



SERVICE ORDER

717 - 17th St., Suite 1445, Denver CO 80202
 Phone: (303) 293-2931 Fax: (303) 293-2939

v580

Contact: Dean Rogers	Job Location: HFE 44-22, SWSE S22, T4N, R68W
Company: Sundance Energy	Job Date: 12/11/12
Address: 390 Interlocken Crescent, Suite 640 Broomfield, CO, 80021	Customer AFE #: <input type="text"/>
Job Type: CWS-600	Customer PO #: <input type="text"/> Code: <input type="text"/>
Phone:	Operator G/L Code #: <input type="text"/>
Fax:	User ID #: <input type="text"/>
Area: Platteville - CO	Sales Rep: Dale Larsen
County: Weld	District: Platteville
	Service Order #: 82118

Quantity	Units	Equipment	Price	Units	Total
		Area 1 - Spread			
7		2000 hhp Fluid Pumper(s)		job	
1		Blender Base charge		job	
1		Chemical Unit Base charge		job	
1		Buffer Unit Base charge		job	
1		Suction Discharge Trailer charge		job	
1		Suction Manifold Trailer		job	
1		Iron Truck charge		job	
1		Sandmaster(s)		job	
1		Computer Van w/ Densitometer		job	
Equipment Subtotal One Frac per Day					\$ 25,000.00
<u>MATERIALS</u>					
1406 cwt		White Sand, 30/50	\$ 35.80	cwt	\$ 50,341.96
100 cwt		Super LC, 20/40	\$ 140.00	cwt	\$ 14,000.00
CWS-600 Fracture Treatment Fluid					
71 gals		DWP-621, Friction Reducer	\$ 90.00	gal	\$ 6,390.00
212 gals		DWP-913, Clay Control	\$ 55.10	gal	\$ 11,681.20
315 gals		DWP-937, ME Surfactant	\$ 120.00	gal	\$ 37,800.00
44 gals		DWP-944, Biocide	\$ 110.00	gal	\$ 4,840.00
Materials Subtotal					\$ 125,053.16
<u>Materials Subtotal Discounted</u>					\$ 37,515.95
<u>CARTAGE</u>					
1506.2 ton*mi		Proppant Transport	\$ 2.50	ton*mi	\$ 3,765.50
20 unit*mi		Sandmaster Cartage	\$ 12.60	unit*mi	\$ 252.00
260 unit*mi		Travel on Equipment (13 units @ 20 miles)	\$ 6.30	unit*mi	\$ 1,638.00
Cartage Subtotal					\$ 5,655.50
Cartage Subtotal Discounted					\$ 1,696.65
Subtotal					\$ 64,212.60
ADDITIONAL CHARGES (no discount)					
14 units		DOT Vehicle Charge (14 unit(s))	\$ 170.00	unit	\$ 2,380.00
1506 cwt		Slickwater Pumping Surcharge	\$ 1.10	cwt	\$ 1,656.60
Additional Charges Subtotal					\$ 4,036.60
GRAND TOTAL					\$ 159,745.26
GRAND TOTAL -Discounted					\$ 68,249.20

Receipt of Materials & Services on this Order Is Hereby Acknowledged

CUSTOMER SIGNATURE

THIS IS NOT AN INVOICE - DO NOT PAY!

General Info		580	
Loc'n	HFE 44-22, SWSE S22, T4N, R68W	Calfrac Service Line:	Frac
Customer:	Dean Rogers	Job Date:	12/11/12
	Sundance Energy	Job Type:	CWS-600
	390 Interlocken Crescent, Suite 640	Program Number:	FAK0109SD
	Broomfield, CO 80021	Service Order #:	82118

	Date	Time
Requested RTS:	12/11/12	8:00 AM
Stage Time Start:	12/11/12	9:10 AM
Stage Time End:	12/11/12	11:10 AM

Wellbore Data								
Type	Wellbore Configuration			Capacity (bbl/ft)	Max Pres (psi)	Top Depth (ft)	Bottom Dept (ft)	Volume (bbl)
	Size	Weight	Grade					
Casing:	4.5	11.6	N-80	0.01554	7780		7581	117.2
Casing 2:								
Liner:								
Tubing:								
Tubing 2:								
Annulus:								
Total								117.2
Packer (ft):	PBDT (ft):			Treating Mode: Down Casing				

