

HALLIBURTON

iCem[®] Service

ANADARKO PETROLEUM CORP - EBUS

For:

Date: Thursday, June 19, 2014

Barefoot State# 40N-36HZ

Anadarko - Barefoot State# 40N-36HZ - Surface

Sincerely,

Andrew Ashby

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Well Name and Number** cement **Job Type** 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
Called Out	5/6/14	10:30	MT
On Location	5/6/14	14:00	MT
Job Started	5/6/14	16:30	MT
Job Completed	5/6/14	17:40	
Departed Location	5/6/14	18:30	

1.2 Cementing Job Summary

Sold To #: 300466		Ship To #: 3274586		Quote #:		Sales Order #: 0901323633				
Customer: ANADARKO PETROLEUM CORP - EBUS						Customer Rep: Randy Case				
Well Name: BAREFOOT STATE			Well #: 40N-36 HZ			API/UWI #: 05-123-38632-00				
Field: WATTENBERG		City (SAP): LON		County/Parish: WELD			State: COLORADO			
Legal Description: NW SW-35-3N-68W-1907FSL-373FWL										
Contractor:				Rig/Platform Name/Num: Majors 29						
Job BOM: 7521										
Well Type: HORIZONTAL GAS										
Sales Person: HALAMERICA\HB47901				Srv Supervisor: Andrew Ashby						
Job										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST						
Job depth MD		850ft		Job Depth TVD						
Water Depth				Wk Ht Above Floor		5 ft				
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	979	0	979
Open Hole Section			13.5				0	989		989
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	9.625			979		Top Plug	9.625	1	HES	
Float Shoe	9.625					Bottom Plug	9.625		HES	
Float Collar	9.625			936.8		SSR plug set	9.625		HES	
Insert Float	9.625					Plug Container	9.625	1	HES	
	9.625					Centralizers	9.625		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 ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Mud Flush III (Powder)	Mud Flush III	12	bbl	8.4				
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	Lead Cement	SWIFTCEM (TM) SYSTEM	373	sack	14.2	1.54		6	7.64
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Displacement	Displacement	72.6	bbl	8.33				
		Amount	42 ft						
Comment									

1.4 Planned Pumping Schedule

HALLIBURTON

Cementing

Anadarko - Major 29

Barefoot State# 40N-36HZ - Surface

Job Procedure

#	Event/Stage	Amount bbls	Rate bpm	Requested Quantity	Density ppg	Yield ft ³ /sk	Water Rq. gal/sk	Total Water bbls
1	Start Job	***Pre Pump Iron Inspection. Verify and communicate all valves are lined up to pump***						
4	Fill Lines	2	2	2 bbls	8.3			2
6	Pressure Test	5000 psi	***Reset Kick Outs to Maximum Job Pressure: 2000 psi***					
9	Pump Water Spacer	10	4	10 bbls	8.3			10
10	Pump Mud Flush III	12	4	12 bbls	8.4			12
9	Pump Water Spacer	10	4	10 bbls	8.3			10
14	Pump Primary Cement	102	4	373 sks	14.2	1.54	7.64	68
48	Shutdown/Wash Pumps/Drop Plug	Estimated Shutdown Time: 5 Minutes						
23	Pump Water Displacement	72.6	4	72.6 bbls	8.3			72.6
4	Slow Rate	Last 10	3	***Adjust rates as needed for job***				
26	Pressure to Land Plug	287 psi	***+	500 psi over Final Circulating Pressure***				
4	Check Floats	Estimated Job Pump Time		0.69 hrs		Total Water For Job (Including Wash Up)		224
2	End Job							bbls

1.5 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	80
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	8.9
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	
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	N
11	Calculated displacement	Bbls	72.6
12	Job displaced by	Rig/HES	HES
13	Annular before job)?	Y/N	Y
14	Annular flow after job	Y/N	Y
15	Length of rat hole	Ft	10
16	Units of gas detected while circulating	Units	
17	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	96	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	< 400	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness		ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium		ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium		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	0	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	68.3	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by: _____

