SWD - 50

Tenneco Oil
A Tenneco Company

Suite 1200
Lincoln Tower Building
Denver, Colorado 80203
(303) 292-9920

TENNECO

it waiting

September 27, 1973

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

RE: Application for Administrative Approval for Water Disposal-Lone Pine Dakota "D" Unit, McKinley County, New Mexico

Gentlemen:

Tenneco Oil Company, as operator of the Lone Pine Dakota "D" Unit, respectfully submits application for administrative approval to recomplete the Lone Pine Dakota "D" Unit Well No. 26 from a water injector in the Dakota "D" Zone to a water disposal well in the Gallup Zone. In support of this application and in accordance with Commission Rule 701-B, we are attaching the following data:

1. A plat showing the location of the proposed injection well and all other wells in the area, along with lease-hold ownerships.

2. A log section of the Gallup Zone in the LPDDU Well No. 26.

3. A diagrammatic sketch of the proposed injection well along with a prognosis to recomplete.

4. Three copies of Commission Form C-108 along with water analyses of Gallup water and Dakota "D" water.

Performance studies on the Lone Pine Dakota "D" Unit have indicated that continued injection of produced water will be detrimental to oil recovery, therefore, another point of water disposal must be developed. The Gallup Formation should be capable of taking the 1,050 barrels of water produced daily from Lone Pine.

TENNECO OIL COMPANY

In addition, the water quality of the two zones (Gallup & Dakota "D") appears to be similar.

By copy of this letter, the surface owner, the Bureau of Land Management is being notified of Tenneco's proposed action. No other operators produce hydrocarbons within one-half mile of the proposed location.

Your approval of this application will be appreciated.

Yours very truly,

TENNECO OIL COMPANY

D. D. Myers
Asst. Division Production Mgr.

WEB/lj
Attachments

cc: Working Interest Owners
Bureau of Land Management-Santa Fe
NMOCC-Aztec
USGS-Roswell w/cover

Form C-108
Revised 3-1-68

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR: Tenneco Oil Company
ADDRESS: Suite 1200 Lincoln Twr., Denver, CO 80203

LEASE NAME: Lone Pine Dakota "D" Unit
WELL NO.: 26
FIELD: Lone Pine
COUNTY: McKinley

LOCATION
UNIT LETTER D ; WELL IS LOCATED 660 FEET FROM THE North LINE AND 660 FEET FROM THE West LINE, SECTION 19 TOWNSHIP 17 North RANGE 9 West NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8 5/8"	65'	40	Surface	Circulation
INTERMEDIATE					
LONG STRING	5 1/2"	2843'	300	1510'	Vol. Calc.
TUBING	2 7/8"	1730'	NAME, MODEL AND DEPTH OF TUBING PACKER: Baker Model D 1700'		

NAME OF PROPOSED INJECTION FORMATION: Gallup
TOP OF FORMATION: 1760'
BOTTOM OF FORMATION: 1862

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?: Tubing
PERFORATIONS OR OPEN HOLE?: Perfs
PROPOSED INTERVAL(S) OF INJECTION: 1762-1802

IS THIS A NEW WELL DRILLED FOR DISPOSAL?: No
IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?: Dakota "D" Producer
HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?: yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH
Dakota "D"-100 Sax

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA:
DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA: Upper Hospah-1750'
DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA: Dakota "A" 2675'

ANTICIPATED DAILY INJECTION VOLUME (BBLS.): MINIMUM 1050; MAXIMUM 2000
OPEN OR CLOSED TYPE SYSTEM: closed
IS INJECTION TO BE BY GRAVITY OR PRESSURE?: pressure
APPROX. PRESSURE (PSI): 200

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE –
WATER TO BE DISPOSED OF: yes
NATURAL WATER IN DISPOSAL ZONE: yes
ARE WATER ANALYSES ATTACHED?: yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)
Bureau of Land Mgmt. P. O. Box 1449 Santa Fe, New Mexico

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL
None

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?
SURFACE OWNER: Yes
EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL: Yes

