



Oilfield Labs of America
3302 Pilot Ave.
Midland, Texas 79706
432-789-1860

30-015-43979

Report Date: 7/9/2018

Complete Water Analysis

Customer:	Solaris Water Midstream	Account Rep:	Jim Docherty
Operator:	Solaris	Sample ID:	01180705053
Lease:	Solaris Lobo State 285 SWD 1	Sample Date:	7/3/2018
Sample Point:	Devonian Formation Water	Received Date:	7/5/2018
Region:	Permian	Log Out Date:	7/9/2018

Solaris Water Midstream, Solaris, Solaris Lobo State 285 SWD 1, Devonian Formation Water

Field Data		Analysis of Sample					
		Anions:		mg/L		meq/L	
Initial Temperature (°F):	190	Chloride (Cl ⁻):	41800	1179.1	Sodium (Na ⁺):	21461	933.9
Final Temperature (°F):	80	Sulfate (SO ₄ ²⁻):	4080	84.9	Potassium (K ⁺):	1433	36.6
Initial Pressure (psi):	1250	Borate (H ₃ BO ₃):	36.9	0.6	Magnesium (Mg ²⁺):	575	47.3
Final Pressure (psi):	15	Silica (SiO ₂):	63.4	1.1	Calcium (Ca ²⁺):	1719	85.8
Sample Specifics							
pH:	6.7	Phosphate (PO ₄ ³⁻):		0.8	0.0	Strontium (Sr ²⁺):	64.0
						Barium (Ba ²⁺):	10.2
						Iron (Fe ²⁺):	93.5
						Manganese (Mn ²⁺):	3.8
						Lead (Pb ²⁺):	ND
						Zinc (Zn ²⁺):	0.3
						Lithium (Li ⁺):	3.8
						Aluminum (Al ³⁺):	1.1
						Total Hardness (CaCO ₃):	6739
Alkalinity by Titration:							
Bicarbonate (HCO ₃ ⁻):	522						
Carbonate (CO ₃ ²⁻):	0.0						
Hydroxide (OH ⁻):	ND						
aqueous CO ₂ (ppm):	163						
aqueous H ₂ S (ppm):	6.6						
Calculated TDS (mg/L):	71862						
Calculated Density (g/cm ³):	1.0450						
Resistivity (Ωcm):	N/A						
Conductivity (mS/cm):	N/A						
Turbidity (NTU):	N/A						
		Anion EPM Total:		1273		Cation EPM Total:	1109
N/A - Not Applicable		% RPD of Cations/Anions:		13.8%		ND = Not Detected	

Conditions		Barite (BaSO ₄)		Calcite (CaCO ₃)		Gypsum (CaSO ₄ ·2H ₂ O)		Anhydrite (CaSO ₄)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	2.38	6.029	0.66	68.576	0.00	9.220	-0.21	0.000
92°F	152 psi	2.28	6.023	0.57	60.623	0.00	7.874	-0.16	0.000
104°F	289 psi	2.19	6.015	0.65	67.685	0.00	9.953	-0.11	0.000
117°F	427 psi	2.11	6.007	0.73	74.192	0.01	16.274	-0.06	0.000
129°F	564 psi	2.03	5.998	0.81	80.183	0.01	27.059	0.00	5.858
141°F	701 psi	1.97	5.989	0.89	85.697	0.01	42.198	0.07	146.767
153°F	838 psi	1.91	5.979	0.97	90.775	0.02	61.376	0.13	284.136
166°F	976 psi	1.85	5.969	1.05	95.452	0.03	84.148	0.20	416.728
178°F	1113 psi	1.81	5.960	1.13	99.765	0.04	109.988	0.27	543.557
190°F	1250 psi	1.76	5.950	1.21	103.746	0.05	138.317	0.34	663.882

Conditions		Celestite (SrSO ₄)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate (FeCO ₃)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	0.27	21.387	-1.90	0.000	2.70	11.456	1.08	53.747
92°F	152 psi	0.26	21.141	-1.91	0.000	2.47	11.428	1.02	52.163
104°F	289 psi	0.26	21.012	-1.92	0.000	2.50	11.434	1.13	55.049
117°F	427 psi	0.26	21.021	-1.93	0.000	2.53	11.440	1.24	57.363
129°F	564 psi	0.26	21.183	-1.94	0.000	2.57	11.445	1.34	59.212
141°F	701 psi	0.27	21.504	-1.94	0.000	2.61	11.450	1.43	60.686
153°F	838 psi	0.28	21.988	-1.95	0.000	2.65	11.455	1.52	61.862
166°F	976 psi	0.29	22.628	-1.95	0.000	2.69	11.459	1.60	62.803
178°F	1113 psi	0.30	23.414	-1.95	0.000	2.74	11.463	1.68	63.559
190°F	1250 psi	0.32	24.329	-1.95	0.000	2.79	11.467	1.75	64.168

