

# HALLIBURTON

iCem<sup>®</sup> Service

## **NOBLE ENERGY INC E-BUSINESS**

Date: Wednesday, January 31, 2018

### **Centennial State G34-684 Production**

Job Date: Sunday, January 28, 2018

Sincerely,

Adam McKay

## Legal Notice

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Centennial State G34-684** 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]**

## HALLIBURTON

## Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 345242		Ship To #: 3792265		Quote #:		Sales Order #: 0904594334				
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Woodie Beardsley						
Well Name: CENTENNIAL STATE			Well #: G34-684		API/UWI #: 05-123-44601-00					
Field: WATTENBERG		City (SAP): LA SALLE		County/Parish: WELD		State: COLORADO				
Legal Description: NE NE-35-4N-65W-522FNL-250FEL										
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 517						
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB70026					Srcv Supervisor: Luke Kosakewich					
<b>Job</b>										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type					BHST		230 degF			
Job depth MD		16837ft			Job Depth TVD		6959			
Water Depth					Wk Ht Above Floor					
Perforation Depth (MD)		From			To					
<b>Well Data</b>										
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	1942	0	1942
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	16823	0	6959
Open Hole Section			8.5				1778	6598	1778	6598
Open Hole Section			8.5				6598	16837	6598	6959
<b>Fluid Data</b>										
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	
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 W/O Super CBL		150	sack	13.2	1.57		6	7.53
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 W/ Super CBL		547	sack	13.2	1.6		8	7.69

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*Cementing Job Summary*

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	
4	NeoCem NT1	NeoCem TM	1151	sack	13.2	2.04		8	9.75	
+										
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	
5	Displacement	Displacement	372.1	bbl	8.33			10		
-										
Cement Left In Pipe		Amount	46ft		Reason			Shoe Joint		
<b>Comment</b> Had full returns throughout the job. Bumped the plug 500 psi. over 1,890 psi. at 3 bpm. Finale Pressure was 2,360 psi. Floats held. Got 4 bbls. back to the truck. Estimated TOT, 6,598', TOL, 2,777', TOC 1,778', TOS, 108'.										

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	DH Density (ppg)	Comments
Event	1	Call Out	Call Out	1/27/2018	19:30:00	USER				Crew was called out at 19:30 for an on location time of 01:30.
Event	2	Depart Location Safety Meeting	Depart Location Safety Meeting	1/27/2018	23:45:00	USER				Crew was called out at 19:30 for an on location time of 01:30.
Event	3	Depart Location for Shop	Depart Location for Shop	1/28/2018	00:00:00	USER				Started journey management with dispatch and left location.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	1/28/2018	01:00:00	USER				Crew performed a site assessment and hazard hunt on location. Checked in with the customer and discussed the job procedures, rig up and well bore schematics to calculate the job. The rig was running casing.
Event	5	Other	Other	1/28/2018	01:20:00	USER				
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	1/28/2018	01:30:00	USER				The crew held a pre rig up safety meeting and JSA.
Event	7	Rig-Up Equipment	Rig-Up Equipment	1/28/2018	01:40:00	USER				The crew rigged up all lines, hoses and equipment for the job.
Event	8	Safety Meeting	Safety Meeting	1/28/2018	04:20:00	USER				All personnel on location held a pre cement job safety meeting and JSA.
Event	9	Start Job	Start Job	1/28/2018	05:01:40	COM4				Pumped 3 bbls. to fill lines and establish circulation.
Event	10	Test Lines	Test Lines	1/28/2018	05:03:52	COM4		4124.00	8.61	Pressure tested lines to 4,000 psi. with a 500 psi. electronic kick out test.
Event	11	Test Lines	Test Lines	1/28/2018	05:13:53	COM4		3010.00	8.63	Pressure tested lbop to 3,000 psi. with a 500 psi. electronic kick out test.
Event	12	Drop Bottom Plug	Drop Bottom Plug	1/28/2018	05:19:12	COM4				Dropped the bottom plug which, was witnessed by the customer.
Event	13	Pump Spacer 1	Pump Spacer 1	1/28/2018	05:19:15	COM4	3.40	287.00	11.69	Pumped 80 bbls. of Tuned Spacer III with surfactants mixed at 11.5 ppg., Yield: 3.73 ft <sup>3</sup> /sks, 23.3 gal/sks. Density was verified by pressurized scales.
Event	14	Shutdown	Shutdown	1/28/2018	05:39:22	COM4				Bled off pressure.

