

HALLIBURTON

iCem[®] Service

Post Job Report

ANADARKO PETROLEUM CORP - EBUS

For: Ellis Lorimor

Date: Saturday, July 05, 2014

Vogl State 16C-36HZ

Sincerely,
Joshua Prudhomme

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Vogl State 16C-36HZ** 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	7/5	17:00	MT
Called Out	7/5	12:30	MT
On Location	7/5	17:30	MT
Job Started	7/5	19:49	MT
Job Completed	7/5	22:00	MT
Departed Location	7/5	23:00	MT

1.2 Cementing Job Summary

Sold To #: 300466		Ship To #: 3541209		Quote #:		Sales Order #: 0901479379				
Customer: ANADARKO PETROLEUM CORP - EBUS					Customer Rep: Ellis Lorimor					
Well Name: VOGL STATE			Well #: 16C-36HZ			API/UWI #: 05-123-39688-00				
Field: WATTENBERG		City (SAP): MEAD		County/Parish: WELD			State: COLORADO			
Legal Description: SW SW-36-3N-68W-556FSL-713FWL										
Contractor:				Rig/Platform Name/Num: MAJOR 29						
Job BOM: 7521										
Well Type: HORIZONTAL GAS										
Sales Person: HALAMERICA\HB47901				Srv 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	500	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	84.6	bbl	8.33				
		Amount	42 ft						
Comment 16bbbls of cement to surface									

1.4 Planned Pumping Schedule

- 1. Fill Lines with Water**
 - a. Density = 8.33
 - b. Volume = 2.0 bbl
- 2. Pressure Test Lines to 2500psi**
- 3. Pump Fresh Water Spacer**
 - a. Density = 8.33 lb/gal
 - b. Volume = 10.0 bbl
 - c. Rate = 5.0 bpm
- 4. Pump Mud Flush Spacer**
 - a. Density = 8.4 lb/gal
 - b. Volume = 12.0 bbl
 - c. Rate = 5.0 bpm
- 5. Pump Fresh Water Spacer**
 - a. Density = 8.33 lb/gal
 - b. Volume = 10.0 bbl
 - c. Rate = 5.0 bpm
- 6. Drop Bottom Plug**
- 7. Pump SwiftCem (Lead)**
 - a. Density = 14.2
 - b. Yield = 1.54
 - c. Water Requirement = 7.66
 - d. Volume = 500 sks (137.0 bbls)
 - e. Rate = 6.0 bpm
- 8. Start Displacement**
- 9. Pump Displacement Water**
 - a. Density = 8.33 lb/gal
 - b. Volume = 84.6 bbls
 - c. Rate = 6.0 bpm
10. Land Plug – Anticipated Final Circulation Pressure 520 psi

Calculated Total Displacement = 106.0 bbls

1.5 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	85
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	9.2
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	01:30
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	84.6
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	6	----	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	68	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by: _Steven Markovich_

