

# HALLIBURTON

iCem<sup>®</sup> Service

## Post Job Report

**ANADARKO PETROLEUM CORP - EBUS**

**For: Randy Case**

Date: Tuesday, June 17, 2014

**Howard 28N-29HZ**

Howard 28N-29HZ

Sincerely,

**Steven Markovich**

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**1.1 Executive Summary**

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Halliburton appreciates the opportunity to perform the cementing services on the **Howard 28N-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>Requested Time On Location</b>	6/17	05:30	MT
<b>Called Out</b>	6/17	01:00	MT
<b>On Location</b>	6/17	05:15	MT
<b>Job Started</b>	6/17	07:07	MT
<b>Job Completed</b>	6/17	09:00	MT
<b>Departed Location</b>	6/17	10:00	MT

## 1.2 Cementing Job Summary

<b>Sold To #:</b> 300466		<b>Ship To #:</b> 3117330		<b>Quote #:</b>		<b>Sales Order #:</b> 0901434118	
<b>Customer:</b> ANADARKO PETROLEUM CORP - EBUS				<b>Customer Rep:</b> Randy Case			
<b>Well Name:</b> HOWARD			<b>Well #:</b> 28N-29 HZ		<b>API/UWI #:</b> 05-123-37864-00		
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> LOCHBUIE		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO	
<b>Legal Description:</b> SE NW-32-1N-67W-2439FNL-1865FWL							
<b>Contractor:</b>				<b>Rig/Platform Name/Num:</b> Majors 29			
<b>Job BOM:</b> 7521							
<b>Well Type:</b> HORIZONTAL GAS							
<b>Sales Person:</b> HALAMERICA\HB47901				<b>Srvc Supervisor:</b> Steven Markovich			

### Job

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

### Well Data

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

### Tools and Accessories

<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	<b>Depth ft</b>		<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>
Guide Shoe	9.625			850		Top Plug	9.625		HES
Float Shoe	9.625					Bottom Plug	9.625		HES
Float Collar	9.625					SSR plug set	9.625		HES
Insert Float	9.625					Plug Container	9.625		HES
	9.625					Centralizers	9.625		HES

### Miscellaneous Materials

<b>Gelling Agt</b>	<b>Conc</b>	<b>Surfactant</b>	<b>Conc</b>	<b>Acid Type</b>	<b>Qty</b>
<b>Treatment Fld</b>	<b>Conc</b>		<b>Conc</b>	<b>Sand Type</b>	

### Fluid Data

<b>Stage/Plug #:</b> 1
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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	bbbl	8.4				
42 gal/bbl									
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
2	Lead Cement	SWIFTCEM (TM) SYSTEM	369	sack	14.2	1.54		6	7.64
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
3	Displacement	Displacement	72	bbbl	8.33				
		Amount	42 ft						
<b>Comment</b> 10bbbls of cement to surface									

## 1.5 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	54
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	9.1
4	Actual mud Plastic Viscosity (PV)	cP	27
5	Actual mud Yield Point (YP)	lb <sub>f</sub> /100ft <sup>2</sup>	
6	Actual mud 30 min Gel Strength	lb <sub>f</sub> /100ft <sup>2</sup>	
7	Time circulated before job	HH:MM	01:00
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	72
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

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Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	8	----	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	<300	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	57	°F	50-80 °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)	Pump Stage Total (bbl)	Driv-Side Pump Rate (bbl/min)	Comment
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	6/17/2014	05:00:00	USER					Arrived on location rig running casing approx 20 joints
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	6/17/2014	05:10:00	USER					JSA and Hazard hunt with HES crew
Event	3	Rig-Up Equipment	Rig-Up Equipment	6/17/2014	05:15:00	USER					Rigged up HES equipment and lines
Event	4	Pre-Job Safety Meeting	Pre-Job Safety Meeting	6/17/2014	06:45:00	USER	11.55	4.00	8.7	0.00	JSA with HES and rig crew on job procedure
Event	5	Start Job	Start Job	6/17/2014	07:10:12	COM6	11.53	10.00	10.7	0.00	
Event	6	Test Lines	Test Lines	6/17/2014	07:12:12	COM6	11.60	2600.00	10.7	0.00	Test lines to 2500psi
Event	7	Pump Spacer 1	Pump Spacer 1	6/17/2014	07:15:09	COM6	11.46	5.00	0.0	0.00	Pump 10bbls of Water
Event	8	Pump Spacer 2	Pump Spacer 2	6/17/2014	07:21:33	COM6	8.19	36.00	10.2	2.60	Pump 12bbls of Mud Flush
Event	9	Pump Spacer 1	Pump Spacer 1	6/17/2014	07:26:15	COM6	8.22	40.00	0.0	2.60	Pump 10bbls of Water
Event	10	Pump Cement	Pump Cement	6/17/2014	07:28:54	COM6	8.33	54.00	10.1	3.00	Pump 101.2bbls of 14.2 Cement
Event	11	Shutdown	Shutdown	6/17/2014	07:54:59	COM6	1.56	26.00	106.3	0.00	
Event	12	Drop Top Plug	Drop Top Plug	6/17/2014	08:02:14	COM6	14.22	6.00	106.3	0.00	Plug dropped
Event	13	Pump Displacement	Pump Displacement	6/17/2014	08:02:17	COM6	14.22	7.00	106.3	0.00	Pump 72bbls of Water. Cement to surface at 62 away.10bbls of Cement to surface
Event	14	Bump Plug	Bump Plug	6/17/2014	08:24:11	COM6	8.42	1004.00	71.7	0.00	Final lift pressure 360psi
Event	15	Bump Plug	Bump Plug	6/17/2014	08:27:53	COM6	8.40	904.00	72.2	0.00	Bumped plug again.
Event	16	Other	Other	6/17/2014	08:35:26	COM6	8.37	1173.00	72.7	0.00	Floats didnt hold completely re bumped plug and held for 3 mins. Checked floats and foats were good.

