

EXHIBIT No. 1

DATA FOR
PROPOSED LANGLIE-JAL (Queen) UNIT
WATERFLOOD PROJECT

OIL CONSERVATION COMMISSION HEARING
CASE No. 4424 & 4430

September 30, 1970

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION

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OIL CONSERVATION COMMISSION
<u>9/30/70</u> EXHIBIT NO. <u># 1</u>
CASE NO. <u>4424 & 4430</u>

UNION TEXAS PETROLEUM
MIDLAND DISTRICT

Case Number 4429 & 4430
Date 9/30/70

GENERAL

OPERATOR - Union Texas Petroleum

PROJECT - Langlie-Jal Unit Waterflood

POOL - Langlie-Mattix and Jalmat

LOCATION OF PROJECT - Located in Townships 24 and 25 South, Range 37 East, approximately one mile northeast of Jal, Lea County, New Mexico.

NUMBER OF WELLS IN PROJECT - 93 wells proposed, including 27 to be drilled, either as replacement wells or to develop un-drilled tracts.

UNIT AND PROJECT AREA - 3708.06 acres

OTHER WATERFLOOD PROJECTS IN POOL - Amerada Woolworth Unit, Gulf Stuart
Langlie-Mattix, Continental Langlie
Jack Unit, Reserve South Langlie-Jal,
Mobil Humphery Queen.

GEOLOGICAL AND RESERVOIR DATA

RESERVOIR - Seven Rivers and Queen

DEPTH - Approximately 3270 to the top of the pay zones

PRODUCTIVE ZONES - Porous sands at the base of the Jalmat and top of the
Langlie-Mattix Pools.

NET PAY - The average net pay thickness is approximately 23 feet.

DESCRIPTION OF RESERVOIR ROCK - The pay section is made up of a series of
alternating layers of sand and anhydrite.

STRUCTURE - The Unit lies on the west flank of a northwest-southeast trend-
ing anticline, which is on the west flank of the Central Basin
Platform. Dip is to the east-southeast in the unit area.

RESERVOIR LIMITS - Lower layers of the productive Queen zone dips into water
on the west and south sides of the unit area, and the upper
layers contain gas in the northwest part. On the south-
eastern side, the sand is impermeable.

AVERAGE POROSITY OF NET PAY - 12%

Case Number _____

Date _____

P R I M A R Y O P E R A T I O N S

DATE OF FIRST PRODUCTION - August, 1935

TOTAL NUMBER OF WELLS DRILLED - 89 in Unit Area

ACCUMULATIVE PRODUCTION - 7-1-70 - 4,448,699

REMAINING PRIMARY RESERVES - 7-1-70 - 180,995

AVERAGE DAILY OIL PRODUCTION PER WELL, June, 1970 - 3.4 bbls.

ORIGINAL RESERVOIR PRESSURE - 1450 psi

OIL GRAVITY 36⁰ API

DRIVE MECHANISM - Solution gas drive

STAGE OF DEPLETION - The project area is approximately 96% depleted of primary oil reserves.

ESTIMATED OIL RECOVERY THROUGH PRIMARY OPERATIONS

W A T E R F L O O D O P E R A T I O N S

PROPOSED PATTERN - Five spot

NUMBER OF INJECTION WELLS - 46

INITIAL INJECTION RATE - 500 BWPD per well

ESTIMATED INJECTION PRESSURE - Maximum design pressure of 2000 psia, but initial pressure expected not to exceed 1000 psia.

PLAN OF INJECTION - Inject into pay zone through cement lined tubing and below a packer.

SOURCE OF INJECTION WATER - Skelly Oil Company's Jal Water System

TYPE OF WATER - Capitan Reef water and produced water - non potable

TREATMENT OF WATER - None anticipated

ADDITIONAL OIL RECOVERY ANTICIPATED - Secondary oil is estimated to be 4,500,000 barrels, or approximately equal to the primary production.

SKELLY OIL COMPANY

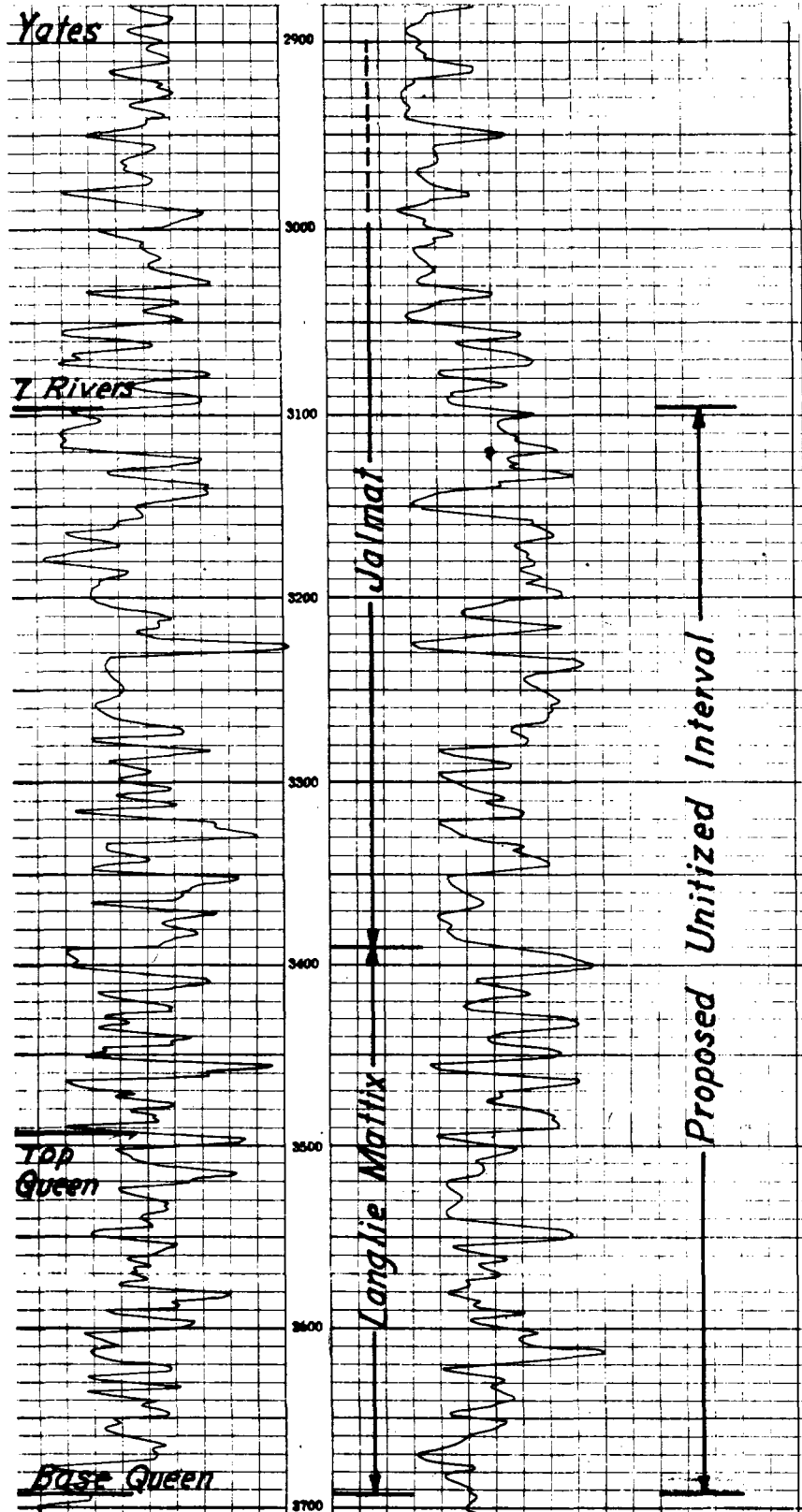
SHERRILL NO. 7

K.B. Elev. 3241'

LANGLIE-MATTIX FIELD

Sec. 31, T 24 S, R 36 E

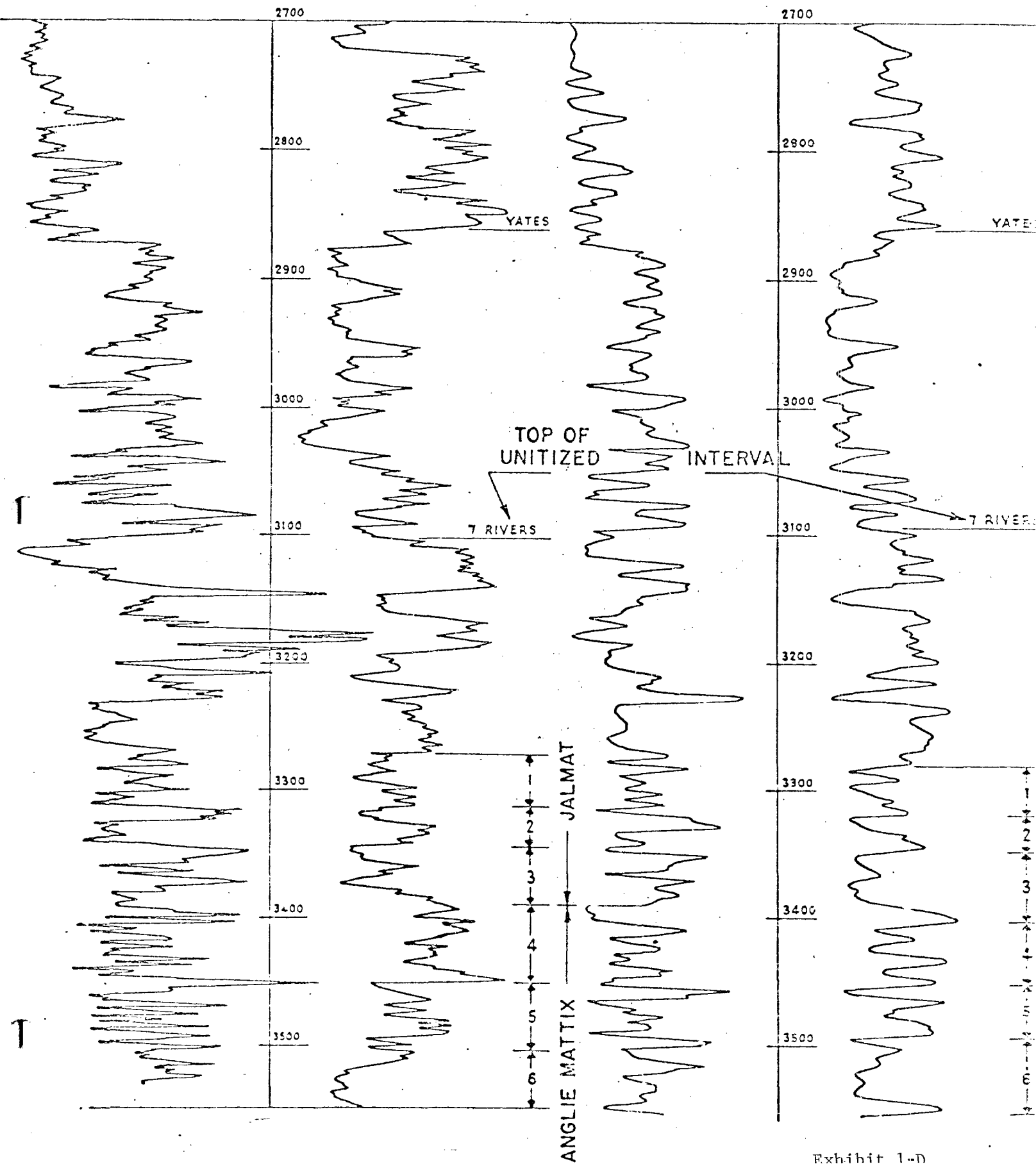
LEA COUNTY, N.M.



