



SKELLY OIL COMPANY

REC'D
DEC 28 11 00 AM '70

EXPLORATION & PRODUCTION DEPARTMENT
WEST CENTRAL DISTRICT

December 24, 1970

ADDRESS REPLY TO:
P. O. BOX 1351
MIDLAND, TEXAS 79701

P. L. NUNLEY, PRODUCTION MANAGER
B. A. STRICKLING, OPERATIONS SUPERINTENDENT
C. J. LOVE, DISTRICT ENGINEER
F. J. PETRO, DISTRICT PRODUCTION ENGINEER
J. D. MCCLAIN, DISTRICT RESERVOIR ENGINEER

File: Skelly Unit
Lease No. 73617
Grayburg-Jackson Pool
Eddy County, New Mexico

Re: Application for Waterflood Expansion

New Mexico Oil Conservation Commission
State Land Office Building
P. O. Box 2088
Santa Fe, New Mexico

WFX - 354
me

Attention: Mr. Secretary-Director

Gentlemen:

Deputy Secretary

Skelly Oil Company respectfully requests administrative approval to expand its Skelly Unit Waterflood in the Grayburg-Jackson Pool, Eddy County, New Mexico. The Skelly Unit Waterflood Project was authorized by order no. R-2900 issued May 4, 1965, and amended by order no. R-3214 dated April 7, 1967.

Initial injection (April 1965) was into wells no. 42, 46, 44, 52, 54 and 56 by authority granted under order no. R-2900. Wells no. 24 and 34 were converted in July, 1967, by authority granted under order no. R-3214. Well no. 98 was converted in December, 1967, by authority granted under order no. WFX278 dated December 3, 1967. Wells no. 19, 21, 22, 24, 26, 30, 32, 38, 40, 48, 58, 71, 73, 83, 85, 96 and 105 were converted in March, 1968, by order no. R-3214. Wells no. 64, 66, 67, 75, 77, 89, 93 and 95 were converted in August, 1968, by authority granted under order no. WFX290 dated June 12, 1968. Wells no. 79 and 81 were converted in August, 1970, by authority granted under order no. WFX327 dated December 17, 1969.

The subject waterflood project is governed by the provisions of Rule 701, 702 and 703 of the Oil Conservation Commission rules and regulations; provided, however, that the Secretary-Director of the Commission may approve expansion of the Grayburg-Jackson Skelly Unit Waterflood Project to include additional wells, within said unit area, on water injection as may be necessary to complete an efficient waterflood pattern.

Skelly Oil Company desires to expand the waterflood and requests administrative approval to convert the following wells to water injection.

Township 17 South, Range 31 East

Skelly Unit Well No. 69, Unit letter L, Section 21

Skelly Unit Well No. 91, Unit letter D, Section 28

Skelly Unit Well No. 100, Unit letter L, Section 28

Under order R-3214, Skelly Oil Company was authorized to effect a waterflood project in the Grayburg-Jackson Pool in the Skelly Unit by the selective injection of water into various zones throughout the Grayburg-Jackson vertical producing interval. Selectivity of injection is to be achieved by dual injection utilizing the casing tubing annulus. Skelly Oil Company requests approval to selectively inject through the Skelly Unit; however, it is our intention to equip the proposed injectors as single injection wells and utilize the separation of zones only in wells where it is deemed necessary to achieve the most efficient vertical distribution of injected fluid.

Attached is a map showing all wells within a two mile radius, a unit plat showing the present and proposed injection wells, schematic diagrams and log sections of the proposed wells, an analysis of the water to be injected and a supplement to the Oil Proration Schedule.

Response to injection has been noted in the area. Shown below are the wells' producing capacity at the start of the pilot (April 1965) and the current producing (November 1970) rates.

Unit Well No.	<u>Daily Average Production</u>			
	<u>April 1965</u>		<u>October 1970</u>	
	<u>Oil</u>	<u>Water</u>	<u>Oil</u>	<u>Water</u>
69	7	0	29	1
91	4	0	5	1
100	24	0	29	3

The oil proration schedule supplement substantiates response in the area by showing increased allowables for wells no. 69 and 100.

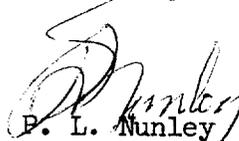
Injection make-up water will be purchased from the Double Eagle Water Company. The water is fresh produced from the Ogallala formation. The produced water is also being re-injected into the reservoir. Anticipated injection rates are 300-600 bbls. per day per well at wellhead pressures of 1500-2000 psi.