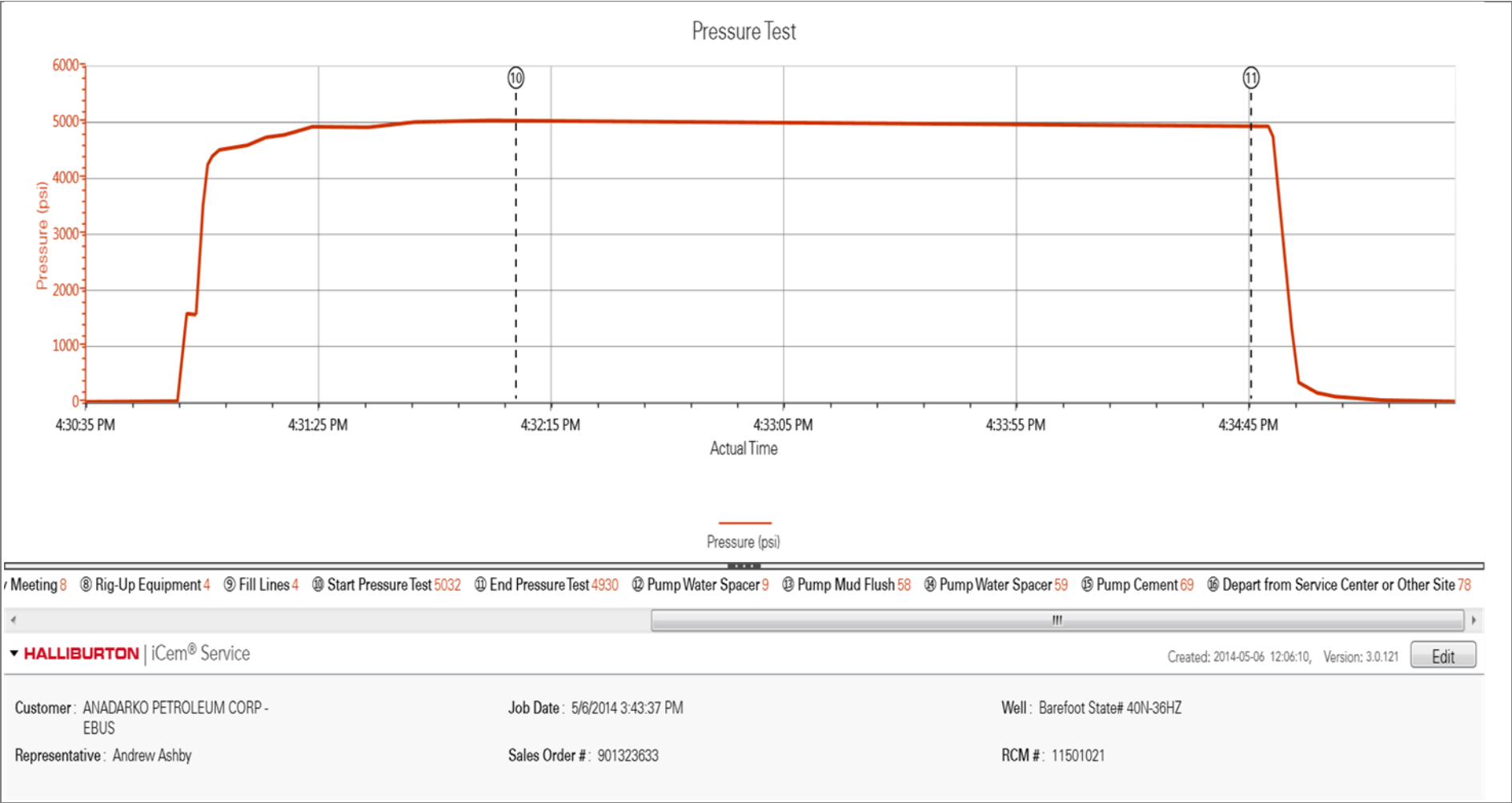
1.7 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Pressure (psi)	Density (ppg)	Rate (bbl/min)	Comment
Event	1	Call Out	Call Out	5/6/2014	10:30:00	USER				Crew Called out.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/6/2014	13:00:00	USER				Met w/crew to discuss travel to location
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	5/6/2014	13:30:00	USER				Passed gate check and left the yard.
Event	4	Arrive At Loc	Arrive At Loc	5/6/2014	14:00:00	USER				Signed into location, check w/Co. Rep. for numbers
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	5/6/2014	14:15:00	USER				Met w/crew assess location and determine the best way to rig up.
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	5/6/2014	14:25:00	USER				Met w/crew to discuss the safety and hazards of rig up.
Event	7	Rig-Up Equipment	Rig-Up Equipment	5/6/2014	14:30:00	USER				Rig up everything on the ground
