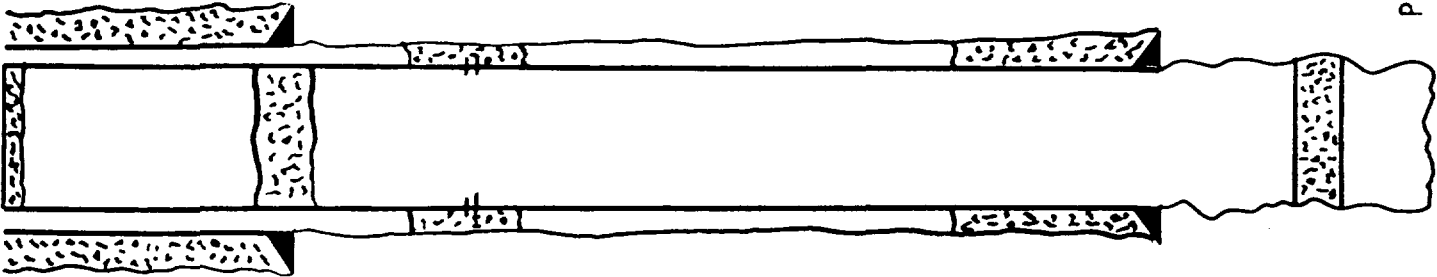


WELL IN AREA OF REVIEW

OPERATOR	WELL NAME	SPUD DATE	LOCATION	SEC.	API NO.	TOTAL DEPTH	COMPLETION INTERVAL	I. P. (BOPD)	FORMA-TION	CASING SIZE & DEPTH	CEMENT SXS	STATUS
Phillips	32 Lea	12/4/83	680 FS 1980 FW	30	30 025 28439-00	4800	4490-4713	78	SA-GB	4 1/2 @ 4800	1700	
	20 Lea State	3/26/48	660 FS 1980 FE	30	30 025 02150-00	4825	4358-4825 OH	99	SA-GB	???????		
	18 Lea	7/31/47	660 FS 660 FE	30	30 025 02148-00	4760	4331-4760 OH	366	SA-GB	5 1/2 @ 4331	200	TA
	23 Lea	8/5/70	510 FS 810 FE	30	30 025 22490-01	13623	10290-10310	120	N/A	5 1/2 @ 13623	600	
Arco	5 State F-TG	12/21/55	990 FN 660 FE	36	30 025 01426-00	4682	4565-4682 OH	36	SA-GB	5 1/2 @ 4565	400	
	2 State F-TG	2/20/55	1980 FN 660 FE	36	30 025 01423-00	4684	4620-4684 OH	72	SA-GB	5 1/2 @ 4620	600	
Baxter	1 Mobil-State	1/1/61	330 FS 330 FE	36	30 025 01418-00	9250	3952-3964	491	ABO	4 1/2 @ 4100	150	P&A
	1 Phillips-State	5/10/50	330FN 1900 FE	6	N/A	4802	-	-	-	8 5/8 1750	50	Dry Hole
Kincaid-Watson	2 Hale State	2/2/70	990 FN 660 FW	31	30 025 23426-00	4678	4590-4678 OH	75	SA-GB	5 1/2 @ 4590	150	
	1 Hale		2310 FN 330 FW	31	30 025 02154-00	4623	4591-4623 OH	50	SA-GB	7" @ 4591	125	
Standard Oil Production Co.	1 Phillips-Lea	3/14/49	1980 FN 1980 FW	31	30 025 02157-00	4765	4590-4710 OH	11	SA-GB	5 1/2 @ 4590	100	
	2 Phillips-Lea	8/29/51	2310 FN 1650 FE	31	30 025 02163-00	4720	4620-4720 OH	144	SA-GB	7 @ 4620	75	
	3 Phillips-Lea	11/8/51	2310 FS 1650 FE	31	30 025 02155-00	4752	4657-4722	45	SA-GB	4 1/2 @ 4751	75	
	4 Phillips-Lea	10/5/61	330 FS 330 FW	31	30 025 02156-00	4995	4920-4995	N/A	SA-GB	4 1/2 @ 4920	200	SMD
	5 Phillips-Lea	6/5/69	2310 FS 990 FW	31	30 025 23161-00	4850	4627-4698	19	SA-GB	4 1/2 @ 4850	300	
	6 Phillips-Lea	12/12/69	2310 FS 2310 FW	31	30 025 23345-00	4875	4639-4760	77	SA-GB	5 1/2 @ 4870	225	
	7 Phillips-Lea	6/2/70	990 FN 1980 FW	31	30 025 23513-00	4850	4623-4751	77	SA-GB	4 1/2 @ 4847	300	
	8 Phillips-Lea	9/7/70	990 FS 1650 FW	31	30 025 23582-00	4950	4702-4805	22	SA-GB	4 1/2 @ 4949	300	
Phillips	3 Lea-State	5/12/48	660 FN 1980 FE	31	30 025 02158-00	4730	4630-4730 OH	68	SA-GB	5 1/2 @ 4495	800	
Arco	1 Dole-Hale State	1/4/48	660 FE 660 FN	31	30 025 02153-00	4823	4350-4823 OH	120	SA-GB	5 1/2 @ 4350	200	Observation Well
	2 Hale State (State Vacuum Unit #2)	11/14/51	990 FN 330 FE	31	30 025 02162-00	4740	4652-4740 OH	30	SA-GB	5 1/2 @ 4652	100	Injection Well
	1 Hale State (State Vacuum Unit #6)	6/13/51	2310 FN 330 FE	31	30 025 02161-00	4730	4630-4730 OH	158	SA-GB	7 @ 4630	600	

