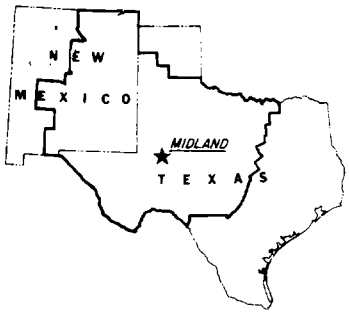


SKELLY OIL COMPANY

June 8, 1973

EXPLORATION & PRODUCTION DEPARTMENT
WEST CENTRAL DISTRICT

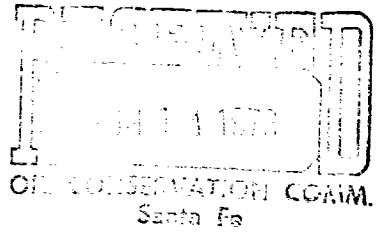
A. B. CARY, EXPLORATION & PRODUCTION MANAGER
V. E. BARTLETT, EXPLORATION MANAGER
C. J. LOVE, PRODUCTION MANAGER
J. R. AVENT, ADMINISTRATIVE COORDINATOR

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

File: Lovington Paddock Unit
Lease General
Lease No. 00308
Lea County, New Mexico

Re: Application to Expand Injection System

Mr. A. L. Porter, Jr. (3)
Secretary-Director
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501



Gentlemen:

Skelly Oil Company respectfully requests administrative approval to expand the Lovington Paddock Unit Water Injection System by conversion of five wells to water injection status. This unit was established by N.M.O.C.C. Order No. R-3124 issued September 30, 1966. At that time approval was granted for injection of water through 22 wells, however, only 18 of the 22 authorized wells were converted to water injectors, four wells (Nos. 2, 25, 34, and 53) remained as producers.

The unit was expanded by Commission Order No. R-3352, issued December, 4, 1967. Approval to convert seven wells to injection was given by the order. Six wells were converted leaving Well No. 8 as a producer.

Authority to convert Wells No. 36, 38, 55, and 57 were granted by N.M.O.C.C. Order No. WFX-343, dated July 17, 1970. The purpose of this expansion was to create several five spot patterns. Performance of the five spot patterns versus originally employed inverted nine spot has led to further expansions and is the reason for this application.

Based on performance of the five spot configuration, application was made to the Commission to further expand the water injection system by converting Wells No. 21, 23, and 61 to water injectors. Authority to do this work was granted by N.M.O.C.C. Order WFX No. 375, dated August 19, 1972. Water is currently being injected through these wells.

Plans are to convert additional wells to injection service and we request approval to convert and inject water into the Lovington Glorieta (Paddock) formation through the following wells:

Township 16 South, Range 36 East
Lovington Paddock Unit Well No. 19
Unit "E" Section 36

Township 16 South, Range 36 East
Lovington Paddock Unit Well No. 40
Unit "O" Section 36

Township 16 South, Range 36 East
Lovington Paddock Unit Well No. 42
Unit "M" Section 36

Township 17 South, Range 36 East
Lovington Paddock Unit Well No. 59
Unit "G" Section 1

Township 17 South, Range 36 East
Lovington Paddock Unit Well No. 82
Unit "O" Section 1

Conversion of these wells will provide for increased injection capacity for the unit and increased sweep efficiency. Following conversion of these wells, the Lovington Paddock Unit will be fully expanded to a five spot configuration with the exception of Wells No. 25, 34, and 53 which are located along the eastern boundary of the unit. Prior to conversion of these wells to injectors, lease line agreements will have to be negotiated.

Attached as part of this request are the following items: A map showing all wells within a two mile radius, which indicates ownership and producing horizons; a unit plat showing present and proposed injection wells; schematic diagrams and copies of logs on proposed injection wells; a recent analysis of injection water. N.M.O.C.C. Order No. 3692 provides for administrative approval for conversion of additional wells in this unit without the necessity of showing response to injection; however, response has occurred in the areas of proposed expansion.

Produced water is reinjected into the Lovington Paddock Unit. Make-up water is supplied by Skelly owned water supply wells; this water is fresh and taken from the Ogallala formation. The two waters are not commingled prior to injection, preventing any problems that might arise, due to incompatibility. Anticipated injection rates are 300-500 BPD per well (1,500-2,500 for the five wells) at wellhead injection pressures of 2,000-2,300 psig.

The casing-tubing annulus will be filled with an inert fluid above the injection packer, and a pressure gauge installed to detect any leaks which might occur.

Yours very truly,

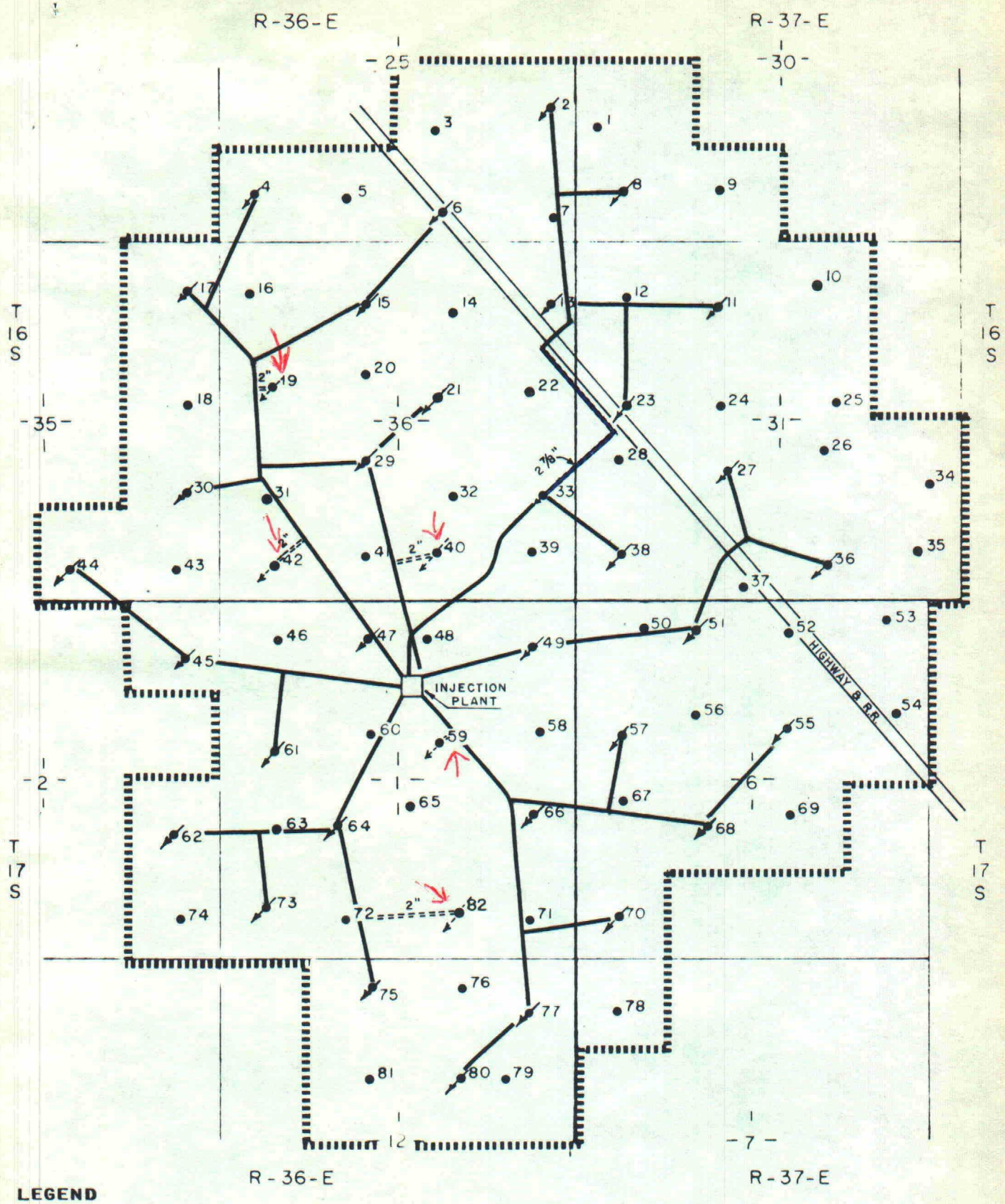
D. A. Stuckling, Jr.