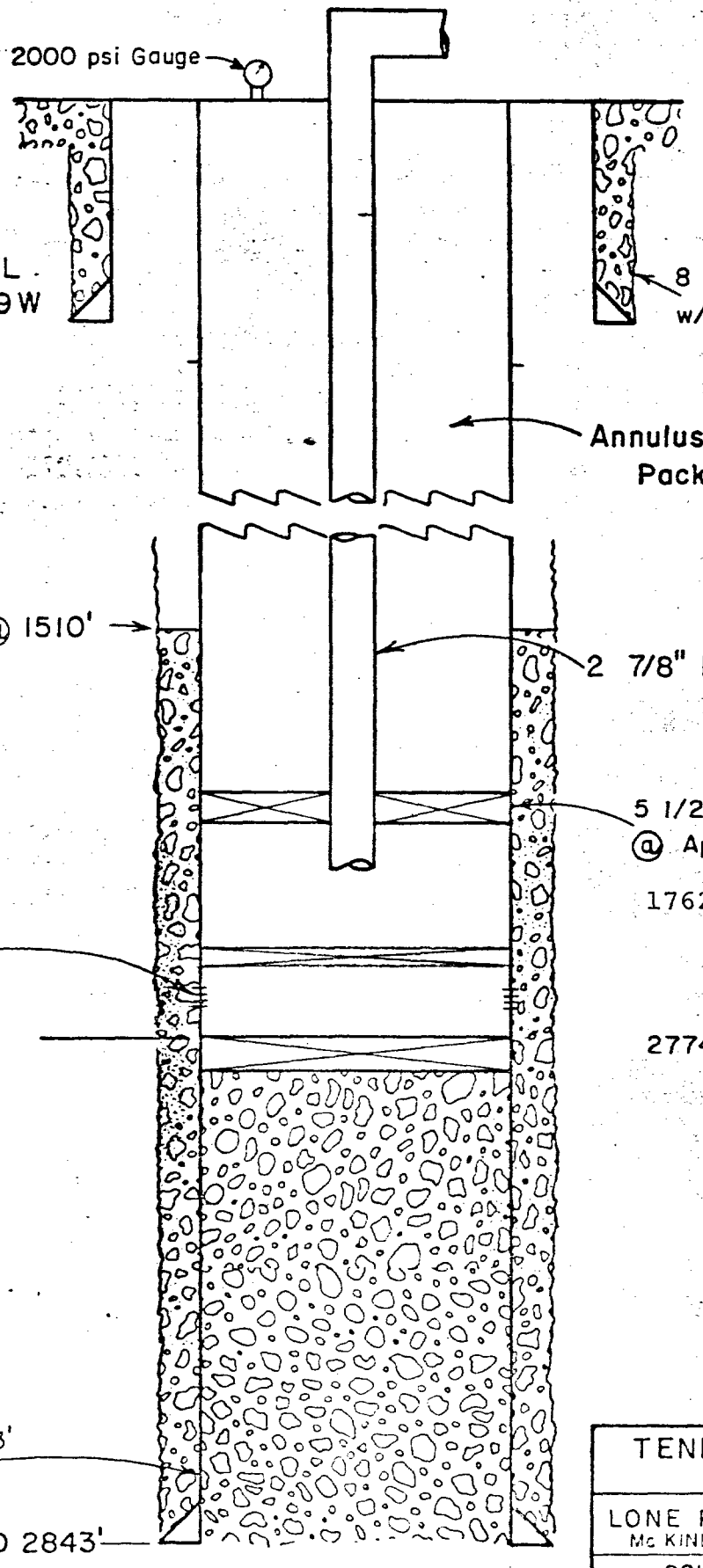
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)
PLAT OF AREA: yes
ELECTRICAL LOG: yes
DIAGRAMMATIC SKETCH OF WELL: yes

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

William E [signature] (Signature) — Petroleum Engineer (Title) — 4/23/73 (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

K.B. Elev. 7001'