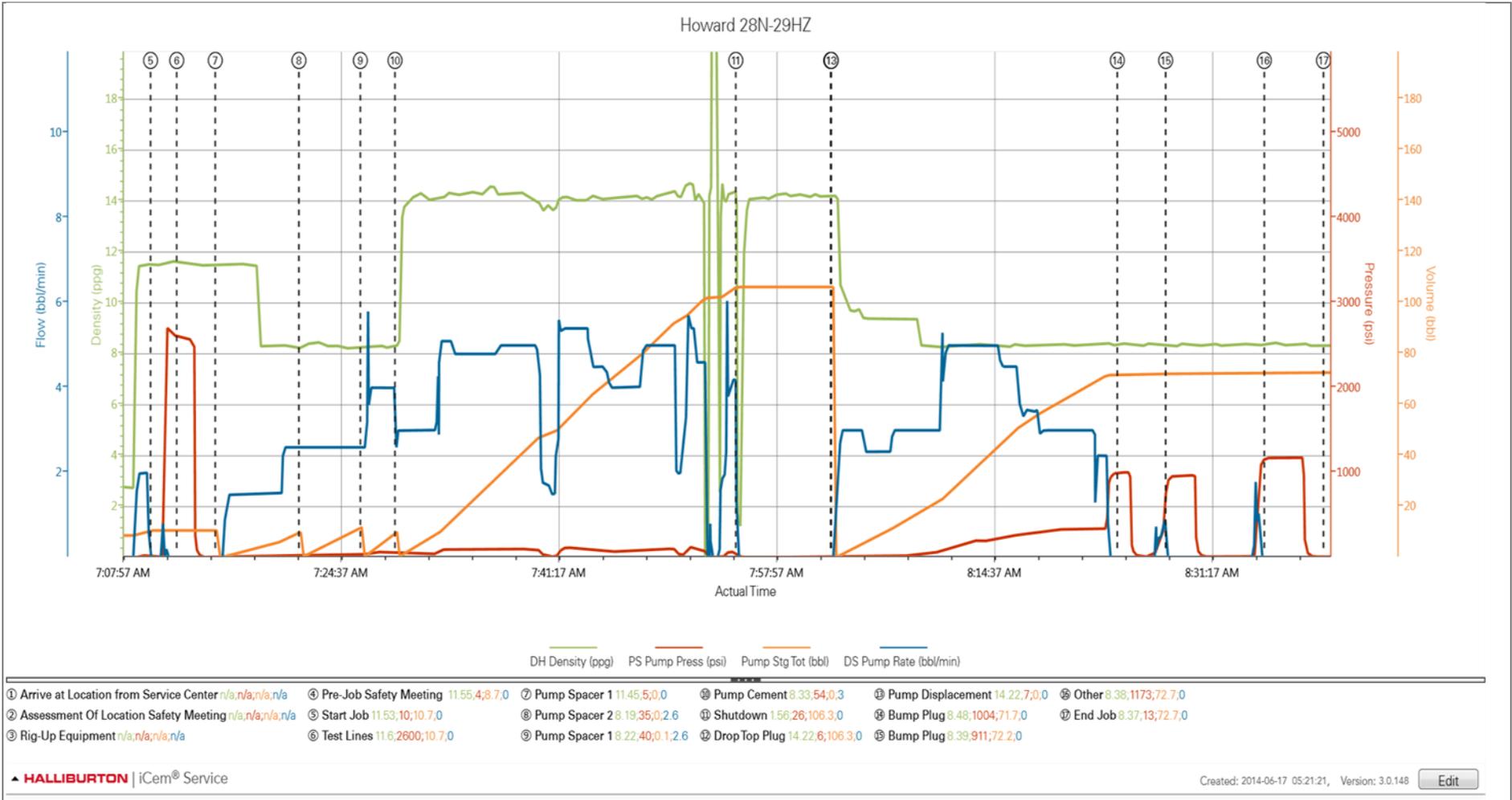
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Event	17	End Job	End Job	6/17/2014	08:39:57	COM6	8.38	13.00	72.7	0.00	Thank you Markovich and crew
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