
Hillcorp Energy

Treatment Summary

State of CO AB 1

Larimer County, CO

NESE Sec 16 T2S R66W

Niobrara

pHaserFrac

November 20, 2011

HALLIBURTON

Hilcorp Energy
1201 Louisiana Suite 1400
Houston, Texas 77002

State of CO AB 1
Wattenberg Field
Adams County, Colorado
United States of America
S:16 T:2S R:66W
API/UWI 05-001-09309

State of CO AB 1 - Hilcorp - Niobrara Stage - pHaferFrac

Prepared for:

November 16, 2011
Version: 1

Submitted by:
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Halliburton
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HALLIBURTON

***Halliburton appreciates the opportunity to present
this proposal and looks forward to being of service to you.***

Foreword

Enclosed is our recommended procedure for fracturing the formation in the referenced well. The information in this proposal includes well data, calculations, material requirements, and cost estimates. This proposal is based on information from our field personnel and previous stimulation services in the area. Halliburton appreciates the opportunity to present this proposal for your consideration and we look forward to being of service to you. Our Services for your well will be coordinated through the Service Center listed below. If you require any additional information or additional designs, please feel free to contact myself or our field representatives listed below.

Prepared and Submitted by: _____

Bryan Haubert
Technical Advisor

SERVICE CENTER:	Brighton
SERVICE COORDINATOR:	Louis Piper / Anthony Esparza
OPER. ENGINEER:	Brandon Baker
PHONE NUMBER:	303-655-4700

Well Information**State of CO AB 1- Niobrara Stage**

Well Name: State of CO Well #: AB 1

Tubulars

Name	Measured Depth (ft)	Outer Diameter (in)	Inner Diameter (in)	Linear Weight (lbm/ft)
Casing	0 - 10000	3.5	2.992	9.3

Perforations

Interval Name/ Depth (ft)
Niobrara Stage / 7500 - 7550

Formations

Name	Top MD (ft)	Bottom MD (ft)
Niobrara Formation	7500	7550

Job Fluids Summary

State of CO AB 1- Niobrara Stage

pHaserFrac (22)									
Volume	Base Fluid	Crosslinker	Crosslinker	Buffer	Gelling Agent	Surfactant	Clay Control	Breaker	Catalyst
77000 (Gal)	Fresh Water*	CL-37	CL-40 Crosslinker	BA-20	WG-18	Gasperm 1100	CLA-Web	Vicon NF	CAT-3
Totals	77000 (Gal)	38.5 (Gal)	77 (Gal)	77 (Gal)	2002 (lbm)	154 (Gal)	38.5 (Gal)	385 (Gal)	15.9 (Gal)

Treated Water			
Volume	Base Fluid	Surfactant	Clay Control
5000 (Gal)	Fresh Water*	Gasperm 1100	CLA-Web
Totals	5000 (Gal)	10 (Gal)	2.5 (Gal)

FR-66 Water					
Volume	Base Fluid	Friction Reducer	Breaker	Surfactant	Clay Control
76000 (Gal)	Fresh Water*	FR-66	Vicon NF	Gasperm 1100	CLA-Web
Totals	76000 (Gal)	76 (Gal)	152 (Gal)	152 (Gal)	38 (Gal)

HCL Acid 15% (22 Be) - with Adds				
Volume	Mixing Fluid	Raw Acid	Surfactant	Corrosion Inhibitor
750 (Gal)	Fresh Water	HCL Acid Raw	Losurf-300D	HAI-404M
Totals	458.25 (Gal)	291 (Gal)	1.5 (Gal)	4.5 (Gal)

JOB TOTALS								
Volume (Gal)	Base Fluid (Gal)	Crosslinker (Gal)	Crosslinker (Gal)	Buffer (Gal)	Gelling Agent (lbm)	Surfactant (Gal)	Clay Control (Gal)	Breaker (Gal)
	Fresh Water*	CL-37	CL-40 Crosslinker	BA-20	WG-18	Gasperm 1100	CLA-Web	Vicon NF
	158458.25	38.5	77	77	2002	316	79	537
	Catalyst	Friction Reducer	Raw Acid	Surfactant	Corrosion Inhibitor			
	(Gal)	(Gal)	(Gal)	(Gal)	(Gal)			
	CAT-3	FR-66	HCL Acid Raw	Losurf-300D	HAI-404M			
	15.9	76	291	1.5	4.5			

Proppant		
	Designed Qty	Requested
CRC-20/40	12000 (lbm)	12000 (lbm)
Premium White-40/70	18750 (lbm)	18750 (lbm)
Premium White-30/50	170000 (lbm)	170000 (lbm)

Customer Supplied Items *			
	Designed Qty	Tank Bottom	Requested w/ Tank Bottom
Fresh Water	158000 Gal	0 Gal	158000 Gal

Treatment 1

State of CO AB 1- Niobrara Stage

Well Name	State of CO	HCL Acid 15% (22 Be) - with Adds	750 Gal
Job Name	State of CO AB 1- Niobrara Stage	FR-66 Water	76000 Gal
Estimated Pump Time	1.45 hrs	pHaserFrac (22)	77000 Gal
BHST	240 degF	Treated Water	5000 Gal
		Premium White-40/70	18750 lbm
		Premium White-30/50	170000 lbm
		CRC-20/40	12000 lbm

Casing (Surface)								
Trt-Stage	Stage Desc.	Flow Path	Fluid Desc.	Rate-Liq+Prop	Clean Vol.	Proppant	Proppant Conc.	Prop. Mass
1-1	Acid	IN	HCL Acid 15% (22 Be) - with Adds	5	750		0	0
1-2	Pad	IN	FR-66 Water	50	25000		0	0
1-3	Proppant Laden Fluid	IN	FR-66 Water	50	27000	Premium White-40/70	0.25	6750
1-4	Proppant Laden Fluid	IN	FR-66 Water	50	24000	Premium White-40/70	0.5	12000
1-5	Pad	IN	pHaserFrac (22)	50	5000		0	0
1-6	Proppant Laden Fluid	IN	pHaserFrac (22)	50	16000	Premium White-30/50	1	16000
1-7	Proppant Laden Fluid	IN	pHaserFrac (22)	50	20000	Premium White-30/50	2	40000
1-8	Proppant Laden Fluid	IN	pHaserFrac (22)	50	18000	Premium White-30/50	3	54000
1-9	Proppant Laden Fluid	IN	pHaserFrac (22)	50	15000	Premium White-30/50	4	60000
1-10	Proppant Laden Fluid	IN	pHaserFrac (22)	50	3000	CRC-20/40	4	12000
1-11	Flush	IN	Treated Water	20	5000		0	0
Totals					158750			200750

Fluid Details - Treatment 1

State of CO AB 1- Niobrara Stage

HCL Acid 15% (22 Be) - with Adds					
Volume (Gal)	Base Fluid	Mixing Fluid (gal/Mgal)	Raw Acid (gal/Mgal)	Surfactant (gal/Mgal)	Corrosion Inhibitor (gal/Mgal)
750	HCL Acid 0 - 750	Fresh Water 611	HCL Acid Raw 388	Losurf-300D 2	HAI-404M 6

FR-66 Water					
Volume (Gal)	Base Fluid	Friction Reducer (gal/Mgal)	Breaker (gal/Mgal)	Surfactant (gal/Mgal)	Clay Control (gal/Mgal)
76000	Fresh Water * 0 - 76000	FR-66 1	Vicon NF 2	Gasperm 1100 2	CLA-Web 0.5

pHaserFrac (22)									
Volume (Gal)	Base Fluid	Crosslinker (gal/Mgal)	Crosslinker (gal/Mgal)	Buffer (gal/Mgal)	Gelling Agent (lbm/Mgal)	Surfactant (gal/Mgal)	Clay Control (gal/Mgal)	Breaker (gal/Mgal)	Catalyst (gal/Mgal)
	Fresh Water *	CL-37	CL-40	BA-20	WG-18	Gasperm 1100	CLA-Web	Vicon NF	CAT-3
	0 - 41000	0.5	1	1	26	2	0.5	5	0.15
	41000 - 74000	0.5	1	1	26	2	0.5	5	0.25
77000	74000 - 77000	0.5	1	1	26	2	0.5	5	0.5

Treated Water			
Volume (Gal)	Base Fluid	Surfactant (gal/Mgal)	Clay Control (gal/Mgal)
5000	Fresh Water * 0 - 5000	Gasperm 1100 2	CLA-Web 0.5

