

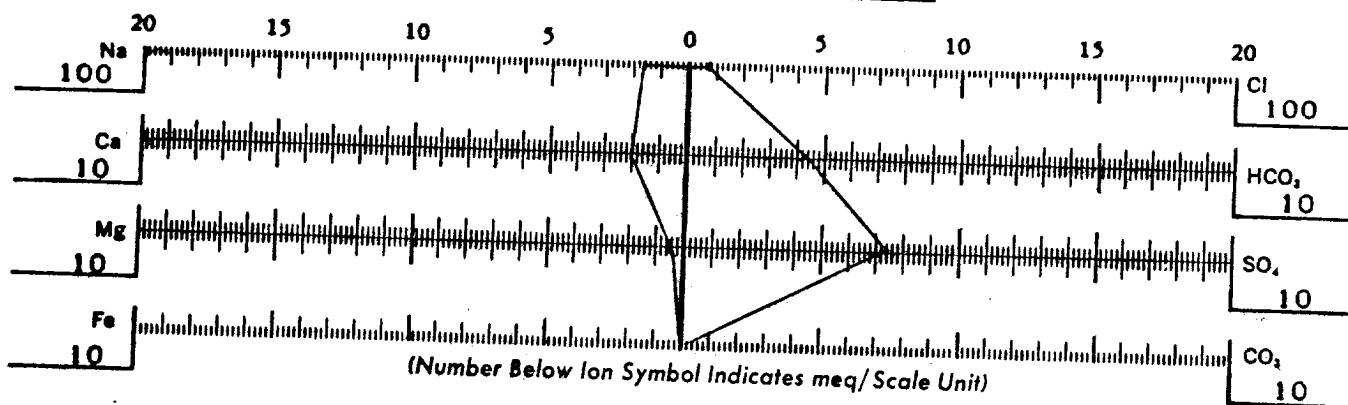
PRODUCTION PROFITS
DIVISION OF SONICS INTERNATIONAL, INC.
Petroleum Service Laboratory
DALLAS, TEXAS

Client Southern Union Production Company County _____ State New Mexico
Field _____ Lease San Ysidro No. 4 Well No. _____
Formation Aqua Zarca Zone Depth 2260-2280 ft. Perf. _____
Source of Sample _____
Date Collected Rec: 3-6-72 by _____

REPORT OF WATER ANALYSIS

Lab. Number P-3483 Specific Gravity 1.0105 pH 7.3
Total Dissolved Solids 13227 Resistivity (Ohmmeters at 68° F.) .619 Hydrogen Sulfide ABSENT

DISSOLVED MINERAL ANALYSIS PATTERN



DISSOLVED SOLIDS ANALYSIS

	mg/l	meq/l
Total Solids (Calc.)	<u>13227</u>	
Sodium (Calc.)	<u>3830</u>	<u>166.4</u>
Iron (Dissolved)	<u>19</u>	<u>.7</u>
Barium	<u>-</u>	<u>-</u>
Calcium	<u>425</u>	<u>21.2</u>
Magnesium	<u>63</u>	<u>5.2</u>
Chloride	<u>2700</u>	<u>76.1</u>
Bicarbonate	<u>2590</u>	<u>42.5</u>
Carbonate	<u>0</u>	<u>0.</u>
Sulfate	<u>3600</u>	<u>74.9</u>

TOTAL IRON

SOLUBILITY CALCULATIONS

Calcium Carbonate Stability Index at 77° F
Calcium Sulfate Stability at 95° F
Concentration 21.2 meq/l.
Barium Sulfate Stability at 95° F
Concentration _____ meq/l.

REMARKS

PRECIPITATED AND SUSPENDED SOLIDS ANALYSIS

	mg/l
Total Undissolved Solids	_____
Oil (Solvent Soluble)	_____
Acid Solubles	_____
Iron	<u>as</u>
Calcium	<u>as</u>
Magnesium	<u>as</u>
Sulfate	<u>as</u>
Organic (Ignition Loss)	_____
Acid Insolubles	_____
Sand & Clay	_____
Barium Sulfate	_____
(Quan.)	_____
(Qual.)	_____

1.26 Scaling Tendency P0S.
Calc. Solubility 29.24 meq/l. Percent Saturation 72.50
Calc. Solubility _____ meq/l. Percent Saturation _____

