

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC-EBUS

United States of America, COLORADO

Date: Tuesday, September 19, 2017

Hullabaloo State Y21-781 Production

Job Date: Friday, September 15, 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 **Hullabaloo State Y21-781** 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]



Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 345242		Ship To #: 3819615		Quote #:		Sales Order #: 0904295025					
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: John Drakota							
Well Name: HULLABALOO STATE			Well #: Y21-781			API/UWI #: 05-123-45239-00					
Field: WATTENBERG		City (SAP): KEENESBURG		County/Parish: WELD			State: COLORADO				
Legal Description: NW NW-16-2N-64W-445FNL-880FWL											
Contractor: H & P DRLG				Rig/Platform Name/Num: H & P 517							
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HB70026				Srcv Supervisor: Bryan Kraft							
Job											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type		BHST			230 degF						
Job depth MD		17303ft			Job Depth TVD		6902ft				
Water Depth					Wk Ht Above Floor		4ft				
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	2025	0	2025	
Casing		5.5	4.778	20	BUTTRESS	P-110	0	17303	0	6902	
Open Hole Section			8.5				2025	6792	2025	6792	
Open Hole Section			8.5				6792	17303	6792	6902	
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		80	bbl	11.5	3.78	23.5	4	2797	
		34.70 gal/bbl		FRESH WATER							
		0.60 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)							
		147.42 lbm/bbl		BARITE, BULK (100003681)							
		0.60 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)							
Stage/Plug #: 2											
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		150	sack	13.2	1.57	7.53	8	1130	
		0.80 %		SCR-100 (100003749)							

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Cementing Job Summary

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/mi n	Total Mix Fluid Gal
3	Lead Cement	ELASTICEM (TM) SYSTEM	578	sack	13.2	1.6	7.69	8	4445
7.69 Gal		FRESH WATER							
0.30 %		SCR-100 (100003749)							
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 Cement	NEOCEM TM	1183	sack	13.2	2.04	9.75	8	11534
9.75 Gal		FRESH WATER							
0.06 %		SCR-100 (100003749)							
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	381	bbl	8.33			10	16002
Cement Left In Pipe	Amount	51ft			Reason			Shoe Joint	
Mix Water:	pH 6.0	Mix Water Chloride: <100 ppm			Mix Water Temperature: 55 °F				
Cement Temperature:	N/A	Plug Displaced by: 8.3 lb/gal Fresh Water			Disp. Temperature: 55 °F				
Plug Bumped?	Yes	Bump Pressure: 1750 psi			Floats Held? Yes				
Cement Returns:	N/A	Returns Density: N/A			Returns Temperature: N/A				
Comment The plug bumped @ calculated displacement @ 1750 PSI, shutdown @ 2315 PSI. The floats held and received 4.5 BBLs back to the truck. No spacer returned to surface.									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Comments
Event	1	Call Out	Call Out	9/15/2017	03:00:00	USER				CREW CALLED OUT AT 4:30 9/10/2017, REQUESTED ON LOCATION 9:30 9/10/2017. CREW PICKED UP CEMENT, CHEMICALS (50 GAL MUSOL A, 48 GAL DUAL SPACER B, 20 GAL D-AIR, 10 GAL MMCR), 100 LBS SUGAR, PLUG CONTAINER AND MANIFOLD FROM FORT LUPTON,CO. BULK 660: 12113644/10246780, BULK 660: 11562546, PUMP ELITE 11897034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/15/2017	06:20:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	9/15/2017	06:30:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	9/15/2017	07:00:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# J-55 @ 2025', 5.5" CASING: 20# @ 17303', 51' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 6902', 9.3 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/15/2017	08:45:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	9/15/2017	09:00:00	USER				CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/15/2017	11:00:00	USER				MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	9/15/2017	11:38:45	COM5				BEGIN RECORDING JOB DATA.
Event	9	Drop Bottom Plug	Drop Bottom Plug	9/15/2017	11:39:40	USER				PLUG LEFT LANDING JOINT, VERIFIED BY CO.MAN.
Event	10	Test Lines	Test Lines	9/15/2017	11:43:44	USER	8.54		4743.00	PRESSURE TESTED IRON TO 4500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1250 PSI, 5TH GEAR STALL OUT @ 1450 PSI.
Event	11	Test Lines	Test Lines	9/15/2017	11:50:50	USER	8.42		3245.00	PRESSURE TESTED IRON AND RIG TO IBOP VALVE TO 3000 PSI.
Event	12	Pump Spacer	Pump Tuned Spacer @ 11.5 ppg	9/15/2017	11:57:50	USER	11.50	3.20	213.00	PUMP 80 BBLs OF TUNED SPACER @ 11.5 LB/GAL, ADDED 50 GAL MUSOL A, 48 GAL DUAL SPACER B, 20 GAL D-AIR, DENSITY VERIFIED

