HALLIBURTON

iCem® Service

Post Job Report

ANADARKO PETROLEUM CORP - EBUS

For: Bob Porter
Date: Monday, June 30, 2014

Banded 16N-27HZ Surface

Banded 16N-27HZ

Sincerely,

Derek Trier

Table of Contents

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Banded 16N-27HZ** cement **Surface** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

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,

Halliburton [Brighton]

Job Times

	Date	Time	Time Zone
Requested Time On Location	6/30	18:30	
Called Out	6/30	12:30	
On Location	6/30	17:45	
Job Started	6/30	20:00	
Job Completed	6/30	21:45	
Departed Location	6/30	22:45	

1.2 Cementing Job Summary

Sold To #: 300466	**Ship To #:** 3471392	**Quote #:**	**Sales Order #:** 0901468830
Customer: ANADARKO PETROLEUM CORP - EBUS		**Customer Rep:** Bob Porter	
Well Name: BANDED	**Well #:** 16N-27HZ		**API/UWI #:** 05-123-39304-00
Field: WATTENBERG	**City (SAP):** IONE	**County/Parish:** WELD	**State:** COLORADO
Legal Description: SE SE-22-2N-67W-300FSL-886FEL			
Contractor:		**Rig/Platform Name/Num:** Majors 42	
Job BOM: 7521			
Well Type: HORIZONTAL GAS			
Sales Person: HALAMERICA\HB47901		**Srvc Supervisor:** Steven Markovich	

Job

Formation Name				
Formation Depth (MD)	**Top**		**Bottom**	
Form Type			**BHST**	
Job depth MD	850ft		**Job Depth TVD**	
Water Depth			**Wk Ht Above Floor**	
Perforation Depth (MD)			**To**	

Well Data

	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		9.625	8.921	36		J-55	0	850		
Open Hole Section			13.5				0	850		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	9.625	1		850		**Top Plug**	9.625	1	HES
Float Shoe	9.625	1				**Bottom Plug**	9.625	1	HES
Float Collar	9.625	1				**SSR plug set**	9.625	1	HES
Insert Float	9.625	1				**Plug Container**	9.625	1	HES
	9.625	1				**Centralizers**	9.625	1	HES

Miscellaneous Materials

Gelling Agt		**Conc**		**Surfactant**		**Conc**		**Acid Type**		**Qty**				
Treatment Fld		**Conc**				Conc		**Sand Type**						

Fluid Data

Stage/Plug #: 1

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Mud Flush III (Powder)	Mud Flush III	12	bbl	8.4				
42 gal/bbl									

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	Lead Cement	SWIFTCEM (TM) SYSTEM	681	sack	14.2	1.54		6	7.64

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Displacement	Displacement	132.5	bbl	8.33				

	Amount	42 ft		

Comment 15bbls of Cement to surface

1.4 Planned Pumping Schedule

Stage /Plug #	Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Avg Rate bbl/min	Surface Volume	Downhole Volume
1	1	Spacer	Fresh Water	8.33	3.00	10.0 bbl	10.0 bbl
1	2	Spacer	Mud Flush III	8.40	3.00	12.0 bbl	12.0 bbl
1	3	Spacer	Fresh Water	8.33	3.00	10.0 bbl	10.0 bbl
1	4	Cement Slurry	SwiftCem	14.20	5.00	681.0 sacks	681.0 sacks

1.5 Job Overview

		Units	Description
1	Surface temperature at time of job	^{o}F	82
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	8.9
4	Actual mud Plastic Viscosity (PV)	cP	
5	Actual mud Yield Point (YP)	$lb_f/100ft^2$	
6	Actual mud 30 min Gel Strength	$lb_f/100ft^2$	
7	Time circulated before job	HH:MM	00:45
8	Mud volume circulated	Bbls	
9	Rate at which well was circulated	Bpm	
10	Pipe movement during hole circulation	Y/N	N
11	Rig pressure while circulating	Psi	
12	Time from end mud circulation to start of job	HH:MM	00:05
13	Pipe movement during cementing	Y/N	N
14	Calculated displacement	Bbls	130.5
15	Job displaced by	Rig/HES	HES
16	Annular flow before job	Y/N	N
17	Annular flow after job	Y/N	N
18	Length of rat hole	Ft	
19	Units of gas detected while circulating	Units	
20	Was lost circulation experienced at any time?	Y/N	N

