

"A"

WATER ANALYSIS REPORT

Company : GREENHILL PETROLEUM
 Address : LOVINGTON, NM
 Lease : SENE SEC 2 T17S R36E
 Well : S. A. #44
 Sample Pt. : WINDMILL

Date : 8-22-90
 Date Sampled : 8-22-90
 Analysis No. : 1

ANALYSIS		mg/L		* meq/L
-----		----		-----
1. pH	7.5			
2. H2S	0			
3. Specific Gravity	1.001			
4. Total Dissolved Solids		2222.8		
5. Suspended Solids		NR		
6. Dissolved Oxygen		NR		
7. Dissolved CO2		NR		
8. Oil In Water		NR		
9. Phenolphthalein Alkalinity (CaCO3)				
10. Methyl Orange Alkalinity (CaCO3)				
11. Bicarbonate	HCO3	244.0	HCO3	4.0
12. Chloride	Cl	917.6	Cl	25.9
13. Sulfate	SO4	325.0	SO4	6.8
14. Calcium	Ca	720.0	Ca	35.9
15. Magnesium	Mg	0.5	Mg	0.0
16. Sodium (calculated)	Na	15.7	Na	0.7
17. Iron	Fe	0.0		
18. Barium	Ba	0.0		
19. Strontium	Sr	0.0		
20. Total Hardness (CaCO3)		1800.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter

+-----+		+-----+
36	*Ca <----- *HCO3	4
-----	/----->	-----
0	*Mg -----> *SO4	7
-----	<-----/	-----
1	*Na -----> *Cl	26
+-----+		+-----+

Saturation Values Dist. Water 20 C

CaCO3	13 mg/L
CaSO4 * 2H2O	2090 mg/L
BaSO4	2.4 mg/L

Compound Equiv wt X meq/L = mg/L

Ca(HCO3)2	81.0	4.0	324
CaSO4	68.1	6.8	461
CaCl2	55.5	25.2	1396
Mg(HCO3)2	73.2		
MgSO4	60.2		
MgCl2	47.6	0.0	2
NaHCO3	84.0		
Na2SO4	71.0		
NaCl	58.4	0.7	40

REMARKS:

Petrolite Oilfield Chemicals Group

Respectfully submitted,
 D. SWEATT

BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
GREENHILL EXHIBIT NO. 10
CASE NO. 10154

"A"

WATER ANALYSIS REPORT

Company : GREENHILL PETROLEUM
 Address : LOVINGTON, NM
 Lease : SENE SEC ~~26~~ TI6S R36E
 Well : PAD 18 ~~35~~
 Sample Pt. : WINDMILL

Date : 8-22-90
 Date Sampled : 8-22-90
 Analysis No. : 2

ANALYSIS		mg/L		* meq/L
-----		----		-----
1. pH	7.6			
2. H2S	0			
3. Specific Gravity	1.001			
4. Total Dissolved Solids		2086.2		
5. Suspended Solids		NR		
6. Dissolved Oxygen		NR		
7. Dissolved CO2		NR		
8. Oil In Water		NR		
9. Phenolphthalein Alkalinity (CaCO3)				
10. Methyl Orange Alkalinity (CaCO3)				
11. Bicarbonate	HCO3	244.0	HCO3	4.0
12. Chloride	Cl	1035.2	Cl	29.2
13. Sulfate	SO4	200.0	SO4	4.2
14. Calcium	Ca	350.0	Ca	17.5
15. Magnesium	Mg	224.9	Mg	18.5
16. Sodium (calculated)	Na	32.1	Na	1.4
17. Iron	Fe	0.0		
18. Barium	Ba	0.0		
19. Strontium	Sr	0.0		
20. Total Hardness (CaCO3)		1800.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter		Compound	Equiv wt X meq/L	=	mg/L
-----	-----	-----	-----	-----	-----
17 *Ca <----- *HCO3	4	Ca(HCO3)2	81.0	4.0	324
----- /----->	-----	CaSO4	68.1	4.2	283
19 *Mg -----> *SO4	4	CaCl2	55.5	9.3	516
----- <-----/	-----	Mg(HCO3)2	73.2		
1 *Na -----> *Cl	29	MgSO4	60.2		
-----	-----	MgCl2	47.6	18.5	881
Saturation Values Dist. Water 20 C		NaHCO3	84.0		
CaCO3 13 mg/L		Na2SO4	71.0		
CaSO4 * 2H2O 2090 mg/L		NaCl	58.4	1.4	82
BaSO4 2.4 mg/L					

REMARKS:

Petrolite Oilfield Chemicals Group

Respectfully submitted,
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