Event	15	Drop Bottom Plug	Drop Bottom Plug	1/28/2018	05:39:45	USER				Loaded and dropped the bottom plug witnessed by the customer.
Event	16	Check Weight	Check weight	1/28/2018	05:41:52	COM4				Cement weight up at 13.2 ppg. Density was verified by pressurized scales.
Event	17	Pump Lead Cement	Pump Lead Cement	1/28/2018	05:44:13	COM4				Pumped 42 bbls. (150 sks.) of Elasticem W/O Super CBL mixed at 13.2 ppg., Yield: 1.57 ft3/sks, 7.53 gal/sks. Density was verified by pressurized scales.
Event	18	Pump Lead Cement	Pump Lead Cement	1/28/2018	06:02:06	USER	6.00	414.00	13.16	Pumped 156 bbls. (547 sks.) of Elasticem mixed at 13.2 ppg., Yield: 1.57 ft3/sks, 7.69 gal/sks. Density was verified by pressurized scales.
Event	19	Pump Tail Cement	Pump Tail Cement	1/28/2018	06:21:52	COM4	5.00	353.00	13.17	Pumped 418 bbls. (1151 sks.) of Neocem mixed at 13.2 ppg. Yield: 2.04 ft3/sks, 9.75 gal/sks. Density was verified by pressurized scales.
Event	20	Check Weight	Check weight	1/28/2018	06:22:56	COM4	7.00	671.00	13.21	Cement weight up at 13.2 ppg. Density was verified by pressurized scales.
Event	21	Check Weight	Check weight	1/28/2018	06:49:37	COM4	8.00	869.00	13.25	Cement weight up at 13.2 ppg. Density was verified by pressurized scales.
Event	22	Shutdown	Shutdown	1/28/2018	07:17:13	COM4				Shutdown to blow down and wash up.
Event	23	Clean Lines	Clean Lines	1/28/2018	07:22:19	COM4				Blew down and washed pumps and lines until clean and dry.
Event	24	Drop Top Plug	Drop Top Plug	1/28/2018	07:34:15	COM4				Loaded and dropped the bottom plug witnessed by the customer.
Event	25	Pump Displacement	Pump Displacement	1/28/2018	07:35:51	COM4	8.00	325.00	8.01	Pumped 372 bbls. of fresh water with MMCR in the first 20 bbls. and Biocide throughout the rest of displacement.
Event	26	Bump Plug	Bump Plug	1/28/2018	08:19:02	COM4	3.10	1833.00	8.07	Bumped the plug 500 psi. over 1,890 psi. at 3 bpm. Finale pressure was 2,360 psi. Held pressure for 5 minutes. Pressure held. Got no spacer to surface. Estimated TOT 6,598', TOL 2,777', TOC 1,778', TOS 108'.
Event	27	Check Floats	Check Floats	1/28/2018	08:23:33	USER				Bled off pressure to check floats. Floats held. Got 4 bbls. back to surface.
Event	28	End Job	End Job	1/28/2018	08:27:42	COM4				Blew down down and washed until clean dry.
Event	29	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	1/28/2018	08:35:00	USER				Halliburton cement crew held a pre rig down safety meeting and JSA.
Event	30	Rig-Down Equipment	Rig-Down Equipment	1/28/2018	08:40:00	USER				Rigged down all lines, hoses and equipment.
Event	31	Depart Location Safety Meeting	Depart Location Safety Meeting	1/28/2018	10:30:00	USER				Held a pre journey safety meeting with the crew.

Event	32	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	1/28/2018	10:45:00	USER	Started journey management with dispatch and left location.
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3.0 Attachments

3.1 Case 1-Custom Results.png