OLSEN
Phillips No. 4
Sec. 6-0, 25S - 37E
Elev. 3218

SKELLY
Sherrill No. 7
Sec. 31-J, 24S - 37E
Elev. 3241

PRODUCING HORIZON CORRELATION



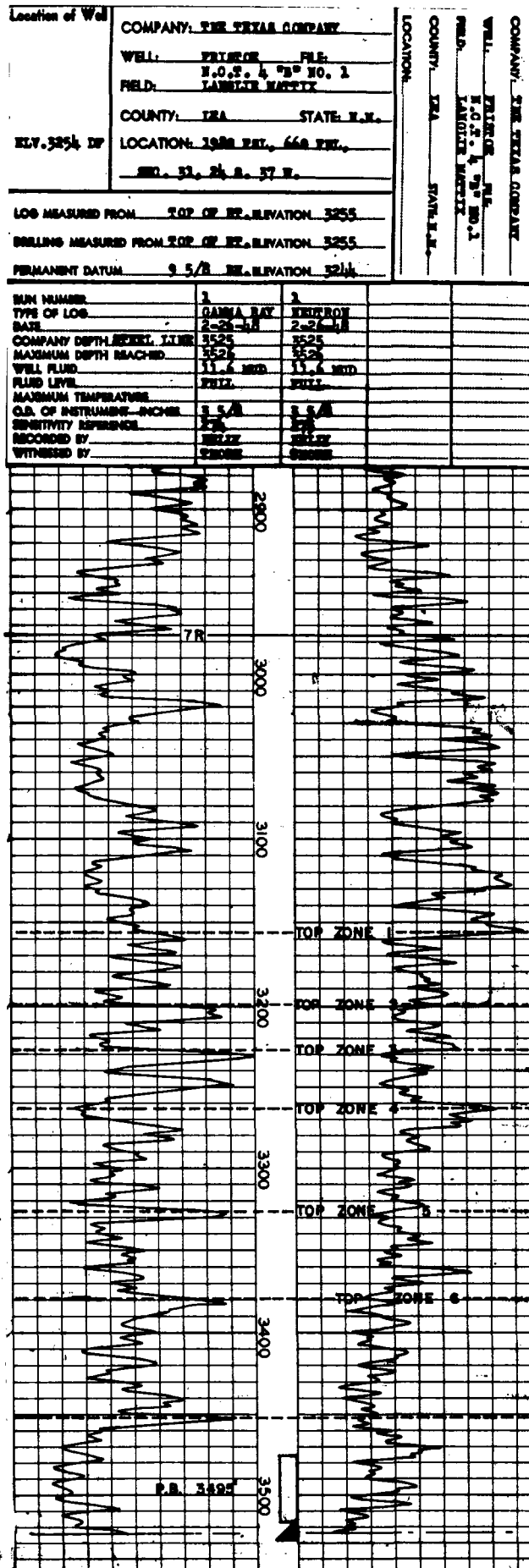


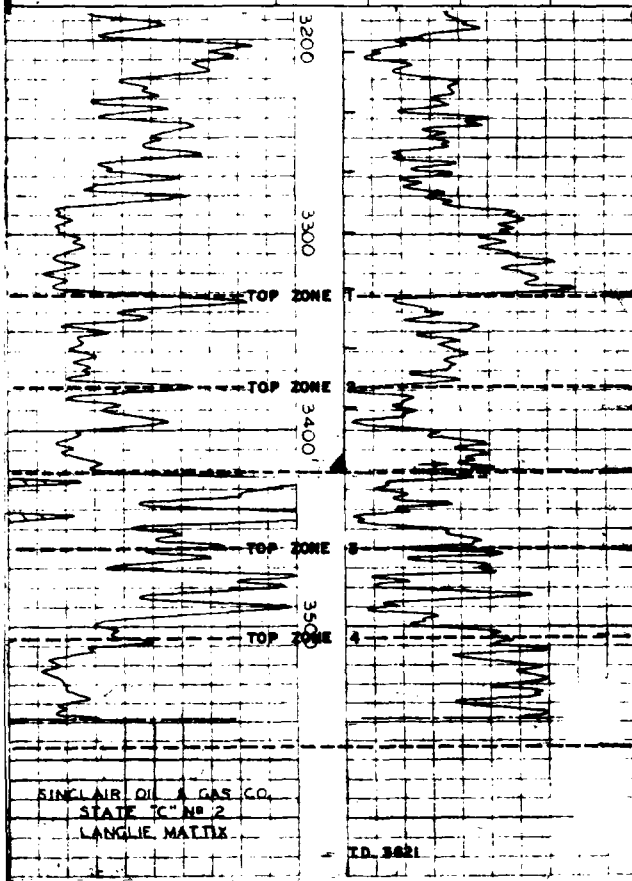
Exhibit 1-E

COMPANY: <u>R. OLSEN PERSONAL</u> WELL: <u>WELLS # 10</u> FIELD: <u>LANGLIE-MATTIX</u> COUNTY: <u>LEA</u> STATE: <u>N. MEX.</u> LOCATION: <u>NW/SE</u> <u>SEC. 6, T-25-S, R-37-E.</u>	LOCATION FILE NO. LOG NO. <u>6765</u>																																																																																								
LOG MEAS. FROM: <u>TOP ROTARY TABLE</u> ELEV. <u>3456</u> ORIG. MEAS. FROM: <u>TOP ROTARY TABLE</u> ELEV. <u>3451</u> PERM. DATUM: <u>GROUND LEVEL</u> ELEV. <u>3241</u>																																																																																									
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LANE RADIOACTIVITY LOG WELLS COMPANY

Location of Well	COMPANY: SINCLAIR OIL & GAS CO.		FILE NO.
	WELL: STATE "C" NO. 2		
	FIELD: LANGUE MATIX		
	COUNTY: LEA	STATE: N.M.	
	LOCATION: 330' FREE/L OF SE 1/4		
3261' G.L.	ELEV. 3161'		COMPANY: SINCLAIR OIL & GAS CO. WELL: STATE "C" NO. 2 FIELD: LANGUE MATIX COUNTY: LEA STATE: N.M.
LOG MEAS. FROM	ELEV. 3161'		
DRIG. MEAS. FROM	ELEV. 3161'		
PERM. DATUM	ELEV. 3161'		

TYPE OF LOG	1	2
RUN NO.	1	2
DATE	1-27-59	1-27-59
TOTAL DEPTH (DRILLER) WIRE LINE	3261'	3261'
EFFECTIVE DEPTH (DRILLER)	3261'	3261'
TOP OF LOGGED INTERVAL	3261'	3261'
BOTTOM OF LOGGED INTERVAL	3261'	3261'
TYPE OF FLUID IN HOLE	3261'	3261'
FLUID LEVEL	3261'	3261'
MAXIMUM RECORDED TEMP.	6000'	6000'
NEUTRON SOURCE STRENGTH & TYPE	8.00	8.00
SOURCE SPACING—IN.	12.5	12.5
LENGTH OF MEASURING DEVICE—IN.	12.5	12.5
O.D. OF INSTRUMENT—IN.	12.5	12.5
TIME CONSTANT—SECONDS	12.5	12.5
LOGGING SPEED FT. MIN.	12.5	12.5
STATISTICAL VARIATION—IN.	12.5	12.5
SENSITIVITY REFERENCE	12.5	12.5
RECORDED BY	TON	TON
WITNESSED BY	EL	EL



COMPANY: PAN AMERICAN PET. CORP.

WELL: P. J. LAMOLIE "A" NO. 2

FIELD: JAL. MAT.