Correlative rights are being protected by offsetting injection under a Common Boundary Agreement between Atlantic-Richfield Company and Skelly Oil Company.

The U.S.G.S. has approved water injection into the proposed wells.

Offset operators are being notified by a copy of this application in accordance with the attached mailing list.

Yours very truly,



P. L. Nunley
District Production Manager

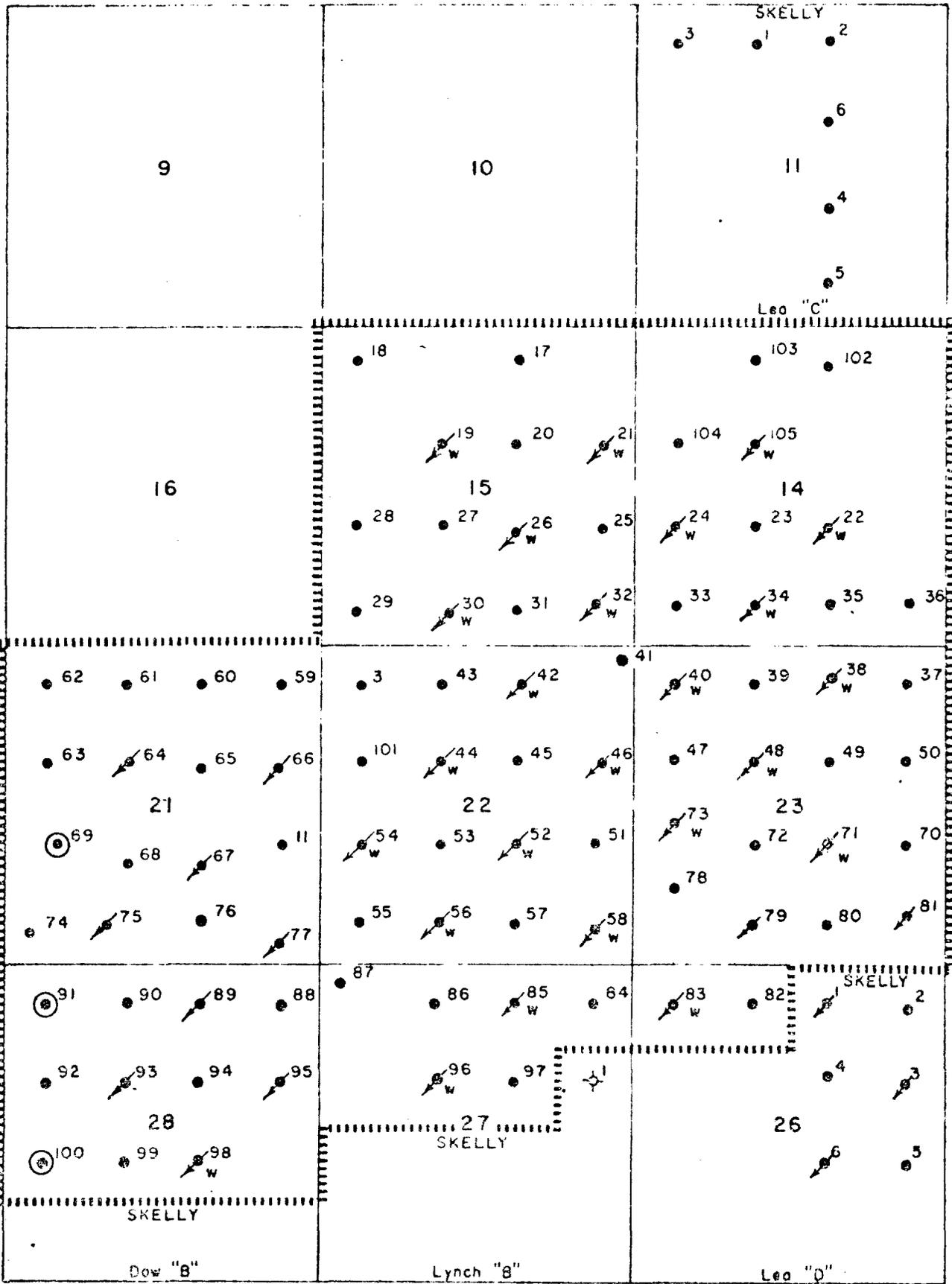
SKELLY UNIT MAILING LIST

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

Getty Oil Company
P. O. Box 1231
Midland, Texas 79701

Kersey and Company
808 West Grand
Artesia, New Mexico 88210

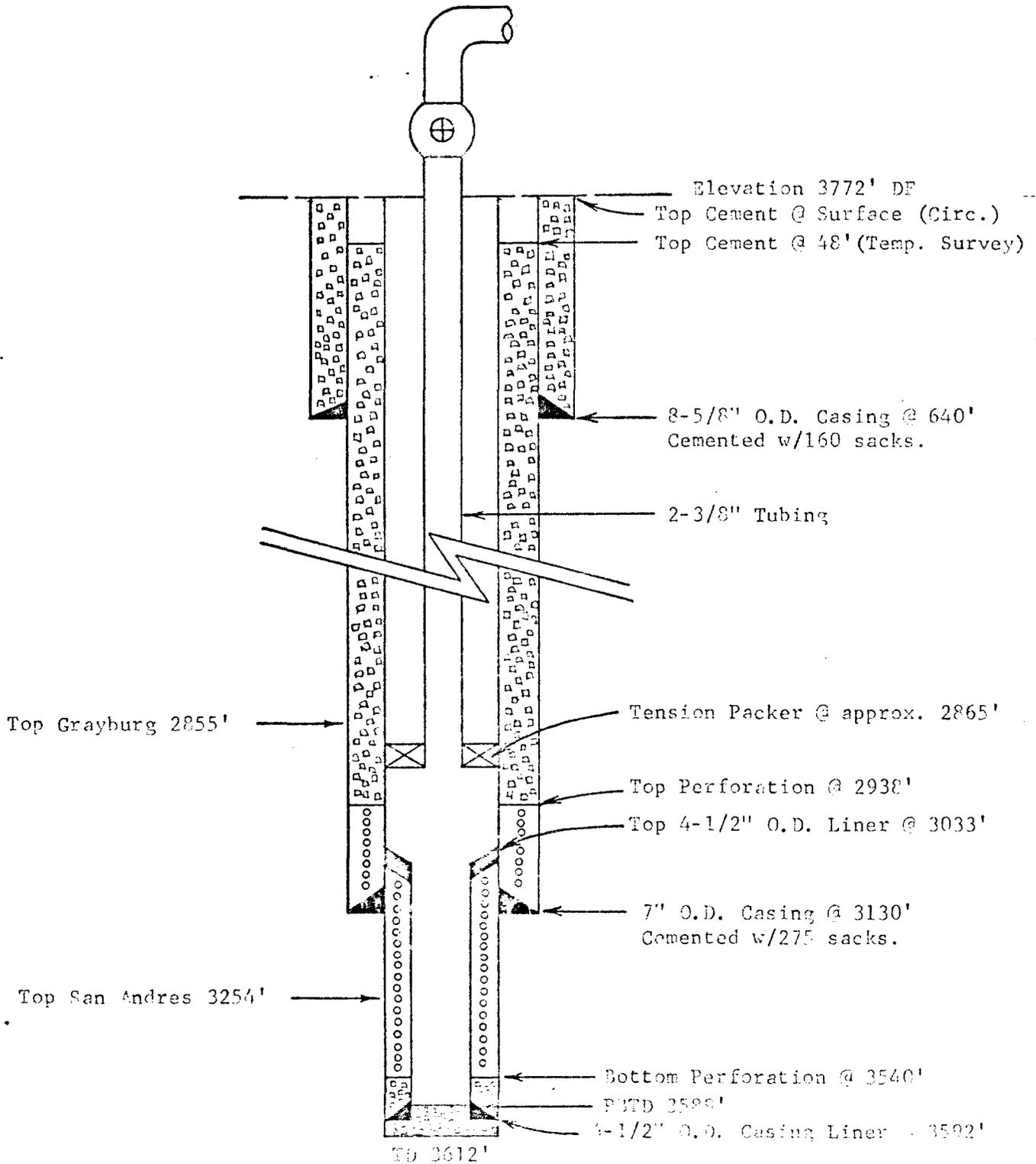
Murchison and Closuit
% Mr. Ernest Closuit
1019 Fort Worth National Bank Building
Fort Worth, Texas 76100



