

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC E-BUSINESS

Date: Thursday, January 04, 2018

Bison Ridge State Y22-786 Production

Job Date: Wednesday, January 03, 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 **Bison Ridge State Y22-786** 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 #: 3822273		Quote #:		Sales Order #: 0904541289				
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Charles Collver						
Well Name: BISON RIDGE STATE		Well #: Y22-786		API/UWI #: 05-123-45373-00						
Field: WATTENBERG		City (SAP): KEENESBURG		County/Parish: WELD		State: COLORADO				
Legal Description: NE SW-10-2N-64W-2230FSL-1980FWL										
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: Luke Kosakewich						
Job										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST		230 degF				
Job depth MD		17304ft		Job Depth TVD		6931ft				
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	2044	0	2044
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	17290	0	6931
Open Hole Section			8.5				1821	7112	1821	6931
Open Hole Section			8.5				7112	17290	6931	17290
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		4		
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		8	7.53	
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	616	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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	NeoCem NT1	NeoCem TM	1146	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/min	Total Mix Fluid Gal
5	Displacement	Displacement	382.7	bbl	8.33			9	
Cement Left In Pipe		Amount	50ft		Reason			Shoe Joint	
Comment There was full returns throughout the job. Bumped the plug 500 psi. over 2,100 psi. at 3 bpm. Finale pressure was 2,600 psi. Held pressure for 5 minutes. Pressure held. Got no spacer or cement to surface. Estimated TOS is 150', TOC 1,821', TOL 2,810', and TOT 7,112'.									

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	1/3/2018	08:00:00	USER				Crew was called out at 08:00 for an on location time of 14:00.
Event	2	Depart Location Safety Meeting	Depart Location Safety Meeting	1/3/2018	12:15:00	USER				Crew held a pre journey safety meeting and JSA.
Event	3	Depart Shop for Location	Depart Shop for Location	1/3/2018	12:30:00	USER				Started journey management with dispatch and left location.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	1/3/2018	13:30:00	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	1/3/2018	13:40:00	USER				W
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	1/3/2018	13:45:00	USER				The crew held a pre rig up safety meeting and JSA.
Event	7	Rig-Up Equipment	Rig-Up Equipment	1/3/2018	13:50:00	USER				The crew rigged up all lines, hoses and equipment for the job.
Event	8	Safety Meeting	Safety Meeting	1/3/2018	16:15:00	USER				All personnel on location held a pre job safety meeting and JSA.
Event	9	Start Job	Start Job	1/3/2018	16:41:46	COM4				Pumped 3 bbls. of fresh water to fill lines and establish circulation.
Event	10	Test Lines	Test Lines	1/3/2018	16:43:48	COM4		4700.00	8.53	Pressure tested lines to 4,500 psi. with a 500 psi. electronic kick out test.
Event	11	Pressure Test	Pressure Test	1/3/2018	16:51:12	USER		2824.00	8.51	Pressure tested lbop to 3,000 psi. with a 500 psi. electronic kick out test.
Event	12	Drop Bottom Plug	Drop Bottom Plug	1/3/2018	16:53:52	USER				Dropped the bottom plug which, was witnessed by the customer.
Event	13	Pump Spacer 1	Pump Spacer 1	1/3/2018	16:54:07	COM4	3.10	443.00	11.44	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	1/3/2018	17:10:58	COM4				Shutdown to load the bottom plug.
Event	15	Drop Bottom Plug	Drop Bottom Plug	1/3/2018	17:17:24	USER				Dropped the bottom plug which, was witnessed by the customer.
Event	16	Pump Lead Cement	Pump Lead Cement	1/3/2018	17:19:32	COM4	5.80	565.00	13.26	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	1/3/2018	17:26:17	COM4	8.00	783.00	13.13	Pumped 175 bbls. (616 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	1/3/2018	17:30:53	COM4	8.00	860.00	13.20	Cement weight up at 13.2 ppg.
Event	19	Pump Tail Cement	Pump Tail Cement	1/3/2018	17:51:29	COM4	8.00	919.00	13.20	Pumped 416 bbls. (1146 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	1/3/2018	18:01:03	COM4	7.00	977.00	13.19	Cement weight up at 13.2 ppg.
Event	21	Check Weight	Check weight	1/3/2018	18:22:15	COM4	7.00	986.00	13.19	Cement weight up at 13.2 ppg.
Event	22	Shutdown	Shutdown	1/3/2018	18:51:51	COM4				Loaded the top plug which was witnessed by the customer.
Event	23	Clean Lines	Clean Lines	1/3/2018	18:53:24	USER				Washed pumps and lines until clean.
Event	24	Drop Top Plug	Drop Top Plug	1/3/2018	19:09:38	COM4				Dropped the top plug, which was witnessed by the customer.
Event	25	Pump Displacement	Pump Displacement	1/3/2018	19:11:17	COM4	9.00	540.00	8.25	Pumped 382.7. bbls. of fresh water with MMCR in the first 20 bbls. and Algicide throughout the rest of displacement.
Event	26	Bump Plug	Bump Plug	1/3/2018	19:57:50	COM4	3.20	2098.00	8.32	Bumped plug @ 2098psi
Event	27	Check Floats	Check Floats	1/3/2018	20:02:08	USER				Bled off pressure to check floats. Floats held. Got 4.5 bbls. of fluid back to the truck.
Event	28	End Job	End Job	1/3/2018	20:04:31	COM4				Washed and blew down pumps and lines until clean and dry.
Event	29	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	1/3/2018	20:15:00	USER				Halliburton cement crew held a pre rig down safety meeting and JSA.
Event	30	Rig-Down Equipment	Rig-Down Equipment	1/3/2018	20:20:00	USER				Rigged down all lines, hoses and equipment.
Event	31	Depart Location Safety	Depart Location Safety	1/3/2018	21:45:00	USER				Held a pre journey safety meeting with the crew.

		Meeting	Meeting					
Event	32	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	1/3/2018	22:00:00	USER	Started journey management with dispatch and left location.	

3.0 Attachments

3.1 Case 1-Custom Results.png