for C. J. Love

WTT/rc
Attach: Two mile radius map
Unit plat
Schematic diagram (proposed injection wells)
Copies of logs
Water analysis

cc: Commissioner of Public Lands (1)
State of New Mexico
Capitol Annex Building
Santa Fe, New Mexico 87501

Bureau of Land Management (1)
District Office
P. O. Box 1397
Roswell, New Mexico 88201
Attention: Mr. Campbell



LOVINGTON PADDOCK UNIT

LEA COUNTY, NEW MEXICO

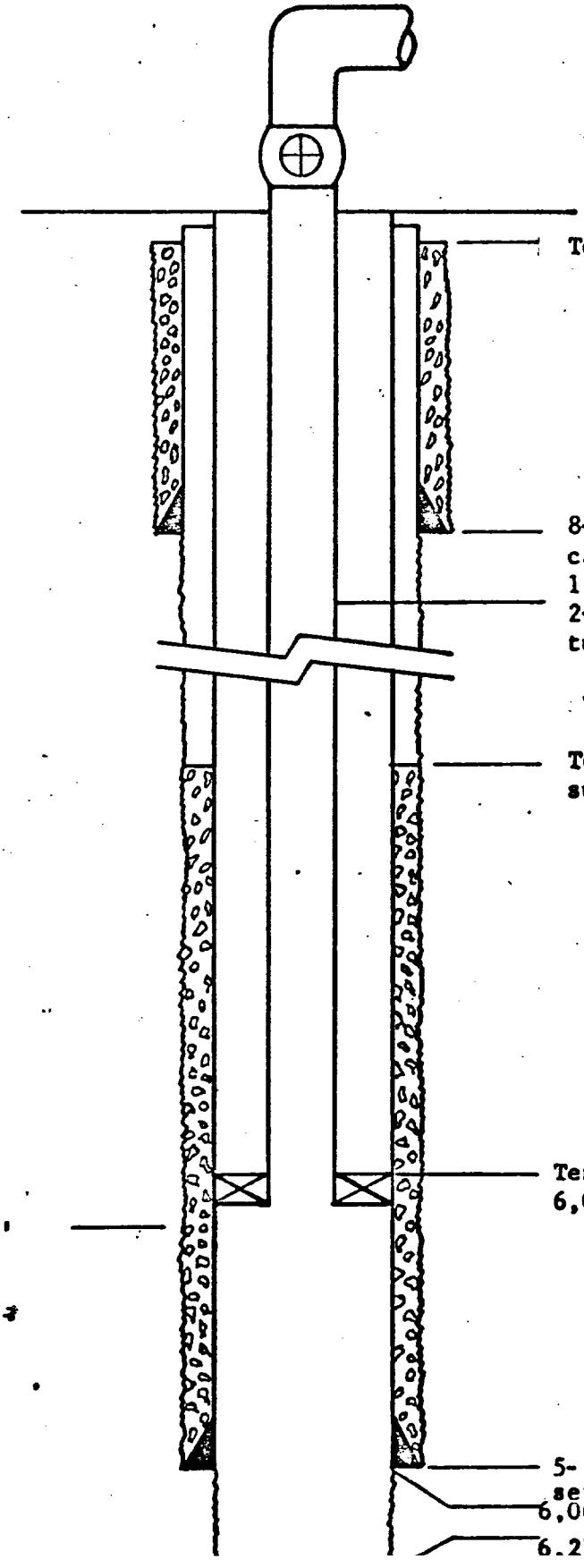
SCALE 1" = 2000'

