

# HALLIBURTON

iCem<sup>®</sup> Service

**ANADARKO PETROLEUM CORP - EBUS**

**For: Toby Yates**

Date: Friday, June 20, 2014

**6N-29 HZ**

Case 1

Sincerely,

**Mark Dean & Crew**

## Table of Contents

---

<b>1.1</b>	<b>Executive Summary</b>	<b>3</b>
<b>1.2</b>	<b>Cementing Job Summary</b>	<b>4</b>
<b>1.3</b>	<b>Planned Pumping Schedule</b>	<b>6</b>
<b>1.4</b>	<b>Job Overview</b>	<b>6</b>
<b>1.5</b>	<b>Job Event Log</b>	<b>8</b>
<b>2.0</b>	<b>Custom Graphs</b>	<b>10</b>
<b>2.1</b>	Custom Graph	10
<b>2.2</b>	Custom Graph	11
<b>2.3</b>	Custom Graph	12
<b>3.0</b>	<b>Appendix</b>	<b>13</b>

---

**1.1 Executive Summary**

---

Halliburton appreciates the opportunity to perform the cementing services on the **Howard 6N-29HZ** 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**

	<b>Date</b>	<b>Time</b>	<b>Time Zone</b>
<b>Called Out</b>	6/19/2014	10:00:48	MT
<b>On Location</b>	6/19/2014	15:00:50	MT
<b>Job Started</b>	6/19/2014	17:26:19	MT
<b>Job Completed</b>	6/19/2014	22:08:35	MT
<b>Departed Location</b>	6/20/2014	03:00:24	MT

