PDC Energy

Treatment Summary

Wells Ranch 24-22

Weld County, Colorado

Section 2
Township 6N
Range 63W

Niobrara

pHaserFrac

June 6, 2012

HALLIBURTON

Well Information *Wells Ranch 24-22 Niobrara*

Well Name: Wells Ranch Well #: 24-22

Tubulars

Name	Measured Depth (ft)	Outer Diameter (in)	Inner Diameter (in)	Linear Weight (lbm/ft)
4 1/2" Production Casing	0 - 8000	4.5	4.052	10.5

Perforations

Interval Name/ Depth (ft)	Shot Density (spf)	# of Perfs	Phase (DEG)	Hole Diam. (in)	Mid-perf Depth (ft)
Niobrara B Perforation Interval / 6671 - 6679	3	24	120	0.42	6675
Niobrara A Perforation Interval / 6560 - 6562	2	4	120	0.42	6561

Formations

Name	Top MD (ft)	Bottom MD (ft)	Top TVD (ft)	Bottom TVD (ft)
Niobrara Formation	6560	6679	6560	6679

PDC ENERGY EBUS
DO NOT MAIL - BOX 26
BRIDGEPORT, WV 26330

Wells Ranch 24-22

Interval 1
Weld County, Colorado

Sales Order: 9572556

Post Job Report

For: Chad Sailors
Date: Wednesday, June 06, 2012

HALLIBURTON

2.0 WELL INFORMATION

2.1 Customer Information

Customer	PDC ENERGY EBUS
Sales Order	9572556
Well Name	Wells Ranch
Interval	1
Well Number	24-22
Job Date	06-Jun-2012
County	Weld
State	Colorado
UWI/API	05-123-27317
Lease Name	WELLS RANCH
Country	United States of America
H2S Present	Unknown
Customer Representative	Chad Sailors
Customer Telephone Number	303-883-5279
Halliburton Representative	GOMEZ