Location:
660 FNL 660 FWL
Sec. 19, T 17 N, R 9 W
McKinley County,
New Mexico

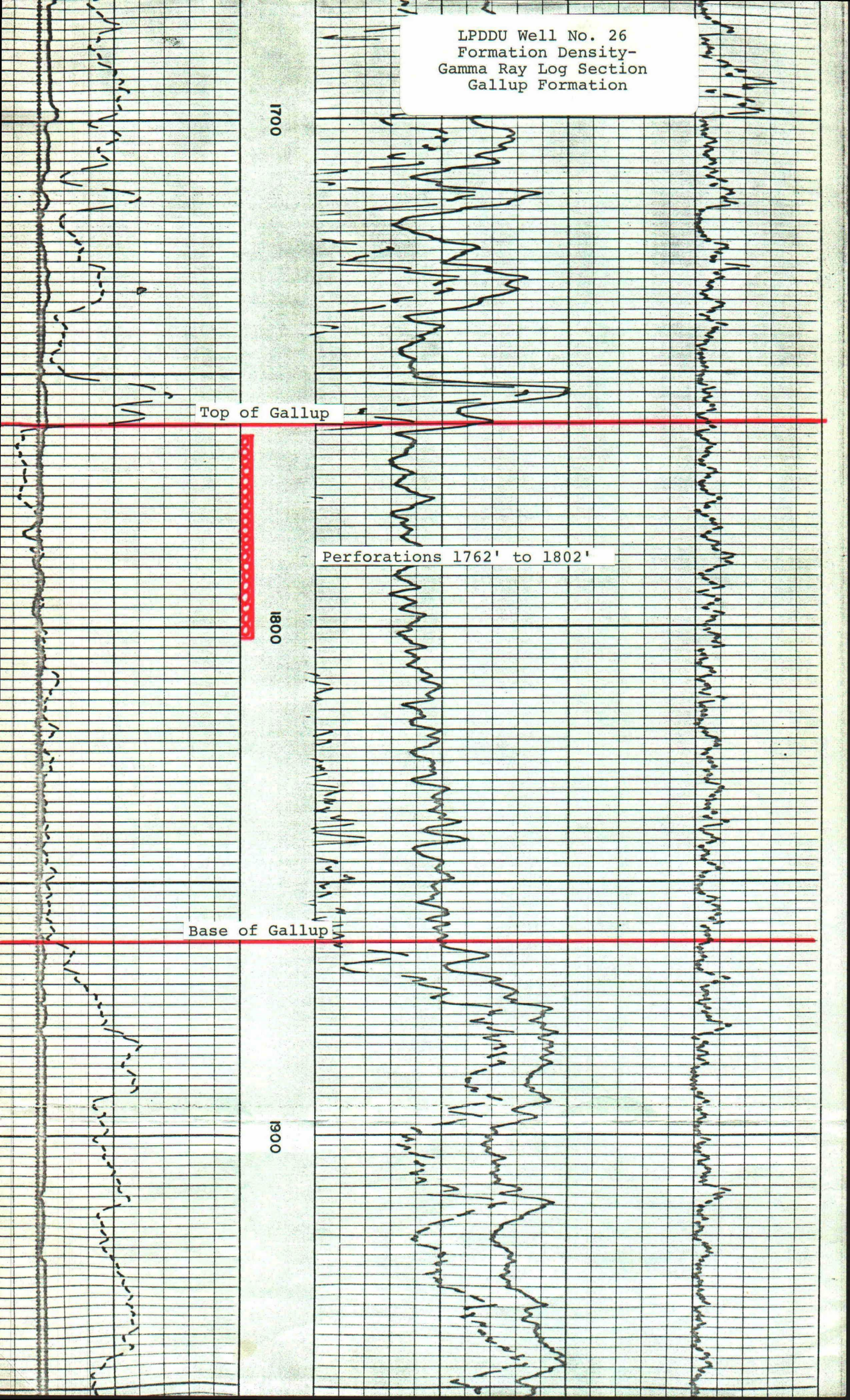
All Measurements Based On Gamma Ray Log

TENNECO OIL COMPANY
SUBSIDIARY OF TENNECO INC.

LONE PINE DAKOTA "D" FIELD
Mc KINLEY COUNTY, NEW MEXICO

SCHEMATIC DIAGRAM OF
PROPOSED W/INJECTION WELL
LPDDU Well No. 26

W E B. SCALE - NONE


LPDDU Well No. 26
Formation Density-
Gamma Ray Log Section
Gallup Formation
1700
Top of Gallup
Perforations 1762' to 1802'
1800
Base of Gallup
1900

RECOMMENDED PROCEDURE FOR WORKOVER ON
LONE PINE UNIT #26

(1) MIRU PU.

(2) Unseat tbg and tally out of hole.

(3) RIH w/2 7/8 tbg and squeeze Dakota "D" zone (2774-80') below Mod "D" Packer @ 2725' w/100 sxs Class "A" Cement.

(4) Pull up 4 jts and spot 120' cement on Mod "D", then reverse out remaining cement.

(5) Pull 2 7/8 tbg.

(6) Run CCL & CBL from PBTD to top of cement in 5 1/2 by 8 5/8 Annulus.

(7) Perforate 5 1/2 csg @ top of cement and squeeze w/50 sxs cement under fullbore packer set 100' above perforations.

(8) Shut-in and WOC.

(9) Pull tbg and treating packer.

(10) Drill out cement.

(11) Perforate 1762' - 1802' 40' w/2 JSPF.

(12) Run 2 7/8 tbg and land bottom @ 1700'±.

(13) Hookup to line and start injection.

CORE LABORATORIES, INC.
Petroleum Reserve Engineering
DALLAS, TEXAS

WATER ANALYSIS

File IWTL-6787

Company Tenneco Oil Company Well Name Hospah No. 12 Sample No.