WELL IN AREA OF REVIEW

OPERATOR	WELL NAME	SPUD DATE	LOCATION	SEC.	API NO.	TOTAL DEPTH	COMPLETION INTERVAL	I. P. (BOPD)	FORMA-TION	CASING SIZE & DEPTH	CEMENT SXS	STATUS
Arco	1 State (State Vacuum Unit #11)	12/20/50	2310 FS 330 FE	31	30 025 02159-00	4753	4353-4753 OH	335	SA-GB	5 1/2 @ 4353	500	Injection Well
	2 State AO (State Vacuum Unit #16)	2/3/52	990 FS 330 FE	31	30 025 02160-00	4786	4456-4786 OH	191	SA-GB	5 1/2 @ 4456	500	
	1 State B-TG (State Vacuum Unit #3)	10/29/47	660 FN 660 FW	32	30 025 02165-00	4755	4350-4755 OH	52	SA-GB	5 1/2 @ 4350	250	
	3 State B-TG (State Vacuum Unit #7)	4/5/48	1980 FN 660 FW	32	30 025 02168-00	4738	4550-4738 OH	528	SA-GB	5 1/2 @ 4550	600	Injection Well
	24 Vacuum Unit	7/28/83	1690 FS 330 FW	32	30 025 28218-00	4900	4568-4659	8	SA-GB	5 1/2 @ 4900	1420	
	8 State C-TG (State Vacuum Unit #17)	10/9/51	990 FS 990 FW	32	30 025 02180-00	4761	4535-4761	216	SA-GB	5 1/2 @ 4535	300	Injection Well
	6 State C-TG (State Vacuum Unit #12)	8/9/50	2310 FS 990 FW	32	30 025 02178-00	4705	4530-4670 OH	216	SA-GB	5 1/2 @ 4530	600	



PLUGGED WELLS IN AREA OF REVIEW
(PROPOSED PLUGGING MAY NOT BE COMPLETED)

OPERATOR: BAXTER

WELL: 1 MOBIL STATE

LOCATION: 330' FSL & 330' FEL , SEC 36 , T-17-S , R - 34 - E

COUNTY: LEA COUNTY, NEW MEXICO

TD : 9250' PBTD : 4070'

CASING DATA :

<u>CSG</u>	<u>DEPTH</u>	<u># Sx</u>	<u>TOC</u>
13 3/8"	276'	310	SURF
8 5/8"	3100'	250 Sx	

PERFORATIONS : FORMATION :

OPEN HOLE

SAN ANDRES

CEMENT PLUGS :

- 1 PLUG @ 3900' W / 35 Sx CEMENT ON TOP
2. PERFORATE @ 1550', CIRCULATE & SQZ 50 Sx
3. CEMENT PLUG SPOTTED 50' ABOVE & BELOW SURFACE SHOE
- 4 10 SxS @ SURFACE W/ METAL PLATE

PBTD 4070'

PLUGGED WELLS IN AREA OF REVIEW

OPERATOR: MALCO

WELL: PHILLIPS STATE #1

LOCATION: 330' FNL & 1980' FEL
SEC. 6, T-18-S, R-34-E

COUNTY: LEA COUNTY, NEW MEXICO

COMPLETION DATA: WELL WAS A DRY HOLE
WELL PLUGGED 7/15/50

CASING DATA:

<u>CSG</u>	<u>DEPTH</u>	<u>#SX</u>	<u>TOC</u>
8 5/8"	1705'	100	N/A

CEMENT PLUGS

15 sacks @ 4700'
15 sacks @ 2800'
15 sacks @ 1700'
SURFACE PLUG @ TOP OF HOLE

INJECTION WELL DATA SHEET

OPERATOR		LEASE		
Standard Oil Production Company		Phillips - Lea		
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
5	2310' FSL, 990' FWL	31	T17S	R34E

Schematic

Attached

Tabular DataSurface Casing

Size 8 5/8 " Cemented with 275 ex.
 TOC surface feet determined by returns
 Hole size 12 1/4"

Intermediate Casing

Size N/A " Cemented with ex.
 TOC feet determined by
 Hole size

Long string

Size 4 1/2 " Cemented with 300 ex.
 TOC 3265 feet determined by calculated
 Hole size 7 7/8"
 Total depth 4850'

Injection interval

4627 feet to 4759 feet
 (perforated ~~or open hole~~, indicate which)

Tubing size 2 3/8" lined with Fiberglas set in a
 (material)
Baker Lock Set packer at 4600' feet
 (brand and model)
 (or describe any other casing-tubing seal).

Other Data

- Name of the injection formation San Andres
- Name of field or Pool (if applicable) Vacuum
- Is this a new well drilled for injection? ☐ Yes ☒ No
 If no, for what purpose was the well originally drilled? Production
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (socks of cement or bridge plug(s) used) No
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. None

STANDARD OIL PRODUCTION COMPANY

Lease: Phillips Lea Lease No.: 290-51810
Well No.: 5
Location: 2310'FSL, 990'FWL, Sec.31, T-17-S, R-34-E
County: Lea. State: New Mexico.
API No.: NMOCC No.: B-4118
WI.: 50% NRI.: RRC Dist.:
Spud'd: 6/5/69 TD'd: 6/6/69 Comp:
Elevation: GL: 4095' TD: 4850' PBTD: 4800'

Surface Equipment:

Casing Data

Hole	Csg	Gr.	Wt.	Depth	# Sx	TOC
12-1/4"	8-5/8"		24#	414'	275	SURF.
7-7/8"	4-1/2"		15.1#	4845'	300	3265

Downhole Equipment (Pkrs. Tbg. Anchors. CIBP. ets.)

Type	Size	Depth	Comments
J-55	2-3/8"	4731'	

Perforations

Perforations	Formation
4627-4698'	San Andres
4728-4759'	San Andres

Perfs.

Perfs.

INJECTION WELL DATA SHEET

OPERATOR		LEASE		
Standard Oil Production Company		Phillips - Lea		
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
7	990' FNL, 1980' FWL	31	T17S	R34E

Schematic

Attached

Tabular DataSurface Casing

Size 8 5/8 " Cemented with 300 ex.
 TOC surface feet determined by returns
 Hole size 12 1/4"

Intermediate Casing

Size N/A " Cemented with ex.
 TOC feet determined by
 Hole size

Long string

Size 4 1/2 " Cemented with 300 ex.
 TOC 3267 feet determined by calculated
 Hole size 7 7/8"
 Total depth 4850

Injection interval

4623 feet to 4751 feet
 (perforated or open hole, indicate which)

Tubing size 2 3/8" lined with Fiberglass set in a
 (material)
Baker Lock Set packer at 4600' feet
 (brand and model)

(or describe any other casing-tubing seal).

Other Data

- Name of the injection formation San Andres
- Name of field or Pool (if applicable) Vacuum
- Is this a new well drilled for injection? ☐ Yes ☒ No
 If no, for what purpose was the well originally drilled? Production
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) No
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. None

STANDARD OIL PRODUCTION COMPANY

Lease: Phillips Lea Lease No.: 290-01803

Well No.: 7

Location: 990'FNL, 1980'FWL, Sec.31, T-17-S, R-34-E

County: Lea. State: New Mexico.