CORE ANALYSIS RESULTS

Company SOUTHERN UNION PRODUCTION CO. Formation CHINLE SHALE File RP-3-2531
 Well # 4 SAN YSIDRO Core Type DIA. CONV. 3 1/2" Date Report 2-15-72
 Field UNNAMED Drilling Fluid WATER BASE MUD Analysts MOHL
 County SANDOVAL State N.MEX. Elev. Location Sec 20 - T 15N - R 1E

Lithological Abbreviations

SAND - SD SHALE - SH DOLOMITE - DOL ANHYDRITE - ANHY FINE - FN CRYSTALLINE - XLN BROWN - BRN FRACTURED - FRAC SLIGHTLY - SL/
 SHALE - SH CHERT - CH CONGLOMERATE - CONG SANDY - SDY MEDIUM - MED GRAIN - GRN GRAY - GY LAMINATION - LAM VERY - V/
 LIME - LM GYPSUM - GYP FOSSILIFEROUS - FOSS LIMY - LM COARSE - CSE GRANULAR - GRNL VUGGY - VGY STYLOLITIC - STY WITH - W/

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
1	2191-92	*	19.3	0.0	92.4	SH, GRY
2	2192-93	*	16.2	0.0	96.1	SH, RED-GRY
3	2193-94	*	15.6	0.0	92.9	SH, RED-GRY
4	2194-95	*	12.1	0.0	94.2	SH, RED-GRY
5	2195-96	*	14.8	0.0	94.5	SH, RED-GRY
6	2208-09	*	19.9	0.0	88.9	SH, RED
7	2209-10	*	15.9	0.0	90.5	SH, RED
8	2210-11	*	13.0	0.0	95.2	SH, RED
9	2211-12	*	15.1	0.0	95.4	SH, RED
10	2212-13	*	13.7	0.0	96.2	SH, RED
11	2213-14	*	15.7	0.0	95.5	SH, RED
12	2214-15	*	13.6	0.0	94.1	SH, RED
13	2215-16	*	14.7	0.0	92.5	SH, RED
14	2216-17	*	14.5	0.0	95.9	SH, RED
15	2217-18	*	14.8	0.0	94.5	SH, RED
16	2218-19	*	13.9	0.0	92.1	SH, RED
17	2219-20	*	14.2	0.0	95.7	SH, RED
18	2220-21	*	13.6	0.0	96.2	SH, GRY
19	2221-22	*	14.1	0.0	96.4	SH, GRY
20	2222-23	*	13.7	0.0	95.6	SH, GRY
21	2223-24	*	12.9	0.0	93.1	SH, GRY
22	2224-25	*	10.4	0.0	92.2	SH, GRN
23	2225-26	0.02	7.2	0.0	93.0	SH, RED, SDY
24	2226-27	0.01	1.6	0.0	75.0	SH, RED, SDY, SL CALC
25	2227-28	0.01	2.8	0.0	85.6	SH, RED, SDY, SL CALC
26	2228-29	0.01	2.0	0.0	60.0	SD, GRY, VFN, V/SHLY, SL CALC
27	2229-30	0.02	4.6	0.0	91.2	SD, GRY, VFN, V/SHLY, SL CALC
28	2230-31	*	11.2	0.0	96.4	SH, RED
29	2231-32	*	10.9	0.0	95.2	SH, RED
30	2232-33	*	10.8	0.0	92.6	SH, RED
31	2233-34	*	12.8	0.0	94.6	SH, RED
32	2234-35	*	12.3	0.0	95.1	SH, RED
33	2235-36	*	13.0	0.0	93.9	SH, RED
34	2236-37	*	12.8	0.0	97.7	SH, RED
35	2237-38	*	13.1	0.0	96.8	SH, RED
36	2238-39	*	13.2	0.0	92.5	SH, RED
37	2239-40	*	12.4	0.0	96.0	SH, RED
38	2240-41	*	12.5	0.0	94.4	SH, RED

* UNABLE TO OBTAIN PERMEABILITY SAMPLES IN THESE INTERVALS

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Petroleum Reservoir Engineering
DALLAS, TEXAS

