

Permian Treating Chemicals

WATER ANALYSIS REPORT

SAMPLE

Oil Co. : Stevens & Tull
Lease : Federal 24
Well No. : # 1
Salesman :

Sample Loc. :
Date Analyzed: 22-September-1997
Date Sampled :

ANALYSIS

1. pH 5.860
2. Specific Gravity 60/60 F. 1.126
3. CaCO₃ Saturation Index @ 80 F. +0.283
@ 140 F. +1.383

Dissolved Gasses

MG/L EQ. WT. *MEQ/L

4. Hydrogen Sulfide Not Present
5. Carbon Dioxide Not Determined
6. Dissolved Oxygen Not Determined

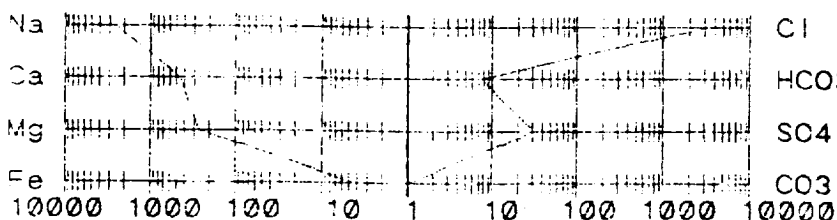
Cations

7. Calcium (Ca⁺⁺) 8,503 / 20.1 = 423.02
8. Magnesium (Mg⁺⁺) 3,108 / 12.2 = 254.75
9. Sodium (Na⁺) (Calculated) 57,842 / 23.0 = 2,514.87
10. Barium (Ba⁺⁺) Not Determined

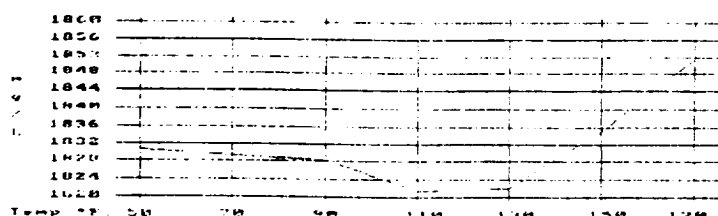
Anions

11. Hydroxyl (OH⁻) 0 / 17.0 = 0.00
12. Carbonate (CO₃⁼) 0 / 30.0 = 0.00
13. Bicarbonate (HCO₃⁻) 449 / 61.1 = 7.35
14. Sulfate (SO₄⁼) 1,450 / 48.0 = 29.71
15. Chloride (Cl⁻) 111,975 / 35.5 = 3,154.23
16. Total Dissolved Solids 183,327
17. Total Iron (Fe) 74 / 18.2 = 4.07
18. Total Hardness As CaCO₃ 34,030
19. Resistivity @ 75 F. (Calculated) 0.010 /cm.

LOGARITHMIC WATER PATTERN *meq/L.



Calcium Sulfate Solubility Profile



PROBABLE MINERAL COMPOSITION COMPOUND EQ. WT. X *meq/L = mg/L.

Cl	Ca(HCO ₃) ₂	81.04	7.35	596
HCO ₃	CaSO ₄	68.07	29.71	2,023
SO ₄	CaCl ₂	55.50	385.97	21,422
CO ₃	Mg(HCO ₃) ₂	73.17	0.00	0
	MgSO ₄	60.13	0.00	0
	MgCl ₂	47.60	254.75	12,131
	NaHCO ₃	84.00	0.00	0
	NaSO ₄	71.00	0.00	0
	NaCl	58.46	2,513.50	146,939

*Milli Equivalents per Liter

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