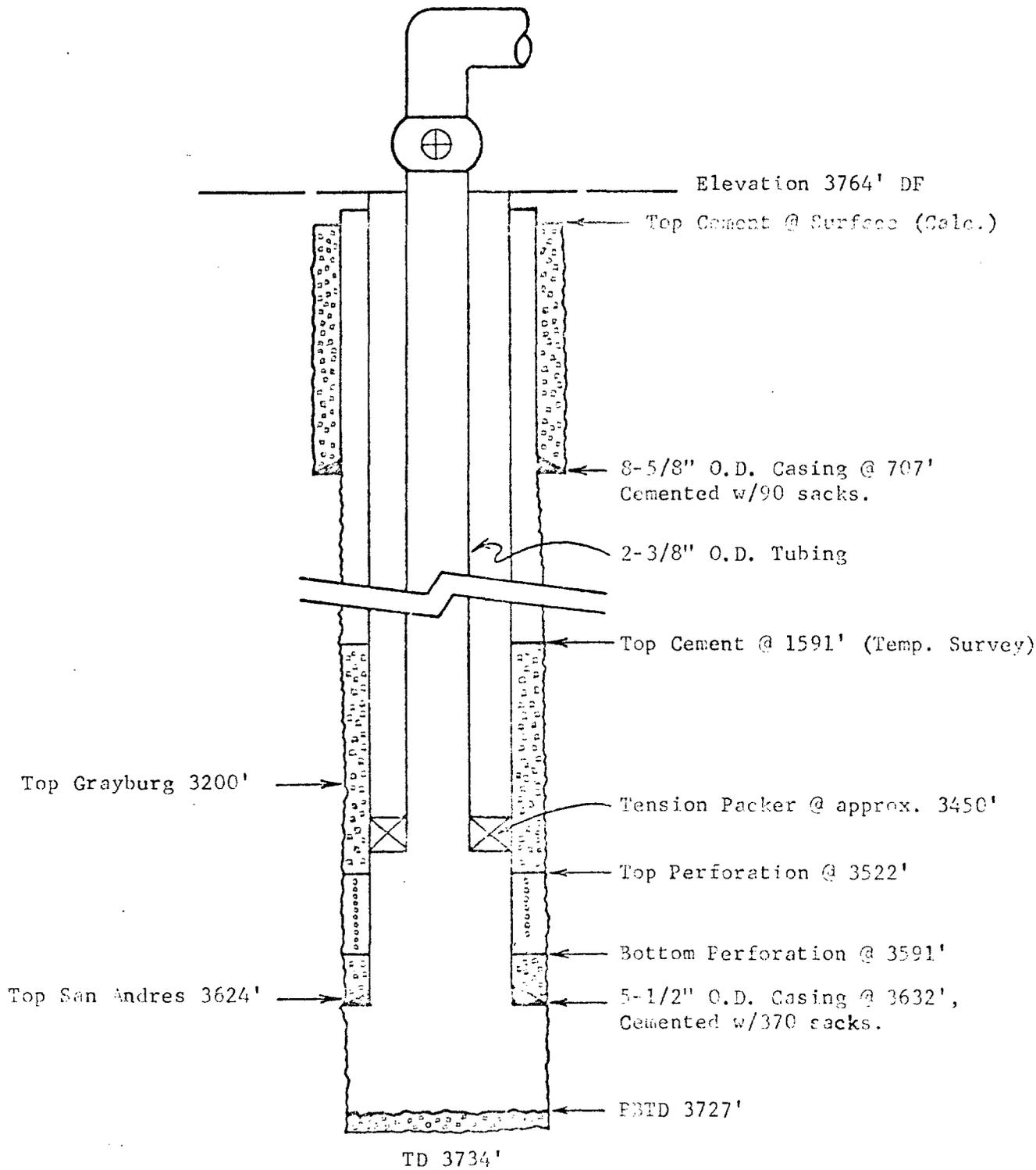
SKELLY OIL COMPANY
 SKELLY UNIT
 EDDY COUNTY, NEW MEXICO
 TOWNSHIP 17-S, RANGE 31-E
 SCALE: 1"=2400'