5-8-73

LOVINGTON PADDOCK UNIT NO. 19

1,980' FNL & 990' FWL, SECTION 36, T-16-S, R-36-E

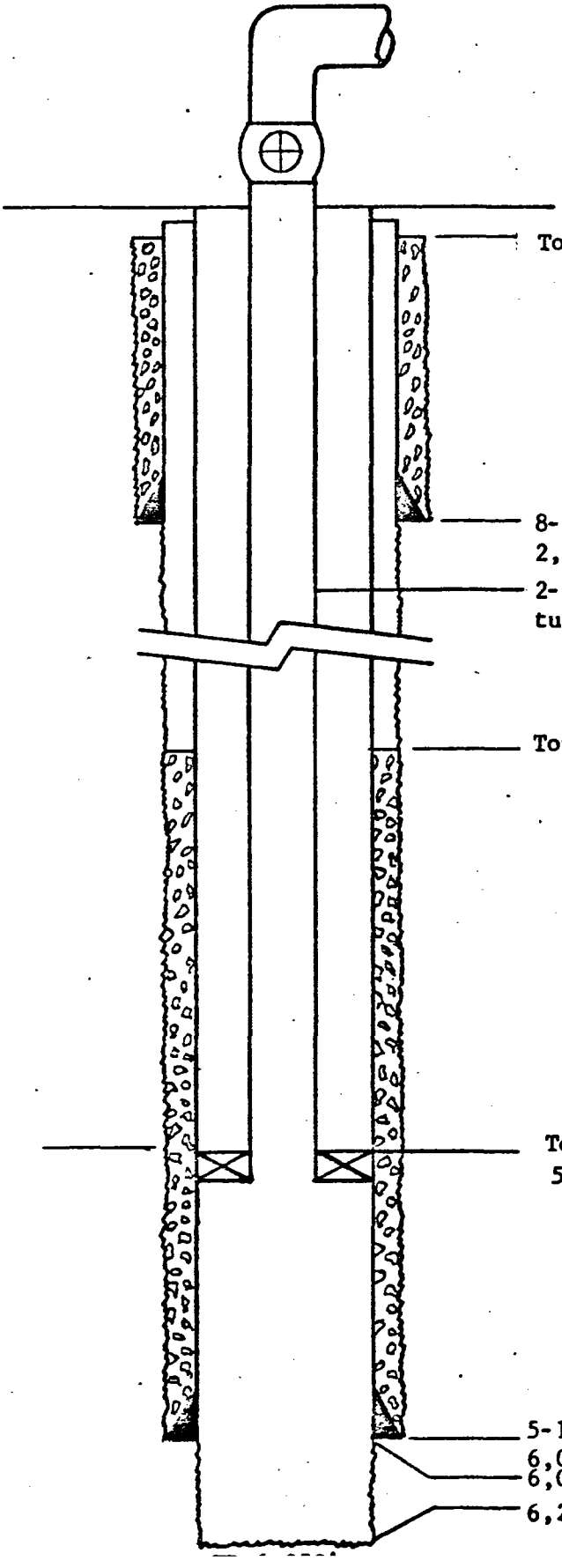
ELEVATION: 3,847' DF



LOVINGTON PADDOCK UNIT NO. 40

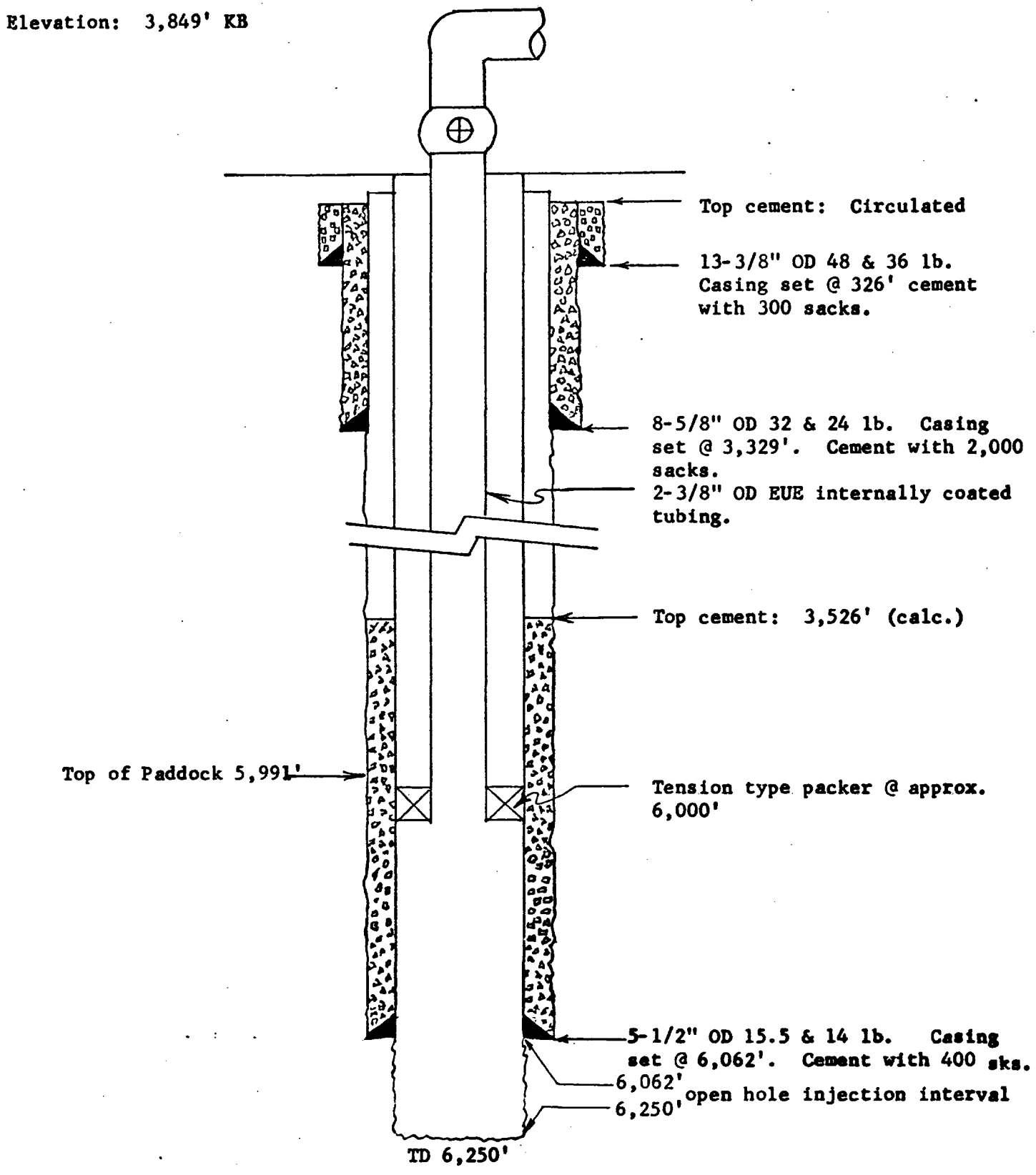
1,980' FEL & 810' FSL, SECTION 36, T-16-S, R-36-E