Perforations		
Top (ft)	Bttm. (ft)	Shots / ft
7538	7556	4

Proppant Data					
1	White Sand, 30/50				
2	Super LC, 20/40				
3					
4					
5					
6					
Total sand on location	140,620	20,000			lb
Sand pumped	140,620	10,000			lb
Sand in Formation	140,620	10,000			lb
Final Conc @ Perfs	0.00	0.00			lb/gal

Treatment Data				
Max. Treating Rate	60.9 bbl/min			
Max. Treating Pressure	4592 psi			
Pressure Test Lines	6500 psi			
Annular Relief Set	N/A	psi		
Annulus Pressure	N/A	psi		
Initial Well Press	0 psi			
Breakdown Press	3270 psi	@	4.8 bpm	
Average Pressure	4418 psi			
Average Fluid Rate	59.3 bbl/min			
Average CO2 Rate	bbl/min			
Average N2 Rate	scf/min			
	MiniFrac	Minifrac 2	Minifrac 3	Treatment
ISIP Pres.	2732			2940 psi
1 Min. SIP	2658			2862 psi
5 Min. SIP	2554			2824 psi
10 Min. SIP				psi
15 Min. SIP				psi
Frac Grad.:	0.81	0.43	0.43	0.84 psi/ft

Formation Treated
Codell, (gas)

Flush Fluid Density
8.34 (lb/gal)

TVD
7257 (ft)

Fluid in Tanks
Pre-Job 11038 bbl
Post-Job 5913 bbl

Pump Power
Available 14000 hhp
Used 6420 hhp

Chemical Data				
Chemical Name	Metered	Prime Up	Strapped	Difference
DWP-621	66	5	71	
DWP-913	204	6	212	2
DWP-937	308	9	315	2
DWP-944	40	4	44	

Fluid Summary	
Load Hole Fluid Vol.	0.0 bbl
Acid Fluid Vol.	bbl
Pump In Fluid Vol.	bbl
Mini-Frac Fluid Vol.	238.1 bbl
Pad Fluid Vol.	805.3 bbl
Sweep Fluid Vol.	479.0 bbl
Proppant Fluid Vol.	3289.6 bbl
Flush Fluid Vol.	117.2 bbl
Total Fluid Pumped	4929.2 bbl

CO2 Data	
CO2 Rate	bbl/min
Average CO2	%
CO2 Pumped	bbl
CO2 Losses	bbl
Total CO2	bbl
Total CO2 Gas	scf

Acid Spearhead Data			
Type	Volume		gal
Chemical Name	Conc.	Loading	Total (gal)

Nitrogen Data	
N2 Rate	scf/min
N2 Space Factor For Job	scft/bbl
N2 Space Factor For Flush	scft/bbl
N2 Pumped	scf
N2 Losses	scf
Total N2	scf

Acid Spearhead #2 Data			
Type	Volume		gal
Chemical Name	Conc.	Loading	Total (gal)

Ball Sealers: Size # Weight

Remarks: Pumped as per customer request.
Calfrac Supervisor: Jason Alps 100602 S1 PL Customer Representative: Dean Rogers



Treatment Details

General Info				580
Loc'n	HFE 44-22, SWSE S22, T4N, R68W	Calfrac Service Line:	Frac	
Customer:	Dean Rogers Sundance Energy 390 Interlocken Crescent, Suite 640 Broomfield, CO 80021	Job Date:	12/11/12	
		Job Type:	CWS-600	
		Program Number:	FACK0109SD	
		Service Order #:	82118	

