

# HALLIBURTON

iCem<sup>®</sup> Service

## **NOBLE ENERGY INC**

Date: Tuesday, January 02, 2018

## **Bison Ridge Y22-779 Production**

Job Date: Friday, December 29, 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	Case 1-Custom Results.png.....	9

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **Bison Ridge Y22-779** 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*

Sold To #: 345242		Ship To #: 3822291		Quote #:		Sales Order #: 0904529177					
Customer: NOBLE ENERGY INC - EBUS				Customer Rep: charles							
Well Name: BISON RIDGE			Well #: Y22-779			API/UWI #: 05-123-45378-00					
Field: WATTENBERG		City (SAP): KEENESBURG		County/Parish: WELD			State: COLORADO				
Legal Description: NE SW-10-2N-64W-2230FSL-2017FWL											
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: Jordan Larue						
<b>Job</b>											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type					BHST		230 degF				
Job depth MD		17191			Job Depth TVD		6989'				
Water Depth					Wk Ht Above Floor		4'				
Perforation Depth (MD)		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	2033	0	2033	
Casing	0	5.5	4.778	20	BUTTRESS	P-110	0	17187	0	6879	
Open Hole Section			8.5				2500	7302	2500	6879	
Open Hole Section			8.5				7302	17191		6879	
<b>Fluid Data</b>											
Stage/Plug #: 1											
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	3.73	23.3	6	
	34.70 gal/bbl	FRESH WATER									
	0.60 gal/bbl	DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)									
	149.34 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	7.53	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 ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	ElastiCem w/ SCBL	ELASTICEM (TM) SYSTEM	603	sack	13.2	1.6	7.69	8	7.69
0.45 %		SCR-100 (100003749)							
7.69 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
4	NeoCem NT1	NeoCem TM	1149	sack	13.2	2.04	9.75	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 ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
5	Displacement	Displacement MMCR 1 <sup>st</sup> 20BBL/ BIOCIDE LAST 360BBL	380	bbl	8.33			10	
Cement Left In Pipe		Amount	50FT		Reason			Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride:		500 ppm		Mix Water Temperature:		75°F
Cement Temperature:		NA	Plug Displaced by:		8.33# H2O		Disp. Temperature:		70 F
Plug Bumped?:		Yes	Bump Pressure:		2500		Floats Held?:		Yes 4.5BBLs BACK
Cement Returns:		NA	Returns Density:		9.5# OBM		Returns Temperature:		NA
<b>Comment:</b> TOP OF SPACER RIGHT AT SURFACE... TOP CAP 1785'... TOP LEAD 2780'... TOP TAIL 6995'... BUMPED ON CALCULATED 380BBLs GONE FINAL LIFT PSI 1950PSI									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