BY PRESSURIZED MUD SCALES.

Event	13	Drop Bottom Plug	Drop Bottom Plug	9/15/2017	12:20:22	USER				PLUG LEFT LANDING JOINT, VERIFIED BY CO.MAN.
Event	14	Pump Cement	Pump Cap Cement @ 13.2 ppg	9/15/2017	12:23:31	USER	13.47	4.30	321.00	PUMP 150 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.53 GAL/SK, 42 BBLS, TOC @ 1764", DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	15	Pump Lead Cement	Pump Lead Cement @ 13.2 ppg	9/15/2017	12:29:57	USER	13.26	7.10	515.00	PUMP 578 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.6 YIELD, 7.69 GAL/SK, 165 BBLS, TOL @ 2748', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	16	Pump Tail Cement	Pump Tail Cement @ 13.2 ppg	9/15/2017	12:52:57	USER	13.23	5.70	549.00	PUMP 1184 SKS OF NEOCEM @ 13.2 LB/GAL, 2.04 YIELD, 9.75 GAL/SK, 430 BBLS, TOT @ 5594', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	17	Other	Other	9/15/2017	12:54:25	USER				LOST WATER AND TUB PACKED OFF. RESOLVED ISSUE AND CONTINUED PUMPING AS SCHEDULED.
Event	18	Shutdown	Shutdown	9/15/2017	14:00:56	USER				SHUTDOWN TO WASH PUMPS/LINES AND DROP TOP PLUG.
Event	19	Drop Top Plug	Drop Top Plug	9/15/2017	14:04:05	USER				PLUG LEFT LANDING JOINT, VERIFIED BY CO. MAN.
Event	20	Pump Displacement	Pump Fresh Water Displacement	9/15/2017	14:12:44	USER	8.10	10.10	398.00	BEGIN CALCULATED DISPLACEMENT OF 381 BBLS WITH FRESH WATER. MMCR & BIOCIDES ADDED TO 1ST 40 BBLS, BIOCIDES ADDED THROUGH REST OF DISPLACEMENT.
Event	21	Bump Plug	Bump Plug	9/15/2017	14:58:18	USER	8.06	3.00	1729.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. PRESSURED 500 PSI OVER FINAL CIRCULATING PRESSURE OF 1750 PSI.
Event	22	Shutdown	Shutdown	9/15/2017	14:58:38	USER	8.07	0.00	2315.00	SHUTDOWN FOR 5 MINUTE @ 2315 PSI.
Event	23	Check Floats	Check Floats	9/15/2017	15:04:20	USER				RELEASED PRESSURE, FLOATS HELD, 4.5 BBLS BACK.
Event	24	End Job	End Job	9/15/2017	15:07:18	COM5				STOP RECORDING JOB DATA.
Event	25	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/15/2017	15:10:00	USER				DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	26	Rig-Down Completed	Rig-Down Completed	9/15/2017	16:00:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	27	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/15/2017	16:20:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	28	Crew Leave Location	Crew Leave Location	9/15/2017	16:30:00	USER				THANK YOU FOR USING HALLIBURTON - BRYAN KRAFT AND CREW.

3.0 Attachments

3.1 Hullabaloo State Y21-781.png

