

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Date: Thursday, December 28, 2017

Bison Ridge Y22-756 Production

Job Date: Monday, December 18, 2017

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 **Bison Ridge Y22-756** 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 #: 3822220	Quote #:	Sales Order #: 0904506089							
Customer: NOBLE ENERGY INC - EBUS		Customer Rep: Chris Ewing								
Well Name: BISON RIDGE	Well #: Y22-756	API/UWI #: 05-123-45370-00								
Field: WATTENBERG	City (SAP): KEENESBURG	County/Parish: WELD	State: COLORADO							
Legal Description: NE SW-10-2N-64W-2230FSL-2130FWL										
Contractor: H & P DRLG		Rig/Platform Name/Num: H & P 517								
Job BOM: 75237523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB70026		Srv Supervisor: Nicholas Roles								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST	230 degF							
Job depth MD	16267ft	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	2055	0	2055
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	16267	0	0
Open Hole Section			8.5				2055	6825	2055	6825
Open Hole Section			8.5				6825	17336	6825	7100
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		6	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/min	Total Mix Fluid Gal
3	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	582	sack	13.2	1.6		6	7.69
0.40 %		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/min	Total Mix Fluid Gal
4	NeoCem NT1	NeoCem TM	1180	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 ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	Displacement	Displacement	360	bbl	8.33			6	
Cement Left In Pipe Amount 43' Reason Shoe Joint									
Comment Got 20bbls spacer to surface. Estimated TOL-1252',TOT-5776'									

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	12/18/2017	05:30:00	USER				Called out by Service Coordinator for O/L at 0730
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	12/18/2017	06:00:00	USER				Held meeting with all personnel in convoy to discuss directions and hazards associated with drive, all fit to drive.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	12/18/2017	06:15:00	USER				Journey Management prior to departure
Event	4	Arrive at Location from Other Job or Site	Arrive at Location from Other Job or Site	12/18/2017	07:00:00	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	12/18/2017	07:30:00	USER				Discussed rigging up hazards and procedure according to HMS.
Event	6	Other	Other	12/18/2017	08:00:00	USER				Water test- PH-6, Chlor-0, Temp-65. Cement temp-70.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/18/2017	11:00:00	USER				Held safety meeting with all job associated personnel to discuss job procedure, hazards and stop work authority.
Event	8	Start Job	Start Job	12/18/2017	15:48:48	COM4				TD-17336', TP-16267', Cut casing short from 17315', 5.5" 20#, FC-17272', TVD-7100', SURF-2055' 9.625" 36#, OH-8.5" MUD-9.1#
Event	9	Drop Bottom Plug	Drop Bottom Plug	12/18/2017	15:51:12	USER				Dropped by HES supervisor, witnessed by company man.
Event	10	Test Lines	Test Lines	12/18/2017	15:51:50	USER	8.75		4933.00	Pumped 5bbls fresh water to fill lines, closed 2" lo torc, performed 500psi k/o function test, followed with 5th gear stall at 1320psi, Performed 3000psi test on Rig Kelly Line. Held pressure, no leaks. proceeded to bring pressure to 5000psi, held pressure, no leaks.
Event	11	Pump Spacer 1	Pump Spacer 1	12/18/2017	16:03:30	COM4	11.47	2.90	187.00	Pumped 80bbls Tuned Spacer III 11.5# 3.78y 23.5g/s with 45g Musol A, 45g Dual Spacer B and 10g D-Air at 5bpm 165psi.
Event	12	Check Weight	Check weight	12/18/2017	16:15:02	COM4	11.58	5.00	167.00	Weight verified with pressurized mud scales.
Event	13	Drop Bottom Plug	Drop Bottom Plug	12/18/2017	16:23:20	USER				Dropped by HES supervisor, witnessed by company man.
Event	14	Pump Lead Cement	Pump Lead Cement	12/18/2017	16:26:50	COM4	13.90	1.10	131.00	Pumped 150sks or 41.9bbls Elasticem w/o CBL 13.2# 1.53y 7.53g/s at 6bpm 390psi.

Event	15	Check Weight	Check weight	12/18/2017	16:33:22	COM4	13.71	6.20	422.00	Weight verified with pressurized mud scales.
Event	16	Pump Lead Cement	Pump Lead Cement	12/18/2017	16:37:13	COM4	13.10	6.10	329.00	Pumped 582sk or 165.8bbls Elasticem w/CBL 13.2# 1.6y 7.69g/s at 6bpm 400psi.
Event	17	Check Weight	Check weight	12/18/2017	16:43:29	COM4	13.21	6.10	331.00	Weight verified with pressurized mud scales.
Event	18	Pump Tail Cement	Pump Tail Cement	12/18/2017	17:06:43	COM4	13.02	3.80	225.00	Pumped 1180sk or 429bbls 13.2# 2.04y 9.75g/s Neocem at 6bpm 500psi.
Event	19	Check Weight	Check weight	12/18/2017	17:14:51	COM4	13.20	6.20	478.00	Weight verified with pressurized mud scales.
Event	20	Check Weight	Check weight	12/18/2017	17:33:10	COM4	13.17	6.20	452.00	Weight verified with pressurized mud scales.
Event	21	Shutdown	Shutdown	12/18/2017	18:21:00	USER				Shutdown, rig blew air through lines to pits, followed with 5bbls fresh water through pumps and lines.
Event	22	Drop Top Plug	Drop Top Plug	12/18/2017	18:30:57	COM4				Dropped by HES supervisor, witnessed by company man.
Event	23	Pump Displacement	Pump Displacement	12/18/2017	18:31:02	COM4	8.14	6.30	194.00	Pumped 360bbls fresh water with 10g MMCR in first 20bbls, 15g Algicide throughout.
Event	24	Bump Plug	Bump Plug	12/18/2017	19:50:10	COM4	8.28	2.70	2167.00	Slowed down to 3bpm at 300bbls away, final circulating pressure-2150psi, bump pressure-2820PSI. Held for 5min.
Event	25	Check Floats	Check Floats	12/18/2017	19:55:55	USER				Released pressure and got 5bbls fresh water to truck, floats held.
Event	26	End Job	End Job	12/18/2017	19:58:45	COM4				Got 20bbls spacer to surface. Estimated TOL-1252',TOT-5776'
Event	27	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/18/2017	20:15:00	USER				Discussed rigging down hazards and procedure according to HMS.
Event	28	Depart Location Safety Meeting	Depart Location Safety Meeting	12/18/2017	21:45:00	USER				Held meeting with all personnel in convoy to discuss directions and hazards associated with drive, all fit to drive.
Event	29	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	12/18/2017	22:00:00	USER				Pre journey management prior to departure.

3.0 Attachments

3.1 H&P 517 Bison Ridge Y22-756-Custom Results.png



