

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC - EBUS

Ft. Lupton District, Colorado

For: Aaron Smith

Date: Monday, July 08, 2019

Kanga State

Weld, Wattenberg

Case 1

Job Date: Monday, July 08, 2019

Sincerely,

Jamar Horton

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.

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1.0 Cementing Job Summary

1.1 Executive Summary

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

		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

		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

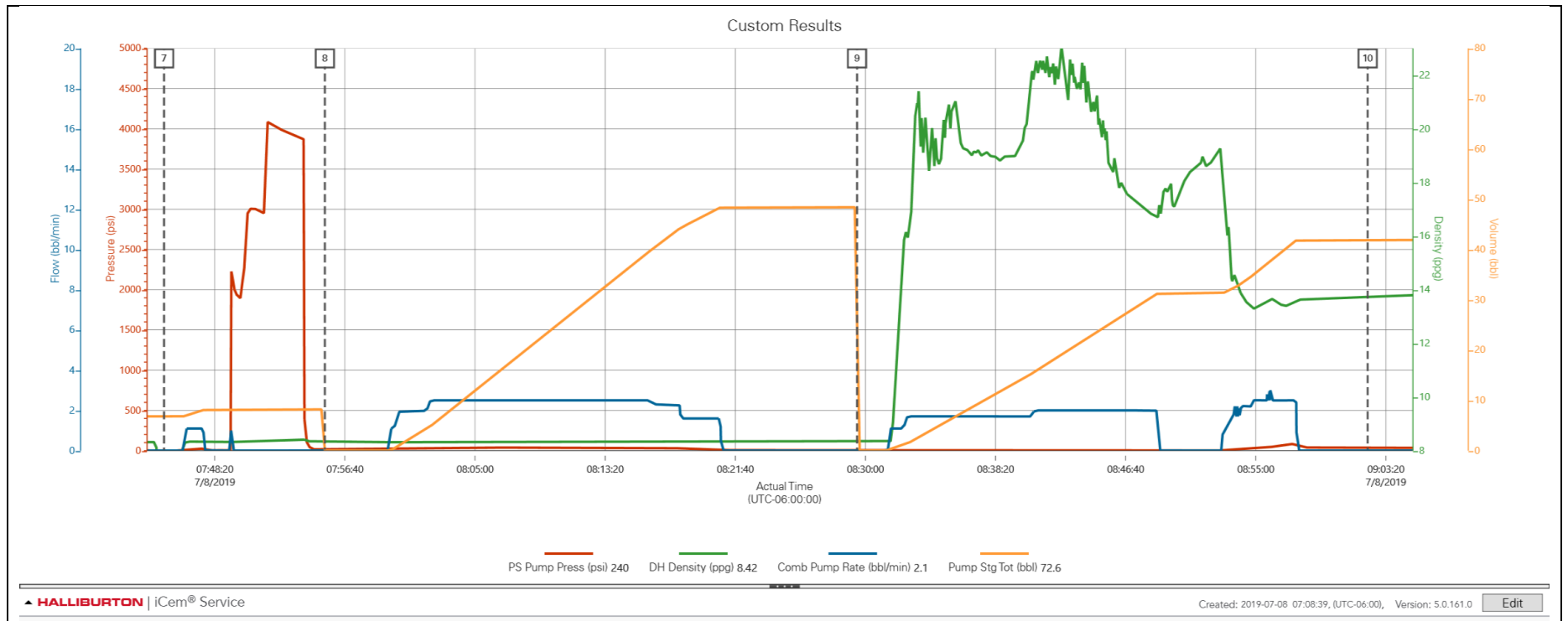
2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Depart from Service Center or Other Site	Depart from Service Center or Other Site	7/8/2019	05:30:00	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	7/8/2019	06:30:00	USER					With all Equipment and materials. Hazard hunt performed before spotting in equipment. discussed numbers and job procedures with customer.
Event	3	Comment	Comment	7/8/2019	06:35:00	USER					Csg 4 1/2" 11.6# perms @550', Surf Csg 8 5/8" 24# @718'. Seen cement to surface.
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	7/8/2019	06:45:00	USER					JSA with all essential personnel to discuss the hazards of rigging up .
Event	5	Rig-Up Completed	Rig-Up Completed	7/8/2019	07:15:00	USER					Safely with no injuries.
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/8/2019	07:30:00	USER	142.00	8.36	5.70	5.80	JSA with all essential personnel to discuss the job procedures and the hazards of the job.
Event	7	Start Job	Start Job	7/8/2019	07:45:05	COM4	2.00	0.00	0.00	6.80	
Event	8	Pump Spacer 1	Pump Spacer 1	7/8/2019	07:55:23	COM4	15.00	8.35	0.00	0.00	48bbls of fresh water.
Event	9	Pump Cement	Pump Cement	7/8/2019	08:29:28	COM4	6.00	8.36	0.00	48.40	234sks 48bbls 15.8ppg 1.15yd 5.00gal/sk verified with pressurized scales.
Event	10	End Job	End Job	7/8/2019	09:02:10	COM4	36.00	13.71	0.00	41.90	Stop recording data.

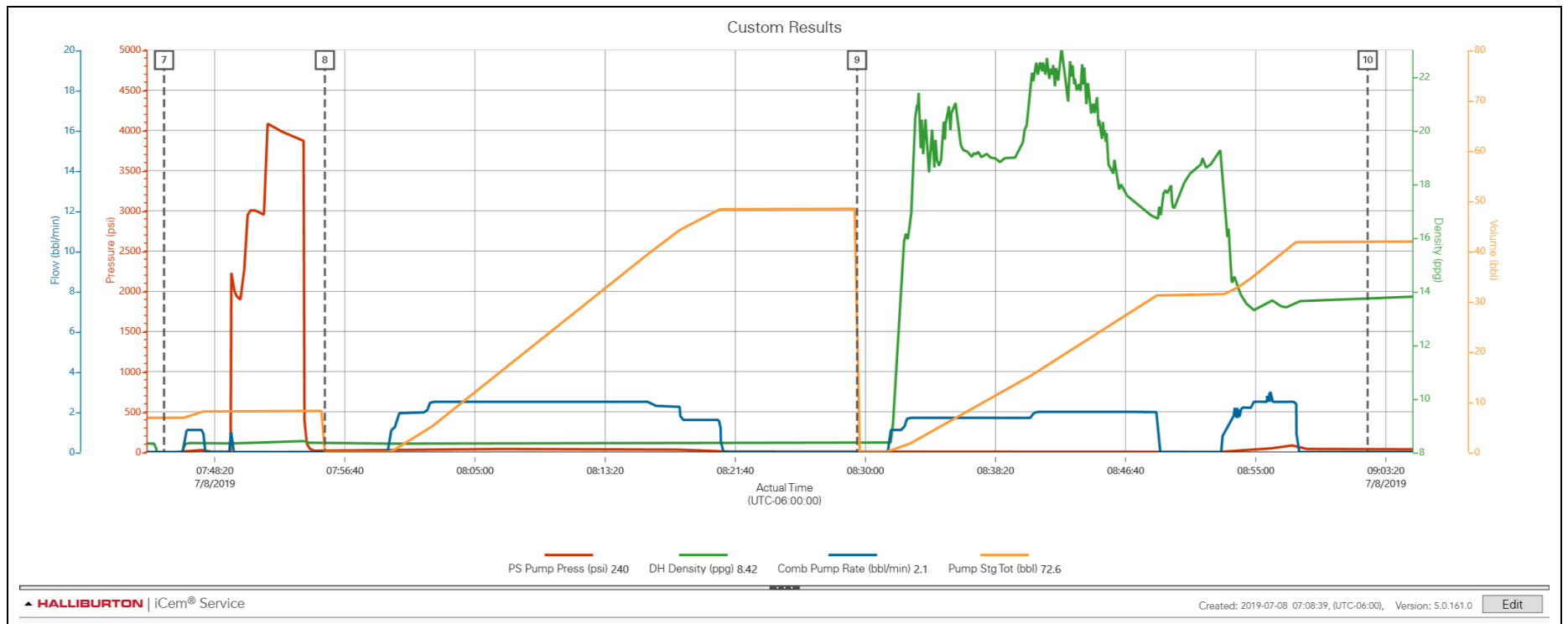
Event	11	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	7/8/2019	09:10:00	USER	28.00	13.62	0.00	42.20	JSA with all essential personnel to discuss the hazards of rigging down.
Event	12	Rig-Down Completed	Rig-Down Completed	7/8/2019	10:15:00	USER					Safely with no injuries.
Event	13	Comment	Comment	7/8/2019	10:35:00	USER					""Thank You for choosing Halliburton.....""
Event	14	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	7/8/2019	11:00:00	USER					Journey Management meeting held prior to departure. journey called into dispatch and approved.

3.0 Attachments

3.1 Case 1-Custom Results.png



3.2 Case 1-Custom Results (1).png



HALLIBURTON

iCem[®] Service

PETROSTAR SERVICES

Ft. Lupton District, CO

For: Aaron Smith

Date: Friday, June 28, 2019

Kanga State

Weld, Gutterson

Case 1

Job Date: Friday, June 28, 2019

Sincerely,

James Bunnell

1.0 Real-Time Job Summary

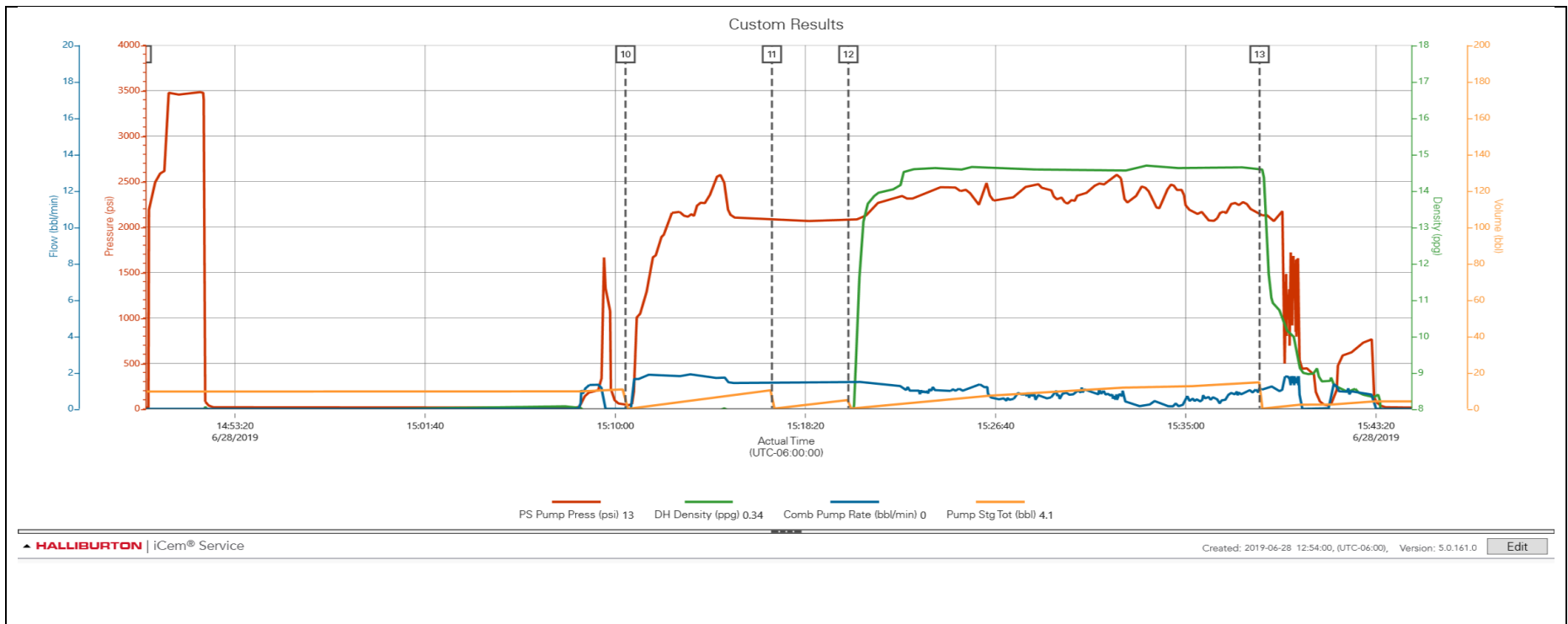
1.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	6/28/2019	04:00:00	USER					For on location after Dalbey
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	6/28/2019	13:30:00	USER					Journey management meeting held to discuss journey.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	6/28/2019	14:10:00	USER					With all equipment and materials.
Event	4	Other	Other	6/28/2019	14:11:00	USER					1.5in coil unit in 4.5 11.6# casing retainer @2400' Perfs @2500'-2200' TOC 2200'
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	6/28/2019	14:12:00	USER					To discuss hazards of rig up.
Event	6	Rig-Up Completed	Rig-Up Completed	6/28/2019	14:40:00	USER	16.00	8.22	0.00	7.70	With no incidents.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	6/28/2019	14:45:00	USER	17.00	8.21	0.00	7.70	With all site personnel to discuss job procedure.
Event	8	Start Job	Start Job	6/28/2019	14:46:39	COM4	17.00	8.15	0.00	7.70	Start recording data.
Event	9	Test Lines	Test Lines	6/28/2019	14:49:15	COM4	15.00	7.81	0.00	9.50	Tested to 3000psi
Event	10	Pump Spacer 1	Pump Spacer 1	6/28/2019	15:10:27	COM4	43.00	7.82	0.00	0.00	10bbls mud flush.
Event	11	Pump Spacer 2	Pump Spacer 2	6/28/2019	15:16:52	COM4	2092.00	7.72	1.40	0.00	5bbls fresh water.
Event	12	Pump Cement	Pump Cement	6/28/2019	15:20:13	COM4	2078.00	7.75	1.50	4.90	86sks 21bbls 14.5ppg 1.39yd 6.78gl/sk verified with pressurized scales.
Event	13	Pump Displacement	Pump Displacement	6/28/2019	15:38:14	COM4	2133.00	14.61	1.10	14.60	4.5bbls fresh water.
Event	14	End Job	End Job	6/28/2019	15:45:39	COM4	13.00	0.34	0.00	4.10	Stop recording data.

Event	15	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	6/28/2019	15:50:00	USER	To discuss hazards of rig down.
Event	16	Rig-Down Completed	Rig-Down Completed	6/28/2019	16:10:00	USER	With no incidents.
Event	17	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	6/28/2019	16:20:00	USER	Journey management meeting held to discuss journey.
Event	18	Other	Other	6/28/2019	16:30:00	USER	Thank you from Halliburton and crew.

2.0 Attachments

2.1 Case 1-Custom Results.png



HALLIBURTON

iCem[®] Service

PETROSTAR SERVICES

Ft. Lupton District, CO

For: Aaron Smith

Date: Monday, July 01, 2019

Kanga State

Weld, Gutterson

Case 2

Job Date: Monday, July 01, 2019

Sincerely,

James Bunnell

Legal Notice

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Case 2-Custom Results.png	Error! Bookmark not defined.

