

TRETOLITE

Chemicals and Services

PETROLITE

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WATER ANALYSIS REPORT

Company : YATES PETROLEUM
Address : ARTESIA, NEW MEXICO
Lease : FEDERAL "AR"
Well : #1
Sample Pt. : WELLHEAD

Date : 03/16/93
Date Sampled : 03/15/93
Analysis No. : 071

ANALYSIS		mg/L	* meq/L	
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1.	pH	5.1		
2.	H ₂ S	4 PPM		
3.	Specific Gravity	1.135		
4.	Total Dissolved Solids	209554.2		
5.	Suspended Solids	NR		
6.	Dissolved Oxygen	NR		
7.	Dissolved CO ₂	NR		
8.	Oil In Water	NR		
9.	Phenolphthalein Alkalinity (CaCO ₃)			
10.	Methyl Orange Alkalinity (CaCO ₃)			
11.	Bicarbonate	HCO ₃ 0.1	HCO ₃	0.0
12.	Chloride	Cl 134403.0	Cl	3791.3
13.	Sulfate	SO ₄ 3125.0	SO ₄	65.1
14.	Calcium	Ca 7800.0	Ca	389.2
15.	Magnesium	Mg 17371.2	Mg	1429.1
16.	Sodium (calculated)	Na 46854.9	Na	2038.1
17.	Iron	Fe NR		
18.	Barium	Ba NR		
19.	Strontium	Sr NR		
20.	Total Hardness (CaCO ₃)	91000.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter				Compound Equiv wt X meq/L = mg/L			
+-----+				-----			
389	*Ca <-----	*HCO3	0	Ca(HCO3)2	81.0	0.0	0
-----	/----->	-----	-----	CaSO4	68.1	65.1	4429
1429	*Mg ----->	*SO4	65	CaCl2	55.5	324.1	17987
-----	<-----/	-----	-----	Mg(HCO3)2	73.2		
2038	*Na ----->	*Cl	3791	MgSO4	60.2		
+-----+				MgCl2	47.6	1429.1	68034
Saturation Values Dist. Water 20 C				NaHCO3	84.0		
CaCO3		13 mg/L		Na2SO4	71.0		
CaSO4 * 2H2O		2090 mg/L		NaCl	58.4	2038.1	119104
BaSO4		2.4 mg/L					

REMARKS:

----- L. MALLETT / FILE

Petrolite Oilfield Chemicals Group

Respectfully submitted,
STEVE TIGERT

PETROLITE

SCALE TENDENCY REPORT -----

Company	: YATES PETROLEUM	Date	: 03/16/93
Address	: ARTESIA, NEW MEXICO	Date Sampled	: 03/15/93
Lease	: FEDERAL "AR"	Analysis No.	: 071
Well	: #1	Analyst	: STEVE TIGERT
Sample pt.	: WELLHEAD		

STABILITY INDEX CALCULATIONS (Stiff-Davis Method) CaCO3 Scaling Tendency

S.I. =	-4.0	at	60 deg. F	or	16 deg. C
S.I. =	-4.0	at	80 deg. F	or	27 deg. C
S.I. =	-4.0	at	100 deg. F	or	38 deg. C
S.I. =	-4.0	at	120 deg. F	or	49 deg. C
S.I. =	-3.9	at	140 deg. F	or	60 deg. C

CALCIUM SULFATE SCALING TENDENCY CALCULATIONS (Skillman-McDonald-Stiff Method) Calcium Sulfate

S =	1998	at	60 deg. F	or	16 deg C
S =	2205	at	80 deg. F	or	27 deg C
S =	2335	at	100 deg. F	or	38 deg C
S =	2391	at	120 deg. F	or	49 deg C
S =	2429	at	140 deg. F	or	60 deg C

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Respectfully submitted,
STEVE TIGERT