

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Date: Monday, January 29, 2018

Centennial State G34-689

Job Date: Tuesday, January 23, 2018

Sincerely,

Adam McKay

Legal Notice

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Centennial State G34-689** cement **Production** 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 [Ft. Lupton]

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 345242		Ship To #: 3792236		Quote #:		Sales Order #: 0904574220					
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Dave Nielsen							
Well Name: CENTENNIAL STATE				Well #: G34-689		API/UWI #: 05-123-44607-00					
Field: WATTENBERG		City (SAP): LA SALLE		County/Parish: WELD		State: COLORADO					
Legal Description: NE NE-35-4N-65W-500FNL-250FEL											
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 517							
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HB70026				Srvc Supervisor: Nicholas Roles							
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST		230 degF					
Job depth MD		16710ft		Job Depth TVD							
Water Depth				Wk Ht Above Floor							
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	1965	0	1965	
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	16710	0	7027	
Open Hole Section			8.5				1965	6686	1965	6686	
Open Hole Section			8.5				6686	16730	6686	7027	
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	11.5 lb/gal Tuned Spacer III w/ Chems	Tuned Spacer III			80	bbl	11.5	3.73		5	
34.70 gal/bbl		FRESH WATER									
0.60 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)									
149.34 lbm/bbl		BARITE, BULK (100003681)									
0.60 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)									
Fluid Data											
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	ElastiCem Cap	ELASTICEM (TM) SYSTEM			150	sack	13.2	1.57		8	7.53
0.80 %		SCR-100 (100003749)									
7.53 Gal		FRESH WATER									

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Cementing Job Summary

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	559	sack	13.2	1.6		7	7.69
0.45 %		SCR-100 (100003749)							
7.69 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
4	NeoCem NT1	NeoCem TM	1129	sack	13.2	2.04		8	9.75
9.75 Gal		FRESH WATER							
0.08 %		SCR-100 (100003749)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
5	Displacement	Displacement	369.5	bbl	8.33			10	
Cement Left In Pipe	Amount	50.1ft		Reason				Shoe Joint	
Comment Got 4bbls spacer to surface. Estimated TOL#1-1708', TOL#2-2705', TOT-6602'									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Comments
Event	1	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	1/22/2018	19:45:00	USER				Held meeting with all personnel in convoy to discuss directions and hazards associated with drive, all fit to drive.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	1/22/2018	20:00:00	USER				Journey Management prior to departure
Event	3	Call Out	Call Out	1/22/2018	22:00:00	USER				Called out by Service Coordinator for O/L at 0400
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	1/23/2018	02:00:00	USER				Upon arrival met with company man to discuss job details and calculations, performed hazard hunt and site assessment.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	1/23/2018	03:00:00	USER				Discussed rigging up hazards and procedure according to HMS.
Event	6	Other	Other	1/23/2018	03:30:00	USER				Water test- PH-6, Chlor-0, Temp-65.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	1/23/2018	05:00:00	USER				Held safety meeting with all job associated personnel to discuss job procedure, hazards and stop work authority.
Event	8	Start Job	Start Job	1/23/2018	08:32:25	COM4				TD-16730', TP-16710' 5.5" 20#, FC-16660', TVD-7027', SURF-1965' 9.625" 36#, OH-8.5" MUD-9.1#
Event	9	Drop Bottom Plug	Drop Bottom Plug	1/23/2018	08:32:37	USER				Dropped by HES supervisor, witnessed by company man.
Event	10	Pump Spacer 1	Pump Spacer 1	1/23/2018	08:45:40	COM4	11.29	2.80	272.00	Pumped 80bbls Tuned Spacer III 11.5# 3.78y 23.5g/s with 50g Musol A, 50g Dual Spacer B and 10g D-Air at 5bpm 240psi.
Event	11	Drop Bottom Plug	Drop Bottom Plug	1/23/2018	09:05:23	USER				Dropped by HES supervisor, witnessed by company man.
Event	12	Pump Lead Cement	Pump Lead Cement	1/23/2018	09:08:25	COM4	13.04	3.80	187.00	Pumped 150sks or 41.9bbls Elasticem w/o CBL 13.2# 1.53y 7.53g/s at 8bpm 480psi.
Event	13	Check Weight	Check weight	1/23/2018	09:10:22	COM4	13.16	4.00	199.00	Weight verified with pressurized mud scales.
Event	14	Check Weight	Check weight	1/23/2018	09:13:15	COM4	13.19	8.00	516.00	Weight verified with pressurized mud scales.
Event	15	Pump Lead Cement	Pump Lead Cement	1/23/2018	09:16:16	COM4	13.49	6.70	471.00	Pumped 559sks or 159bbls Elasticem w/CBL 13.2# 1.6y 7.69g/s at 7bpm 580psi.

Event	16	Check Weight	Check weight	1/23/2018	09:17:29	COM4	13.17	6.70	448.00	Weight verified with pressurized mud scales.
Event	17	Pump Tail Cement	Pump Tail Cement	1/23/2018	09:40:38	COM4	13.55	7.40	596.00	Pumped 1129sks or 410bbls 13.2# 2.04y 9.75g/s Neocem at 8bpm 7600psi.
Event	18	Check Weight	Check weight	1/23/2018	09:47:41	COM4	13.20	8.00	759.00	Weight verified with pressurized mud scales.
Event	19	Check Weight	Check weight	1/23/2018	10:21:33	COM4	13.17	8.10	782.00	Weight verified with pressurized mud scales.
Event	20	Drop Top Plug	Drop Top Plug	1/23/2018	10:46:26	COM4				Dropped by HES supervisor, witnessed by company man.
Event	21	Pump Displacement	Pump Displacement	1/23/2018	10:46:32	COM4	8.20	8.00	259.00	Pumped 369.5bbls fresh water with 10g MMCR in first 20bbls, 15g Algicide throughout.
Event	22	Bump Plug	Bump Plug	1/23/2018	11:32:50	COM4	8.17	3.00	1787.00	Slowed down to 3bpm at 345bbls away, final circulating pressure-1650psi, bump pressure-2145PSI. Held for 5min.
Event	23	Check Floats	Check Floats	1/23/2018	11:38:15	USER				Released pressure and got _bbls fresh water to truck, floats held.
Event	24	End Job	End Job	1/23/2018	11:40:50	COM4				Got 4bbls spacer to surface. Estimated TOL#1-1708', TOL#2-2705',TOT-6602'
Event	25	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	1/23/2018	11:45:00	USER				Discussed rigging down hazards and procedure according to HMS.
Event	26	Depart Location Safety Meeting	Depart Location Safety Meeting	1/23/2018	13:15:00	USER				Held meeting with all personnel in convoy to discuss directions and hazards associated with drive, all fit to drive.
Event	27	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	1/23/2018	13:30:00	USER				Pre journey management prior to departure.

3.0 Attachments

3.1 H&P 517 CENTENNIAL STATE G34-689 -Custom Results.png