3.0 ACTUAL STAGE SUMMARY

3.1 Stage Summary

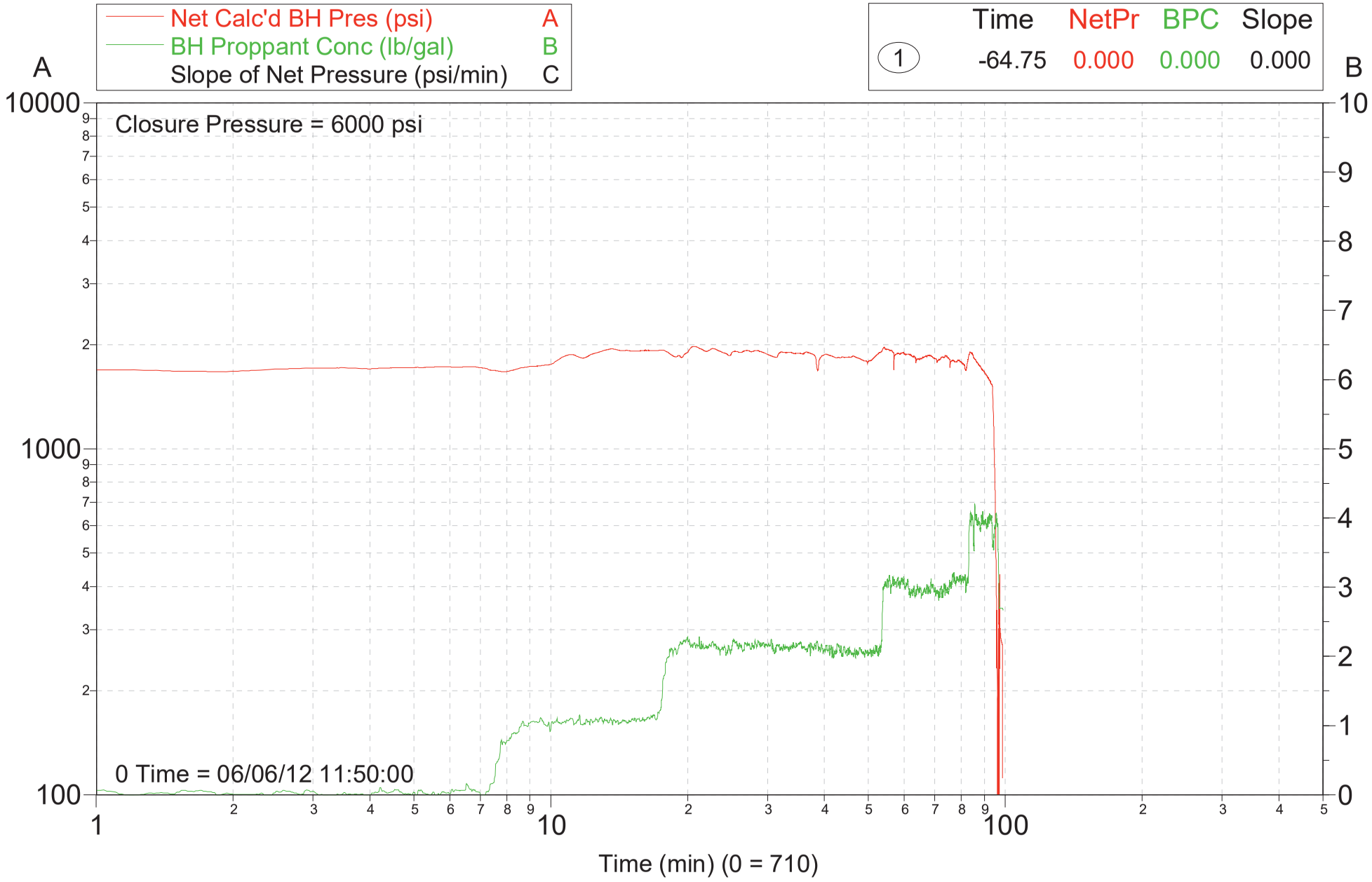
Stage Number	Stage Time	Start Time	End Time	Time min	Pump Time min	Max Treat Pr psi	Max Slurry Rate bpm
1	06-Jun-12 10:42:52	10:31:29	06-Jun-12 10:42:52	11.42	9.60	5619	16.9
2	06-Jun-12 11:22:30	10:42:53	06-Jun-12 11:22:30	39.62	39.62	5017	18.0
3	06-Jun-12 11:52:23	11:22:31	06-Jun-12 11:52:23	29.89	29.88	5039	17.2
4	06-Jun-12 12:02:23	11:52:24	06-Jun-12 12:02:23	10.00	10.00	5000	18.5
5	06-Jun-12 12:39:59	12:02:24	06-Jun-12 12:39:59	37.60	37.60	5019	26.8
6	06-Jun-12 12:59:56	12:40:00	06-Jun-12 12:59:56	19.95	19.95	4920	32.2
7	06-Jun-12 13:10:25	12:59:57	06-Jun-12 13:10:25	10.48	10.48	4923	35.1
8	06-Jun-12 13:20:35	13:10:26	06-Jun-12 13:20:35	10.17	10.17	4914	38.0
9	06-Jun-12 13:23:47	13:20:36	06-Jun-12 13:23:47	3.20	3.20	4659	38.1
10	06-Jun-12 13:29:11	13:23:48	06-Jun-12 13:29:11	5.40	3.40	4848	38.2

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	06-Jun-12 10:42:52	16.9	0.00	0.00	4483	12.3	12.3
2	06-Jun-12 11:22:30	18.0	0.46	0.46	4831	16.8	16.8
3	06-Jun-12 11:52:23	17.2	0.97	0.97	4972	16.7	16.8
4	06-Jun-12 12:02:23	18.5	1.96	1.96	4911	16.7	17.5
5	06-Jun-12 12:39:59	26.8	2.77	2.77	4904	20.9	22.9
6	06-Jun-12 12:59:56	32.2	3.15	3.15	4871	26.3	29.8
7	06-Jun-12 13:10:25	35.1	3.83	3.83	4868	29.6	33.7
8	06-Jun-12 13:20:35	38.0	4.18	4.18	4787	31.5	37.1
9	06-Jun-12 13:23:47	38.1	4.06	4.06	4614	32.3	37.9
10	06-Jun-12 13:29:11	38.2	2.87	2.87	4410	30.9	31.3