* Customer Supplied

Company: Hillcorp Energy

Lease: State of CO AB 1

Formation: Niobrara

pHaserFrac

CW 230 °F

Location: NESE Sec 16 T2S R66W

HALLIBURTON

		Volume	Proppant	Prop	Prop	Slurry	Rate	Stage	Exposure	CL-23	BA-20	GasPerm 1100	Cla-Web	VICON NF	CAT-3	FR-66	WG-18	
Stage	Fluid Schedule	(gal)	Type.	Conc. (ppg)	Total (lbs)	Vol. (gals)	(bpm)	Time (h:min:sec)	Time (h:min:sec)	(gpt)	(gpt)	(gpt)	(gpt)	(gpt)	(gpt)	(gpt)	(ppt)	
1	15% HCl Acid	750				750	5	0:03:34	1:23:08									
2	FR Water Pad	25000				25000	50	0:11:54	1:19:34			2.00	0.50	2.00		1.00		
3	FR Water	27000	Ottawa 40/70	0.25	6750	27305	50	0:13:00	1:07:40			2.00	0.50	2.00		1.00		
4	FR Water	24000	Ottawa 40/70	0.5	12000	24543	50	0:11:41	0:54:39			2.00	0.50	2.00		1.00		
5	pHaserFrac Pad	5000				5000	50	0:02:23	0:42:58	0.50	1.00	2.00	0.50	3.00			26.00	
6	pHaserFrac 22 visc	16000	Ottawa 30/50	1	16000	16724	50	0:07:58	0:40:35	0.50	1.00	2.00	0.50	3.00	0.15		26.00	
7	pHaserFrac 22 visc	20000	Ottawa 30/50	2	40000	21810	50	0:10:23	0:32:37	0.50	1.00	2.00	0.50	3.00	0.25		26.00	
8	pHaserFrac 22 visc	18000	Ottawa 30/50	3	54000	20443	50	0:09:44	0:22:14	0.50	1.00	2.00	0.50	3.00	0.25		26.00	
9	pHaserFrac 22 visc	15000	Ottawa 30/50	4	60000	17715	50	0:08:26	0:12:30	0.50	1.00	2.00	0.50	3.00	0.50		26.00	
10	pHaserFrac 22 visc	3000	CRC-20/40	4	12000	3543	50	0:01:41	0:04:04	0.50	1.00	2.00	0.50	3.00	0.50		26.00	
11	Flush	5000				5000	50	0:02:23	0:02:23			2.00	0.50					
								0:00:00										
Total Pump Time: 1:23																		
TOTAL FLUID:		158750 gal	Total Proppant:		200750	167834	Final Design Used			39	77	316	79	383	21	76	2002	
Pad+SLF+Flush:		158000 gal	Average Rate:				48.1 bpm											
Pad+SLF:		153000 gal	Treatment Down:				Casing			CL-23	BA-20	GasPerm 1100	Cla-Web	VICON NF	CAT-3	FR-66	WG-18	
Percent Pad:		52.9%	Abs. Min. HHP:				9,190 HHP			Loaded	53	101	400	104	484	31	100	2508

MAX PRESSURE: 7500 psi		S.G.:	0.9
Anticipated Surface Pres:	6149 psi	T Perf	B Perf
Perforations: 100	Perf Zone #1	7,719	7,739
Dia. in: 0.42	Perf Zone #2	7,789	7,809
Calc. Perf Fric (psi): 24	Perf Zone #3		
Est. Well Bore Fric (psi): 2,500	Perf Zone #4		
WELL-BORE PATH			
3.5" 9.3		7587 ft	
5.5" 14		132 ft	
		ft	

MAXIMUM CHEMICAL ADDITIVE								
Pump Rates (gal/min)	CL-23	BA-20	GasPerm 1100	Cla-Web	VICON NF	CAT-3	FR-66	WG-18
50.0 bpm								
Bucket Test Time for 1 gal (min:sec)	0.57	0.29	0.14	0.57	0.10	0.57	0.29	0.01

Customer: Hillcorp Energy
 Well: State of CO AB 1
 Date: 11/20/2011
 Formation: Niobrara
 Ticket #: 9074964

HALLIBURTON

MT. MOVER

	COMP # 1	COMP # 2	COMP # 3	COMP # 4	COMP # 5	TOTAL
Sand Size	30/50	30/50	30/50	30/50	30/50	
Est. Amt. (sacks)	425	426	0	425	425	1701
Amt. Pumped (sacks)	425	426	0	425	425	1701
Amt. Returned (sacks)	0	0	0	0	0	0

SAND SIEVE ANALYSIS

30/50 SAND

Initial Weight(grams):	COMP 1		COMP 2		COMP 3		COMP 4		COMP 5	
Sand Type:	Wt	%	Wt	%	Wt	%	Wt	%	Wt	%
Pan #20.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pan #30	1.2	1.2	0.7	0.7	0.0	0.0	0.7	0.7	0.6	0.6
Pan #40	62.8	63.1	75.6	75.7	0.0	0.0	77.2	77.4	72.2	72.4
Pan #45	25.9	26.0	17.5	17.5	0.0	0.0	15.5	15.5	17.2	17.3
Pan #50	7.4	7.4	4.4	4.4	0.0	0.0	4.6	4.6	6.0	6.0
Pan #70	2.3	2.3	1.5	1.5	0.0	0.0	1.7	1.7	3.1	3.1
PAN	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.1	0.6	0.6
Total	99.6	100.0	99.9	100.0	0.0	100.0	99.8	100.0	99.7	100.0
Retained	96.5%		97.6%		0.0%		97.5%		95.7%	

MT. MOVER

	COMP # 1	COMP # 2	COMP # 3	COMP # 4	COMP # 5	TOTAL
Sand Size	40/70	40/70	40/70	40/70	40/70	
Est. Amt. (sacks)	0	0	188.2	0	0	188.2
Amt. Pumped (sacks)	0	0	188.2	0	0	188.2
Amt. Returned (sacks)	0	0	0	0	0	0

SAND SIEVE ANALYSIS

40/70 SAND

Initial Weight(grams):	COMP 1		COMP 2		COMP 3		COMP 4		COMP 5	
Sand Type:	Wt	%	Wt	%	Wt	%	Wt	%	Wt	%
Pan #30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pan #40	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
Pan #50	0.0	0.0	0.0	0.0	19.2	19.3	0.0	0.0	0.0	0.0
Pan #60	0.0	0.0	0.0	0.0	53.0	53.2	0.0	0.0	0.0	0.0
Pan #70	0.0	0.0	0.0	0.0	21.6	21.7	0.0	0.0	0.0	0.0
Pan #100	0.0	0.0	0.0	0.0	5.2	5.2	0.0	0.0	0.0	0.0
PAN	0.0	100.0	0.0	100.0	0.1	0.1	0.0	100.0	0.0	100.0
Total	0.0	100.0	0.0	100.0	99.6	100.0	0.0	100.0	0.0	100.0
Retained	0.0%		0.0%		94.2%		0.0%		0.0%	

Customer: Hillcorp Energy
 Well: State of CO AB 1
 Date: 11/20/2011
 Formation: Niobrara
 Ticket #: 9074964

HALLIBURTON

TANK VOLUMES:

TANK:	1	2	3	4	5	6	7	8	9	10	11	12
Initial Strap Job (Inches)	101	101	101	102	102	102	102	104	101	104	101	94
Fluid Vol. (BBL)	485.0	485.0	485.0	490.0	490.0	490.0	490.0	500.0	485.0	500.0	485.0	450.0
Final Strap (Inches)	0	0	0	0	20	101	100	33	0	0	0	0
Fluid Vol. (BBL)	0.0	0.0	0.0	0.0	90.0	485.0	480.0	148.5	0.0	0.0	0.0	0.0

	Initial	Final	Used	Fluid in Trucks
Hydration Tank (Gallons)	0	2,000	-2,000	0
Volume Pumped (Gallons)	245,070	52,547	192,523	

