

# HALLIBURTON

iCem<sup>®</sup> Service

## **PETROSTAR SERVICES**

Ft. Lupton District, Colorado

### **For: Aaron Smith**

Date: Wednesday, October 16, 2019

### **Edward Hemple**

Weld, Wattenberg

Case 1

Job Date: Wednesday, October 16, 2019

Sincerely,

**Jamar Horton**

## Legal Notice

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### 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.

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the cement 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.

**Approximately XX bbls of cement were returned to surface.**

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 Fort Lupton**

### 1.2 Squeeze Job Information

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		Units	Description
1	Was the well full prior to cementing?	Y/N	
2	Injection Rate #1 & Pressure	psi/bpm	
3	Injection Rate #2 & Pressure	psi/bpm	
4	Injection Rate #3 & Pressure	psi/bpm	
5	Initial ISIP	psi	
6	Density of fluid used for Initial ISIP	lb/gal	
7	Final ISIP	psi	
8	Density of displacement fluid	lb/gal	

### 1.3 Plug Job Information

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		Units	Description
1	Density of well fluid exiting well prior to job	lb/gal	
2	Density of well fluid entering well prior to job	lb/gal	
3	Was the well full prior to cementing?	Y/N	
4	How many joints of workstring pulled wet?	# Joints	
5	Depth of workstring for circulation after the plug?	ft	
6	Calculated Plug Height (workstring out)	ft	

## 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)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Depart from Service Center or Other Site	Depart from Service Center or Other Site	10/16/2019	05:00:00	USER					Journey Management meeting held prior to departure. journey called into dispatch and approved.
Event	2	Arrive at Location from Service Center	Arrive at Location from Service Center	10/16/2019	10:30:00	USER					With all Equipment and materials. Hazard hunt performed before spotting in equipment. discussed numbers and job procedures with customer.
Event	3	Comment	Comment	10/16/2019	10:35:00	USER					1.5" Coil Tubing @ 2400', Csg 4 1/2" 11.6# perfs @ 2500' and 2200' 9" OH, CICR @ 2400'. Estimated TOC 2000'. Water test: PH 7, Chloride less than 300.
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	10/16/2019	10:40:00	USER					JSA with all essential personnel to discuss the hazards of rigging up .
Event	5	Rig-Up Completed	Rig-Up Completed	10/16/2019	11:30:00	USER					Safely with no injuries.
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	10/16/2019	11:40:00	USER					JSA with all essential personnel to discuss the job procedures and the hazards of the job.
Event	7	Start Job	Start Job	10/16/2019	12:11:10	COM4	-2.00	7.87	0.00	6.60	Start recording data.

Event	8	Test Lines	Test Lines	10/16/2019	12:14:27	COM4	51.00	8.09	0.00	10.30	To 3000psi.
Event	9	Pump Spacer 1	Pump Spacer 1	10/16/2019	12:37:17	COM4	94.00	8.13	0.00	10.40	10bbls of mud flush.
Event	10	Pump Spacer 2	Pump Spacer 2	10/16/2019	12:43:29	COM4	2227.00	7.91	2.00	0.00	20bbls of fresh water.
Event	11	Pump Cement	Pump Cement	10/16/2019	12:53:20	COM4	1994.00	7.97	2.00	20.00	150sk 37bbls 14.5ppg 1.39yd 6.78gal/sk verified with pressurized scales.
Event	12	Pump Displacement	Pump Displacement	10/16/2019	13:21:18	COM4	1803.00	14.01	1.50	0.00	4.5bbls of fresh water.
Event	13	End Job	End Job	10/16/2019	13:24:37	COM4	50.00	8.22	0.00	4.80	Stop recording data.
Event	14	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	10/16/2019	13:50:00	USER					JSA with all essential personnel to discuss the hazards of rigging down.
Event	15	Rig-Down Completed	Rig-Down Completed	10/16/2019	14:25:00	USER					Safely with no injuries.
Event	16	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	10/16/2019	14:30:00	USER					Journey Management meeting held prior to departure. journey called into dispatch and approved.
Event	17	Comment	Comment	10/16/2019	14:35:00	USER					"" .....Thank You for choosing Halliburton.....""

## 3.0 Attachments

### 3.1 Case 1-Custom Results.png