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	5/6/2014	16:00:00	USER	8.00	8.78	0.00	Met w/crew, Co. Rep, and rig crew to discuss the job procedure and hazards involved as well as contingencies.
Event	9	Rig-Up Equipment	Rig-Up Equipment	5/6/2014	16:15:00	USER	4.00	8.81	0.00	Load the plug (witnessed by the Co. Rep.) and rig up the floor
Event	10	Other	Fill Lines	5/6/2014	16:29:06	COM12	4.00	8.77	0.00	Fill lines w/water for pressure test
Event	11	Test Lines	Start Pressure Test	5/6/2014	16:32:08	COM12	5032.00	8.97	0.00	Test lines 5000 psi for 3 min
Event	12	Test Lines	End Pressure Test	5/6/2014	16:34:46	USER	4931.00	8.95	0.00	Test Good - lost 100 psi
Event	13	Pump Spacer 1	Pump Water Spacer	5/6/2014	16:35:57	COM12	9.00	8.88	0.00	10 bbls Water Spacer
Event	14	Pump Spacer 1	Pump Mud Flush	5/6/2014	16:38:00	USER	58.00	8.28	4.00	12 bbls Mud Flush
Event	15	Pump Spacer 1	Pump Water Spacer	5/6/2014	16:42:12	USER	59.00	8.24	4.00	10 bbls Water Spacer
Event	16	Pump Cement	Pump Cement	5/6/2014	16:44:59	COM12	68.00	11.43	4.00	373 sks SwiftCem @ 14.2 lbm/gal, 1.54 cuft/sk, 7.64