API No.: NMOCC No.: B-4118

WI.: 50% NRI.: RRC Dist.:

Spud'd: 6/2/70 TD'd: 6/11/70

Elevation: GL: 4088' TD: 4850' PBTD: 4811'

Surface Equipment:

Casing Data

Hole	Csg	Gr.	Wt.	Depth	# Sx	TOC
12-1/4"	8-5/8"		24#	375'	300	SURF.
7-7/8"	4-1/2"		15.1#	4847'	300	

Downhole Equipment (Pkrs. Tbg. Anchors. CIBP. ets.)

Type	Size	Depth	Comments
------	------	-------	----------

J-55	2-3/8"	4700'	
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S/N		4710'	
-----	--	-------	--

M/A	(31')		
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Perforations	Formation
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4623-4751'	San Andres
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Perfs.

INJECTION WELL DATA SHEET

OPERATOR		LEASE		
Standard Oil Production Company		Phillips - Lea		
WELL NO.	PORTAGE LOCATION	SECTION	TOWNSHIP	RANGE
8	990' FSL, 1650' FWL	31	T17S	R34E

Schematic

Attached

Tabular DataSurface Casing

Size 8 5/8 " Cemented with 325 ex.
 TOC surface feet determined by returns
 Hole size 12 1/4"

Intermediate Casing

Size N/A " Cemented with ex.
 TOC feet determined by
 Hole size

Long string

Size 4 1/2 " Cemented with 300 ex.
 TOC feet determined by calculated
 Hole size 7 7/8"
 Total depth 4950

Injection interval

4702 feet to 4805 feet
 (perforated ~~xxxxxx~~, indicate which)

Tubing size 2 3/8 lined with Fiberglass set in a
 (material)
Baker Lock Set packer at 4600' feet
 (brand and model)
 (or describe any other casing-tubing seal).

Other Data

- Name of the injection formation San Andres
- Name of field or Pool (if applicable) Vacuum
- Is this a new well drilled for injection? ☐ Yes ☒ No
 If no, for what purpose was the well originally drilled? Production
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (socks of cement or bridge plug(s) used) No
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. None

STANDARD OIL PRODUCTION COMPANY

Lease: Phillips Lea Lease No.: 290-01803
Well No.: 8
Location: 990'FSL, 1650'FWL, Sec.31, T-17-S, R-34-E
County: Lea. State: New Mexico.
API No.: NMOCC No.: B-4118
WI.: 50% NRI.: RRC Dist.:
Spud'd: 9/7/70 TD'd: 9/24/70
Elevation: GL: 4092' TD: 4950' P8TD: 4918'

Surface Equipment:

Casing Data

Hole	Csg	Gr.	Wt.	Depth	# Sx	TOC
12-1/4"	8-5/8"		24#	365'	325	SURF.
7-7/8"	4-1/2"		15.1#	4949'	300	3369'

Downhole Equipment (Pkrs, Tbg, Anchors, CIBP, ets.)

Type	Size	Depth	Comments
J-55	2-3/8"	4846'	

S/N

M/A (31')

Perforations	Formation
4702-4805'	San Andres

Perfs.

INJECTION WELL DATA SHEET

OPERATOR		LEASE		
Standard Oil Production Company		Phillips - Lea		
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
9	1565' FNL, 1350' FEL	31	T17S	R34E

SchematicTabular DataSurface Casing

Size 8 5/8 " Cemented with ± 300 ex.
 TOC surface feet determined by returns
 Hole size 12 1/4"

Intermediate Casing

Size N/A " Cemented with ex.
 TOC feet determined by
 Hole size

Long string

Size 5 1/2 " Cemented with ± 300 ex.
 TOC ± 3,000' feet determined by caliper
 Hole size 7 7/8"
 Total depth 4900'

Injection interval

4600 feet to 4800 feet
 (perforated ~~or open hole~~ indicate which)

Tubing size 2 3/8" lined with Fiberglas set in a
 (material)
Baker Lock Set packer at 4600 feet
 (brand and model)
 (or describe any other casing-tubing seal).

Other Data

- Name of the injection formation San Andres
- Name of field or Pool (if applicable) Vacuum
- Is this a new well drilled for injection? ☒ Yes ☐ No
 If no, for what purpose was the well originally drilled?
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) No
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. None

STANDARD OIL PRODUCTION COMPANY

Lease: Phillips Lea Lease No.: 290-51810
Well No.: 9 (New Inj. Well)
Location: 1565'FNL, 1350' FEL, Sec.31, T17S, R34E
County: Lea. State: New Mexico.
API No.: NMOCC No.: B-4118
WI.: 50% NRI.: ARC Dist.:
Spud'd: TD'd:
Elevation: GL: TD: 4900' PBTD:

Surface Equipment:

Casing Data

Hole	Csg	Gr.	Wt.	Depth	# Sx	TOC
12-1/4"	8-5/8"		32#	400'	300	SURF.
7-7/8"	5-1/2"		17#	4900'	300	±3000

Downhole Equipment (Pkrs, Tbg. Anchors, CIBP, ets.)

Type	Size	Depth	Comments
Pkr.	5-1/2"	4600'	Lokset on 2-3/8" tbg.
Perforations		Formation	
4600-4800'		San Andres	

Perfs.

INJECTION WELL DATA SHEET

OPERATOR		LEASE		
Standard Oil Production Company		Phillips - Lea		
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
10	1150' FSL, 1350' FEL	31	T17S	R34E

SchematicTabular DataSurface Casing

Size 8 5/8 " Cemented with ± 300 sx.
 TOC surface feet determined by returns
 Hole size 12 1/4"

Intermediate Casing

Size N/A " Cemented with sx.
 TOC feet determined by
 Hole size

Long string

Size 5 1/2 " Cemented with ± 300 sx.
 TOC ± 3,000 feet determined by caliper
 Hole size 7 7/8"
 Total depth 4900'

Injection interval

4600 feet to 4800 feet
 (perforated or open-hole, indicate which)

Tubing size 2 3/8" lined with Fiberglas set in a
 (material)
Baker Lock Set packer at 4600 feet
 (brand and model)
 (or describe any other casing-tubing seal).