Total Fluid Pumped
192,523

LABORATORY WATER ANALYSIS

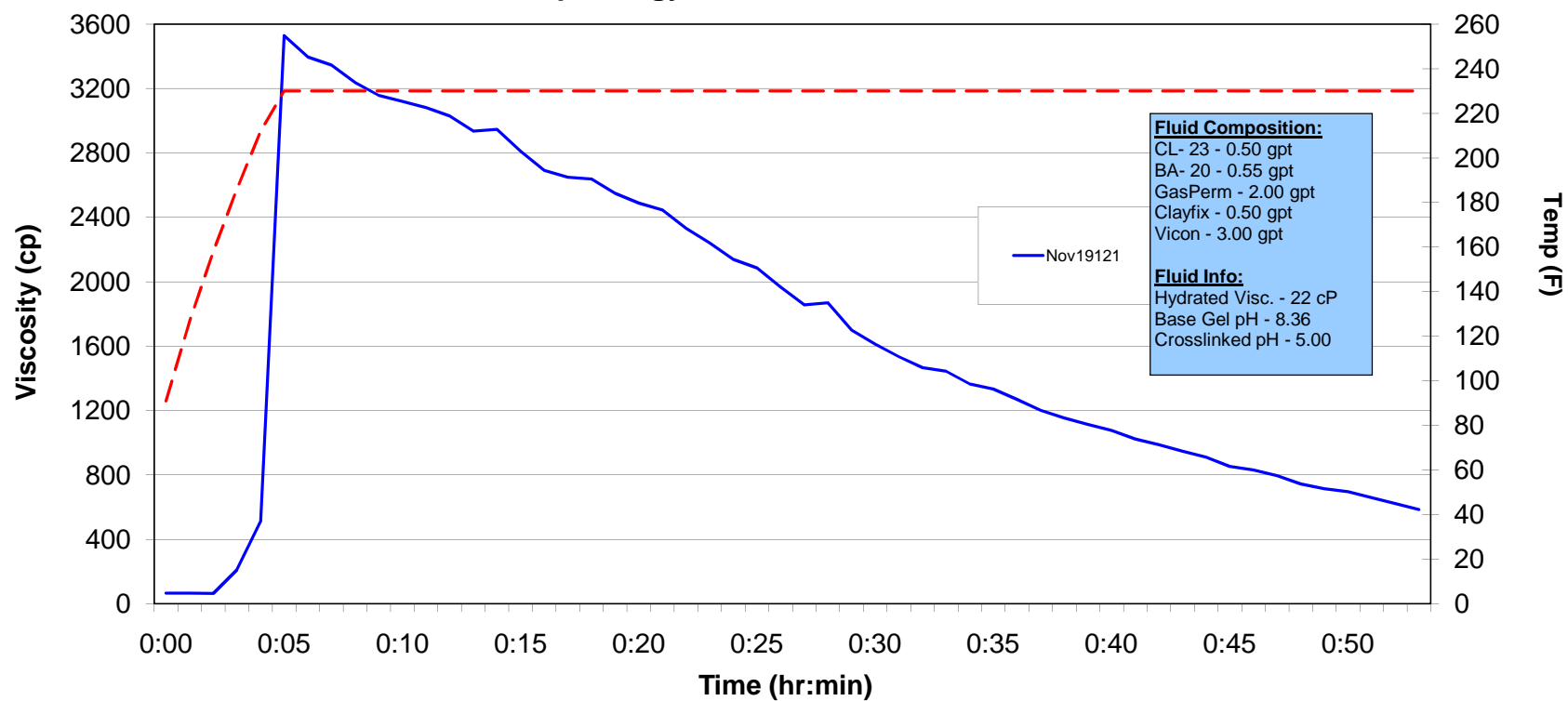
TANK:	1	2	3	4	5	6	7	8	9	10	11	12	Averages
Temperature (°F)	61.6	61.3	61.0	60.3	60.7	61.6	62.2	61.6	61.7	62.9	63.9	64.1	61.9
pH	7.17	7.24	7.47	7.59	7.55	7.53	7.50	7.50	7.54	7.52	7.53	7.49	7.5
Chlorides (mg/L):	<32	<32	<32	<32	<32	<32	<32	<32	<32	<32	<32	<32	<32
Potassium (mg/L):	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Sodium (mg/L):	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Sulfate (mg/L):	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Iron (mg/L):	0.10	0.10	0.10	0.10	0.15	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.1
Bicarbonates (mg/L):	110	183	171	207	85	207	110	122	171	98	98	85	137.3
Reducing Agents (mg/L):	P	P	P	P	P	P	P	P	P	P	P	P	P
Total Hardness (mg/L):	128	100	84	100	116	148	100	140	160	100	104	160	120.0
Calcium (Ca) (mg/L):	102	80	67	80	93	118	80	112	128	80	83	128	95.9
Magnesium (Mg) (mg/L):	26	20	17	20	23	30	20	28	32	20	21	32	24.1
Phosphates (PO ₄) (mg/L):	5	5	5	5	5	5	5	5	5	5	5	5	5.0
Specific Gravity	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.0

PRE-JOB WATER ANALYSIS

TANK:	1	2	3	4	5	6	7	8	9	10	11	12	Avg
Temperature (°F)	74.4	74.6	73.5	75.3	70.6	74.1	73.4	73.7	71.2	70.8	70.2	70.4	72.7
pH	6.56	6.70	6.76	6.71	6.81	6.76	6.83	7.20	7.20	7.15	7.10	7.12	6.9
Specific Gravity	1.000	1.001	1.001	1.001	1.001	1.000	1.000	1.000	1.000	1.001	1.001	1.001	1.0

HALLIBURTON

**Brighton District Laboratory
Model 50 - pHaserFrac, Niobrara Design
Hilcorp Energy - State of Colorado AB #1**





Customer: Hillcorp Energy
Location: State of CO AB 1
Formation Niobrara
Date: 11/20/2011

Test No: 2
QC Operator: L.Owens
Ticket No: 9074964

Fann 35 Analysis Data Sheet QC Field Test

Location Water
7.33 pH

Hydrated
8.74 pH

Buffered to
4.90 pH

Final
4.90 pH

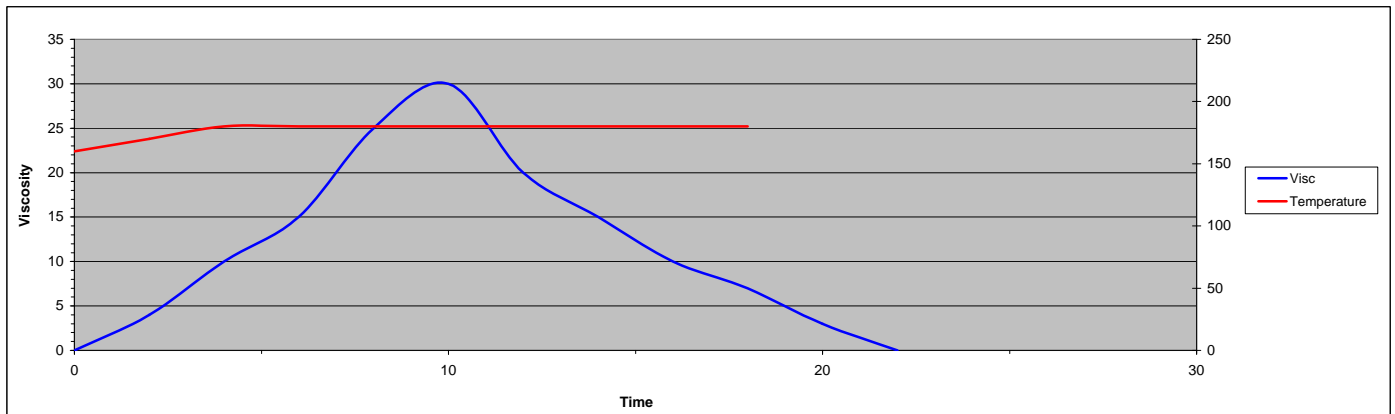
Crosslink Time	
Temperature	Time
160.00 °f	:58

Hydration Test		
Time	Visc.	Temp.
5	22	69
10	22	69
15	22	69

Test Increments:		2	minutes
Time (Min)	Temp (°F)	Fann35 (Dial)	Apparent Visc
0	150	0	0.0
2	150	4	101.6
4	160	10	254.0
6	170	15	381.0
8	180	25	635.0
10	180	30	762.0
12	180	20	508.0
14	180	15	381.0
16	180	10	254.0
18	180	7	177.8
20	180	3	76.2
22	180	0	0.0
24			
26			
28			
30			
32			
34			
36			
38			
40			
42			
44			
46			
48			
50			
52			
54			
56			
60% of Initial Reading			0

Fluid	pHaserFrac
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DRY GEL			
Submitted Location Water		1000	mL
setpoint:	22.00	WG-18	2.639 grams
Viscosity	22	cp	Temp 69.1 °f
Components are mixed in 1000 mLs of Hydrated Gel			
Chemicals			
Miscellaneous			
setpoint:			
Surfactants			
setpoint:	2.00	GasPerm 1100	2.00 mL
setpoint:			
setpoint:			
Clay Control / Stabilizers			
setpoint:	0.50	ClayWeb	0.50 mL
setpoint:			
Buffers			
setpoint:	0.40	BA-20	0.40 mL
setpoint:			
Crosslinkers			
Crosslinker Dilution: 1 0 3.5			
setpoint:	0.50	CL-23	0.07 mL
setpoint:			
setpoint:			
Breakers			
Hydrated Gel Used for Test:		200	mL
setpoint:	0.50	CAT-3	0.100 ml
setpoint:	3.00	VICON NF	2.500 ml
setpoint:			
setpoint:			
setpoint:			



