

Permian Treating Chemicals

WATER ANALYSIS REPORT

SAMPLE

Oil Co. :
Lease : CW Trainer
Well No.: Morse #1
Salesman:

Sample Loc. :
Date Analyzed: 04-January-1996
Date Sampled :

ANALYSIS

1. pH 7.280
2. Specific Gravity 60/60 F. 1.028
3. CaCO₃ Saturation Index @ 80 F. +0.094
@ 140 F. +1.064

Dissolved Gasses

4. Hydrogen Sulfide
5. Carbon Dioxide
6. Dissolved Oxygen

Not Present
Not Determined
Not Determined

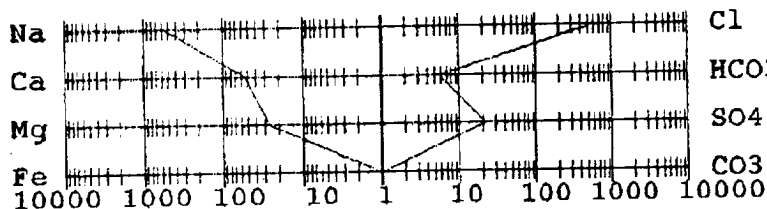
Cations

7. Calcium (Ca ⁺⁺)	1,002	/ 20.1 =	49.85
8. Magnesium (Mg ⁺⁺)	304	/ 12.2 =	24.92
9. Sodium (Na ⁺)	11,869	/ 23.0 =	516.04
10. Barium (Ba ⁺⁺)	(Calculated) Not Determined		

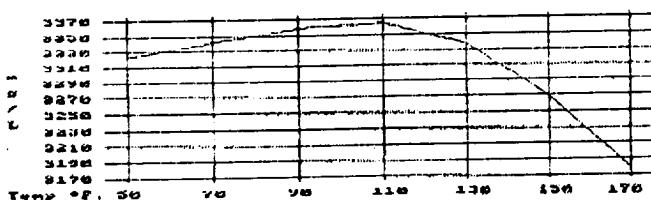
Anions

11. Hydroxyl (OH ⁻)	0	/ 17.0 =	0.00
12. Carbonate (CO ₃ ²⁻)	0	/ 30.0 =	0.00
13. Bicarbonate (HCO ₃ ⁻)	332	/ 61.1 =	5.43
14. Sulfate (SO ₄ ²⁻)	1,050	/ 48.8 =	21.52
15. Chloride (Cl ⁻)	19,995	/ 35.5 =	563.24
16. Total Dissolved Solids	34,552		
17. Total Iron (Fe)	4	/ 18.2 =	0.19
18. Total Hardness As CaCO ₃	3,753		
19. Resistivity @ 75 F. (Calculated)	0.235 /cm.		

LOGARITHMIC WATER PATTERN *meq/L.



Calcium Sulfate Solubility Profile



COMPOUND	EQ. WT.	X	*meq/L = mg/L.
Ca(HCO ₃) ₂	81.04	5.43	440
CaSO ₄	68.07	21.52	1,465
CaCl ₂	55.50	22.90	1,271
Mg(HCO ₃) ₂	73.17	0.00	0
MgSO ₄	60.19	0.00	0
MgCl ₂	47.62	24.92	1,187
NaHCO ₃	84.00	0.00	0
NaSO ₄	71.03	0.00	0
NaCl	58.46	515.42	30,131

*Milli Equivalents per Liter

This water is mildly corrosive due to the pH observed on analysis.
The corrosivity is increased by the content of mineral salts in solution.

EXHIBIT "E"