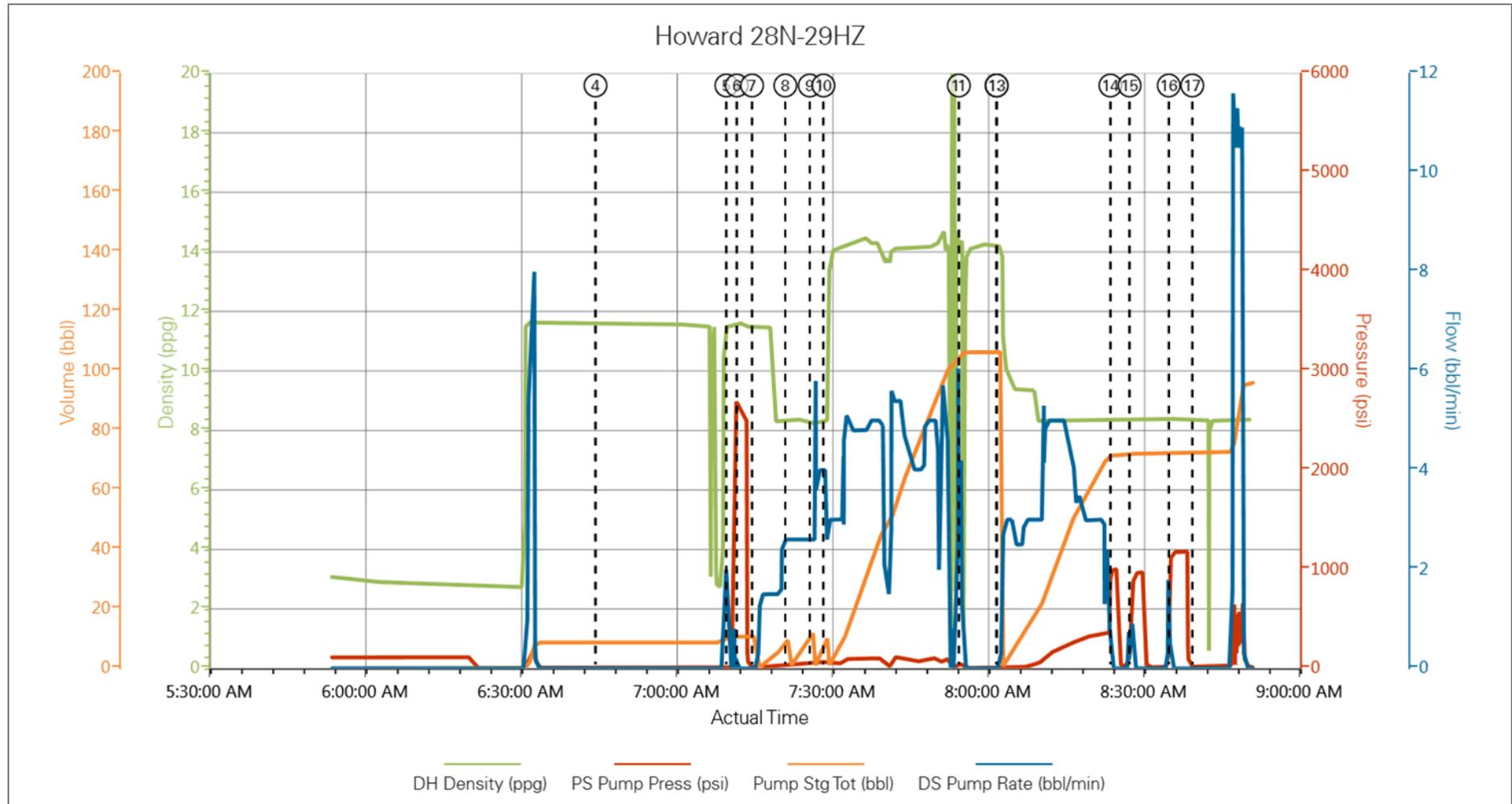
## 2.0 Attachments

### 2.1 Howard 28N-29HZ-Custom Results.png



## 3.0 Custom Graphs

### 3.1 Custom Graph



4.0 Appendix

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