Company: Hillcorp Energy

Lease: State of CO AB 1

Formation: Niobrara

pHaserFrac
CW 230 °F

Location: NESE Sec 16 T2S R66W

HALLIBURTON

Stage	Fluid Schedule	Volume (gal)	Proppant Type.	Prop Conc. (ppg)	Prop Total (lbs)	Slurry Vol. (gals)	Rate (bpm)	Stage Time (h:min:sec)	Exposure Time (h:min:sec)	CL-23 (gpt)	BA-20 (gpt)	GasPerm 1100 (gpt)	Cla-Web (gpt)	VICON NF (gpt)	CAT-3 (gpt)	FR-66 (gpt)	WG-18 (ppt)		
1	Load and Break	676				676	5	0:03:13	1:34:03										
	15% HCl Acid	750				750	5	0:03:34	1:30:49										
2	FR Water Pad	26318				26318	50	0:12:32	1:27:15			2.00	0.50	1.00		1.00			
3	FR Water	19148	Ottawa 40/70	0.25	4787	19365	50	0:09:13	1:14:43			2.00	0.50	1.00		1.00			
	FR Water	7598				7598	50	0:03:37	1:05:30			2.00	0.50	1.00		1.00			
	FR Water	8719		0.25	2179.75	8818	50	0:04:12	1:01:53			2.00	0.50	1.00		1.00			
4	FR Water	5052	Ottawa 40/70	0.5	2526	5166	50	0:02:28	0:57:41			2.00	0.50	1.00		1.00			
	Linear Gel	8309				8309	50	0:03:57	0:55:13			2.00	0.50	3.00		0.50	22.00		
	Linear Gel	5699		0.25	1424.75	5763	50	0:02:45	0:51:16			2.00	0.50	3.00		0.50	22.00		
	Linear Gel	14214		0.5	7107	14536	50	0:06:55	0:48:31			2.00	0.50	3.00		0.50	22.00		
5	pHaserFrac Pad	5043				5043	50	0:02:24	0:41:36	0.50	0.40	2.00	0.50	3.00			22.00		
6	pHaserFrac 22 visc	16013	Ottawa 30/50	1	16013	16738	50	0:07:58	0:39:12	0.50	0.40	2.00	0.50	3.00			22.00		
7	pHaserFrac 22 visc	20009	Ottawa 30/50	2	40018	21820	50	0:10:23	0:31:14	0.50	0.40	2.00	0.50	3.00			22.00		
8	pHaserFrac 22 visc	18497	Ottawa 30/50	3	55491	21008	50	0:10:00	0:20:50	0.50	0.50	2.00	0.50	3.00	0.25		22.00		
9	pHaserFrac 22 visc	13811	Ottawa 30/50	4	55244	16311	50	0:07:46	0:10:50	0.50	0.95	2.00	0.50	3.00	0.50		22.00		
10	pHaserFrac 22 visc	3149	CRC-20/40	4	12596	3719	50	0:01:46	0:03:04	0.50	0.90	2.00	0.50	3.00	0.50		22.00		
11	Flush	2718				2718	50	0:01:18	0:01:18			2.00	0.50	3.00					
								0:00:00											
Total Pump Time: 1:34																			
TOTAL FLUID:		175723 gal	Total Proppant:		197387	184655	Final Design Used			38	42	349	87	389	13	81	2304		
Pad+SLF+Flush:		174297 gal	Average Rate:					46.8 bpm											
Pad+SLF:		171579 gal	Treatment Down:					Casing			CL-23	BA-20	GasPerm 1100	Cla-Web	VICON NF	CAT-3	FR-66	WG-18	
Percent Pad:		58.3%	Abs. Min. HHP:					9,190 HHP			Loaded	53	57	441	114	492	21	106	2885

MAX PRESSURE: 7500 psi		S.G.: 0.9
Anticipated Surface Pres:	6149 psi	T Perf B Perf
Perforations: 100	Perf Zone #1	7,719 7,739
Dia. in: 0.42	Perf Zone #2	7,789 7,809
Calc. Perf Fric (psi): 24	Perf Zone #3	
Est. Well Bore Fric (psi): 2,500	Perf Zone #4	
WELL-BORE PATH		
3.5" 9.3#		7587 ft
5.5" 14.0#		132 ft
		ft

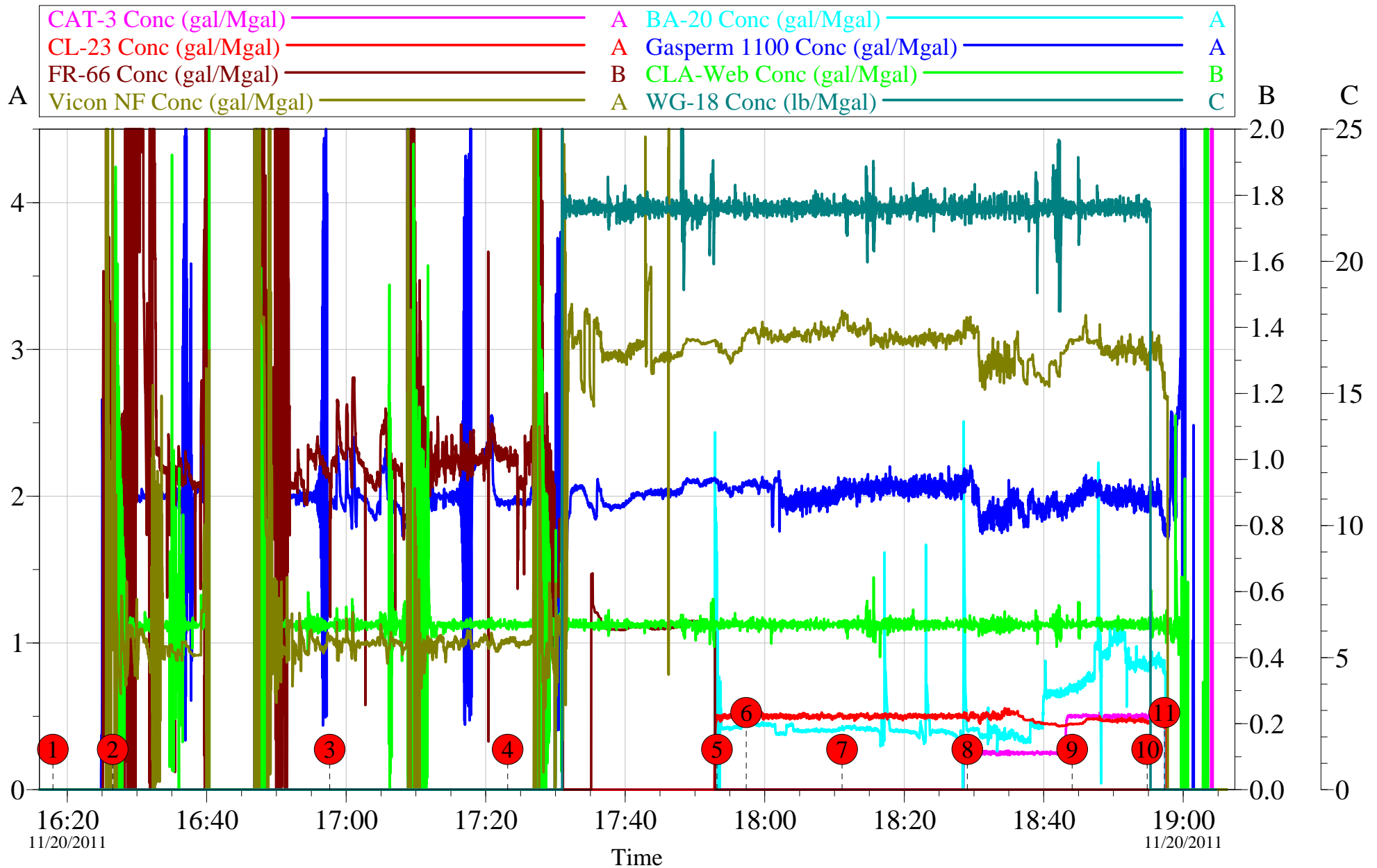
MAXIMUM CHEMICAL ADDITIVE								
Pump Rates (gal/min)	CL-23	BA-20	GasPerm 1100	Cla-Web	VICON NF	CAT-3	FR-66	WG-18
50.0 bpm								
Bucket Test Time for 1 gal (min:sec)	0.57	0.30	0.14	0.57	0.10	0.57	0.29	0.01

HALLIBURTON

	Description	Units	Flowmeter	Strap	Gel	%					
	Water	GALS.	175,723	192523.0	0.0	-9.56					
Pump	Description	Units	Additive	Design	Actual	Beginning Prime Up End			Used	Design %	Actual %
0	Crosslinker	GALS.	CL-23	38.5	38.3	335	335	296.0	39	1.30%	1.93%
0	Buffer	GALS.	BA-20	77.0	41.6	330	328	286.0	42	45.45%	0.89%
0	Surfactant	GALS.	GasPerm 1100	316.0	348.6	970	965	617.0	348	10.13%	0.17%
0	Clay Control	GALS.	Cla-Web	79.0	87.1	325	320	233.0	87	10.13%	0.17%
0	Breaker	GALS.	VICON NF	383.0	389.2	1335	1332	940.0	392	2.35%	0.71%
0	Breaker/Catalyst	GALS.	CAT-3	20.9	13.1	120	120	109.0	11	47.37%	16.06%
0	Friction Reducer	GALS.	FR-66	76.0	80.9	330	325	230.0	95	25.00%	17.36%
0	Dry Additive	LBS.	WG-18	2002.0	2304.4	7500	7500	4904.0	2596	29.67%	12.66%
	Proppant	LBS.	Total Sand	200750	197387	200920	200920	0	200920	0.08%	1.79%
Notes:											