Other Data

- Name of the injection formation San Andres
- Name of field or Pool (if applicable) Vacuum
- Is this a new well drilled for injection? ☒ Yes ☐ No
 If no, for what purpose was the well originally drilled?
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (socks of cement or bridge plug(s) used) No
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. None

STANDARD OIL PRODUCTION COMPANY

Lease: Phillips Lea Lease No.: 290-51810
Well No.: 10 (New Inj. Well)
Location: 1150' FSL, 1350' FEL, Sec. 31, T17S, R34E
County: Lea. State: New Mexico.
API No.: NMOCC No.: B-4118
WI.: 50% NRI.: RRC Dist.:
Spud'd: TD'd:
Elevation: GL: TD: 4900' PBTD: 4850'

Surface Equipment:

Casing Data

Hole	Csg	Gr.	Wt.	Depth	# Sx	TOC
12-1/4"	8-5/8"		32#	400'	300	SURF.
7-7/8"	5-1/2"		17#	4900'	300	±3000

Downhole Equipment (Pkrs, Tbg, Anchors, CIBP, ets.)

Type	Size	Depth	Comments
Pkr.	5-1/2"	4600'	Lokset on 2-3/8" tbg.
Perforations		Formation	
4600-4800'		San Andres	

Perfs.

WATER ANALYSIS REPORT

Lab ID No. : 081787C

Analysis Date: August 17, 1987

Company : Sohio Petroleum
Field :
Lease/Unit : Phillips Lea Lease
Well ID. : Well No. 5
Sample Loc.: Wellhead

Sampled By : Pretreat, Inc.
Sample Date: 13-August-1987
Salesperson: Les Preece
Formation :
Location : Midland, Texas

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	2,048	102.4	Hydroxyl as OH-	0	0.0
Magnesium as Mg++	539	44.2	Carbonate as CO3=	0	0.0
Sodium as Na+ (Calc)	77,256	3,359.0	Bicarbonate as HCO3-	738	12.1
Barium as Ba++	Not Deter	0.0	Sulfate as SO4=	3,900	81.3
Other	0		Chloride as Cl-	120,973	3,412.2

Total Dissolved Solids, Calculated: 205,453 mg/L.

Calculated Resistivity: 0.010 ohm-meters

pH: 6.800

mg/L. Hydrogen Sulfide: 60

Specific Gravity 60/60 F.: 1.134

mg/L. Carbon Dioxide: 180

Saturation Index @ 80 F.: +0.760

mg/L. Dissolved Oxygen: Not Determined

@ 140 F.: +1.860

Total Hardness:	7,326	mg/L. as CaCO3
Total Iron:	4	mg/L. as Fe++

PROBABLE MINERAL COMPOSITION

	COMPOUND	MG/L	MEQ/L
	Ca(HCO3)2	980	12
Calcium Sulfate Scaling Potential	CaSO4	5,531	81
Not Present	CaCl2	501	9
Estimated Temperature of Calcium	Mg(HCO3)2	0	0
Carbonate Instability is	MgSO4	0	0
58 F.	MgCl2	2,106	44
	NaHCO3	0	0
	Na2SO4	0	0
Analyst	NaCl	196,364	3,359

02:25 PM

WATER ANALYSIS REPORT

Lab ID No. : 081787D

Analysis Date: August 17, 1987

Company : Sohio Petroleum
Field :
Lease/Unit : Phillips Lea Lease
Well ID. : Well No. 7
Sample Loc.: Wellhead

Sampled By : Pretreat, Inc.
Sample Date: 13-August-1987
Salesperson: Les Preece
Formation :
Location : Midland, Texas

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	2,671	133.5	Hydroxyl as OH-	0	0.0
Magnesium as Mg++	1,295	106.1	Carbonate as CO3=	0	0.0
Sodium as Na+ (Calc)	73,347	3,189.0	Bicarbonate as HCO3-	632	10.4
Barium as Ba++	Not Deter	0.0	Sulfate as SO4=	3,000	62.5
Other	0		Chloride as Cl-	118,973	3,355.8

Total Dissolved Solids, Calculated: 199,918 mg/L.

Calculated Resistivity: 0.010 ohm-meters
mg/L. Hydrogen Sulfide: 20
mg/L. Carbon Dioxide: 260
mg/L. Dissolved Oxygen: Not Determined

pH: 6.500
Specific Gravity 60/60 F.: 1.131
Saturation Index @ 80 F.: +0.468
@ 140 F.: +1.488

Total Hardness: 11,988 mg/L. as CaCO3
Total Iron: 4 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION

	COMPOUND	MG/L	MEQ/L
	Ca(HCO3)2	840	10
Calcium Sulfate Scaling Potential Not Present	CaSO4	4,254	63
	CaCl2	3,367	61
Estimated Temperature of Calcium Carbonate Instability is 61 F.	Mg(HCO3)2	0	0
	MgSO4	0	0
	MgCl2	5,054	106
	NaHCO3	0	0
	Na2SO4	0	0
Analyst	NaCl	186,430	3,189
02:26 PM			

Lab ID No. : 081787B

Analysis Date: August 17, 1987

Company : Sohio Petroleum
 Field :
 Lease/Unit : Phillips Lea Lease
 Well ID. : So. Battery
 Sample Loc.: Heater Treater

Sampled By : Pretreat, Inc.
 Sample Date: 13-August-1987
 Salesperson: Les Preece
 Formation :
 Location : Midland, Texas

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	2,226	111.3	Hydroxyl as OH-	0	0.0
Magnesium as Mg++	593	48.6	Carbonate as CO3=	0	0.0
Sodium as Na+ (Calc)	76,804	3,339.3	Bicarbonate as HCO3-	733	12.0
Barium as Ba++	Not Deter	0.0	Sulfate as SO4=	3,600	75.0
Other	0		Chloride as Cl-	120,973	3,412.2

Total Dissolved Solids, Calculated:

204,928 mg/L.

