

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC

Date: Saturday, August 20, 2016

Lapp A15-625

Production

Job Date: Friday, August 19, 2016

Sincerely,
Lauren Roberts

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Lapp A15-625** 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.

29 bbl. of Tuned Spacer III returned to surface.

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]

The Road to Excellence Starts with Safety

Sold To #: 345242		Ship To #: 3723530		Quote #:		Sales Order #: 0903485338	
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: Cliff			
Well Name: LAPP			Well #: A15-625		API/UWI #: 05-123-42818-00		
Field: WATTENBERG		City (SAP): GILL		County/Parish: WELD		State: COLORADO	
Legal Description: SW SW-13-6N-64W-842FSL-400FWL							
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 524			
Job BOM: 7523							
Well Type: HORIZONTAL OIL							
Sales Person: HALAMERICA\HB61755				Srcv Supervisor: Vaughn Oteri			
Job							

Formation Name			
Formation Depth (MD)	Top	Bottom	
Form Type		BHST	230 degF
Job depth MD	17233ft	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			0	1930	0	1930
Casing		5.5	4.778	20			0	17226	0	6695
Open Hole Section			8.5				1930	17233	1930	6695

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make	
Guide Shoe	5.5				Top Plug	5.5	1	HES	
Float Shoe	5.5			17226	Bottom Plug	5.5	2	HES	
Float Collar	5.5			17186	SSR plug set	5.5		HES	
Insert Float	5.5				Plug Container	5.5		HES	
Stage Tool	5.5				Centralizers	5.5		HES	

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 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbl	11	4.72		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	11 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbbl	11	4.72		5		
FRESH WATER										
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/o CBL	ELASTICEM (TM) SYSTEM	150	sack	13.2	1.57		5	7.53	
7.53 Gal										
FRESH WATER										
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	ElastiCem W/ CBL	ELASTICEM (TM) SYSTEM	620	sack	13.2	1.6		5	7.69	
7.69 Gal										
FRESH WATER										
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	EconoCem	ECONOCEM (TM) SYSTEM	1483	sack	13.5	1.68		5	7.98	
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	
6	Displacement	Displacement	379	bbbl	8.33					
Cement Left In Pipe										
	Amount	42 ft	Reason				Shoe Joint			
Comment 29bbbl of spacer back to surface estimated HOTC-10857.89 TOTC-6368.11 HOLC-5303.4 TOLC-1064.71 HOS-1064.71										

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	PS Pump Rate (bbl/min)	DS Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	8/18/2016	16:00:00	USER					Call out from Arc hub
Event	2	Arrive at Rig	Arrive at Rig	8/18/2016	20:00:00	USER					Requested on location 2200 Arrived on location met with company rep to discuss job process and concerns advised they still had a couple racks of casing left to run
Event	3	Other	Other	8/18/2016	20:03:00	USER					TD-17233 TP-17226 FC-17186 SUF-1930 MUD-9.9
Event	4	Start Job	Start Job	8/19/2016	00:33:25	COM4	-2.00	8.36	0.00	0.00	Held pre-job safety meeting with all hands on location to discuss job process and hazards
Event	5	Check Weight	Check weight	8/19/2016	00:33:26	COM4	-2.00	8.36	0.00	0.00	Confirm weight on scales 11.0ppg
Event	6	Other	Other	8/19/2016	00:34:11	COM4	1.00	0.87	0.40	0.00	Primed pumps and lines with fresh water
Event	7	Test Lines	Test Lines	8/19/2016	00:37:28	COM4	92.00	8.40	0.00	0.00	Pressure tested pumps and lines found no leaks and pressure held good 4879psi
Event	8	Drop Bottom Plug	Drop Bottom Plug	8/19/2016	00:42:28	COM4	48.00	8.38	0.00	0.00	Released plug witnessed by company rep
Event	9	Pump Spacer 1	Pump Spacer 1	8/19/2016	00:42:29	COM4	48.00	8.38	0.00	0.00	Mixed 80bbl of 11.0ppg Tuned Spacer III 40 with surfactants at 4.0bpm 430psi
Event	10	Drop Bottom Plug	Drop Bottom Plug	8/19/2016	01:03:05	COM4	91.00	10.87	0.00	2.00	Released plug witnessed by company rep
Event	11	Check Weight	Check weight	8/19/2016	01:07:27	COM4	52.00	10.68	0.00	0.00	Confirm weight of 13.2ppg on scales
Event	12	Pump Lead Cement	Pump Lead Cement	8/19/2016	01:13:04	COM4	818.00	13.12	7.00	0.00	Mixed 770sks or 219bbl of 13.2ppg y-1.57 g/sk 7.53 ElastiCem at 8.0bpm 715psi
Event	13	Other	Other	8/19/2016	01:49:07	COM4	418.00	13.17	4.50	0.80	Slowed rate due to poor bulk delivery out of trailer#11764052
Event	14	Pump Tail Cement	Pump Tail Cement	8/19/2016	01:51:27	COM4	236.00	13.46	2.00	0.80	Mixed 1483sks or 443bbl of 13.5ppg y-1.68 g/sk 7.98 EconoCem at 8.0bpm 1004psi
Event	15	Check Weight	Check weight	8/19/2016	01:54:11	COM4	1072.00	13.43	4.10	4.10	Confirm weight of 13.5ppg on scales

Event	16	Check Weight	Check weight	8/19/2016	02:19:07	COM4	1075.00	13.43	4.10	4.10	Confirm weight on scales of 13.5ppg
Event	17	Shutdown	Shutdown	8/19/2016	02:47:05	USER	27.00	13.23	0.40	0.00	
Event	18	Drop Top Plug	Drop Top Plug	8/19/2016	02:47:09	COM4	26.00	13.44	0.40	0.00	Released plug witnessed by company rep
Event	19	Clean Lines	Clean Lines	8/19/2016	02:47:23	COM4	24.00	13.96	0.40	0.00	Washed pumps and lines with fresh water
Event	20	Pump Displacement	Pump Displacement	8/19/2016	02:58:48	COM4	21.00	8.13	0.00	0.00	Pumped 379bbl of fresh water to displace cement
Event	21	Bump Plug	Bump Plug	8/19/2016	03:40:23	COM4	2444.00	8.41	0.00	0.00	Bumped plug 500psi over final pump pressure 1882/2576 psi
Event	22	Other	Other	8/19/2016	03:46:09	COM4					Released pressure back to pump truck to check floats, floats held good 4.5bbl back to truck
Event	23	End Job	End Job	8/19/2016	03:49:03	COM4	17.00	8.35	0.00	0.00	29bbl of spacer back to surface estimated HOTC-10857.89 TOTC-6368.11 HOLC-5303.4 TOLC-1064.71 HOS-1064.71

3.0 Attachments

3.1 Case 1-Custom Results.png