Detailed Stage Summary														
#	Elapsed Time	Treating Pressure (psi)		Rate (bpm)				Clean Fluid Pumped (bbl)		Start Conc. (ppg)	End Conc. (ppg)	Proppant (lb)		Stage Details
		Max	Min	Slurry	Clean	CO2	N2	Stage	Total			Stage	Total	
1	0:04:46	3747	3695	49.9	49.9			238.1	238.1					Mini-Frac - [CWS-600]
2	0:18:10	4532	4425	60.1	60.1			805.3	1043.4					Pad - [CWS-600]
3	0:33:09	4502	4387	60.1	58.8			881.2	1924.6	0.47	0.47	17503	17503	0.47 ppg Sand - [CWS-600 / White Sand, 30/50]
4	0:35:08	4542	4489	60.0	60.0			118.8	2043.4					Sweep - [CWS-600]
5	0:51:19	4539	4403	60.0	57.4			929.5	2972.9	0.98	0.98	38258	55762	.98 ppg Sand - [CWS-600 / White Sand, 30/50]
6	0:53:18	4537	4413	60.0	60.0			119.6	3092.5					Sweep - [CWS-600]
7	1:05:01	4563	4382	60.1	56.9			666.2	3758.7	1.23	1.23	34416	90177	1.23 ppg Sand - [CWS-600 / White Sand, 30/50]
8	1:06:59	4586	4454	60.0	60.0			118.7	3877.4					Sweep - [CWS-600]
9	1:13:22	4592	4401	60.0	56.2			358.4	4235.8	1.48	1.48	22278	112456	1.48 ppg Sand - [CWS-600 / White Sand, 30/50]
10	1:15:24	4566	4439	60.0	60.0			121.9	4357.7					Sweep - [CWS-600]
11	1:21:24	4578	4380	60.9	55.8			335.3	4693.0	2.00	2.00	28164	140620	2 ppg Sand - [CWS-600 / White Sand, 30/50]
12	1:23:35	4429	4381	60.0	54.8			119.0	4812.0	2.00	2.00	10000	150620	2 ppg Sand - [CWS-600 / Super LC, 20/40]
13	1:25:32	4534	4380	59.9	59.9			117.2	4929.2					Flush - [CWS-600]

Remarks:	Pumped as per customer request.
CALFRAC Supervisor:	Jason Alps 100602 S1 PL
Customer Representative:	Dean Rogers



Water Analysis

580

General Info			
Well Name, Loc'n:	HFE 44-22, SWSE S22, T4N, R68W	Calfrac Service Line:	Frac
Customer:	Dean Rogers	Job Date:	12/11/12
	Sundance Energy	Job Type:	CWS-600
	390 Interlocken Crescent, Suite 640	Program Number:	FAK0109SD
	Broomfield, CO 80021	Service Order #:	82118

Pre-Job Fluid Test Results:														
QC Step:	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14
Tank #	Initial Water pH	Water Temp. °F	Specific Gravity	Iron (Fe) mg/l	Chloride (Cl) mg/l	Potassium (K) mg/l	Calcium (Ca) mg/l	Magnesium (Mg) mg/l	Total Alkalinity mg/l	Sulfates (Su) mg/l	Sodium (Na) mg/l	TDS calc. mg/l		
1	7.50	66.6	1.002	10.33	1723.27	0.00	36.25	0.00	805.46	195.86	1439.02	3888.00		
2	7.13	68.9	1.000	0.00	161.75	6.15	86.08	22.10	213.27	200.91	147.79	752.73		
3	7.09	68.5	1.000	0.00	110.35	5.91	83.85	21.85	193.66	192.89	114.64	645.69		
4	7.10	69.8	1.000	0.00	109.34	5.94	85.86	22.43	195.46	199.01	116.71	656.58		
5	7.12	66.4	1.000	0.00	106.32	5.69	84.32	21.58	190.46	192.60	110.33	635.11		
6	7.14	71.1	1.000	0.00	106.32	5.87	83.07	21.64	191.76	192.28	113.50	637.74		
7	7.17	69.1	1.000	0.00	109.09	5.48	79.53	20.76	197.56	185.50	109.27	628.16		
8	7.22	70.0	1.000	0.00	108.08	5.91	85.14	22.24	196.66	197.29	115.89	652.54		
9	7.24	68.5	1.000	0.00	105.06	5.75	80.50	21.16	190.36	187.68	110.57	624.93		
10	7.27	69.1	1.000	0.00	105.81	5.96	82.45	21.70	189.76	194.94	113.87	638.59		
11	7.26	68.5	1.000	0.00	110.85	6.13	86.16	22.70	195.06	201.88	121.51	666.27		
12	7.29	68.9	1.000	0.00	104.05	5.83	80.82	21.15	185.46	189.26	111.52	623.91		
13	7.28	69.8	1.000	0.00	107.58	5.84	86.42	22.37	196.46	200.21	116.80	657.09		
14	7.30	70.7	1.000	0.00	107.07	5.80	84.28	21.99	196.86	197.95	115.14	650.35		
15	7.38	69.8	1.000	0.00	92.71	4.63	72.44	17.49	160.15	152.51	88.10	523.97		
16	7.33	70.7	1.000	0.00	107.33	5.99	88.52	23.27	197.66	209.86	121.28	674.85		
17	7.31	70.3	1.000	0.00	110.10	5.77	85.76	22.43	196.86	198.73	116.64	657.54		
18	7.29	66.2	1.000	0.00	108.33	5.96	87.05	22.81	198.06	204.99	118.96	666.95		
19	7.29	72.5	1.000	0.00	108.08	6.04	87.25	22.96	198.06	205.35	120.64	669.16		
20	7.30	69.6	1.000	0.00	107.07	7.09	84.86	22.57	195.26	200.43	118.99	658.16		
21	7.29	66.2	1.000	0.00	104.81	5.77	80.46	21.25	189.76	187.71	111.89	625.74		
22	7.30	67.3	1.000	0.00	108.59	6.06	86.13	22.72	196.36	203.55	119.42	664.28		
23	7.34	70.2	1.000	0.00	108.08	6.08	86.66	23.11	197.36	204.71	120.38	667.44		

