

# DownHole SAT™ Water Analysis Report



## SYSTEM IDENTIFICATION

Sample 1  
 Lab Tech: Ernest Jack  
 Field Tech: Joseph Bear

Sample ID#: 669  
 ID: 04201988

Sample Date: 03-20-2014 at 1436  
 Report Date: 03-20-2014

## WATER CHEMISTRY

### CATIONS

Calcium(as Ca)	6230
Magnesium(as Mg)	474.00
Barium(as Ba)	0.00
Strontium(as Sr)	67.30
Sodium(as Na)	22000
Potassium(as K)	1370
Lithium(as Li)	0.00
Iron(as Fe)	0.600
Ammonia(as NH <sub>3</sub> )	0.00
Aluminum(as Al)	0.00
Manganese(as Mn)	0.700
Zinc(as Zn)	0.00
Lead(as Pb)	0.00

### ANIONS

Chloride(as Cl)	45800
Sulfate(as SO <sub>4</sub> )	1860
Bromine(as Br)	0.00
Acidity(as CaCO <sub>3</sub> )	129.69
"M" Alkalinity(as CaCO <sub>3</sub> )	795.00
"P" Alkalinity(as CaCO <sub>3</sub> )	0.00
Silica(as SiO <sub>2</sub> )	0.00
Phosphate(as PO <sub>4</sub> )	0.00
H <sub>2</sub> S (as H <sub>2</sub> S)	0.00
Fluoride(as F)	0.00
Nitrate(as NO <sub>3</sub> )	0.00
Boron(as B)	0.00

### PARAMETERS

Temperature(°C)	20.00	Sample pH	7.45
-----------------	-------	-----------	------

## SCALE AND CORROSION POTENTIAL

Temp. (°C)	Press. (atm)	Calcite CaCO <sub>3</sub>	Anhydrite CaSO <sub>4</sub>	Gypsum CaSO <sub>4</sub> *2H <sub>2</sub> O	Barite BaSO <sub>4</sub>	Celestite SrSO <sub>4</sub>	Siderite FeCO <sub>3</sub>	Mackawenite FeS	CO <sub>2</sub> (mpy)	pCO <sub>2</sub> (atm)							
21.00	0.00	5.91	0.121	0.928	-28.53	1.46	132.39	0.00	-0.0457	0.557	-33.74	0.675	-0.0532	0.00	-0.555	0.0873	0.0655
29.09	0.00	7.61	0.147	0.930	-26.85	1.36	107.41	0.00	-0.0658	0.543	-35.50	0.965	-0.00484	0.00	-0.563	0.120	0.0655
37.18	0.00	9.50	0.173	0.975	-9.12	1.29	88.13	0.00	-0.0902	0.543	-35.39	1.33	0.0383	0.00	-0.572	0.123	0.0655
45.27	0.00	11.53	0.197	1.06	19.92	1.35	99.86	0.00	-0.119	0.548	-34.57	1.77	0.0769	0.00	-0.581	0.0818	0.0655
53.36	0.00	13.80	0.222	1.20	55.67	1.46	119.60	0.00	-0.156	0.551	-34.03	2.31	0.113	0.00	-0.591	0.0274	0.0655
61.45	0.00	16.26	0.248	1.40	93.93	1.57	135.36	0.00	-0.203	0.552	-33.80	2.96	0.147	0.00	-0.602	0.105	0.0655
69.55	0.00	18.89	0.274	1.69	131.47	1.68	148.12	0.00	-0.261	0.551	-33.87	3.71	0.178	0.00	-0.613	0.109	0.0655
77.64	0.00	21.60	0.300	2.08	166.11	1.79	158.59	0.00	-0.333	0.547	-34.21	4.57	0.207	0.00	-0.626	0.113	0.0655
85.73	0.00	24.31	0.326	2.63	196.66	1.88	167.35	0.00	-0.422	0.542	-34.82	5.50	0.232	0.00	-0.639	0.0674	0.0655
93.82	0.00	26.88	0.350	3.39	222.69	1.98	174.83	0.00	-0.531	0.535	-35.70	6.48	0.254	0.00	-0.654	0.0452	0.0655
101.91	0.0714	28.83	0.378	4.40	247.53	2.03	182.05	0.00	-0.675	0.519	-37.96	7.36	0.272	0.00	-0.676	0.0580	0.0702
110.00	0.415	30.65	0.397	5.87	266.14	2.11	187.99	0.00	-0.842	0.508	-39.56	8.22	0.283	0.00	-0.694	0.0828	0.0927
		xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels	xSAT	Lbs per 1000 Barrels		

Saturation Levels (xSAT) are the ratio of ion activity to solubility, e.g. {Ca}{CO<sub>3</sub>}/K<sub>sp</sub>. pCO<sub>2</sub> (atm) is the partial pressure of CO<sub>2</sub> in the gas phase. Lbs/1000 Barrels scale is the quantity of precipitation (or dissolution) required to instantaneously bring the water to equilibrium.

