



DownHole SAT(tm)

FORMATION WATER CHEMISTRY INPUT

POG Resources
Juice
Wellhead

Pro-Stim Chemicals
Paul Dwyer & Ryan Uhland

Report Date: 03-06-2018 Sampled: 02-28-2018 at 1711
Sample #: 2947 Sample ID: WBaten

CATIONS

Calcium (as Ca)	2960
Magnesium (as Mg)	219.00
Barium (as Ba)	0.00
Strontium (as Sr)	0.00
Sodium (as Na)	39997
Potassium (as K)	0.00
Lithium (as Li)	0.00
Ammonia (as NH ₃)	0.00
Aluminum (as Al)	0.00
Iron (as Fe)	11.50
Manganese (as Mn)	0.290
Zinc (as Zn)	0.00
Lead (as Pb)	0.00

ANIONS

Chloride (as Cl)	66000
Sulfate (as SO ₄)	2200
Bromine (as Br)	0.00
Dissolved CO ₂ (as CO ₂)	130.00
Bicarbonate (as HCO ₃)	300.00
Carbonate (as CO ₃)	0.00
Oxalic acid (as C ₂ O ₄)	0.00
Silica (as SiO ₂)	0.00
Phosphate(as PO ₄)	0.00
H ₂ S (as H ₂ S)	0.00
Fluoride (as F)	0.00
Nitrate (as NO ₃)	0.00
Boron (as B)	0.00

PARAMETERS

Calculated T.D.S.	109529
Molar Conductivity	156531
Resistivity	6.39
Sp.Gr.(g/mL)	1.07
Pressure(psia)	14.70
pCO ₂ (psia)	0.00744
pH ₂ S(atm)	0.00
Temperature (°F)	74.00
pH	7.45

CORROSION RATE PREDICTION

CO ₂ - H ₂ S Rate(mpy)	0.00437
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COMMENTS All anions & cations are in mg/l

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FORMATION WATER DEPOSITION POTENTIAL INDICATORS

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SATURATION LEVEL

Calcite (CaCO ₃)	9.16
Aragonite (CaCO ₃)	8.52
Witherite (BaCO ₃)	0.00
Strontianite (SrCO ₃)	0.00
Calcium oxalate (CaC ₂ O ₄)	0.00
Magnesite (MgCO ₃)	0.659
Anhydrite (CaSO ₄)	0.645
Gypsum (CaSO ₄ *2H ₂ O)	0.949
Barite (BaSO ₄)	0.00
Celestite (SrSO ₄)	0.00
Fluorite (CaF ₂)	0.00
Calcium phosphate	0.00
Hydroxyapatite	0.00
Silica (SiO ₂)	0.00
Brucite (Mg(OH) ₂)	< 0.001
Magnesium silicate	0.00
Iron hydroxide (Fe(OH) ₃)	753.70
Strengite (FePO ₄ *2H ₂ O)	0.00
Siderite (FeCO ₃)	35.87
Halite (NaCl)	0.0408
Thenardite (Na ₂ SO ₄)	< 0.001
Iron sulfide (FeS)	0.00

FREE ION MOMENTARY EXCESS (ppm)

Calcite (CaCO ₃)	1.10
Aragonite (CaCO ₃)	1.09
Witherite (BaCO ₃)	-67.76
Strontianite (SrCO ₃)	-21.42
Calcium oxalate (CaC ₂ O ₄)	-0.0665
Magnesite (MgCO ₃)	-0.535
Anhydrite (CaSO ₄)	-702.43
Gypsum (CaSO ₄ *2H ₂ O)	-82.95
Barite (BaSO ₄)	-0.121
Celestite (SrSO ₄)	-193.38
Fluorite (CaF ₂)	-14.40
Calcium phosphate	>-0.001
Hydroxyapatite	-969.21
Silica (SiO ₂)	-96.28
Brucite (Mg(OH) ₂)	0.0226
Magnesium silicate	-291.04
Iron hydroxide (Fe(OH) ₃)	< 0.001
Strengite (FePO ₄ *2H ₂ O)	>-0.001
Siderite (FeCO ₃)	1.38
Halite (NaCl)	-405997
Thenardite (Na ₂ SO ₄)	-224980
Iron sulfide (FeS)	-0.109

SIMPLE INDICES

Langelier	1.35
Ryznar	4.76
Puckorius	4.18
Larson-Skold Index	373.32
Stiff Davis Index	0.675
Oddo-Tomson	0.271

BOUND IONS

	TOTAL	FREE
Calcium	2960	2715
Barium	0.00	0.00
Carbonate	29.28	0.738
Phosphate	0.00	0.00
Sulfate	2200	1123

OPERATING CONDITIONS

Temperature (°F)	74.00
Time(mins)	3.00