

HALLIBURTON

iCem[®] Service

ANADARKO PETROLEUM CORP - EBUS

Date: Saturday, March 28, 2015

Butterball 38N-10HZ

Surface

Job Date: Wednesday, February 11, 2015

Sincerely,

Justin Lansdale

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Butterball 38N-10HZ** 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 [Fort Lupton]

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 300466		Ship To #: 3642196		Quote #:		Sales Order #: 0902126591				
Customer: ANADARKO PETROLEUM CORP - EBUS						Customer Rep:				
Well Name: BUTTERBALL			Well #: 38N-10HZ			API/UWI #: 05-123-40990-00				
Field: WATTENBERG		City (SAP): IONE		County/Parish: WELD		State: COLORADO				
Legal Description: NW NE-10-2N-67W-717FNL-1489FEL										
Contractor: ADVANCED ENERGY					Rig/Platform Name/Num: ADVANCED 10					
Job BOM: 7521										
Well Type: HORIZONTAL GAS										
Sales Person: HALAMERICA/HB60191					Srvc Supervisor:					
Job										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type										
BHST										
Job depth MD		1148ft			Job Depth TVD					
Water Depth										
Perforation Depth (MD)					From			To		
Well Data										
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	1138		
Open Hole Section			13.5				0	1148		
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	9.625			850	Top Plug	9.625		HES		
Float Shoe	9.625				Bottom Plug	9.625				
Float Collar	9.625				SSR plug set	9.625				
Insert Float	9.625				Plug Container	9.625		HES		
Stage Tool	9.625				Centralizers	9.625		HES		
Miscellaneous Materials										
Gelling Agt		Conc		Surfactant		Conc	Acid Type	Qty	Conc	
Treatment Fld		Conc		Inhibitor		Conc	Sand Type	Size	Qty	
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	Fresh Water Spacer	Fresh Water Spacer	20	bbl	8.33			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	

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Cementing Job Summary

2	Fresh Water Spacer with Red Dye	Fresh Water Spacer with Red Dye	10	bbbl	8.33			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
3	Lead Cement	SWIFCEM (TM) SYSTEM	424	sack	14.2	1.54		4	7.66

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	
4	Displacement	Displacement	85	bbbl	8.33					
Cement Left in Pipe		Amount	42 ft		Reason			Shoe Joint		
Mix Water:		pH7 ##	Mix Water Chloride:		##124 ppm		Mix Water Temperature:			##61 °F °C
Cement Temperature:		## °F °C	Plug Displaced by:		##8.33 lb/gal		Disp. Temperature:			## °F °C
Plug Bumped?		Yes	Bump Pressure:		###900 psi MPa		Floats Held?			Yes
Cement Returns:		## bbl m3	Returns Density:		## lb/gal kg/m3		Returns Temperature:			## °F °C
Comment										

1.2 Planned Pumping Schedule

1.3 Pump Schedule

Description	Stage No.	Density (ppg)	Rate (bbl/min)	Yield (ft ³ /sack)	Water Req. (gal/sack)	Volume (bbl)	Bulk Cement (sacks)	Duration (min)
Anadarko MUD	1	9.00	5.00			0.00		0.00
Water	2	8.33	6.00			20.00		3.33
Anadarko 14.2 ppg Surface SwiftCem	3-1	14.20	6.00	1.5380	7.650	116.14	424.00	19.36
Shutdown	3-2			1.5380	7.650		0.00	10.00
Top Plug/Start Displacement								
Anadarko MUD	4	9.00	6.00			88.75		14.79
Total:						224.90		47.48

**Pump schedule may include additional rows for displacement if "Automatic Rate Adjustment" was enabled and ECDs approached the fracture gradient.*