Calculated Resistivity: 0.010 ohm-meters
 mg/L. Hydrogen Sulfide: 35
 mg/L. Carbon Dioxide: 160
 mg/L. Dissolved Oxygen: Not Determined

pH: 6.950
 Specific Gravity 60/60 F.: 1.133
 Saturation Index @ 80 F.: +0.943
 @ 140 F.: +2.043

Total Hardness: 7,992 mg/L. as CaCO3
 Total Iron: 4 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION

	COMPOUND	MG/L	MEQ/L
	Ca(HCO3)2	973	12
Calcium Sulfate Scaling Potential Not Present	CaSO4	5,105	75
	CaCl2	1,347	24
Estimated Temperature of Calcium Carbonate Instability is 57 F.	Mg(HCO3)2	0	0
	MgSO4	0	0
	MgCl2	2,316	49
	NaHCO3	0	0
	Na2SO4	0	0
Analyst	NaCl	195,215	3,339
02:23 PM			

WATER ANALYSIS REPORT

Lab ID No. : 081787A

Analysis Date: August 17, 1987

Company : Sohio Petroleum
Field :
Lease/Unit : Phillips Lea Lease
Well ID. : Fresh Water
Sample Loc.:

Sampled By : Pretreat, Inc.
Sample Date: 13-August-1987
Salesperson: Les Preece
Formation :
Location : Midland, Texas

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
Calcium as Ca++	62	3.1	Hydroxyl as OH-	0	0.0
Magnesium as Mg++	11	0.9	Carbonate as CO3=	0	0.0
Sodium as Na+ (Calc)	56	2.4	Bicarbonate as HCO3-	211	3.5
Barium as Ba++	Not Deter	0.0	Sulfate as SO4=	34	0.7
Other	0		Chloride as Cl-	80	2.3

Total Dissolved Solids, Calculated: 454 mg/L.

Calculated Resistivity: 2.463 ohm-meters
mg/L. Hydrogen Sulfide: 0
mg/L. Carbon Dioxide: 5
mg/L. Dissolved Oxygen: 5

pH: 7.620
Specific Gravity 60/60 F.: 1.000
Saturation Index @ 80 F.: +0.247
@ 140 F.: +0.947

Total Hardness: 200 mg/L. as CaCO3
Total Iron: 0.15 mg/L. as Fe++

PROBABLE MINERAL COMPOSITION

	COMPOUND	MG/L	MEQ/L
	Ca(HCO3)2	253	3
Calcium Sulfate Scaling Potential Not Present	CaSO4	0	0
	CaCl2	0	0
Estimated Temperature of Calcium Carbonate Instability is 63 F.	Mg(HCO3)2	25	0
	MgSO4	33	1
	MgCl2	0	0
	NaHCO3	0	0
	Na2SO4	12	0
Analyst 02:21 PM	NaCl	132	2

5.0 μ Membrane Filter Test Data
 Sohio Petroleum
 Fresh Water
 Pennzoil Water Supply Line

Volume ml	Time sec.	Chg. in Vol dv	Chg in Time dt	Rate ml/sec dv/dt
=====	=====	=====	=====	=====
100	3	100	3	33.3
200	6	100	3	33.3
300	9	100	3	33.3
400	11	100	2	50.0
500	14	100	3	33.3
600	17	100	3	33.3
700	20	100	3	33.3
800	23	100	3	33.3
900	25	100	2	50.0
1,000	28	100	3	33.3
1,100	31	100	3	33.3
1,200	33	100	2	50.0
1,300	36	100	3	33.3
1,400	39	100	3	33.3
1,500	42	100	3	33.3
1,600	45	100	3	33.3
1,700	48	100	3	33.3
1,800	52	100	4	25.0
1,900	55	100	3	33.3
2,000	58	100	3	33.3
2,100	61	100	3	33.3
2,200	64	100	3	33.3
2,300	67	100	3	33.3
2,400	71	100	4	25.0
2,500	74	100	3	33.3
2,600	77	100	3	33.3
2,700	80	100	3	33.3
2,800	84	100	4	25.0
2,900	87	100	3	33.3
3,000	90	100	3	33.3
3,100	93	100	3	33.3
3,200	97	100	4	25.0
3,300	100	100	3	33.3
3,400	104	100	4	25.0
3,500	107	100	3	33.3
3,600	111	100	4	25.0
3,700	115	100	4	25.0
3,800	119	100	4	25.0
3,900	122	100	3	33.3
4,000	126	100	4	25.0

Sohio Petroleum
Fresh Water
Pennzoil Water Supply Line

Oil and Grease Count - N/A

5.0 μ m. MEMBRANE FILTER EVALUATION

=====

Total Suspended Solids	0.88 mg/L.
Chloroform-Soluble hydrocarbons	0.07 mg/L.
15% HCl-soluble materials	0.55 mg/L.
15% HCl-insoluble materials	0.25 mg/L.

The acid-soluble materials consisted mainly of by-products of the corrosion of Iron.