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	06-Jun-12 10:42:52	12.3	0.00	1356	4976	4976	4976
2	06-Jun-12 11:22:30	16.8	0.14	1991	27901	27987	27987
3	06-Jun-12 11:52:23	16.8	0.07	2041	20980	21031	21031
4	06-Jun-12 12:02:23	17.5	1.10	2105	6998	7347	7347
5	06-Jun-12 12:39:59	22.9	2.11	2750	32994	36141	36141
6	06-Jun-12 12:59:56	29.8	2.96	3558	22017	24975	24975
7	06-Jun-12 13:10:25	33.7	3.06	4015	13015	14822	14822
8	06-Jun-12 13:20:35	37.1	3.91	4351	13452	15839	15839
9	06-Jun-12 13:23:47	37.9	3.77	4284	4344	5094	5094
10	06-Jun-12 13:29:11	31.3	0.55	3383	4414	4471	4471
Total					151091	162683	162683

Stage Number	Stage Time	Prop Mass 100*lb
1	06-Jun-12 10:42:52	0.00
2	06-Jun-12 11:22:30	18.95
3	06-Jun-12 11:52:23	11.37
4	06-Jun-12 12:02:23	76.92
5	06-Jun-12 12:39:59	693.82
6	06-Jun-12 12:59:56	652.14
7	06-Jun-12 13:10:25	398.52
8	06-Jun-12 13:20:35	526.42
9	06-Jun-12 13:23:47	163.53
10	06-Jun-12 13:29:11	12.40
Total		2554.07

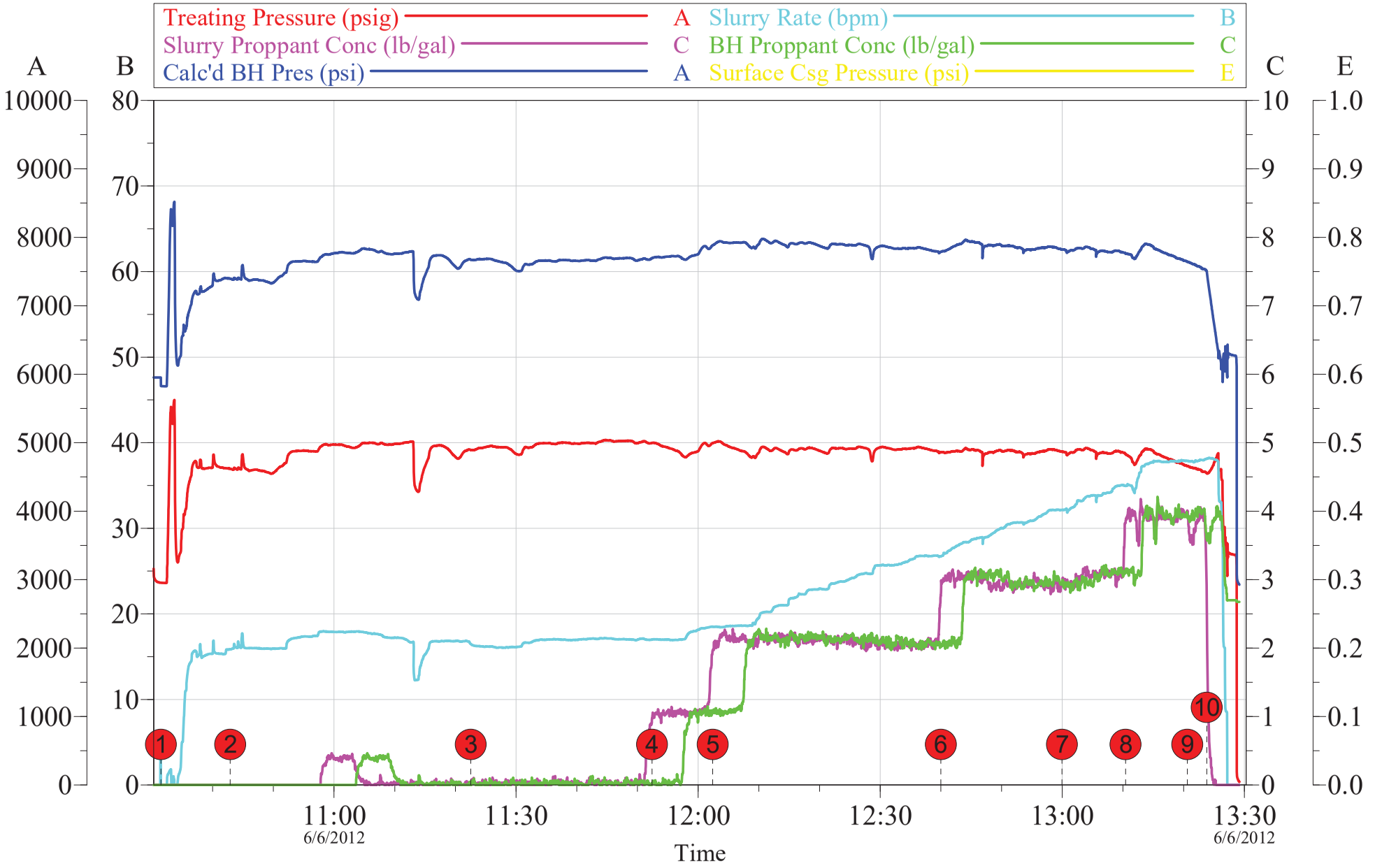
Net Pressure Plot
Wells Ranch 24-22 - Niobrara