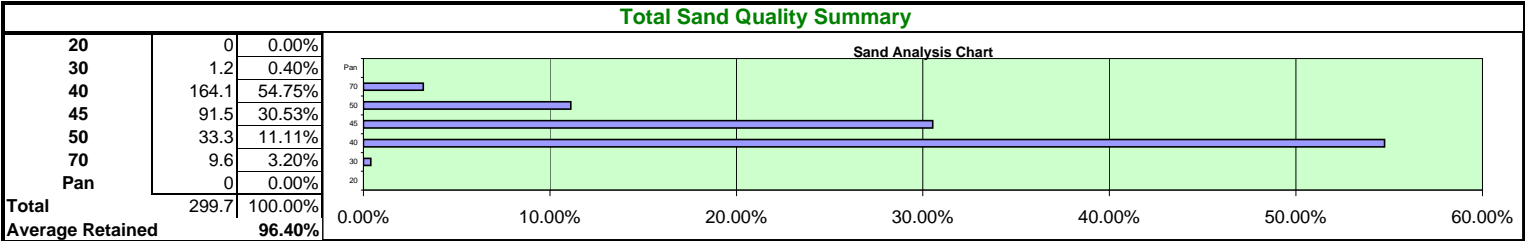


SAND SIEVE ANALYSIS 1

General Info				580
Well Name, Loc'n:	HFE 44-22, SWSE S22, T4N, R68W	Calfrac Service Line:	Frac	
Customer:	Dean Rogers	Job Date:	11-Dec-12	
	Sundance Energy	Job Type:	CWS-600	
	390 Interlocken Crescent, Suite 640	Program Number:	FAK0109SD	
	Broomfield, CO 80021	Service Order #:	82118	

Sand Master #	TOTAL SAND DELIVERED				140620	lbs	Type	White Sand				Mesh		30/50		
Order	1		1		1		2		4		5		5			
Bin #	1		1		1		4		4		5		5			
Ticket # / wt	SD-1		58160		s8-2		42000		SD-3		40460					
Sieve Size	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%	Weight	%
20	0	0.00%	0	0.00%	0	0.00%	0	0.00%								
30	0.4	0.40%	0.4	0.40%	0.4	0.40%	0.4	0.40%								
40	54.7	54.75%	54.7	54.75%	54.7	54.75%	54.7	54.75%								
45	30.5	30.53%	30.5	30.53%	30.5	30.53%	30.5	30.53%								
50	11.1	11.11%	11.1	11.11%	11.1	11.11%	11.1	11.11%								
70	3.2	3.20%	3.2	3.20%	3.2	3.20%	3.2	3.20%								
Pan	0	0.00%	0	0.00%	0	0.00%	0	0.00%								
Total	0	0.00%	99.9	100.00%	99.9	100.00%	99.9	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Retained	0.00%		96.40%		96.40%		96.40%		0.00%		0.00%		0.00%		0.00%	