- LEGEND**
- GRAYBURG - SAN ANDRÉS OIL WELL
 - ⊕ DRY HOLE
 - - - SKELLY UNIT
 - ⊙ PROPOSED WATER INJECTION WELL

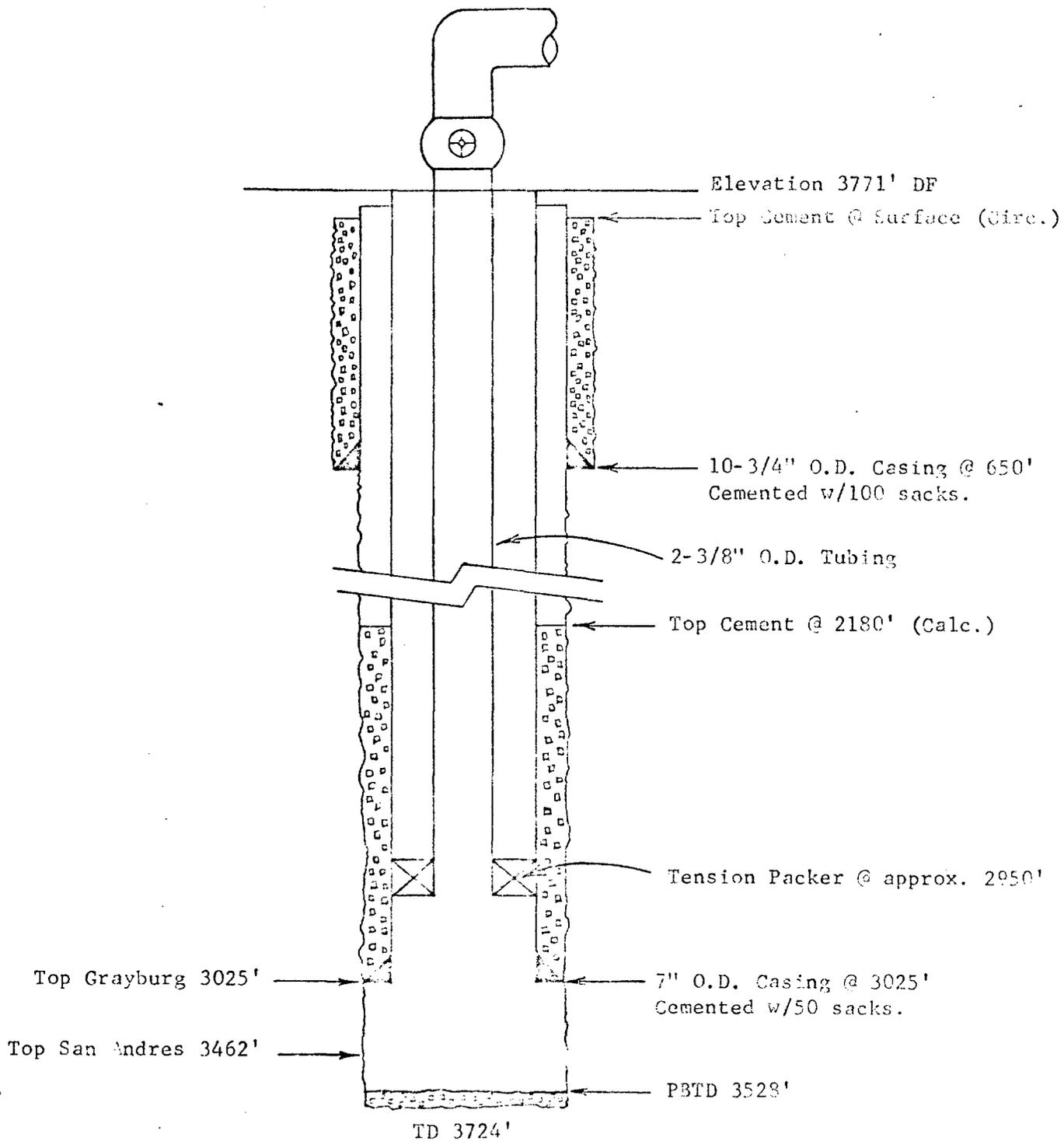
SKELLY OIL COMPANY
 Skelly Unit Well No. 6^o
 1980' FSL & 760' FWL, Section 21, T-17-S, R-31-E
 Grayburg Jackson Injection Well



SKELLY OIL COMPANY
 Skelly Unit Well No. 100
 1980' FSL & 660' FWL, Section 28, T-17-S, R-31-E
 Grayburg Jackson Injection Well



SKELLY OIL COMPANY
 Skelly Unit Well No. 91
 660' FNL & 650' FWL, Section 28, T-17-S, R-31-E
 Grayburg Jackson Injection Well





UNITED CHEMICAL CORPORATION
OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Skelly Oil Company
 Field _____
 Lease Double Eagle Water Sampling Date 11-19-69
 Type of Sample Inlet to Skelly Tank

