

WATER ANALYSIS REPORT  
furnished by TRETOLITE CHEMICALS

COMPANY: ARMSTRONG ENERGY  
LEASE: GOVERNMENT (SAN ANDRES)  
SAMPLE POINT: HEATER TREATER  
SAMPLE DATE:  
SAMPLE TEMP.:

pH: 6.4  
H2S: +  
SPECIFIC GRAVITY: 1.185

TITRATED AND CALCULATED IONS

	MILLIGRAMS PER LITER	MILLIEQUIVALENTS PER LITER
HCO3	122.00	2.00
Cl	155490.00	4380.00
SO4	0.00	0.00
Ca	20000.00	1000.00
Mg	5589.00	458.11
Na	67249.36	2923.89

IONIC STRENGTH = 5.12  
TOTAL HARDNESS = 73000.0 mg/ltr.  
TOTAL DISSOLVED SOLIDS = 248296.8 mg/ltr.  
TOTAL IRON (Fe) = 1.0 ppm

PROBABLE MINERAL COMPOSITION AND ION PAIRING

	MILLIEQUIVALENTS PER LITER	MILLIGRAMS PER LITER
Ca(HCO3)2	2.00	162.08
CaSO4	0.00	0.00
CaCl2	998.00	55389.00
Mg(HCO3)2	0.00	0.00
MgSO4	0.00	0.00
MgCl2	458.11	21815.43
NaHCO3	0.00	0.00
Na2SO4	0.00	0.00
NaCl	2923.89	170930.30

CALCULATED SCALING TENDENCIES

SCALING INDEX

CaCO3 @ 80 DEG F. = 1.2  
CaCO3 @ 120 DEG F. = 1.9

SATURATION POINT

CaSO4 @ 70 DEG F. = 609.2 MG/LTR.  
CaSO4 @ 110 DEG F. = 653.9 MG/LTR.