UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2
CASE NO. 4139-4140

JAN 7 - 1969

Union Texas Petroleum Division
of Allied Chemical Corporation
P. O. Box 2120
Houston, Texas 77001

Gentlemen:

Your application of November 1 filed with the Regional Oil and Gas Supervisor, Roswell, New Mexico, requests the designation of the Milnesand (San Andres) unit area embracing 5,354.30 acres, Roosevelt County, New Mexico, as logically subject to operation under the unitization provisions of the Mineral Leasing Act as amended. Our review of the unit area indicates the total acreage to be 5,370.18 acres. Please recheck and correct your acreage figures if appropriate. Based on such acreage figure, the unit area embraces 2,586.94 acres (48.17 percent) of Federal land and 2,783.24 acres (51.83 percent) of fee land.

Unitization is for the purpose of conducting secondary recovery operations by waterflooding and will be limited to that portion of the San Andres defined by Section 2(h) of the unit agreement. The proposed unit area has been developed by 123 wells completed in the formation to be unitized. Participation will be based on a two-phase formula as follows:

> Primary Phase - 25 percent of the production from January 1, 1966, to September 1, 1966, and 75 percent of the remaining primary oil after September 1, 1966.
>
> Secondary Phase - 75 percent ultimate primary, 5 percent porosity acre feet, and 20 percent cumulative production to September 1, 1966.

The secondary phase is to begin the first day of the month next following the date when oil production subsequent to September 1, 1966, from the interval to be unitized within the unit area equals 2,284,845 barrels. You estimate that secondary recovery operations will result in the recovery of 4,224,568 barrels of additional oil.

The land outlined on your plat marked "Exhibit A, Milnesand (San Andres) Unit, Roosevelt County, New Mexico," is acceptable as a logical unit area for secondary recovery operations. Your proposed form of unit agreement will be acceptable if further modified in accordance with the marked form returned herewith. The remaining copies of the proposed form of unit agreement are being retained for distribution to the appropriate offices of the Geological Survey.

Please include the latest status of all acreage when the executed agreement is submitted for final approval. The format of the sample exhibits attached to the Form of Agreement for Unproved Areas (1968 Reprint) should be followed closely in preparation of Exhibits A and B.

Sincerely yours,

William A. Baker

Acting Director

Enclosure

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. I
CASE NO. 4139 - 4140

EXHIBIT NO. I

DATA FOR
PROPOSED MILNESAND (SAN ANDRES) UNIT
WATERFLOOD PROJECT

OIL CONSERVATION COMMISSION HEARING
CASE NO. 4140

MAY 21, 1969

UNION TEXAS PETROLEUM

MIDLAND DISTRICT

Case Number 4140
Date: May 21, 1969

G E N E R A L

Pertinent Exhibit(s)

OPERATOR Union Texas Petroleum

PROJECT Milnesand (San Andres) Unit Waterflood — 1A

POOL Milnesand San Andres

LOCATION OF PROJECT Located in Township 8 South, Ranges 34 and 35 East approximately four miles west of the town of Milnesand, Roosevelt County, New Mexico.

NUMBER OF WELLS IN PROJECT 115 San Andres formation completions — 1A

UNIT AND PROJECT AREA 5370.18 acres — 1A

OTHER WATERFLOOD PROJECTS IN POOL The Pan American Horton Pressure Maintenance Project is located on the southeast edge of the field.

G E O L O G I C A L A N D R E S E R V O I R D A T A

RESERVOIR The San Andres Dolomite — 1B

DEPTH Approximately 4550' to pay zones.

PRODUCTIVE ZONES Three porous dolomite zones located approximately 750' below the top of the San Andres formation.

NET PAY The average net pay thickness is approximately 46'.

Case Number 4140
Date: May 21, 1969

Pertinent Exhibit(s)

DESCRIPTION OF RESERVOIR ROCK San Andres dolomite, fine to medium crystalline, brown, with pinpoint to vuggy porosity.

STRUCTURE The field is on the nose of a local anticline plunging to the southeast at the rate of approximately 100 feet per mile. 1C

RESERVOIR LIMITS The productive limits of the field are defined by a reduction in porosity and permeability on the east and west edges, water to the southeast and gas on the north and northwest.

AVERAGE POROSITY OF NET PAY 6.13%

AVERAGE PERMEABILITY OF NET PAY 6 mds.

PRIMARY OPERATIONS

DATE OF FIRST PRODUCTION July, 1958

TOTAL NUMBER OF WELLS DRILLED 115 San Andres in project Area 1A

CUMULATIVE PRODUCTION, 3-1-69 4,391,395 1D-1E

Case Number 4140
Date: May 21, 1969

	Pertinent Exhibit(s)
REMAINING PRIMARY RESERVES, 3-1-69 1,247,760	
AVERAGE DAILY OIL PRODUCTION PER WELL, Feb., 1969 6.1 Bbls.	1D-1E
ORIGINAL RESERVOIR PRESSURE 1650 (estimated)	
OIL GRAVITY 29° API	
DRIVE MECHANISM Solution gas drive	
STAGE OF DEPLETION The project area is approximately 78% depleted of primary oil reserves	
ESTIMATED OIL RECOVERY THROUGH PRIMARY OPERATIONS 5,639,155	

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

PROPOSED PATTERN Inverted Nine Spot	1A
NUMBER OF INPUT WELLS 28	1A
INITIAL INJECTION RATES Up to 700 barrels of water per day per input well	
ESTIMATED INJECTION PRESSURES Maximum of 2000 psi at the well head. The injection plant will be designed for 2500 psi maximum pressure	
PLAN OF INJECTION Inject into the pay zone through plastic coated tubing and below a packer	1F-1G
SOURCE OF INJECTION WATER Water produced from the Devonian formation in the Crossroads Field.	

Pertinent
Exhibit(s)

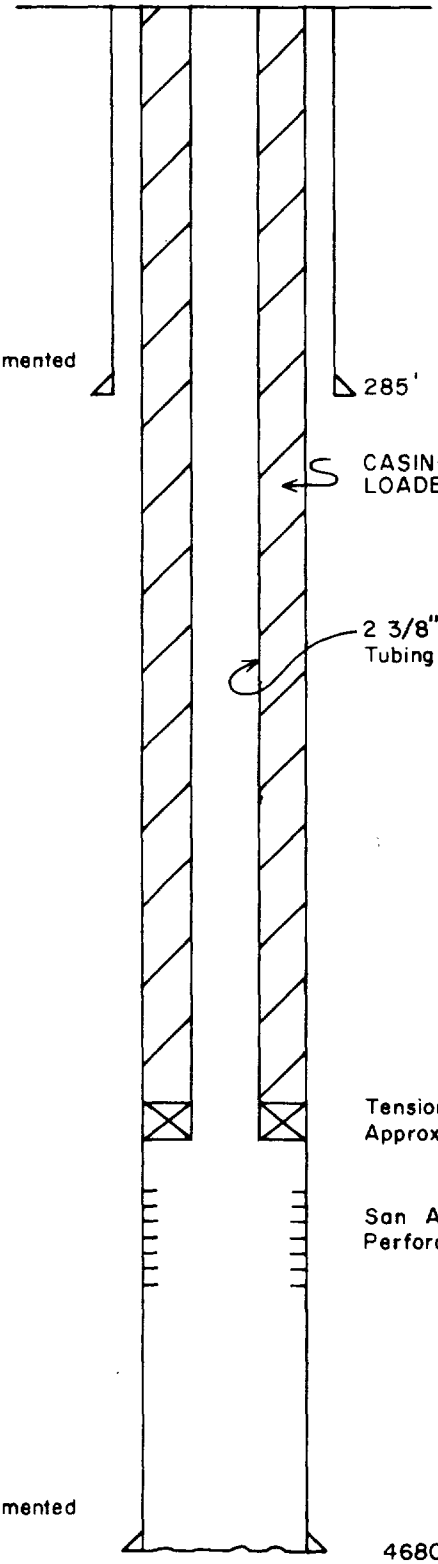
TYPE OF WATER Saline. The Devonian water containes approximately 37,000 ppm. chloride.

TREATMENT OF WATER Chemical treatment for scale and corrosion mitigation will be used as deemed necessary.

ADDITIONAL OIL RECOVERY ANTICIPATED A minimum of 4,229,400 barrels, an amount equal to 75% of the estimated ultimate primary oil recovery in the unit area.

DIAGRAMMATIC SKETCH

TYPICAL PROPOSED INJECTION WELL
PROPOSED MILNESAND UNIT
Roosevelt Co., New Mexico
BTA Oil Co. Taylor No.7
Sec. 7 - T-8-S — R-35-E



8 5/8" OD Casing Cemented Circulated.

285'

CASING-TUBING ANNULUS WILL BE LOADED WITH INHIBITED FLUID.

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

Tension Type Packer To Be Set @ Approximately 4565'

San Andres Formation
Perforated Interval 4597' to 4662'

4 1/2" OD Casing Cemented With 200 sx. Cmt. Top @ 3800'

4680'

EXHIBIT "IF"

TABLE I

INJECTION WELL DETAIL
PROPOSED MILNESAND (SAN ANDRES) UNIT
ROOSEVELT COUNTY, NEW MEXICO

	Injection Well	SURFACE CASING Size	Depth	Cmt. Top	PRODUCTION CASING Size	Depth	Cement	Cmt.Top	INJ.INTERVALS Gross Perf And/Or OH Top	Btm.	#Tubing* & Packer Set @
Citgo	Govt-"J" No. 1	8-5/8"	394'	Circ.	4-1/2"	4744'	250 sx	3620'	4598'	4631'	4570'
	Pate "A" No. 6	8-5/8"	413'	Circ.	4-1/2"	4731'	350 sx	3160'	4630'	69'	4600'
Mobil	Jacobs-Fed. No. 6	8-5/8"	367'	Circ.	4-1/2"	4800'	1760 sx	Circ.	4658'	4738'	4630'
	Jacobs-Fed. No. 9	8-5/8"	370'	Circ.	4-1/2"	4800'	1575 sx	Circ.	4637'	4699'	4600'
Union Texas	Jacobs-Fed. No. 6	8-5/8"	437'	Circ.	4-1/2"	4751'	300 sx	3400'	4550'	4600'	4530'
	Jacobs-Fed. No. 10	8-5/8"	363'	Circ.	4-1/2"	4725'	200 sx	3825'	4618'	80'	4590'
	Jacobs-Fed. No. 16	8-5/8"	360'	Circ.	4-1/2"	4730'	200 sx	3830'	4646'	4714'	4615'
	Jacobs-Fed. No. 17	8-5/8"	356'	Circ.	4-1/2"	4717'	200 sx	3820'	4633'	4712'	4600'
	Hefflefinger No. 3	10-3/4"	450'	Circ.	7-5/8"	4770' PBTD 4730'	2500 sx	Unknown	4560'	4615'	4530'
	Hefflefinger No. 4	10-3/4"	446'	Circ.	7-5/8"	4961' PBTD 4770'	2025 sx	Circ.	4576'	4650'	4545'
	Haley No. 5	10-3/4"	444'	Circ.	7-5/8"	4780' 5½ liner 4575'-4751' PBTD	1850 sx	1225'	4535'	4614'	4500'
	Haley No. 6	10-3/4"	425'	Circ.	7-5/8"	4780' PBTD 4730'	2300 sx	Circ.	4545'	4612'	4515'
Lario	Fed. "A" No. 3	8-5/8"	375'	Circ.	4-1/2"	4772'	200 sx	3875'	4591'	4624'	4560'

Exhibit 1G

	Injection Well	SURFACE CASING Size	Depth	Cmt. Top	PRODUCTION CASING Size	Depth	Cement	Cmt.Top	INJ.INTERVALS Gross Perf And/Or OH Top	Btm.	#Tubing* & Packer Set @
Sun DX	N.M. Fed. F No. 4	8-5/8"	366'	Circ.	4-1/2"	4662'	200 sx	3760'	4452'	4630'	4520'
	N.M. Fed. F No. 6	8-5/8"	350'	Circ.	4-1/2"	4685'	200 sx	3790'	4546'	4621'	4515'
	N.M. Fed. F No. 13	8-5/8"	357'	Circ.	4-1/2"	4730'	250 sx	3600'	4622'	82'	4590'
	N.M. Fed. F No. 17	8-5/8"	370'	Circ.	4-1/2"	4790'	200 sx	3900'	4624'	76'	4590'
	N.M. Fed. F No. 20	8-5/8"	373'	Circ.	4-1/2"	4900'	200 sx	4000'	4666'	4735'	4635'
	Bowley No. 2	8-5/8"	371'	Circ.	4-1/2"	4702'	225 sx	3600'	4566'	4628'	4535'
Maxwell	Fraser No. 2	8-5/8"	350'	Circ.	4-1/2"	4700'	350 sx	3125'	4598'	4608'	4570'
Getty	Coleman No. 1	8-5/8"	333'	Circ.	4-1/2"	4668'	400 sx	2870'	4603'	28'	4570'
Sunoco	Cosby No. 2	8-5/8"	337'	Circ.	4-1/2"	4694'	200 sx	3800'	4607'	36'	4575'
BTA	Taylor No. 2	8-5/8"	356	Circ.	4-1/2"	4680'	200 sx	3600'	4655'	67'	4625'
	Taylor No. 7	8-5/8"	285	Circ.	4-1/2"	4685'	200 sx	3800'	4597'	4662'	4570'
Atlantic	Miller No. 1	8-5/8"	391'	Circ.	4-1/2"	4674'	480 sx	2515'	4589'	4662'	4560'
Texaco	Rogers No. 3	7-5/8"	353'	Circ.	4-1/2"	4730'	400 sx	2930'	4662'	88'	4630'
Texam	Luman No. 2	8-5/8"	427'	Circ.	5-1/2"	4650'	250 sx	3525'	4601'	23'	4570'
	Weathersby No. 3	8-5/8"	430'	Circ.	5-1/2"	4755'	250 sx	3630'	4605'	72'	4575'

* 2-3/8" OD Internally Plastic coated tubing and Tension Type Packer

Exhibit 1G

OIL PRODUCTION DATA
MILNESAND (SAN ANDRES) UNIT
ROOSEVELT COUNTY, NEW MEXICO

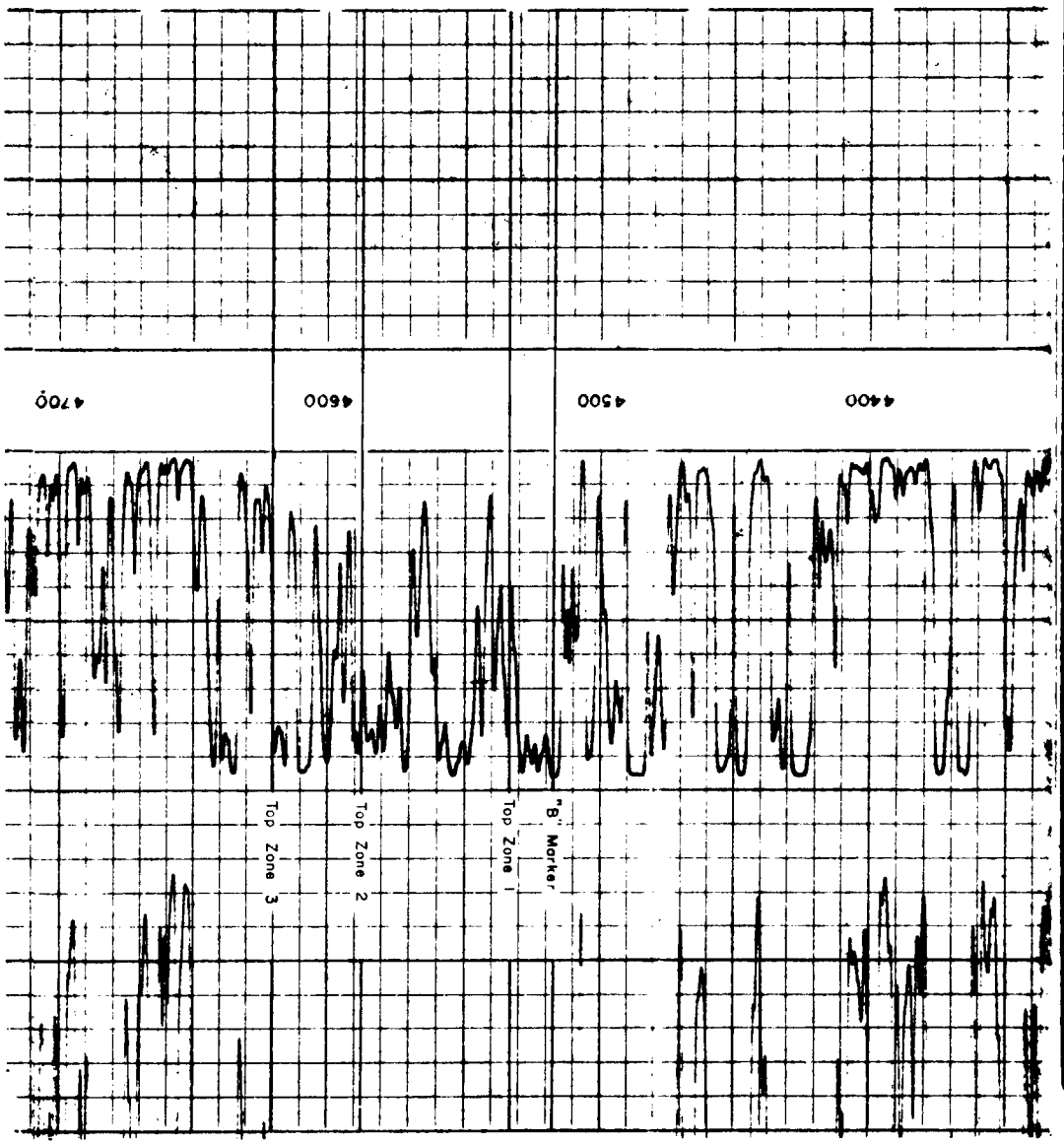
DATE	OIL PRODUCTION BARRELS	CUMULATIVE BARRELS OIL
1958	5,035	5,035
1959	8,075	13,110
1960	5,634	18,744
1961	23,574	42,318
1962	274,132	316,450
1963	771,505	1,087,955
1964	963,138	2,051,093
1965	836,417	2,887,510
1966		
January	65,536	
February	59,458	
March	62,416	
April	57,509	
May	59,291	
June	56,612	
July	55,228	
August	50,750	
September	49,019	
October	51,243	
November	48,588	
December	49,550	
		3,552,710
1967		
January	50,495	
February	42,084	
March	45,640	
April	37,672	
May	37,825	
June	37,575	
July	36,894	
August	36,556	
September	34,719	
October	34,437	
November	32,863	
December	33,767	
		4,013,237

Exhibit 1E

OIL PRODUCTION DATA
MILNESAND (SAN ANDRES) UNIT
ROOSEVELT COUNTY, NEW MEXICO

DATE	OIL PRODUCTION BARRELS	CUMULATIVE BARRELS OIL
1968		
January	32,294	
February	31,324	
March	31,980	
April	30,713	
May	28,278	
June	25,348	
July	25,455	
August	27,997	
September	25,255	
October	25,691	
November	25,446	
December	23,986	
		4,347,004
1969		
January	24,353	
February	20,038	
		4,391,395

Exhibit 1E



SCHLUMBERGER

LATEROLOG
WITH GAMMA RAY
SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COMPANY CITIES SERVICE OIL COMPANY
WELL ~~CSO~~ #1 GOV. "J" (2)
FIELD MILNESAND
COUNTY ROOSEVELT STATE NEW MEXICO

COUNTY ROOSEVELT
FIELD or LOCATION MILNESAND
WELL CSO #1 GOV. "J"
COMPANY CITIES SERVICE OIL COMPANY

LOCATION 660' FSL
1980' FWL
Sec. 5 Twp. 8 S Rge. 35 E

Other Services:
SGR - MLL

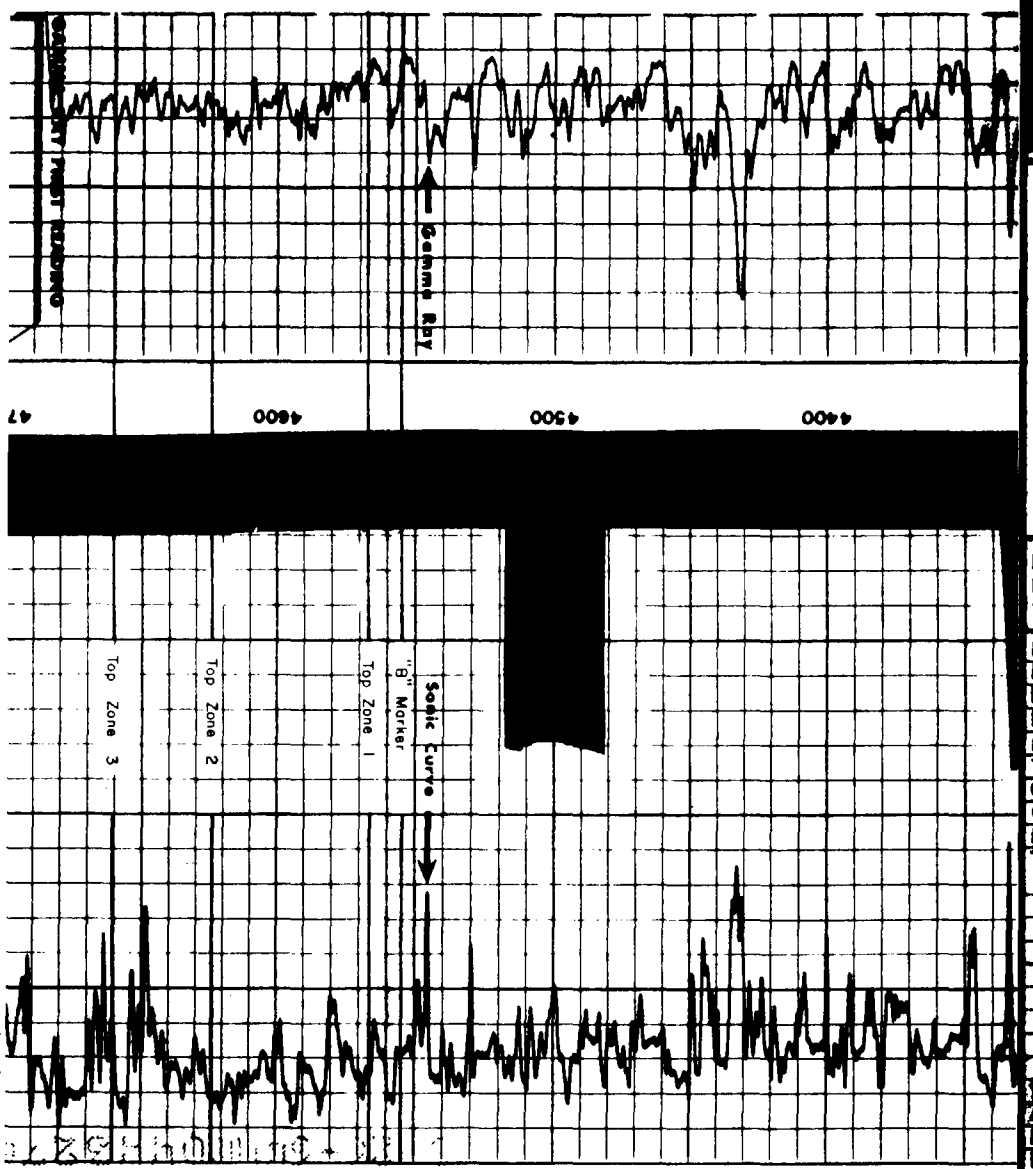
Permanent Datum: GROUND LEVEL Elev. 4243
Log Measured From KB 9 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 4252
D.F. 4251
G.L. 4243

