

# HALLIBURTON

iCem<sup>®</sup> Service

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

Date: Tuesday, February 20, 2018

Centennial State G34-675 Production

Job Date: Thursday, February 15, 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 G34-675** 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 #: 3792288		Quote #:		Sales Order #: 0904639410				
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Woodie Beardsley						
Well Name: CENTENNIAL STATE				Well #: G34-675		API/UWI #: 05-123-44604-00				
Field: WATTENBERG		City (SAP): LA SALLE		County/Parish: WELD		State: COLORADO				
Legal Description: SE NE-35-4N-65W-1550FNL-285FEL										
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 517						
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB70026				Srvs Supervisor: Luke Kosakewich						
<b>Job</b>										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST		230 degF				
Job depth MD		12297ft		Job Depth TVD		6932ft				
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	1945	0	1945
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	12285	0	6932
Open Hole Section			8.5				2015	6870	2015	6870
Open Hole Section			8.5				6870	12297	6870	6932
<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		4	
Stage/Plug #: 2										
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		6	7.53
Stage/Plug #: 3										
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		548	sack	13.2	1.6		8	7.69

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(v. 4.5.139)

Created: Tuesday, February 20, 2018

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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/mi n	Total Mix Fluid Gal
4	NeoCem NT1	NeoCem TM	611	sack	13.2	2.04		8	9.75
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
5	Displacement	Displacement	271.5	bbl	8.33			9	
Cement Left In Pipe		Amount	48ft		Reason			Shoe Joint	
Comment There were full returns throughout the job. Bumped the plug 500 psi. over 1,950 psi. at 3 bpm and held for 5 minutes. Final pressure was 2,700 psi. Floats held. Got 4 bbls. of fluid back to the truck. Got no spacer or cement back to surface. Estimated TOT 6,870', TOL cement is 3,042', TOC is 2,015', and TOS is 334'.									

## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

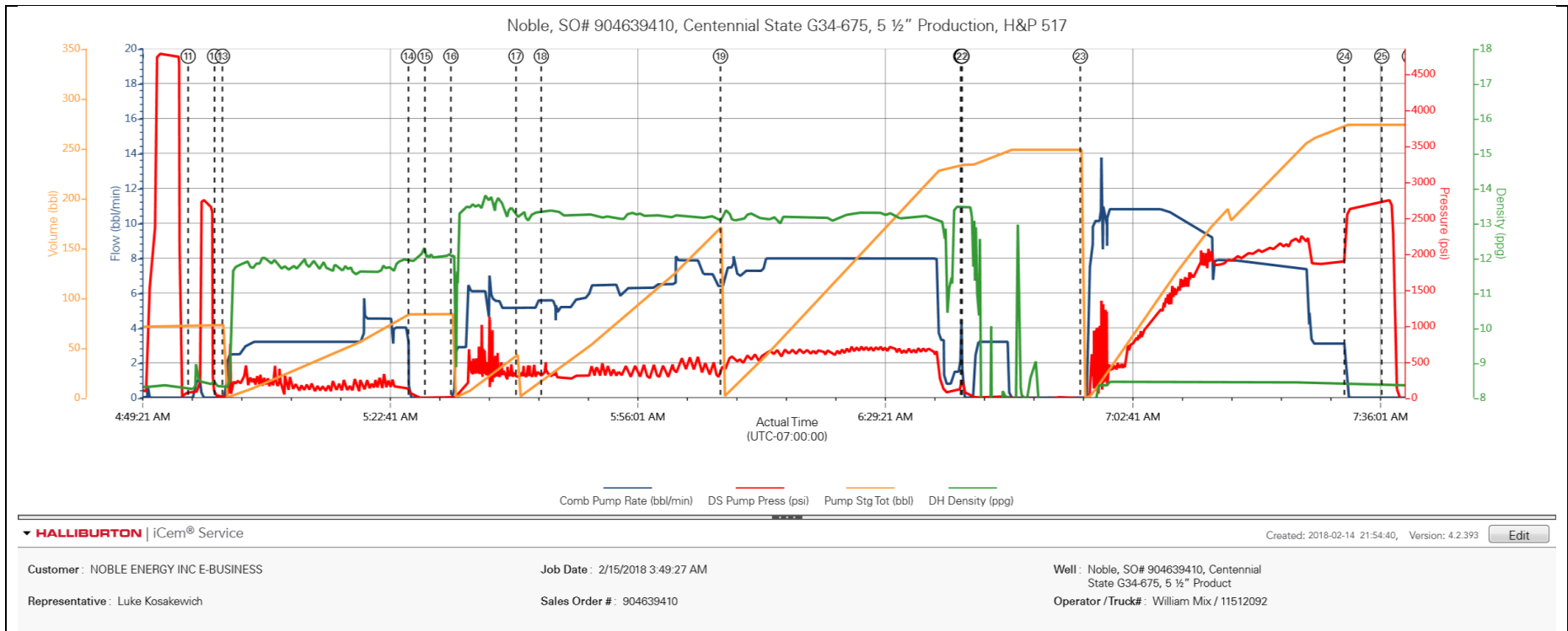
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	DH Density (ppg)	Comments
Event	1	Call Out	Call Out	2/14/2018	19:00:00	USER				Crew was called out at 19:00 for an on location time of 01:00.
Event	2	Depart Location Safety Meeting	Depart Location Safety Meeting	2/14/2018	22:50:00	USER				Crew held a pre journey safety meeting and JSA.
Event	3	Depart Shop for Location	Depart Shop for Location	2/14/2018	23:00:00	USER				Started journey management with dispatch and left location.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	2/15/2018	00:00:00	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	2/15/2018	00:10:00	USER				
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	2/15/2018	00:15:00	USER				The crew held a pre rig up safety meeting and JSA.
Event	7	Rig-Up Equipment	Rig-Up Equipment	2/15/2018	00:20:00	USER				The crew rigged up all lines, hoses and equipment for the job.
Event	8	Safety Meeting	Safety Meeting	2/15/2018	02:00:00	USER				All personnel on location held a pre cement job safety meeting and JSA.
Event	9	Start Job	Start Job	2/15/2018	04:45:13	COM4				Pumped 3 bbls. of fresh water at 3 bpm. to fill lines and establish circulation.
Event	10	Test Lines	Test Lines	2/15/2018	04:48:48	COM4		4777.00	8.19	Pressure tested lines to 4,500 psi. with a 500 psi. electronic kick out test.
Event	11	Pressure Test	Pressure Test	2/15/2018	04:55:48	USER		2754.00	8.37	Pressure tested lbop to 2,500 psi. with a 500 psi. electronic kick out test.
Event	12	Drop Bottom Plug	Drop Bottom Plug	2/15/2018	04:59:21	USER				Dropped the bottom plug which, was witnessed by the customer.
Event	13	Pump Spacer 1	Pump Spacer 1	2/15/2018	05:00:25	COM4	2.50	187.0	11.76	Pumped 80 bbls. of Tuned Spacer III with surfactants mixed at 11.5 ppg.,Yield: 3.73 ft3/sks, 23.3 gal/sks. Density was verified by pressurized scales.

