

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC E-BUSINESS

Date: Friday, February 09, 2018

Centennial State G34-679 Production

Job Date: Thursday, February 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 G34-679** 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 #: 3792235		Quote #:		Sales Order #: 0904606638					
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Charles Collver							
Well Name: CENTENNIAL STATE		Well #: G34-679		API/UWI #: 05-123-44608-00							
Field: WATTENBERG	City (SAP): LA SALLE	County/Parish: WELD		State: COLORADO							
Legal Description: NE NE-35-4N-65W-545FNL-250FEL											
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: Bradley Hinkle									
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST		230 degF					
Job depth MD		16959ft		Job Depth TVD		7049ft					
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	1959	0	1959	
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	16959	0	7049	
Open Hole Section			8.5				2440	7155	0	7049	
Open Hole Section			8.5				7155	16959	0	106	
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	Spacer	Tuned Spacer III w/ Surfactants			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	1 st Lead	ELASTICEM w/o Super CBL			150	sack	13.2	1.57		7	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	2 nd Lead	ELASTICEM w/ Super CBL			559	sack	13.2	1.6		7	7.69

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(v. 4.4.18)

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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	Tail	NeoCem	1158	sack	13.2	2.04		7	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	Fresh Water with Biocide (First 20 bbls with MMCR)	375	bbl	8.33			10		
Cement Left In Pipe		Amount	Reason				Shoe Joint			
Mix Water:		pH 6	Mix Water Chloride:			0 ppm		Mix Water Temperature:		55 °F
Cement Temperature:		## °F °C	Plug Displaced by:			## lb/gal kg/m3 XXXX		Disp. Temperature:		## °F °C
Plug Bumped?		Yes	Bump Pressure:			1680 psi		Floats Held?		Yes
Cement Returns:		## bbl m3	Returns Density:			## lb/gal kg/m3		Returns Temperature:		## °F °C
Comment Estimated top of lead cement at 2440 feet. Estimated top of tail cement at 7155 feet.										

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	2/1/2018	13:30:00	USER				Crew called for an on location of 1930. Crew was Bradley Hinkle, William Mix, Bo Williams and William Rex.
Event	2	Depart Shop for Location	Depart Shop for Location	2/1/2018	18:00:00	USER				Pre-journey safety meeting.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	2/1/2018	18:45:00	USER				Sign in, complete our 2018 NEI safety orientation, perform a site assessment and pre-rig up safety meeting.
Event	4	Safety Meeting	Safety Meeting	2/1/2018	23:00:00	USER				Pre-job safety meeting with all personnel on location.
Event	5	Start Job	Start Job	2/1/2018	23:29:16	COM4				
Event	6	Drop Bottom Plug	Drop Bottom Plug	2/1/2018	23:35:27	USER				Bottom plug loaded into casing. Witnessed by customer.
Event	7	Test Lines	Test Lines	2/1/2018	23:36:22	COM4	8.72		2939.00	Pressure test lines with a 500 psi electronic kick-out test. First tested against rig's IBOP to 3000 psi. Then tested iron to 4500 psi.
Event	8	Pump Spacer 1	Pump Spacer 1	2/1/2018	23:49:44	COM4	11.80	2.70	175.00	Pump 80 bbls Tuned Spacer mixed at 11.5 ppg with surfactants added throughout. Density verified by pressurized scales.
Event	9	Drop Bottom Plug	Drop Bottom Plug	2/2/2018	00:16:39	USER				Bottom plug loaded into casing. Witnessed by customer.
Event	10	Pump Lead Cement	Pump Lead Cement	2/2/2018	00:17:18	COM4	13.23	8.00	664.00	Pump 42 bbls (150 sacks, 1.57 yield, 7.53 gal/sk) ElastiCem mixed at 13.2 ppg. Density verified by pressurized scales.
Event	11	Pump Lead Cement	Pump Lead Cement	2/2/2018	00:24:51	COM4	13.25	8.00	665.00	Pump 160 bbls (559 sacks, 1.6 yield, 7.69 gal/sk) ElastiCem mixed at 13.2 ppg. Density verified by pressurized scales.
Event	12	Check Weight	Check weight	2/2/2018	00:34:11	COM4	13.18	8.10	656.00	Cement weighed at 13.2 ppg.
Event	13	Pump Tail Cement	Pump Tail Cement	2/2/2018	00:43:35	COM4	13.24	7.90	639.00	Pump 421 bbls (1158 sacks, 2.04 yield, 9.75 gal/sk) NeoCem mixed at 13.2 ppg. Density verified by pressurized scales.
Event	14	Check Weight	Check weight	2/2/2018	00:47:59	COM4	13.14	7.10	730.00	Cement weighed at 13.25 ppg.
Event	15	Check Weight	Check weight	2/2/2018	00:53:01	COM4	13.19	7.10	747.00	Cement weighed at 13.2 ppg.

Event	16	Shutdown	Shutdown	2/2/2018	01:09:37	USER					Cement delivery issues. Added some air assistance and cement began to line out.
Event	17	Shutdown	Shutdown	2/2/2018	01:49:09	USER					
Event	18	Clean Lines	Clean Lines	2/2/2018	01:52:25	USER					Wash pumps and lines until clear then blow down lines from rig floor.
Event	19	Drop Top Plug	Drop Top Plug	2/2/2018	02:03:37	COM4					Top plug loaded into casing. Witnessed by customer
Event	20	Pump Displacement	Pump Displacement	2/2/2018	02:03:40	COM4	7.99	10.00	491.00		Pump 375 bbls Biocide water (first 20 with MMCR). Good returns throughout. Estimated top of lead cement at 2440 feet. Estimated top of tail cement at 7155.
Event	21	Bump Plug	Bump Plug	2/2/2018	02:45:06	COM4	7.99	3.00	1709.00		Bump plug at 1680 psi and increase pressure 500 psi over. Held for 5 minutes.
Event	22	Check Floats	Check Floats	2/2/2018	02:50:23	USER					Floats held. 4 bbls back.
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	2/2/2018	02:55:00	USER					Pre-rig down safety meeting.
Event	24	End Job	End Job	2/2/2018	03:08:35	COM4					
Event	25	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	2/2/2018	04:30:00	USER					Pre-journey safety meeting.

3.0 Attachments

3.1 Centennial State G34-679.png