ELEVATION: 3,834' DF



LOVINGTON PADDOCK UNIT WELL NO. 42

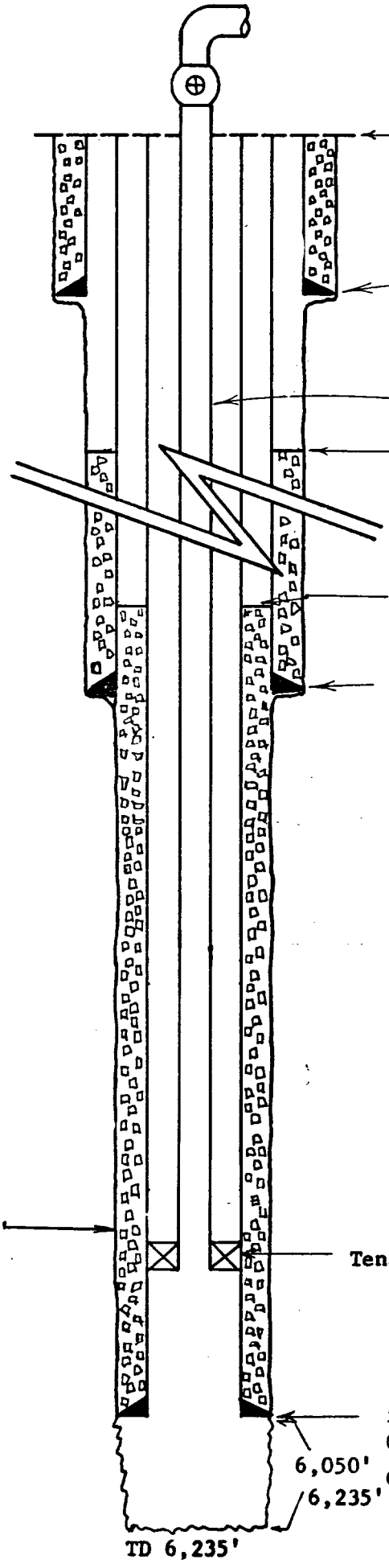
660' FSL & 990' FWL, SECTION 36, T-16-S, R-36-E



LOVINGTON PADDOCK UNIT WELL NO. 59

2080' FNL & 1980' FEL, SECTION 1, T-17-S, R-36-E

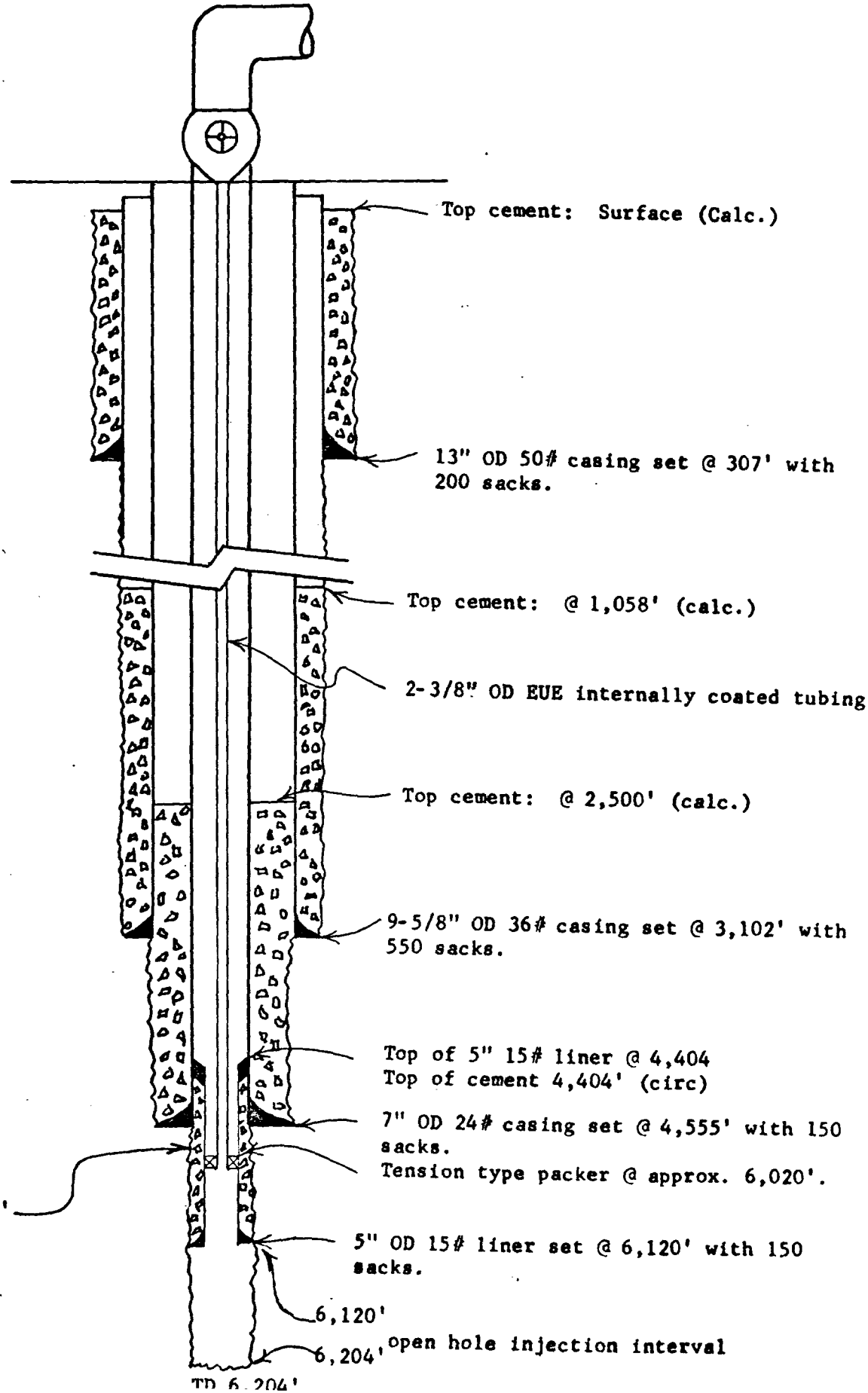
ELEVATION: 3835' KB



LOVINGTON PADDOCK UNIT NO. 82

4,620' FNL & 1,980' FEL, SECTION 1, T-17-S, R-36-E

ELEVATION: 3,825' DF



SCHLUMBERGER WELL SURVEYING CORPORATION
HOUSTON, TEXAS

SCHLUMBERGER

Electrical Log

COMPANY AMERADA PETR. CORP.

WELL STATE LA # 11

FIELD S. LOVINGTON

LOCATION SEC. 1-17S-36E

COUNTY LEA

STATE NEW MEXICO

Location of Well
1650' f NL
1980' f EL
Sec. 1-17S-36E

ES-GRL

Elevation: D.F.: 3837
K.B.:
or G.L.:

FILING No.

COMPANY Amerada Petr. Corp.

o.	1					
	1-4-53					
ng	8437					
ng	3750					
ured	4687					
m.	3750					
r	3750					
ched	8440					
ller	8440					
um	KB 13.5' Abv. GL					
	Zeogel-Impermix					
ty	9.2					
sity	41.0					
	.42 @ 52 °F	@ °F	@ °F	@ °F	@ °F	
BHT	.16 @ 149F	@ °F	@ °F	@ °F	@ °F	
	@ °F	@ °F	@ °F	@ °F	@ °F	
Loss	12.0 cc 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	CC 30 min.	
o. °F	149					
	7 7/8"					
M	10"					
	32" LS					
O	19'					
ime	5 Hrs.					