LOCATION: 1989' FSL & 660' FWL OF SEC. 2
T-25-S, R-37-E

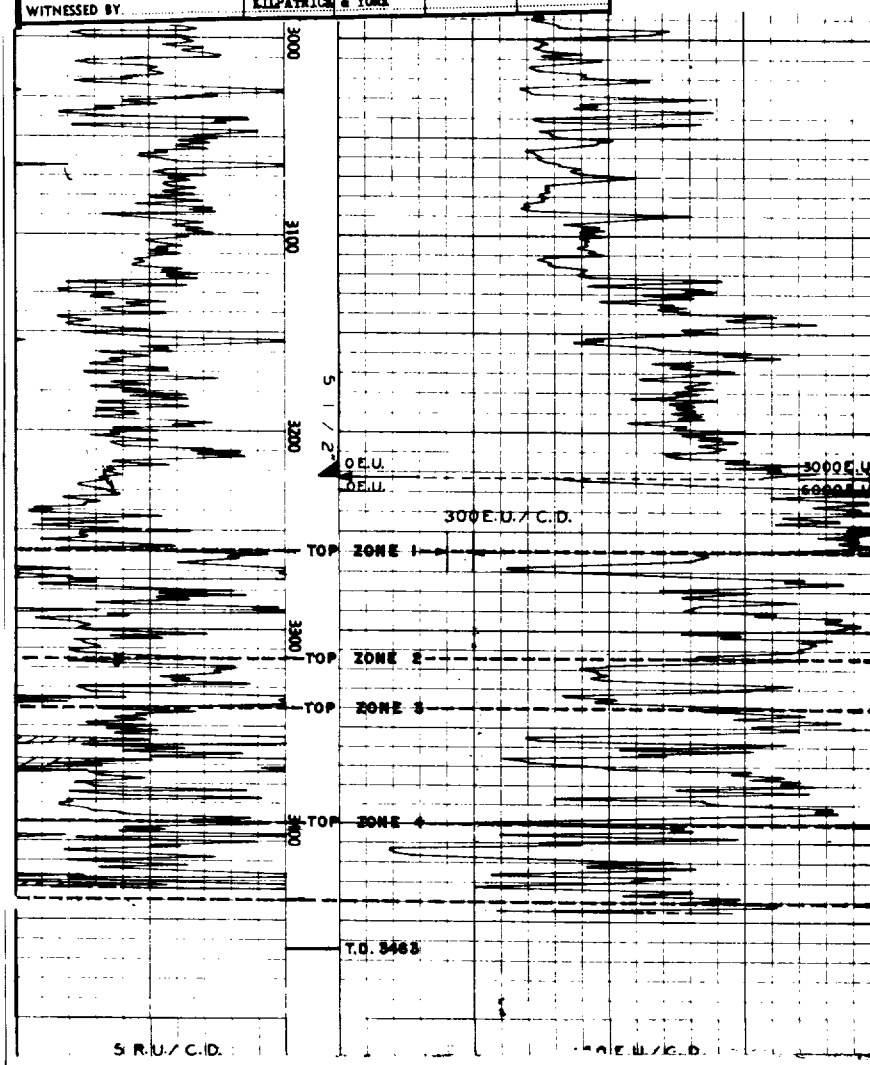
COUNTY: LEA STATE: N. MEX.

LOG ZERO: DERRICK FLOOR ELEV. 3160

DRLG. ZERO: DERRICK FLOOR ELEV. 3160

PERM. DATUM: TOP 5 1/2" CASING ELEV. 3160

TYPE OF LOG	GAMMA RAY	NEUTRON
RUN NO.	ONE-ON	ONE-ON
DATE	3-7-58	3-7-58
TOTAL DEPTH (DRILLER) STRATH	365	365
EFFECTIVE DEPTH (DRILLER)	365	365
TOP OF LOGGED INTERVAL	SURFACE	SURFACE
BOTTOM OF LOGGED INTERVAL	3133	3160
TYPE OF FLUID IN HOLE	WATER	WATER
FLUID LEVEL		37'
MAXIMUM RECORDED TEMP.		51.3
SOURCE STRENGTH & TYPE		13.5
SOURCE SPACING - IN.	SCINT.	SCINT.
DETECTOR CLASS.	D601	D601
DETECTOR TYPE	1	1
LENGTH OF MEAS. DEVICE - IN.	3 5/8	3 5/8
O.D. OF INSTRUMENT - IN.	2.625	2.625
TIME CONSTANT - SECONDS	30-60	30-60
LOGGING SPEED FT./MIN.	RECORDED	RECORDED
STATISTICAL VARIATION - IN.	0.25	0.25
SENSITIVITY REFERENCE	DOCKWORTH	DOCKWORTH
RECORDED BY	KILPATRICK	YORK
WITNESSED BY		



LOCATION FILE NO. _____ LOG NO. _____	COMPANY: <u>J. OLSEN PERSONAL</u> WELL: <u>OLSEN PHILLIPS NO. 2</u> FIELD: <u>LANGLE MATTHEW</u> COUNTY: <u>LEA</u> STATE <u>N. MEXICO</u> LOCATION: <u>560' FWL-2080' FSL SEC. 6.</u> <u>T25S-R37E</u>	COM. <u>ANY</u> R. OLSEN PERSONAL WELL <u>OLSEN PHILLIPS NO. 2</u> FIELD <u>LANGLE MATTHEW</u> COUNTY <u>LEA</u> STATE <u>N. MEXICO</u> LOCATION <u>560' FWL-2080' FSL SEC. 6.</u> <u>T25S-R37E</u>																																																																																
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COMPANY: R. OLSEN PERSONAL

WELL: OLSEN PHILLIPS # 3

FIELD: LANGLEY MATTIX

COUNTY: LEA STATE: N. MEX.

LOCATION: 660' FSL & 1980' FWL

SEC. 6, T-25-S, R-37-E

FILE NO. 95832

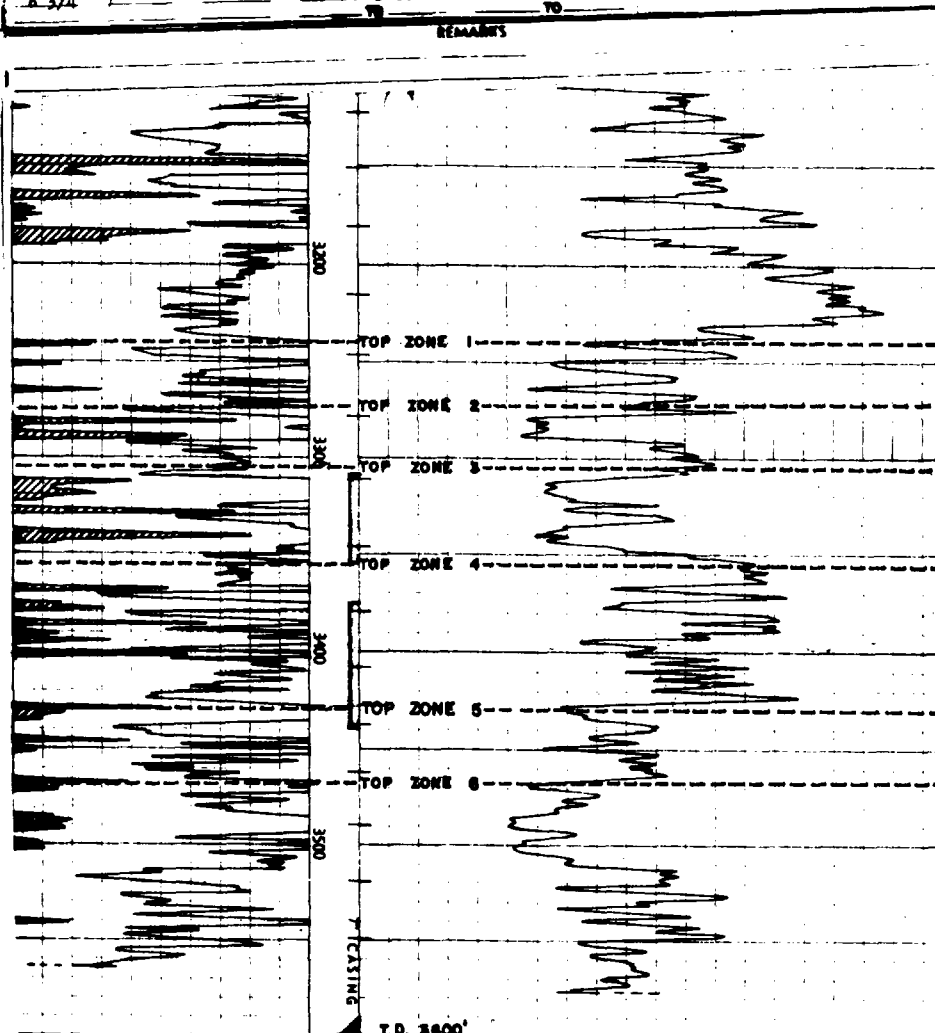
LOG MEAS. FROM: 10.5' ABOVE GROUND LEVEL SURV. 3218

DRILL MEAS. FROM SURV.

FORM. DATUM: 10.5' ABOVE GROUND LEVEL SURV.

TYPE OF LOG	C/R	N/N
RUN NO.	1-NV	1-NV
DATE	5-16-58	5-16-58
TOTAL DEPTH (DRILLER)	3600	3600
EFFECTIVE DEPTH (DRILLER)	3550	3550
EFFECTIVE DEPTH (WESTERN)	3577.5	3577.5
TOP OF LOGGED INTERVAL	SURF.	SURF.
BOTTOM OF LOGGED INTERVAL	3577.5	3577.5
TYPE OF FLUID IN HOLE	OIL	OIL
FLUID LEVEL	304	304
SOURCE STRENGTH & TYPE	S10A3	S10A3
SOURCE SPACING	1-15	1-15
DETECTOR CLASS	SCINT.	SCINT.
DETECTOR TYPE	D461	D461
DETECTOR LENGTH	3 5/8	3 5/8
O.D. OF INSTRUMENT	3.0	3.0
TIME CONSTANT	30-60	30-60
LOGGING SPEED	RECORDED	RECORDED
STATISTICAL VARIATION	2-5.3	2-5.3
SENSITIVITY REFERENCE	MC/KINZEY	MC/KINZEY
RECORDED BY	MR. FRENCH	MR. FRENCH

BIT SIZE	CASING	WT. LB.	CASING RECORD		INTERVAL	
			FROM WELL RECORD	TO	FROM RA LOG	TO
8 3/4	10 7/8		SURF.	TO 388		TO
7"			SURF.	TO 3398		TO



COMPANY R. OLSEN PERSONAL LOCATION _____

WELL OLSEN PHILLIPS # 5

FIELD LANGLIE MATTIE

COUNTY LEA STATE NEW MEX.