Event	14	Shutdown	Shutdown	2/15/2018	05:25:28	USER				Loaded the bottom plug into the casing.
Event	15	Drop Bottom Plug	Drop Bottom Plug	2/15/2018	05:27:41	USER				Dropped the bottom plug which, was witnessed by the customer.
Event	16	Pump Lead Cement	Pump Lead Cement	2/15/2018	05:31:11	COM4	2.90	159.00	13.45	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	17	Pump Lead Cement	Pump Lead Cement	2/15/2018	05:39:57	COM4	5.10	306.00	13.15	Pumped 156 bbls. (548 sks.) of Elasticem mixed at 13.2 ppg.,Yield: 1.6 ft3/sks, 7.69 gal/sks. Density was verified by pressurized scales.
Event	18	Check Weight	Check weight	2/15/2018	05:43:21	COM4	5.50	348.00	13.31	Cement weight up at 13.2 ppg.
Event	19	Pump Tail Cement	Pump Tail Cement	2/15/2018	06:07:29	COM4	6.40	414.00	13.17	Pumped 222 bbls. (611 sks.) of Neocem mixed at 13.2 ppg. Yield: 2.04 ft3/sks, 9.77 gal/sks. Density was verified by pressurized scales.
Event	20	Shutdown	Shutdown	2/15/2018	06:39:50	COM4				Shutdown to wash up and load top plug.
Event	21	Clean Lines	Clean Lines	2/15/2018	06:39:56	COM4				Washed pumps and blew down lines until clean.
Event	22	Drop Top Plug	Drop Top Plug	2/15/2018	06:40:01	COM4				Dropped the top plug witnessed by the customer.
Event	23	Pump Displacement	Pump Displacement	2/15/2018	06:55:56	COM4	10.10	347.00	7.95	Pump Displacement
Event	24	Bump Plug	Bump Plug	2/15/2018	07:31:30	COM4	3.10	1904.00	8.42	Bumped the plug 500 psi. over 1,950 psi. at 3 bpm. Finale pressure was 2,700 psi. Held pressure a for 5 minutes.
Event	25	Other	Other	2/15/2018	07:36:32	COM4				Bled off pressure to check floats. Floats held got 4 bbls. of fluid back to the truck.
Event	26	End Job	End Job	2/15/2018	07:40:15	COM4				Blew down and washed pumps and lines until clean and dry.
Event	27	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	2/15/2018	10:00:00	USER				Halliburton cement crew held a pre rig down safety meeting and JSA.
Event	28	Rig-Down Equipment	Rig-Down Equipment	2/15/2018	10:10:00	USER				Rigged down all lines, hoses and equipment.
Event	29	Depart Location Safety Meeting	Depart Location Safety Meeting	2/15/2018	11:00:00	USER				Held a pre journey safety meeting with the crew.
Event	30	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	2/15/2018	11:10:00	USER				Started journey management with dispatch and left location.



3.0 Attachments

3.1 Case 1-Custom Results (1).png



## 3.2 Case 1-Custom Results.png