Date	11-17-64
Run No.	ONE
Depth—Driller	4790
Depth—Logger	4794
Btm. Log Interval	4739
Top Log Interval	3800
Casing—Driller	8 5/8 @ 410
Casing—Logger	— —
Bit Size	7 7/8
Type Fluid in Hole	SALT GEL STARCH
Dens. / Visc.	10.4 / 39
pH / Fluid Loss	N.A. / 13.8 ml
Source of Sample	CIRCULATED
R_m @ Meas. Temp.	.061 @ 65 °F
R_{mf} @ Meas. Temp.	.047 @ 67 °F
R_{mc} @ Meas. Temp.	.103 @ 67 °F
Source: R_{mf} / R_{mc}	M / M
R_m @ BHT	.04 @ 181 °F
Time Since Circ.	5 HOURS
Max. Rec. Temp.	181 °F
Equip. / Location	4-556 / HOBBS
Recorded By	VANN
Witnessed By	NABORS-ALLISON

FIELD PRINT THANKS

Case No. 4140
Exhibit "1R"



SONIC LOG - GAMMA RAY

WITH CALIPER

SCHLUMBERGER

SCHLUMBERGER WELL SURVEYING CORPORATION

Houston, Texas

COMPANY CITIES SERVICE OIL COMPANY

WELL PATE "A" # 6 (4)

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

LOCATION 1980' FROM N/L
660' FROM E/L

Sec. 7 Twp. 8S Rge. 35E

Other Services:
LL, MLL

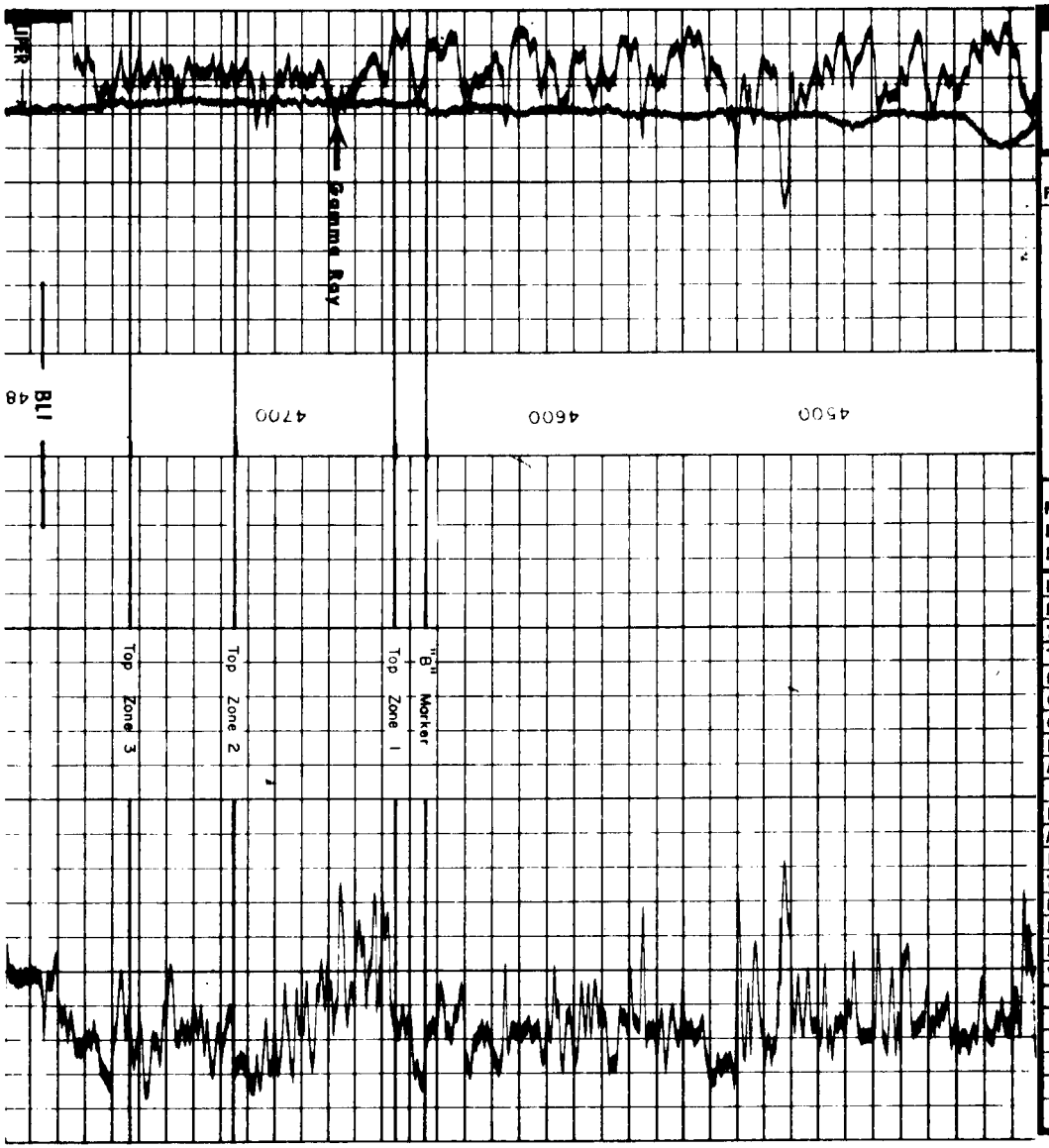
Permanent Datum: GL, Elev. 4240
Log Measured From KB, 10 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 4250
D.F. 4249
G.L. 4240

COMPANY CITIES SERVICE OIL
WELL PATE "A" # 6
FIELD or LOCATION MILNESAND
COUNTY ROOSEVELT

Date	5-23-64			
Run No.	ONE			
Depth—Driller	4720			
Depth—Logger	4716			
Btm. Log Interval	4709			
Top Log Interval	0			
Casing—Driller	8 5/8@ 425	@	@	@
Casing—Logger	-			
Bit Size	7 7/8"			
Type Fluid in Hole	SALT GEL, STARCH			
Dens. / Visc.	10.9 / 37			
pH / Fluid Loss	6.0 / 16 ml	ml	ml	ml
Source of Sample	CIRC.			
R_m @ Meas. Temp.	.049 @ 93 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	.035 @ 91 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	.078 @ 91 °F	@ °F	@ °F	@ °F
Source: R_{mf} R_{mc}	M / M			
R_m @ BHT	.042 @ 110 °F	@ °F	@ °F	@ °F
Time Since Circ.	3 HOURS			
Max. Rec. Temp.	110 °F	°F	°F	
Equip. / Location	2519 / HOBBS			
Recorded By	BROWN			
Witnessed By	NABORS			

Case No. 4140
Exhibit "1B"



PAN GEO ATLAS CORP.

PGAC *Acoustic-Gamma Ray Log*

FILE NO.

COMPANY SOCONY MOBIL OIL COMPANY

WELL JACOBS FEDERAL # 6 (14)

FIELD MILNESANDS (SAN ANDRES)

COUNTY ROOSEVELT STATE NEW MEXICO

LOCATION: 660 FS & EL

SEC 19 TWP 8-S RGE 35-E

Other Services: LL-3

Permanent Datum G.L. Elev. 4212

Log Measured from K.B. 11.8 Ft. Above Permanent Datum

Drilling Measured from K.B.

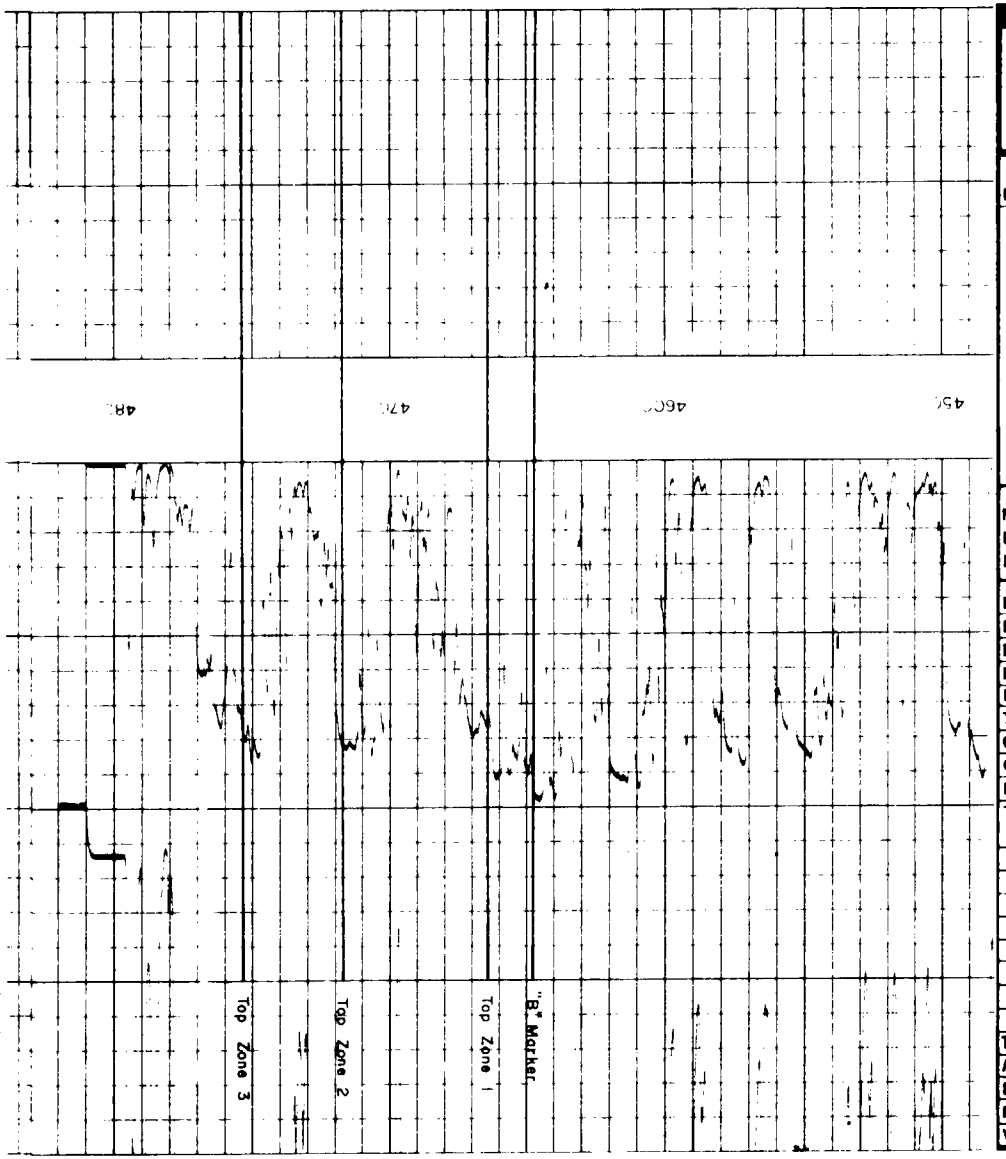
Elevations: KB 4223.8, DF 4222.8, GL 4212

Date	11-28-64
Run No.	ONE
Total Depth Driller	4800
Total Depth PGAC	4792
Bottom Logged Interval	4786
Casing Driller	370
Casing PGAC	368
Footage Logged	A-2386
Mud Type	SALT BRINE
Density / Visc.	10.4 / 41
Max. Temp. (F)	106
Rec. To Rec. Spacing	1'
Trans. To Rec. Spcg.	4'
Logging Instrument	T5-135-TEL8-40-2
Equip. No.	ES-114
Recorded By	HAY
Witnessed By	MR. RIVERS

DUPLICATE

BORE HOLE RECORD			CASING RECORD			
Bit Size	From	To	Csg. Size	Csg. Wt.	From	To
7 7/8	370	4800	8 5/8		SURFACE	370

Case No. 4140
Exhibit "1B"



PAN GEO ATLAS CORP.

PGAC

Laterolog Survey

FILE NO.

COMPANY Socony Mobil Oil Co.

WELL Jacobs Federal #9 114

FIELD Milnesand (San Andres)

COUNTY Roosevelt STATE New Mexico

LOCATION: 660' FSL & 1980 FWL

SEC 20 TWP 8-S RGE 35-E

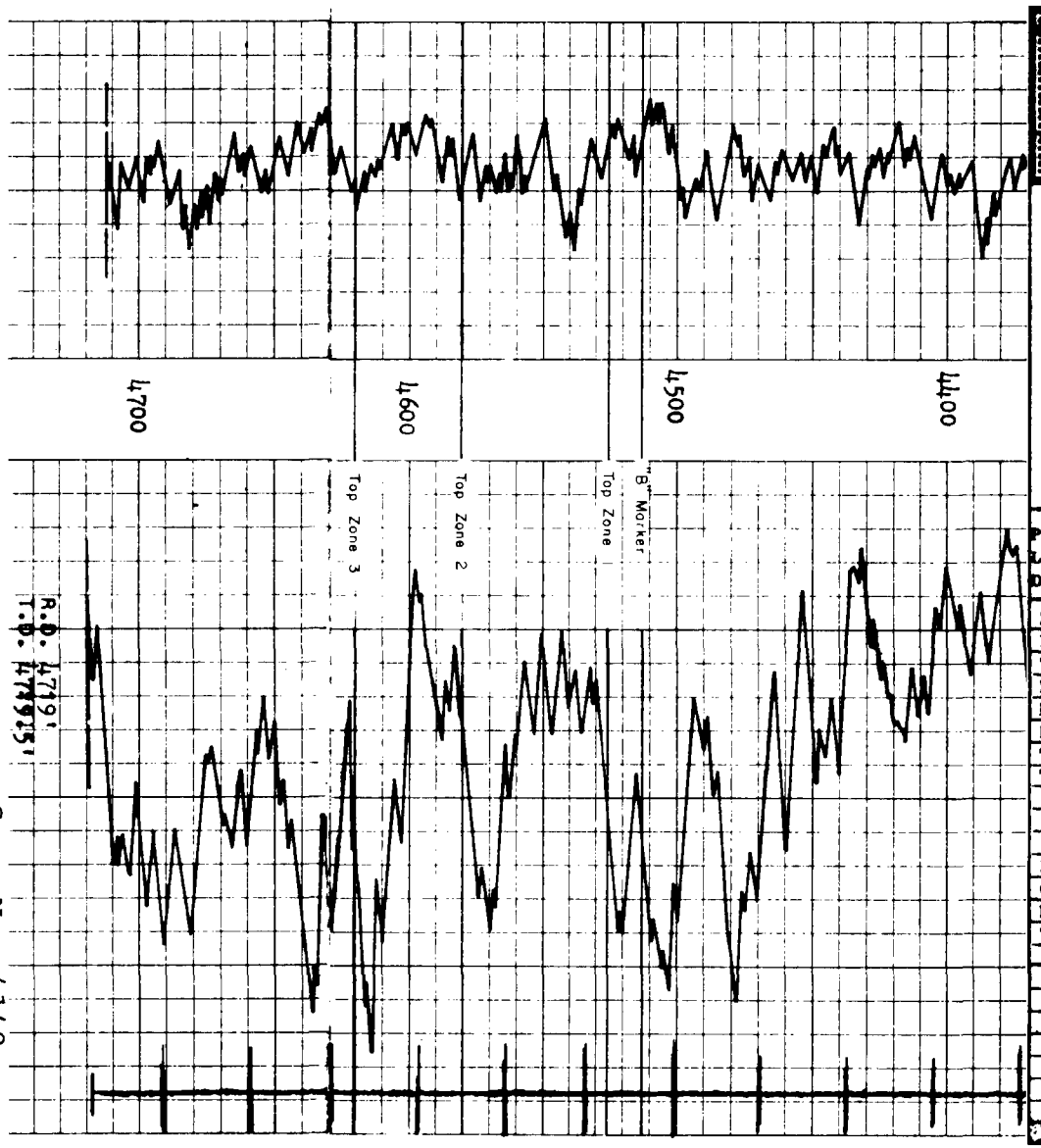
Other Services
APL
A/G/C
MLL

Permanent Datum G.L. Elev.
Log Measured from K.B. 10 Ft. Above Permanent Datum
Drilling Measured from K.B.

Elevations:
KB 4213
DF 4212
GL 4203

Date	1-10-66				
Run No.	one				
Depth—Driller	4800				
Depth—Logger	4802				
Bottom Logged Interval	4796				
Top Logged Interval	2400				
Casing—Driller	8 5/8 @ 370	@	@	@	
Casing—Logger	not Detected				
Bit Size	7 7/8				
Type Fluid in Hole	Salt Brine				
Density and Viscosity	10.1 34				
pH and Fluid Loss	8 Not Controlled cc		cc		cc
Source of Sample	Circulated				
Rm @ Meas. Temp.	.032 @ 60 °F	@ °F	@ °F	@ °F	@ °F
Rmf @ Meas. Temp.	.022 @ 60 °F	@ °F	@ °F	@ °F	@ °F
Rmc @ Meas. Temp.	.042 @ 60 °F	@ °F	@ °F	@ °F	@ °F
Source of Rmf and Rmc	measured				
Rm @ BHT	.018 @ 106° °F	@ °F	@ °F	@ °F	@ °F
Time Since Circ.	6 hrs				
Max. Rec. Temp. Deg. F.	106° °F	°F	°F	°F	°F
Equip. No. and Location	EL-25 Hobbs				
Recorded By	Lewis-Forcade				
Witnessed By	Mr. Rivers				

Case No. 4140
Exhibit "1B"



GO RADIOACTIVITY LOG

COMPANY EL CHORRO EXPLORATION, INC.

WELL JACOBS FED. #6

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

Location:

Sec. Twp. Rge.

Other Services:
PERFORATION LOG

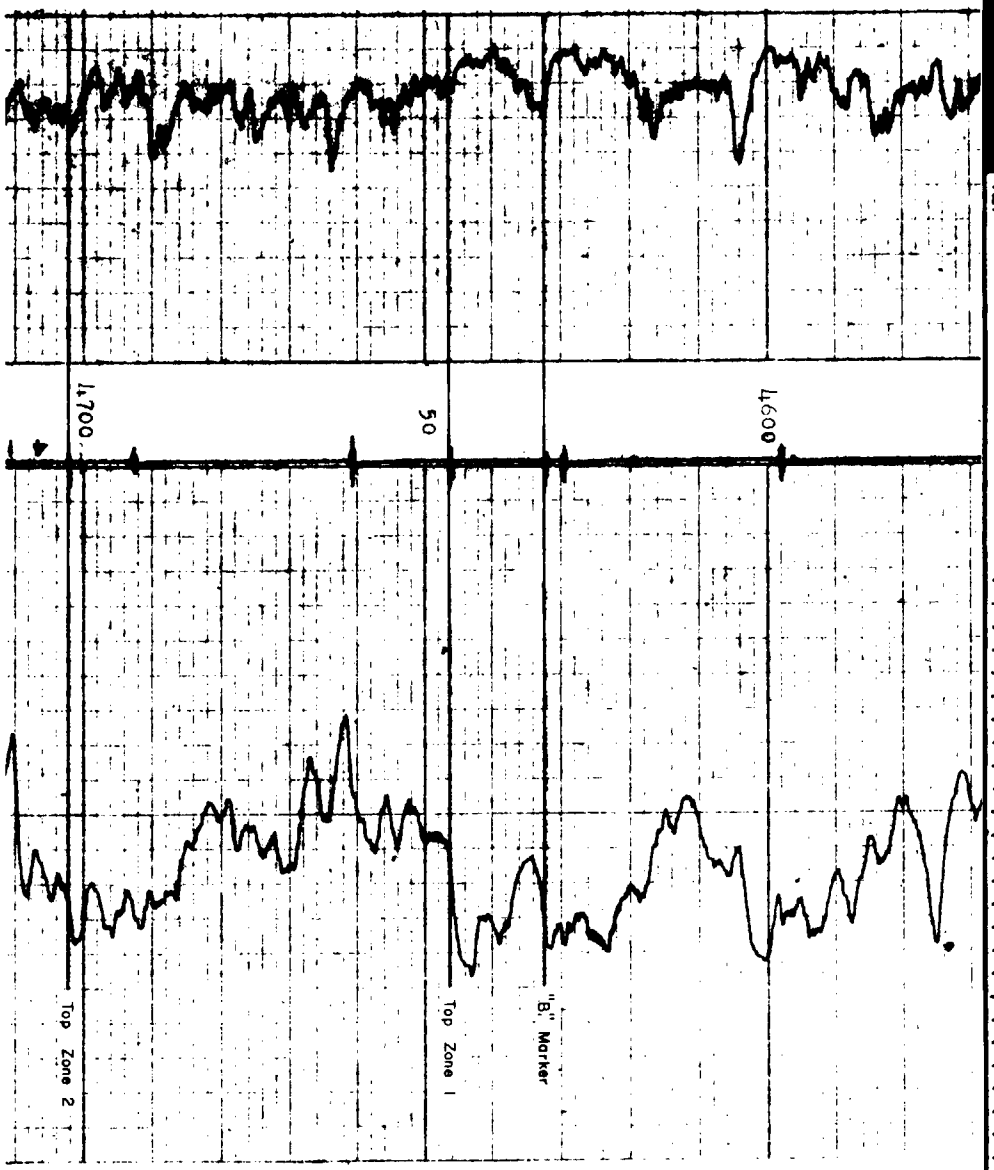
Permanent Datum: GROUND LEVEL, Elev.
Log measured from G.L. 10' ft above perm. datum
Drilling measured from K.B.