LOCATION 660' PS & EL'S, SEC. 6

T-25-S, R-37-E

FILE NO. _____

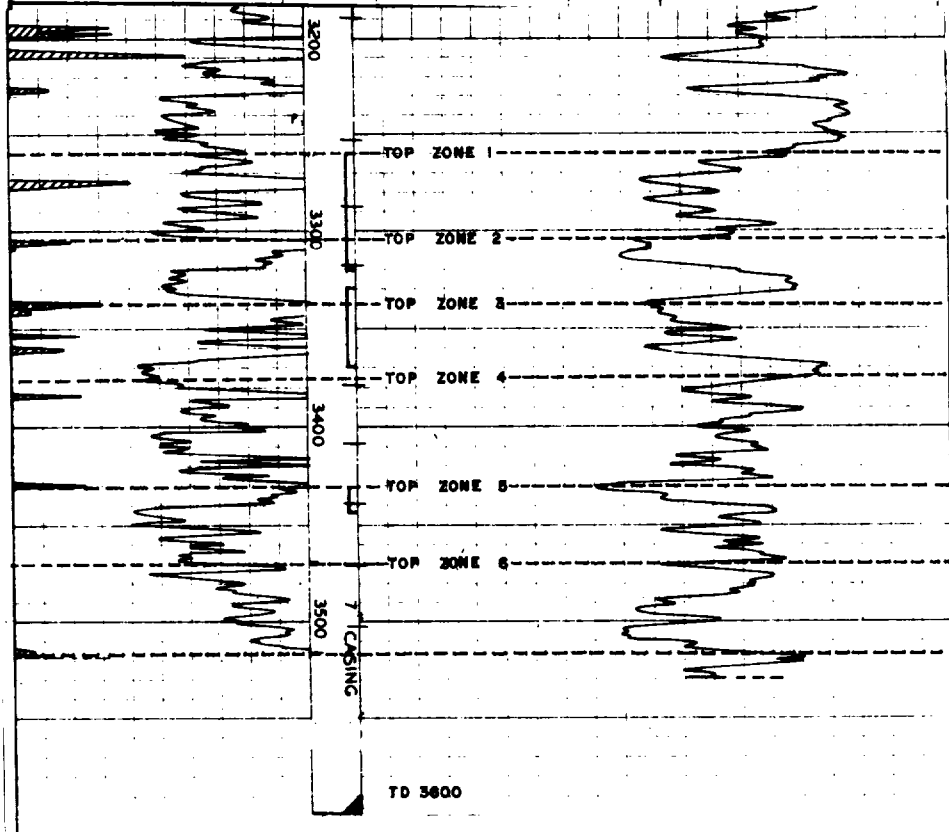
LOG NO. 125847

LOG MEAS FROM 10.5 ABOVE GROUND LEVEL ELEV. _____

ORIG MEAS FROM 10.5 ABOVE GROUND LEVEL ELEV. _____

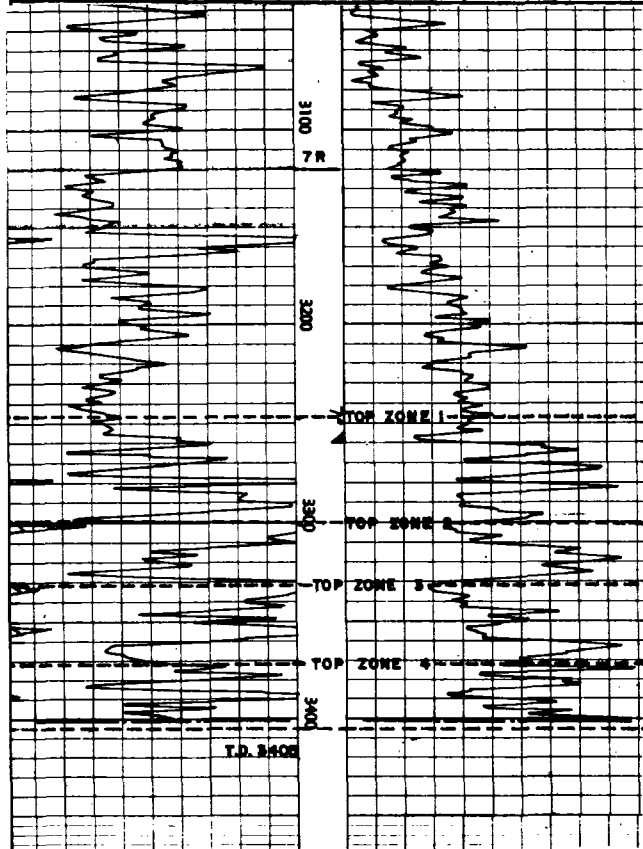
PERM DATUM GROUND LEVEL ELEV. _____

TYPE OF LOG	G/R	H/W
RUN NO	1-WV	1-WV
DATE	12-17-58	12-17-58
TOTAL DEPTH (DRILLER)		
EFFECTIVE DEPTH (DRILLER)	3535	3535
EFFECTIVE DEPTH (WESTERN)	3530.5	3530.5
TOP OF LOGGED INTERVAL	SURF.	SURF.
BOTTOM OF LOGGED INTERVAL	3517.5	3529
TYPE OF FLUID IN HOLE	OIL	OIL
FLUID LEVEL	FULL	FULL
SOURCE STRENGTH & TYPE		\$10A3
SOURCE SPACING		13.5"
DETECTOR CLASS	SCINT.	SCINT.
DETECTOR TYPE	DAG1	D6H1
DETECTOR LENGTH	4"	4"
O.D. OF INSTRUMENT IN	3 5/8	3 5/8
TIME CONSTANT SEC.	2.0-3.0	2.0-3.0
LOGGING SPEED FT./MIN	25-60	25-60
STATISTICAL VARIATION	RECORDED	RECORDED
SENSITIVITY REFERENCE	C-933	B-368
RECORDED BY	MC/KIRKEY	
WITNESSED BY	MR. MATSON & FRENCH	



Location of Well	COMPANY: ANDERSON PETROLEUM OIL CORP. WELL: LAMBLE C - 2 FIELD: LAMBLE MATIX COUNTY: EMA STATE: E.M. LOCATION: 880' FEL, 1880' FEL, SECTION 17, 28S, 27E.		COMPANY: ANDERSON PETROLEUM OIL CORP. WELL: LAMBLE C-2 FIELD: LAMBLE MATIX COUNTY: EMA STATE: E.M. LOCATION:
LOG MEAS. FROM KELLY DRIVE HOUSING ELEV. 5148' DRUG. MEAS. FROM KELLY DRIVE HOUSING ELEV. 5148' PERM. DATUM 7' BRATHEN HEAD ELEV. 5198'			
TYPE OF LOG RUN NO. DATE TOTAL DEPTH (DRILLER) EFFECTIVE DEPTH (DRILLER) TOP OF LOGGED INTERVAL BOTTOM OF LOGGED INTERVAL TYPE OF FLUID IN HOLE FLUID LEVEL MAXIMUM RECORDED TEMP. NEUTRON SOURCE STRENGTH & TYPE SOURCE SPACING - IN. LENGTH OF MEASURING DEVICE - IN. O.D. OF INSTRUMENT - IN. TIME CONSTANT - SECONDS LOGGING SPEED FT./MIN. STATISTICAL VARIATION - IN. SENSITIVITY REFERENCE RECORDED BY WITNESSED BY	GAMMA RAY 1 ME 12-22-52 2408' 2408' SURFACE 2408' OIL FULL 8000 8.25 24 2 1/2 4 25-50 274 274 DOUGLSON	NEUTRON 1 ME 12-22-52 2408' 2408' SURFACE 2408' OIL FULL 8000 8.25 24 2 1/2 4 25-50 274 274 DOUGLSON	

Location of Well	ANDERSON PRICHARD	
	COMPANY: OIL CORPORATION	
	WELL: LANGLEY NO. 6	
	FIELD: LANGLEY MATIX	
	COUNTY: LRA	STATE: N.M.
LOCATION: 1980' PAL, 2310' FEL,		
SECTION 8, 28S, 37E.		
ELEVATION OF 9.5: 3140'		
LOG MEAS. FROM ROTARY TABLE		ELEV.
DRLG. MEAS. FROM ROTARY TABLE		ELEV.
7" BRAIN REED PLANE IS		
PERM. DATUM 9' BELOW ROTARY TABLE.		ELEV.
TYPE OF LOG	GAMMA RAY	NEUTRON
RUN NO.	1 SW	1 SW
DATE	2-24-53	2-24-53
TOTAL DEPTH (DRILLER) STRAIN	3404.5'	3404.5'
EFFECTIVE DEPTH (DRILLER)	3404.5'	3404.5'
TOP OF LOGGED INTERVAL	SURFACE	SURFACE
BOTTOM OF LOGGED INTERVAL	3401'	3401'
TYPE OF FLUID IN HOLE	OIL	OIL
FLUID LEVEL	FULL	FULL
MAXIMUM RECORDED TEMP.		
NEUTRON SOURCE STRENGTH & TYPE		600M
SOURCE SPACING - IN.		8.25
LENGTH OF MEASURING DEVICE - IN.	26	9
O.D. OF INSTRUMENT - IN.	3 5/8	3 5/8
TIME CONSTANT - SECONDS	5	4
LOGGING SPEED FT./MIN.	25-45	25-45
STATISTICAL VARIATION - IN.		
SENSITIVITY REFERENCE	274	272
RECORDED BY	ANDERSON	ANDERSON
WITNESSED BY	COULSON	COULSON



DIAGRAMMATIC SKETCH
TYPICAL PROPOSED INJECTION WELL
PROPOSED LANGLEIE-JAL UNIT
Lea County, New Mexico
SINGLE COMPLETION

8 5/8" OD Casing Cement
Circulated.

300'

CASING-TUBING ANNULUS WILL BE
LOADED WITH INHIBITED FLUID.

2 3/8" OD 4.70# EUE 8 rd. J-55
Tubing Cement Lined Internally.

