

Rocky Mountain Region
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30-045-24333

Water Analysis Report by Baker Petrolite

Company:	CONOCO - PHILLIPS PETROLEUM CO	Sales RDT:	44211
Region:	ROCKY MOUNTAINS	Account Manager:	CRAIG SMITH (505) 330-3224
Area:	FARMINGTON, NM	Sample #:	204724
Lease/Platform:	LUCERNE	Analysis ID #:	35997
Entity (or well #):	1 E	Analysis Cost:	\$40.00
Formation:	UNKNOWN		
Sample Point:	CASING HEAD		

Summary		Analysis of Sample 204724 @ 75 °F					
Sampling Date:	7/2/03	Anions	mg/l	meq/l	Cations	mg/l	meq/l
Analysis Date:	7/10/03	Chloride:	173.0	4.88	Sodium:	1135.4	49.39
Analyst:	ANNA McELANEY	Bicarbonate:	364.0	5.97	Magnesium:	4.5	0.37
TDS (mg/l or g/m3):	4675	Carbonate:	258.0	8.6	Calcium:	353.0	17.61
Density (g/cm3, tonne/m3):	1.004	Sulfate:	2353.0	48.99	Strontium:	1.5	0.03
Anion/Cation Ratio:	0.9999999	Phosphate:			Barium:	0.6	0.01
Carbon Dioxide:		Borate:			Iron:	19.0	0.69
Oxygen:		Silicate:			Potassium:	13.0	0.33
Comments:		Hydrogen Sulfide:			Aluminum:		
		pH at time of sampling:			Chromium:		
		pH at time of analysis:		10	Copper:		
		pH used in Calculation:		10	Lead:		
					Manganese:		
					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	2.72	243.51	-0.32	0.00	-0.39	0.00	-0.99	0.00	1.80	0.35	0
100	0	2.72	244.21	-0.33	0.00	-0.33	0.00	-0.97	0.00	1.66	0.35	0
120	0	2.74	245.26	-0.32	0.00	-0.24	0.00	-0.94	0.00	1.54	0.35	0
140	0	2.76	246.65	-0.29	0.00	-0.12	0.00	-0.91	0.00	1.45	0.35	0

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

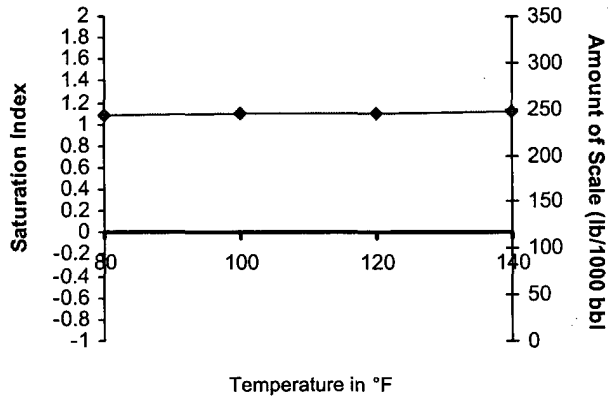
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

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

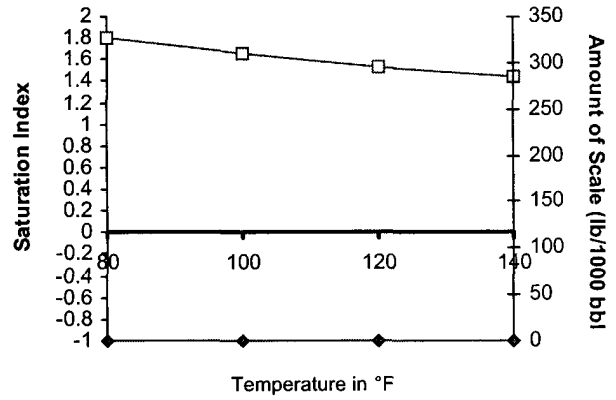
Scale Predictions from Baker Petrolite

Analysis of Sample 204724 @ 75 °F for CONOCO - PHILLIPS PETROLEUM CO, 7/10/03

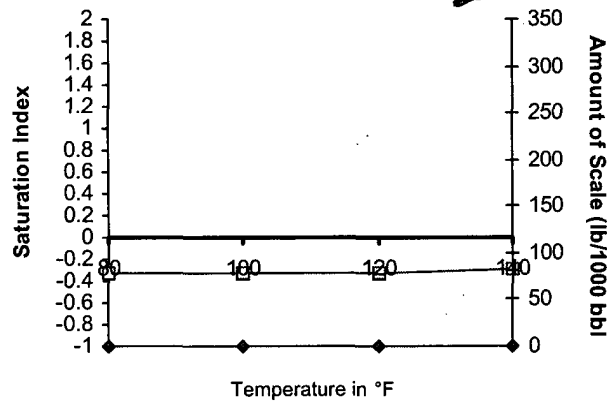
Calcite - CaCO_3



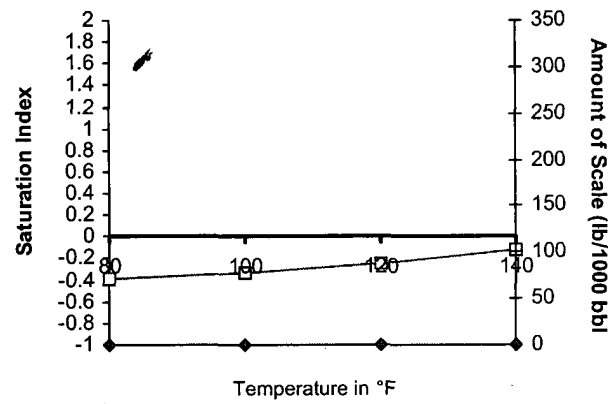
Barite - BaSO_4



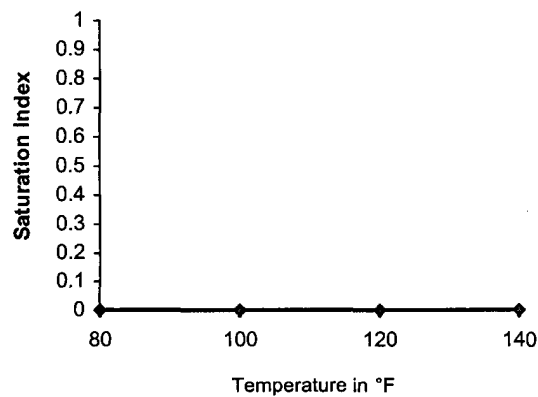
Gypsum - $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$



Anhydrite - CaSO_4



Carbon Dioxide Partial Pressure



Celestite - SrSO_4