Formation Gallup Sand Depth Sampled From Bleader

Location Field County State

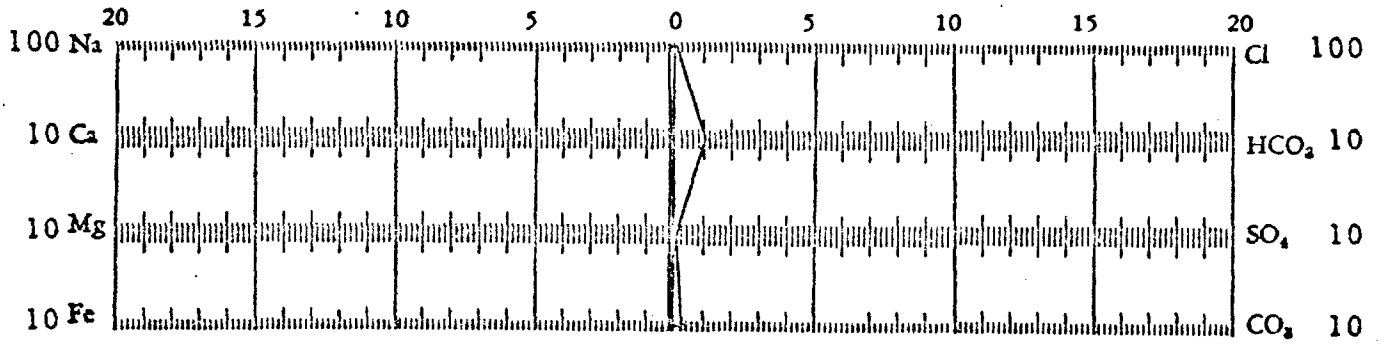
Date Sampled Date Analyzed 6/27/67 Analyst WCD

Total Dissolved Solids 1347 mg/L calculated Specific Gravity 1.0005 @ 79 °F.

Resistivity 4.200 ohm-meters @ 79 °F. measured Hydrogen Sulfide present

pH 9.15 @ 79 °F.

Constituents	meq/L	mg/L		Constituents	meq/L	mg/L	
Sodium	17.7	407		Chloride	3.81	135	
Calcium	0.44	8.8		Bicarbonate	10.49	640	
Magnesium	0.21	2.6		Sulfate	1.20	57.6	(Grav.)
Iron	0.20	5.5		Carbonate	3.03	91	
Barium	0.0	0.0	(Grav.)	Hydroxide	0.0	0.0	



Scale: meq/L

* All analyses except iron determination performed on a filtered sample.

TRETOLITE DIVISION

200 South Puente Street / Brea, California 92621

WATER ANALYSIS REPORT

SAMPLE

Company Tenneco Oil Company — Sample Test No. 24

Address Suite 1200 Lincoln Tower Building — Sample Date 11-13-70

Sample Taken from S.F.P.R.R. #4 — Submitted by Stan Jones

Field Hospah

Produced Sample-Res. 8.5 ohms @ 55F. & 4.9 ohms @ 100 F.

ANALYSIS Dakota "D"

		Mg/L	Equiv. Wt.	* Meq/L	
1.	pH 8.6				
2.	Hydrogen Sulfide 500m				
3.	Specific Gravity 1.000				
4.	Temperature 72 °F				
5.	Phenolphthalein Alkalinity (as $CaCO_3$)	-0-			
6.	Methyl Orange Alkalinity (as $CaCO_3$)	440			
7.	Bicarbonate (as HCO_3)	546	÷ 61 =	9	HCO_3
8.	Sulfate (as SO_4)	0	÷ 48 =	0	SO_4
9.	Chloride (as Cl)	134	÷ 35.5 =	4	Cl
10.	Calcium (as Ca)	18	÷ 20 =	1	Ca
11.	Magnesium (as Mg)	24	÷ 12.2 =	2	Mg
12.	Total Hardness (as $CaCO_3$)	142			
13.	Total Iron (as Fe)	-0-			
14.	Barium	-0-			
15.	Dissolved solids				
16.	Suspended Solids				
17.					

* Milli equivalants per liter

PROBABLE MINERAL COMPOSITION

* Meq Cations		* Meq Anions	
1	Ca	9	HCO_3
2	Mg	0	SO_4
10	Na	4	Cl

Compound	Equiv. Wt.	X *Meq/L	= Mg/L
$Ca(HCO_3)_2$	81.04	1	81
$CaSO_4$	68.07		
CaCl	55.50		
$Mg(HCO_3)_2$	73.17	2	146
$MgSO_4$	60.19		
$MgCl_2$	47.62		
$NaHCO_3$	84.00	6	504
Na_2SO_4	71.03		
NaCl	58.46	4	234

Saturation Values in Distilled Waters at 20 °C

$CaCO_3$	13 Mg/l
$CaSO_4 \cdot 2H_2O$	2,090 Mg/l
$MgCO_3$	103 Mg/l

REMARKS

cc: Schnorr

Respectfully Submitted Floyd A. Collier — Date 11-13-70

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