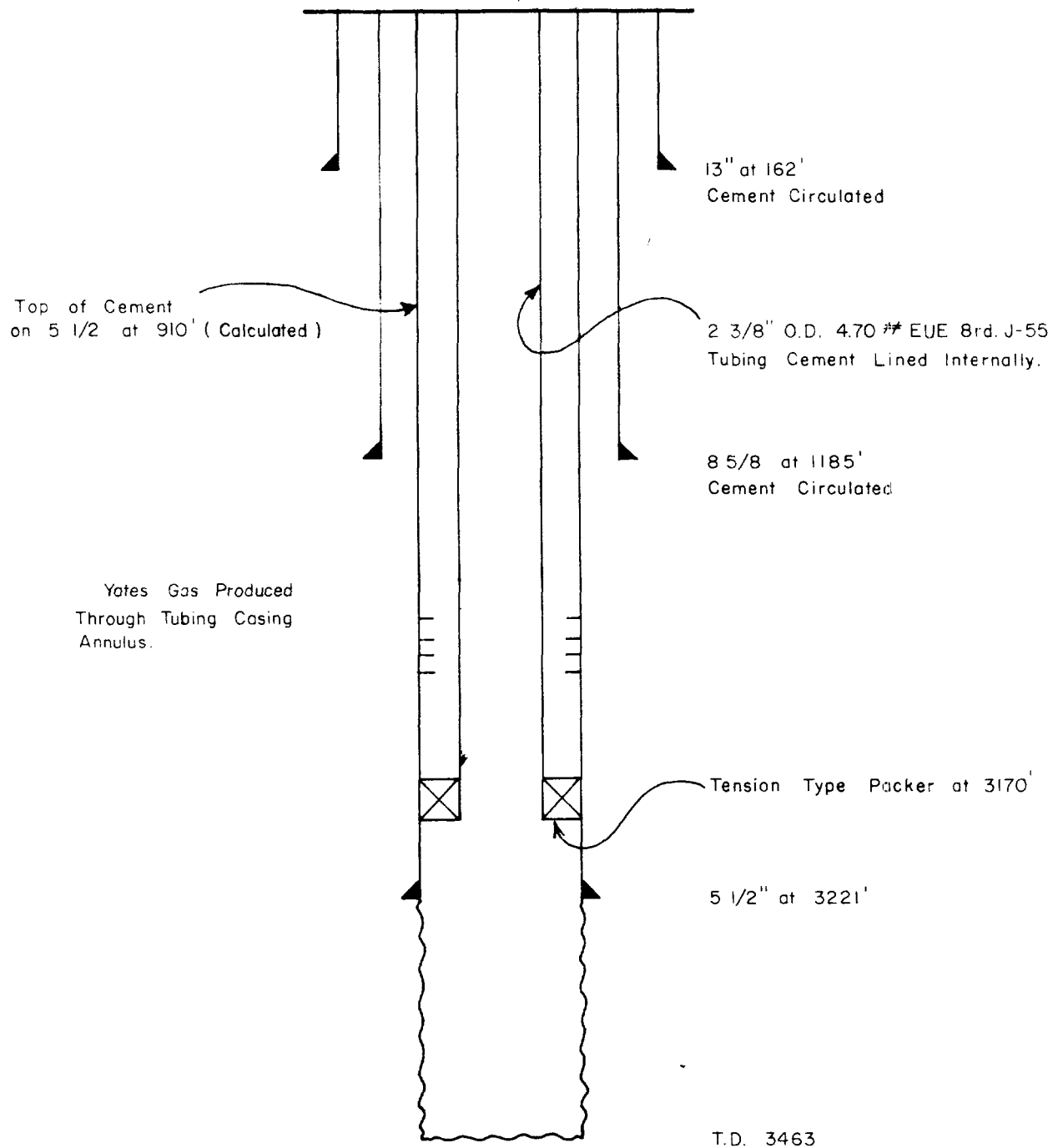
Tension Type Packer, To Be Set At
Approximately 3250'

SEVEN RIVERS-QUEEN
Perforated or Open Hole 3300'-3600'

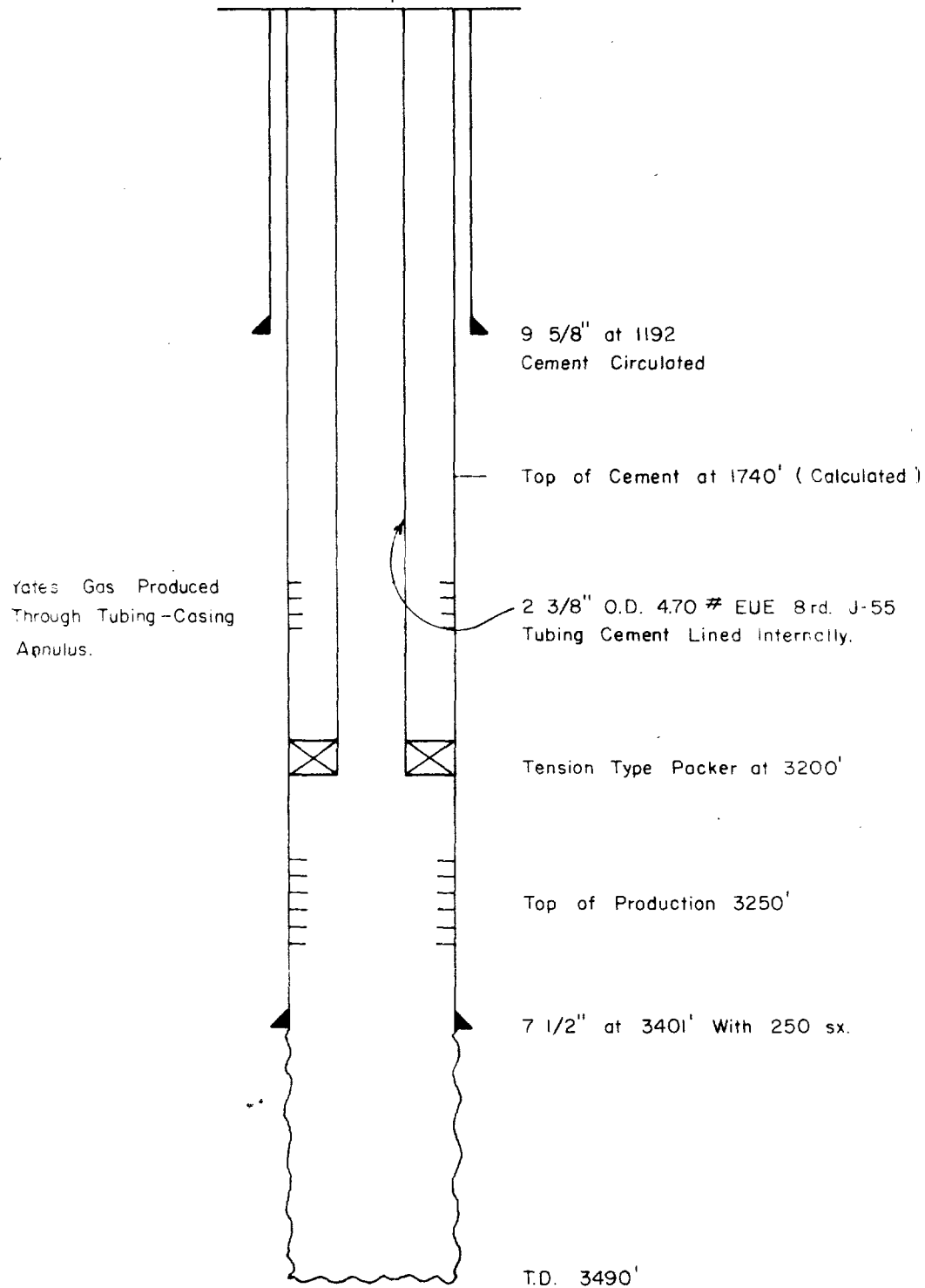
4 1/2" OD Casing Cemented
With 600 sx. Cmt. Top
At Surface

3600'

DIAGRAMMATIC SKETCH
 PROPOSED INJECTION WELL
 PROPOSED LANGLEIE-JAL UNIT
 Lea County, New Mexico
 Pan American, Langlie "A" No. 2
 Dual Completion



DIAGRAMMATIC SKETCH
 PROPOSED INJECTION WELL
 PROPOSED LANGLEIE-JAL UNIT
 Lea County, New Mexico
 Skelly Sherrill, No. 3
 Dual Completion



INITIAL PLAN OF OPERATION

The proposed injection pattern is an 80 acre five-spot. We propose to drill replacement wells and development wells to complete every five-spot pattern in the unit area. Strategic wells will be cored to obtain additional reservoir data. All wells drilled will be logged. After development is complete, injection will commence. Injection of 500 barrels of water per day per well is anticipated. Injection wells will be equipped with cement lined tubing and a packer. Singly completed injection wells will have inhibited fluid in the annulus above the packer. The injection water will be produced Seven Rivers water and Capitan Reef water purchased from Skelly Oil Company's Jal Water System. Water produced in unit operations will also be injected. To insure maximum recovery through cooperative waterflood operations and to protect the correlative rights of the unit, line well agreements will be negotiated with offset operators at the earliest possible date.

All work will be conducted in a prudent manner utilizing the best techniques and equipment deemed by the working interest owners to be most efficient.