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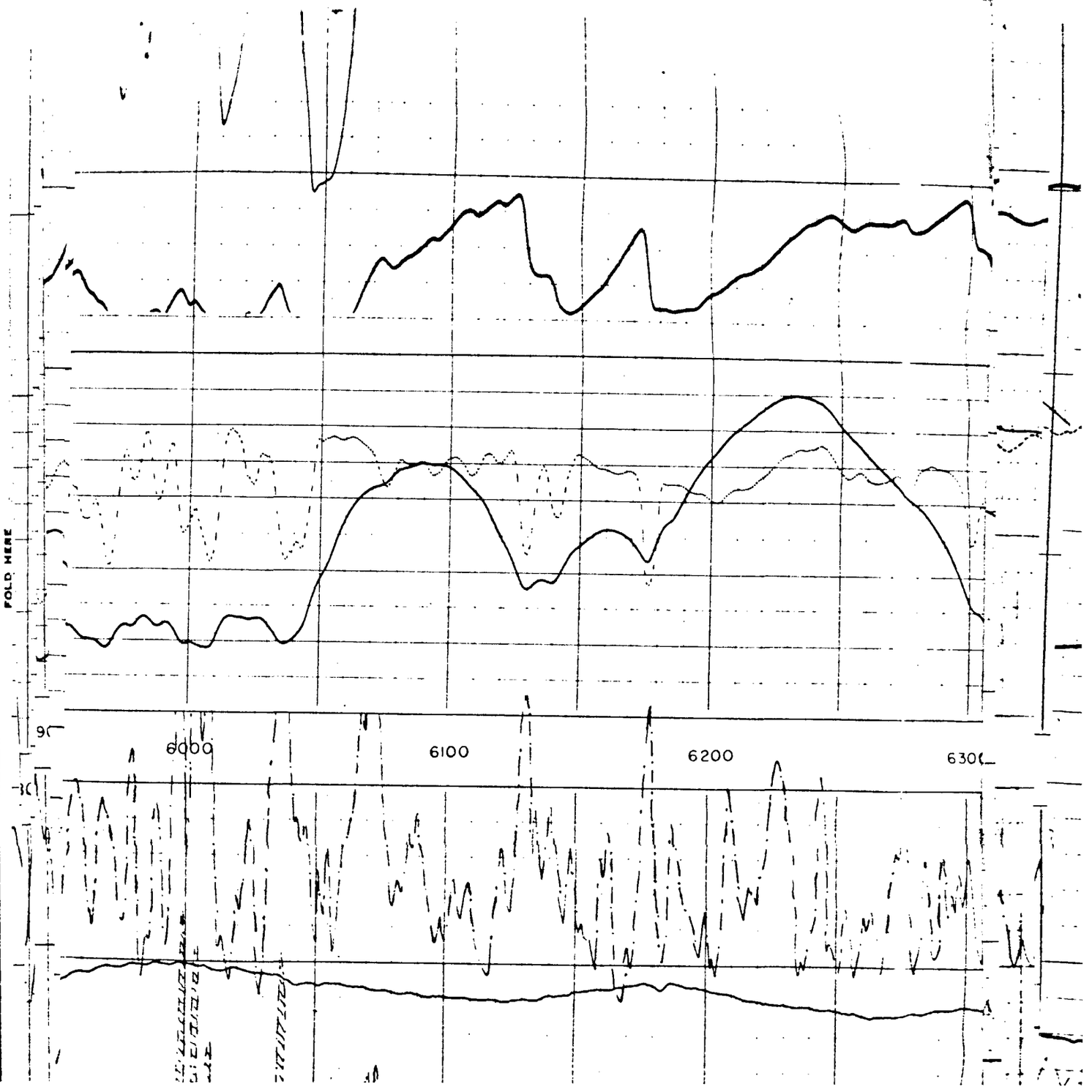


Martin Water Laboratories

P. O. BOX 1468
MONAHANS, TEXAS 79756
PHONE 943-3234 OR 563-1040

406 W. ILLINOIS
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 473106

TO: Mr. D. R. Parkhurst
P. O. Box 730, Hobbs, N. M.

SAMPLE RECEIVED 4-10-73

RESULTS REPORTED 4-17-73

COMPANY Shelly Oil Company LEASE Lovington Paddock Unit

FIELD OR POOL Lovington

SECTION ___ BLOCK ___ SURVEY ___ COUNTY Lea STATE N. M.

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Produced water - taken from heater treater. 4-10-73

NO. 2 Treated water - taken from injection pump discharge. 4-10-73

NO. 3 Injection water - taken from input #38. 4-10-73

NO. 4

REMARKS: Produced Water System

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0715	1.0723	1.0725	
pH When Sampled	6.3	6.6	6.6	
pH When Received	6.6	7.0	7.15	
Bicarbonate as HCO_3	378	366	376	
Supersaturation as $CaCO_3$	124	12	16	
Undersaturation as $CaCO_3$	-	-	-	
Total Hardness as $CaCO_3$	22,500	22,500	23,000	
Calcium as Ca	6,400	5,960	6,920	
Magnesium as Mg	1,538	1,239	1,335	
Sodium and/or Potassium	35,700	35,627	34,435	
Sulfate as SO_4	1,426	1,457	1,364	
Chloride as Cl	69,509	69,593	68,173	
Iron as Fe	1.5	2.0	1.9	
Barium as Ba	0	0	0	
Turbidity, Electric	23	31	27	
Color as Pt	20	24	36	
Total Solids, Calculated	115,305	115,243	112,453	
Temperature °F.	60	66	52	
Carbon Dioxide, Calculated	492	150	154	
Dissolved Oxygen, Winkler	0.0	0.0	0.0	
Hydrogen Sulfide	4.2	3.0	7.0	
Resistivity, ohms/m at 77° F.	0.086	0.086	0.087	
Suspended Oil	1.5	45	31	
Filtrable Solids as mg/l	82.2	6.5	6.3	
Volume Filtered, ml	500	4,000	3,000	

ILLEGIBLE

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks The above results generally reflect favorable chemical and physical properties at the injection pumps and injection well. It is noted that there is an unusually high supersaturation to calcium carbonate and high filtrable solids at the heater-treater. However, there was a substantial amount of chemical treatment in the water and we are reasonably confident that this has caused this discrepancy in the results. Previous results and the results at the discharge and injection well indicate this is solely the result of this chemical treatment. Generally, we would advise making no changes in regard to the chemical and physical aspects of this water.

Form No. 3

By Waylan C. Martin, M. A.

cc: Mr. F. J. Petro, Midland

LANE WELLS RADIOACTIVITY LOG COMPANY

FILE NO.