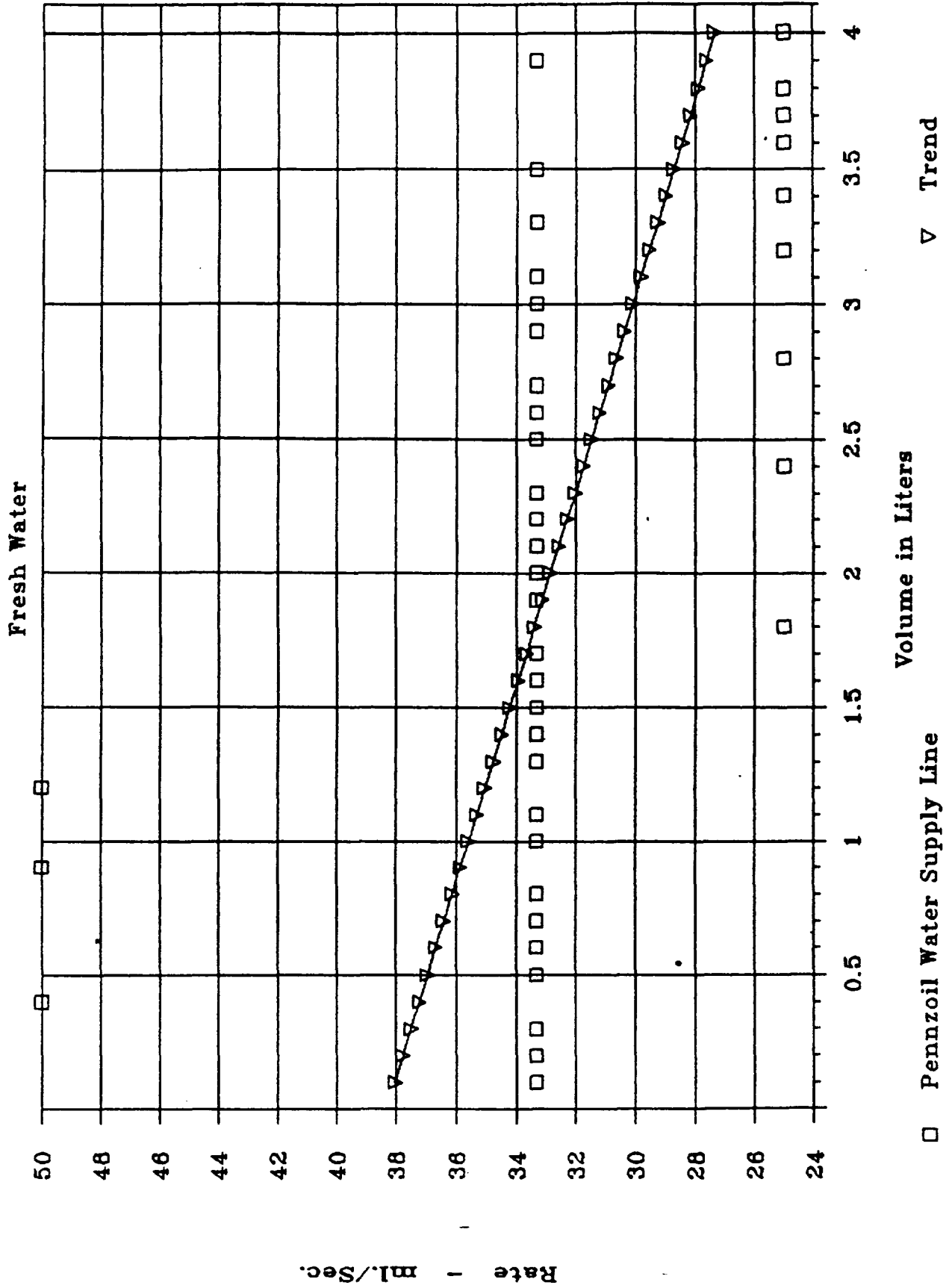
The acid-insoluble materials were identified as silicates.

BACTERIA CULTURES

The bacteria cultures initiated with this water revealed the presence of Aerobic Bacteria at levels above 10,000 colonies per milliliter.

The Sulfate-Reducing Bacteria cultures initiated on-site gave negative results to the presence of these organisms.

5.0 μ Membrane Filter Test Results



COMPARISON BETWEEN TWO WATERS

13-AUGUST-1987

TO: PRETREAT INC.

FOR: SOHIO PETROLEUM

WATER NO. 1

WATER NO. 2

PHILLIPS LEA FRESH WATER

PHILLIPS LEA SOUTH BATTERY TEATER

THE FOLLOWING ARE ESTIMATED FIGURES BASED ON THE DATA FROM THE ABOVE SOURCES

PERCENT #1 - #2	SPECIFIC GRAVITY	PH	TOTAL SOLIDS	CACO3 ● DEG. F.	CALCIUM SULFATE
0 - 100	1.133	6.950	204929	59	NIL
5 - 95	1.126	6.983	194705	59	NIL
10 - 90	1.120	7.017	184481	59	NIL
15 - 85	1.113	7.051	174257	59	NIL
20 - 80	1.106	7.084	164034	60	NIL
25 - 75	1.100	7.118	153810	60	NIL
30 - 70	1.093	7.151	143586	61	NIL
35 - 65	1.086	7.184	133362	61	NIL
40 - 60	1.080	7.218	123139	62	NIL
45 - 55	1.073	7.252	112915	63	NIL
50 - 50	1.067	7.285	102691	65	NIL
55 - 45	1.060	7.319	92467	66	NIL
60 - 40	1.053	7.352	82244	69	NIL
65 - 35	1.047	7.385	72020	73	NIL
70 - 30	1.040	7.419	61796	75	NIL
75 - 25	1.033	7.453	51572	75	NIL
80 - 20	1.027	7.486	41349	73	NIL
85 - 15	1.020	7.520	31125	69	NIL
90 - 10	1.013	7.553	20901	66	NIL
95 - 5	1.007	7.586	10677	63	NIL
100 - 0	1.000	7.620	454	59	NIL

Bell PETROLEUM LABORATORIES

P. O. BOX 2988

Midland, Texas 79702

PHONE 563-2628 - 694-6712

API FORM 45-1

API WATER ANALYSIS REPORT FORM

Company Standard Oil Co.		Sample No. 18546		Date Recd. 8-13-87
Field	Legal Description	County or Parish	Date Sampled	
Lease or Unit	Well Fresh Water	Depth	Formation	Water, B/D
Type of Water (Produced, Supply, etc.)		Sampling Point		Sampled By

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	27.8	1.21
Calcium, Ca	40.1	2.01
Magnesium, Mg	18.2	1.50
Barium, Ba	_____	_____
_____	_____	_____

ANIONS

Chloride, Cl	42	1.18
Sulfate, SO ₄	40	0.83
Carbonate, CO ₃	0	0
Bicarbonate, HCO ₃	165	2.71
_____	_____	_____
_____	_____	_____

Total Dissolved Solids (calc.)

333

Iron, Fe (total)

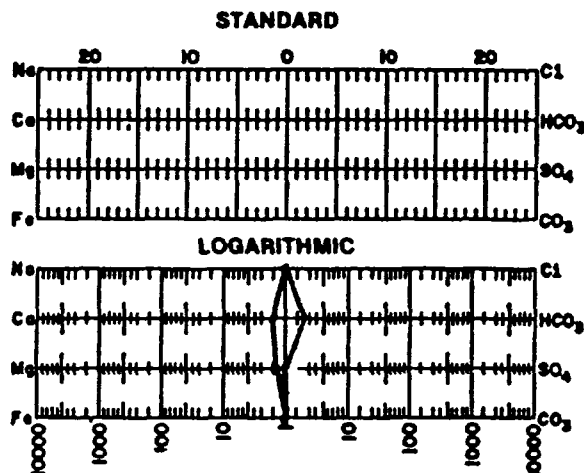
0

Sulfide, as H₂S

OTHER PROPERTIES

pH	7.1
Specific Gravity, 60/60 F.	1.010
Resistivity (ohm-meters) 77°F.	18.80
Total Hardness, as CaCO ₃ , mg/l	_____
Total Alkalinity, as CaCO ₃ , mg/l	_____
Supersaturation, as CaCO ₃ , mg/l	_____