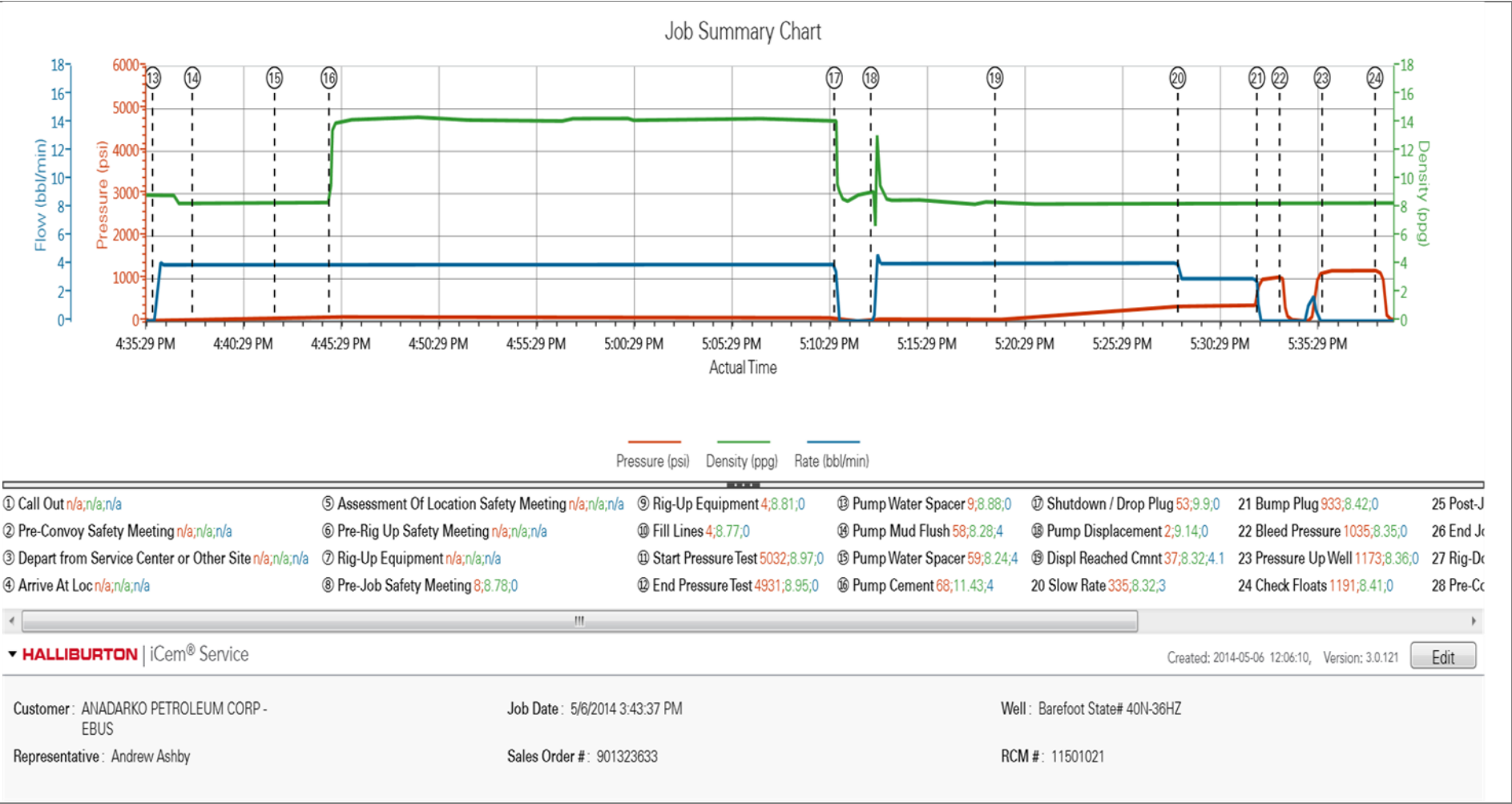
										gal/sk
Event	17	Other	Shutdown / Drop Plug	5/6/2014	17:10:51	COM12	53.00	9.90	0.00	Co. Rep. Witnessed plug drop
Event	18	Pump Displacement	Pump Displacement	5/6/2014	17:12:43	COM12	2.00	9.14	0.00	Water displacement 72.6 bbls calculated.
Event	19	Displ Reached Cmnt	Displ Reached Cmnt	5/6/2014	17:19:05	USER	37.00	8.32	4.10	Displacement caught pressure
Event	20	Other	Slow Rate	5/6/2014	17:28:26	COM12	335.00	8.32	3.00	Slow rate last 12 bbls to bump plug.
Event	21	Other	Bump Plug	5/6/2014	17:32:29	COM12	933.00	8.42	0.00	Bump 500 psi over final circulating pressure (___ psi)
Event	22	Other	Bleed Pressure	5/6/2014	17:33:39	COM12	1035.00	8.35	0.00	Bleed pressure off & re-bump per Co. Rep. (1/2 bbl back)
Event	23	Pressure Up Well	Pressure Up Well	5/6/2014	17:35:49	COM12	1173.00	8.36	0.00	Re-Bump Plug
Event	24	Pressure Up Well	Check Floats	5/6/2014	17:38:32	COM12	1191.00	8.41	0.00	Floats held - 1/2 bbls back.
Event	25	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	5/6/2014	17:40:00	USER	8.00	8.34	0.00	Met w/crew to discuss rig-down & safety
Event	26	Other	End Job	5/6/2014	17:40:21	COM12	8.00	8.31	0.00	Job Complete per Co. Rep.
Event	27	Rig-Down Equipment	Rig-Down Equipment	5/6/2014	17:45:01	USER	7.00	8.30	0.00	Blow down the lines and rig everything down.
Event	28	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/6/2014	18:25:00	USER				Met w/crew to discuss drive home.
Event	29	Depart Location	Depart Location	5/6/2014	18:30:00	USER				Thanks for using Halliburton!!