1.6 Water Field Test

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	<3000	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	<1500	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness	<500	ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium	<500	ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity	<1000	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates	<1000	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium	<5000	ppm	5000 ppm	High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides)
Iron	<500	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	61	^{o}F	50-80 ^{o}F	High temps will accelerate; Low temps may risk freezing in cold weather

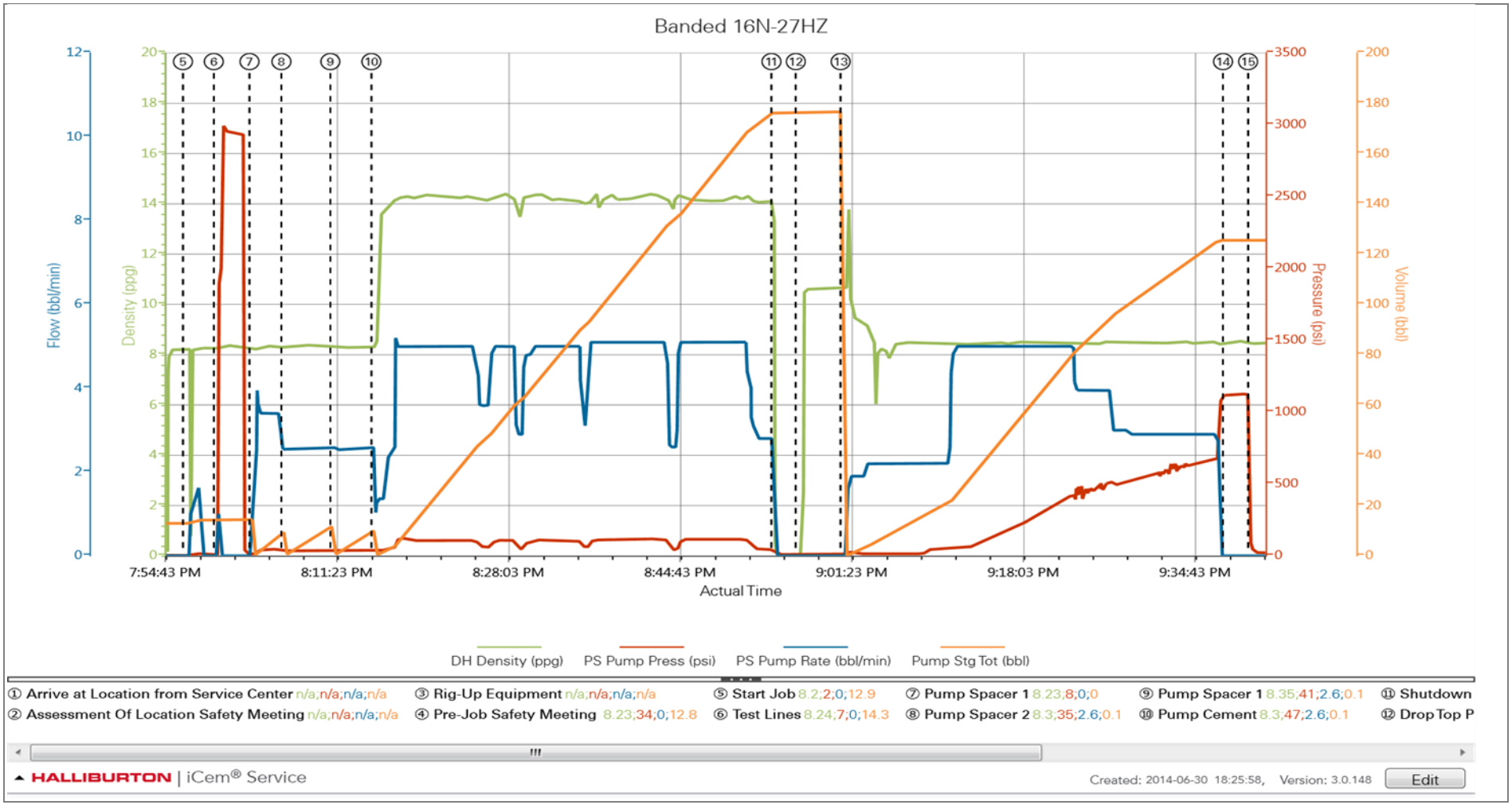
Submitted Respectfully by: __Steven Markovich__

