

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

Date: Tuesday, October 02, 2018

Wells Ranch BB09-650 Production

Job Date: Saturday, September 15, 2018

Sincerely,

Adam McKay

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Wells Ranch BB09-650** 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]

The Road to Excellence Starts with Safety

Sold To #: 345242		Ship To #: 3805794		Quote #:		Sales Order #: 0905124805					
Customer: NOBLE ENERGY INC-EBUS						Customer Rep: Dave Nielson					
Well Name: WELLS RANCH				Well #: BB09-650		API/UWI #: 05-123-44963-00					
Field: WATTENBERG		City (SAP): GILL		County/Parish: WELD		State: COLORADO					
Legal Description: NW SW-11-5N-63W-2335FSL-235FWL											
Contractor: H & P DRLG					Rig/Platform Name/Num: H & P 321						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HB70026					Srvc Supervisor: Prince Perez						
Job											
Formation Depth (MD)		Top	0'		Bottom	16,609'					
						BHST	230 degF				
Job depth MD		16,594.3'		Job Depth TVD		6,625'					
						Wk Ht Above Floor	5'				
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	0	9.625	8.921	36			0	1940	0	1940	
Casing	0	5.5	4.778	20			0	16594	0	6625	
Open Hole Section			8.5				1940	16609	1940	6625	
Open Hole Section			8.5				1940	16609	1940	6625	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5	1		16,594		Top Plug	5.5	1	HES		
Float Shoe	5.5	1				Bottom Plug	5.5	1	HES		
Float Collar	5.5	1		16,544.6							
						Plug Container	5.5	1	HES		
						Centralizers	5.5	186	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	Spacer	Tuned Spacer III			120	bbl	11.5	3.78	23.5	8	4,189

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	Cap Cement	ELASTICEM (TM) SYSTEM	140	sack	13.2	1.68	8.04	8	1,126

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	Lead	ELASTICEM (TM) SYSTEM	372	sack	13.2	1.68	8.06	8	2,998

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	Tail	NeoCem TM	1,167	sack	13.2	2.04	9.75	8	11,378

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 w/ Biocide	367.29	bbl	8.34				

Cement Left In Pipe	Amount	50 ft	Reason	Shoe Joint
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Mix Water:pH 7	Mix Water Chloride:7 ppm	Mix Water Temperature:72 °F
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Cement Temperature: 84 °F	Plug Displaced by: 8.34 lb/gal	Disp. Temperature: 72 °F
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Plug Bumped?	Yes	Bump Pressure:	1,636 psi	Floats Held?	Yes
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Spacer Returns: 2 bbls	Returns Density: ## lb/gal	Returns Temperature: 99 °F
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Comment

Pumped 120 bbls of Tuned Spacer III w/ 75 gallons of Dual B, 75 gallons of Musol A, and 20 gallons of D-air.

Pumped 41.89 bbls of Elasticem Cap Cement .

Pumped 111.31 bbls of Elasticem w/ SCBL.

Pumped 424 bbls of Neocem.

Pumped 367.29 bbls of Displacement with MMCR in the first 20 bbls and Aldacide throughout.

2 bbls of spacer back.

4 bbls back on the floats.

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)	PS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	9/14/2018	12:00:00	USER				CREW CALLED OUT AT 12:00, REQUESTED ON LOCATION 18:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 10867521, 10866497, AND PUMP 11189145.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/14/2018	15:50:00	USER				CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Shop	Crew Leave Shop	9/14/2018	16:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	9/14/2018	17:45:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,940', 5.5" CASING: 20 LB/FT TOTAL 16,594.3', 8 1/2" HOLE, TD 16,609', 49.7' SHOE TRAC, TVD- 6,625'. PUMP FRESH WATER DISPLACEMENT. CASING LANDED @ 01:00 09/15/2018.
Event	5	Safety Meeting - Assessment of Location	Safety Meeting - Assessment of Location	9/14/2018	17:55:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	9/14/2018	18:05:00	USER				RIG UP BULK AND MIXING EQUIPMENT.
Event	7	Rig-Up Completed	Rig-Up Completed	9/14/2018	20:00:00	USER				
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/15/2018	02:00:00	USER				MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	9	Start Job	Start Job	9/15/2018	03:31:08	COM4				BEGIN RECORDING JOB DATA.
Event	10	Test Lines	Test Lines	9/15/2018	03:39:23	COM4	8.44		5331.00	PRESSURE TESTED IRON TO 4,700 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1,038 PSI, 5TH GEAR STALL OUT @ 2,002 PSI. 4,700 PRESSURE TEST KICKED OUT @ 5,100 PSI
Event	11	Test Lines	Test Lines	9/15/2018	03:45:07	COM4	8.38		2949.00	PRESSURE TESTED THE IBOP TO 2,500 PSI. KICKED OUT @ 2,800 PSI.
Event	12	Pump Spacer 1	Pump Spacer 1	9/15/2018	03:47:14	COM4	11.55	3.90	467.00	PUMP 120 BBLS OF TUNED SPACER III @ 11.5 LB/GAL, 3.78 CUFT/SK, 23.5 GALL/SK. 20 GALS D-AIR, 75 GALS DUAL B, 75 GALS OF MUSOL A. 5.27 BBLS CALCULATED TO RETURN TO SURFACE. DENSITY VERIFIED

BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 690 PSI.

Event	13	Pump Cap Cement	Pump Cap Cement	9/15/2018	04:19:53	COM4	13.46	7.40	464.00	PUMPED 140 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.68 FT3/SK, 8.04 GAL/SK. 41.89 BBLS. HOC CALCULATED @ 1,026.7', TOC CALCULATED @ 2,474.2' DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 650 PSI
Event	14	Pump Lead Cement	Pump Lead Cement	9/15/2018	04:26:07	COM4	13.34	7.40	449.00	PUMPED 372 SKS OF ELASTICEM W/SCBL @ 13.2 LB/GAL, 1.68 FT3/SK, 8.06 GAL/SK. 111.31 BBLS, HOL CALCULATED @ 2,728.2', TOL CALCULATED @ 3,500.9'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 600 PSI
Event	15	Check Weight	Check Weight	9/15/2018	04:27:35	COM4	13.25	7.40	502.00	SCALED CEMENT TO VERIFY DENSITY.
Event	16	Pump Tail Cement	Pump Tail Cement	9/15/2018	04:45:12	COM4	13.24	8.10	790.00	PUMP 1,167 SKS OF NEOCEM @ 13.2 LB/GAL, 2.04 FT3/SK, 9.75 GAL/SK, 424 BBLS. HOT CALCULATED @ 10,365.2', TOT CALCULATED @ 6,229.1'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 870 PSI.
Event	17	Check Weight	Check Weight	9/15/2018	04:46:53	COM4	13.18	8.00	839.00	SCALED CEMENT TO VERIFY DENSITY.
Event	18	Shutdown	Shutdown	9/15/2018	05:37:53	COM4				SHUTDOWN TO WASH LINES.
Event	19	Drop Top Plug	Drop Top Plug	9/15/2018	05:54:58	COM4				PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.
Event	20	Pump Displacement	Pump Displacement	9/15/2018	05:55:04	COM4	8.21	9.90	485.00	BEGIN CALCULATED DISPLACEMENT OF 367.29 BBLS WITH FRESH WATER. MMCR IN THE FIRST 20 BBLS AND ALDACIDE THROUGHOUT. PUMP RATE 9 BPM @ 1,200 PSI
Event	21	Bump Plug	Bump Plug	9/15/2018	06:42:01	COM4	8.23	2.00	1636.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. 1,600 PSI PRESSURED 500 PSI OVER BUMP.
Event	22	Check Floats	Check Floats	9/15/2018	06:49:12	USER				RELEASED PRESSURE, FLOATS HELD, 4 BBLS BACK.
Event	23	End Job	End Job	9/15/2018	06:50:26	USER				STOP RECORDING JOB DATA.
Event	24	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	9/15/2018	07:00:00	USER				DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	25	Rig-Down Equipment	Rig-Down Equipment	9/15/2018	07:10:00	USER				RIG DOWN BULK AND MIXING EQUIPMENT.
Event	26	Rig-Down Completed	Rig-Down Completed	9/15/2018	08:10:00	USER				
Event	27	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/15/2018	09:20:00	USER				CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	28	Crew Leave Location	Crew Leave Location	9/15/2018	09:30:00	USER				THANK YOU FOR USING HALLIBURTON – PRINCE PEREZ AND CREW.

3.0 Attachments

3.1 Noble Wells Ranch BB09-650-Custom Results (2).png