Chemical Plot

State of CO AB 1 - Niobrara



Customer: HILCORP ENERGY
Well Description: State of CO AB 1

Job Date: 20-Nov-2011
UWI: 05-001-09309

Sales Order #: 9074964

HALLIBURTON
INSITE for Stimulation v4.1.3
20-Nov-11 19:06

BULK SAND WEIGHTS

CUSTOMER: Hillcorp Energy

LEASE: State of CO AB 1

FORMATION: Niobrara

JOB TOTAL: 18820 #Ottawa 40/70
170100 #Ottawa 30/50
12000 #SB Excel

DATE: 11/20/2011

CARRIER: Unimin Corporation

TRUCK NO.	BILL OF LANDING	WEIGHT
40/70	14840	18820
30/50	100845	49960
30/50	100844	52000
30/50	100847	36440
30/50	100846	31700

TOTAL 188920

TOTAL SACKS 1889

HILCORP ENERGY
1201 LOUISIANA SUITE 1400
HOUSTON, TX 77002

State of CO AB 1

Interval 1
Adams County, Colorado

Sales Order: 9074964

Post Job Report

For: JEFF SCHNEIDER
Date: Sunday, November 20, 2011

Notice: Although the information contained in this report is based on sound engineering practices, the copyright owner(s) does (do) not accept any responsibility whatsoever, in negligence or otherwise, for any loss or damage arising from the possession or use of the report whether in terms of correctness or otherwise. The application, therefore, by the user of this report or any part thereof, is solely at the user's own risk.

HALLIBURTON

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1.0 EXECUTIVE SUMMARY

JEFF SCHNEIDER
HILCORP ENERGY
1201 LOUISIANA SUITE 1400
HOUSTON, TX 77002

Dear JEFF SCHNEIDER,

Halliburton appreciates the opportunity to perform the stimulation treatment on the State of CO AB 1. A pre-job safety meeting was held where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined. Pump time was 153.87 min.

The proposed treatment for State of CO AB 1- Niobrara Stage consisted of:

- 750 gal of FR-56 WATER - SBM (467131).
- 25000 gal of FR-66 Water.
- 51000 gal of FR-66 Water carrying 187.50 100*lb of SAND - PREMIUM - 40/70, BULK, SK (100064018).
- 5000 gal of pHaserFrac (22).
- 69000 gal of pHaserFrac (22) carrying 1700.00 100*lb of SAND - PREMIUM - 30/50, BULK, SK (100009377).
- 3000 gal of pHaserFrac (22) carrying 120.00 100*lb of SAND-CRC-20/40, BULK (101357947).
- 5000 gal of Treated Water.

The treatment actually pumped consisted of:

- 1426 gal of FR-56 WATER - SBM (467131).
- 26318 gal of FR-66 Water.
- 68739 gal of FR-66 Water carrying 161.72 100*lb of SAND - PREMIUM - 40/70, BULK, SK (100064018).
- 5043 gal of pHaserFrac (22).
- 68330 gal of pHaserFrac (22) carrying 1630.76 100*lb of SAND - PREMIUM - 30/50, BULK, SK (100009377).
- 3149 gal of pHaserFrac (22) carrying 114.27 100*lb of SAND-CRC-20/40, BULK (101357947).
- 2718 gal of Treated Water.

The average BH treating rate was 30.2 bpm and average WH pressure was 5045 psi.

The total liquid load to recover is 175723 gal.

Halliburton is strongly committed to quality control on location. Before and after each job all chemicals, proppants, and fluid volumes are measured to assure the highest level of quality control. Tank fluid analysis, crosslink time, and break tests are performed before each job in order to optimize the performance of the treatment fluids.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

NUCE

2.0 WELL INFORMATION

2.1 Customer Information

Customer	HILCORP ENERGY
Sales Order	9074964
Well Name	State of CO
Interval	1
Well Number	AB 1
Job Date	20-Nov-2011
County	Adams
State	Colorado
UWI/API	05-001-09309
Lease Name	State of CO
Country	United States of America
H2S Present	Unknown
Customer Representative	JEFF SCHNEIDER
Halliburton Representative	NUCE

2.2 Pipe Information

Equipment	Top MD ft	Bottom MD ft	OD in	ID in	Weight lb/ft
Surface Pipe	0.0	0.1	5.000	4.000	
Tubing	0.0	7587.0	3.500	2.992	9.30
Casing	7587.0	8000.0	5.500	5.012	14.00

3.0 PUMPING SCHEDULE

3.1 Designed Pumping Schedule

Stage Number	Description	Flow Path	Fluid System	Clean Volume gal	Slurry Volume gal	Prop Conc Start lb/gal	Prop Conc End lb/gal
1	Pad	In	FR-56 WATER - SBM (467131)	750	750	0.00	0.00
2	Pad	In	FR-66 Water	25000	25138	0.00	0.00
3	Proppant Laden Fluid	In	FR-66 Water	27000	27454	0.25	0.25
4	Proppant Laden Fluid	In	FR-66 Water	24000	24675	0.50	0.50
5	Pad	In	pHaserFrac (22)	5000	5046	0.00	0.00
6	Proppant Laden Fluid	In	pHaserFrac (22)	16000	16870	1.00	1.00
7	Proppant Laden Fluid	In	pHaserFrac (22)	20000	21992	2.00	2.00
8	Proppant Laden Fluid	In	pHaserFrac (22)	18000	20608	3.00	3.00
9	Proppant Laden Fluid	In	pHaserFrac (22)	15000	17852	4.00	4.00
10	Proppant Laden Fluid	In	pHaserFrac (22)	3000	3578	4.00	4.00
11	Flush	In	Treated Water	5000	5013	0.00	0.00
Total				158750	168974		

3.2 Designed Pumping Schedule (continued)

Stage Number	Description	Prop Type	Prop Mass 100*lb	Rate Stage Start bpm	Rate Stage End bpm	Stage Time min
1	Pad			5.0	5.0	3.57
2	Pad			50.0	50.0	11.97
3	Proppant Laden Fluid	SAND - PREMIUM - 40/70, BULK, SK (100064018)	67.50	50.0	50.0	13.07
4	Proppant Laden Fluid	SAND - PREMIUM - 40/70, BULK, SK (100064018)	120.00	50.0	50.0	11.75
5	Pad			50.0	50.0	2.40
6	Proppant Laden Fluid	SAND - PREMIUM - 30/50, BULK, SK (100009377)	160.00	50.0	50.0	8.03
7	Proppant Laden Fluid	SAND - PREMIUM - 30/50, BULK, SK (100009377)	400.00	50.0	50.0	10.47
8	Proppant Laden Fluid	SAND - PREMIUM - 30/50, BULK, SK (100009377)	540.00	50.0	50.0	9.81
9	Proppant Laden Fluid	SAND - PREMIUM - 30/50, BULK, SK (100009377)	600.00	50.0	50.0	8.50
10	Proppant Laden Fluid	SAND-CRC-20/40, BULK (101357947)	120.00	50.0	50.0	1.70
11	Flush			20.0	20.0	5.97
Total			2007.50			87.26

3.3 Designed Liquid Additive Schedule

Stage Number	Gasperm 1100			CLA-Web			FR-66		
	Conc Start gal/Mgal	Conc End gal/Mgal	Vol gal	Conc Start gal/Mgal	Conc End gal/Mgal	Vol gal	Conc Start gal/Mgal	Conc End gal/Mgal	Vol gal
1									
2	2.000	2.000	50.000	0.500	0.500	12.500	1.000	1.000	25.000
3	2.000	2.000	54.000	0.500	0.500	13.500	1.000	1.000	27.000
4	2.000	2.000	48.000	0.500	0.500	12.000	1.000	1.000	24.000
5	2.000	2.000	10.000	0.500	0.500	2.500			
6	2.000	2.000	32.000	0.500	0.500	8.000			
7	2.000	2.000	40.000	0.500	0.500	10.000			
8	2.000	2.000	36.000	0.500	0.500	9.000			
9	2.000	2.000	30.000	0.500	0.500	7.500			
10	2.000	2.000	6.000	0.500	0.500	1.500			
11	2.000	2.000	10.000	0.500	0.500	2.500			
Total			316.000			79.000			76.000