1.7 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density *(ppg)*	PS Pump Press *(psi)*	PS Pump Rate *(bbl/min)*	Pump Stg Tot *(bbl)*	Comment
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	6/30/2014	17:45:00	USER					Arrived on location rig just started running casing
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	6/30/2014	17:50:00	USER					JSA and Hazard hunt with HES crew
Event	3	Rig-Up Equipment	Rig-Up Equipment	6/30/2014	18:00:00	USER					Rigged up HES equipment and Lines
Event	4	Pre-Job Safety Meeting	Pre-Job Safety Meeting	6/30/2014	19:30:00	USER	8.23	34.00	0.00	12.8	JSA with HES and Rig crew on job procedure
Event	5	Start Job	Start Job	6/30/2014	19:56:42	COM6	8.20	2.00	0.00	12.9	
Event	6	Test Lines	Test Lines	6/30/2014	19:59:42	COM6	8.23	7.00	0.00	14.3	Test lines to 3000psi
Event	7	Pump Spacer 1	Pump Spacer 1	6/30/2014	20:03:10	COM6	8.24	8.00	0.00	14.4	Pump 10bbls of Water
Event	8	Pump Spacer 2	Pump Spacer 2	6/30/2014	20:06:16	COM6	8.30	35.00	2.60	0.0	Pump 12bbls of Mud Flush
Event	9	Pump Spacer 1	Pump Spacer 1	6/30/2014	20:11:01	COM6	8.35	40.00	2.60	0.0	Pump 10bbls of Water
Event	10	Pump Cement	Pump Cement	6/30/2014	20:15:00	COM6	8.31	47.00	2.60	0.0	Pump 186bbls of 14.2ppg Cement
Event	11	Shutdown	Shutdown	6/30/2014	20:53:51	COM6	0.80	31.00	0.00	176.6	
Event	12	Drop Top Plug	Drop Top Plug	6/30/2014	20:56:13	COM6	-0.08	9.00	0.00	176.6	Plug loaded on the fly
Event	13	Pump Displacement	Pump Displacement	6/30/2014	21:00:34	COM6	10.69	13.00	0.00	0.0	Pump 132.5bbls of Water. Cement to surface at 117 away giving us 15bbls of cement to surface
Event	14	Bump Plug	Bump Plug	6/30/2014	21:37:42	COM6	8.43	1124.00	0.00	125.5	Final lift pressure was 640psi took 500 over and held for 3 mins,
Event	15	Other	Other	6/30/2014	21:40:08	COM6	8.43	74.00	0.00	125.5	Checked floats, flpoats good
Event	16	End Job	End Job	6/30/2014	21:51:15	COM6	0.63	22.00	0.00	145.8	Thank you Markovich and crew