## 1.2 Cementing Job Summary

HALLIBURTON

## Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 300466		Ship To #: 3117329		Quote #:		Sales Order #: 0901433737																																																									
Customer: ANADARKO PETROLEUM CORP - EBUS				Customer Rep: Toby Yates																																																											
Well Name: HOWARD			Well #: 6N-29 HZ			API/UWI #: 05-123-37863-00																																																									
Field: WATTENBERG		City (SAP): LOCHBUIE		County/Parish: WELD			State: COLORADO																																																								
Legal Description: SE NW-32-1N-67W-2439FNL-1805FWL																																																															
Contractor:				Rig/Platform Name/Num: Majors 29																																																											
Job BOM: 7521																																																															
Well Type: HORIZONTAL GAS																																																															
Sales Person: HALAMERICA\HB47901					Srvc Supervisor: Mark Dean																																																										
Job																																																															
Formation Name																																																															
Formation Depth (MD)		Top			Bottom																																																										
Form Type																																																															
BHST																																																															
Job depth MD		982ft			Job Depth TVD																																																										
Water Depth																																																															
Wk Ht Above Floor 4 ft																																																															
Perforation Depth (MD)		From			To																																																										
Well Data																																																															
<table border="1"> <thead> <tr> <th>Description</th> <th>New / Used</th> <th>Size in</th> <th>ID in</th> <th>Weight lbm/ft</th> <th>Thread</th> <th>Grade</th> <th>Top MD ft</th> <th>Bottom MD ft</th> <th>Top TVD ft</th> <th>Bottom TVD ft</th> </tr> </thead> <tbody> <tr> <td>Casing</td> <td></td> <td>9.625</td> <td>8.921</td> <td>36</td> <td></td> <td>J-55</td> <td>0</td> <td>982</td> <td></td> <td></td> </tr> <tr> <td>Open Hole Section</td> <td></td> <td></td> <td>13.5</td> <td></td> <td></td> <td></td> <td>0</td> <td>982</td> <td></td> <td></td> </tr> </tbody> </table>										Description	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	982			Open Hole Section			13.5				0	982																							
Description	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	982																																																							
Open Hole Section			13.5				0	982																																																							
Tools and Accessories																																																															
<table border="1"> <thead> <tr> <th>Type</th> <th>Size in</th> <th>Qty</th> <th>Make</th> <th>Depth ft</th> <th>Type</th> <th>Size in</th> <th>Qty</th> <th>Make</th> </tr> </thead> <tbody> <tr> <td>Guide Shoe</td> <td>9.625</td> <td>1</td> <td></td> <td>982</td> <td>Top Plug</td> <td>9.625</td> <td>1</td> <td>HES</td> </tr> <tr> <td>Float Shoe</td> <td>9.625</td> <td>1</td> <td></td> <td></td> <td>Bottom Plug</td> <td>9.625</td> <td></td> <td>HES</td> </tr> <tr> <td>Float Collar</td> <td>9.625</td> <td>1</td> <td></td> <td>940</td> <td>SSR plug set</td> <td>9.625</td> <td>1</td> <td>HES</td> </tr> <tr> <td>Insert Float</td> <td>9.625</td> <td>1</td> <td></td> <td></td> <td>Plug Container</td> <td>9.625</td> <td>1</td> <td>HES</td> </tr> <tr> <td>Stage Tool</td> <td>9.625</td> <td>1</td> <td></td> <td></td> <td>Centralizers</td> <td>9.625</td> <td>1</td> <td>HES</td> </tr> </tbody> </table>										Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make	Guide Shoe	9.625	1		982	Top Plug	9.625	1	HES	Float Shoe	9.625	1			Bottom Plug	9.625		HES	Float Collar	9.625	1		940	SSR plug set	9.625	1	HES	Insert Float	9.625	1			Plug Container	9.625	1	HES	Stage Tool	9.625	1			Centralizers	9.625	1	HES
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make																																																							
Guide Shoe	9.625	1		982	Top Plug	9.625	1	HES																																																							
Float Shoe	9.625	1			Bottom Plug	9.625		HES																																																							
Float Collar	9.625	1		940	SSR plug set	9.625	1	HES																																																							
Insert Float	9.625	1			Plug Container	9.625	1	HES																																																							
Stage Tool	9.625	1			Centralizers	9.625	1	HES																																																							
Miscellaneous Materials																																																															
<table border="1"> <thead> <tr> <th>Gelling Agt</th> <th>Conc</th> <th>Surfactant</th> <th>Conc</th> <th>Acid Type</th> <th>Qty</th> <th>Conc</th> </tr> <tr> <th>Treatment Fld</th> <th>Conc</th> <th>Inhibitor</th> <th>Conc</th> <th>Sand Type</th> <th>Size</th> <th>Qty</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>										Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc	Treatment Fld	Conc	Inhibitor	Conc	Sand Type	Size	Qty																																								
Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc																																																									
Treatment Fld	Conc	Inhibitor	Conc	Sand Type	Size	Qty																																																									
Fluid Data																																																															
Stage/Plug #: 1																																																															
<table border="1"> <thead> <tr> <th>Fluid #</th> <th>Stage Type</th> <th>Fluid Name</th> <th>Qty</th> <th>Qty UoM</th> <th>Mixing Density lbm/gal</th> <th>Yield ft<sup>3</sup>/sack</th> <th>Mix Fluid Gal</th> <th>Rate bbl/min</th> <th>Total Mix Fluid Gal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Mud Flush III (Powder)</td> <td>Mud Flush III</td> <td>12</td> <td>bbl</td> <td>8.4</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="3">42 gal/bbl</td> <td colspan="7">FRESH WATER</td> </tr> </tbody> </table>										Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /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			FRESH WATER																														
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /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			FRESH WATER																																																												

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
2	Lead Cement	SWIFTCEM (TM) SYSTEM	371	sack	14.2	1.54		6	7.64
3	Displacement	Displacement	72	bbl	8.33				
4	Top Out	HALCEM (TM) SYSTEM	85	sack	15.8	1.16		2	4.99
4.99 Gal		FRESH WATER							
Cement Left in Pipe		Amount	42 ft		Reason			Shoe Joint	
Comment									

HALLIBURTON



## Summary Report

Crew: \_\_\_\_\_  
 Job Start Date: 6/20/2014

Sales Order #: 0901433737  
 WO #: 0901433737  
 PO/AFE #: NA

Customer:	ANADARKO PETROLEUM CORP - EBUS	Field:	WATTENBERG	Job Type:	CMT SURFACE CASING BOM
UWI / API Number:	05-123-37863-00	County/Parish:	WELD	Service Supervisor:	Mark Dean
Well Name:	HOWARD	State:	COLORADO	Cust Rep Name:	Toby Yates
Well No:	6N-29 HZ	Latitude:	40.008207	Cust Rep Phone #:	
		Longitude:	-104.917277		
		Sect / Twn / Rng:	32/1/67		

