

# HALLIBURTON

iCem<sup>®</sup> Service

## **NOBLE ENERGY INC - EBUS**

Date: Wednesday, October 04, 2017

## **Hullabaloo State Y21-769 Production**

Job Date: Monday, September 25, 2017

Sincerely,

Adam McKay

## Legal Notice

---

### Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. Accordingly, HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

## Table of Contents

---

1.0	Cementing Job Summary .....	4
1.1	Executive Summary .....	4
2.0	Real-Time Job Summary .....	7
2.1	Job Event Log .....	7
3.0	Attachments.....	9
3.1	NOBLE ENERGY HULLABALOO STATE Y21 769-Custom Results.png.....	9

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **Hullabaloo State Y21-769** 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]**

**HALLIBURTON**

**Cementing Job Summary**

*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 345242		<b>Ship To #:</b> 3819614		<b>Quote #:</b>		<b>Sales Order #:</b> 0904318947				
<b>Customer:</b> NOBLE ENERGY INC - EBUS				<b>Customer Rep:</b> CHRIS EWING						
<b>Well Name:</b> HULLABALOO STATE			<b>Well #:</b> Y21-769			<b>API/UWI #:</b> 05-123-45237-00				
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> KEENESBURG		<b>County/Parish:</b> WELD			<b>State:</b> COLORADO			
<b>Legal Description:</b> NW NW-16-2N-64W-445FNL-955FWL										
<b>Contractor:</b> H & P DRLG				<b>Rig/Platform Name/Num:</b> H & P 517						
<b>Job BOM:</b> 7523 7523										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HB70026				<b>Srvc Supervisor:</b> Robert Davis						
<b>Job</b>										
<b>Formation Name</b>										
<b>Formation Depth (MD)</b>		Top 2032		Bottom						
<b>Form Type</b>				BHST		230 degF				
<b>Job depth MD</b>		17337ft		<b>Job Depth TVD</b>						
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>		4				
<b>Perforation Depth (MD)</b>		From		To						
<b>Well Data</b>										
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	2230	0	2230
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	17337	0	0
Open Hole Section			8.5				2230	6970	2230	6970
Open Hole Section			8.5				6970	17358	6260	6955
<b>Fluid Data</b>										
<b>Stage/Plug #: 1</b>										
Fluid #	Stage Type	Fluid Name		Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /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	3.78		5	
	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)								
Fluid #	Stage Type	Fluid Name		Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /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
	0.80 %	SCR-100 (100003749)								
	7.53 Gal	FRESH WATER								

**HALLIBURTON**

*Cementing Job Summary*

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	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	579	sack	13.2	1.6		8	7.69
7.69 Gal		FRESH WATER							
0.35 %		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	NeoCem NT1	NeoCem TM	1184	sack	13.2	2.04		8	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 ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
5	Displacement	Displacement	382	bbl	8.33			8	
Cement Left In Pipe	Amount	Reason					Shoe Joint		
Mix Water:pH	7	Mix Water Chloride:	200 ppm	Mix Water Temperature:			50 °F °C		
Cement Temperature:## °F °C		Plug Displaced by:	8.33 lb/gal kg/m3 XXXX	Disp. Temperature:## °F °C					
Plug Bumped?Yes		Bump Pressure:	1980-2680psi MPa	Floats Held?Yes					
Cement Returns:## bbl m3		Returns Density:## lb/gal kg/m3		Returns Temperature:## °F °C					
<b>Comment</b> BUMPED PLUG @ CACALATED DISPLACEMENT, FLOATS HELD 4 ½ BBLs BACK TO THE TRUCK, FULL RETURNS THOUGHOUT THE JOB, 8 ½ BBLs OF SPACER BACK TO SURFACE.									

## 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)	DH Density (ppg)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	9/25/2017	15:30:00	USER				CALLED OUT FROM FT. LUPTON CO.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	9/25/2017	18:30:00	USER				LEAVE YARD AFTER SAFTEY MEETING
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	9/25/2017	19:30:00	USER				ARRIVED ON LOCATION AND TALKED TO COMPANY MAN ABOUT JOB FIGURES AND THE SPOTTING OF OUR EQUIPMENT
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	9/25/2017	19:45:00	USER				ASSESSED LOCATION AN TOOK WATER SAMPLE
Event	5	Rig-Up Equipment	Rig-Up Equipment	9/25/2017	20:15:00	USER				SPOTTED EQUIPMENT AND RIGGED UP TO FLOOR RIG IS RUNNING CASING
Event	6	Other	Other	9/25/2017	20:30:00	USER				Water test=pH: __7__, Cl: 250____, temp __55__degrees Tannin-Lignin: __NEG.____; Sulfate: __200____
Event	7	Other	Other	9/25/2017	21:00:00	USER				Rig Circulation: ____ bbls Circulation Rate: ____ bbl/min Mud Density __9.2__ lb/gal Mud YP/PV: _____
Event	8	Other	Other	9/25/2017	21:30:00	USER				Spacer: __80__ bbl TOS __49__ Lead Cement: __207__ bbl, __729__ sks, TOC __1719__ Tail Cement: __430__ bbl, __1184__ sks, TOC __6823.3__ Displacement: __382__ bblCMT left in Pipe __1__ Reason __SHOE____
Event	9	Other	Other	9/25/2017	22:00:00	USER				TD: 17358____, TP __17337.3____, SJ: __50.73____, OH: __8.5____, Casing: Size/Weight/Grade: __5.5/20#/P110____, Previous Casing Shoe: __2032__
Event	10	Rig-Up Completed	Rig-Up Completed	9/26/2017	01:30:00	USER				RIG UP COMPLETE SAFETY MEETING WITH RIG HANDS AND HALLIBURTON ABOUT THE DANGERS OF OUR EQUIPMENT AND WENT OVER JOB FIGURES. READY TO TEST LINES
Event	11	Test Lines	Test Lines	9/26/2017	04:23:06	COM4		8.53	5083.00	FLOOD LINES W/ 2 BBLS OF FRESH WATER, LOW PSI TEST TO 500 PSI, HIGH PSI TEST TO 5000 PSI