3.4 Designed Liquid Additive Schedule

Stage Number	Vicon NF			CL-37			CL-23		
	Conc Start gal/Mgal	Conc End gal/Mgal	Vol gal	Conc Start gal/Mgal	Conc End gal/Mgal	Vol gal	Conc Start gal/Mgal	Conc End gal/Mgal	Vol gal
1									
2	2.000	2.000	50.000						
3	2.000	2.000	54.000						
4	2.000	2.000	48.000						
5	5.000	5.000	25.000	0.500	0.500	2.500	1.000	1.000	5.000
6	5.000	5.000	80.000	0.500	0.500	8.000	1.000	1.000	16.000
7	5.000	5.000	100.000	0.500	0.500	10.000	1.000	1.000	20.000
8	5.000	5.000	90.000	0.500	0.500	9.000	1.000	1.000	18.000
9	5.000	5.000	75.000	0.500	0.500	7.500	1.000	1.000	15.000
10	5.000	5.000	15.000	0.500	0.500	1.500	1.000	1.000	3.000
11									
Total			537.000			38.500			77.000

3.5 Designed Liquid Additive Schedule

	BA-20		
Stage Number	Conc Start gal/Mgal	Conc End gal/Mgal	Vol gal
1			
2			
3			
4			
5	0.150	0.150	0.750
6	0.150	0.150	2.400
7	0.150	0.150	3.000
8	0.250	0.250	4.500
9	0.250	0.250	3.750
10	0.500	0.500	1.500
11			
Total			15.900

3.6 Designed Dry Additive Schedule

	WG-18		
Stage Number	Conc Start lb/Mgal	Conc End lb/Mgal	Mass lb
1			
2			
3			
4			
5	26.00	26.00	130.00
6	26.00	26.00	416.00
7	26.00	26.00	520.00
8	26.00	26.00	468.00
9	26.00	26.00	390.00
10	26.00	26.00	78.00
11			
Total			2002.00

4.0 ACTUAL STAGE SUMMARY

4.1 Stage Summary

Stage Number	Stage Time	Start Time	End Time	Time min	Pump Time min	Max Treat Pr psi	Max Slurry Rate bpm
1	20-Nov-11 16:26:30	16:17:57	20-Nov-11 16:26:30	8.58	7.93	3867	10.1
2	20-Nov-11 16:57:37	16:26:31	20-Nov-11 16:57:37	31.11	23.93	5833	44.5
3	20-Nov-11 17:23:07	16:57:38	20-Nov-11 17:23:07	25.51	25.02	6788	45.7
4	20-Nov-11 17:53:08	17:23:08	20-Nov-11 17:53:08	30.02	30.02	6803	34.2
5	20-Nov-11 17:57:19	17:53:09	20-Nov-11 17:57:19	4.17	4.15	5360	29.7
6	20-Nov-11 18:11:04	17:57:20	20-Nov-11 18:11:04	13.76	13.75	5257	29.5
7	20-Nov-11 18:29:02	18:11:05	20-Nov-11 18:29:02	17.95	17.95	5154	29.5
8	20-Nov-11 18:44:03	18:29:03	20-Nov-11 18:44:03	15.03	15.00	5950	37.5
9	20-Nov-11 18:54:48	18:44:04	20-Nov-11 18:54:48	10.75	10.75	6266	37.8
10	20-Nov-11 18:57:17	18:54:49	20-Nov-11 18:57:17	2.47	2.45	6172	36.7
11	20-Nov-11 19:26:27	18:57:18	20-Nov-11 19:26:27	29.17	2.92	5864	35.0

Stage Number	Stage Time	Max Wellhead Rate bpm	Max Prop Conc lb/gal	Max Slurry Prop Conc lb/gal	Avg Treating Pressure psi	Avg Clean Rate bpm	Avg Slurry Rate bpm
1	20-Nov-11 16:26:30	10.1	0.00	0.00	2930	4.3	4.3
2	20-Nov-11 16:57:37	44.5	0.31	0.31	4631	26.2	26.2
3	20-Nov-11 17:23:07	45.7	0.82	0.83	5366	33.7	34.0
4	20-Nov-11 17:53:08	34.2	0.63	0.63	5033	26.4	26.7
5	20-Nov-11 17:57:19	29.7	0.78	0.78	5294	28.8	29.0
6	20-Nov-11 18:11:04	29.5	1.83	1.83	5156	27.7	28.9
7	20-Nov-11 18:29:02	29.5	2.84	2.84	5097	26.5	28.9
8	20-Nov-11 18:44:03	37.5	3.75	3.75	5298	29.3	33.2
9	20-Nov-11 18:54:48	37.8	3.98	3.98	6090	30.6	36.0
10	20-Nov-11 18:57:17	36.7	3.98	3.98	6064	30.3	35.3
11	20-Nov-11 19:26:27	35.0	2.86	2.86	4282	21.9	22.4

Stage Number	Stage Time	Avg Wellhead Rate bpm	Avg Slurry Prop Conc lb/gal	Avg Hydraulic Horsepower hp	Clean Volume gal	Slurry Volume gal	Wellhead Volume gal
1	20-Nov-11 16:26:30	4.3	0.00	306	1426	1426	1426
2	20-Nov-11 16:57:37	26.2	0.28	2972	26318	26349	26349
3	20-Nov-11 17:23:07	34.0	0.27	4471	35465	35807	35807
4	20-Nov-11 17:53:08	26.7	0.33	3293	33274	33664	33664
5	20-Nov-11 17:57:19	29.0	0.23	3757	5043	5076	5076
6	20-Nov-11 18:11:04	28.9	0.97	3654	16013	16717	16717
7	20-Nov-11 18:29:02	28.9	1.94	3605	20009	21765	21765
8	20-Nov-11 18:44:03	33.2	2.98	4316	18497	20987	20987
9	20-Nov-11 18:54:48	36.0	3.88	5366	13811	16236	16236
10	20-Nov-11 18:57:17	35.3	3.63	5251	3149	3672	3672
11	20-Nov-11 19:26:27	22.4	0.71	2349	2718	2780	2780
Total					175723	184478	184478

Stage Number	Stage Time	Prop Mass 100*lb
1	20-Nov-11 16:26:30	0.00
2	20-Nov-11 16:57:37	6.91
3	20-Nov-11 17:23:07	75.62
4	20-Nov-11 17:53:08	86.10
5	20-Nov-11 17:57:19	7.27
6	20-Nov-11 18:11:04	155.67
7	20-Nov-11 18:29:02	388.25
8	20-Nov-11 18:44:03	550.49
9	20-Nov-11 18:54:48	536.35
10	20-Nov-11 18:57:17	114.27
11	20-Nov-11 19:26:27	13.67
Total		1934.59