332092





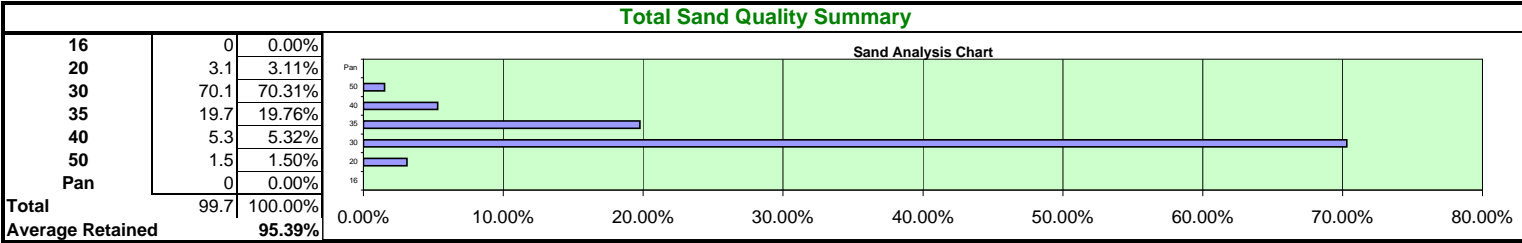
SAND SIEVE ANALYSIS 2

580

General Info

Well Name, Loc'n: HFE 44-22, SWSE S22, T4N, R68W Customer: Dean Rogers Sundance Energy 390 Interlocken Crescent, Suite 640 Broomfield, CO 80021	Calfrac Service Line: Frac Job Date: 11-Dec-12 Job Type: CWS-600 Program Number: FACK0109SD Service Order #: 82118
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Sand Master #	TOTAL SAND DELIVERED				20000	lbs	Type	Super LC		Mesh		20/40		
Order							3							
Bin #	1		1		2		3		4		5		5	
332092	Ticket # / wt						20000							
	Sieve Size		Weight %		Weight %		Weight %		Weight %		Weight %		Weight %	
	16		0		0		0.00%							
	20		3.1		3.1		3.11%							
	30		70.1		70.1		70.31%							
	35		19.7		19.7		19.76%							
	40		5.3		5.3		5.32%							
	50		1.5		1.5		1.50%							
	Pan		0		0		0.00%							
	Total		0		0		0.00%		0		0.00%		0	
	Retained		0.00%		0.00%		0.00%		99.7		100.00%		0	



General Info			
Well Name, Loc'n:	HFE 44-22, SWSE S22, T4N, R68W	Calfrac Service Line:	Frac
Customer:	Dean Rogers Sundance Energy 390 Interlocken Crescent, Suite 640 Broomfield, CO 80021	Job Date:	12/11/12
		Job Type:	CWS-600
		Program Number:	FACK0109SD
		Service Order #:	82118

Pre-Job Fluid Test Results:

QC Step:	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11
Tank #	Water Temp °F	Initial Water pH	DWP-621 Conc. gpt	DWP-937 Conc. gpt	DWP-913 Conc. gpt	DWP-944 Conc. gpt	Base Gel Viscosity cp	Base Gel Sample pH			
1	66.6	7.50	0.5	1.5	1.0	0.20	3	7.41			
2	68.9	7.13	0.5	1.5	1.0	0.20	3	7.07			
3	68.5	7.09	0.5	1.5	1.0	0.20	3	7.07			
4	69.8	7.10	0.5	1.5	1.0	0.20	3	7.07			
5	66.4	7.12	0.5	1.5	1.0	0.20	3	7.07			
6	71.1	7.14	0.5	1.5	1.0	0.20	3	7.07			
7	69.1	7.17	0.5	1.5	1.0	0.20	3	7.07			
8	70.0	7.22	0.5	1.5	1.0	0.20	3	7.07			
9	68.5	7.24	0.5	1.5	1.0	0.20	3	7.07			
10	69.1	7.27	0.5	1.5	1.0	0.20	3	7.07			
11	68.5	7.26	0.5	1.5	1.0	0.20	3	7.07			
12	68.9	7.29	0.5	1.5	1.0	0.20	3	7.07			
13	69.8	7.28	0.5	1.5	1.0	0.20	3	7.21			
14	70.7	7.30	0.5	1.5	1.0	0.20	3	7.21			
15	69.8	7.38	0.5	1.5	1.0	0.20	3	7.21			
16	70.7	7.33	0.5	1.5	1.0	0.20	3	7.21			
17	70.3	7.31	0.5	1.5	1.0	0.20	3	7.21			
18	66.2	7.29	0.5	1.5	1.0	0.20	3	7.21			
19	72.5	7.29	0.5	1.5	1.0	0.20	3	7.21			
20	69.6	7.30	0.5	1.5	1.0	0.20	3	7.21			
21	66.2	7.29	0.5	1.5	1.0	0.20	3	7.21			
22	67.3	7.30	0.5	1.5	1.0	0.20	3	7.21			
23	70.2	7.34	0.5	1.5	1.0	0.20	3	7.21			