Location of Well

D. F. ELEV. 3847

COMPANY: SKELLY OIL COMPANY PADDOCK 19
WELL: STATE "R" NO. 11
FIELD: SOUTH LOVINGTON PADDOCK
COUNTY: LEA STATE: N MEX.
LOCATION: 1980' FNL & 990' FWL
SECTION 36, T-16-S, R-36-E

COMPANY: SKELLY OIL COMPANY
WELL: STATE "R" NO. 11
FIELD: SOUTH LOVINGTON PADDOCK
COUNTY: LEA
LOCATION:
STATE: N MEX.

LOG MEAS. FROM KELLY DRIVE BUSHING ELEV.
DRLG. MEAS. FROM KELLY DRIVE BUSHING ELEV.
PERM. DATUM K. D. B. TO 5 1/2" B. H. IS 10' ELEV.

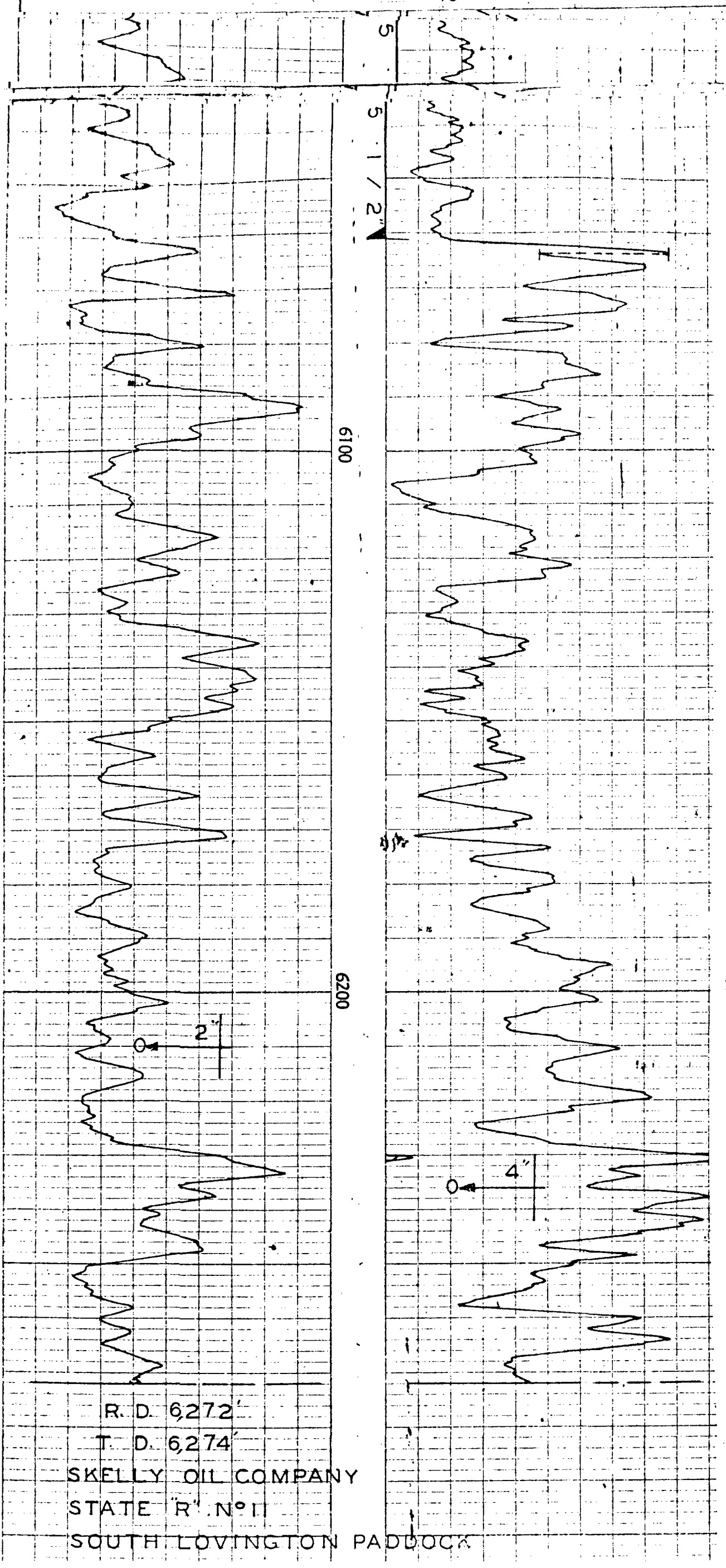
TYPE OF LOG	GAMMA RAY	NEUTRON
RUN NO.	ONE-NW	ONE-NW
DATE	5-30-54	5-30-54
TOTAL DEPTH (DRILLER) STRAIN	6275	6275
EFFECTIVE DEPTH (DRILLER)	6275	6275
TOP OF LOGGED INTERVAL	SURFACE	SURFACE
BOTTOM OF LOGGED INTERVAL	6272	6272
TYPE OF FLUID IN HOLE	WATER	WATER
FLUID LEVEL	FULL	FULL
MAXIMUM RECORDED TEMP.		
NEUTRON SOURCE STRENGTH & TYPE		600N
SOURCE SPACING — IN.		8.25
LENGTH OF MEASURING DEVICE — IN.	36"	9"
O.D. OF INSTRUMENT — IN.	3 5/8"	3 5/8"
TIME CONSTANT — SECONDS	5.2	4.8
LOGGING SPEED FT. MIN.	25-50	25-50
STATISTICAL VARIATION — IN.		
SENSITIVITY REFERENCE	274	275
RECORDED BY	KELLY	KELLY
WITNESSED BY	YELL	YELL

RECORDED SIMULTANEOUSLY

4638
3847
791

CASING RECORD

RUN NO.	BIT SIZE	CASING	WT.—LB.	FROM WELL RECORD		FROM R A LOG	
ONE				SURFACE TO		TO	
ONE	12"	8 5/8"		SURFACE TO	3240	SURFACE TO	3240
ONE	7 7/8"	5 1/2"		SURFACE TO	6065	SURFACE TO	6061
ONE	4 3/4"			6065 TO	6275	6061 TO	6274
				TO		TO	



R. D. 6,272'
T. D. 6,274'
SKELLY OIL COMPANY
STATE "R" N° 11
SOUTH LOVINGTON PADDOCK

COMPANY

FILE NO.