Event	12	Pump Spacer 1	Pump Spacer 1	9/26/2017	04:32:33	COM4	5.30	11.51	521.00	TUNED SPACER II W/ SUFACTANTS, @ 11.5 PPG, PUMPED @ 5 BPM @ 405 PSI HOS-1670 FT, TOS 49 FT
Event	13	Pump Lead Cement	Pump Lead Cement	9/26/2017	04:49:06	COM4	8.00	13.24	693.00	PUMP LEAD CEMENT 1,ELASTICEM, 150 SKS @ 13.2 PPG, YEILD @ 1.57, GAL/SK @ 7.53, 235.5 FT3, 42 BBLS, 27 BBLS OF WATER TO MIX, PUMPED @ 8 BPM @ 713 PSI, HOL1-987.3, TOL1-1719 FT
Event	14	Pump Cement	Pump Cement	9/26/2017	04:54:22	COM4	8.00	13.38	699.00	PUMP LEAD CEMENT 2, ELASTICEM W/ CBL, 579 SKS @ 13.2PPG, YEILD @ 1.6, GAL/SK @ 7.69, 926.4 FT3, 165 BBLS, 106 BBLS OF WATER TO MIX, PUMPED @ 8 BPM @ 730 PSI, HOL2-4117, TOL2-2706.2
Event	15	Pump Tail Cement	Pump Tail Cement	9/26/2017	05:15:14	COM4	8.00	13.24	883.00	NEOCEM, 1184 SKS @ 13.2 PPG, YEILD @ 2.04, GAL/SK @ 9.75, 2415.36 FT3, 430 BBLS, 275 BBLS OF WATER TO MIX, PUMPED @ 8 BPM @ 963 PSI, HOT-10514 FT, TOT-6823.3
Event	16	Clean Lines	Clean Lines	9/26/2017	06:16:35	COM4				
Event	17	Drop Top Plug	Drop Top Plug	9/26/2017	06:21:47	COM4				HWE TOP PLUG
Event	18	Pump Displacement	Pump Displacement	9/26/2017	06:22:08	COM4	8.00	8.25	411.00	382 BBLS, FRESH WATER W/ 3RD PARTY CHEMICALS, FIRST 20 BBLS MMCR, PUMPED @ 8 BPM @ 2100 PSI, FULL RETURNS THOUGHOUT THE JOB, SLOWED RATE LAST 20 BBLS TO 3 BPM @ 2080 PSI, 8 1/2 BBLS OF SPACER RETURNS TO SURFACE
Event	19	Bump Plug	Bump Plug	9/26/2017	07:14:35	COM4	3.00	8.33	2056.00	BUMPED PLUG, 500 OVER, BUMPED @ 1980 PSI TOOK TO 2680 PSI, HELD FOR 5 MIN., CHECK FLOATS FLOATS HELD W/ 4 1/2 BBLS BACK TO THE TRUCK, CUSTOMER HAPPY
Event	20	End Job	End Job	9/26/2017	07:23:39	COM4				
Event	21	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	9/26/2017	07:30:00	USER				SAFETY MEETING OVER RIGGING DOWN
Event	22	Rig-Down Equipment	Rig-Down Equipment	9/26/2017	07:45:00	USER				RIG DOWN EQUIPMENT AND HOSES
Event	23	Rig-Down Completed	Rig-Down Completed	9/26/2017	09:00:00	USER				RIG DOWN COMPLETE
Event	24	Safety Meeting - Departing Location	Safety Meeting - Departing Location	9/26/2017	09:30:00	USER				SAFETY MEETING OVER DEPARTURE AND JOURNEY HOME
Event	25	Depart Location for Home	Depart Location for Home	9/26/2017	10:00:00	USER				LEAVE LOCATION, THANKS FOR CALLING HALLIBURTON ROBERT DAVIS AND CREW

3.0 Attachments

3.1 NOBLE ENERGY HULLABALOO STATE Y21 769-Custom Results.png