Remarks:		
The Information Stated Herein Is Correct	Customer Representative Signature 	Date
	Customer Representative Printed Name	

## 1.3 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 Spacer	8.33	2.0	10.0 bbl	10.0 bbl
1	1	Spacer	Mud Flush	8.40	2.0	12.0 bbl	12.0 bbl
1	1	Spacer	Fresh Water Spacer	8.33	3.0	10.0 bbl	10.0 bbl
1	2	Cement Slurry	SwiftCem B2	14.2	5.5	371.0 sacks	371.0 sacks

## 1.4 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	
4	Time circulated before job	HH:MM	
5	Mud volume circulated	Bbls	
6	Rate at which well was circulated	Bpm	
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	
9	Time from end mud circulation to start of job	HH:MM	
10	Pipe movement during cementing	Y/N	
11	Calculated displacement	Bbls	101
12	Job displaced by	Rig/HES	HES
13	Annular before job)?	Y/N	N
14	Annular flow after job	Y/N	N
15	Length of rat hole	Ft	
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	N



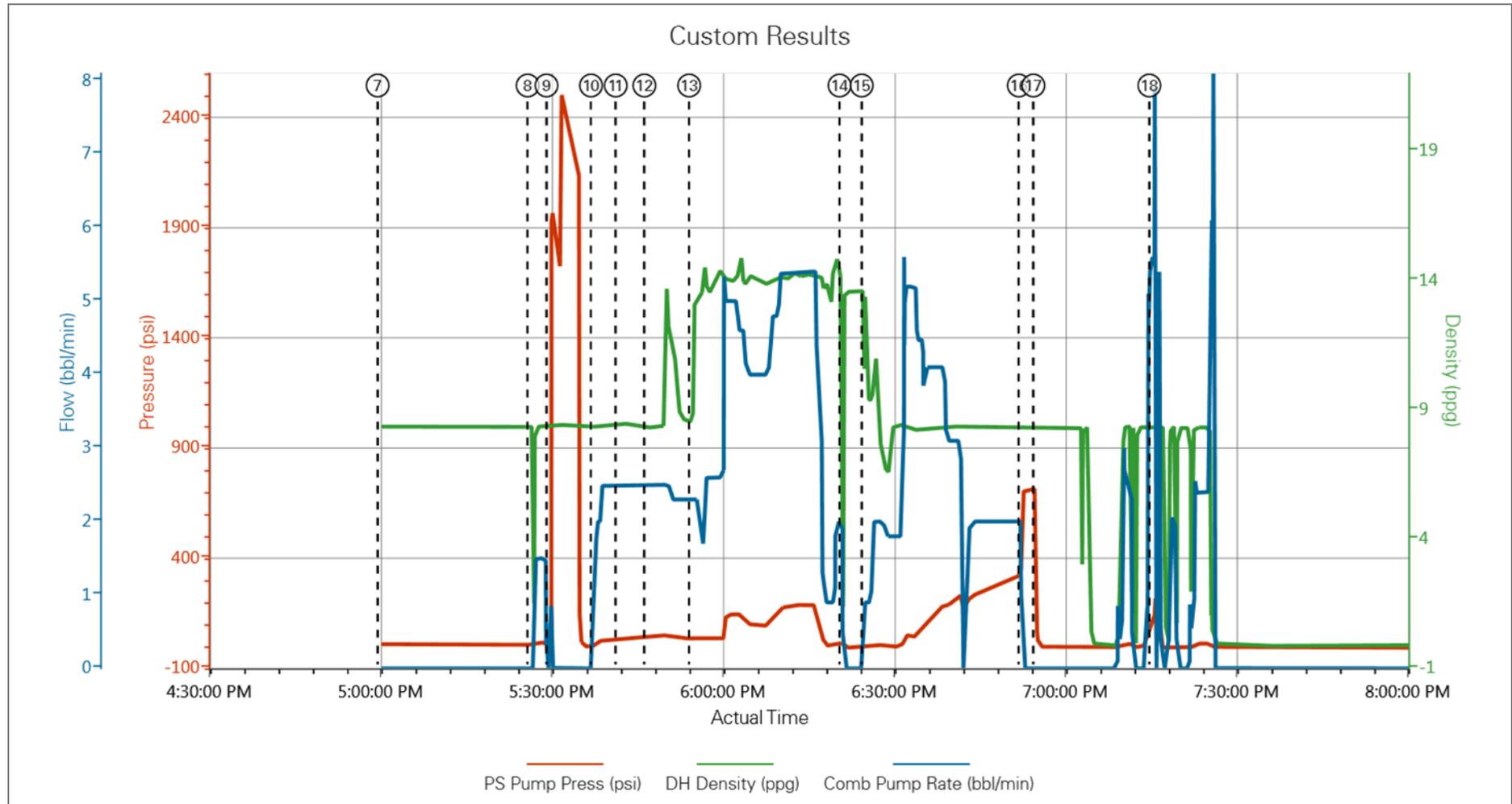
## 1.5 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Pass-Side Pump Pressure (psi)	Downhole Density (ppg)	Combined Pump Rate (bbl/min)	Comment
Event	1	Call Out	Call Out	6/19/2014	10:00:48	USER				Crew called at 10:00 am
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	6/19/2014	14:00:05	USER				Discussed load checks planned routes and safe driving
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	6/19/2014	14:15:36	USER				Departed yard in convoy
Event	4	Arrive At Loc	Arrive At Loc	6/19/2014	15:00:50	USER				Req on location at 15:00