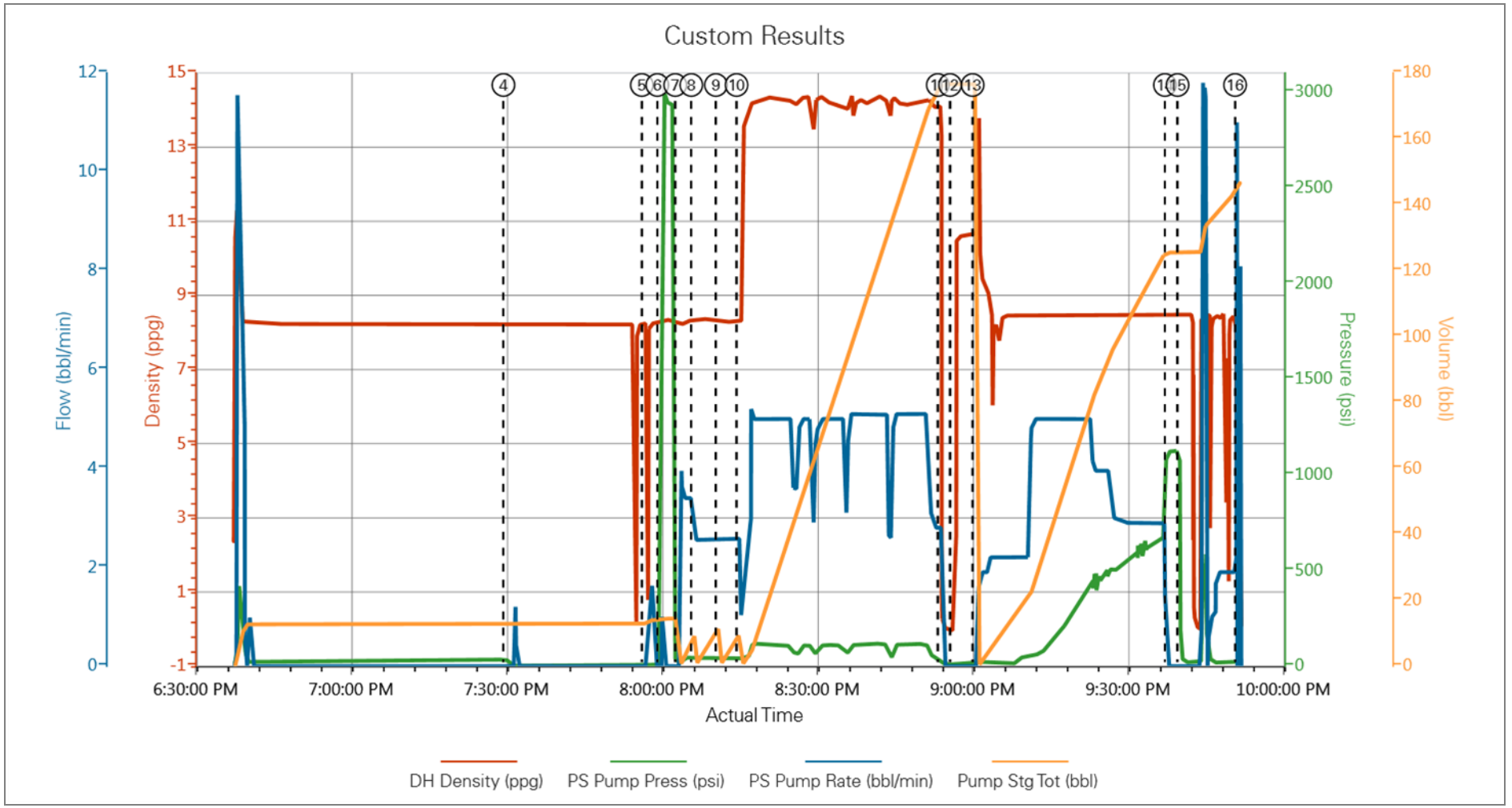
2.0 Attachments

2.1 Banded 16N-27HZ-Custom Results.png