Location of Well

COMPANY: SKELLY OIL COMPANY
PADDOCK 40
WELL: STATE "Q" NO. 6
FIELD: SOUTH LOVINGTON
COUNTY: LEA STATE: N MEX.
LOCATION: 1830' FEL & 810' FSL
SECTION 36 T 16 S R 36-E

DERRICK FLOOR 3834

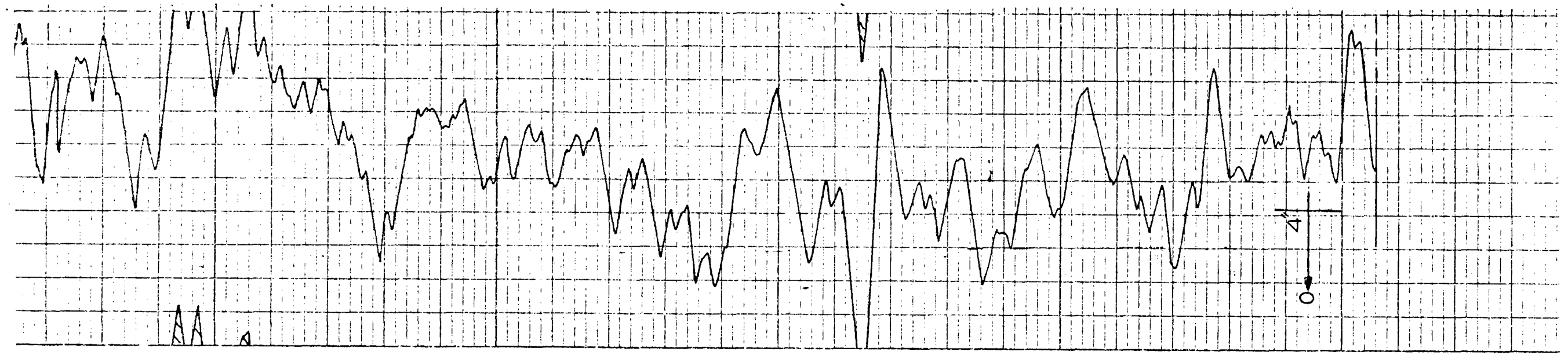
LOG MEAS. FROM KELLY BUSHING ELEV.
DRLG. MEAS. FROM KELLY BUSHING ELEV.
PERM. DATUM 5 1/2" BH TO [illegible] ELEV.

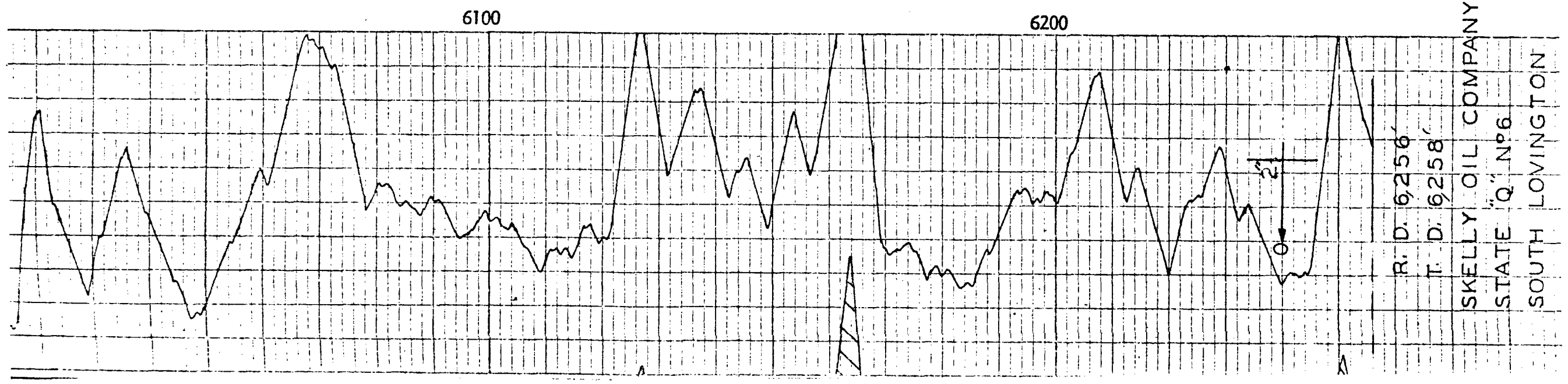
COMPANY: SKELLY OIL COMPANY
WELL: STATE "Q" NO. 6
FIELD: SOUTH LOVINGTON
COUNTY: LEA STATE: N MEX.
LOCATION:

TYPE OF LOG	GAMMA RAY	NEUTRON
RUN NO.	ONE-NW	ONE-NW
DATE	10-11-53	10-11-53
TOTAL DEPTH (DRILLER) STRAIN	6252	6252
EFFECTIVE DEPTH (DRILLER)	6252	6252
TOP OF LOGGED INTERVAL	SURFACE	SURFACE
BOTTOM OF LOGGED INTERVAL	6256	6256
TYPE OF FLUID IN HOLE	MUD	MUD
FLUID LEVEL	FULL	FULL
MAXIMUM RECORDED TEMP.		
NEUTRON SOURCE STRENGTH: & TYPE		600N
SOURCE SPACING — IN.		8.25
LENGTH OF MEASURING DEVICE — IN.	36"	9"
O.D. OF INSTRUMENT — IN.	3 5/8"	3 5/8"
TIME CONSTANT — SECONDS	5.0	3.2
LOGGING SPEED FT. MIN.	25-60	25-60
STATISTICAL VARIATION — IN.		
SENSITIVITY REFERENCE	274	275
RECORDED BY	KELLY	KELLY
WITNESSED BY	YELL	YELL

CASING RECORD

RUN NO.	BIT SIZE	CASING	WT.—LB.	FROM	WELL RECORD TO	FROM	R A LOG TO
ONE	10 3/4"	8 5/8"	±	SURFACE	2050	SURFACE	2040
ONE	7 7/8"	5 1/2"		SURFACE	6009	SURFACE	6011
ONE	4 3/4"			6009	6252	6011	6258





SCHLUMBERGER

COMPANY CITIES SERVICE OIL COMPANY

WELL ~~STATE AE # 5~~ LOVINGTON PADDOCK UNIT #42

FIELD LOVINGTON PADDOCK UNIT #42

LOCATION SEC.36-16S-36E

COUNTY LEA

STATE NEW MEXICO

Location of Well
660' f SL
990' f WL
Sec.36-16S-36E

GRN (ML)

Elevation: D.F.: 3849
K.B.:
~~DF~~ or G.L.:

FILING No.

COUNTY Lea
FIELD or LOCATION Lovington Paddock
WELL State AE # 5
COMPANY Cities Serv. Oil Co.