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	6/19/2014	15:05:01	USER				Discussed spotting using proper spotters and layout of trucks
Event	6	Rig-Up Equipment	Rig-Up Equipment	6/19/2014	15:30:30	USER				Discussed using proper PPE layout of iron and red zones
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	6/19/2014	17:00:03	USER	10.00	8.38	0.00	Discussed job procedure with customer and crew
Event	8	Start Job	Start Job	6/19/2014	17:26:19	COM1	1.00	8.35	0.00	Primed pump & lines
Event	9	Test Lines	Test Lines	6/19/2014	17:29:38	COM1	3.00	8.35	0.00	Tested lines to 2000 psi (Pressure Held)
Event	10	Pump Spacer 1	Pump Water	6/19/2014	17:37:26	COM1	6.00	8.39	1.30	Pumped 10 fresh ahead
Event	11	Pump Spacer 2	Pump Mud Flush	6/19/2014	17:41:46	COM1	37.00	8.38	2.50	Pumped 12 bbl of mud flush III
Event	12	Pump Spacer 1	Pump Water	6/19/2014	17:46:47	COM1	31.00	8.14	2.50	Pumped 10 water behind
Event	13	Pump Cement	Pump Cement	6/19/2014	17:54:38	COM1	37.00	9.90	2.30	Pumped 101 bbl ( 14.2 # cement 371sks )
Event	14	Shutdown	Shutdown	6/19/2014	18:20:59	COM1	2.00	9.26	0.00	Shut down to drop top plug
Event	15	Pump Displacement	Pump Displacement	6/19/2014	18:24:52	COM1	2.00	12.67	0.90	Pumped 72bbl fresh water displacement
Event	16	Bump Plug	Bump Plug	6/19/2014	18:52:23	COM1	689.00	8.31	0.00	Bumped plug at 300psi ( 500 over )
Event	17	Check Floats	Check Floats	6/19/2014	18:54:57	USER	51.00	8.33	0.00	.5 bbl back to truck (Floats held)

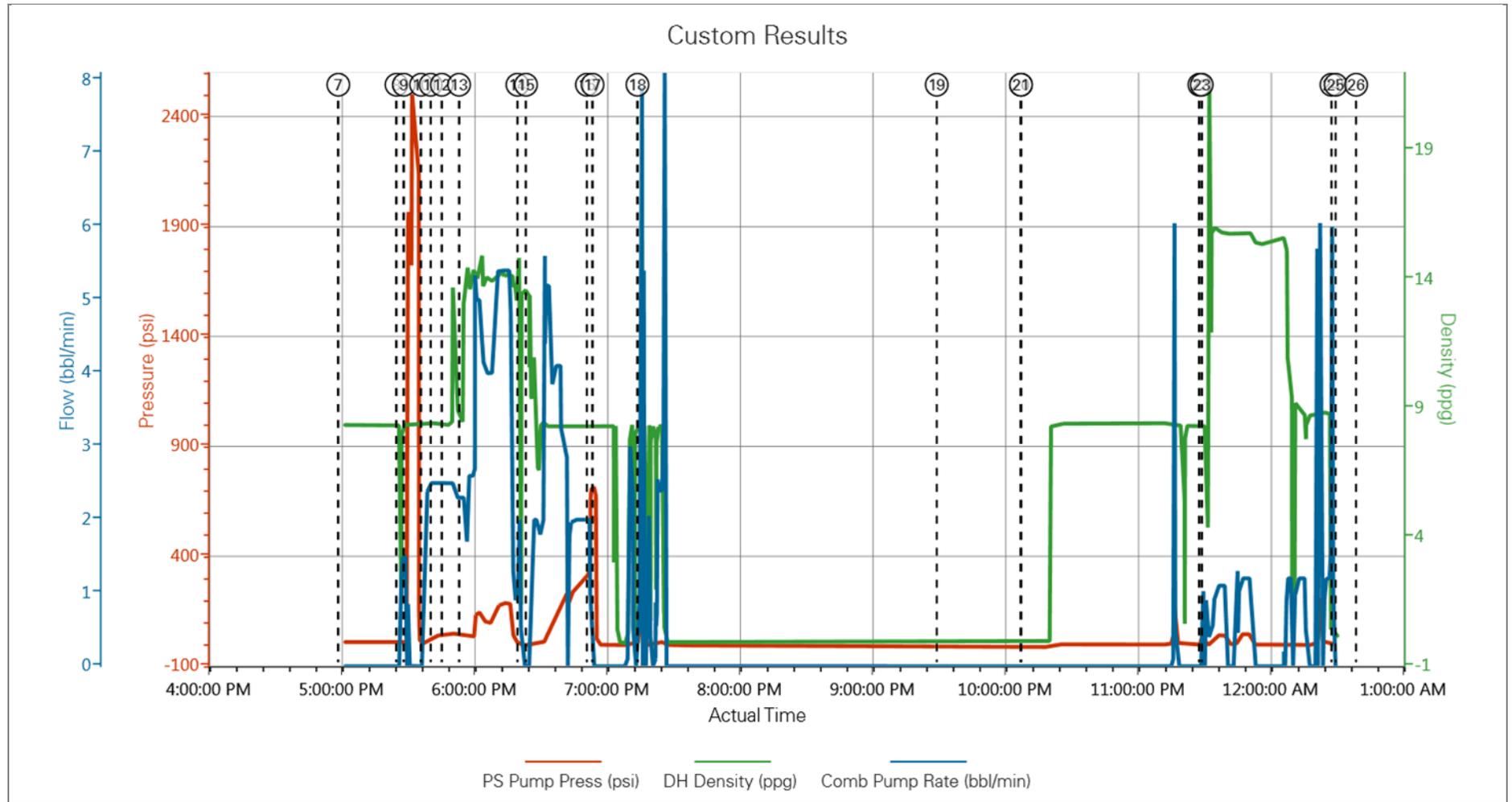
Event	18	Wait on HES Materials to Arrive - Start Time	Wait on HES Materials to Arrive - Start Time	6/19/2014	19:15:16	USER	121.00	8.27	5.60	No cement to surface customer required 100 additional sks for topout
Event	19	Wait on HES Materials to Arrive - End Time	Wait on HES Materials to Arrive - End Time	6/19/2014	21:30:32	USER				Topout truck arrived waiting on rig move to run 1" pipe
Event	20	End Job	End Job	6/19/2014	22:08:35	COM1	-12.00	-0.06	0.00	No cement to surface topout required
Event	21	Start Job	Start Job	6/19/2014	22:08:38	COM1	-12.00	-0.06	0.00	Primed pumps
Event	22	Pump Spacer 1	Establish circulation	6/19/2014	23:29:14	COM1	14.00	8.19	1.00	Filled lines to establish circulation
Event	23	Pump Lead Cement	Pump Topout Cement	6/19/2014	23:30:18	COM1	-3.00	8.33	0.00	17.5 bbl of topout cement at 15.8# ( 85 sks )
Event	24	End Job	End Job	6/20/2014	00:28:57	COM1	-1.00	0.22	0.00	8bbl of topout cement to surface
Event	25	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	6/20/2014	00:30:50	USER				Discussed trapped pressure
Event	26	Rig-Down Equipment	Rig-Down Equipment	6/20/2014	00:40:07	USER				Rig- Down safely
Event	27	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	6/20/2014	03:00:24	USER				Job completed sucessfully by M. Dean and crew

