4)
	Leanex #21	660' FSL & 2310' FUL Section 22-17S-33E Lea County, MN	04 May 1979 (oil)	6300' 6260'	8-5/8	1500	965	None			4-1/2	6309	1550	825	6058'-6072' Leanex-Paddock	6058'-6116' Leanex-Paddock
	Leanex #30	660' FSL & 660' FEL Section 21-17S-33E Lea County, MN	24 July 1981 (oil)	6200' 6028'	8-5/8	1522	900	None			4-1/2	6188	2175	Surface (Circ)	6086'-6092' Leanex-Paddock	4282'-4540' Maljanar-GB/SA (Attachment No. 5)
Leanex #34	1980' FSL & 990' FUL Section 22-17S-33E Lea County, MN		02 July 1983 (oil)	6400' 6362'	8-5/8	1456	550	None			4-1/2	6400	1500	Surface (Circ)	4181'-4511' Maljanar-GB/SA	No Change
Leanex #35	2130' FSL & 1980' FUL Section 22-17S-33E Lea County, MN		19 Jan 1983 (oil)	6300' 4845'	8-5/8	1496	550	None			4-1/2	6298	1300	950 (S)	6242'-6251' Leanex-Paddock	4202'-4597' Maljanar-GB/SA (Attachment No. 6)
Philmex #13	330' FUL & 1980' FEL Section 27-17S-33E Lea County, MN		20 May 1979 (oil)	6300' 5960'	8-5/8	1500	840	None			4-1/2	6300	1650	Surface (Circ)	6024'-6105' Leanex-Paddock	4390'-4579' Maljanar-GB/SA (Attachment No. 7)
Philmex #15	660' FUL & 660' FEL Section 28-17S-33E Lea County, MN		14 Aug. 1981 (oil)	6200' 4850'	8-5/8	1490	750	None			4-1/2	4890	1200	900 (S)	4692'-4698' Maljanar-GB/SA	4224'-4698' Maljanar-GB/SA (Attachment No. 8)

(C) = calculated with .5 safety factor and 1.33 cubic foot/sack

(S) = determined with a survey

(Circ) = circulated to the surface

* Additional work placed an additional cement plug behind the 5-1/2" casing from 2500'-9182". TOC was determined by temperature survey. (See Attachment 3 for further details)