Elev.: K.B.
D.F.
G.L. 4251

Date	5-5-62
Run No.	ONE
Type Log	GR-NU
Depth—Driller	4721'
Depth—Logger	4719.5'
Bottom logged interval	4719'
Top logged interval	200'
Type fluid in hole	WATER
Salinity, PPM Cl.	FRESH
Density	8.3#
Level	200'
Max. rec. temp., deg F.	
Operating rig time	3 HRS.
Recorded by	SEAY
Witnessed by	HARRELL

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
1	7-7/8"	SURF.	T.D.	4½"	10.6	SURF.	T.D.

Case No. 4140
Exhibit "1B"



THE WESTERN COMPANY

GAMMATRON

Simultaneous Nuclear Log

FILING NO. 66421

COMPANY EL CHORRO EXPLORATION, INC.

WELL JACOBS FEDERAL #16

FIELD MILNESAND-SAN ANDRES

COUNTY ROOSEVELT STATE NEW MEXICO

LOCATION: 1654.5'FWL-990'FSL

OTHER SERVICES:

SEC. 19 TWP. 8S RGE. 35E

PERMANENT DATUM GROUND LEVEL ELEV. 4231

LOG MEASURED FROM 8.5 FT. ABOVE PERMANENT DATUM

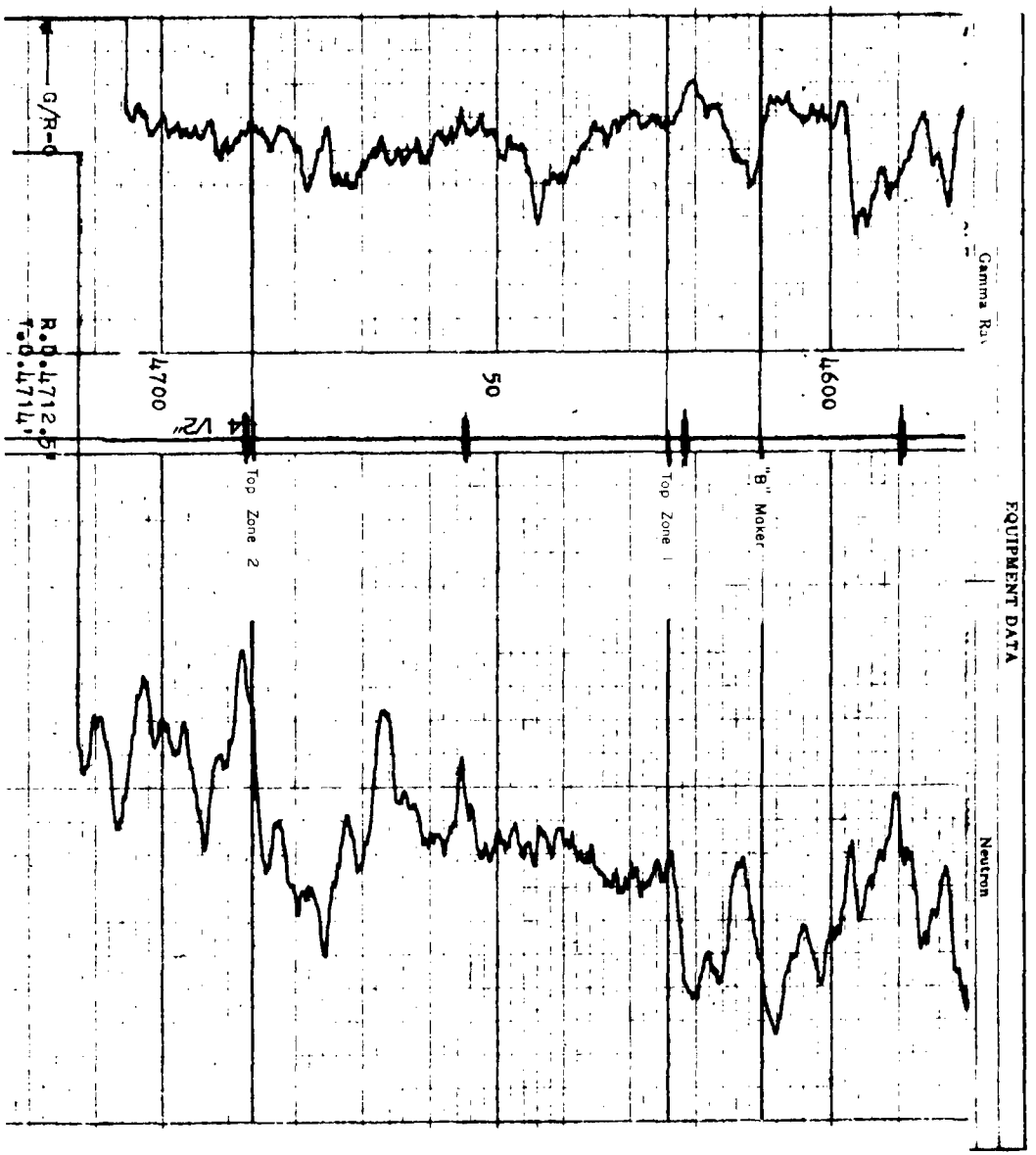
DRILLING MEASURED FROM K.D.B.

ELEVATIONS: KB 4239.5 DF GL 4231

DATE	5/31/64	5/31/64
RUN NO.	1-NW.	1-NW
TYPE LOG	GAMMA RAY	NEUTRON
DEPTH—DRILLER	4727	4727
DEPTH—LOGGER	4722	4722
BOTTOM LOGGED INTERVAL	4713	4720.5
TOP LOGGED INTERVAL	4000	4000
TYPE FLUID IN HOLE	WATER	WATER
SALINITY PPM CL.		
DENSITY		
LEVEL	FULL	FULL
MAX. REC. TEMP. DEG. F		
OPR. RIG TIME	2 HRS.	2 HRS.
RECORDED BY	JAMES	
WITNESSED BY	MR. LANDUSKY	

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
				4½		SURF	4830

Case No. 4140
Exhibit "1B"



THE WESTERN COMPANY

Gammatron

COMPANY EL CHORRO EXPLORATION, INC.

WELL JACOBS FEDERAL # 17

FIELD MILNESAND (SAN ANDRES)

COUNTY ROOSEVELT STATE NEW MEXICO

Location: 2310'FNL & 990'FEL SEC.19, TWP.8S, RGE.35E

Other Services:

86476

Permanent Datum: GROUND LEVEL, Elev. 4231

Log measured from 8.5 ft above perm. datum

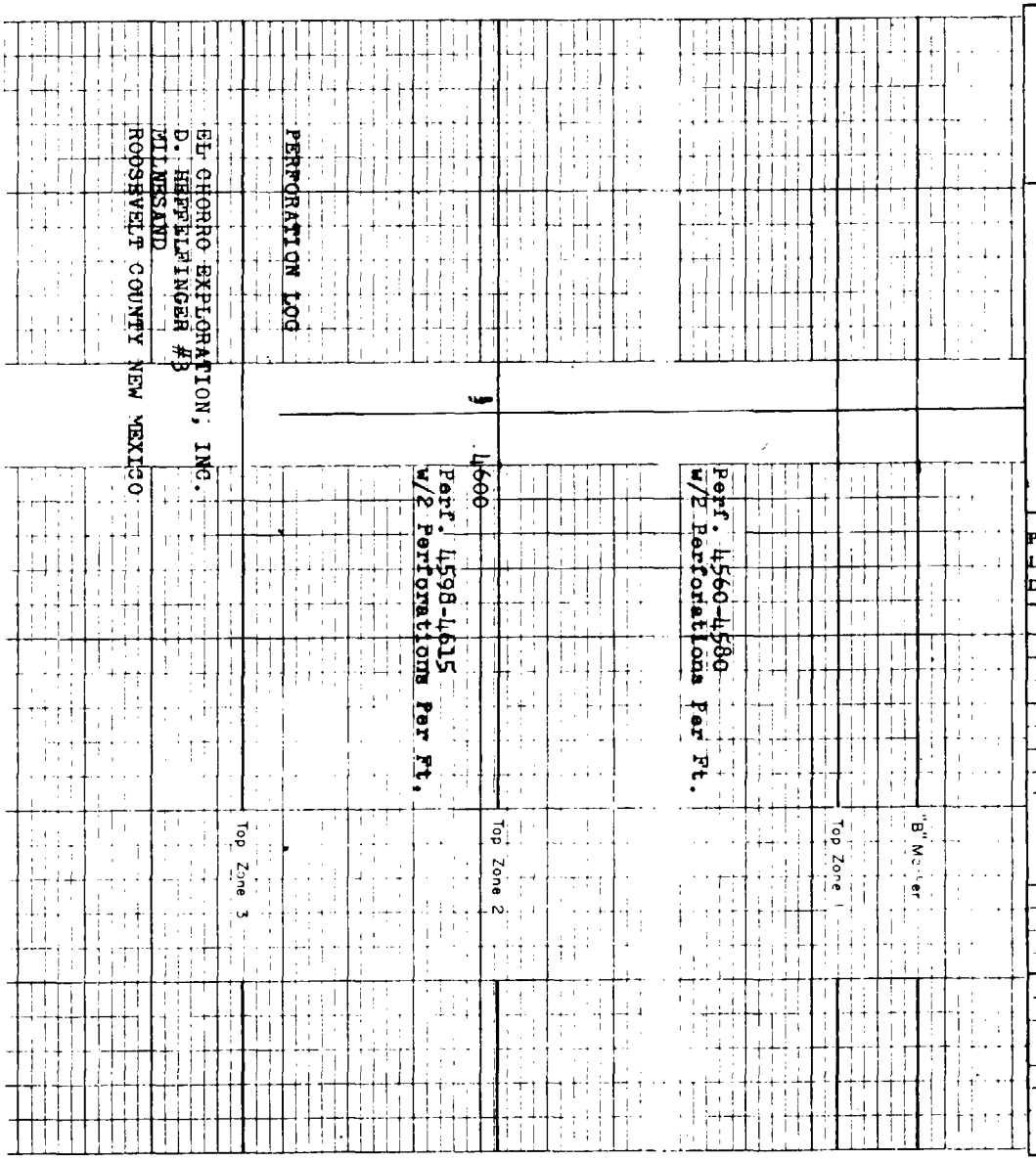
Drilling measured from K.B.

Elev.: K.B. 4239.5 D.F. G.L. 4231

Date	8-21-64	8-21-64
Run No.	ONE	ONE
Type Log	GAMMA-RAY	NEUTRON
Depth—Driller	4714	4714
Depth—Logger	4714	4714
Bottom logged interval	4705	4712.5
Top logged interval	3900	3900
Type fluid in hole	WATER	WATER
Salinity, PPM Cl.		
Density		
Level	FULL	FULL
Max. rec. temp., deg F.		
Operating rig time		
Recorded by	CARROLL	
Witnessed by	MR. SPEARS	

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
				4½"		SURF.	T.D.

Case No. 4140
Exhibit "1B"



Well Perforators, Inc.

P. O. BOX 5014 ABILENE, TEXAS

Radioactivity Log

COMPANY El Chorro Exploration, Inc.

WELL D. Heffelfinger #3

FIELD Milnesand

COUNTY Roosevelt STATE New Mexico

Location: 1980' FNL & 1980' FWL
Sec. 18
T-8-S - R- 35 - E

Sec. Twp. Rge.

Other Services:

Permanent Datum: K. B. 12' Above G. L. Elev.

Log measured from ft above perm. datum

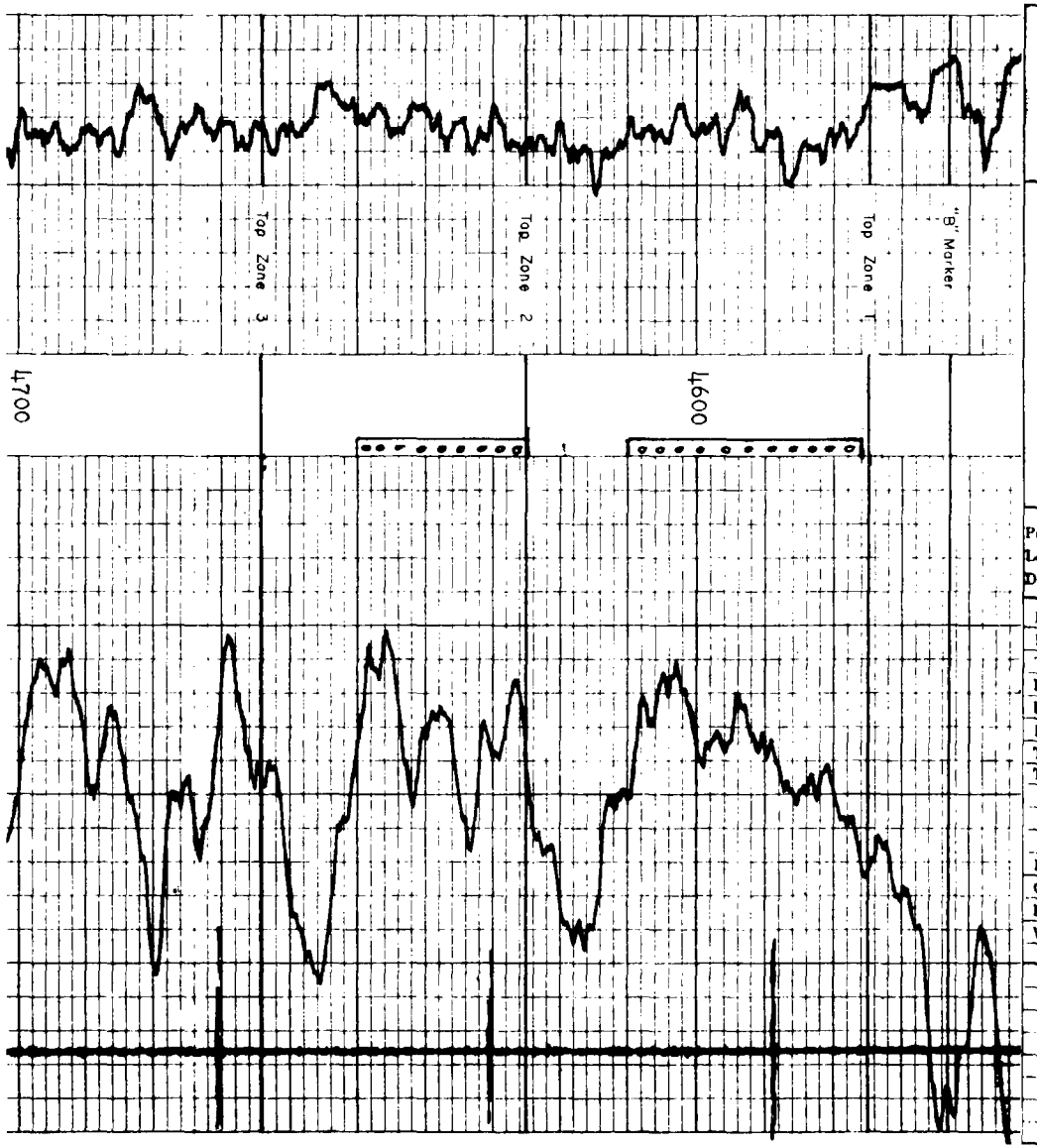
Drilling measured from

Elev.: K.B. 4244
D.F.
G.L. 4232

Date	7-16-62
Run No.	
Type Log	Perforation
Depth—Driller	
Depth—Logger	
Bottom logged interval	
Top logged interval	
Type fluid in hole	Water & Oil
Salinity, PPM Cl.	
Density	
Level	1700
Max. rec. temp., deg F.	
Operating rig time	
Recorded by	Morris
Witnessed by	Spears

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
				7 7/8			

Case No. 4140
Exhibit "1B"



Well Perforators, Inc.

P. O. BOX 5014 ABILENE, TEXAS

Radioactivity Log

COMPANY El Chorro Exploration, Inc.

WELL D. Hefflefinger #4

FIELD Milnesand San Andres

COUNTY Roosevelt STATE New Mexico

Location: 1980' FNL & 660' FEL
Sec. 18 T-8-S
R-35-E

Sec. Twp. Rge.

Other Services:

Permanent Datum: 12' Above G. L. Elev.

Log measured from ft above perm. datum

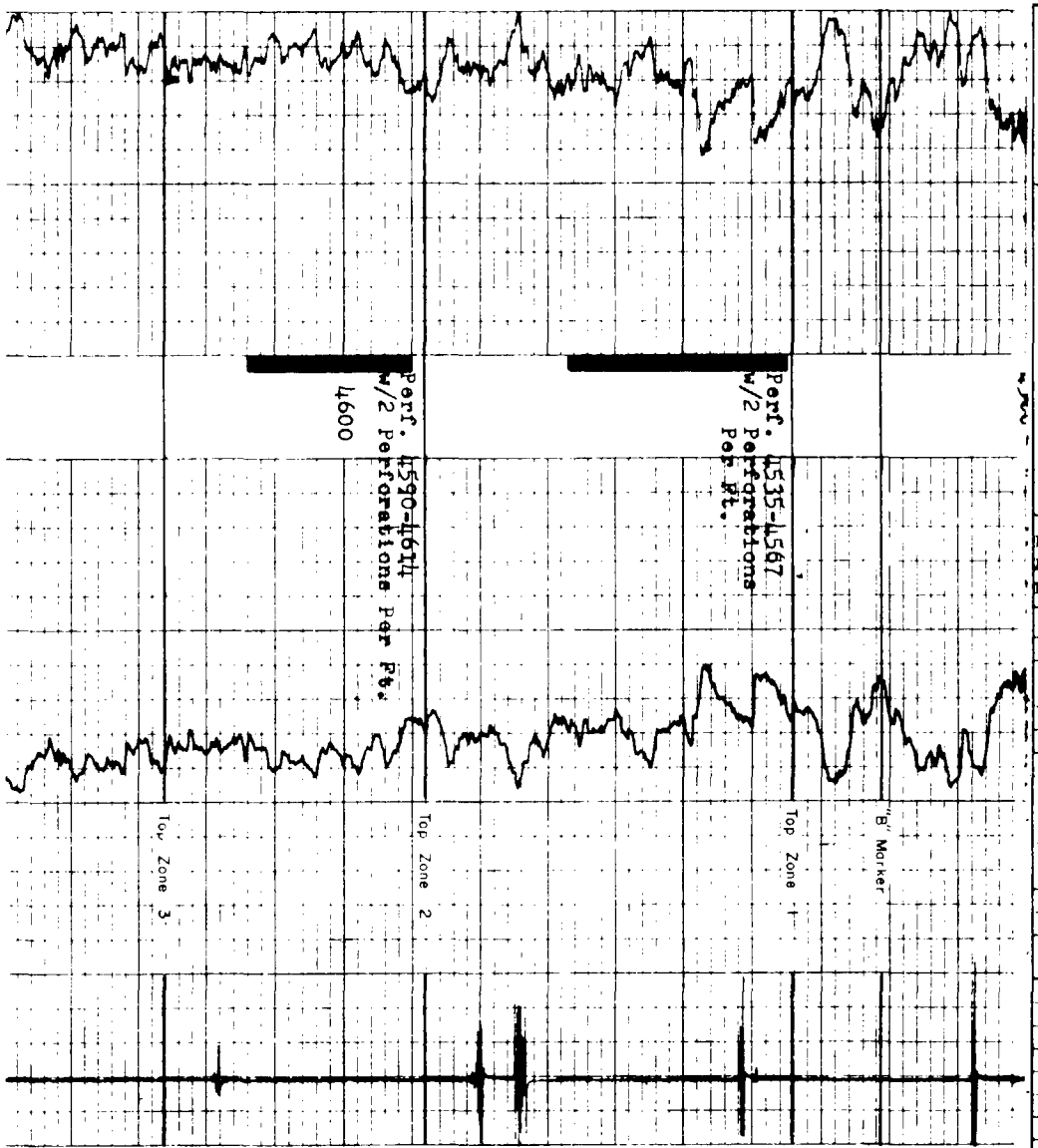
Drilling measured from

Elev.: K.B. 4240
D.F.
G.L. 4228

Date	8-9-62	8-9-62
Run No.	One	One
Type Log	Gamma Ray	Neutron
Depth—Driller	4850+	4850+
Depth—Logger	4798	4798
Bottom logged interval	4788	4796
Top logged interval	4192	4200
Type fluid in hole	Water	Water
Salinity, PPM Cl		
Density		
Level	870	870
Max. rec. temp., deg F.		
Operating rig time		
Recorded by	Gregg	Gregg
Witnessed by	Spears	Spears

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
	9 7/8			7 5/8			

Case No. 4140
Exhibit "1B"



Well Perforators, Inc.

P. O. BOX 5014 ABILENE, TEXAS

Radioactivity Log

COMPANY El Chorro Exploration, Inc.

WELL A. R. Haley #5

FIELD Milnesand

COUNTY Roosevelt STATE New Mexico

Location:

Sec. Twp. Rge.

Other Services:

Permanent Datum: 12' Above G. L. Elev.