L. C. CASE, P. E.

CONSULTANT, OIL FIELD WATER PROBLEMS

200 SUNSET DRIVE

TULSA 14, OKLAHOMA

LUTHER 3-9307

LUTHER 3-3067

WATER ANALYSIS- Seven Rivers brine. Skelly Oil Company, Coates Lease.
Sampled at supply tank, 7/29/66

	Milligrams/liter	E.P.I.%(R.V.%)
Sodium, Na	2,005	32.19
Calcium, Ca	520	9.61
Magnesium, Mg	266	8.10
Sulfate, SO ₄	540	4.15
Chloride, Cl	3,595	37.55
Bicarbonate, HCO ₃	1,366	8.30
Carbonate, CO ₃	nil	0.00
Total	8,292	100.00%

Other determinations:

Sp.Gr. at 60°F 1.009
pH value 6.8
Hydrogen sulfide, H₂S - 408* (At supply tank, 7/29/66)

Hypothetical Combinations, milligrams/liter:

* Milligrams/liter

Calcium bicarbonate, Ca(HCO ₃) ₂	1,816
Magnesium bicarbonate, Mg(HCO ₃) ₂	0.0
Sodium bicarbonate, NaHCO ₃	0.0
Calcium sulfate, CaSO ₄	241
Magnesium sulfate, MgSO ₄	462
Sodium sulfate, Na ₂ SO ₄	0.0
Calcium chloride, CaCl ₂	0.0
Magnesium chloride, MgCl ₂	675
Sodium chloride, NaCl	5,098
Total	8,292

Definition of water character:

Primary salinity	64.58
Secondary salinity	18.82
Primary alkalinity	0.00
Secondary Alkalinity	16.60
Total	100.00%

Remarks:

Considerable time was spent in an attempt to count the bacteria in a sample of this brine taken from the supply tank. The count was not accurate due to the very high H₂S, which darkened the agar. Final results were indicated to be as follows: Aerobic bacteria-- less than 500/ml in API agar. SO₄-reducers- 0 colonies in 18 days.

This brine shows no tendency to deposit gypsum, calculated from gypsum solubility data. This brine is incompatible with waters having appreciable dissolved iron or oxygen.

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

9/30/70 EXHIBIT NO. 1-L

CASE NO. 44298 4430

Exhibit 1-L

ENJAY CHEMICAL COMPANY

Houston Chemical Plant
8230 Stedman, Houston, Texas 77029

April 21, 1969

WATER ANALYSIS



SAMPLE DESCRIPTION: Jal water supply well #2. 4-14-69

COMPANY: Skelly Oil Company

STSR NUMBER: #46986

REQUESTED BY: A. R. Bohannon

DATE RECEIVED: 4-15-69

ANALYZED BY: J. L. Johnson

	<u>Mg/L</u>	<u>Meq/L</u>
Sodium	7,298	317.3
Calcium	724	36.2
Magnesium	301	24.8
Chloride	11,363	320.4
Sulfate	2,218	46.1
Bicarbonate	720	11.8
Carbonate	0	
Hydroxide	0	

pH 6.8

Specific Gravity at 60 °F. 1.0076

Oil Content

Organic Matter

Hydrogen Sulfide

Mg/L

313

TOTAL 22,624

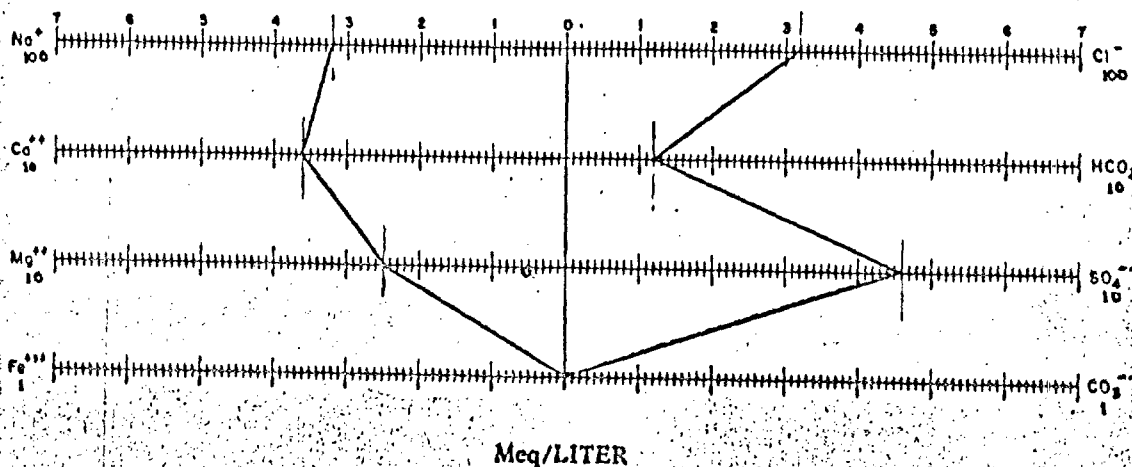
Dissolved Iron

Total Iron

0.12

0.0

WATER PATTERN (Stiff Method)



Remarks:

L. C. CASE, P. E.

CONSULTANT, OIL FIELD WATER PROBLEMS

200 DUNSET DRIVE

TULSA 14, OKLAHOMA

LUTHER 3-9307

LUTHER 3-3087

WATER ANALYSIS- Seven Rivers brine. Skelly Oil Company, Coates Lease.
Sampled at supply tank, 7/29/66

	Milligrams/liter	E.P.L.%(R.V.%)
Sodium, Na	2,005	32.19
Calcium, Ca	520	9.61
Magnesium, Mg	266	8.10
Sulfate, SO_4	540	4.15
Chloride, Cl	3,595	37.55
Bicarbonate, HCO_3	1,366	8.30
Carbonate, CO_3	nil	0.00
Total	8,292	100.00%

Other determinations:

Sp.Gr. at 60°F

1.009

pH value

6.8

Hydrogen sulfide, H_2S - 408* (At supply tank, 7/29/66)

Hypothetical Combinations, milligrams/liter:

* Milligrams/liter

Calcium bicarbonate, $Ca(HCO_3)_2$	1,816
Magnesium bicarbonate, $Mg(HCO_3)_2$	0.0
Sodium bicarbonate, $NaHCO_3$	0.0
Calcium sulfate, $CaSO_4$	241
Magnesium sulfate, $MgSO_4$	462
Sodium sulfate, Na_2SO_4	0.0
Calcium chloride, $CaCl_2$	0.0
Magnesium chloride, $MgCl_2$	675
Sodium chloride, $NaCl$	5,098
Total	8,292

Definition of water character:

Primary salinity	64.58
Secondary salinity	18.82
Primary alkalinity	0.00
Secondary Alkalinity	16.60
Total	100.00%

Remarks:

Considerable time was spent in an attempt to count the bacteria in a sample of this brine taken from the supply tank. The count was not accurate due to the very high H_2S , which darkened the agar. Final results were indicated to be as follows: Aerobic bacteria-- less than 500/ml in API agar. SO_4 -reducers- 0 colonies in 18 days.

This brine shows no tendency to deposit gypsum, calculated from gypsum solubility data. This brine is incompatible with waters having appreciable dissolved iron or oxygen.

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

9/30/70 EXHIBIT NO. 1-L

CASE NO. 44298 4430

Exhibit 1-L

April 21, 1969

WATER ANALYSIS

ENJAY

SAMPLE DESCRIPTION: Jal water supply well #2, 4-14-69

COMPANY: Skelly Oil Company

STSR NUMBER: #46986

REQUESTED BY: A. R. Bohannon

DATE RECEIVED: 4-15-69

ANALYZED BY: J. L. Johnson

	<u>Mg/L</u>	<u>Mcq/L</u>
Sodium	7,298	317.3
Calcium	724	36.2
Magnesium	301	24.8
Chloride	11,363	320.4
Sulfate	2,218	46.1
Bicarbonate	720	11.8
Carbonate	0	
Hydroxide	0	
TOTAL	22,624	

pH 6.8

Specific Gravity at 60 °F. 1.0076

Oil Content

Organic Matter

Hydrogen Sulfide

Mg/L

313

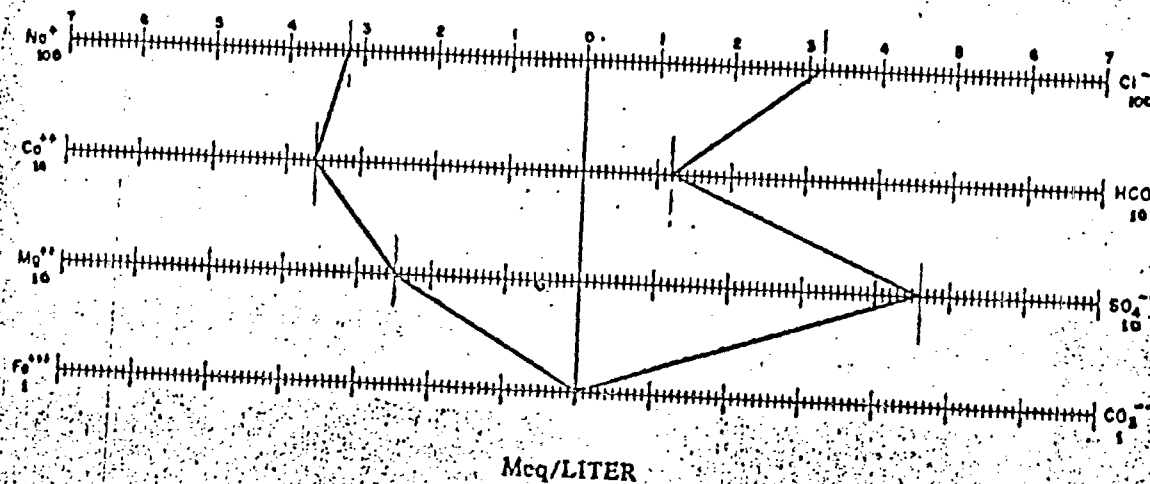
Dissolved Iron

Total Iron

0.12

0.0

WATER PATTERN (Stiff Method)



Remarks:

COMPANY			LEASE AND WELL NO.			LOCATION			SURFACE & INTERMEDIATE CASING			
						S-T-R-U			SIZE	DEPTH	CEMENT SACKS	CEMENT TOP
Atlantic Richfield	State 24 No. 1	32-24-37-N	7 5/8	2789	750	Surfa						
	** State 157 "B" No. 2	32-24-37-B	9 5/8	1202	500	Surfa						
	* State 157 "C" No. 3	32-24-37-P	8 5/8	300	300	Surfa						
	* Burleson No. 3	8-25-37-F	8 5/8	300	300	Surfa						
Pan American	** Langlie "A" No. 2	9-25-37-L	13	162	100	Surfa						
			8 5/8	1185	360	Surfa						
Phillips	* Woolworth 3-4	6-24-37-H	8 5/8	300	300	Surfa						
	** Martin No. 1	31-24-37-H	10 3/4	600	150	Surfa						
Reserve	** Martin No. 4	31-24-37-B	8 5/8	170	150	Surfa						
	* Martin "B" No. 3	31-24-37-F	8 5/8	300	300	Surfa						
Skelly	** Sherrell No. 1	31-24-37-P	9 5/8	1182	200	Surfa						
	** Sherrell No. 3	6-25-37-B	9 5/8	1192	250	Surfa						
	** Sherrell No. 7	31-24-37-J	8 5/8	1150	500	Surfa						
	* Sherrell No. 9	31-24-37-N	8 5/8	300	300	Surfa						
Tenneco	** State "H" No. 2	32-24-37-L	16	136	50	Surfa						
			8 5/8	1305	100	Surfa						
	** Fritstoe NCT-4 "B" No. 1	31-24-37-L	13 3/8	136	150	Surfa						
			9 5/8	1173	100	Surfa						
Terra Pacific	Wells No. 6	5-25-37-J	8 5/8	290	225	Surfa						
	** Wells No. 7	6-25-37-F	8 5/8	260	250	Surfa						
	** Wells No. 9	6-25-37-D	8 5/8	273	250	Surfa						
	** Wells No. 10	6-25-37-J	8 5/8	275	250	Surfa						
Thurston Food	* Wells No. 12	5-25-37-F	8 5/8	300	300	Surfa						
	** Humble State "J" No. 2	32-24-37-C	16	138	150	Surfa						
Union Trust Petroleum	Jol "D" No. 2	8-25-37-B	9 5/8	1143	500	Surfa						
	Langlie No. 1	8-25-37-P	10	700	None	Surfa						
Langlie No. 3	8-25-37-H	9 5/8	1191	66	Surfa							
	** Langlie No. 6	8-25-37-J	10 3/4	311	250	Surfa						
	** Langlie "A" No. 2	17-25-37-P	9 5/8	322	150	Surfa						
	* Langlie "A" No. 5	17-25-37-J	8 5/8	300	300	Surfa						
	Langlie "C" No. 1	17-25-37-H	10 3/4	304	250	Surfa						
	Olsen Phillips No. 2	17-25-37-B	10 3/4	313	250	Surfa						
	Olsen Phillips No. 3	6-25-37-N	9 5/8	301	250	Surfa						
	** Phillips No. 2	6-25-37-P	9 5/8	298	200	Surfa						
	** State "A" No. 2	6-25-37-L	9 5/8	314	250	Surfa						
	** State "A" No. 3	32-24-37-F	9 5/8	535	225	Surfa						
	Stuart No. 3	9-25-37-D	9 5/8	643	325	Surfa						
	Wells No. 1	5-25-37-D	7 5/8	1165	350	Surfa						
		5-25-37-P	16	99	30	Surfa						
			8 5/8	1170	100	Surfa						
			7 5/8	1208	350	Surfa						
Wells No. 4	5-25-37-B	9 5/8	1200	500	Surfa							
	Wells No. 7	4-25-37-L	9 5/8	1203	500	Surfa						
	** Wells No. 10	4-25-37-B	9 5/8	1206	500	Surfa						
	* Wells No. 15	5-25-37-N	8 5/8	300	300	Surfa						
Wells No. 16	5-25-37-L	8 5/8	300	300	Surfa							
Wells No. 2	5-25-37-H	13	171	100	Surfa							
		9 5/8	1254	300	Surfa							
Wells "B" No. 3	4-25-37-D	8 5/8	300	300	Surfa							
	4-25-37-F	8 5/8	300	300	Surfa							

* Wells to be drilled by Unit
 ** Wells to be deepened or worked over prior to Injection

TABLE No. 1
INJECTION WELL DATA
PROPOSED LANGLELIE-JAL UNIT

COMPANY	LEASE AND WELL NO.	LOCATION S-T-R-U	SURFACE & INTERMEDIATE CASING				PRODUCTION CASING				TOTAL DEPTH	PROPOSED INJECTION INTERVAL		TUBING & PACKER SET @ APPROX.	DUAL COMPLETION	LOG CURRENTLY AVAILABLE
			SIZE	DEPTH	CEMENT SACKS	CEMENT TOP	SIZE	DEPTH	CEMENT SACKS	CEMENT TOP		TOP	BOTTOM			
Atlantic Richfield	State 24 No. 1	32-24-37-N	7 5/8	2789	750	Surface(c)	5 1/2	3336	12	2750(c)	3336	3546	No	3280	No	No
	** State 157 "B" No. 2	32-24-37-B	9 5/8	1202	500	Surface(c)	7	3122	250	1760(c)	3300	3550	No	3250	No	Yes
	* State 157 "C" No. 3	32-24-37-P	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface	3320	3590	No	3270	No	No
	* Burlington No. 3	8-25-37-F	8 5/8	300	300	Surface(c)	4 1/2	3500	600	Surface	3200	3175	No	3150	No	No
	* Burlington No. 4	8-25-37-D	8 5/8	300	300	Surface(c)	4 1/2	3500	600	Surface	3240	3175	No	3190	No	No
Pan American	** Langlie "A" No. 2	9-25-37-L	13 8 5/8	1185	100	Surface(c)	5 1/2	3221	400	910(c)	3221	3463	Yates G.O.	3170	Yes	Yes
Phillips	* Woolworth 3-4	6-24-37-H	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface(c)	3290	3560	No	3240	No	No
Reserve	** Martin No. 1	31-24-37-H	10 3/4	400	150	Surface(c)	7	3399	300	2140(c)	3275	3540	No	3225	No	No
	** Martin No. 4	31-24-37-B	8 5/8	170	150	Surface(c)	5 1/2	3554	300	1820(c)	3290	3554	No	3250	No	No
Skelly	* Martin "B" No. 3	31-24-37-F	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface(c)	3300	3550	No	3250	No	No
	** Sherrill No. 1	31-24-37-P	9 5/8	1182	200	Surface	7	3410	200	2080(c)	3270	3540	No	3220	No	No
	** Sherrill No. 3	6-25-37-B	9 5/8	1192	250	Surface	7	3401	250	1740(c)	3250	3490	Yates G.O.	3200	No	No
	** Sherrill No. 7	31-24-37-J	8 5/8	1150	500	Surface	5 1/2	3554	200	2400(c)	3280	3540	No	3230	No	No
	* Sherrill No. 9	31-24-37-N	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface(c)	3270	3550	No	3220	No	Yes
Tenneco	** State "K" No. 2	32-24-37-L	16 8 5/8	1305	50	Surface	7	3408	150	1300(c)	3280	3540	No	3250	No	No
	** Fristoe NCT-4-"B" No. 1	31-24-37-L	13 3/8	136	150	Surface(c)	7	3525	1280	Surface	3275	3525	No	3225	Yes	Yes
Tenneco Pacific	Wells No. 6	5-25-37-J	8 5/8	280	225	Surface	5 1/2	3180	300	1450(c)	3180	3524	No	3130	No	No
	** Wells No. 7	6-25-37-F	8 5/8	280	250	Surface	5 1/2	3260	300	1530(c)	3260	3550	No	3210	No	No
	** Wells No. 9	6-25-37-D	8 5/8	293	250	Surface	5 1/2	3375	600	Surface(c)	3240	3470	No	3200	No	No
	** Wells No. 10	6-25-37-J	8 5/8	275	250	Surface	5 1/2	3478	300	1750(c)	3250	3508	No	3200	Yes	Yes
	* Wells No. 12	5-25-37-F	8 5/8	300	300	Surface	4 1/2	3600	600	Surface(c)	3350	3550	No	3300	No	No
Thurston Prod.	** Humble State "L" No. 2	32-24-37-C	16 8 5/8	138	150	Surface	7	3303	250	Surface(c)	3275	3550	No	3225	No	No
Union Trust Petroleum	Jal "D" No. 2	8-25-37-B	9 5/8	1143	500	Surface(c)	7	3268	250	1600(c)	3268	3479	No	3200	No	No
	Langlie No. 1	8-25-37-P	10 7/8	703	None	Surface	7	3268	250	1600(c)	3268	3479	No	3200	No	No
	Langlie No. 3	8-25-37-H	8 1/4	1200	66	900(c)	5 1/2	3194	300	1450(c)	3194	3485	No	3150	No	No
	** Langlie No. 6	8-25-37-J	9 5/8	1191	500	Surface(c)	6 5/8	3265	350	1300(c)	3265	3479	No	3200	No	No
	** Langlie "A" No. 2	17-25-37-P	9 5/8	301	250	Surface(c)	7	3258	200	1930(c)	3258	3500	Yes	3200	No	No
Wabash	* Langlie "A" No. 5	17-25-37-J	9 5/8	322	150	Surface(c)	7	2844	350	515(c)	3250	3400	No	3200	No	No
	** Langlie "C" No. 1	17-25-37-H	10 3/4	304	250	Surface(c)	4 1/2	3450	600	Surface	3250	3400	No	3200	No	No
	Langlie "C" No. 2	17-25-37-B	10 3/4	313	250	Surface(c)	7	3198	200	1870(c)	3198	3404	No	3150	No	Yes
	Olsen Phillips No. 3	6-25-37-N	10 3/4	301	200	Surface(c)	7	3248	200	1920(c)	3248	3404	No	3200	Yes	Yes
	Olsen Phillips No. 5	6-25-37-P	9 5/8	298	200	Surface(c)	7	3598	300	1600(c)	3230	3450	No	3180	Yes	Yes
	** Phillips No. 2	6-25-37-L	9 5/8	314	250	Surface(c)	7	3599	300	1600(c)	3230	3470	No	3200	Yes	Yes
	** State "A" No. 32 No. 2	22-24-37-F	9 5/8	535	225	Surface(c)	7	3407	300	1090(c)	3260	3500	No	3200	Yes	Yes
	** State "A" No. 32 No. 3	32-24-37-D	9 5/8	643	325	Surface(c)	7	3447	300	1090(c)	3300	3550	No	3250	No	No
	Stuart No. 3	9-25-37-D	7 5/8	1165	350	Surface(c)	5 1/2	3201	300	Surface(c)	3261	3499	No	3250	No	No
	Wells No. 1	5-25-37-P	16 8 5/8	99	30	Surface	5 1/2	3201	300	Surface(c)	3261	3499	No	3250	No	No
	** Wells No. 4	5-25-37-D	8 5/8	1170	100	776(c)	5 1/2	3270	300	1540(c)	3270	3500	No	3220	No	No
	Wells No. 5	5-25-37-B	9 5/8	1208	350	Surface(c)	5 1/2	3528	250	500(c)	3310	3550	No	3260	No	No
	Wells No. 7	4-25-37-E	9 5/8	1203	500	Surface(c)	7	3359	200	2020(c)	3350	3556	No	3200	No	No
	** Wells No. 10	4-25-37-B	9 5/8	1206	500	Surface(c)	7	3307	300	1310(c)	3307	3537	No	3250	No	No
	* Wells No. 15	5-25-37-N	8 5/8	300	300	Surface(c)	4 1/2	3550	600	Surface(c)	3330	3529	No	3270	No	No
* Wells No. 16	5-25-37-L	8 5/8	300	300	Surface(c)	4 1/2	3550	600	Surface(c)	3275	3500	No	3225	No	No	
Wabash	** Wells "D" No. 2	5-25-37-H	13 8 5/8	171	100	Surface(c)	7	3402	300	1400	3350	3500	No	3250	No	No
	* Wells "B" No. 3	4-25-37-D	8 5/8	1254	300	Surface(c)	5 1/2	3538	600	Surface	3350	3548	No	3200	No	No
	* Wells No. 13	4-25-37-F	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface	3340	3540	No	3250	No	No