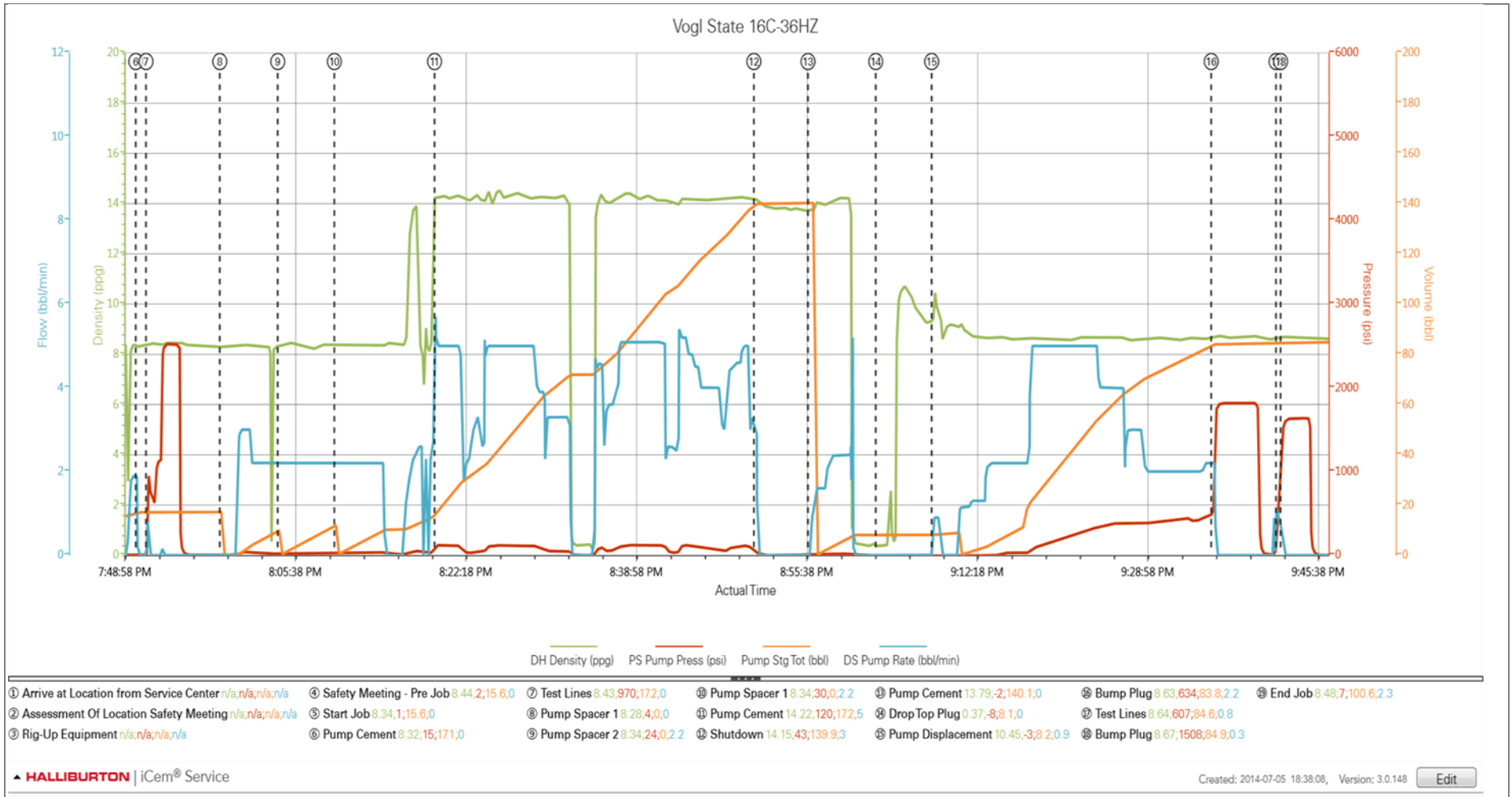
1.7 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	PS Pump Press (psi)	Driv-Side Pump Rate (bbl/min)	Comment
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	7/5/2014	17:30:00	USER				Arrived on location rig waiting on us.
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	7/5/2014	17:35:00	USER				JSA and Hazard hunt with HES crew
Event	3	Rig-Up Equipment	Rig-Up Equipment	7/5/2014	17:40:00	USER				Rigged up HES lines and equipment
Event	4	Safety Meeting - Pre Job	Safety Meeting - Pre Job	7/5/2014	19:30:00	USER	8.44	2.00	0.00	JSA with HES and Rig crew on job procedure
Event	5	Start Job	Start Job	7/5/2014	19:48:31	COM6	8.34	1.00	0.00	
Event	6	Pump Cement	Pump Cement	7/5/2014	19:50:13	USER	8.32	15.00	0.00	
Event	7	Test Lines	Test Lines	7/5/2014	19:51:13	COM6	8.43	970.00	0.00	Test lines to 2500psi
Event	8	Pump Spacer 1	Pump Spacer 1	7/5/2014	19:58:26	COM6	8.28	4.00	0.00	Pump 10bbls of Water
Event	9	Pump Spacer 2	Pump Spacer 2	7/5/2014	20:04:06	COM6	8.34	24.00	2.20	Pump 12bbls of Mud Flush
Event	10	Pump Spacer 1	Pump Spacer 1	7/5/2014	20:09:38	COM6	8.34	30.00	2.20	Pump 10bbls of Water
Event	11	Pump Cement	Pump Cement	7/5/2014	20:19:26	COM6	14.22	120.00	5.00	Pump 128bbls of 14.2ppg Cement
Event	12	Shutdown	Shutdown	7/5/2014	20:50:39	USER	14.15	43.00	3.00	
Event	13	Pump Cement	Pump Cement	7/5/2014	20:55:57	USER	13.79	-2.00	0.00	Pump 8.2bbls of 14.2ppg cement for previous well.
Event	14	Drop Top Plug	Drop Top Plug	7/5/2014	21:02:34	COM6	0.37	-8.00	0.00	Plug pre loaded in HES head
Event	15	Pump Displacement	Pump Displacement	7/5/2014	21:08:02	COM6	10.45	-3.00	0.90	Pump 84.6bbls of Water. Cement to surface at 68 away giving us 18bbls to surface
Event	16	Bump Plug	Bump Plug	7/5/2014	21:35:22	COM6	8.63	634.00	2.20	Final lift pressure was 520psi took 1000psi over and held for 5 mins
Event	17	Test Lines	Test Lines	7/5/2014	21:41:43	COM6	8.64	607.00	0.80	pressure up on plug again
Event	18	Bump Plug	Bump Plug	7/5/2014	21:42:10	COM6	8.67	1508.00	0.30	Held 1500psi for 2 mins

Event	19	End Job	End Job	7/5/2014	22:00:48	COM6	8.48	7.00	2.30	Thank you Markovich and crew
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2.0 Attachments

2.1 Vogl State 16C-36HZ-Custom Results.png



3.0 Custom Graphs

4.0 Appendix