Log measured from ft above perm. datum

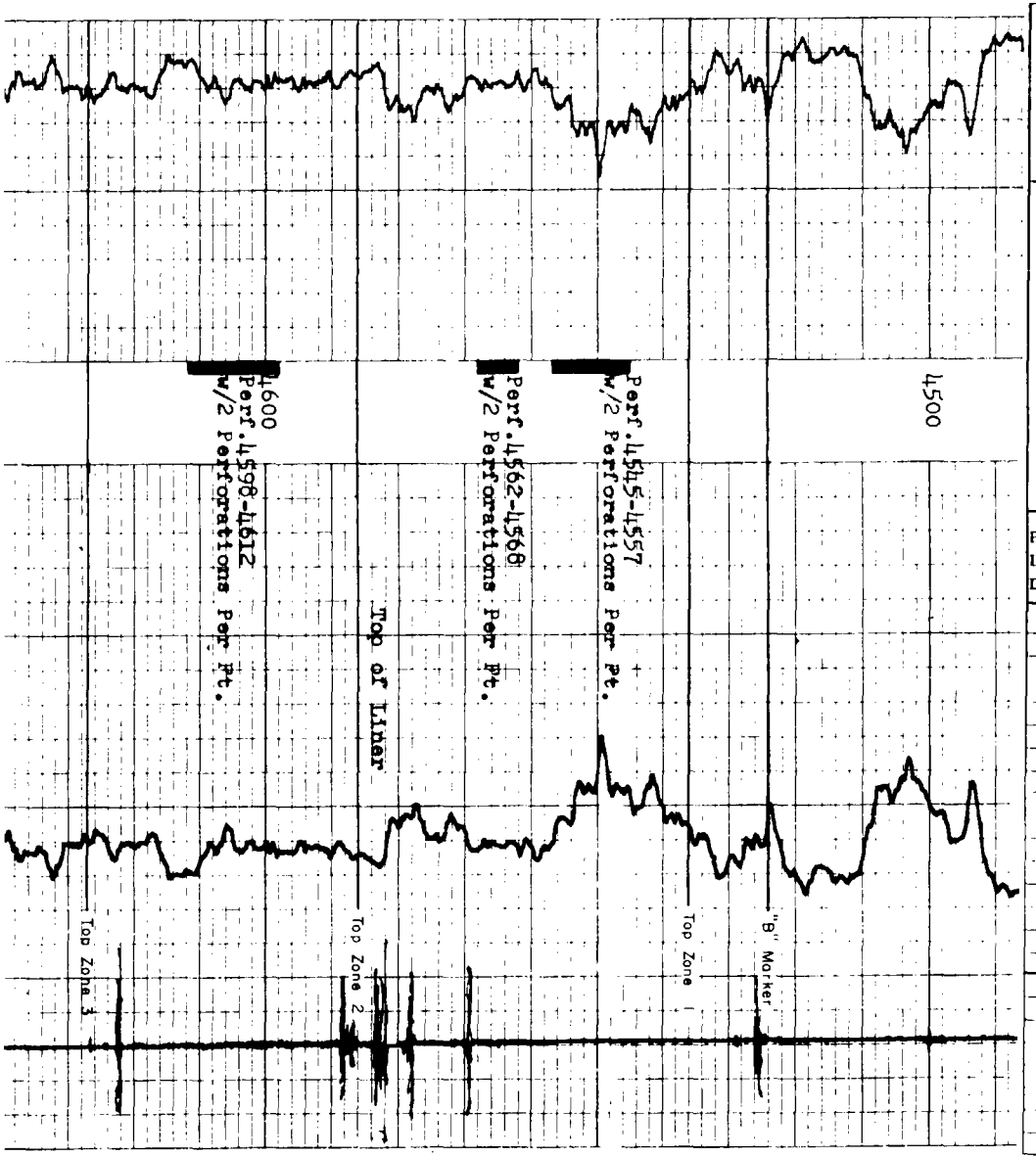
Drilling measured from

Elev.: K.B. 4248
D.F. 4247
G.L. 4236

Date	6-20-62
Run No.	One
Type Log	Gamma Ray
Depth—Driller	
Depth—Logger	4951
Bottom logged interval	4950
Top logged interval	4300
Type fluid in hole	Oil
Salinity, PPM Cl.	
Density	
Level	1000
Max. rec. temp., deg F.	
Operating rig time	
Recorded by	Morris
Witnessed by	Spears

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
				7 5/8	26.40		

Case No. 4140
Exhibit "1B"



Well Perforators, Inc.

P. O. BOX 5014 ABILENE, TEXAS

Radioactivity Log

COMPANY El Chorro Exploration, Inc.

WELL A. R. Haley Well #6

FIELD Milnesand San Andres

COUNTY Roosevelt STATE New Mexico

Location: SE/SW Sec. 13 - T.8S R-34E

Sec. Twp. Rge.

Other Services:

Permanent Datum: 11 Above G. L. , Elev.

Log measured from , ft above perm. datum

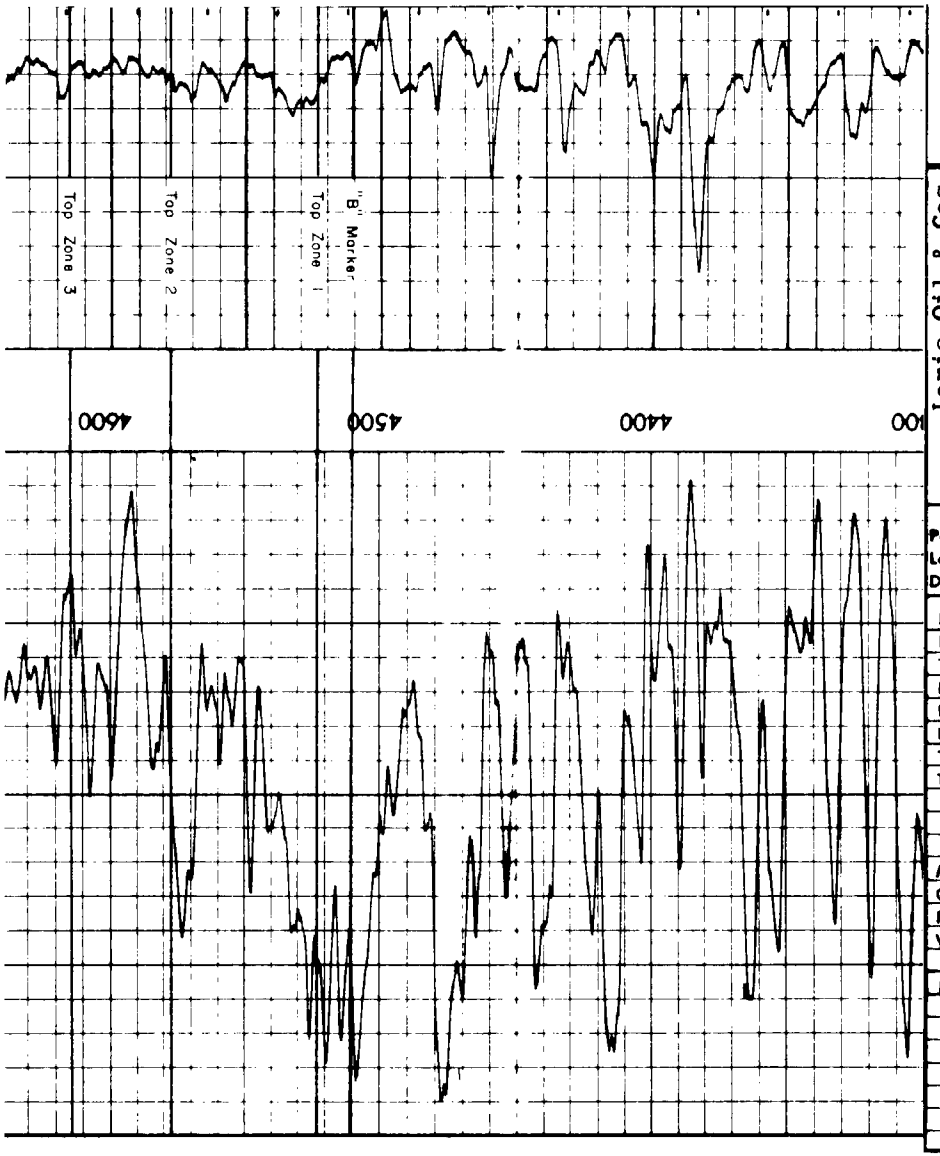
Drilling measured from

Elev.: K.B. 4262
D.F.
G.L. 4251

Date	8-4-62
Run No.	One
Type Log	Gamma Ray
Depth—Driller	9200+
Depth—Logger	9100 (Plug)
Bottom logged interval	4700
Top logged interval	4350
Type fluid in hole	
Salinity, PPM Cl.	
Density	
Level	
Max. rec. temp., deg F.	
Operating rig time	
Recorded by	Gregg
Witnessed by	Spears

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
	9 7/8&7 3/4			7 5/8&5½			

Case No. 4140
Exhibit "1B"



WELEX

RADIOACTIVITY LOG

COMPANY Lario Oil & Gas Company
WELL Federal # 3-A
FIELD Milnesand (San Andres)
County Roosevelt State N. M.

COMPANY LARIO OIL & GAS COMPANY

(10)

WELL FEDERAL # 3-A

FIELD MILNESAND (SAN ANDRES)

COUNTY ROOSEVELT STATE NEW MEXICO

Location 660'FSL 660'FEL

Other Services:

Sec. 14 Twp 8-S Rge 34-E

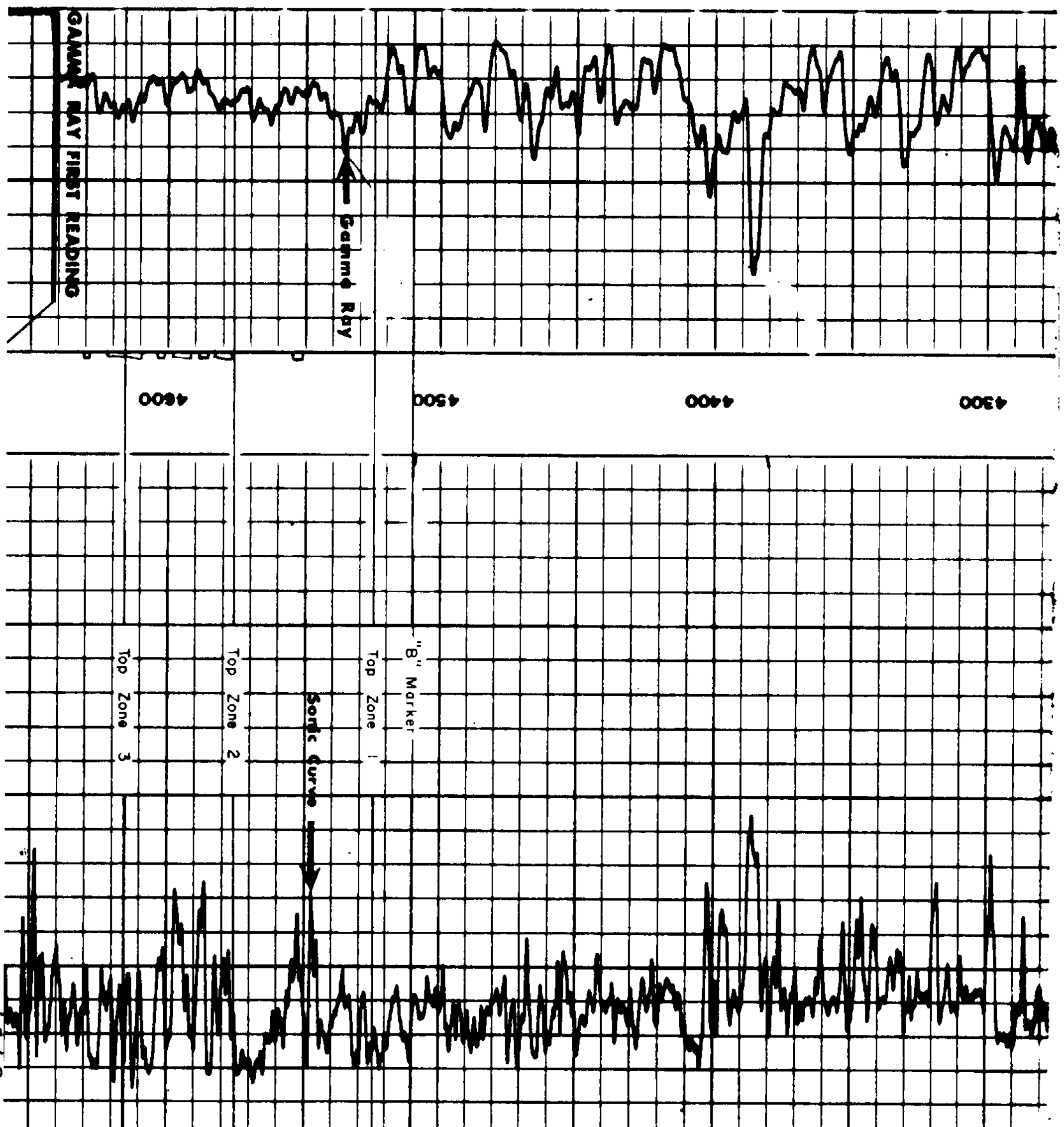
Permanent Datum Ground Level Elev. 4259
Log Measured from K. B. 8 Ft. Above Perm. Datum
Drilling Measured From Kelly Bushing

Elev.: K.B. 4267
D.F. 4266
G.L. 4259

Date	7-25-63	7-25-63
Run No.	- One -	- One -
Type Log	Gamma	Neutron
Depth—Driller	4680	4680
Depth—Welex	4680	4680
Bottom Logged Interval	4670	4680
Top Logged Interval	20	30
Type Fluid in Hole	Mud	Mud
Salinity, PPM Cl.		
Density		
Level	Full	Full
Max. rec. temp., deg. F.	103	103
Operating Rig Time	2 Hrs.	
Recorded By	B. L. Harris	
Witnessed by	Mr. Brock	

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
	12-1/4"	0	385	8-5/8"		0	385
	7-7/8"	385	4680				

Case No. 4140
Exhibit "1B"



SCHLUMBERGER

SONIC LOG

COUNTY ROOSEVELT
FIELD or LOCATION MILNESAND
WELL NEW MEXICO FEDERAL "F" # 4
COMPANY SUNRAY MID-CONTINENT OIL COMPANY

COMPANY SUNRAY MID-CONTINENT OIL COMPANY

WELL NEW MEXICO FEDERAL "F" # 4

FIELD MILNESAND

LOCATION SEC. 13-8S-34E

COUNTY ROOSEVELT

STATE NEW MEXICO

Other Surveys
NONE

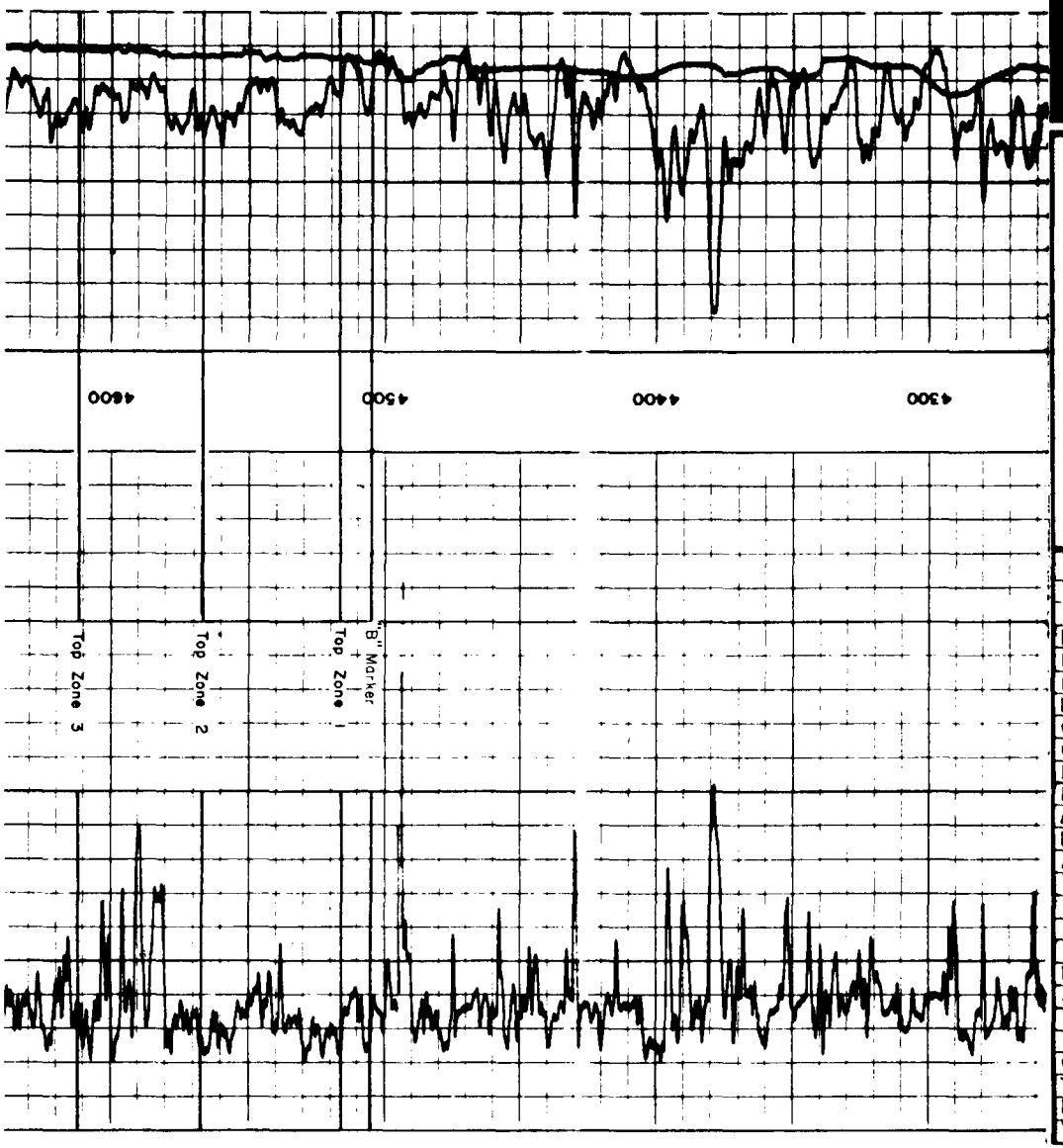
Location of Well
2050' FROM N/L
660' FROM E/L

Elevation: K.B.:
D.F.: 4245
J.C.G. or G.L.:

Log Depths Measured From KB 9 Ft. above GL

RUN No.	ONE		
Date	11-28-61		
First Reading	4663		
Last Reading	0		
Feet Measured	4663	69	
Csg. Schlum.	-		
Csg. Driller	8 5/8"@ 360		
Depth Reached	4670		
Bottom Driller	4665		
Mud Nat.	SALT GEL		
Dens. / Visc.	10.1 / 35		
Mud Resist.	@ °F	@ °F	@ °F
" Res. BHT	@ °F	@ °F	@ °F
" pH	4.0 @ °F	@ °F	@ °F
" Wtr. Loss	15.2 CC 30 min	CC 30 min	CC 30 min
" Rmf	@ °F	@ °F	@ °F
Bit Size	6¾"		
Spacing:			
T3 R3 3R:	CSG To 3500	To	To
T3 R1 1R:	3500 To TD	To	To
Opr. Rig Time	3 HOURS		
Truck No.	2527-HOBBS		
Recorded By	DAVIS		
Witness	BURGER		

Case No. 4140
Exhibit "1B"



SCHLUMBERGER

SONIC LOG

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COUNTY
FIELD or LOCATION
WELL
COMPANY

COMPANY SUNRAY MIDCONTINENT OIL COMPANY

WELL NEW MEXICO FEDERAL F #6

FIELD MILNESAND

LOCATION SE. 12 - B - tE

COUNTY ROOSEVELT

STATE NEW MEXICO

Other Surveys

Location of Well
1980' FNWL

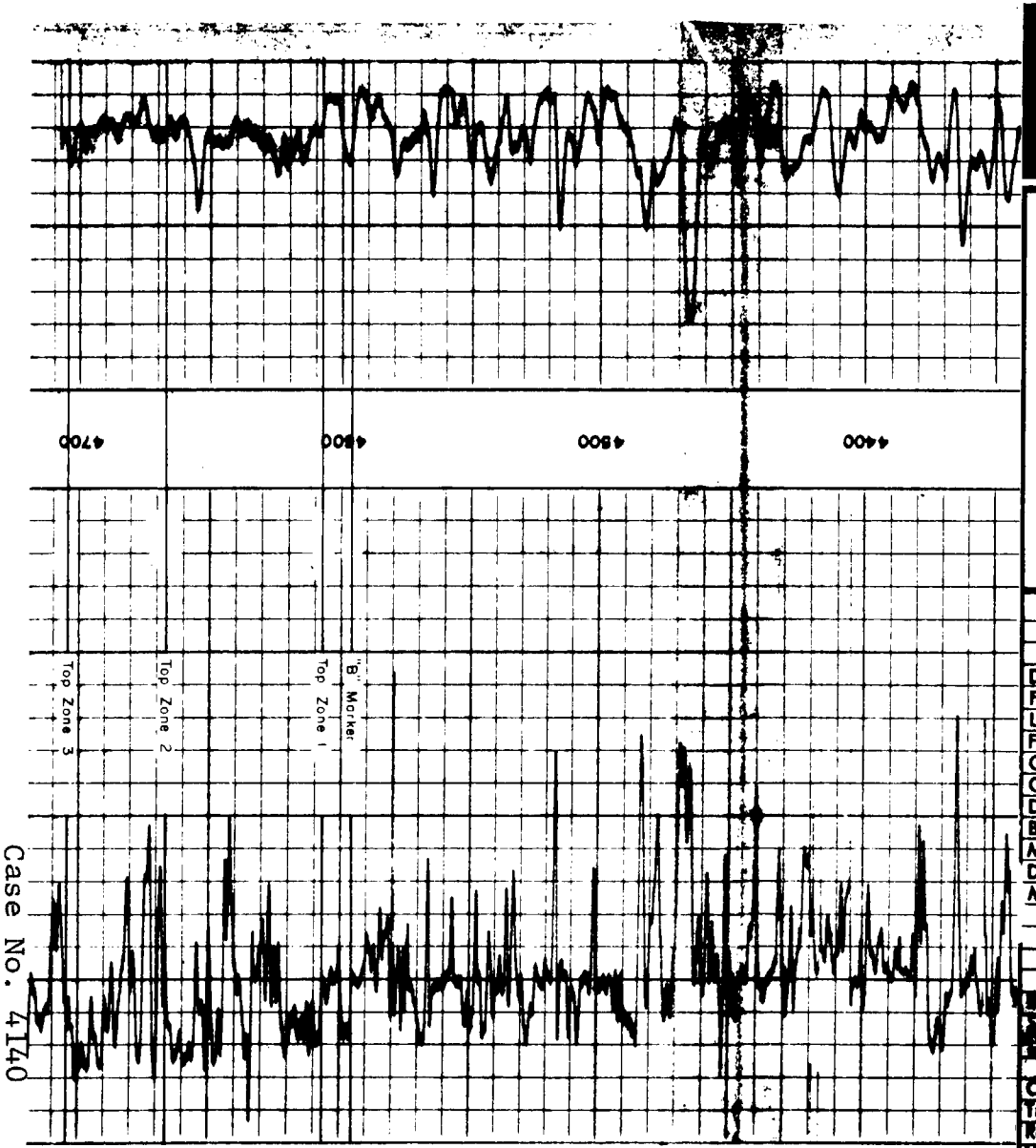
8

Elevation: K.B.: 4257
D.F.: 4256
or G.L.: 4246

Log Depths Measured From KB , 10 Ft. above GL

RUN No.	ONE		
Date	3-2-62		
First Reading	4679		
Last Reading	0		
Feet Measured	4679		
Csg. Schlum.	360		
Csg. Driller	362		
Depth Reached	4685		
Bottom Driller	4685		
Mud Nat.	SALT GEL STARCH		
Dens. | Visc.	10.5 | 39		
Mud Resist.	.055 @ 72 °F	@ °F	@ °F
" Res. BHT	.042 @ 90 °F	@ °F	@ °F
" pH	5 @ °F	@ °F	@ °F
" Wtr. Loss	18.4 CC 30 min	CC 30 min	CC 30 min
" Rmf	@ °F	@ °F	@
Bit Size	6 3/4		
Spacing:			
T 3 R 1 R.	T.D. To 3700	To	To
T 3 R 2 R.	3900 To [illegible]	To	To
Opr. Rig Time	[illegible]		
Truck No.	3701-HOBBS		
Recorded By	OWEN		
Witness	GORDON - BURGER - DOND		

Case No. 4140
Exhibit "LB"



SCHLUMBERGER

SONIC LOG

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston Texas

COUNTY / FIELD or LOCATION / WELL / COMPANY

COMPANY SUNRAY DX OIL COMPANY

WELL NEW MEXICO FEVERAL F-13

FIELD MILNESAND

LOCATION SEC 24 TWP 8-S -4 E

COUNTY ROOSEVELT

STATE NEW MEXICO

Other Surveys
LL, MLL

Location of Well
480' FNL
660' FEL

12

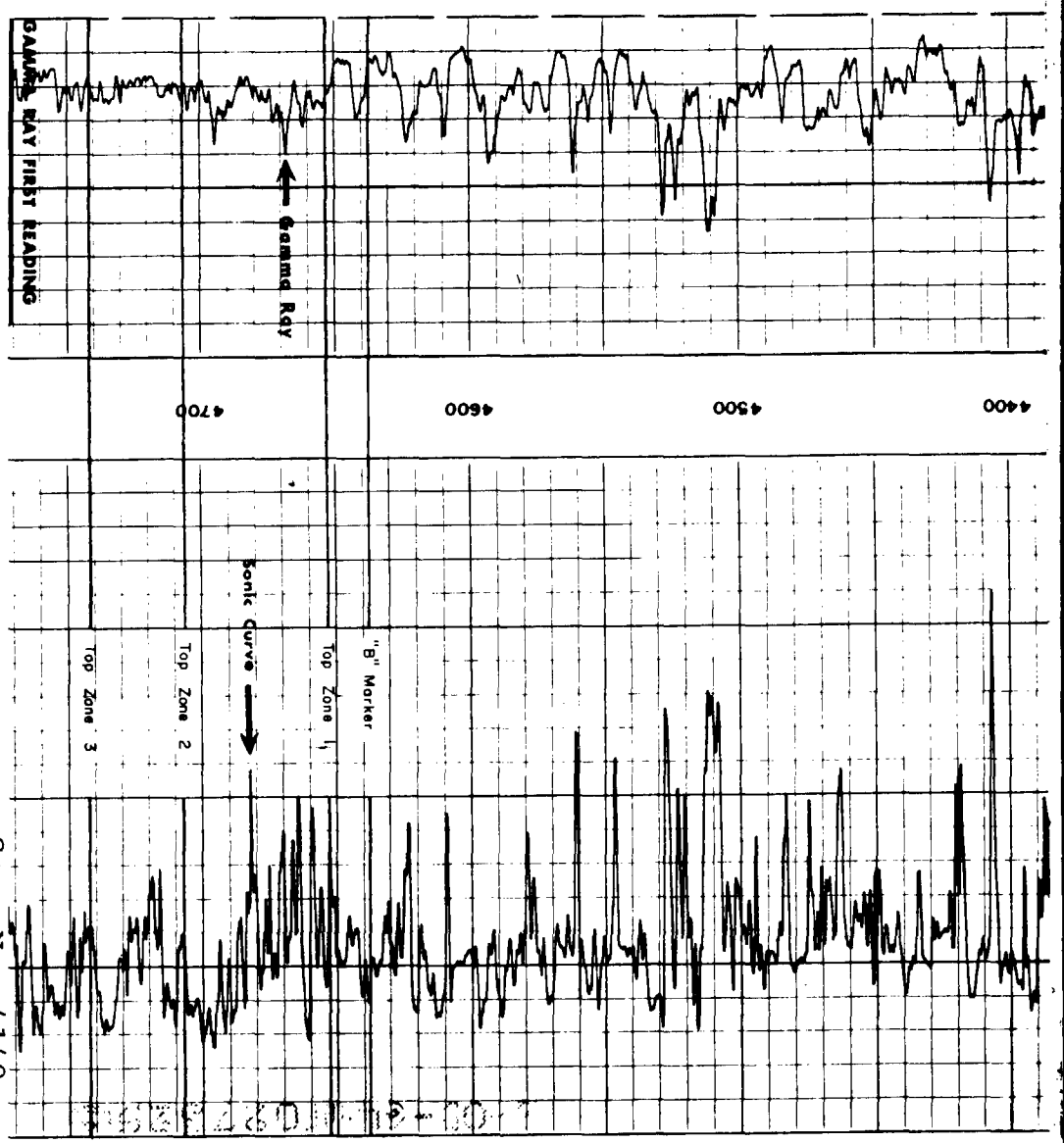
I. Burger

Elevation: K.B.:
EST D.F.: 4242
or G.L.:

Log Depths Measured From K.B. 9 Ft. above G.L

RUN No.	I		
Date	12-25-62		
First Reading	4726		
Last Reading	100		
Feet Measured	4626		
Csg. Schlum.			
Csg. Driller	357		
Depth Reached	4732		
Bottom Driller	4730		
Mud Nat.	SALT GEL		
Dens. | Visc.	10.1 | 41	|	|
Mud Resist.	.07 @ 58 °F	@ °F	@ °F
" Res. BHT	.04 @ 102 °F	@ °F	@ °F
" pH	@ °F	@ °F	@ °F
" Wtr. Loss	11 CC 30 min	CC 30 min	CC 30 min
" Rmf	.055 @ 58 °F	@ °F	@ °F
Bit Size	7 7/8		
Spacing:			
R. / R.	C66 To T.D.	To	To
T R1 R2	To	To	To
Opr. Rig Time	3 HRS		
Truck No.	2526 HOBBS		
Recorded By	WENDLAND		
Witness	MR. RAY - BURGER		

Case No. 4140
Exhibit "1B"



SONIC LOG - GAMMA RAY

WITH CALIPER

SCHLUMBERGER WELL SURVEYING CORPORATION

Houston, Texas

SCHLUMBERGER

COMPANY SUNRAY DX OIL COMPANY SDX Hobbs

WELL NEW MEXICO FEDERAL F # 17 PRS (14)

FIELD MILNESAND SAN ANDRES

COUNTY ROOSEVELT STATE NEW MEXICO

COUNTY ROOSEVELT
FIELD or LOCATION MILNESAND SAN ANDRES
WELL N.M.FED.F # 17
COMPANY SUNRAY DX OIL CO.

LOCATION 660' FROM S/L
660' FROM E/L

Sec. 24 Twp. 8S Rge. 34E

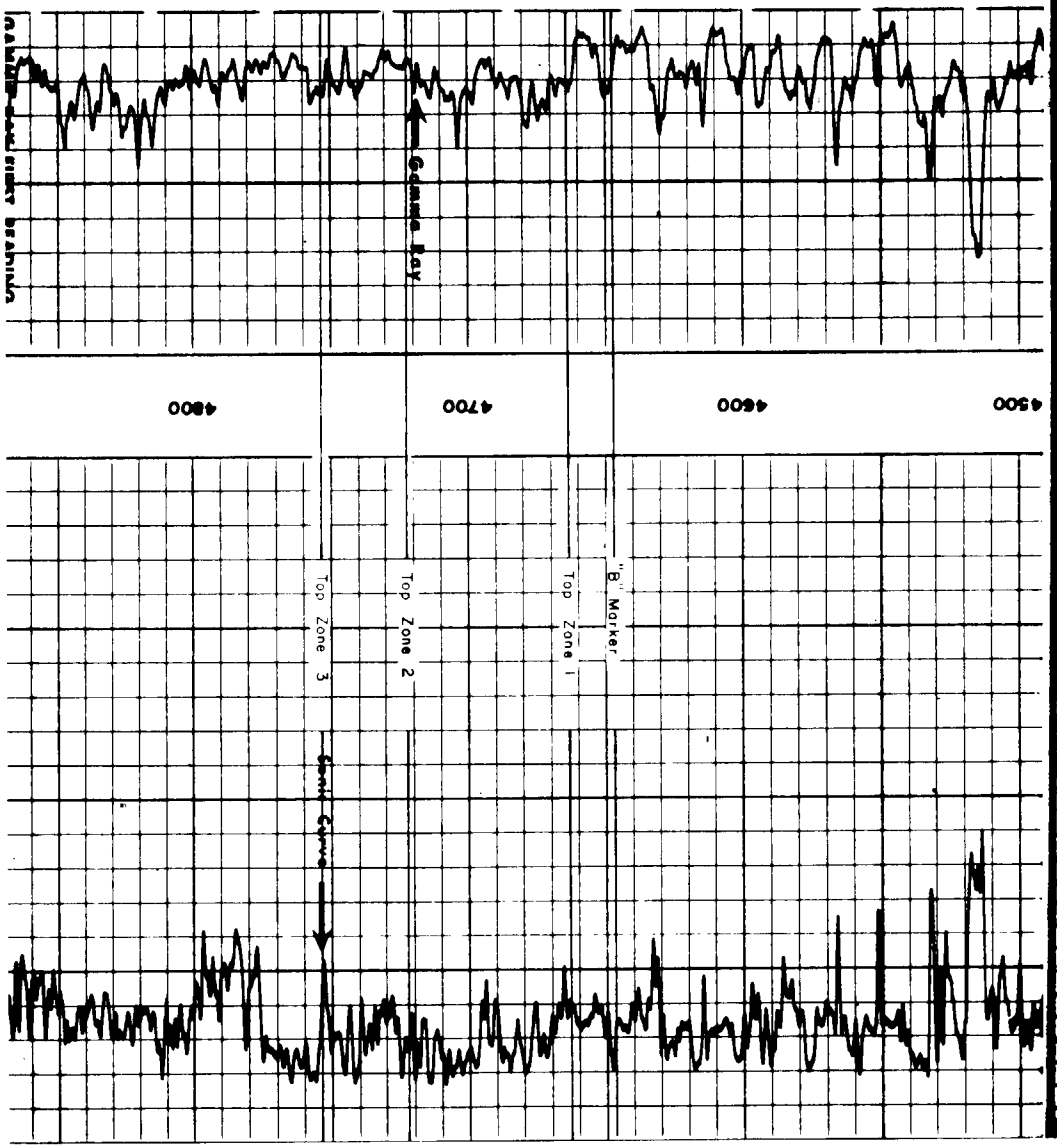
Other Services:
LL, MLL

Permanent Datum: GL , Elev.
Log Measured From KB 10.4 Ft. Above Perm. Datum
Drilling Measured From KB 10.4' ABOVE PERM. DATA

Elev.: K.B.
EST. D.F. 4240
G.L.

Date	1-24-64			
Run No.	ONE			
Depth—Driller	4791			
Depth—Logger	4794			
Btm. Log Interval	4790			
Top Log Interval	50			
Casing—Driller	@ 270	@	@	@
Casing—Logger				
Bit Size	7 7/8"			
Type Fluid in Hole	SALT GEL			
Dens. | Visc.	10.3 | 42	|	|	|
pH | Fluid Loss	| 20 ml	| ml	| ml	| ml
Source of Sample	PIT			
R_m @ Meas. Temp.	.057 @ 76 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	.049 @ 76 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	- @ °F	@ °F	@ °F	@ °F
Source: R_{mf} R_{mc}	M | -	|	|	|
R_m @ BHT	.056 @ 91 °F	@ °F	@ °F	@ °F
Time Since Circ.				
Max. Rec. Temp.	91 °F	°F	°F	°F
Equip. | Location	2519 | HOBBS	|	|	|
Recorded By	WENDLAND			
Witnessed By	MOBERLY			

Case No. 4140
Exhibit "1B"



SONIC LOG - GAMMA RAY

SCHLUMBERGER

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COMPANY SUNRAY DX OIL COMPANY

WELL N.M. FEDERAL "F" # 20

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

LOCATION 990' FROM S/L
330' FROM E/L

Sec. 25 Twp. 8S Rge. 34E

Other Services:
LL, ML

18

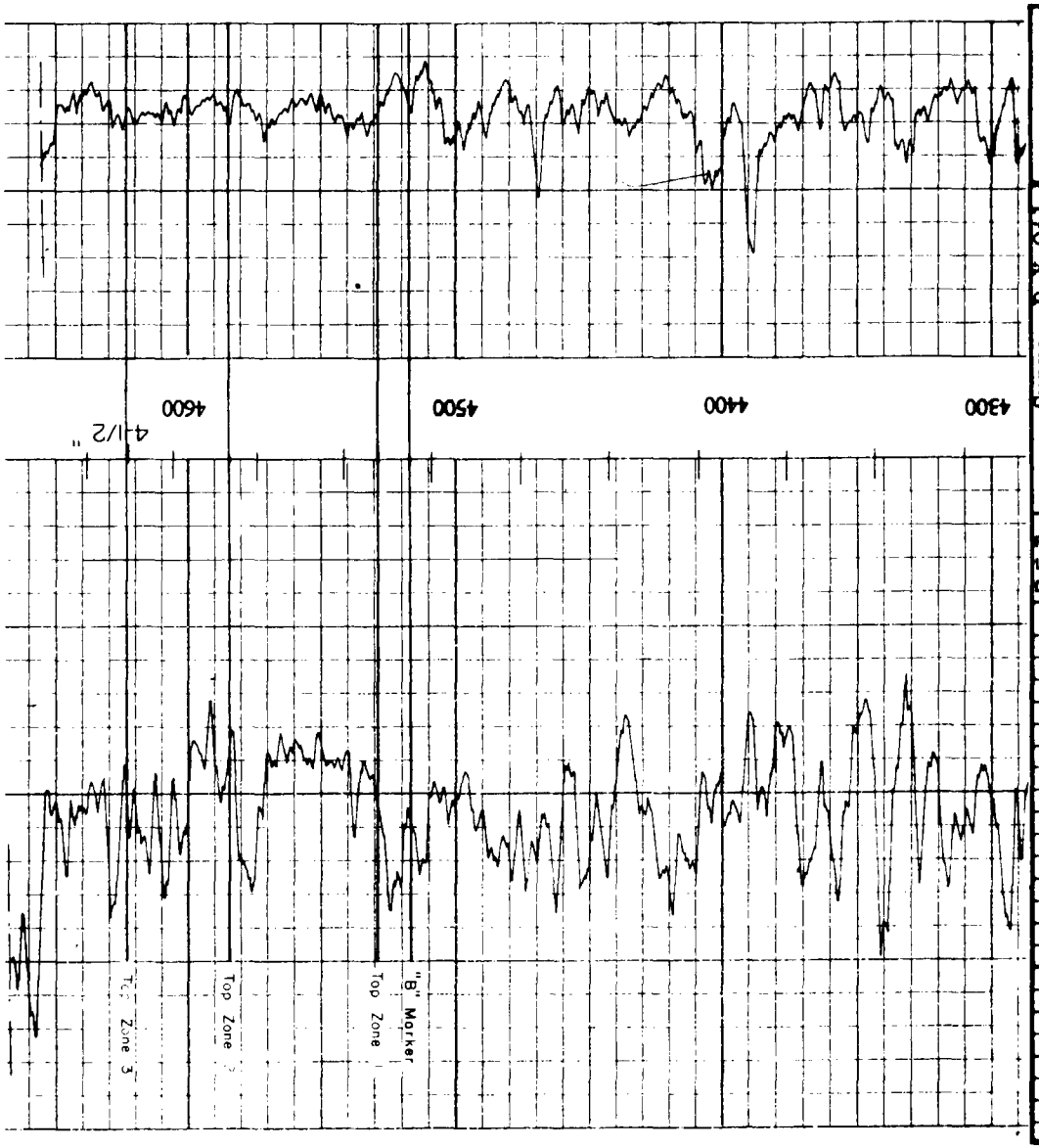
COUNTY ROOSEVELT
FIELD or LOCATION MILNESAND
WELL N.M. FEDERAL "F" # 20
COMPANY SUNRAY DX OIL CO.

Permanent Datum: GL, Elev. 4224.6
Log Measured From KB, 11 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 4235.6
D.F. 4234.6
G.L. 4224.6

Date	11-29-64			
Run No.	ONE			
Depth—Driller	4900			
Depth—Logger	4903			
Btm. Log Interval	4896			
Top Log Interval	0			
Casing—Driller	8 5/8 @ 365	@	@	@
Casing—Logger	-			
Bit Size	7 7/8"			
Type Fluid in Hole	SALT GEL, STARCH			
Dens. / Visc.	9.6 / 42			
pH / Fluid Loss	6 / 12.2 ml	ml	ml	ml
Source of Sample	PIT			
R_m @ Meas. Temp.	.050 @ 67 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	.043 @ 67 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	M / -			
R_m @ BHT	.037 @ 92 °F	@ °F	@ °F	@ °F
Time Since Circ.	3 HOURS			
Max. Rec. Temp.	92 °F	°F	°F	°F
Equip. / Location	3722 / HOBBS	-		
Recorded By	BROWN-LEFLER			
Witnessed By	BURGER-SOTER			

Case No. 4140
Exhibit "1B"



WELEX

RADIOACTIVITY LOG

COMPANY Sunray D-X Oil Company
WELL Bowley # 2
FIELD Milnesand
County Roosevelt State N. M.

COMPANY SUNRAY D-X OIL COMPANY

WELL BOWLEY # 2

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

Location 660'FSL 660'FEL

Sec. 12 Twp. 8-S Rge. 34-E

Other Services: (6)

Permanent Datum Ground Level Elev. 4241

Log Measured from 10 Ft. Above Perm. Datum

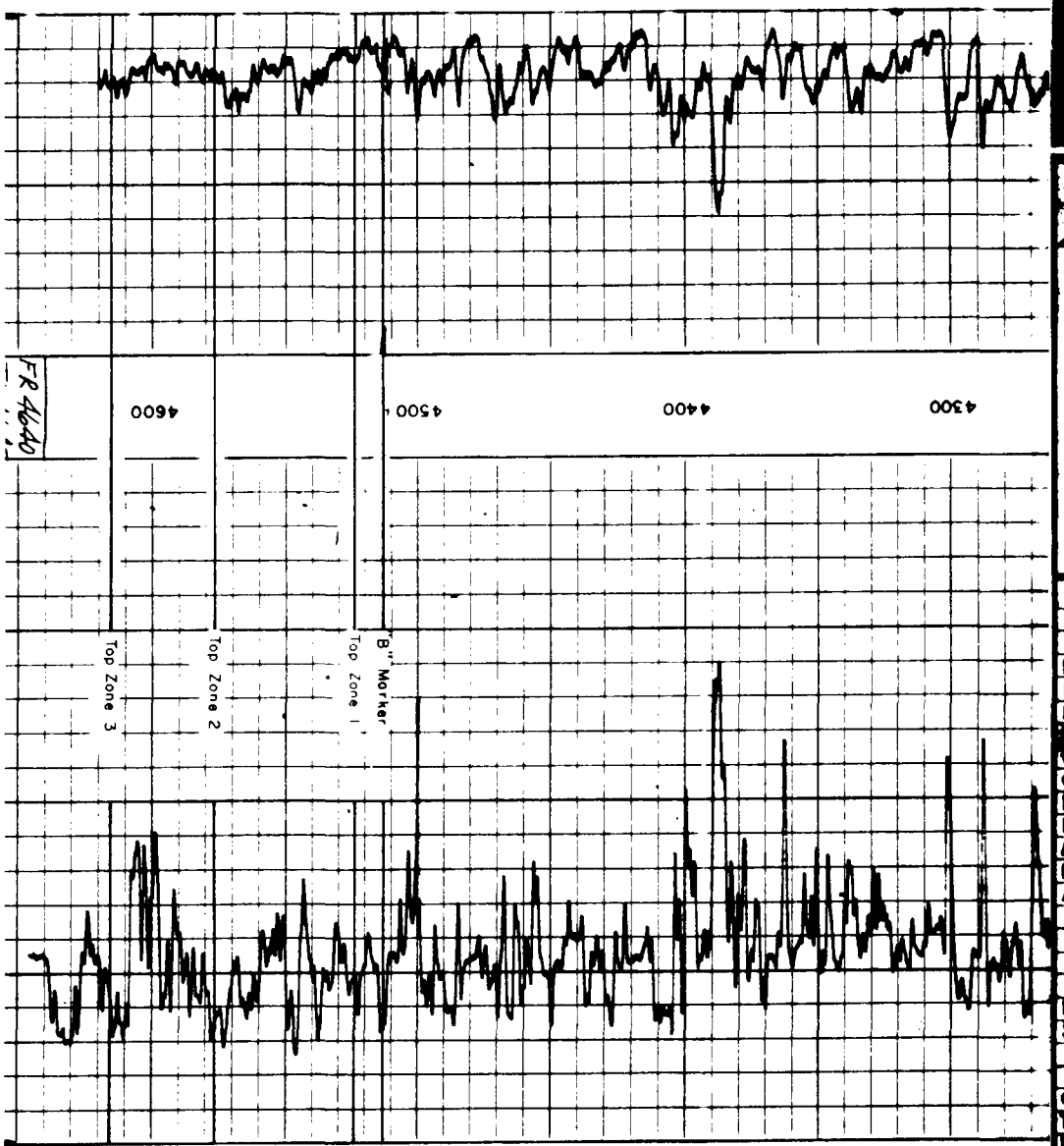
Drilling Measured From Kelly Bushing

Elev.: K.B. 4252
D.F. 4251
G.L. 4241

Date	11-20-62	11-20-62
Run No.	- One -	- One -
Type Log	Gamma	Neutron
Depth—Driller	4700	4700
Depth—Welex	4669	4669
Bottom Logged Interval	4656	4668
Top Logged Interval	Surf.	Surf.
Type Fluid in Hole	Water	Water
Salinity, PPM Cl.		
Density		
Level	135	135
Max. rec. temp., deg. F.		
Operating Rig Time		
Recorded By	B. Adkins	
Witnessed by	Mr. Burger	

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
	12-1/4"	0	371	8-5/8"	24	0	371
	7-7/8"	371	4700	4-1/2"	9.5	0	4700

Case No. 4140
Exhibit "1B"



SCHLUMBERGER

SONIC LOG

COUNTY / FIELD or LOCATION / WELL / COMPANY

COMPANY Maxwell Oil Company

WELL Fraser #2

FIELD Milnesand

LOCATION Sec. 6, T 8 S, R 35 E

COUNTY Roosevelt

STATE New Mexico

Other Surveys
L, MLL, MOP

Location of Well
660' FSL
660' FEL

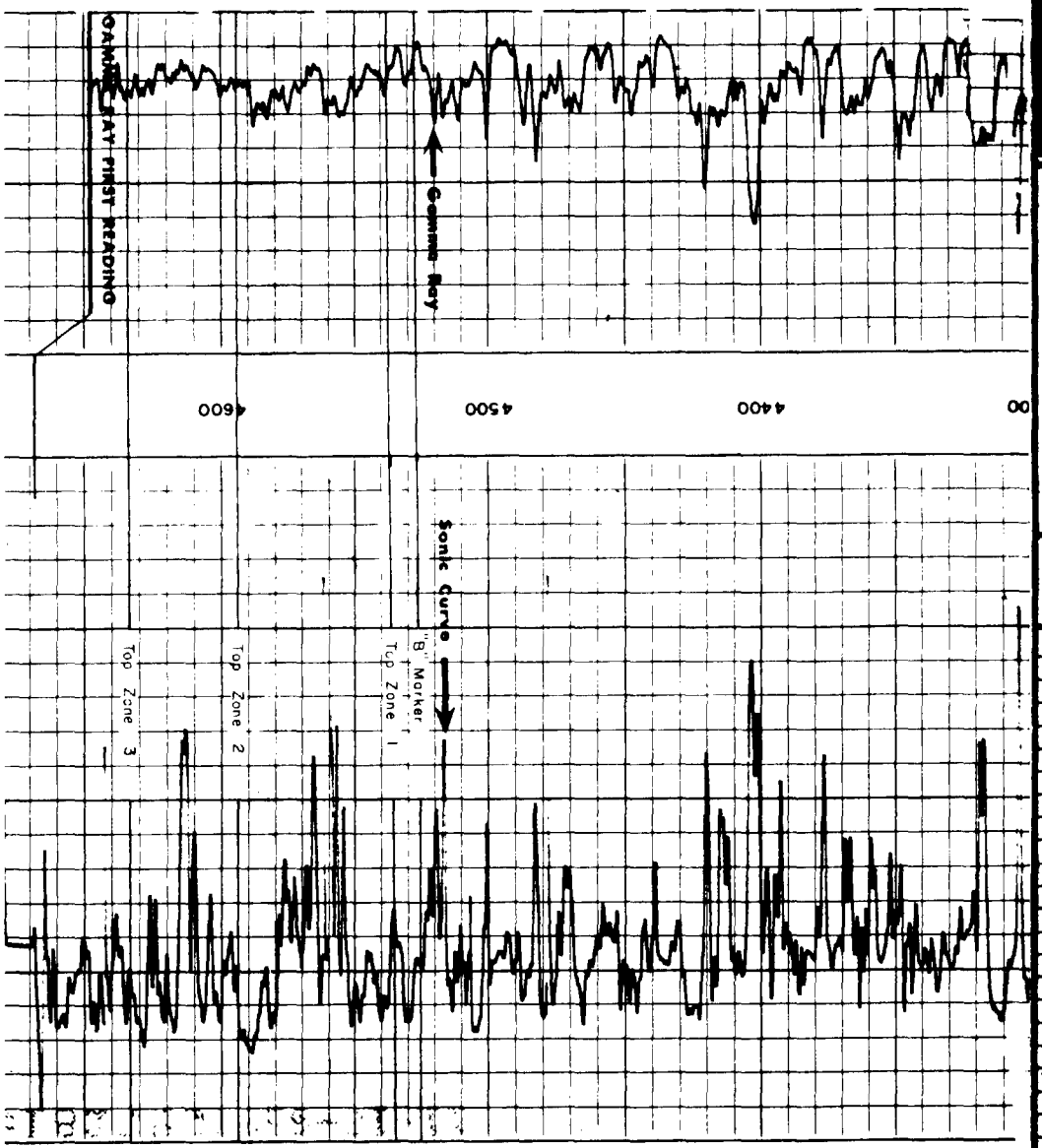
(2)

Elevation: K.B.: 42[illegible]
D.F.: 42[illegible]
or G.L.: 42[illegible]

Log Depths Measured From KB 12 Ft. above GL

RUN No.	1		
Date	7-17-63		
First Reading	4640		
Last Reading	0		
Bot. Measured	4640		
Csg. Schlum.	—		
Csg. Driller	455'		
Depth Reached	4647'		
Bottom Driller	4648'		
Mud Nat.	Salt Gel, Starch		
Dens. / Visc.	10.3 / 41		
Mud Resist.	0.046 @ 86 °F	@ °F	@ °F
" Res. BHT	0.043 @ 90 °F	@ °F	@ °F
" pH	6.5 @ °F	@ °F	@ °F
" Wtr. Loss	7 CC 30 min	CC 30 min	CC 30 min
" Rmf (M)	0.041 @ 84 °F	@ °F	@
Bit Size	7 7/8" - 4598 - 7 3/4"		
Spacing:			
T. R. / R.	4200 To FR	To	To
T. R. / R.	4200 To Surf	To	To
Opr. Rig Time	3 hours		
Truck No.	3701-Hobbs		
Recorded By	Schaeffer		
Witness	Dorsey		

Case No. 4140
Exhibit "1B"



SCHLUMBERGER

SONIC LOG - GAMMA RAY

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COUNTY ROOSEVELT
FIELD or LOCATION MILNESAND
WELL CLYDE C. COLEMAN "G.O." # 1
COMPANY TIDEWATER OIL CO.

COMPANY TIDEWATER OIL COMPANY OK

(4)

WELL CLYDE C. COLEMAN "G.O." # 1

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

LOCATION 2310' FROM N/L
2310' FROM W/L

Sec. 12 Twp. 8S Rge. 34E

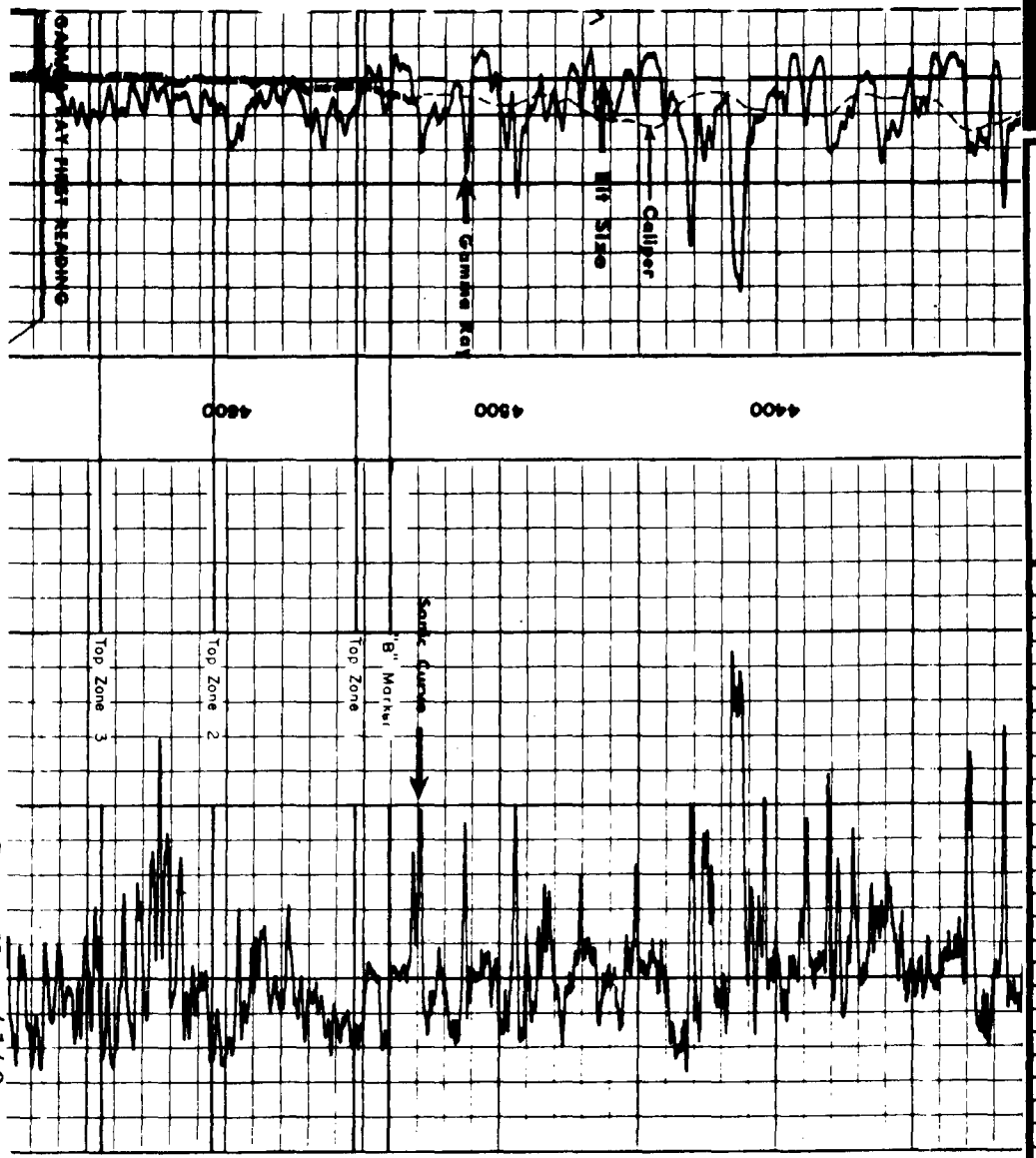
Other Services:
LL

Permanent Datum: GL, Elev. 4254
Log Measured From KB, 8 Ft. Above Perm. Datum
Drilling Measured From KB

Elev.: K.B. 4262
D.F. 4261
G.L. 4254

Date	11-10-63			
Run No.	ONE			
Depth—Driller	4671			
Depth—Logger	4671			
Btm. Log Interval	4668			
Top Log Interval	0			
Casing—Driller	8 5/8@ 333	@	@	@
Casing—Logger	-			
Bit Size	7 7/8"			
Type Fluid in Hole	SALT GEL, STARCH			
Dens. / Visc.	10.8 / 37			
pH / Fluid Loss	6 / 15 ml	ml	ml	ml
Source of Sample				
R_m @ Meas. Temp.	.067 @ 66 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	.048 @ 69 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	- @ - °F	@ °F	@ °F	@ °F
Source: R_{mf} R_{mc}	M			
R_m @ BHT	.05 @ 91 °F	@ °F	@ °F	@ °F
Time Since Circ.	2 HOURS			
Max. Rec. Temp.	91 °F	°F	°F	°F
Equip. / Location	3701 / HOBBS			
Recorded By	SCHAEFFER-ADKISSON			
Witnessed By	SOUTHERLAND			

Case No. 4140
Exhibit "1B"



SCHLUMBERGER

SONIC LOG

SCHLUMBERGER WELL SURVEYING CORPORATION

COUNTY ROOSEVELT
FIELD or LOCATION MILNESAND
WELL COSBY # 2
COMPANY SUN OIL COMPANY

COMPANY SUN OIL COMPANY

WELL COSBY # 2 (4)

FIELD MILNESAND

LOCATION SEC. 12 8S-34E

COUNTY ROOSEVELT

STATE NEW MEXICO

Other Surveys
L-GR

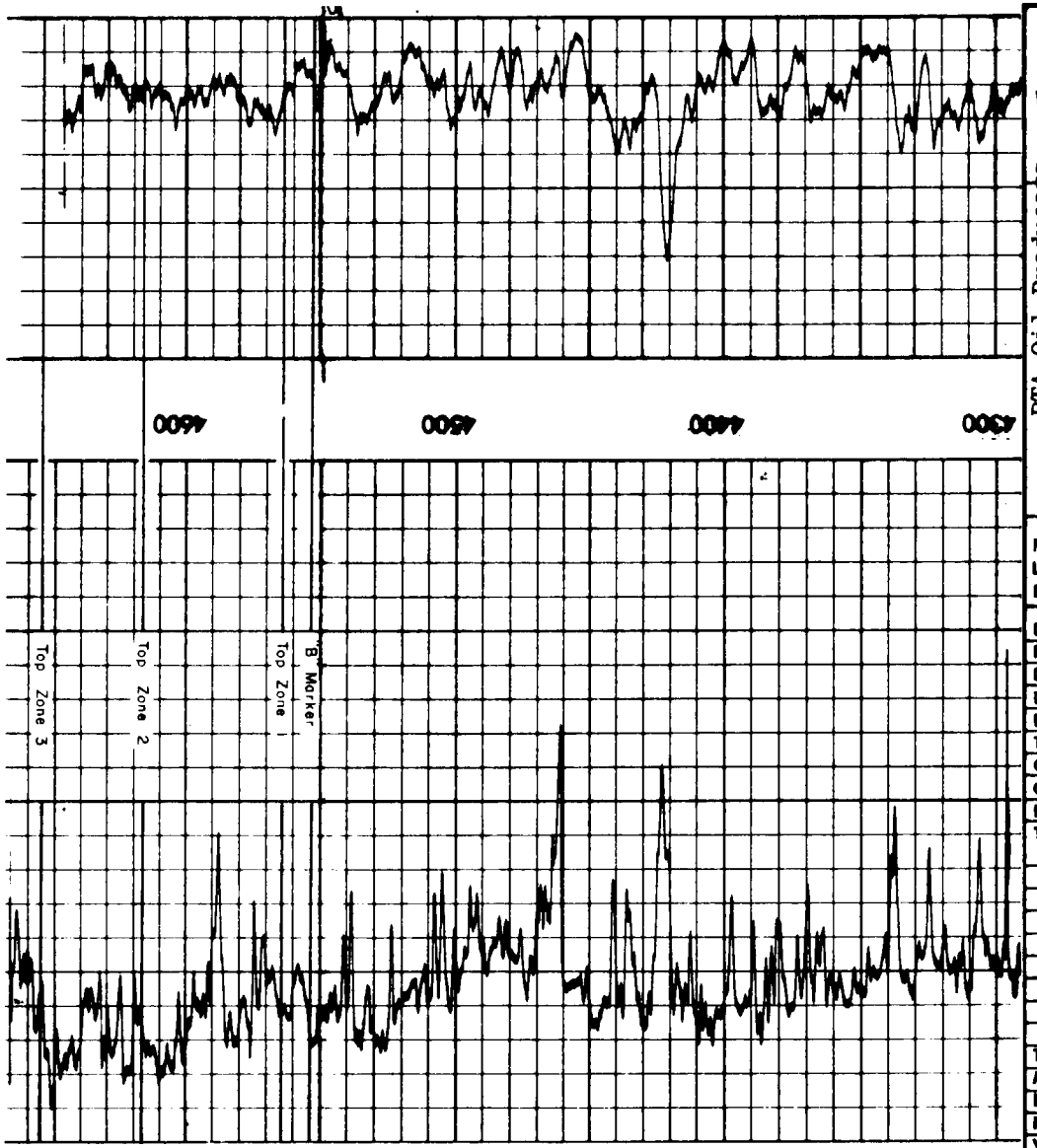
Location of Well
1980' FROM N/L
660' FROM E/L

Elevation: K.B.: 4268
D.F.: 4265
or G.L.: 4256

Log Depths Measured From KB 11.30 **Ft. above** GL

RUN No.	ONE		
Date	3-21-63		
First Reading	4687		
Last Reading	2400		
Feet Measured	2287		
Csg. Schlum.			
Csg. Driller	8 5/8 @ 350'		
Depth Reached	4694		
Bottom Driller	4695		
Mud Nat.	SALT GEL		
Dens. / Visc.	10.6 / 37	/	/
Mud Resist.	.064 @ 75 °F	@ °F	@
" Res. BHT	.05 @ 100 °F	@ °F	@
" pH	@ °F	@ °F	@
" Wtr. Loss	17.6 CC 30 min	CC 30 min	CC 30 m
" Rmf	.052 @ 77 °F	@ °F	@
Bit Size	7 7/8"		
Spacing:			
T.3 R. 1 R.	2400 To TD	To	To
T R. R.	To	To	To
Opr. Rig Time	3 HOURS		
Truck No.	2519 HOBBS		
Recorded By	DAVIS		
Witness	WINKLER		

Case No. 4140
Exhibit "1B"



WELEX

ACOUSTIC VELOCITY LOG

COMPANY BTA Oil Producers
WELL Taylor # 2
FIELD Milnesand
County Roosevelt State N. M.

COMPANY BTA OIL PRODUCERS

WELL TAYLOR # 2

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

Location 1980'FWL 660'FSL

Sec. 7 Twp. 18-S Rge. 35-E

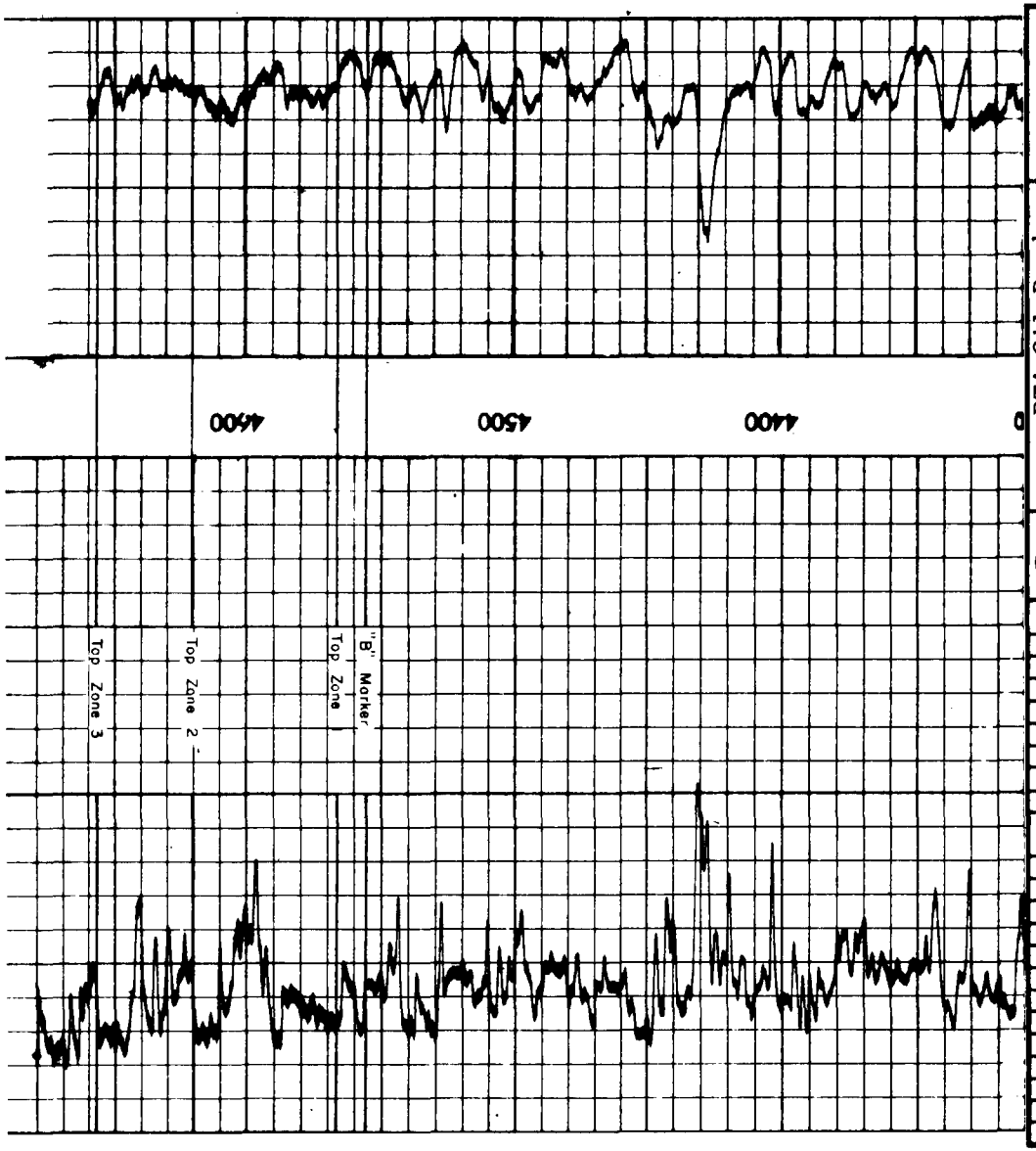
Other Services:

Permanent Datum Ground Level Elev. 4240
Log Measured From K. B. 9 Ft. Above Perm. Datum
Drilling Measured From Kelly Bushing

Elev.: K.B. 4249
D.F. 4248
G.L. 4240

Date	9-13-62			
Run No.	- One -			
Depth—Driller	4670			
Depth—Welex	4671			
Btm. Log Inter.	4667			
Top Log Inter.	330 (G/R-30")			
Casing—Driller	8-5/8 @ 368	@	@	@
Casing—Welex	-			
Bit Size	7-7/8"			
Type Fluid in Hole	Mud			
Dens. | Visc.	9.5 | 46	|	|	|
pH | Fluid Loss	6 | 5 ml	| ml	| ml	| ml
Source of Sample				
R_m @ Meas. Temp.	- @ °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	- @ °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	- @ °F	@ °F	@ °F	@ °F
Source R_{mf} R_{mc}	- |	|	|	|
R_m @ BHT	- @ °F	@ °F	@ °F	@ °F
Time Since Circ.	-			
Max. Rec. Temp.	112 °F @ BH	°F @	°F @	°F @
Equip. | Location	7121 | Hobbs	|	|	|
Recorded By	L.E.Pharr			
Witnessed By	Mr.Taylor			

Case No. 4140
Exhibit "1B"



OR

WELEX

ACOUSTIC VELOCITY LOG

COMPANY BTA Oil Producers
WELL Taylor # 7
FIELD Milnesand
County Roosevelt State N. M.