4430

* Wells to be drilled by Unit.
** Wells to be deepened or worked over prior to injection

EXHIBIT "B"

TABLE No. 1
INJECTION WELL DATA
PROPOSED LANGLEIE-JAL UNIT

COMPANY	LEASE AND WELL NO.	LOCATION S-T-R-U	SURFACE & INTERMEDIATE CASING			PRODUCTION CASING			TOTAL DEPTH	PROPOSED INJECTION INTERVAL		TUBING & PACKER SET @ APPROX.	DUAL COMPLETION	LOG CURRENTLY AVAILABLE		
			SIZE	DEPTH	CEMENT SACKS	CEMENT TOP	SIZE	DEPTH		CEMENT SACKS	CEMENT TOP				TOP	BOTTOM
Atlantic Richfield	State 24 No. 1	32-24-37-N	7 5/8	2789	750	Surface(c)	5 1/2	3336	12	2750(c)	3336		3546	3280	No	No
	** State 157 "E" No. 2	32-24-37-B	9 5/8	1202	500	Surface(c)	7	3422	250	1760(c)	3300		3553	3250	No	Yes
	* State 157 "C" No. 3	32-24-37-P	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface	3320		3600	3270	No	No
	* Burleson No. 3	8-25-37-F	8 5/8	300	300	Surface(c)	4 1/2	3500	600	Surface	3200		3500	3150	No	No
	* Burleson No. 4	8-25-37-D	8 5/8	300	300	Surface(c)	4 1/2	3500	600	Surface	3240		3500	3190	No	No
Pan American	** Langleie "A" No. 2	9-25-37-L	13 8 5/8	162 1185	100 360	Surface(c) Surface(c)	5 1/2	3221	1400	910(c)	3221		3463	3170	Yates Gas	Yes
Phillips	* Woolworth 3-4	6-24-37-H	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface(c)	3290		3600	3240	No	No
Reserve	** Martin No. 1	31-24-37-H	10 3/4	400	150	Surface(c)	7	3399	300	2140(c)	3275		3540	3225	No	No
	** Martin No. 4	31-24-37-B	8 5/8	170	150	Surface(c)	5 1/2	3554	300	1820(c)	3290		3554	3250	No	No
	* Martin "B" No. 3	31-24-37-F	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface(c)	3300		3600	3250	No	No
	** Sherrill No. 1	31-24-37-P	9 5/8	1182	200	Surface	7	3410	200	2080(c)	3270		3540	3220	No	No
Skelly	** Sherrill No. 3	6-25-37-B	9 5/8	1192	250	Surface	7	3401	250	1740(c)	3250		3490	3200	Yates Gas	No
	** Sherrill No. 7	31-24-37-J	8 5/8	1150	500	Surface	5 1/2	3554	200	2400(c)	3280		3540	3230	Yes	No
	* Sherrill No. 9	31-24-37-N	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface(c)	3270		3550	3220	No	No
	** State "M" No. 2	32-24-37-L	16 8 5/8	136 1305	50 100	Surface 900(c)	7	3408	150	1300(c)	3280		3540	3230	No	No
	** Fristoe NCT-4-"B" No. 1	31-24-37-L	13 9 5/8	136 1173	150 100	Surface(c) 850(c)	7	3525	1280	Surface	3275		3525	3225	Yes	Yes
Texas Pacific	Wells No. 6	5-25-37-J	8 5/8	290	225	Surface	5 1/2	3180	300	1450(c)	324		3524	3130	No	No
Texas Pacific	** Wells No. 7	6-25-37-F	8 5/8	260	250	Surface	5 1/2	3260	300	1530(c)	3260		3550	3210	No	No
	** Wells No. 9	6-25-37-D	8 5/8	293	250	Surface	5 1/2	3375	600	Surface(c)	3240		3470	3200	No	No
	** Wells No. 10	6-25-37-J	8 5/8	275	250	Surface	5 1/2	3478	300	1750(c)	3250		3508	3200	Yes	Yes
	* Wells No. 12	5-25-37-F	8 5/8	300	300	Surface	4 1/2	3600	600	Surface(c)	3350		3550	3300	No	No
	** Humble State "L" No. 2	32-24-37-G	16 8 5/8	138 1325	150 150	Surface 925(c)	7	3303	250	Surface(c)	3275		3550	3225	No	No
Union Texas Petroleum	Jal "D" No. 2	8-25-37-B	9 5/8	1143	500	Surface(c)	7	3268	250	1600(c)	3268		3479	3200	No	No
Union Texas Petroleum	Langleie No. 1	8-25-37-P	10 8 1/4	708 1200	None 66	Surface(c) 900(c)	5 1/2	3194	300	1450(c)	3485		3485	3150	No	No
	Langleie No. 3	8-25-37-H	9 5/8	1191	500	Surface(c)	6 5/8	3265	350	1300(c)	3265		3479	3200	No	No
	** Langleie "A" No. 6	8-25-37-J	10 3/4	411	250	Surface(c)	7	3258	200	1930(c)	3258		3500	3200	Yes	Yes
	** Langleie "A" No. 2	17-25-37-P	9 5/8	322	150	Surface(c)	7	2844	350	515(c)	3250		3400	3200	No	No
	* Langleie "A" No. 5	17-25-37-J	8 5/8	300	300	Surface(c)	4 1/2	3450	600	Surface(c)	3250		3400	3200	No	No
	Langleie "C" No. 1	17-25-37-H	10 3/4	304	250	Surface(c)	7	3198	200	1870(c)	3404		3404	3150	No	No
	Langleie "C" No. 2	17-25-37-B	10 3/4	313	250	Surface(c)	7	3248	200	1920(c)	3248		3404	3200	Yes	Yes
	Olsen Phillips No. 3	6-25-37-N	10 3/4	301	300	Surface(c)	7	3598	300	1600(c)	3230		3450	3180	Yes	Yes
	Olsen Phillips No. 5	6-25-37-P	9 5/8	298	200	Surface(c)	7	3599	300	1600(c)	3250		3470	3200	Yes	Yes
	** Phillips No. 2	6-25-37-L	9 5/8	314	250	Surface(c)	7	3598	300	1600(c)	3260		3470	3210	Yes	Yes
	** State "A"-32 No. 2	32-24-37-F	9 5/8	535	225	Surface(c)	7	3407	300	1050(c)	3290		3541	3240	No	No
	** State "A"-32 No. 3	32-24-37-D	9 5/8	643	325	Surface(c)	7	3447	300	1090(c)	3300		3575	3250	No	No
	Stuart No. 3	9-25-37-D	7 5/8	1165	350	Surface(c)	5 1/2	3281	300	Surface(c)	3281		3499	3230	No	No
	Wells No. 1	5-25-37-P	16 8 5/8	99 1170	30 100	Surface 776(c)	5 1/2	3270	300	1540(c)	3270		3500	3220	No	No
	** Wells No. 4	5-25-37-D	7 5/8	1208	350	Surface(c)	5 1/2	3528	250	500(c)	3310		3550	3260	No	No
Westates	Wells No. 5	5-25-37-B	9 5/8	1200	500	Surface(c)	7	3350	200	2020(c)	3350		3556	3300	No	No
	Wells No. 7	4-25-37-L	9 5/8	1203	500	Surface(c)	7	3307	300	1310(c)	3307		3537	3250	No	No
	** Wells No. 10	4-25-37-B	9 5/8	1206	500	Surface(c)	7	3386	300	1390(c)	3330		3529	3270	No	No
	* Wells No. 15	5-25-37-N	8 5/8	300	300	Surface(c)	4 1/2	3550	600	Surface(c)	3275		3550	3225	No	No
	* Wells No. 16	5-25-37-L	8 5/8	300	300	Surface(c)	4 1/2	3550	600	Surface(c)	3300		3550	3250	No	No
Westates	** Wells "B"-5 No. 2	5-25-37-H	13 9 5/8	171 1254	100 300	Surface(c) 300(c)	7	3402	300	1400	3350		3518	3300	No	No
	* Wells "B"-4 No. 3	4-25-37-D	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface	3340		3600	3290	No	No
	* Wells No. 13	4-25-37-F	8 5/8	300	300	Surface(c)	4 1/2	3600	600	Surface	3340		3600	3290	No	No

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4430