

Schlumberger

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Comments:

Analysis on Black Powder

*Gene - hopes this answers some
questions*

Have a good day

Ismael

Company: <u>Coultus Management</u>	Report No.: <u>ANM03W073</u>
Lease & Well: <u>Wilson #1</u>	Service Point: <u>ANM Lab</u>
County, State: <u>Quay County</u>	Prepared by: <u>Geraldine Perez</u>
Formation: _____	Prepared for: <u>Mr. Gene Wilson</u>
BHT (F): _____	Date: <u>08/27/2003</u>

Specific gravity: 1.165 @ 72 degrees F ph 7.00

Anions						Ionic Strength			
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Chlorides	3545	3.0	0.1	106350	0.0282	2999.07	1.4889	1.4889	91283
Sulfates	0			1600	0.0208	33.28	0.0336	0.0333	1373
Carbonates	492	0.0	50	0	0.0333	0.00	0.0000	0.0000	0
Bicarbonates	1000	1.6	50	32	0.0164	0.52	0.0003	0.0003	27

Cations						Ionic Strength			
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Calcium	1000	1.9	0.1	19000	0.0499	948.10	0.9500	0.9431	16309
Magnesium	605	2.2	0.1	1818	0.0823	149.62	0.1491	0.1498	1581
Iron				500	0.0637	28.85	0.0040	0.0134	429
Sodium	0	0	0	43669	0.0435	1908.30	0.9861	0.9542	37858

Total Dissolved Solids: 173169 6066.75
Total Ionic Strength: 3.5910 3.5934

Chlorite clay problems from acid job.

**XRD analysis of the filtered black powder related to
Wilson #1 well for Schlumberger Well Services**

The crystalline material in the sample consists mainly of iron oxides (about 20%) and silica (about 25%); the rest being amorphous material. The latter can be identified by chemical analysis, not by XRD.

There is a variety of iron oxides in the sample:

- magnetite (Fe_3O_4) and its alteration product maghemite ($\gamma\text{-Fe}_2\text{O}_3$) are predominant
- small amounts of hematite ($\alpha\text{-Fe}_2\text{O}_3$) and lepidocrocite (FeOOH).

Silica consists mainly of quartz (SiO_2) with small amounts of silhydrate ($3\text{SiO}_2\cdot\text{H}_2\text{O}$), which is probably precipitated from silica in solution.