2.0 Real-Time Job Summary

2.1 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)	Comments
Event	1	Call Out	Call Out	2/11/2015	04:00:00	USER				
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	2/11/2015	06:50:00	USER				Discussed route, driving hazards and driving safety
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	2/11/2015	07:00:00	USER				
Event	4	Arrive At Loc	Arrive At Loc	2/11/2015	08:00:00	USER				Tp- 1138', TD- 1148', ST- 41.46', CAS- 9 5/8" 36#, OH- 13 1/2", WF- 8.5#- WBM, Halliburton HWE top plug supplied by company man. Water PH- 7, SULF- less than 200, Iron- 0, Chlor.- 124, Temp-62 deg.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	2/11/2015	08:10:00	USER				Did site assessment, discussed safety and hazards.
Event	6	Rig-Up Equipment	Rig-Up Equipment	2/11/2015	08:15:00	USER				
Event	7	Running In Hole	Running In Hole	2/11/2015	08:16:00	USER				Rig running casing in hole
Event	8	Circulate Well	Circulate Well	2/11/2015	08:30:00	USER				Rig circulating well @ 4 bbls/min, 68 psi
Event	9	Rig-Up Completed	Rig-Up Completed	2/11/2015	08:50:00	USER				
Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	2/11/2015	08:55:00	USER				Discussed job procedures, safety and hazards
Event	11	Start Job	Start Job	2/11/2015	09:13:05	COM4				
Event	12	Test Lines	Test Lines	2/11/2015	09:14:56	COM4				Tested lines to 2500 psi. Had good tests.

Event	13	Pump Spacer 1	Pump Spacer 1	2/11/2015	09:18:40	COM4	4.00	8.49	4.00	Pumped 10 bbls of 8.33# fresh water @ 4 bbls/min., 50 psi
Event	14	Pump Spacer 2	Pump Spacer 2	2/11/2015	09:22:08	COM4	49.00	8.33	4.00	Pumped 10 bbls of 8.33# dye water @ 4 bbls/min., 50 psi
Event	15	Pump Spacer 1	Pump Spacer 1	2/11/2015	09:24:39	COM4	52.00	8.33	4.00	Pumped 10 bbls of 8.33# fresh water @ 4 bbls/min., 50 psi
Event	16	Pump Lead Cement	Pump Lead Cement	2/11/2015	09:33:19	COM4	2.00	14.2	4.00	Pumped 116.5 bbls of 14.2# lead cement @ 4 bbls/min., 60 psi
Event	17	Check Weight	Check weight	2/11/2015	09:38:33	COM4	51.00	14.35	3.60	14.2#
Event	18	Check Weight	Check weight	2/11/2015	09:51:37	COM4	62.00	14.40	4.00	14.2#
Event	19	Drop Top Plug	Drop Top Plug	2/11/2015	10:04:35	COM4				Dropped top plug. Driller was present to witness
Event	20	Pump Displacement	Pump Displacement	2/11/2015	10:04:39	COM4	5.00	8.33	2.00	Pumped 85 bbls of 8.33# fresh water @ 6 bbls/min., pressure range from 19 psi to 425 psi. Slowed to 2 bbls/min. last 10 to bump plug. Got 10 bbls of cement to surface.
Event	21	Bump Plug	Bump Plug	2/11/2015	10:28:35	COM4	1014.00	8.68	0.00	Bumped plug at calculated displacement 500 psi over final circulating pressure. Pressure range from 400 psi to 900 psi.
Event	22	Check Floats	Check Floats	2/11/2015	10:33:00	USER				Got 1/2 bbl back. Floats held.
Event	23	End Job	End Job	2/11/2015	10:34:28	COM4				
Event	24	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	2/11/2015	10:45:00	USER				Discussed safety and hazards.
Event	25	Rig-Down Equipment	Rig-Down Equipment	2/11/2015	10:55:00	USER				

Event	26	Rig-Down Completed	Rig-Down Completed	2/11/2015	11:15:00	USER	
Event	27	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	2/11/2015	11:20:00	USER	Discussed route, driving safety and driving hazards
Event	28	Depart Location	Depart Location	2/11/2015	11:30:00	USER	

2.2 Custom Graph