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	2.59	52
Magnesium (Mg++)	1.07	13
Sodium (Na+) (Calculated)	2.07	48
Iron		0.55
Bicarbonate (HCO ₃ ⁻)	2.10	128
Carbonate (CO ₃ ⁻)	NOT	FOUND
Hydroxide (OH ⁻)	NOT	FOUND
Sulphate (SO ₄ ⁻)	2.08	100
Chloride (Cl ⁻)	1.55	55
6.7ph c 68°F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO ₃	3.66	183
Carbonate Hardness as CaCO ₃ (temporary)	2.10	105
Non-Carbonate Hardness as CaCO ₃ (permanent)	1.56	78
Alkalinity as CaCO ₃	2.10	105
Specific Gravity c 68 ° F	1.000	

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

Calcium Carbonate scaling index negative at 86°F

Calcium Sulfate scaling index negative

Makes Water Work

Supplement A--1 for September 1969 Continued

Skelly Unit

#68-K, 21-17-31,	increased to	21 BOPD or	630 bbls for the month.
#69-L, "	, increased to	20 BOPD or	600 bbls for the month.
#72-K, 23-17-31,	increased to	69 BOPD or	2070 bbls for the month.
#76-O, "	, increased to	57 BOPD or	1710 bbls for the month.
#78-M, "	, increased to	21 BOPD or	630 bbls for the month.
#80-O, "	, increased to	44 BOPD or	1320 bbls for the month.
#81-P, "	, increased to	29 BOPD or	870 bbls for the month.
#82-C, "	, increased to	33 BOPD or	990 bbls for the month.
#88-A, 28-17-31,	increased to	38 BOPD or	1140 bbls for the month.
#90-C, "	, increased to	18 BOPD or	540 bbls for the month.
#92-E, "	, increased to	198 BOPD or	5940 bbls for the month.
#94-G, "	, increased to	85 BOPD or	2550 bbls for the month.
#100-L, "	, increased to	46 BOPD or	1380 bbls for the month.

WAG:jw

Skelly Oil Company

TNM

*Copies to: ScLinger
Theo Dodson
Skelly Tucker
Roy P. Merworth
9-2-69*



McCloughlin
SINCE 1911

LING NOM-17701

COMPANY **SKELLY OIL COMPANY**

WELL **S4611 4217 #100**
DOM 11 3/8" #32

FIELD **GRAYBURG-JACKSON**

COUNTY **EDDY** STATE **NEW MEXICO**

LOCATION: **1980' FROM SOUTH LINE**
660' FROM WEST LINE

OTHER SERVICES:

ILLEGIBLE

SEC. **28** TWP. **17S** RGE. **31E**

PERMANENT DATUM **GROUND LEVEL** ELEV. **3760**

LOG MEASURED FROM **4'** FT. ABOVE PERMANENT DATUM

BILLING MEASURED FROM **DERRICK FLOOR**

DATE **11-29-59**

IN NO. **ONE**

PE LOG **GR/N**

PTH-DRILLER **3700**

PTH-LOGGER **3696**

BTOM LOGGED INTERVAL **3695**

PT LOGGED INTERVAL **0**

PE FLUID IN HOLE **OIL 240'**

SALINITY PPM CL. **-**

DENSITY LB/GAL. **-**

LEVEL **2239**

EX REC. TEMP. DEG. F **LESS 100**

R. RIG TIME **7 HOURS**

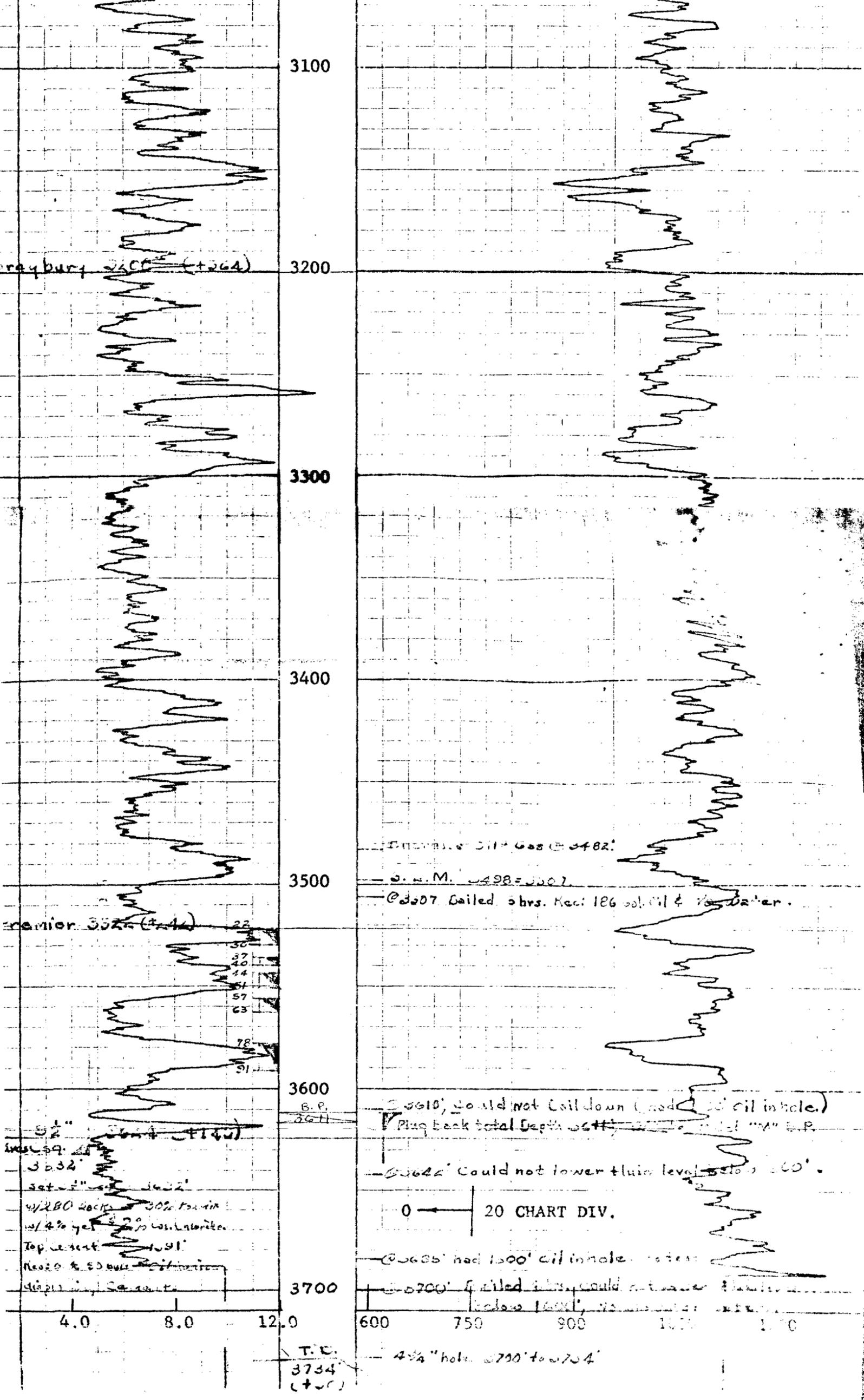
RECORDED BY **PARDUE**

FINISHED BY **MR. PURCELL**

ELEVATIONS:
KB **3764'**
DF **3760'**
GL **3760'**

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP-35

EQUIPMENT DATA



BORE HOLE RECORD				CASING RECORD				
UN	NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
	1	11"	0	707	8-5/8"	23	0	707
	2	8"	707	3700				