Chemical Lot Numbers:

Job Fluid Test Results:

Sand Stage Description	Base	X-Link	Visc.	Frac Fluid Temp	Comments:
(lb/Gal)	pH	pH	cp	°F	
Averages:					

General Info		580
Well Name, Loc'n:	HFE 44-22, SWSE S22, T4N, R68W	Calfrac Service Line: Frac
Customer:	Dean Rogers Sundance Energy 390 Interlocken Crescent, Suite 640 Broomfield, CO 80021	Job Date: 12/11/12 Job Type: CWS-600 Program Number: FACK0109SD Service Order #: 82118

Time On Location:	5:30 AM
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Personnel on Location				
Calfrac Crew				Calfrac 3rd Party
Jason Alps	Paul Holmes			Daniel Mercado
Brian Ramsey	Shawn Frink			Clint Magoon
	Thoran Martinez			
J. Connonor	Wayne Sweeney			Dean Rogers
Matthew Falce	Devin Pearce			
Michael Alexander	Jared Hamlin	Jerry Blake		
Todd Haley	#REF!	Brent Mayo		
Greggory Dodd	John Demello			
Mauro Gonzalez	Joshua Vancil			
#VALUE!	Craig Hefti			

Hazard Assessment	
Associated Hazards	Control Measures
Pressure, Vehicle Movement, Environmental, Chemical Exposure, Noise, Radiation, Projectile, Heights, Static Electricity, Moving Equipment/Parts	Pressure test, iron inspection, relief valves, auto-shutdowns, Guides, lights, speed control, driver certification, Spill control, pressure test, environmental fluids, drip trays, Proper PPE, transfer hoses, vapor control, MSDS, Hearing protection, noise survey, Limit exposure time, distance, shielding, PPE, inspections, distance, procedures, Fall protection PPE, handrails, platforms, Grounding, bonding, Guards, procedures, warning signs, distance
Corrosive, Flammable, Toxic	Proper PPE, emergency eyewash, neutralizing agent, No smoking, fire prevention, intrinsic devices, Proper PPE, Spill control

Wellhead / Component Data			
	Casing Assembly	Assembly	Master Valve Assembly
Make and Model			Wellhead Isolation Tool
Serial Number			CalFrac Remote
Maximum Allowable Safe Working Pressure (psi)			4in
			10000 psi

Job Parameters		Emergency Information (Remarks?)			
Max Design Pressure	5500 psi	Emergency Center #	911	Emergency Service Site #	911
Pressure Test	6500 psi	Number of Personnel on location	23		
Annular Relief Set	N/A psi	GPS Coordinates	Latitude	40.294833	Longitude
Annulus Pressure	N/A psi				-104.987806

Pre-Treat Safety Meeting Checklist		Emergency Response Plan	
Safe Area / Escape Routes	X		
Designated Smoking Area	X	Designate Person In Charge	X
Total Personnel On Lease	X		
Job Type	X	Designate ERP Job Duties	X
Job Hazards	X		
Personal Protective Equipment Required	X	First Aid	X
Fire Extinguishers Placed	X	Fire Protection	N/A
Unnecessary Personnel-Location	X	Wellhead	X
Unnecessary Equipment Shut Off	X	Tank Valves	X
Vehicles - Windows Up, Lights Off	X	Emergency Shower	N/A
Designated Access Control	X	Breathing Apparatus	N/A
Job Parameters	X		
Maximum Treating Pressure	X	Identify ERP Contact numbers	X
Test Surface Lines	X	In The Event Of Emergency, Hit The Emergency Kill	X
Hole Fill Rate	X	Evacuate to the Safe Area and Take Head Count	X
Frac Rate	X	Assess Situation	X
Shut-In Time	X	Initiate Customer and Calfrac ERPs	X

Post-Treatment Meeting as Required	
Discuss Post-Frac Requirements	X
Assign and Implement Post-Frac Duties	

eg Acid Frac, Sour Service, HH Hydrocarbon, Sandoff With Tracer

Authorization To Pump

I certify that this safety meeting was carried out in the presence of the above personnel who were on location and that all the above safety aspects, including the safety data, of the treatment were discussed and agreed to. I am confident all present are aware of their duties and the treatment can be carried out in a safe manner.

