

**Entek Grb LLC**

Battle Mountain Federal 14-10L Stage: 2

Basal Niohrara Bench

23 cP pHaser Frac

DATE: 9/19/2011

SO#: 8476474

Mid Perf (ft): 6,933

Stage	Fluid Type	Proppant Type	Clean Volume (gal)	Prop Conc (ppg)	Prop Total (lbs)	Slurry Vol (bbls)	Slurry Rate (bpm)	Max Press (psi)	Min Press (psi)	Gelling Agent	X-Linker	X-Linker	Buffer	Buffer	Buffer	Clay Cont / Surfactant	Surfactant / Foamer	Breaker / Activator	Breaker / Activator	Breaker / Activator	Breaker / Activator	Breaker / Activator	Conductivity Endurance	Conductivity Endurance	Other	Other	
1	Treated Water		12,747			303.5	5.3	6976	1	LGC-VI UC	CL-37	CL-40	BA-20	BA-20		Cla-Web	GP-1100	Vicon NF	Optiflo II	SP					BE-7	Superset W	
2	15 % HCL Acid		1,033			24.6	6.1	6132	5743							0.50	2.00									0.30	
3	10 # Linear		21,611			514.5	18.2	5743	3909	2.00			3.00			0.50	2.00	5.00								0.30	
4	10 # Linear	40/70 Ottawa	14,716	0.50	7,358	358.4	28.6	6820	2880	2.00			3.00			0.50	2.00	5.00								0.30	
5	10 # Linear									2.00			3.00			0.50	2.00	5.00								0.30	
6	26 vis pHaser Frac	20/40 Ottawa		0.50						7.00	1.50	0.25	3.75	3.75		0.50	2.00		3.00	0.50						0.30	
7	26 vis pHaser Frac	20/40 Ottawa		1.00						7.00	1.50	0.25	3.75	3.75		0.50	2.00		3.00	1.00						0.30	
8	26 vis pHaser Frac	20/40 Ottawa		2.00						7.00	1.50	0.25	3.75	3.75		0.50	2.00		3.00	2.00						0.30	
9	26 vis pHaser Frac	20/40 Ottawa		3.00						7.00	1.50	0.25	3.75	3.75		0.50	2.00		4.00	3.00						0.30	
10	26 vis pHaser Frac	20/40 Ottawa		4.00						7.00	1.50	0.25	3.75	3.75		0.50	2.00		4.00	4.00						0.30	
11	26 vis pHaser Frac	20/40 SB Excel		4.00						7.00	1.50	0.25	3.75	3.75		0.50	2.00		5.00	4.00						0.30	5.00
	Hydro @ Flush		5,938			141.4				7.00			3.75	3.75		0.50										0.30	
12	Flush		12,138			289.0				7.00			3.75	3.75		0.50										0.30	

Prop Total: 7,358 lbs Calc Amt (gal-lb): 199.19 Actual Amt (gal-lb): 199.7 Variance (%): 13.0%

Gel System: 36,327 (gal) % Pad: 70.6% (including breakdown)

Total Fluid: 62,245 (gal) 1,482 (bbls)

Total Slurry: 62,581 (gal) 1,490 (bbls)

Prop Laden Fluid: 15,052 (gal) 358 (bbls)

Total Fluid to Recover: 1700,366 (bbls) includes csg

Casing Vol: 9,170 (gal) 218 (bbls)

**BREAKDOWN / ISIP DATA**

Int. WHP 0.1 Base Fluid: 8.34 ppg

Break: psi @ bpm

Break down Vol: gal @ bbl

Final Inj: psi @ bpm

**TREATMENT SUMMARY**

Max Rate: 29.3 bpm Max Pressure: 6976 psi

Min Rate: 5.3 bpm Min Pressure: 1 psi

Avg Rate: 14.7 bpm Avg Pressure: 4776 psi

ISDP: psi

Frac Gradient: 0.433 psi/ft

Press. Increase: psi

**PROPPANT INFORMATION**

!! Use weight slip values !! VARIANCE (%)