2.0 Attachments

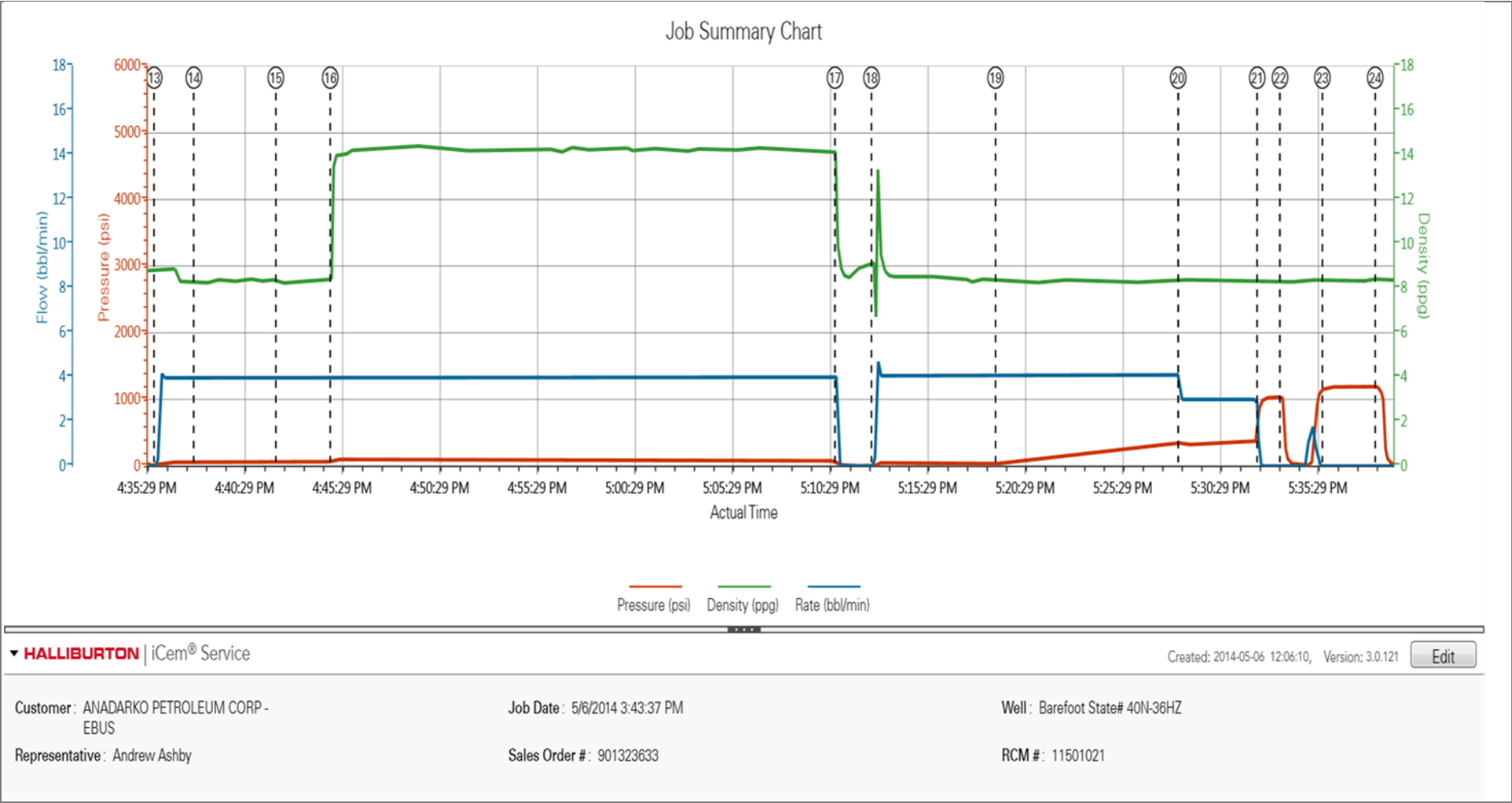
2.1 Anadarko - Barefoot State# 40N-36HZ - Surface-Pressure Test.png