COMPANY BTA OIL PRODUCERS

WELL TAYLOR # 7 (4)

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

Location 1974.7'FNL 1900'FWL

Other Services: GR-NN

Sec. 7 Twp. 8-S Rge. 35-E

Permanent Datum Ground Level Elev. 4251

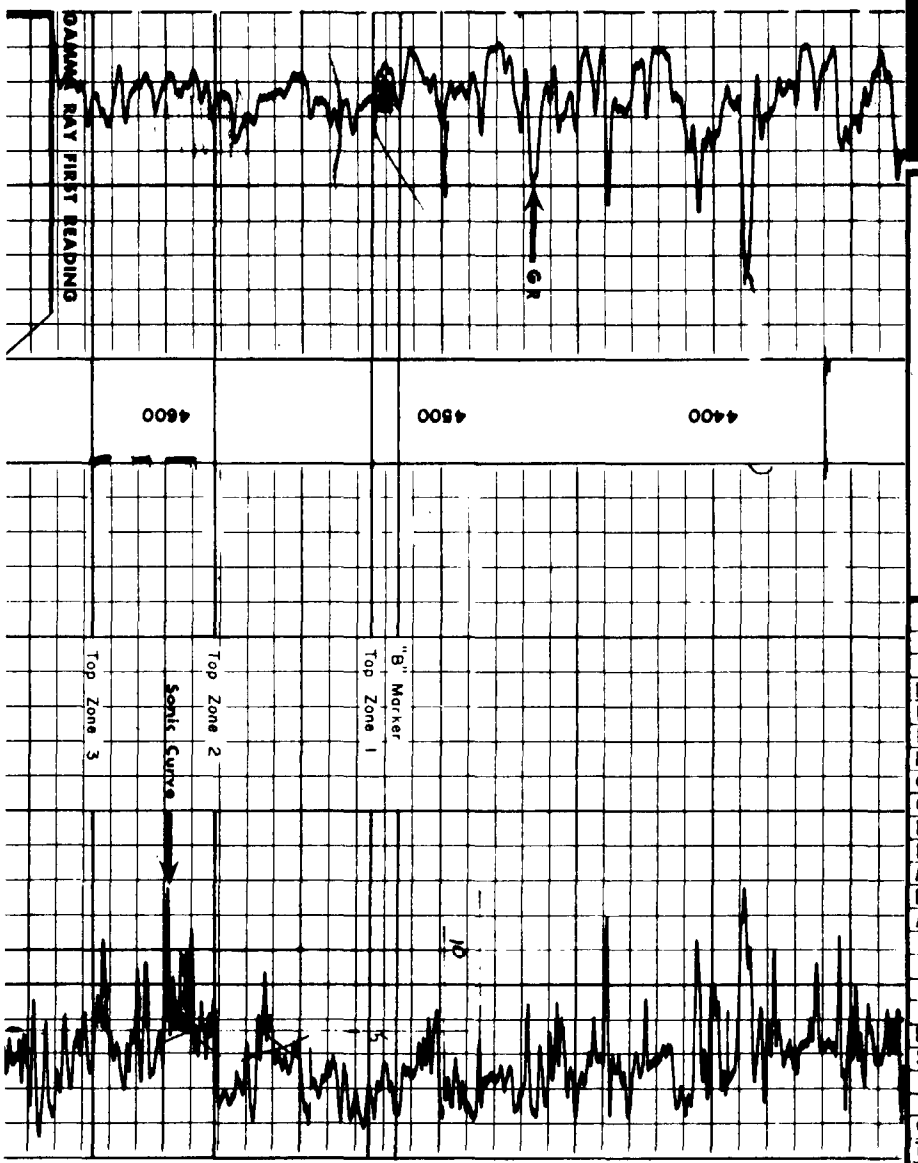
Log Measured From K. B. 10 Ft. Above Perm. Datum

Drilling Measured From Kelly Bushing

Elev.: K.B. 4261
D.F. 4260
G.L. 4251

Date	3-22-63			
Run No.	- One -			
Depth—Driller	4685			
Depth—Welex	4686			
Btm. Log Inter.	4680			
Top Log Inter.	Surf.			
Casing—Driller	8-5/8 @ 278	@	@	@
Casing—Welex	-			
Bit Size	7-7/8"			
Type Fluid in Hole	Mud			
Fluid Level	325			
Dens. | Visc.	10.3 | 37			
pH | Fluid Loss	10.2 ml	ml	ml	ml
Source of Sample	Circulated			
R_m @ Meas. Temp.	.055 @ 60 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	.045 @ 60 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	.08 @ 60 °F	@ °F	@ °F	@ °F
Source R_{mf} R_{mc}	Measured			
R_m @ BHT	.05 @ 101 °F	@ °F	@ °F	@ °F
Time Since Circ.				
Max. Rec. Temp.	101 °F @ BH	°F @	°F @	°F @
Equip. | Location	7121 Hobbs			
Recorded By	Scott & Ayres			
Witnessed By	Mr. Taylor			

Case No. 4140
Exhibit "1B"



SCHLUMBERGER

SONIC LOG

SCHLUMBERGER WELL SURVEYING CORPORATION
Houston, Texas

COUNTY ROOSEVELT
FIELD or LOCATION MILNESAND
WELL MILLER # 1
COMPANY ATLANTIC REFINING COMPANY

COMPANY ATLANTIC REFINING COMPANY
WELL MILLER # 1 (6)
FIELD MILNESAND
LOCATION SEC. 12 8S-34E
COUNTY ROOSEVELT
STATE NEW MEXICO

Other Surveys
LL, MLL

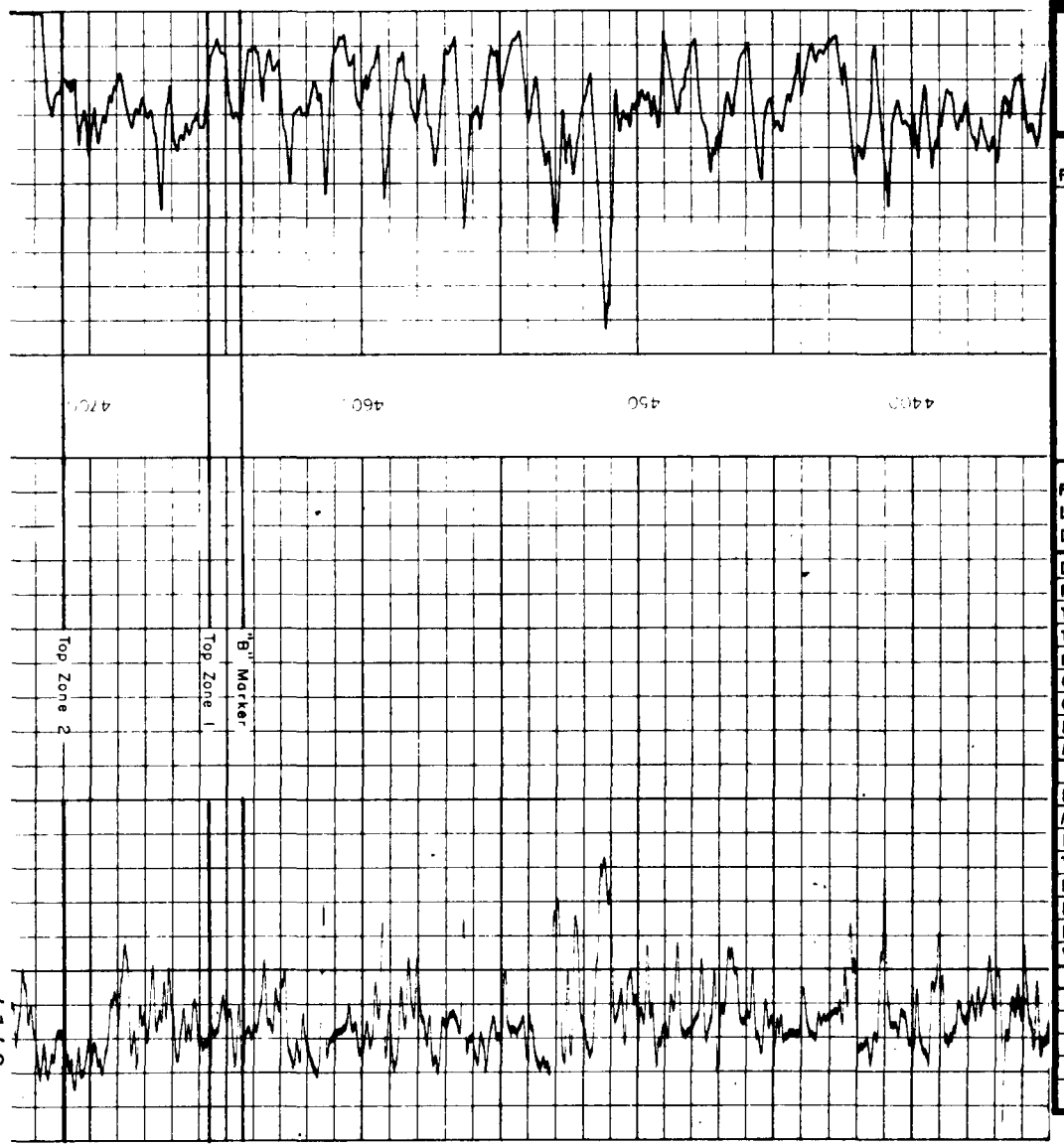
Location of Well
660' FROM S/L
1980' FROM W/L
LCH
file

Elevation: K.B.: 4259
D.F.: 4258
or G.L.: 4249

Log Depths Measured From KB 10 Ft. above GL

RUN No.	ONE		
Date	5-21-62		
First Reading	4663		
Last Reading	0		
Feet Measured	4663		
Csg. Schlum.	-		
Csg. Driller	401		
Depth Reached	4670		
Bottom Driller	4660		
Mud Nat.	SALT		
Dens. | Visc.	10.1 | 46		
Mud Resist.	.062 @ 82 °F	@ °F	@ °F
" Res. BHT	.062 @ 82 °F	@ °F	@ °F
" pH	8 @ °F	@ °F	@ °F
" Wtr. Loss	8.4 CC 30 min	CC 30 min	CC 30 min
" Rmf	.045 @ 83 °F	@ °F	@ °F
Bit Size	7 7/8"		
Spacing:			
T 3 R. 1R:	2500 To TD	To	To
T 3 R. 3R:	CSG. To 2500	To	To
Opr. Rig Time	3 HOURS		
Truck No.	2526-HOBBS		
Recorded By	OWEN-BROWN		
Witness	SHEETS		

Case No. 4140
Exhibit "1B"



PAN GEO ATLAS CORP.

PGAC Acoustic-Gamma Ray Log

FILE NO. 16

COMPANY TEXACO INCORPORATED well file

WELL W.L. ROGERS # 3

FIELD MILNESAND (SAN ANDRES)

COUNTY ROOSEVELT STATE NEW MEXICO

LOCATION: 1980 FNL & 660 FEL

SEC 25 TWP 8-S RGE 34-E

Other Services: LL3, SCOPE PICTU

Permanent Datum G.L. Elev.
Log Measured from K.B. Ft. Above Permanent Datum
Drilling Measured from K.B.

Elevations: KB 4232, DF 4231, GL

Date	2-9-64
Run No.	ONE
Total Depth Driller	4730
Total Depth PGAC	4732
Bottom Logged Interval	4726
Casing Driller	366
Casing PGAC	NOT LOGGED
Footage Logged	4626
Mud Type	SALT GEL
Density / Visc.	10.3 / 39
Max. Temp. (°F)	109°F
Rec. To Rec. Spacing	1'
Trans. To Rec. Spcg.	4'
Logging Instrument	TEL 820 T3 130 4052
Equip. No.	EL 25
Recorded By	CAREY
Witnessed By	MR. MORRISON

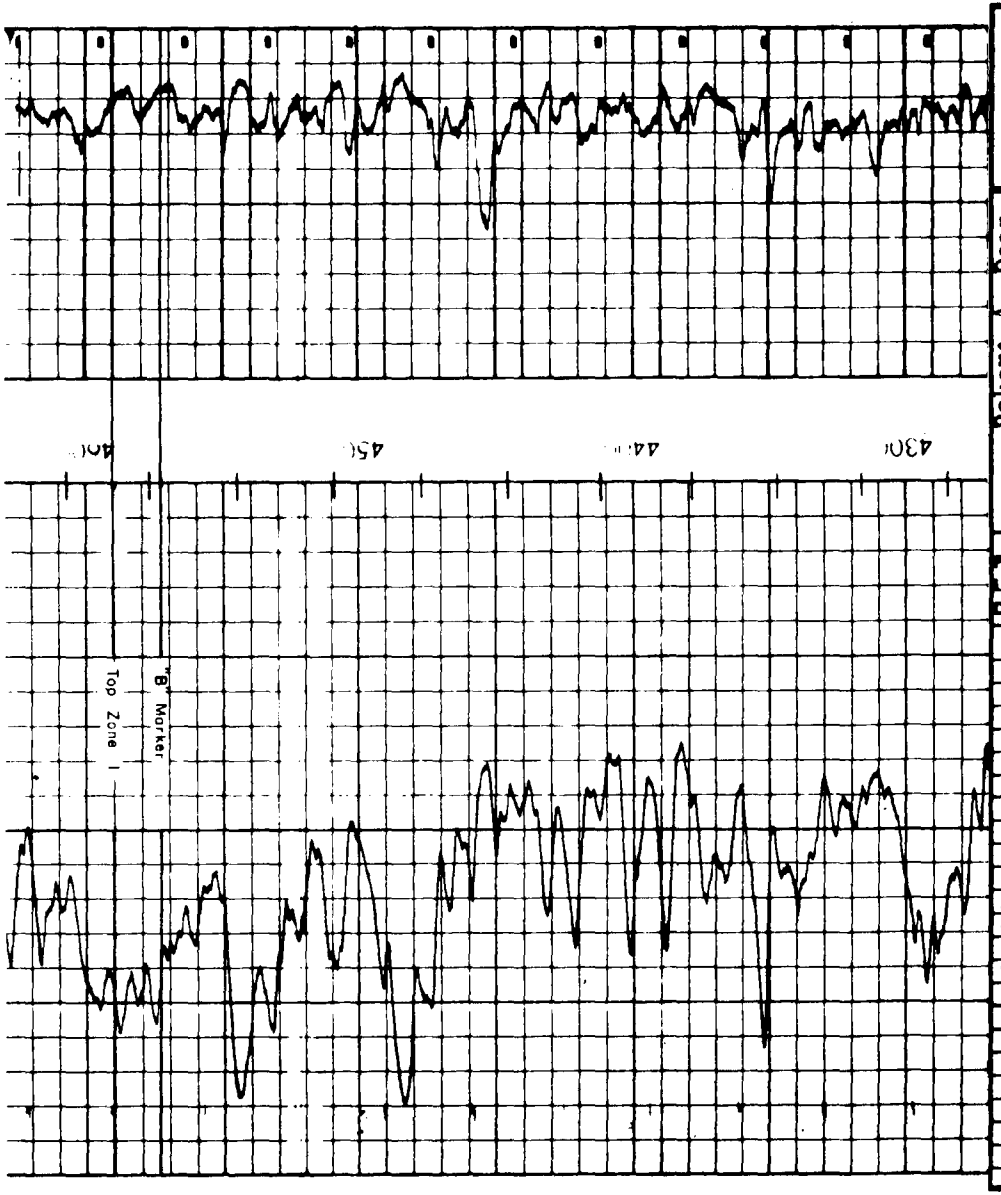
BORE HOLE RECORD

Bit Size	From	To
11	SURF	366
6¾	366	4730

CASING RECORD

Csg. Size	Csg. Wt.	From	To
7 5/8		SURF	366

Case No. 4140
Exhibit "1B"



WELEX

RADIOACTIVITY LOG

COMPANY Robert A. Dean
WELL Luman # 2
FIELD Milnesand
County Roosevelt State N. M.

COMPANY ROBERT A. DEAN

WELL LUMAN # 2 (12)

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

Location 660'FEL 1980'FNL

Other Services: Perf.

Sec. 23 Twp. 8-S Rge. 34-E

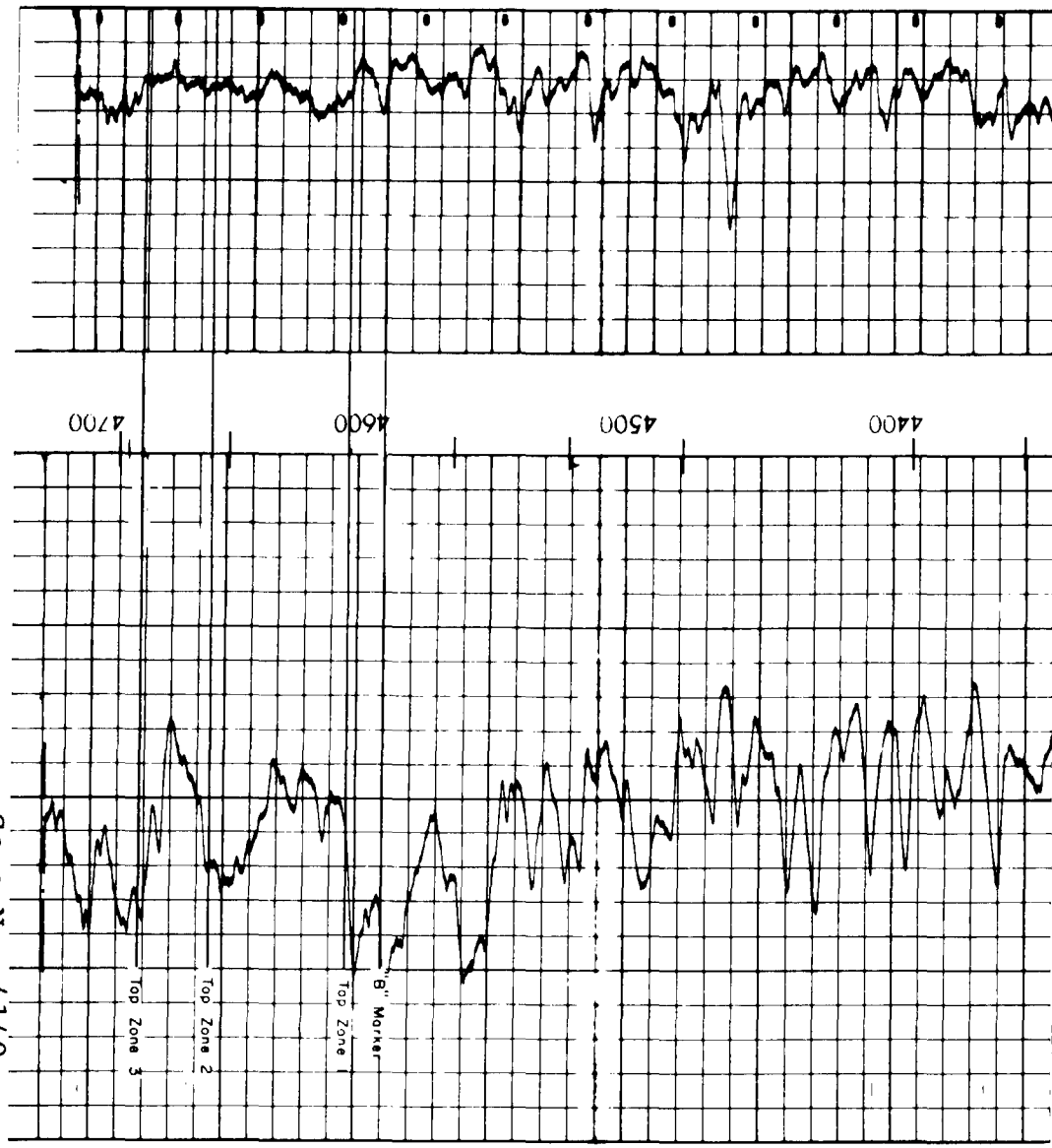
Permanent Datum Ground Level Elev.
Log Measured from K. B. 13 Ft. Above Perm. Datum
Drilling Measured From Kelly Bushing

Elev.: K.B.
D.F.
G.L.

Date	12-16-62	12-16-62
Run No.	- One -	- One -
Type Log	Gamma	Neutron
Depth—Driller	4650	4650
Depth—Welex	4633	4633
Bottom Logged Interval	4623	4633
Top Logged Interval	Surf.	Surf.
Type Fluid in Hole	Water	Water
Salinity, PPM Cl.		
Density		
Level	190	190
Max. rec. temp., deg. F.		
Operating Rig Time		
Recorded By	J.G.Greer	
Witnessed by	Mr.Dean	

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
	7-7/8"	-	4650	5-1/2"		0	4650

Case No. 4140
Exhibit "1B"



Case No. 4140
Exhibit "1B"

WELEX

RADIOACTIVITY LOG

COMPANY Robert A. Dean
WELL C.W. Weathersby #3
FIELD Milnesand
County Roosevelt State N.M.

COMPANY ROBERT A. DEAN

WELL C. W. WEATHERSBY # 3

FIELD MILNESAND

COUNTY ROOSEVELT STATE NEW MEXICO

Location 1980'FNL 1980'FWL

Sec. 24 Twp. 8-S Rge. 34-E

Other Services: Perf.

