

# HALLIBURTON

iCem<sup>®</sup> Service

## **CATAMOUNT ENERGY PARTNERS LLC-EBUS**

United States of America, COLORADO

### **For: Jake Richter**

Date: Saturday, September 15, 2018

### **E.Bull Creek #5**

ARCHULETA, E.Bull Creek #5

Catamount, E.Bull Creek #5, Surface

Job Date: Sunday, September 16, 2018

Sincerely,

**Jacob Ayers**

## 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. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. 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	Job Design .....	4
1.1	Pump Schedule .....	4
2.0	Real-Time Job Summary .....	5
2.1	Job Event Log .....	5
3.0	Attachments.....	7
3.1	Catamount, E.Bull Creek #5,Surface -Custom Results.png .....	7

## 1.0 Job Design

### 1.1 Pump Schedule

Description	Stage No.	Density (ppg)	Rate (bbl/min)	Yield (ft <sup>3</sup> /sack)	Water Req. (gal/sack)	Volume (bbl)	Bulk Cement (sacks)	Duration (min)
Spud Mud	1	8.40	3.00			0.00		0.00
Fresh Water	2	8.33	3.00			10.00		3.33
Surface Blend 2467065/1	3	15.80	3.50	1.1638	5.004	58.04	280.00	16.58
Top Plug/Start Displacement								
Fresh Water	4-1	8.33	3.50			28.00		8.00
Fresh Water	4-2	8.33	1.50			7.90		5.27
<b>Total:</b>						<b>103.94</b>		<b>33.18</b>

*\*Pump schedule may include additional rows for displacement if "Automatic Rate Adjustment" was enabled and ECDs approached the fracture gradient.*

## 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)	PS Pmp Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	9/15/2018	11:00:00	USER					Job Called out @1100
Event	2	Safety Meeting	Safety Meeting	9/15/2018	13:00:00	USER					Pre convoy safety meeting with crew
Event	3	Depart Home for Location	Depart Home for Location	9/15/2018	13:30:00	USER					Departed from the yard @1330
Event	4	Arrive at Rig	Arrive at Rig	9/15/2018	16:00:00	USER					Arrived on location@1600 rig was about to run casing
Event	5	Other	Well Info	9/15/2018	17:24:45	USER					OH- 12 1/4" 524' Surface- 9 5/8" 519' SJ- 24.4'
Event	6	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	9/15/2018	17:24:46	USER					Pre rig up safety meeting with crew
Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	9/15/2018	17:24:52	USER					Safety meeting held with all affected personnel on location
Event	8	Start Job	Start Job	9/15/2018	19:59:29	COM4	66.00	8.31	0.00	0.00	
Event	9	Pressure Test	Pressure Test	9/15/2018	20:29:38	USER	3619.00	8.25	0.00	2.10	test pumps and lines to 2500
Event	10	Pump Spacer	Pump Spacer	9/15/2018	20:37:31	USER	10.00	8.28	1.70	2.30	20 bbl water spacer
Event	11	Pump Cement	Pump Cement	9/15/2018	20:42:22	USER	125.00	10.35	4.90	0.60	280 sks 1.18 yield 5.24 wrq = 58.8bbl cmt @15.8#
Event	12	Check Weight	Check Weight	9/15/2018	20:43:39	COM4	146.00	16.36	4.90	6.90	
Event	13	Drop Plug	Drop Plug	9/15/2018	20:54:32	USER	131.00	15.86	2.80	54.20	dropped plug
Event	14	Pump Displacement	Pump Displacement	9/15/2018	20:55:06	USER	109.00	8.18	3.90	1.30	calculated 38.3 bbl to land plug
Event	15	Cement Returns to	Cement Returns to	9/15/2018	20:59:18	USER	228.00	8.01	3.90	18.00	calculated 28 bbl cmt back

	Surface	Surface										20 bbl actually returned to surface
Event	16	Bump Plug	Bump Plug	9/15/2018	21:05:53	USER	288.00	8.00	0.00	37.30		calculated 191 psi to land plug actually landed @240 psi
Event	17	Check Floats	Check Floats	9/15/2018	21:07:44	USER	306.00	7.99	0.00	37.30		floats held 1/4 bbl back
Event	18	End Job	End Job	9/15/2018	21:08:31	COM4	-3.00	8.03	0.00	0.00		

3.0 Attachments

3.1 Catamount, E. Bull Creek #5, Surface -Custom Results.png