RECORD

WELL LOGGING

COMPANY SKELLY OIL CO.
 WELL DOW "B" NO. 11
 COUNTY EDDY STATE N.M.
 LOCATION SEC. 28, 17-S, 31-E

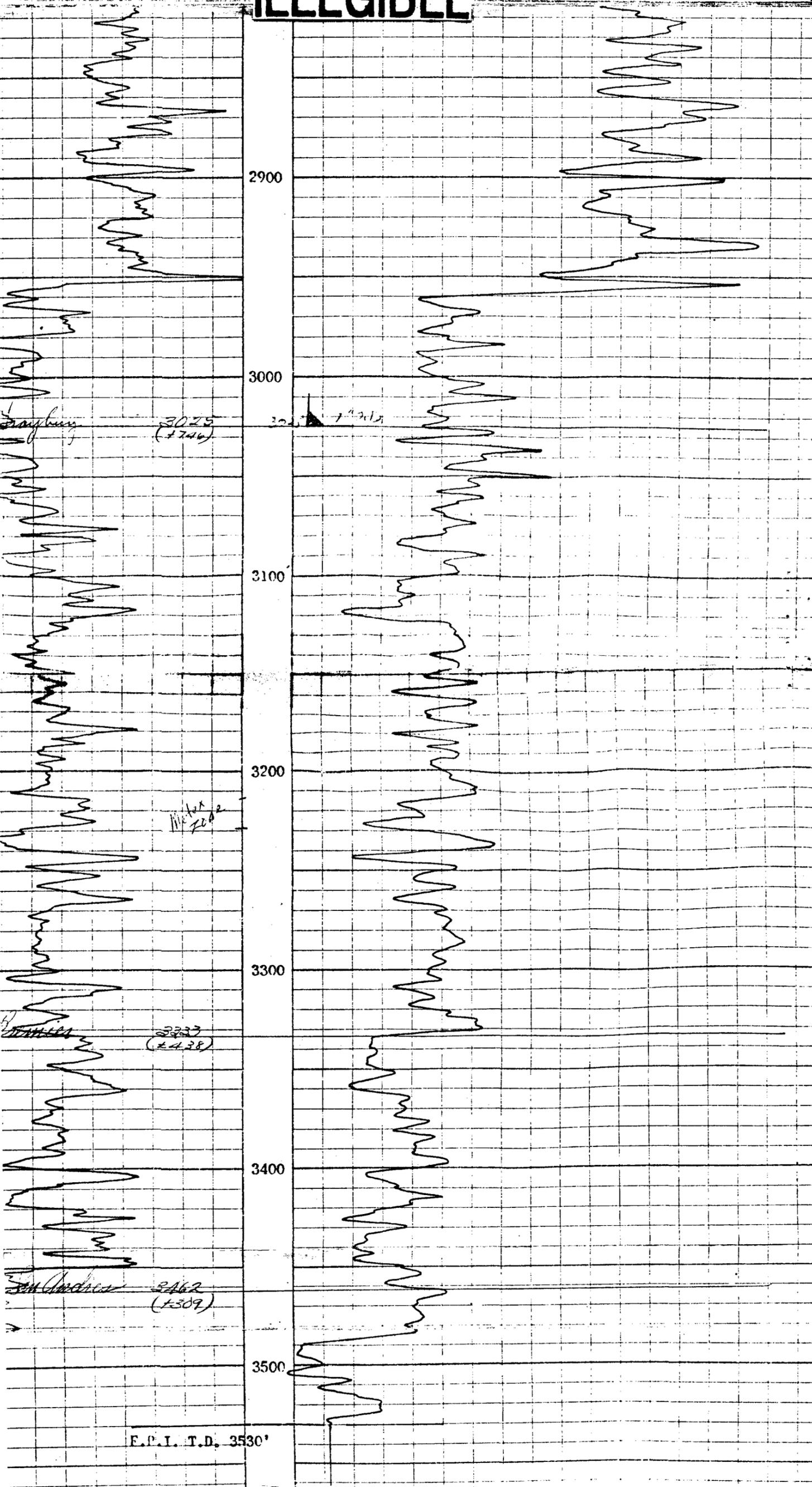
COMPANY SKELLY OIL CO.
 WELL DOW "B" NO. 11
 FIELD MALJAMAR
 LOCATION SEC. 28, 17-S, 31-E

Location of Well
 660' FR. N/L
 660' FR. W/L

COUNTY EDDY STATE N.M. Filing No.
 LOG MEASURED FROM D. F. ELEV. 3771'
 DRLG. MEASURED FROM D. F. ELEV. 3771'
 PERM DATUM G. L. ELEV. 3769'

TYPE OF LOG	GAMMA RAY	NETPOCN	ISOTPCN
RUN NO.	ONE		
DATE	10-31-57		
FIRST READING	3529'		
LAST READING	0000		
FOOTAGE LOGGED	3529'		
MAX. DEPTH REACHED	3530'		
BOTTOM DRILLER	3528'		
FLUID NATURE	OIL & WATER		
FLUID LEVEL			
MAX. TEMP.	N.A.		
LOG SIZE	7" - 3031'		
LOG WEIGHT	.71#		
OPEN HOLE DIA.	6-1/4" - 3031' TO T.D.		
SENS. POS.	200	400	400
TIME CONSTANT	2	2	2
LOGGING SPEED	1000' & 2500'/HR.		
LOG TIME	6 HOURS		
LOCATION	HOBBS		

ILLEGIBLE



E.P.L. T.D. 3530'
 F.P.L. T.D. 3530'

10 M.F. = 4.5 DIV.,
 THEREFORE, EACH DIV. = 2.22 M.F.
 120 COUNTS/SEC. = 3.5