2.0 Custom Graphs

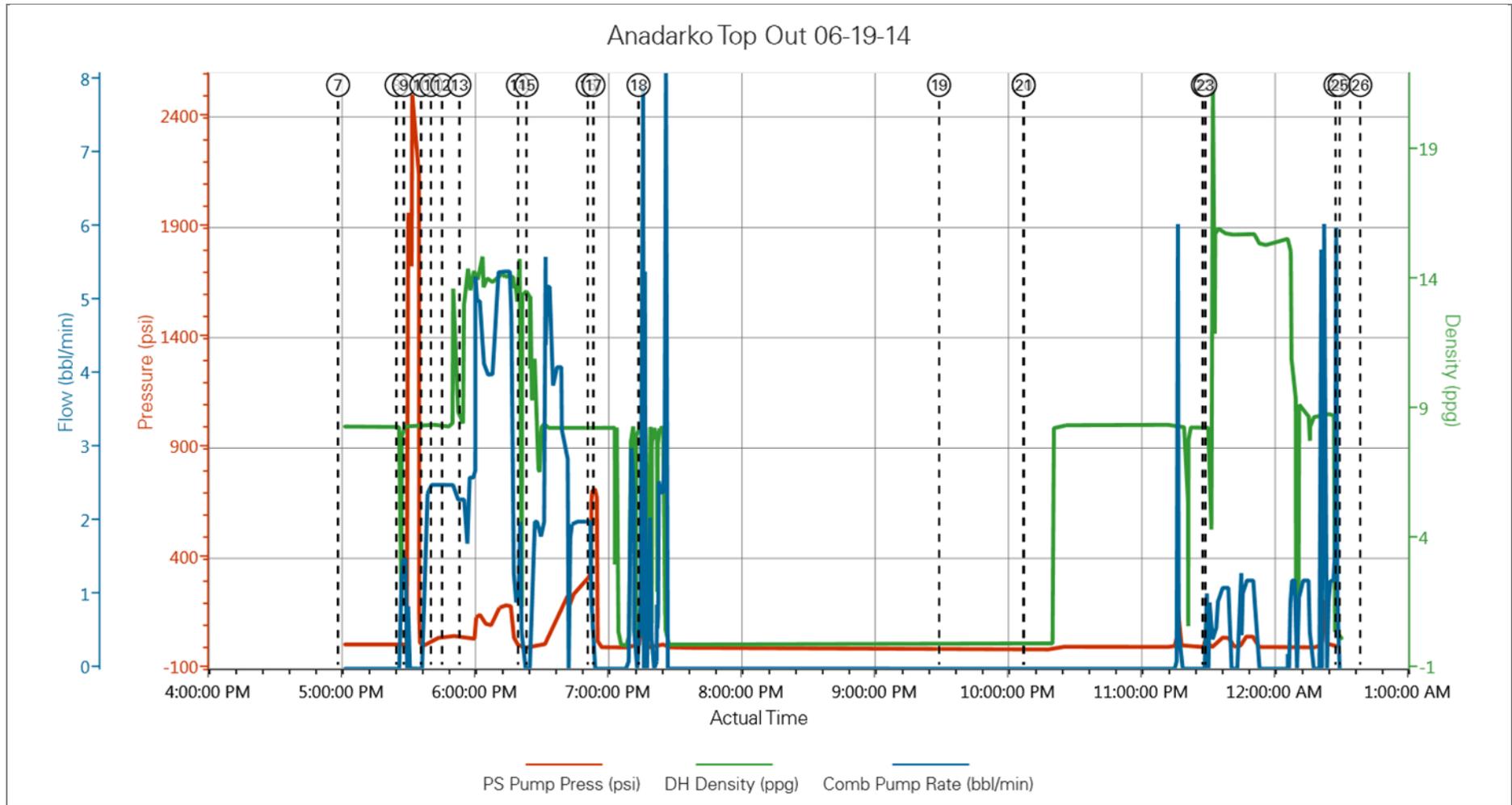
2.1 Custom Graph



2.2 Custom Graph



2.3 Custom Graph



**3.0 Appendix**

---

Insert Planned Pump Schedule from Proposal or actual Job Procedure built for job