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

Pour Point of Oil = 13°F
Cloud Point of Oil = 62°F

COPIES TO: _____

Mike Cook

ANALYSIS BY:

Bell PETROLEUM LABORATORIES

P. O. BOX 2988

Midland, Texas 79702

PHONE 563-2628 - 694-6712

API FORM 45-1

API WATER ANALYSIS REPORT FORM

Company Standard Oil Co.				Sample No. 18547 & 18545		Date Recd. 8-13-87	
						Date Sampled	
Field		Legal Description		County or Parish		State	
Lease or Unit		Well Phillips Lea #5		Depth		Formation	
						Water, B/D	
Type of Water (Produced, Supply, etc.) Produced H ₂ O and Oil				Sampling Point		Sampled By	

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	72,300	3143
Calcium, Ca	2,310	116
Magnesium, Mg	547	45.0
Barium, Ba		

ANIONS

Chloride, Cl	113,700	3207
Sulfate, SO ₄	4,380	91.3
Carbonate, CO ₃	0	0
Bicarbonate, HCO ₃	317	5.20

Total Dissolved Solids (calc.)
193,500

Iron, Fe (total) 0
Sulfide, as H₂S 56

REMARKS & RECOMMENDATIONS:

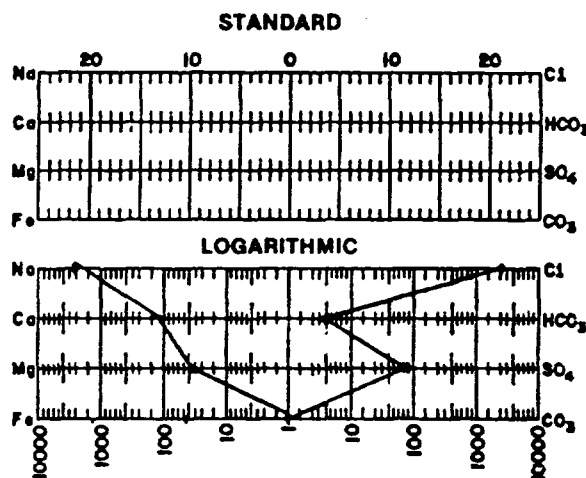
Pour Point of Oil = 13°F
Cloud Point of Oil = 62°F

COPIES TO: _____

OTHER PROPERTIES

pH	6.7
Specific Gravity, 60/60 F.	1.134
Resistivity (ohm-meters) 77°F.	0.049
Total Hardness, as CaCO ₃ mg/l	8,030
Total Alkalinity, as CaCO ₃ mg/l	
Supersaturation, as CaCO ₃ mg/l	

WATER PATTERNS — me/l



Mike Cooke

ANALYSIS BY:

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

TO: Mr. Wayne Sutton
10 Desta Drive, Suite 600 West, Midland, TX

LABORATORY NO. 1087172
SAMPLE RECEIVED 10-20-87
RESULTS REPORTED 10-20-87

COMPANY Standard Oil Production Company LEASE Phillips Lea
FIELD OR POOL Vacuum
SECTION 30 BLOCK SURVEY T-17S & R-34E COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Raw water - taken from Amax water supply well #2. 10-19-87

NO. 2 _____

NO. 3 _____

NO. 4 _____

REMARKS: SE, NW of Section 30

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0011			
pH When Sampled				
pH When Received	7.50			
Bicarbonate as HCO ₃	188			
Supersaturation as CaCO ₃				
Undersaturation as CaCO ₃				
Total Hardness as CaCO ₃	176			
Calcium as Ca	49			
Magnesium as Mg	13			
Sodium and/or Potassium	21			
Sulfate as SO ₄	29			
Chloride as Cl	27			
Iron as Fe	1.2			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	327			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	26.60			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Nitrate, as N	2.9			

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks	The undersigned certifies the above to be true and correct to the best of his knowledge and belief.
---------------------------------------	---

By

Waylan C. Martin, M.A.

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

TO: Mr. Wayne Sutton
10 Desta Drive, Suite 600 West, Midland, TX

LABORATORY NO. 1087173
SAMPLE RECEIVED 10-20-87
RESULTS REPORTED 10-20-87

COMPANY Standard Oil Production Company LEASE Phillips Lea
FIELD OR POOL Vacuum
SECTION 30 BLOCK SURVEY T-17S & R-34E COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1 Raw water - taken from Amax water supply well #4. 10-19-87

NO. 2 _____

NO. 3

NO. 4

REMARKS: SE, SW of Section 30

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0024			
pH When Sampled				
pH When Received	7.50			
Bicarbonate as HCO ₃	210			
Supersaturation as CaCO ₃				
Undersaturation as CaCO ₃				
Total Hardness as CaCO ₃	344			
Calcium as Ca	101			
Magnesium as Mg	22			
Sodium and/or Potassium	61			
Sulfate as SO ₄	30			
Chloride as Cl	193			
Iron as Fe	0.40			
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	617			
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0			
Resistivity, ohms/m at 77° F.	11.02			
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Nitrate, as N	2.8			

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks	The undersigned certifies the above to be true and correct to the best of his knowledge and belief.
---------------------------------------	---

By

Waylan C. Martin, M.A.



BHC
Acoustilog

FILE NO.

COMPANY SOLID PETROLEUM COMPANY

JUN 17 1969

WELL PHILLIPS LEA NO. 5FIELD VACUUM - GRAYBEE SAN ANTONIOCOUNTY LEA STATE NEW MEXICO

LOCATION:

2310 FSL # 990 FUL

Other Services

LLSEC 31 TWP 17-S RGE 34-E

Permanent Datum G.L. Elev. 4075
 Log Measured from K.D. 10-0 Ft. Above Permanent Datum
 Drilling Measured from K.D.