Customer:	PDC ENERGY EBUS	Job Date:	06-Jun-2012	Sales Order #: 9572556
Well Description:	Wells Ranch 24-22	UWI:	05-123-27317	

INSITE for Stimulation v4.2.0
06-Jun-12 13:30

Treatment Plot
Wells Ranch 24-22 - Niobrara



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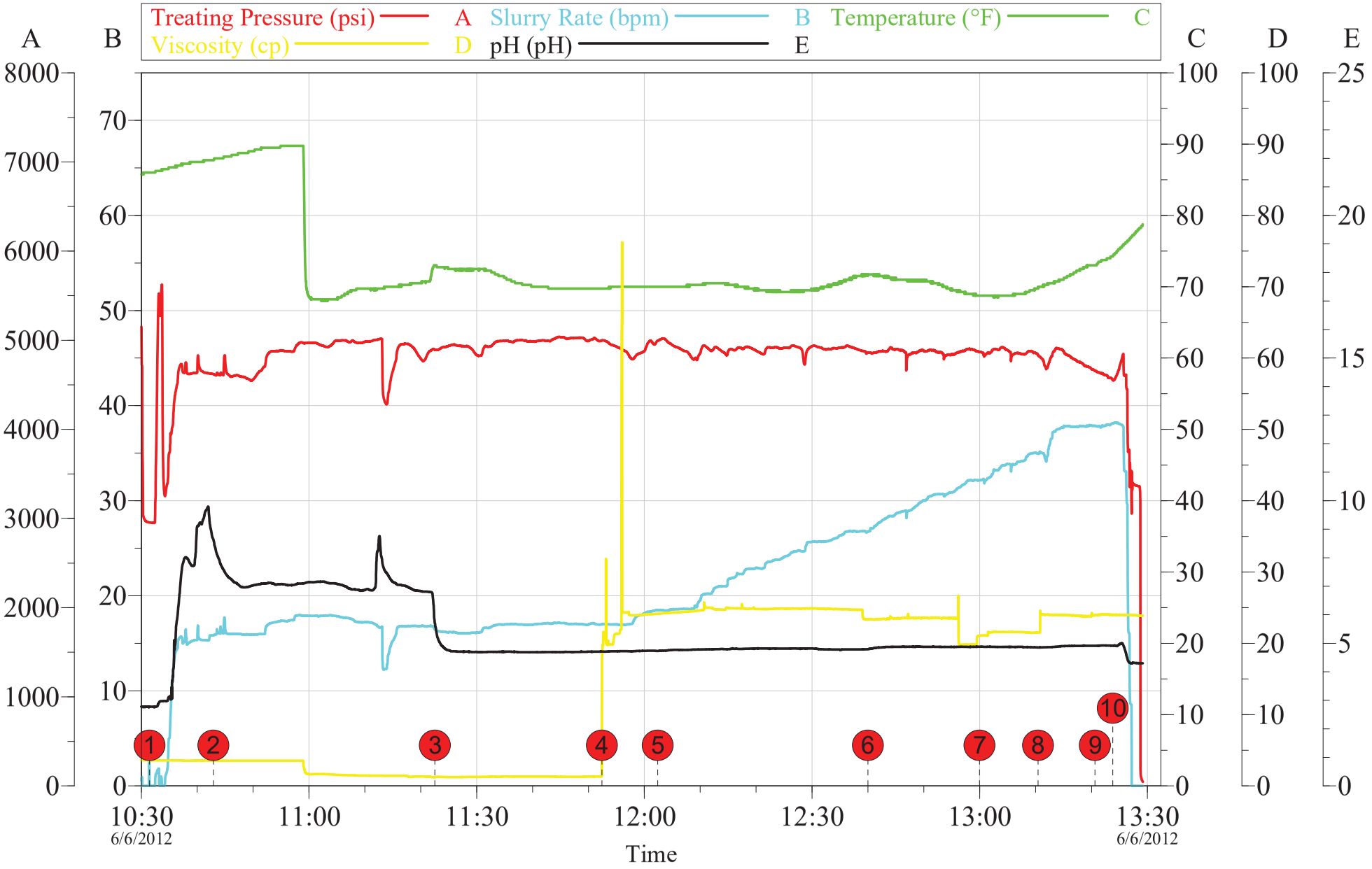
INSITE for Stimulation v4.2.0
06-Jun-12 13:30