2.2 Anadarko - Barefoot State# 40N-36HZ - Surface-Job Summary.png

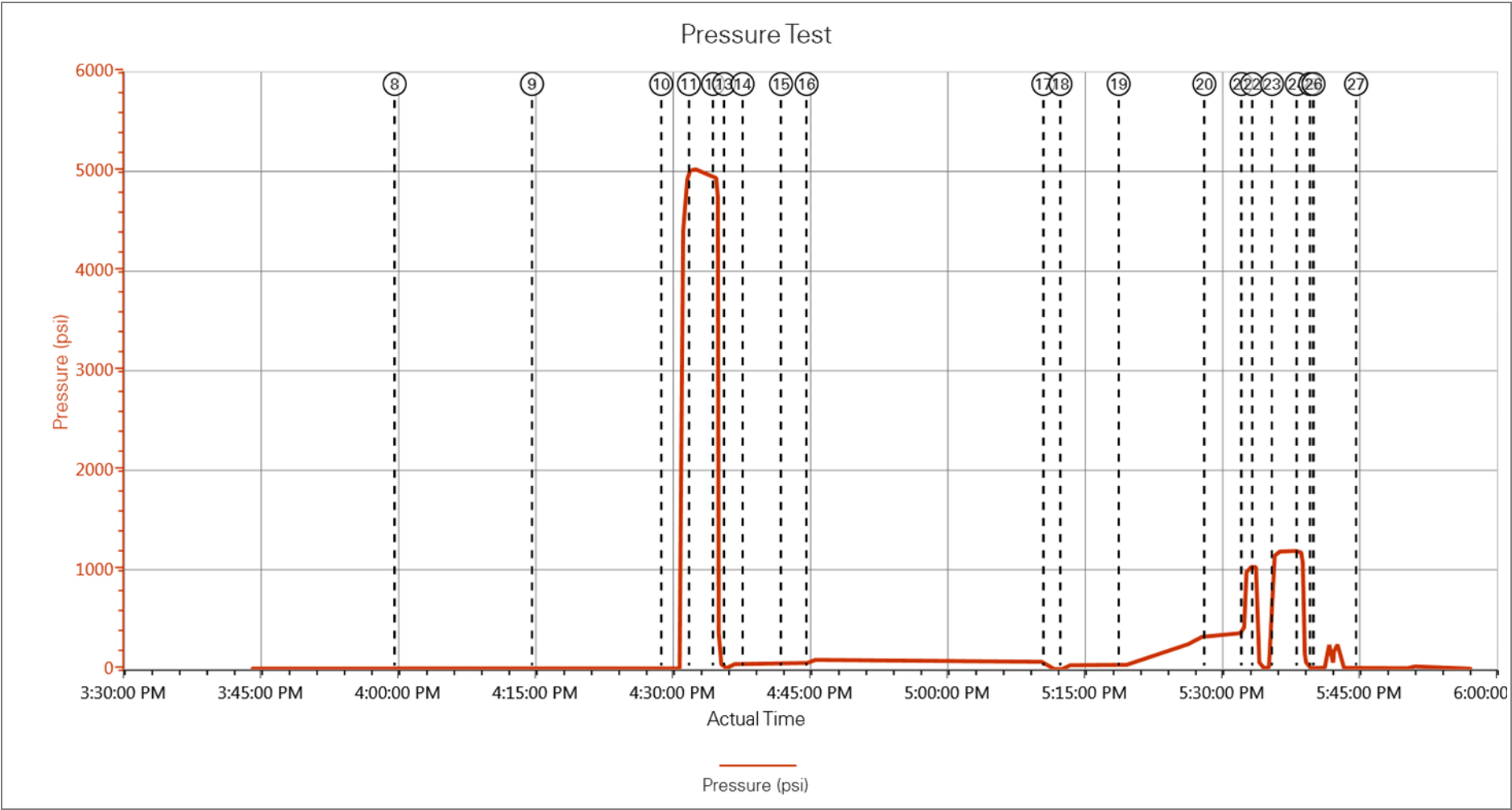


2.3 Anadarko - Barefoot State# 40N-36HZ - Surface-Job Summary NE.png