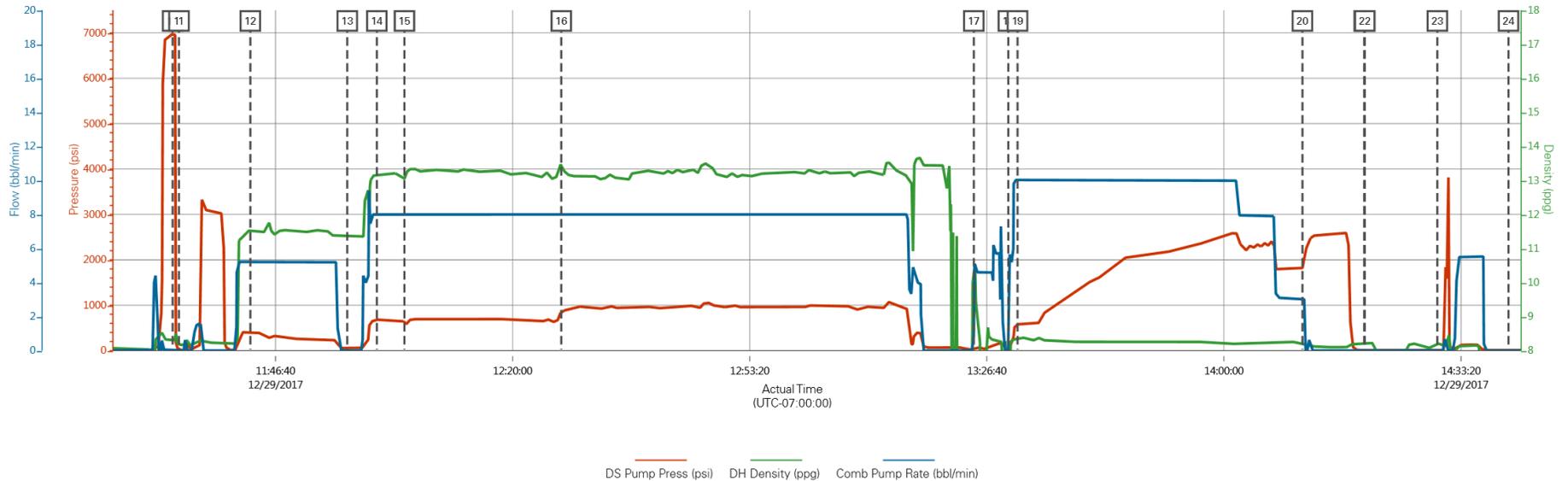
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	12/29/2017	02:00:00	USER				ON LOCATION TIME 0830
Event	2	Arrive At Loc	Arrive at location	12/29/2017	06:00:00	USER				RIG RUNNING CASING
Event	3	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	12/29/2017	06:15:00	USER				TALK TO CO REP AND WALK LOC FOR HAZARDS
Event	4	Other	Well Info	12/29/2017	06:30:00	USER				TD 17191, TP 17187, TVD 6989, OH 8.5, PC 9.625 36# J55 2056', FC @ 17131',
Event	5	Other	Water Test	12/29/2017	06:45:00	USER				ph 7, cl 500, temp 76°F, TANN PASS...
Event	6	Pre-Rig Up Safety Meeting	PRE RIG UP SAFETY MEETING	12/29/2017	07:00:00	USER				JSA COMPLETED... HANDS SIGN JSA ON CEMENTING PROGRAM
Event	7	Rig-Up Equipment	RIG UP EQUIPMENT	12/29/2017	07:15:00	USER				NO ACCIDENTS OR INJURIES
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/29/2017	11:15:00	USER				JSA COMPLETED: ALL PERSONNEL SIGNED SIGN UP SHEET. REVIEW PUMP SCHEDULE AND WASH UP.
Event	9	Start Job	Start Job	12/29/2017	11:22:02	COM10				
Event	10	Test Lines	Test Lines	12/29/2017	11:31:06	COM10	6971.00	8.31		7000 PSI TEST GOOD/ THEN BLED OFF AND PUT 3000PSI AGAINST THEIR VALVE
Event	11	Drop Bottom Plug	Drop Bottom Plug	12/29/2017	11:33:05	COM10				
Event	12	Pump Spacer 1	Pump Spacer 1	12/29/2017	11:33:15	COM10	396.00	11.57	5.20	80 BBLs TUNED SPACER SCALED @ 11.5#
Event	13	Drop Bottom Plug	Drop Bottom Plug	12/29/2017	11:56:45	COM10				STUFFED 2ND BP INTO CASING
Event	14	Pump Lead Cement	Pump CAP Cement	12/29/2017	11:59:51	COM10	693.00	13.15	8.00	150 SACKS CAP CMT SCALED @ 13.2#
Event	15	Pump Lead Cement	Pump Lead Cement	12/29/2017	12:04:47	USER	634.00	13.04	8.00	603 SACKS LEAD CMT SCALED @ 13.2#
Event	16	Pump Tail Cement	Pump Tail Cement	12/29/2017	12:26:50	COM10	847.00	13.46	8.00	1149 SACKS TAIL SCALED @ 13.2#
Event	17	Clean Lines	Clean Lines	12/29/2017	13:24:50	COM10				

Event	18	Drop Top Plug	Drop Top Plug	12/29/2017	13:29:41	COM10				
Event	19	Pump Displacement	Pump Displacement	12/29/2017	13:29:43	COM10	582.00	8.36	10.00	380BBLs PUMPED 10BPM, FINAL LIFT PSI @ 1950... SPACER RIGHT AT SURFACE
Event	20	Bump Plug	Bump Plug	12/29/2017	14:12:20	COM10	1803.00	8.24	3.10	BUMPED 500 PSI OVER FOR 5MIN 2500PSI
Event	21	Other	CHECK FLOATS	12/29/2017	14:19:43	COM10				FLOATS HELD 4.5BBLs BACK
Event	22	End Job	End Job	12/29/2017	14:19:48	COM10				
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/29/2017	14:30:00	USER				DISCUSS HAZARDS
Event	24	Rig-Down Equipment	Rig-Down Equipment	12/29/2017	14:40:00	USER				NO ACCIDENTS OR INJURIES
Event	25	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/29/2017	16:15:00	USER				REVIEW DIRECTIONS
Event	26	Crew Leave Location	Crew Leave Location	12/29/2017	16:30:00	USER				BULK HEADING BACK TO YARD AND PUMP CREW SLEEPING ON LOC

## 3.0 Attachments

### 3.1 Case 1-Custom Results.png

Noble, SO# 904529177, myCem ID# 393174, Bison Ridge Y22-779, 5 1/2" Production, H&P 517



Description	Actual Time (UTC-07:00:00)	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)
Drop Bottom Plug	11:46:40	7000	11.00	0.00
14 Pump CAP Cement	12:00:54	693.00	13.15	8.00
15 Pump Lead Cement	12:04:47	634.00	13.04	8.00
16 Pump Tail Cement	12:26:50	847.00	13.46	8.00
17 Clean Lines	13:24:50	21.00	10.16	0.90

HALLIBURTON | iCem® Service

Created: 2017-12-29 09:31:39, (UTC-07:00), Version: 4.4.18

Edit

Customer: NOBLE ENERGY INC  
Representative: CHARLES

Job Date: 12/29/2017  
Sales Order #: 0904529177

Well: BISON RIDGE  
ELITE 11818101: LARUE/JOHNSON