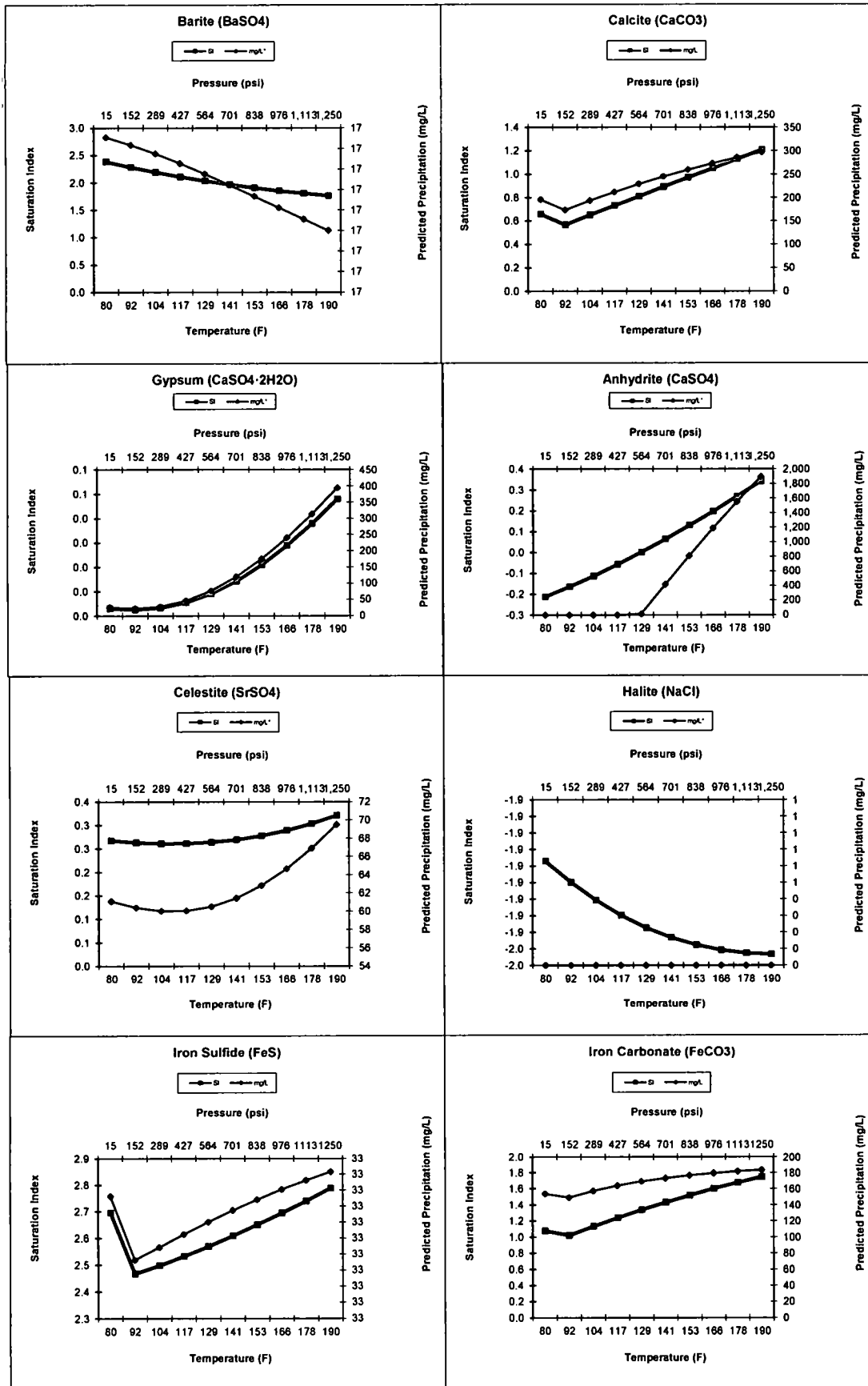
Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

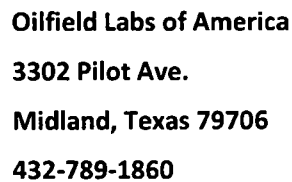
Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales

Note 3: Saturation index predictions on this sheet use pH and alkalinity. %CO₂ is not included in the calculations.



Comments:





Report Date: 7/9/2018

Total Oil and Grease (TOG) Report

[illegible]