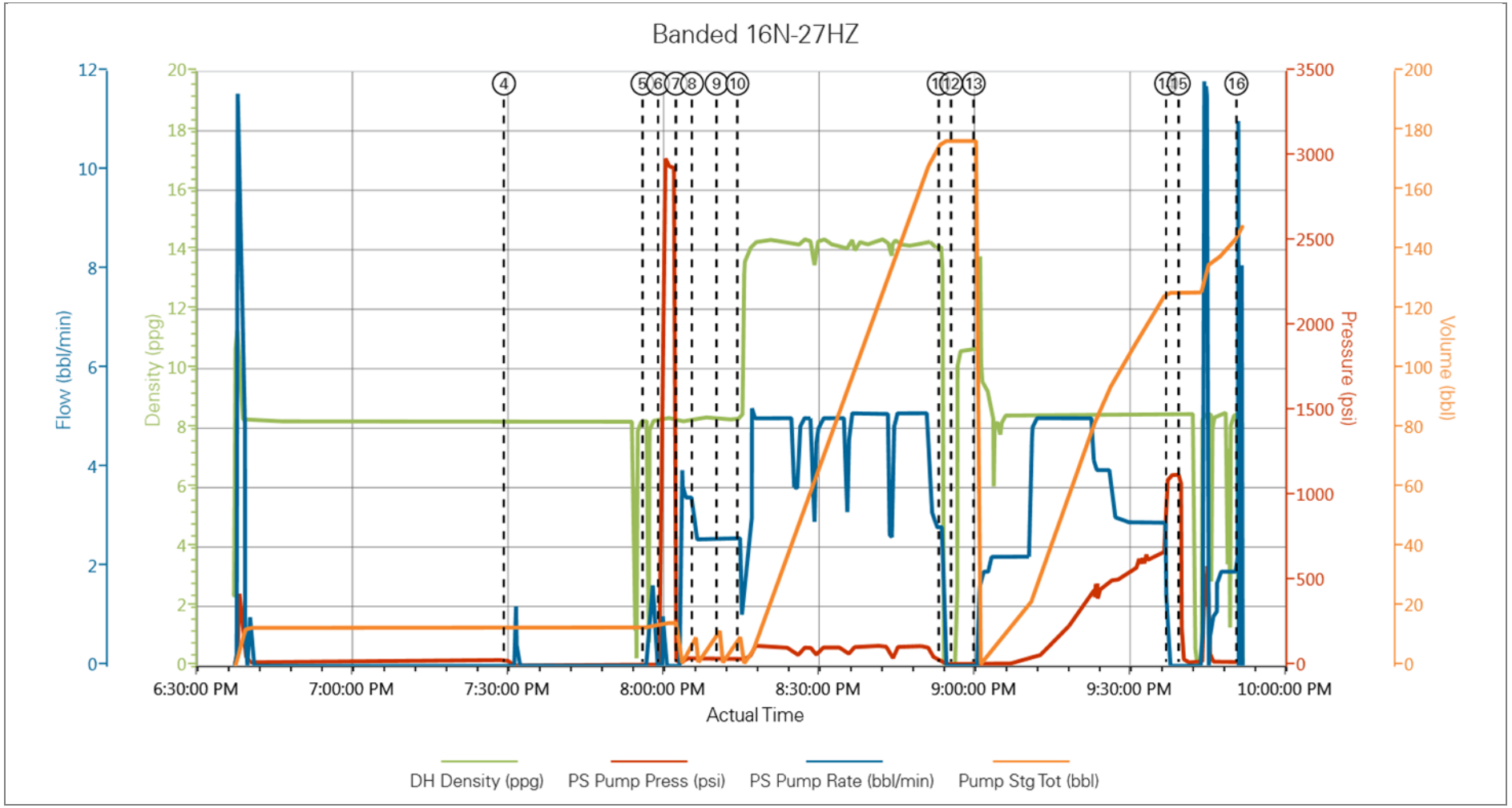


3.0 Custom Graphs

3.1 Custom Graph



3.2 Custom Graph



Banded 16N-27HZ

4.0 Appendix