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CORE ANALYSIS RESULTS

Company SOUTHERN UNION PRODUCTION CO. Formation BASAL AQUA ZARCA File RP-3-2531
Well # 4 SAN YSIDRO Core Type DIA. CONV. 3 1/2" Date Report 2-15-72
Field WILDCAT Drilling Fluid WATER BASE MUD Analysts MOHL
County SANDOVAL State N. MEX. Elev. Location SEC 20 - T 15N - R 1E

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
39	2397-98	0.30**	3.1	0.0	54.8	SH, GRY
40	2398-99	0.01	3.3	0.0	81.9	SH, GRY
41	2399-00	0.01	3.7	0.0	75.7	SH, GRY
42	2400-01	0.02	4.4	0.0	65.9	SH, RED
43	2401-02	0.01	2.9	0.0	79.4	SH, RED
44	2402-03	0.01	3.2	0.0	65.6	SH, RED
45	2403-04	0.02	3.8	0.0	79.0	SH, RED
46	2404-05	0.01	2.4	0.0	70.8	SH, RED
47	2405-06	0.01	2.7	0.0	77.7	SH, RED
48	2406-07	0.01	3.3	0.0	78.8	SH, RED
49	2407-08	0.02	4.2	0.0	71.6	SH, RED
50	2408-09	0.02	4.0	0.0	72.4	SH, RED
51	2409-10	0.01	3.9	0.0	77.0	SH, RED
52	2410-11	0.01	3.1	0.0	80.6	SH, RED
53	2411-12	0.01	3.5	0.0	71.5	SH, RED
54	2412-13	0.01	3.6	0.0	72.2	SH, RED
55	2413-14	0.01	3.3	0.0	63.7	SH, RED
56	2414-15	<0.01	3.2	0.0	71.9	SH, RED
57	2415-16	0.01	4.8	0.0	83.3	SH, RED
58	2416-17	<0.01	2.2	0.0	68.2	SH, RED
59	2417-18	0.01	3.0	0.0	70.0	SH, RED
60	2418-19	0.01	3.0	0.0	70.0	SH, RED
61	2419-20	0.01	3.0	0.0	70.0	SH, RED
62	2420-21	<0.01	4.8	0.0	83.3	SH, RED
63	2421-22	0.01	4.7	0.0	70.3	SH, RED, W/VFN SD
64	2422-23	0.02	5.9	0.0	74.6	SH, RED, W/VFN SD
65	2423-24	0.01	5.1	0.0	80.4	SH, RED, W/VFN SD
66	2424-25	0.02	6.6	0.0	72.7	SH, RED, W/VFN SD
67	2425-26	0.02	6.8	0.0	76.5	SH, RED, W/VFN SD
68	2426-27	0.01	7.1	0.0	78.8	SH, RED, W/VFN SD
69	2427-28	0.02	7.3	0.0	79.5	SH, RED, W/VFN SD
70	2428-29	<0.01	3.2	0.0	53.2	SH, RED, W/VFN SD
71	2429-30	0.01	5.7	0.0	73.6	SH, RED, W/VFN SD
72	2430-31	0.01	6.9	0.0	72.4	SH, RED, W/VFN SD
73	2431-32	0.02	8.1	0.0	72.8	SH, RED, W/VFN SD
74	2432-33	0.01	4.4	0.0	75.0	SH, RED, W/VFN SD
75	2433-34	0.01	6.1	0.0	80.4	SH, RED, W/VFN SD

** DENOTES FRACTURE PERMEABILITY

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Petroleum Reservoir Engineering

DALLAS, TEXAS

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				OIL	TOTAL WATER	
76	2434-35	0.01	5.7	0.0	71.9	SH, RED, W/VFN SD
77	2435-36	0.01	6.5	0.0	75.4	SH, RED, W/VFN SD
78	2436-37	0.01	6.2	0.0	79.0	SH, RED, W/VFN SD
79	2437-38	0.01	7.4	0.0	81.1	SH, RED, W/VFN SD
80	2438-39	0.01	7.9	0.0	77.2	SH, RED, W/VFN SD
81	2439-40	0.01	7.1	0.0	73.2	SH, RED, W/VFN SD
82	2440-41	0.01	7.5	0.0	76.0	SH, RED, W/VFN SD
83	2441-42	0.01	5.6	0.0	73.3	SH, RED, W/VFN SD
84	2442-43	0.01	6.9	0.0	75.4	SH, RED, W/VFN SD
85	2443-44	0.01	5.1	0.0	72.5	SH, RED, W/VFN SD