Prop Type / Mesh Quantity

40/70 Ottawa 19060 lbs -61.4%

20/40 Ottawa 134940 lbs -100.0%

20/40 SB Excel 15540 lbs -100.0%

Total Prop on Location: 169540 lbs -95.7%

Variance From Weight Tickets

Sand Screw Total 6847 lbs -96.0%

Densometer Prop Total 6036 lbs -96.4%

2300 lbs. of proppant placed 1.4% Proppant placed

Crew: Black  
Halliburton Engineer: Jim Green  
Treater: Kelsey Brown  
Production Co. Rep: Kristen Stocks  
Consultant:

START JOB: 2:15 PM

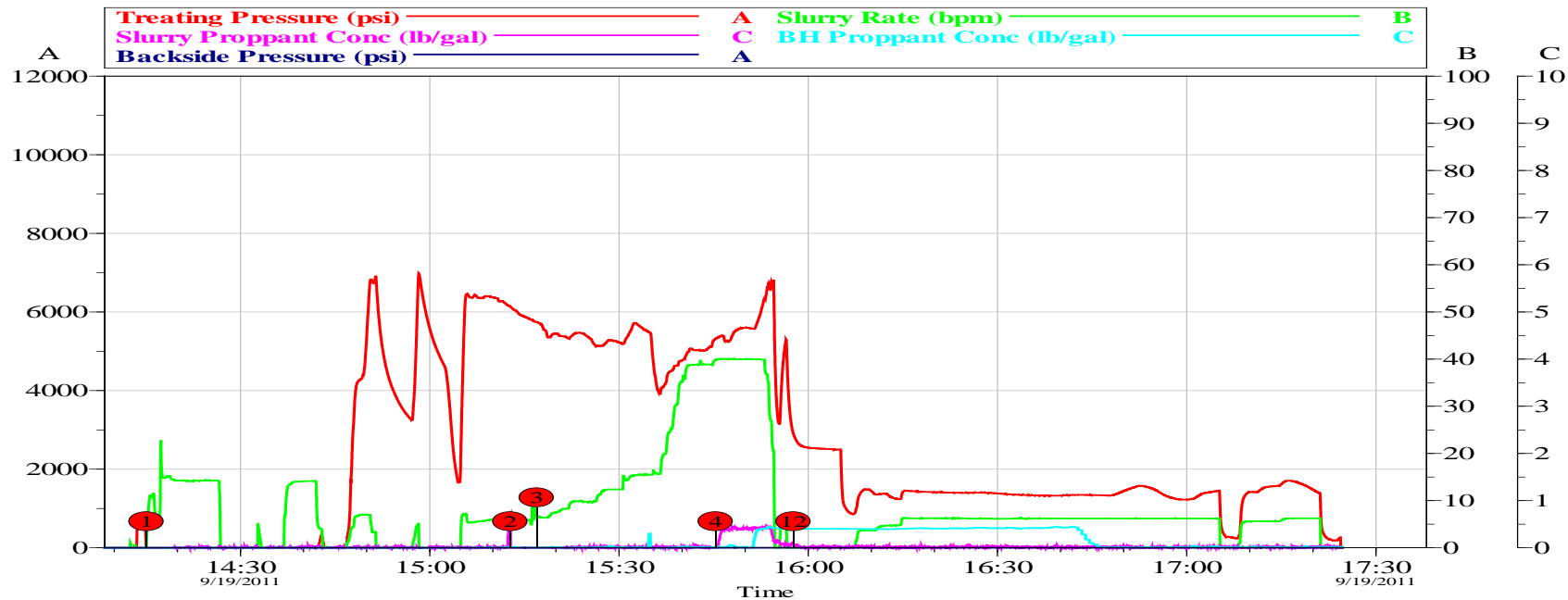
END JOB:

**JOB COMMENTS**

Well opened on a vacuum. Had to fill wellbore and get fluid to surface back up through tubing. Pressured out in breakdown, had to bleed off and surge well to get injection. Never saw a break. Went to acid. Saw good pressure relief with acid. began to work up to job rate, held stage 3 for job rate before going to sand. Screened out in stg 4. Placed apx 2300 lbs, left apx 6800 lbs in wellbore. Charged for 12500lbs 40/70 from pumped, hopper and belt totals. Opened tubing



### Treatment Plot



Customer: Entek Grb LLC	Job Date: 19-Sep-2011	Sales Order #: 8476474
Well Description: Battle Mountain Federal 14-10L	UWI: 05-081-07641	