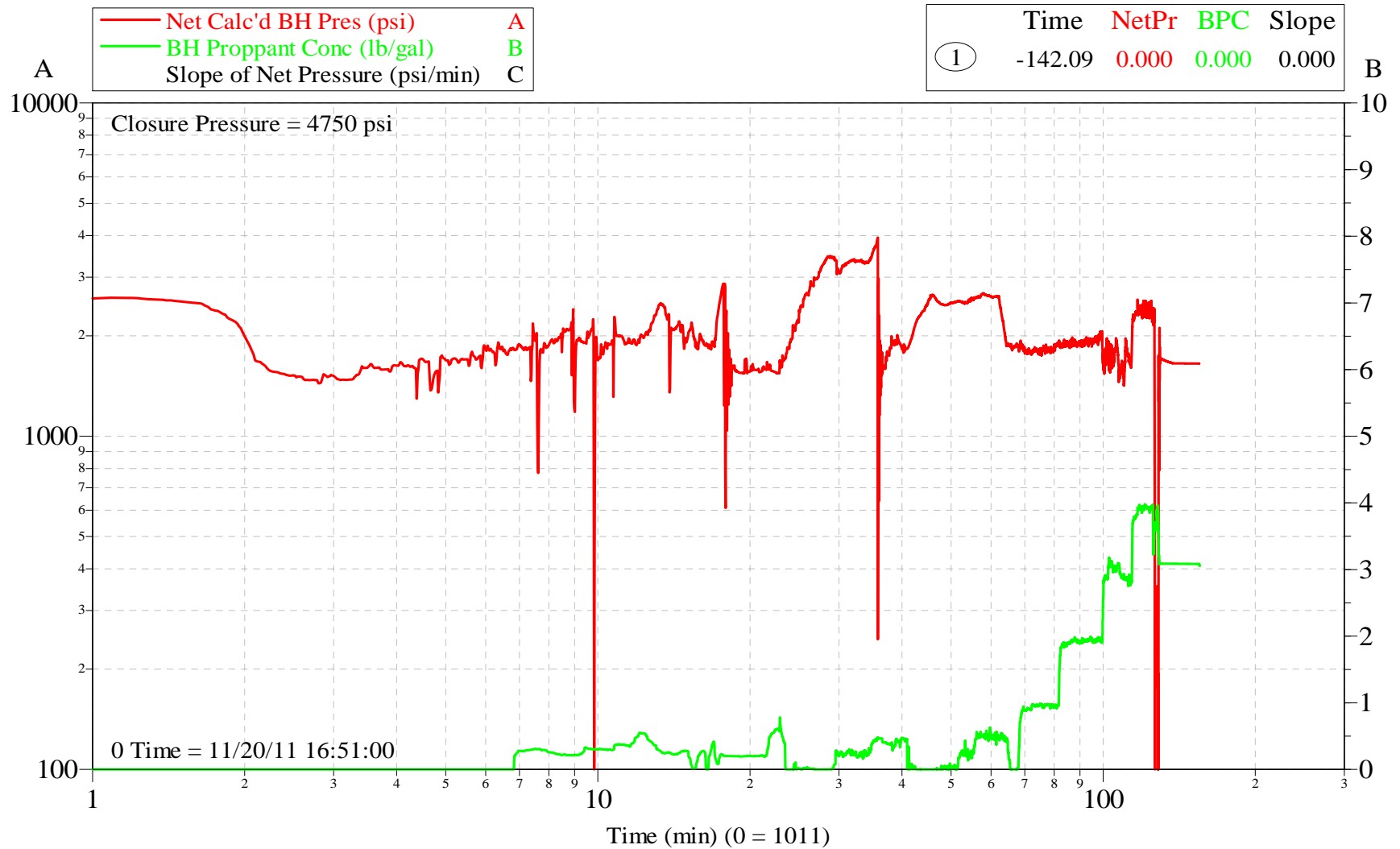
5.0 PERFORMANCE HIGHLIGHTS

5.1 Job Stage Log

Time	Description	Comment
20-Nov-11 16:17:57	Stage 1	Pad
16:26:31	Stage 2	Pad
16:57:38	Stage 3	Proppant Laden Fluid
17:23:08	Stage 4	Proppant Laden Fluid
17:53:09	Stage 5	Pad
17:57:20	Stage 6	Proppant Laden Fluid
18:11:05	Stage 7	Proppant Laden Fluid
18:29:03	Stage 8	Proppant Laden Fluid
18:44:04	Stage 9	Proppant Laden Fluid
18:54:49	Stage 10	Proppant Laden Fluid
18:57:18	Stage 11	Flush