RUN NO.		1		
Date		11-17-55		
Depth Reference		KB 8.5' Abv. GL		
First Reading		6251		
Last Reading		5800		
Footage Measured		451		
Max. Depth Reached		3252		
Bottom Driller		6250		
Maximum Temp. F.		128		
Mud: Nature		Salt Gel		
" Density		9.7		
" Viscosity		40		
" Resistivity		.3 @ 45 °F.	@	°F.
Casing Size &	1	8 5/8" to 3350	to	
Weight	2	to	to	
Open Hole	1	7 7/8" to TD	to	
	2	to	to	
Fluid Level		Surf.		
Recording Speed (ft/hr)		2000		
Sensitivity Tap		GR) 140 N) 400	GR)	N)
Time Constant		1.4	1	
Panel		GNP-B # 46		
Opr. Rig Time		1 Hr.		
Sonde Size & Type		3 5/8"		
Truck No.		1759-Hobbs		
Observer		Reinders		

5½" @ 6062'

6100

6200

Acidized w/1000 gals. mud acid.
Acidized w/5000 gals. LT acid.
IP 12-9-55 Pumped 107.9 bbls. oil, 3/10 1% BS&W
24 hrs., 10 SPM, 74° S, 34 grav. COR 36

SCHLUMBERGER

L.P.U. Well #62

GAMMA RAY - NEUTRON

COUNTY Lea
FIELD or LOCATION S. Lovington
WELL State E Tr. 17 Well #1
COMPANY Stanolind Oil & Gas Co.

COMPANY STANOLIND OIL AND GAS COMPANY
WELL STATE E TRACT 17 WELL # 1
FIELD S. LOVINGTON
LOCATION SEC. 1-17S-36E
COUNTY LEA
STATE NEW MEXICO

Location of Well
1980' f EL
660' f SL
Sec. 1-17S-36E

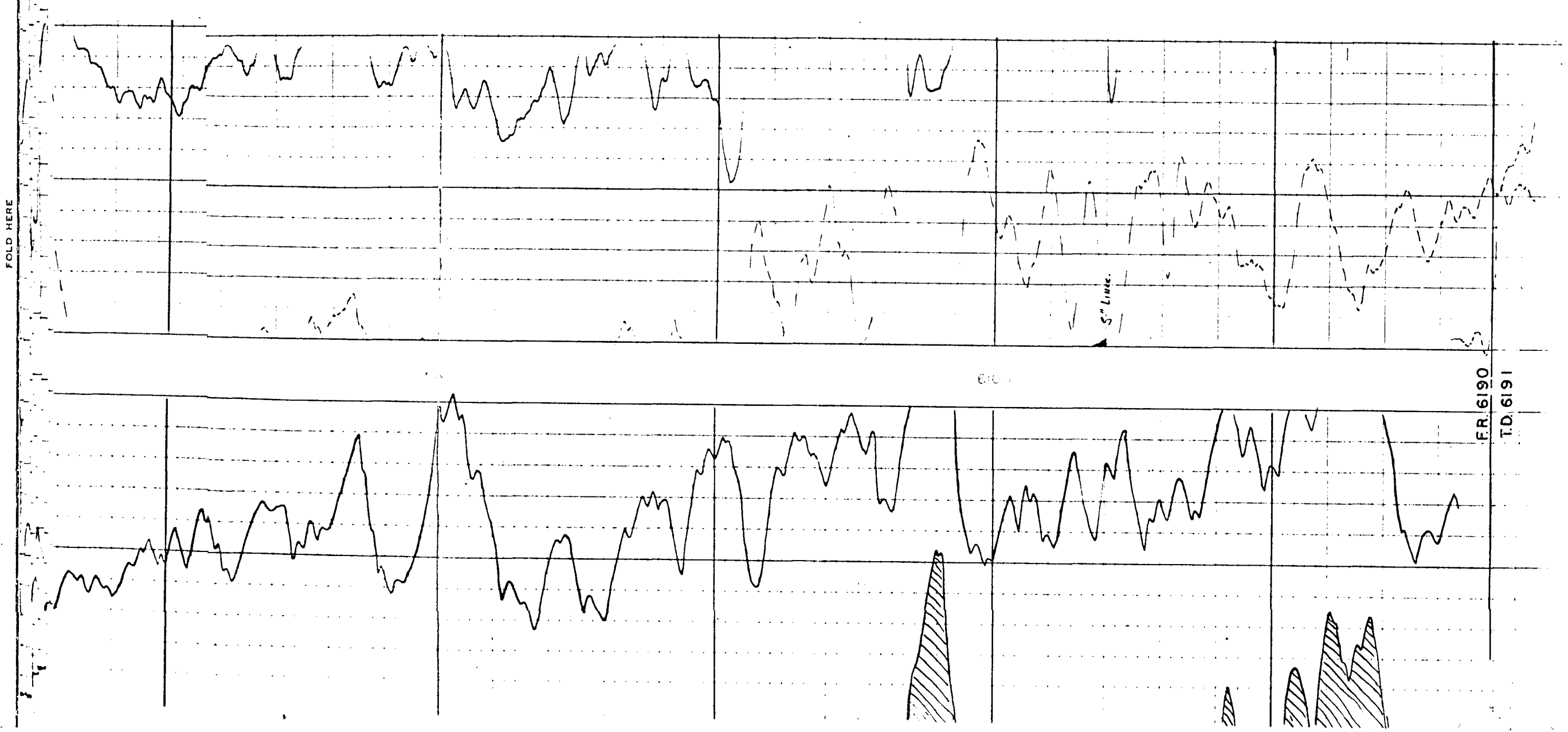
GRN
(LL-ML)

Elevation: D.F.: 3826
K.B.:
or G.L.:

FILING No.

FOLD HERE

RUN No.	1
Date	10-5-53
First Reading	6190
Last Reading	600
Feet Measured	5590
Csg. Schlum.	4550
Csg. Driller	4550
Depth Reached	6191
Bottom Driller	6191
Depth Datum	1' Abv. RT
Mud Nat.	Gel-Chemicals
" Density	9.1
" Viscosity	49
" Resist.	0.7 @ 70 °F @ °F
" Res. BHT	0.4 @ 120F @ °F
" pH	10 @ °F @ °F
" Wtr. Loss	10CC 30 min. CC 30 min.
Max. Temp. °F	120
Bit Size	7" Csg. in 8 3/4"-4550-6050
	6 1/4" open hole 4550-6050
	4 3/4" open hole-6050-TD
Opr. Rig Time	2 Hrs.
Truck No.	1762-Hobbs
Recorded By	Reinders
Witness By	Adams



PADDOCK No 82
STANOLIND OIL & GAS CO.
STATE E TRACT 17 WELL #1
S. LOVINGTON FIELD
LEA COUNTY, NEW MEXICO

LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE