

Water Analysis Report by Baker Petrolite

Company:	EL PASO E & P	Sales RDT:	44625
Region:	ROCKY MOUNTAINS	Account Manager:	TY CLINESMITH (575) 447-0621
Area:	RATON, NM	Sample #:	48998
Lease/Platform:	VERMEJO PARK RANCH 'E'	Analysis ID #:	113129
Entity (or well #):	19	Analysis Cost:	\$90.00
Formation:	UNKNOWN		
Sample Point:	WELLHEAD		

Summary		Analysis of Sample 48998 @ 75 °F					
Sampling Date:	09/21/11	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	10/07/11	Chloride:	41.0	1.16	Sodium:	493.7	21.48
Analyst:	SANDRA GOMEZ	Bicarbonate:	1281.0	20.99	Magnesium:	3.0	0.25
		Carbonate:	0.0	0.	Calcium:	4.5	0.22
TDS (mg/l or g/m3):	1835.9	Sulfate:	3.0	0.06	Strontium:	0.7	0.02
Density (g/cm3, tonne/m3):	1.001	Phosphate:			Barium:	0.3	0.
Anion/Cation Ratio:	0.9999990	Borate:			Iron:	2.0	0.07
		Silicate:			Potassium:	6.5	0.17
Carbon Dioxide:		Hydrogen Sulfide:			Aluminum:		
Oxygen:					Chromium:		
Comments:		pH at time of sampling:		8	Copper:		
		pH at time of analysis:			Lead:		
		pH used in Calculation:		8	Manganese:	0.200	0.01
					Nickel:		

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000 bbl										
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	psi
80	0	0.14	1.05	-4.43	0.00	-4.50	0.00	-3.49	0.00	-0.77	0.00	0.18
100	0	0.22	1.40	-4.44	0.00	-4.45	0.00	-3.47	0.00	-0.90	0.00	0.26
120	0	0.32	1.75	-4.45	0.00	-4.37	0.00	-3.43	0.00	-1.01	0.00	0.35
140	0	0.41	2.45	-4.44	0.00	-4.28	0.00	-3.39	0.00	-1.09	0.00	0.47

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

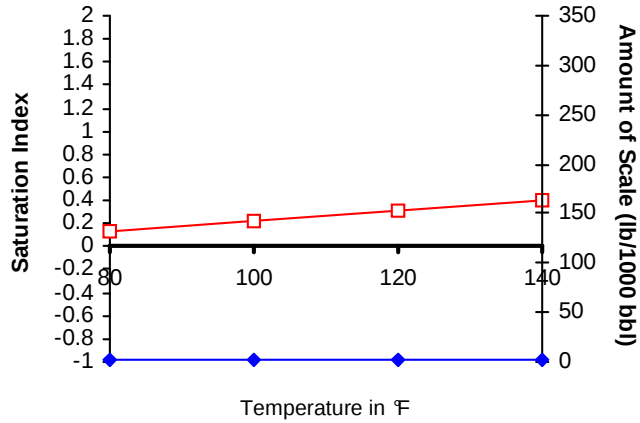
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

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

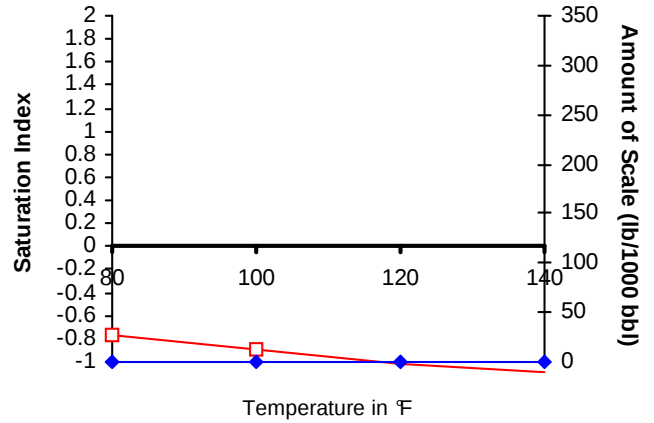
Scale Predictions from Baker Petrolite

Analysis of Sample 48998 @ 75 °F for EL PASO E & P, 10/07/11

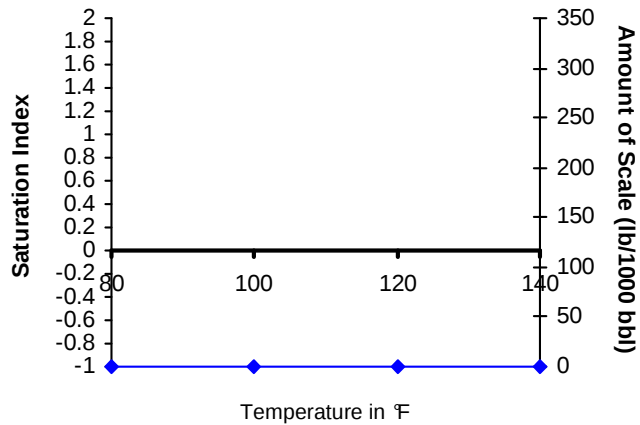
Calcite - CaCO_3



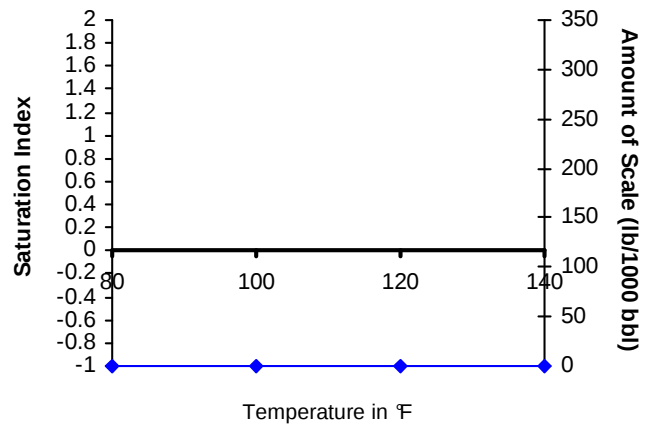
Barite - BaSO_4



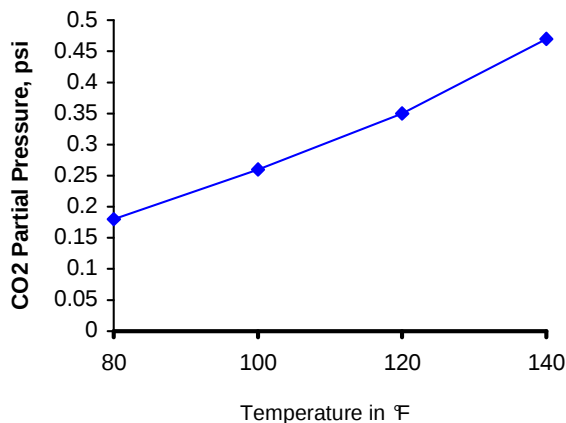
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4

