

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Date: Monday, March 05, 2018

Centennial State G34-635 Production

Job Date: Thursday, March 01, 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 G34-635** 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 #: 3792233		Quote #:		Sales Order #: 0904670615					
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: John Drahota							
Well Name: CENTENNIAL STATE			Well #: G34-635			API/UWI #: 05-123-44606-00					
Field: WATTENBERG		City (SAP): LA SALLE		County/Parish: WELD			State: COLORADO				
Legal Description: NE SE-35-4N-65W-2320FSL-280FEL											
Contractor: H & P DRLG					Rig/Platform Name/Num: H & P 517						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HB70026					Srv Supervisor: Steven Markovich						
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST		230 degF				
Job depth MD		17004ft			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	1939	0		
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	17060	0	0	
Open Hole Section			8.5				2500	7191			
Open Hole Section			8.5				7191	17060			
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	11.5 lb/gal Tuned Spacer III w/ Chems	Tuned Spacer III		80	bbl	11.5	3.73				
34.70 gal/bbl		FRESH WATER									
0.60 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)									
0.60 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)									
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	ElastiCem Cap	ELASTICEM (TM) SYSTEM		150	sack	13.2	1.57		6	7.53	
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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	556	sack	13.2	1.6		6	7.69
		7.69 Gal FRESH WATER							
		0.45 % SCR-100 (100003749)							
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
4	NeoCem NT1	NeoCem TM	1162	sack	13.2	2.04		6	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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	Displacement	Displacement	375	bbl	8.33				
<p>Comment Bumped plug at 375bbbls away, final lift pressure was 2050psi. After holding for 5 mins pressure was 2538psi. Checked floats and after 4.5bbbls back floats held. Estimated Top of Tail Cement 6665' Estimated Top of Lead 2 Cement 2782' Estimated Top of Lead Cement 1781' Estimated Top of Spacer 111'.</p>									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	DS Pump Press (psi)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	2/28/2018	22:00:00	USER				Job called out with an on location of 04:00
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/1/2018	01:30:00	USER				JSA with HES crew on driving safety and route to rig.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	3/1/2018	02:30:00	USER				Arrived on location, rig was running casing. 3500' to run.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	3/1/2018	02:40:00	USER				JSA and hazard hunt with HES crew.
Event	5	Rig-Up Equipment	Rig-Up Equipment	3/1/2018	02:50:00	USER				Rigged up HES lines and equipment.
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	3/1/2018	06:00:00	USER				JSA with HES and rig crews on job safety and procedure.
Event	7	Start Job	Start Job	3/1/2018	06:29:43	COM4				TD 17020" TP 17004' FC 16957.3' 5 1/2" 20# Production Casing, 8 1/2" open hole, 9 5/8" 36# Surface Casing at 1940' Estimated Top of Tail Cement 6665' Estimated Top of Lead 2 Cement 2782' Estimated Top of Lead Cement 1781' Estimated Top of Spacer 111'.
Event	8	Test Lines	Test Lines	3/1/2018	06:33:03	COM4	8.59	4468.00		Set kick outs to 500psi and check kick outs, then bring pressure up to 4500psi and hold. Release pressure then pressure up on the rigs ibop to 3000psi and hold.
Event	9	Drop Bottom Plug	Drop Bottom Plug	3/1/2018	06:42:41	USER				Plug loaded into the casing by the company rep.
Event	10	Pump Spacer 1	Pump Spacer 1	3/1/2018	06:43:34	COM4	11.27	392.00	4.10	Pump 80bbls of 11.5ppg 3.73yield Tuned Spacer. Added 45gallons of Musol A and Dual Spacer B on the fly. Pumped at 5bbl/min 270psi.
Event	11	Check Weight	Check weight	3/1/2018	07:08:01	COM4	11.03	19.00	0.00	Weight verified by pressurized scales.
Event	12	Drop Bottom Plug	Drop Bottom Plug	3/1/2018	07:08:41	USER	11.02	19.00	0.00	Plug loaded into the casing by the company rep.
Event	13	Pump Lead Cement	Pump Lead Cement	3/1/2018	07:14:13	COM4	13.21	324.00	5.80	Pump 41.9bbls (150sks) of 13.2ppg 1.57yield Lead Cement. Pumped at 8bbl/min 525psi.
Event	14	Check Weight	Check weight	3/1/2018	07:15:17	COM4	13.47	546.00	8.00	Weight verified by pressurized scales.

Event	15	Pump Cement	Pump Cement	3/1/2018	07:17:17	COM4	13.26	564.00	8.00	Pump 158.44bbls (556sks) of 13.2ppg 1.6yield Lead 2 Cement. Pumped at 8bbl/min 579psi.
Event	16	Check Weight	Check weight	3/1/2018	07:32:13	COM4	13.17	738.00	8.00	Weight verified by pressurized scales.
Event	17	Pump Tail Cement	Pump Tail Cement	3/1/2018	07:36:50	COM4	13.15	800.00	8.00	Pump 422bbls (1162sks) of 13.2ppg 2.04yield Tail Cement. Pumped at 8bbl/min 956psi.
Event	18	Check Weight	Check weight	3/1/2018	07:38:30	COM4	13.07	723.00	7.00	Weight verified by pressurized scales.
Event	19	Check Weight	Check weight	3/1/2018	08:27:03	COM4	13.25	750.00	7.00	Weight verified by pressurized scales.
Event	20	Shutdown	Shutdown	3/1/2018	08:36:28	COM4	12.96	175.00	0.00	Shutdown and clean pumps and lines.
Event	21	Drop Top Plug	Drop Top Plug	3/1/2018	08:54:14	COM4				Plug loaded into the casing by the company rep.
Event	22	Pump Displacement	Pump Displacement	3/1/2018	08:54:17	COM4	7.74	342.00	8.00	Pump 375bbls of H2O. First 20bbls with MMCR then 355bbls with Biocide added on the fly. Pumped at 10bbl/min and then slowed rate to 3bbls/min at 350bbls away to bump plug.
Event	23	Bump Plug	Bump Plug	3/1/2018	09:35:26	COM4	8.38	1953.00	3.00	Bumped plug at 375bbls away, final lifting pressure was 2050psi. brought pressure 500psi over and held for 5 mins.
Event	24	Check Floats	Check Floats	3/1/2018	09:41:37	USER				Opened release line to check floats, after 4.5bbls back the floats held.
Event	25	End Job	End Job	3/1/2018	09:44:10	COM4				Thank you Steve Markovich and crew.

3.0 Attachments

3.1 Centennial State G34-635 Production-Custom Results.png