QAQC Plot
Wells Ranch 24-22 - Niobrara



Customer: PDC ENERGY EBUS	Job Date: 06-Jun-2012	Sales Order #: 9572556
Well Description: Wells Ranch 24-22	UWI: 05-123-27317	

INSITE for Stimulation v4.2.0
06-Jun-12 13:32

HALLIBURTON — JOB SUMMARY

TICKET # 9572556

COUNTRY: UNITED STATES	LOCATION: BRIGHTON, COLORADO	BDA: ROCKIES NWA	TICKET DATE: 6-Jun-2012
H.E.S EMPLOYEE NAME: CRUZ QUEZADA	MBU ID: N/A	EMP NO.: 478606	SUB PSL: PRODUCTION ENHANCEMENT
CUSTOMER REP.: CHAD SAILORS	COMPANY: PDC		JOB PURPOSE CODE: 15321
WELL NAME: WELLS RANCH	WELL NO.: 24-22	API/UWI #: 05-123-21390	COUNTY: WELD
WELL LOCATION: LAND	SEC / TWP / RNG: SEC 2 / T6N / R63W		DEPARTMENT NO.: 5005
			JOB CLASSIFICATION: pHaserFrac
			FORMATION: NIOBRARA

H.E.S. EMP NAME / EMP # / (EXPOSURE HOURS)	HRS		HRS		HRS		HRS
28 H.E.S. EMPLOYEES	10.0	SEE ATTCH. SHEET					

H.E.S. UNIT #'S / (R / T MILES)	R / T MILES		R / T MILES		R / T MILES		R / T MILES
18 FRAC. UNITS		SEE ATTCH. SHEET					
2 PICKUPS							

Form. Name: NIOBRARA Type: LIMESTONE
Form. Thickness: 119 From: 6,560 to: 6,679
Packer Type: Set At:
Bottom Hole Temp.: Pressure:
Retainer Depth: Total Depth:

	Called Out	On Location	Job Started	Job Completed
Date	6/6/2012	6/6/2012	6/6/2012	6/6/2012
Time	0500	0630		

Tools and Accessories

Type and Size	Qty	Make
Float Collar		
Float Shoe		
Centralizers		
Top Plug		
Packer		
DV Tool		
Insert Float		
Guide Shoe		
Other		

Well Data

	New/Used	Weight	Size	Grade	From	To	Max. Allow
Casing	NEW	10.5	4 1/2		0	8,006	5,500
Casing							
Liner							
Tubing							
Tubing							
Open Hole							PERFS
Perforations					6,560	6,552	28
Perforations					6,671	6,679	
Perforations							