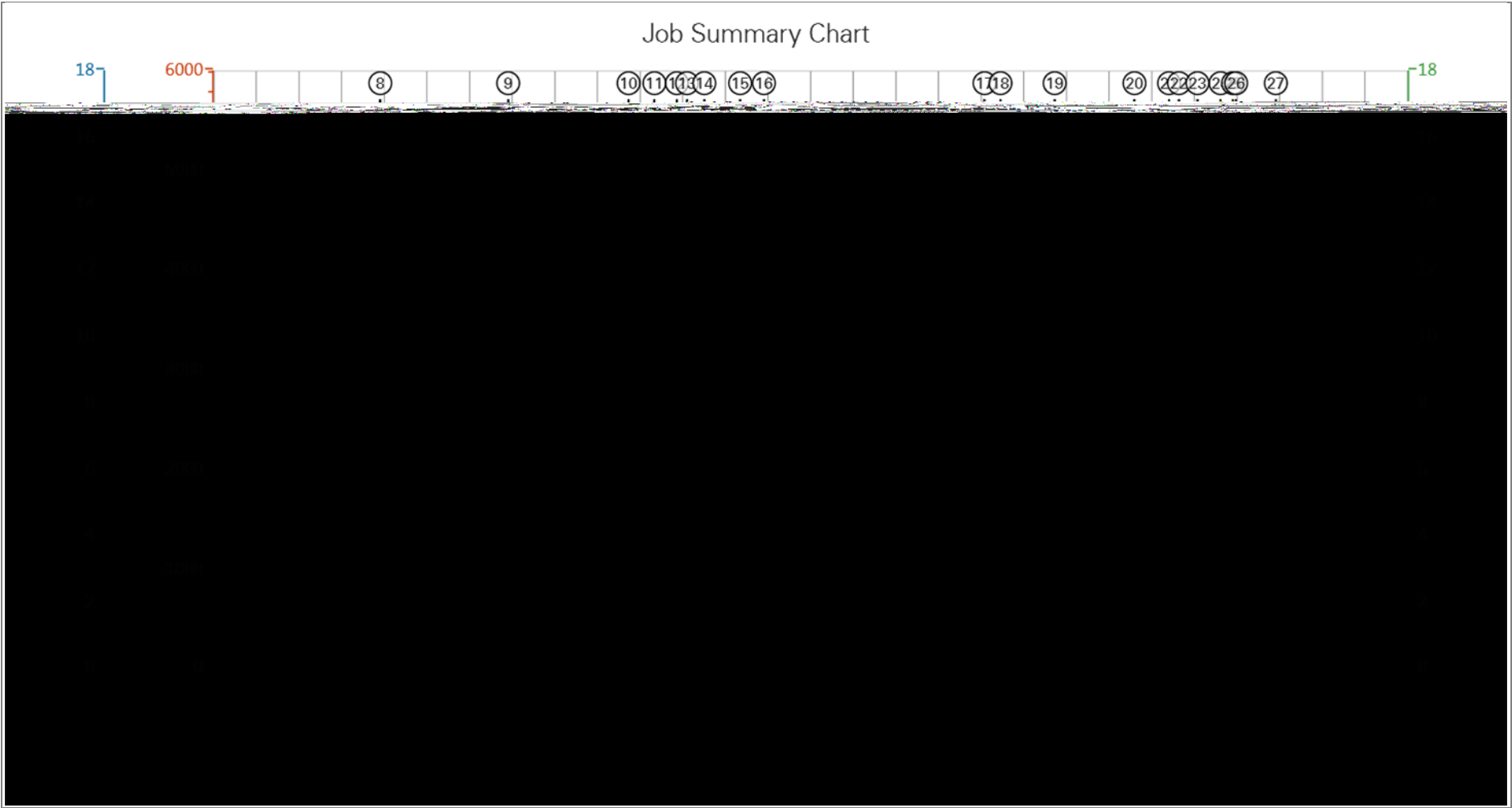


3.0 Custom Graphs

3.1 Custom Graph



3.2 Custom Graph



4.0 Appendix

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