Customer Representative Signature	Dean Rogers
Calfrac Supervisor Signature	Jason Alps 100602 S1 PL

Surf & BH- HFE 44-22 Codell

— Treating Pressure (psi)

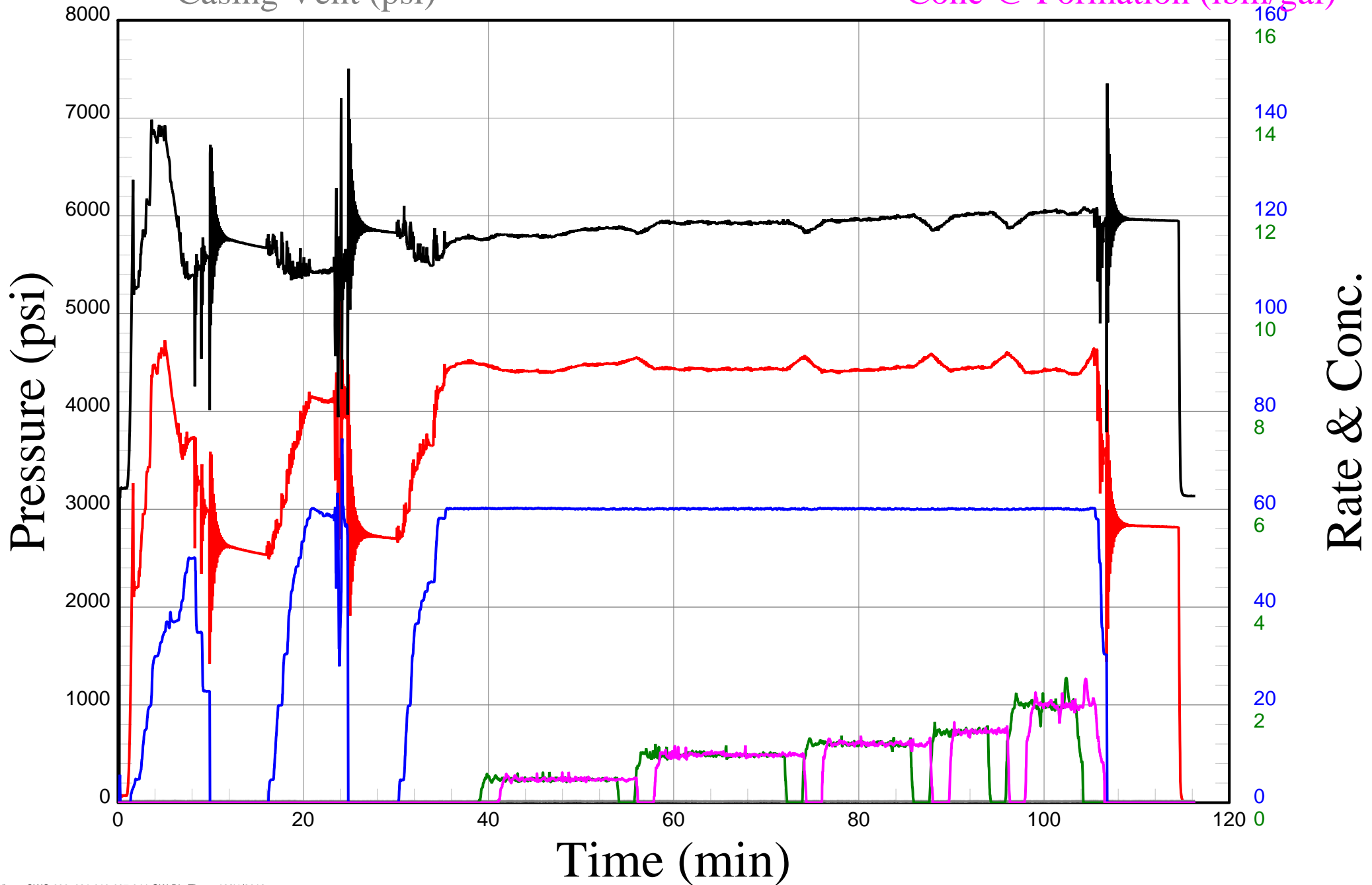
— Bottom Hole Pressure (psi)

