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BUREAU OF LAND MGMT.
CARLSBAD RESOURCE AREA

Water Analysis Report by Baker Petrolite

ARCO PERMIAN
BARBER UNIT
BATTERY
WATER TANK

Account Manager
RON MATTHEWS

Summary		Analysis of Sample 108008 @ 75°F					
Sampling Date	3/1/00	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date	3/14/00	Chloride	21433	605	Sodium	11210	488
Analyst	JOANNA RAGAN	Bicarbonate	110	1.80	Magnesium	918	75.5
		Carbonate	0.00	0.00	Calcium	1904	95.0
TDS (mg/l or g/m³)	39132	Sulfate	3075	64.0	Strontium	36.0	0.82
Density (g/cm³ or tonne/m³)	1.031	Phosphate	N/A	N/A	Barium	0.05	0.00
Anion/Cation Ratio	1.00	Borate	N/A	N/A	Iron	0.70	0.03
		Silicate	N/A	N/A	Potassium	445	11.4
Carbon Dioxide	60 PPM	Hydrogen Sulfide		80 PPM	Aluminum	N/A	N/A
Oxygen					Chromium	N/A	N/A
					Copper	N/A	N/A
		pH at time of sampling		6.60	Lead	N/A	N/A
		pH at time of analysis			Manganese	N/A	N/A
		pH used in Calculations		6.60	Nickel	N/A	N/A

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000bbl							
Temp.	Gauge Press.	Calcite CaCO ₃	Gypsum CaSO ₄ · 2H ₂ O	Anhydrite CaSO ₄	Celestite SrSO ₄	Barite BaSO ₄	CO ₂ Press.		
°F	psi	Index Amount	Index Amount	Index Amount	Index Amount	Index Amount	Index Amount	psi	
80	0.	-0.37	0.05 151	-0.00	0.09 4.84	0.36 0.02			0.25
100	0.	-0.25	0.03 85.7	0.04 95.1	0.09 4.85	0.20 0.01			0.32
120	0.	-0.13	0.02 52.1	0.11 238	0.10 5.38	0.06 0.00			0.40
140	0.	-0.00	0.02 45.8	0.20 404	0.12 6.30	-0.05			0.48

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.