Materials

Fluid Type	pHaserFrac	Density	22		
Disp. Fluid	H2O	Density	8.34		
Prop. Type	OTTAWA	Size	20/40	Lb	238,160
Prop. Type	SB EXCEL	Size	20/40	Lb	12,000
Crosslinker	CL-23	Gal.	77		
Crosslinker		Gal.			
Surfactant	GP	Gal.	248		
Surfactant	LOSURF	Gal.	149		
Buffer		Gal			
Claycontrol	CLAY WEB	Gal	42		
Gelling Agent	WG-18	Gal.	3,284		
Breaker	BA-20	Lb	45		
Breaker	VICON NF	Lb	276		
Breaker	CAT 3	Lb	18		
Breaker		Lb			
Stabilizer		Lb			
Acid		Gal.			
Other	BE 7	Gal.	54		
FRICTION RED	FR		99		
Other					
Other	LCA		33		
Perfpac Balls					

Hours On Location

Date	Hours
6/6	10.0
Total	10.0

Operating Hours

Date	Hours
6/6	3.0
Total	3.0

Description of Job

SEE JOB LOG DESCRIPTION

Hydraulic Horsepower

Ordered: 11500 Avail.: 11500 Used: 2752

Average Rates in BPM

Treating: 47.9 Disp.: Overall: 4686.0

PRESSURES

Breakdown	5620@ 1.8 BBL
Displacement	
Maximum	5039
Average	4882
Shut In: Instant	3380
5 Min.	N/A
10 Min.	N/A
15 Min.	N/A

VOLUMES

		GALS	BBLS
load & break	Gal - BBl		
Pad:	Gal - BBl	27901	664
Treatment:	Gal - BBl	113800	2,709
Pipe Volume	Gal - BBl	4452	106
Flush Volume	Gal - BBl	4452	106
Total Volume	Gal - BBl	151074	3,597

Customer Signature:

HALLIBURTON — JOB LOG

9572556

COUNTRY: UNITED STATES	LOCATION: BRIGHTON, COLORADO	BDA: ROCKIES NWA	TICKET DATE: 6-Jun-2012
H.E.S EMPLOYEE NAME: CRUZ QUEZADA	MBU ID: N/A	EMP NO.: 417249	SUB PSL: PRODUCTION ENHANCEMENT
CUSTOMER REP. / PHONE: CHAD SAILORS	COMPANY: PDC		JOB PURPOSE CODE: 15321
WELL NAME: WEBSTER	WELL NO.: 42-11	API/UWI #: 05-123-21390	COUNTY: WELD / JOB CLASSIFICATION: pHaserFrac
WELL LOCATION: LAND	SEC / TWP / RNG: SEC 2 / T6N / R63W	DEPARTMENT NO.: 5005	FORMATION: NIOBRARA

Chart No.	Time	Rate (BPM)	Volume (BBL)(GAL)	Pmps T	Pmps C	Press.(PSI) Tbg	Press.(PSI) Csg	Job Description / Remarks
	2:00 AM							CALLED OUT
	2:30 AM							YARD SAFETY MEETING
	3:45 AM							ON LOCATION
	4:00 AM							PRE - RIGUP SAFETY MEETING
	5:49 AM							PRIME UP TRUCKS
	10:25 AM							TEST LINES TO 7920 MAX PRESSURE AT 7500
								POP OFFS AT 7406
								BACKSIDE AT N/A
								PRE - JOB SAFETY MEETING
	10:28 AM						2951	START JOB
	10:32 AM	1.8		1			5620	BREAK FORMATION 3239@ 1.9
	10:28 AM			1			2951	START ACTIVE PAD
	10:39 AM	15.6	118	3			4616	START FR WATER PAD
	11:20 AM	16.4	783	4			4894	START PHASERFRAC PAD
	11:48 AM	17.0	1282	4			4998	START 1.00 PPG SAND STAGE
	11:55 AM	17.8	1388	4			4838	1.00 PPG SAND ON FORMATION
	11:58 AM	18.5	1449	4			4994	START 2.00 PPG SAND STAGE
	12:04 PM	18.6	1555	4			4844	2.00 PPG SAND ON FORMATION
	12:36 PM	26.8	2235	4			4862	START 3.00 PPG SAND STAGE
	12:41 PM	28.4	2327	4			4903	3.00 PPG SAND ON FORMATION
	12:56 PM	32.1	2759	4			4869	CONTINUE 3.00 SAND STAGE
	1:06 PM	34.9	3069	4			4835	START 4.00 SAND STAGE
	1:13 PM	37.3	3158	4			4877	4.00 PPG SAND ON FORMATION
	1:17 PM	37.9	3389	4			4659	START SBXL 4.00 SAND STAGE
	1:20 PM	38.1	3493	4			4554	FLUSH
								END FLUSH
	1:24 PM						3380	JOB COMPLETED