Elevations
 KB 4100
 DF 4104
 GL 4095

Date 6-10-69Run No ONEDepth—Driller 4350Depth—Logger 4877Bottom Logged Interval 4852Top Logged Interval 0Casing—Driller 85.8 @ 410Casing—Logger H14Bit Size 7 7/8Type Fluid in Hole SALT GEL

FIELD
PRINT

Density and Viscosity	<u>10.3</u>	<u>47</u>							
pH and Fluid Loss	<u>9.0</u>	<u>8-0</u>	cc		cc		cc		cc
Source of Sample	<u>FLOWLINE</u>								
Rm @ Meas. Temp.	<u>.65</u>	<u>@ 70</u>	F		F		F		F
Rmf @ Meas. Temp.	<u>.5</u>	<u>@ 70</u>	F		F		F		F
Rmc @ Meas. Temp.	<u>1</u>	<u>@ 70</u>	F		F		F		F
Source of Rm and Rmf	<u>M</u>	<u>+</u>	F		F		F		F
Rm @ BHT	<u>.4</u>	<u>@ 100</u>	F		F		F		F
Time Since Circ	<u>3 HRS</u>								
Max. Rec. Temp. Deg. F	<u>100</u>	F		F		F		F	
Exp. No. and Date	<u>100</u>								
Pressure at Bit	<u>4000</u>								

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP 31

REMARKS * LOG OF ANALYSIS NOT AVAILABLE

Changes in Mud Type or Additional Samples

Scale Changes

Scale Changes

Scale Changes



BHC
Acoustilog

JUN 25 1973 B.W.N.

FILE NO

COMPANY SOHIO OIL COMPANY

WELL PHILLIPS LEA NO. 7

FIELD VACUUM (GRAYBURG SAN ANDRES)

COUNTY LEA STATE NEW MEXICO

LOCATION:

990' FNL & 1980' FWL

SEC 31 TWP 17-S RGE 34-E

Other Services

Permanent Datum G.L. Elev. 4088'
 Log Measured from K.B. 11 Ft. Above Permanent Datum
 Drilling Measured from K.B.

Elevations:
 KB 4099'
 DF 4098'
 GL 4088'

Date	6-11-70				
Run No.	ONE				
Depth—Driller	4850				
Depth—Logger	4850				
Bottom Logged Interval	4846				
Top Logged Interval	3500				
Casing—Driller	8 5/8 365	@	@	@	
Casing—Logger	-				
Bit Size	7 7/8				
Type Fluid in Hole	SALT GEL				
Density and Viscosity	10.1 34				
pH and Fluid Loss	6.5 12 cc	cc	cc	cc	cc
Source of Sample	MUD PIT				
Rm @ Meas. Temp	.062 @ 38	F	@	F	@
Rmf @ Meas. Temp	.03 @ 38	F	@	F	@
Rnc @ Meas. Temp	- @	F	@	F	@
Source of Rmf and Rnc	MEASURED				
Rm @ BHT	.55 @ 100	F	@	F	@
Time Since Circ	4 HRS.				
Max. Rec. Temp. Deg. F	100	F	F	PF	F
Sample No. and Location	6034 10033				
Revised 31	VAU				
Revised 31					

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE MP 31

REMARKS

Changes in Mud Type or Additional Samples

Date Sample No.

Depth Driller

Depth in Hole

Scale Changes

Depth

Type Log

Scale Up Hole

Scale Down Hole

BHC
Aconstilog®

COMPANY SOHIO PETROLEUM COMPANY

WELL _____ PHILLIPS LEA NO. 8

FIELD VACUUM-GRAYBURG (SAN ANDRES)

COUNTY LEA STATE NEW MEXICO

990' FSL & 1650' FWL

Other Services

SEC 31 TWP 17-S RGE 34-E

Permanent Datum GROUND LEVEL Elev. 4092
 Log Measured from K. B. 10 Ft. Above Permanent Datum
 Drilling Measured from K. B.

	Elevations:
KB	4102
DF	4101
GL	4092

Date	9-18-70								
Run No.	ONE								
Depth—Driller	4950								
Depth—Logger	4952								
Bottom Logged Interval	4950								
Top Logged Interval	3500								
Coring—Driller	8 5/8 @ 369	@		@		@		@	
Coring—Logger									
Hole Size	7 7/8"								
Type Fluid In Hole	SALT GEL								
Density and Viscosity	10.6 [4]								
pH and Fluid Loss	16 cc	cc		cc		cc		cc	
Source of Sample	PIT								
Rm @ Meas. Temp.	.061 @ 81 °F	@	°F	@	°F	@	°F	@	°F
Rmf @ Meas. Temp.	.047 @ 71 °F	@	°F	@	°F	@	°F	@	°F
Rmc @ Meas. Temp.	.075 @ 71 °F	@	°F	@	°F	@	°F	@	°F
Source of Rmf and Rmc	MEAS., MEAS.								
Rm @ BHT	.047 @ 102 °F	@	°F	@	°F	@	°F	@	°F
Time Since Circ.	4 HOURS								
Max. Rec. Temp. Deg. F	102 °F	°F		°F		°F		°F	
Log No. and Location	6040 (HOBB)								
Logged By	HC AE								
Checked By	HC AE								

UNITED STATES DEPARTMENT OF JUSTICE
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

THE

MARKS

Changes in Mud Type or Additional Samples

Date	Sample No.
1902	1
1903	2
1904	3
1905	4
1906	5
1907	6
1908	7
1909	8
1910	9
1911	10
1912	11
1913	12
1914	13
1915	14
1916	15
1917	16
1918	17
1919	18
1920	19
1921	20
1922	21
1923	22
1924	23
1925	24
1926	25
1927	26
1928	27
1929	28
1930	29
1931	30
1932	31
1933	32
1934	33
1935	34
1936	35
1937	36
1938	37
1939	38
1940	39
1941	40
1942	41
1943	42
1944	43
1945	44
1946	45
1947	46
1948	47
1949	48
1950	49
1951	50
1952	51
1953	52
1954	53
1955	54
1956	55
1957	56
1958	57
1959	58
1960	59
1961	60
1962	61
1963	62
1964	63
1965	64
1966	65
1967	66
1968	67
1969	68
1970	69
1971	70
1972	71
1973	72
1974	73
1975	74
1976	75
1977	76
1978	77
1979	78
1980	79
1981	80
1982	81
1983	82
1984	83
1985	84
1986	85
1987	86
1988	87
1989	88
1990	89
1991	90
1992	91
1993	92
1994	93
1995	94
1996	95
1997	96
1998	97
1999	98
2000	99

Depth Driller

Type Fluid in Hole

Scale Changes

Scale Up Hole

Depth

Type Log

Scale Down Hole