Permanent Datum Ground Level Elev. 4236
Log Measured from K. B. 12 Ft. Above Perm. Datum
Drilling Measured From Kelly Bushing

Elev.: K.B. 4248
D.F. 4247
G.L. 4236

Date	12-27-62	12-27-62
Run No.	- One -	- One -
Type Log	Gamma	Neutron
Depth—Driller	4745	4745
Depth—Welex	4719	4719
Bottom Logged Interval	4709	4719
Top Logged Interval	Surf.	Surf.
Type Fluid in Hole	Water	Water
Salinity, PPM Cl.		
Density		
Level	180°	180°
Max. rec. temp., deg. F.	102°	102°
Operating Rig Time		
Recorded By	J. G. Greer	
Witnessed by	Mr. Dean	

RUN No.	BORE-HOLE RECORD Bit	From	To	CASING RECORD Size	Wgt.	From	To
	7-7/8"	-	4770	5-1/2"		0	4770

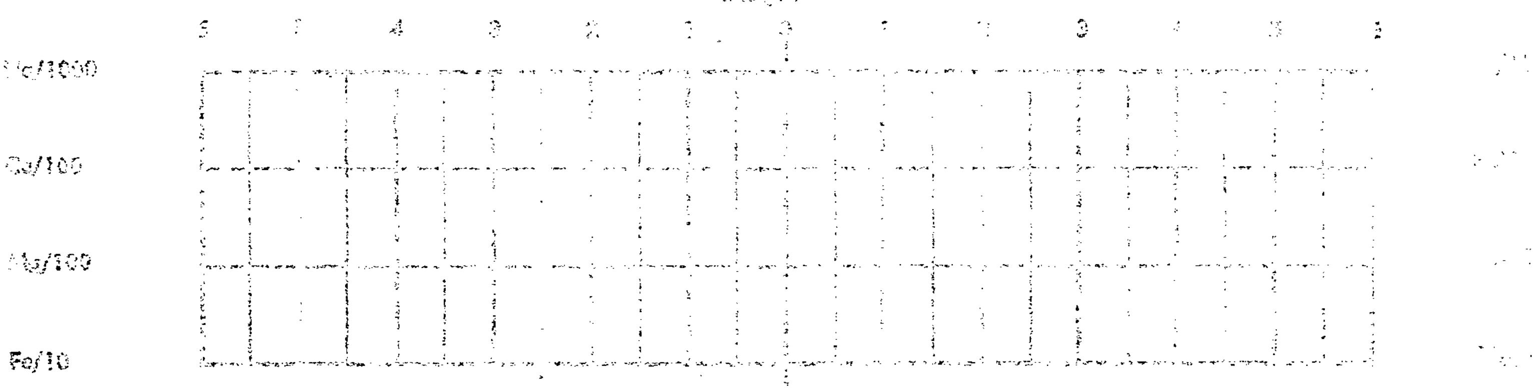
RES
GEM

For:	Union Texas Petroleum	4-2-68	MX20941
	1300 Wilco Bldg.		
	Midland, Texas	Midland, Texas	

Attn: Mr. Gilbert Miller

W. Hilsenrod [illegible]	San Andres
Mobil Jacobs Fed. #4	

Heater Treater			[illegible]	1.175	75
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	86,500	3,760	[illegible]	167,000	4,720
[illegible]	12,800	640	[illegible]	320	5
[illegible]	3,990	320	[illegible]	720	15
[illegible]	0	[illegible]	[illegible]	0	[illegible]



Remarks: No precipitate was noted when this water was mixed with East Crossroads, Devonian water and allowed to stand for 72 hours.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 4139 - 4140

George N. Greer, Jr.
Crenshaw - 2
Tulsa Lab

ILLEGIBLE

ANALYSIS BASED ON API RECOMMENDED PROCEDURE

STATE OF NEW MEXICO)

COUNTY OF ROOSEVELT)

COOPERATIVE WATER SUPPLY AND INJECTION AGREEMENT

THIS AGREEMENT, entered into and effective as of March 10, 1975, between Union Texas Petroleum, a Division of Allied Chemical Corporation, as Unit Operator of the Milnesand (San Andres) Unit hereinafter sometimes referred to as "Union Texas"; and D. M. Norman et al, hereinafter sometimes referred to as "Norman".

W I T N E S S E T H:

Whereas, Union Texas is the Operator of the Milnesand (San Andres) Unit which covers among other lands, the east half of Section 14, the east half of Section 24, and all of Section 13, Township 8 South, Range 34 East, Roosevelt County, New Mexico; and,

Whereas, Norman is the Operator of the C. W. Weathersby et al Lease which covers the west half of Section 24 and of the N. J. Luman Lease which covers the north half of Section 23, Township 8 South, Range 34 East, Roosevelt County, New Mexico; and,

Whereas, Union Texas and Norman, each in their indicated capacity as Operator, wish to operate their respective properties above described but desire to cooperate with one another in a waterflood operation to the extent and in the manner hereinafter provided, it being the opinion of the parties hereto that by so doing each of said properties will be benefited by an increase in the production of crude oil from the Milnesand (San Andres) Field underlying said properties, and the correlative rights of all of the owners of said properties will be protected:

NOW THEREFORE, in consideration of the premises and the mutual benefits to be derived therefrom, it is agreed as follows:

1. Union Texas agrees to convert, equip, and thereafter maintain and operate two (2) wells for water injection in the San Andres formation in the manner hereinafter provided, such well to be located as follows:

Milnesand (San Andres) Unit Well No. 43 located in the southeast quarter of the southeast quarter (SE/4 SE/4) of Section 14, Township 8 South, Range 34 East, Roosevelt County, New Mexico; and,

Milnesand (San Andres) Unit Well No. 196 located in the southeast quarter of the southwest quarter (SE/4 SW/4) of Section 13, Township 8 South, Range 34 East, Roosevelt County, New Mexico.

Norman agrees to convert, equip, and thereafter maintain and operate one (1) well for water injection in the San Andres formation in the manner hereinafter provided, such well to be located as follows:

C. W. Weathersby et al Lease - Well No. 3 located in the southeast quarter of the northwest quarter (SE/4 NW/4) of Section 24, Township 8 South, Range 34 East, Roosevelt County, New Mexico.

2. Each party hereto agrees at its sole risk and expense, to convert, equip, maintain and operate its water input well(s) so that water may be injected into the San Andres formation in the manner hereinafter provided, each of said water input wells to be equipped to take injection within one hundred twenty (120) days after the effective date of this agreement, or as soon thereafter as it is agreed it is practical, and thereafter to inject water through its water input wells into the San Andres formation; it being agreed that the parties hereto will endeavor to control their respective operations in such manner that water will be injected into each water input well at a uniform rate so that the volume injected into each well in any month will be equal to that injected into each other well covered hereby as nearly as it is possible to do so; provided, however, in no event shall either party inject water into its respective water input wells at wellhead pressures in excess of two thousand (2000) pounds per square inch gauge or insofar as it is within their reasonable control as Operator at rates or volumes which will prevent either of the properties covered hereby from receiving its fair share of waterflood benefits. The parties hereto shall have access to the premises subject to this agreement at all reasonable hours and the right to inspect pertinent records in connection therewith at all such times.

Each party hereto shall promptly perform any workover or remedial work necessary on its water input wells, in order that said wells will take water at the rate and volume and under the pressure limitation herein provided, so as to effectively carry out the waterflood operations to be performed under this agreement.

It is further agreed that each party hereto shall carry on waterflood operations in the manner herein provided until the property it operates no longer derives any reasonable benefit from same. It is the intention of the parties hereto that nothing herein contained shall be construed to require either party

economically profitable to it.

3. If at any time either of the parties hereto shall determine that water injection into any of its water input wells is no longer economically profitable to it, then said party shall have the right to cease injection into said well or wells upon giving thirty (30) days' written notice to the other party of such intention. The other party hereto may then, at its sole risk and expense, take over and operate said well or wells. In such event, the party taking over said well or wells is hereby granted, without warranty expressed or implied, the right of ingress and egress and all right-of-ways and easements necessary for continued operation of said well or wells, and the party electing not to continue such operation shall execute any assignments or conveyances necessary for the continuance of such operation insofar as it is possible for such party to execute such assignments or conveyances. The party taking over said well or wells shall pay for the equipment taken over on the basis of its current salvage value in place, less abandonment and plugging cost. The party taking over said well agrees to plug and abandon the well in accordance with all applicable laws, state, federal, and otherwise at its sole risk and expense, and salvage all equipment in and on said well or wells for its sole account. The party taking over said well or wells hereby agrees to indemnify and hold the other party hereto harmless from all damages and any liability to any third party, caused as a result of its subsequent operations.

4. The cooperative injection as described above shall commence as of the date the water input wells are equipped to take injection and extend for one hundred fifty (150) days from said date and as long thereafter as the properties covered hereby derive any reasonable benefit from the waterflood operations provided for herein.

5. Union Texas agrees to make available sufficient nonpotable pressured water to meet Norman's currently indicated maximum waterflood injection requirements from the Milnesand (San Andres) Unit distribution system, and agrees that it will commence delivery of water hereunder upon Norman's request so to do at any time after sixty (60) days from the execution of this agreement. In addition, Union Texas agrees to furnish additional water for injection purposes for Norman's No. 2 Luman, located in the SE/4 of the NE/4 of Section 23, T-8-S, R-24-E, Roosevelt County, New Mexico at such time as Norman shall convert said well to injection for waterflooding purposes. The water delivery shall be for a period of one (1) year from and after the date of first delivery and thereafter from year to year until cancelled by either party by giving the other party thirty (30) days' written notice of cancellation. Union Texas reserves

the right to interrupt service, at any time and from time to time, to make necessary repairs of or improvements in the Milnesand (San Andres) Unit System; however, Union Texas agrees to use its best efforts to see that Norman shall secure a continuous non-interrupted supply of water from said System.

6. The price of water sold and purchased hereunder shall be five (5) cents per barrel of forty two (42) United States gallons. Union Texas shall invoice Norman monthly for the volume of water sold and delivered during the next preceeding month, and Norman shall pay Union Texas therefor within twenty (20) days of receipt of invoice. Union Texas reserves the right to adjust this cost to reflect increases in cost to provide this service. Norman shall not be required to purchase a minimum daily quantity of water; however, Norman agrees that during the term of this agreement it will buy water from no other source of supply.

7. Union Texas shall not be required to deliver a minimum daily quantity of water and if Union Texas' source of water shall fail in part, or be so diminished that the total volume of water available for distribution through the Milnesand (San Andres) Unit System shall be less than the aggregate daily requirements, then such water as is available shall be ratably apportioned based on respective water usage during the six months' period immediately preceeding the time that the shortage of water may develop.

8. Union Texas does not warrant or guarantee the purity, quality, condition, or suitability of delivered water for any use or purpose.

9. The delivery point for water delivered shall be at a point along the lease line which represents a common boundary to both the parties for their properties described in this agreement. Union Texas shall install a conventional water meter at this point. Title to said water shall pass to Norman on the downstream side of said meter. All debts, obligations and liabilities for which Union Texas may be or shall become liable in connection with the ownership of said water prior to the passing of title thereto to Norman shall be borne and paid by Union Texas, and Union Texas hereby indemnifies Norman against any such liabilities. All debts, obligations and liabilities for which Norman may be or shall become liable in connection with the ownership of said water at and after title to said water has passed to Norman shall be borne and paid by Norman, and Norman hereby indemnifies Union Texas against any such liabilities.

meter at any reasonable time and from time to time in the presence of Union Texas' representative. If the accuracy of the meter is questioned, Union Texas shall cause the meter to be tested and calibrated upon request of Norman. If the meter is found to be reading accurate within plus or minus 5%, such meter readings as have been made since the last such test shall be considered accurate for billing purposes, and the cost and expense of testing and calibrating the meter shall be borne by Norman. If the meter is found to be in error in excess of 5% in favor of Union Texas, an adjustment shall be made in the next following monthly billing for one-half (1/2) the elapsed time since the last previous meter calibration; but in no event shall the correction be applied for a period in excess of three (3) months. Norman shall bear the cost and expense of testing and calibrating the meter in the event the meter is found to be reading accurately within plus or minus 5%.

11. Norman agrees that all water purchased hereunder is for use in waterflooding the leases previously described and that water will not be resold by it to a third party without prior written consent of Union Texas having been first had and obtained.

12. Union Texas agrees to accept produced water from San Andres formation from the Norman properties included in this agreement at a point along the lease line which represents a common boundary to both parties for the properties described in this agreement. This produced water will be connected and delivered to the Milnesand (San Andres) Unit Gathering System at no cost to either party. Norman will be responsible for maintaining sufficient pressure on the system to assure entry of produced water into the Milnesand (San Andres) Unit Disposal System. Union Texas reserves the right to limit the amount of produced water accepted if, in the opinion of Union Texas, the amount becomes excessive for the gathering or disposal facilities.

13. Under no circumstances shall this agreement be construed as creating a partnership, agency, or any other type of association between the parties hereto. The liability of the parties hereto shall be several and not joint or collective.

Each party hereto agrees that this agreement shall not constitute a partnership, as defined in the Internal Revenue Code, and each of the parties hereto specifically elects to be excluded from the application of all of Subchapter K of the Internal Revenue Code of 195 pursuant to Section 761 thereof.

14. Any sale, assignment, unitization or transfer of any interest of any party hereto in the leases and lands covered hereby shall be made expressly subject to this agreement, and any party acquiring any such interest shall assume the obligations hereof and be entitled to the benefits accruing hereunder. In the event any party not a signatory party to this contract thereafter shall acquire any interest subject to this contract by assignment, operation of law, or otherwise, such party shall forthwith furnish to all other parties having an interest subject to this contract evidence of the acquisition of such interest. Failure to comply herewith shall constitute a waiver by such party as to any notice required or permitted hereunder, and said party shall be deemed to have received any such notice where such notice was given to such party's predecessor in title and any action taken or any notice received by such party's predecessor in title shall be binding upon any such party.

15. All terms and provisions herein shall be subject to all valid orders, rules and regulations of the New Mexico Oil Conservation Commission and all other applicable State and Federal laws, rules and regulations.

16. If any party to this agreement is rendered unable, in whole or in part, by force majeure to carry out its obligations under this agreement, then such obligations, so far as they are affected by the force majeure, shall be suspended during, but no longer than, the continuance of the force majeure; provided, however, all reasonable efforts shall be made to remove the force majeure as quickly as possible. The term "force majeure", as employed herein, shall mean an act of God, strike, lockout, or other industrial disturbance, act of the public enemy, war, blockade, public riot, lightning, earthquake, storm, flood, explosions, governmental restraint, unavailability of equipment, failure of water supply, and any other cause, whether or not of the character above enumerated, which is not reasonably within the control of the party claiming suspension. It is understood that the settlement of strikes or lockouts shall be entirely within the discretion of the party concerned, and the requirement that all reasonable efforts shall be made to remedy the force majeure promptly, shall not require the settlement of strikes or lockouts contrary to its wishes.

17. This agreement and all terms, covenants, and conditions hereof shall extend to and be binding upon the parties hereto, their successors and assigns, respectively, and shall constitute covenants running with the lands and

UNION TEXAS PETROLEUM, A [illegible] OF
ALLIED CHEMICAL CORPORATION, as
Operator of the Milnesand (San Andres)
Unit

By _____
C. D. Gaines, Vice President
Domestic Production

D. M. Norman et al, as Operator of
the C. W. Weathersby Lease and the
N. J. Luman Lease

_____
D. M. Norman

THE STATE OF TEXAS)

COUNTY OF HARRIS)

BEFORE ME, the undersigned authority, on this day personally appeared C. D. Gaines, known to me to be the person whose name is subscribed to the foregoing instrument, as Vice President for ALLIED CHEMICAL CORPORATION, a corporation, and acknowledged to me that he executed the same for the purposes and consideration therein expressed, in the capacity stated, and as the act and deed of said corporation.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this, the 10th day of March, 1975.

_____
Notary Public in and for Harris County,
Texas

THE STATE OF TEXAS)

COUNTY OF MIDLAND)

BEFORE ME, the undersigned authority, on this day personally appeared D. M. Norman, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this, the 19 day of December, 1974.

_____
Notary Public in and for Midland County,
Texas

R-34-E

R-35-E

T 7 S

T 8 S

T 9 S

LEA COUNTY

Kerr-McGee Davis TD 4655

Franklin et al Nix-Yates-Fed

Franklin et al Texaco-Fed.

Shell Harwood TD 7957

Atlantic State 1-BA

Franklin, et al Dalport-St.

Sunray New Mex St TD 4601 1-CC

Smith Atlantic-St TD 4564

Brown & George Fed. TD 4694

Hamon Davis-Bee-be TD 9503

Wil-Mc Oil Baker

Frankfort Ainsworth TD 4750

El Charro Skelly St TD 4739

Tenneco Carter TD 9570

T. L. Ingram Alcorn

T. L. Ingram Carter

Hudson Ohio-Fed. T.D. 9700

Texaco Davis "Flats Unit" TD. 10,000

Brown Bros. Ohio-Fed TD 9542

Grt. Westn. Tyra- TD 9754

Williamson Mobil-Fed. T.D. 9790

Williamson Mobil-Fed TD 9796

BTA Sun TD 4720

Sun McNutty TD 9822

Sun Schmidt

Sun McNutty

Major, et al Schmidt TD 9542

BTA Schmidt TD 4771

Myer State 1-Y-MM TD 4742

Del-Apache Rogers

BTA Wolf 686 Ltd.

BTA Superior Katy 684 Ltd.

Williams Murphy-Fed. T.D. 9770

BTA (Sun) Citc 688 Ltd.

BTA Cit. Serv. Morton 688 Ltd.

Penn.

UNLESS OTHERWISE NOTED, ALL WELLS ARE NOW OR HAVE BEEN PRODUCING FROM THE SAN ANDRES FORMATION.

● Penn. = PRODUCING FROM PENNSYLVANIAN FORMATION

#4140

UNION TEXAS PETROLEUM
A DIVISION OF ALLIED CHEMICAL CORPORATION

MILNESAND (SAN ANDRES) UNIT

ROOSEVELT COUNTY, NEW MEXICO

EXHIBIT "1 A"

● = PROPOSED INJECTION WELLS

SCALE IN FEET

2000 1000 0 2000 4000

G.E.M. MIDLAND DISTRICT 5-69

UNION TEXAS PETROLEUM

A DIVISION OF ALLIED CHEMICAL CORPORATION

MILNESAND (SAN ANDRES) UNIT

ROOSEVELT COUNTY, NEW MEXICO

PROPOSED UNIT OUTLINE

EXHIBIT "I"

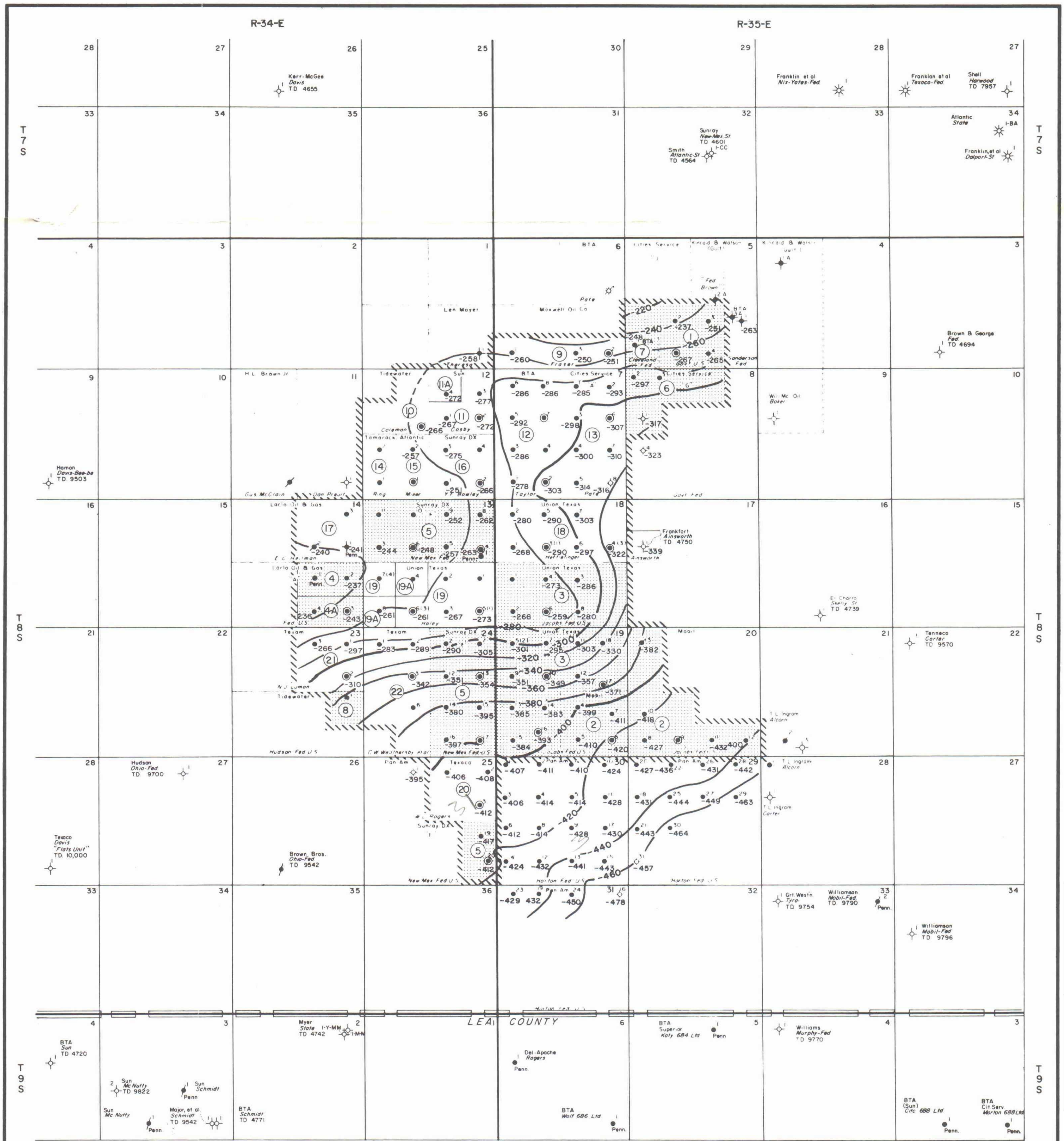
LAND PLAT

#4140

SCALE IN FEET

4000 2000 0 4000 8000

G.E.M. MIDLAND DISTRICT 5-69



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● Penn = PRODUCING FROM PENNSYLVANIAN FORMATION

#4140

UNION TEXAS PETROLEUM
A DIVISION OF ALLIED CHEMICAL CORPORATION

MILNESAND (SAN ANDRES) UNIT
ROOSEVELT COUNTY, NEW MEXICO

STRUCTURE MAP
TOP OF "B" MARKER
EXHIBIT "1C"

SCALE IN FEET
2000 1000 0 2000 4000

G.E.M. MIDLAND DISTRICT 5-69