AVERAGES :		SHUTIN PRESSURES :	
PRESSURE	4882	INSTANT	3380
RATE	23	5 MIN	N/A
TEMP	71.9	10 MIN	N/A
VIS.	23.7	15 MIN	N/A
MAX :		TOTAL VOLUME	3597
PRESSURE	5039	FLUSH VOLUME	106
RATE	38		

HALLIBURTON

PDC Energy

3801 Carson St
Evans, Colorado 80620

Wells Ranch 24-22

Niobrara
05-123-27317
SWSE SEC 2 T6N R63W
June 6, 2012
Ticket #: 9572556

Treater: **Cruz Quezada**
IFS: **Brandon White**
Engineer: **Adebambo Alli**
Customer: **Chad Sailor**

Pre Job Inventory

Total Water on Location			0.0 bbls	gal
Total Water after Prime Up	0 Gal Prime Up		0.0 bbls	gal
Bottoms			57.1 bbls	2,400 gal
Water Required for Design			2761.9 bbls	116,000 gal
Excess			**2819.0** bbls	**118,400** gal

Total Sand	Ottawa 20/40	238,160 #
	SB Excel 20/40	12,000 #
Proppant Hauled From		Brighton

Pressure Test

Lines Tested To	**6247** psi
Max Pressure	5500 psi
Kick-Outs	5500 psi

Volume Calculations

Top Perf	6,560 ft
TVD Difference	0 ft
Wellbore Volume	4395 gal
	104.6 bbls

Event Log

		Pressure	Rate
10:31	Opened wellhead	2955	
10:32	Fornation Break	5620	1.8
	Break occured after we kicked out attaining max pressure		
10:42	Begin FR water	4618	15.9
10:57	Begin 0.50 ppg sand scour	4950	17.9
10:57	Experiencing high pressures during FR	5000	15.7
11:03	No response after sand hit formation	4940	18.0
	Went to Gel early		
11:22	Begin Crosslinked Gel	4899	16.7
11:52	Begin 1.00 ppg sand	5008	17.0
11:58	1.00 ppg sand on formation	4788	17.2
12:02	Begin 2.00 ppg sand	4993	18.5
12:08	2.00 ppg sand on formation	4842	18.6
12:40	Begin 3.00 ppg sand	4858	26.7
12:43	3.00 ppg sand on formation	4898	28.4
13:10	Begin 4.00 ppg sand	4849	34.9
13:13	4.00 ppg sand on formation	4876	37.3
13:20	Begin 4.00 ppg SB Excel	4657	37.8
13:24	Marked Flush	4554	38.1
13:27	ISDP	3380	

Pressure Analysis

ISIP	NA psi	ISDP	3380 psi
IFG	NA psi/ft	FFG	0.948 psi/ft
5 min	NA psi	5 min	NA psi
Leakoff	NA psi	Leakoff	NA psi

Average	Pressure	4882 psi
	Rate	23 bpm
	Viscosity	23.7 cP
	Temperature	71.9 °F
	pH	4.84
Maximum	Pressure	5039 psi
	Rate	38 bpm

Fluid Totals

FR Water	664.3 bbls	27,901 Gal
pHaserFrac	2709.5 bbls	113,800 Gal
SLF	2210.0 bbls	92,820 Gal
Load to Recover	3597.4 bbls	151,091 Gal

Ticket