— Casing Vent (psi)

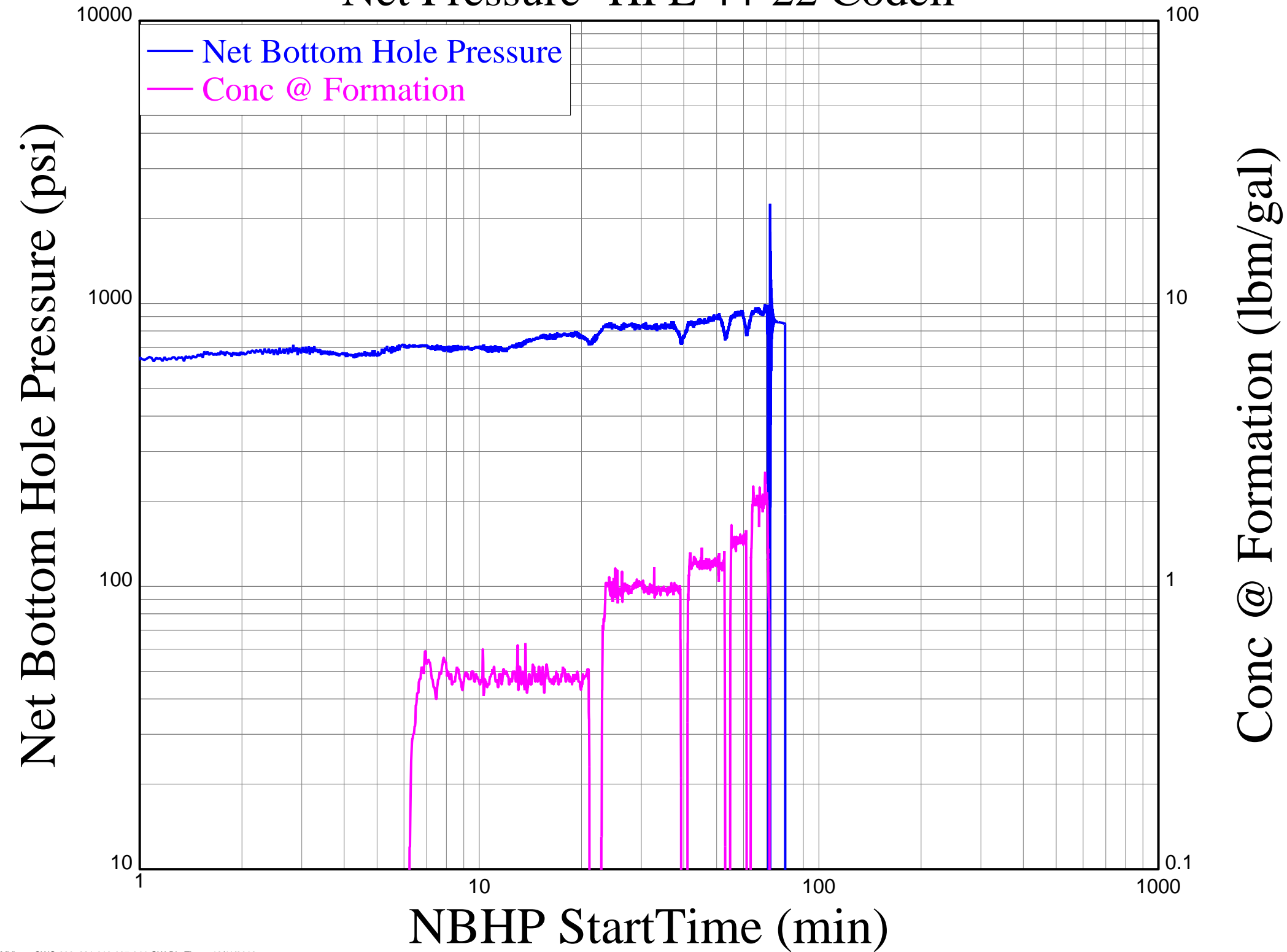
— Slurry Rate (bpm)

— Blender Conc. (lbm/gal)

— Conc @ Formation (lbm/gal)



Net Pressure- HFE 44-22 Codell



Chemical Plot- HFE 44-22 Codell