Net Pressure Plot

State of CO AB 1 - Niobrara



Customer: HILCORP ENERGY
Well Description: State of CO AB 1

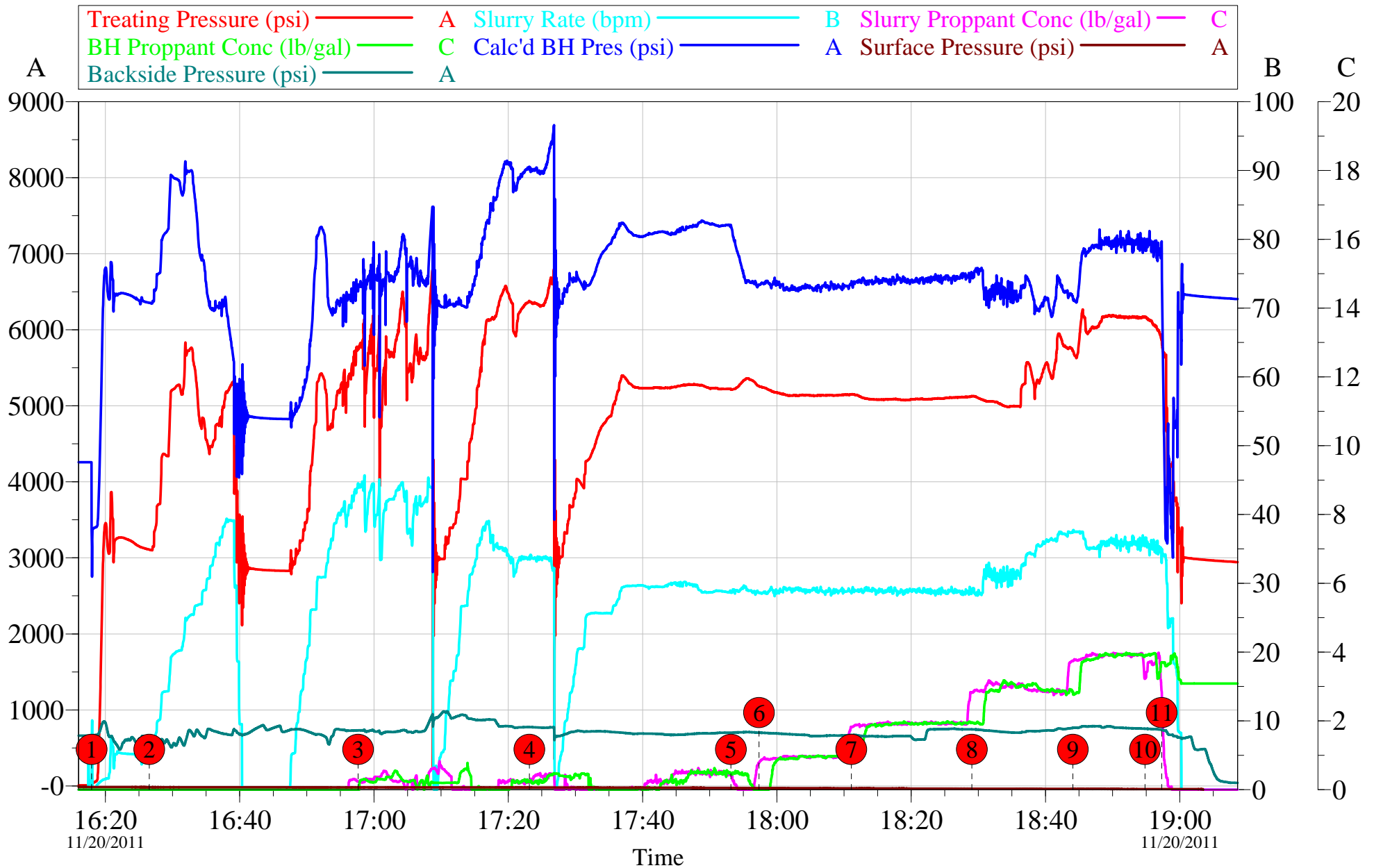
Job Date: 20-Nov-2011
UWI: 05-001-09309

Sales Order #: 9074964

HALLIBURTON
INSITE for Stimulation v4.1.3
20-Nov-11 19:29

Treatment Plot

State of CO AB 1 - Niobrara



Customer: HILCORP ENERGY
Well Description: State of CO AB 1

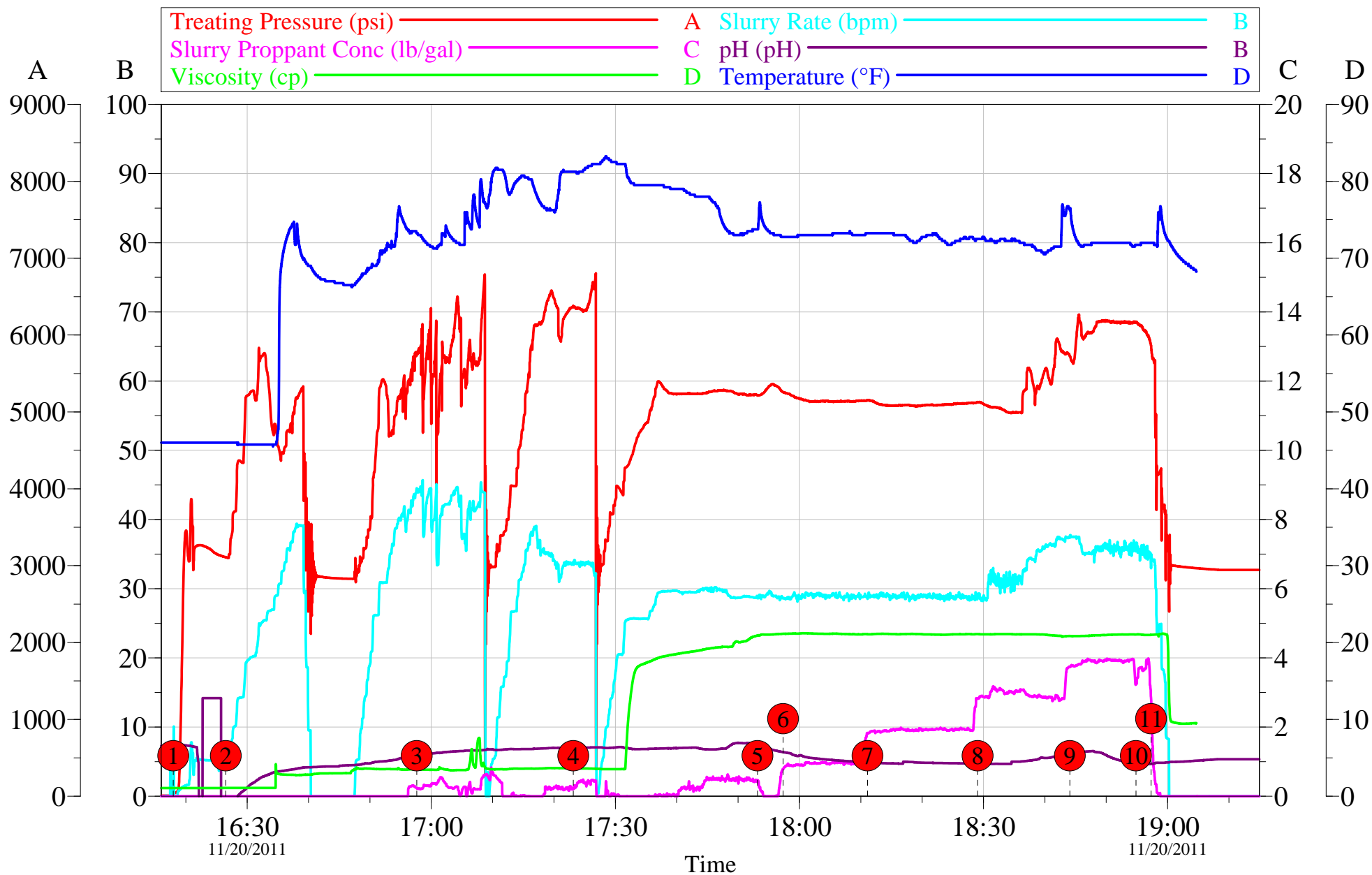
Job Date: 20-Nov-2011
UWI: 05-001-09309

Sales Order #: 9074964

HALLIBURTON
INSITE for Stimulation v4.1.3
20-Nov-11 19:28

QAQC Plot

State of CO AB 1 - Niobrara



Customer: HILCORP ENERGY
Well Description: State of CO AB 1

Job Date: 20-Nov-2011
UWI: 05-001-09309

Sales Order #: 9074964

HALLIBURTON
INSITE for Stimulation v4.1.3
20-Nov-11 19:29

HALLIBURTON						JOB SUMMARY							TICKET # 9021612	
COUNTRY UNITED STATES				LOCATION BRIGHTON, COLORADO				BDA ROCKIES NWA			TICKET DATE 20-Nov-2011			
H.E.S. EMPLOYEE NAME MIKE NUCE				MBU ID N/A		EMP NO. 446133		SUB PSL PRODUCTION ENHANCEMENT						
CUSTOMER REP GARY CHANDLER				COMPANY HILLCORP				JOB PURPOSE CODE 15321						
WELL NAME STATE OF CO		WELL NO. AB 1		API/UWI # 05-001-09309				COUNTRY WELD		JOB CLASSIFICATION pHaserFrac				
WELL LOCATION COMMERCE CITY, CO				SEC / TWP / RNG SEC 16 / T2S / R66W				DEPARTMENT NO. 5005		FORMATION NIOBRARA				
H.E.S. EMP NAME / EMP # / (EXPOSURE HOURS) HRS HRS HRS HRS														
16		H.E.S. EMPLOYEES		9.0		SEE ATTCH. SHEET								
H.E.S. UNIT #'S / (R / T MILES) R / T MILES R / T MILES R / T MILES R / T MILES														
14		FRAC. UNITS				SEE ATTCH. SHEET								
1		PICKUPS												
Form. Name NIOBRARA Type: LIME STONE														
Form. Thickness		90		From		7,719		to		7,809				
Packer Type				Set At										
Bottom Hole Temp.				Pressure										
Retainer Depth				Total Depth										
Tools and Accessories														
Type and Size		Qty		Make		Well Data								
Float Collar						New/Used		Weight		Size		Grade		
Float Shoe						Casing		USED		11.6		4112		
Centralizers						Casing								
Top Plug						Liner								
Packer						Tubing								
DV Tool						Tubing								
Insert Float						Open Hole						PERFS		
Guide Shoe						Perforations				7,719		7,739		
Other						Perforations				7,889		7,809		
						Perforations								
Materials														
Fluid Type		pHaserFrac		Density				Hours On Location		Operating Hours		Description of Job		
Disp. Fluid		H2O		Density		8.34		Date		Hours		SEE JOB LOG DESCRIPTION		
Prop. Type		OTTAWA		Size		20/40		11/20		9.0				
Prop. Type		OTTAWA		Size		40/70								
Proppant Type		CRC		Gal.		20/40								
Crosslinker		CL-23		Gal.		39								
Surfactant		GP 1100		Gal.		353								
Surfactant				Gal.										
Buffer		BA-20		Gal.		44								
Claycontrol		Clay Web		Gal.		92								
Gelling Agent		WG-18		LBS.		2,596								
Breaker		VICON NF		Lb		395								
Breaker		CAT-3		Lb		11								
Breaker		BE-3S		Lb		36								
Breaker				Lb										
Stabilizer		FR-66		Lb		100								
Acid		15%		Gal.		750								
Other		HAI		Gal.		2								
Other														
Other														
Other														
Perfpac Balls														
PRESSURES														
Breakdown		3457						VOLUMES		GALS		BBLS		
Displacement		6804						load & break		Gal - BBI				
Maximum		6804						Pad:		Gal - BBI		101514		
Average		5336						Treatment:		Gal - BBI		90426		
Shut In: Instant		3124						Pipe Volume		Gal - BBI		4058		
5 Min.		2802						Flush Volume		Gal - BBI		2,772		

HALLIBURTON					JOB LOG					9021612		
COUNTRY UNITED STATES				LOCATION BRIGHTON, COLORADO				BDA ROCKIES NWA		TICKET DATE 20-Nov-2011		
H.E.S EMPLOYEE NAME MIKE NUCE				MBU ID N/A		EMP NO. 446133		SUB PSL PRODUCTION ENHANCEMENT				
CUSTOMER REP. / PHONE GARY CHANDLER				COMPANY HILLCORP				JOB PURPOSE CODE 15321				
WELL NAME STATE OF CO		WELL NO. AB1		API/UWI # 05-001-09309				COUNTRY WELD		JOB CLASSIFICATION pHaserFrac		
WELL LOCATION COMMERCE CITY, CO				SEC / TWP / RNG SEC 16 / T2S / R66W				DEPARTMENT NO. 5005		FORMATION NIOBRARA		
Chart No.	Time	Rate (BPM)	Volume (BBL)(GAL)	Pmps		Press.(PSI)		Job Description / Remarks				
				T	C	Tbg	Csg					
	8:00 AM							CALLED OUT				
	9:00AM							YARD SAFETY MEETING				
	11:00AM							ON LOCATION				
	11:10 AM							PRE - RIGUP SAFETY MEETING				
	1:00 PM							PRIME UP TRUCKS				
	1:30PM							TEST LINES 6002 MAX PRESSURE AT 5000#				
	1:35 PM							POP OFFS AT5012				
								BACKSIDE POP OFF SET AT 1017 BACKSIDE AT N/A				
	2:00 PM							PRE - JOB SAFETY MEETING				
	3:18 PM						34	START JOB WITH ACID				
								START FR PAD				
	3:20 PM	1.7					3457	BREAK FORMATION				
								START ACID				
	3:26 PM	5.0	34				3109	START FR WATER PAD				
								SHUTDOWN ISIP 3066 5 MIN. 2833				
	3:50 PM							RESUME FR WATER PAD UP TO RATE				
	3:58 PM	44.5	661				5753	START .25 PPG FR WATER STAGE				
			727					0.25 PPG ON FORMATION				
	4:23 PM	33.6	1505				6350	START .5 PPG FR WATER STAGE				
			1571					.5 PPG ON FORMATION				
	4:53 PM	28.6	2298				5218	START PHASER PAD				
	4:57 PM	28.6	2417				5258	START 1 PPG SAND STAGE				
	4:59 PM	29.0	2486				5178	1 PPG SAND ON FORMATION				
	5:11 PM	28.5	2799				5150	START 2 PPG SAND STAGE				
	5:13 PM	29.3	2868				5090	2 PPG SAND ON FORMATION				
	5:29 PM	28.9	3275				5126	START 3 PPG SAND STAGE				
	5:31 PM	31.4	3344				5060	3 PPG SAND ON FORMATION				
	5:44 PM	37.5	3716				5723	START 4 PPG SAND STAGE				
	6:46 PM	35.0	3785				5949	4 PPG SAND ON FORMATION				
	5:55 PM	36.5	4045				6163	START 2ND 4PPG SAND STAGE				
	5:57		4120				5864	FLUSH				
	6:00		4183				3124	JOB COMPLETED				
								AVERAGES :			SHUTIN PRESSURES :	
								PRESSURE	5336	INSTANT	3124	
								RATE	30.9	5 MIN	2802	
								TEMP	70	10 MIN	N/A	
								VIS.	20.4	15 MIN	N/A	
								MAX :			TOTAL VOLUME	4183
								PRESSURE	6804	FLUSH VOLUME		66
								RATE	45.7			