1.0 Real-Time Job Summary

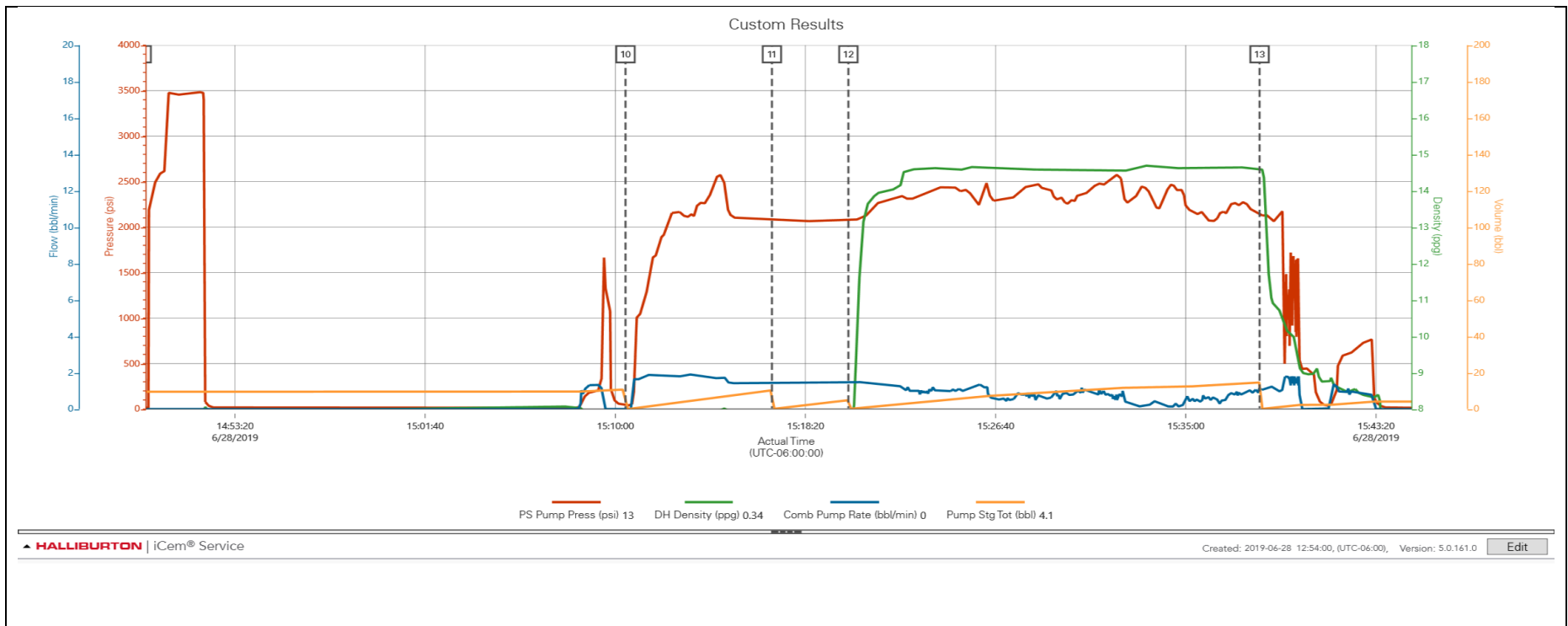
1.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	7/1/2019	04:00:00	USER					For on location @0700
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	7/1/2019	15:15:00	USER					Journey management meeting held to discuss journey.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	7/1/2019	15:50:00	USER					With all equipment and materials.
Event	4	Other	Other	7/1/2019	15:51:00	USER					4.5 11.6#casing in 8 5/8 24# casing @718' 9" OH perfs @768' TOC ?'
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	7/1/2019	15:55:00	USER					To discuss hazards of rig up.
Event	6	Rig-Up Completed	Rig-Up Completed	7/1/2019	16:15:00	USER	28.00	8.42	0.00	0.70	With no incidents.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/1/2019	16:16:00	USER	28.00	8.42	0.00	0.70	With all site personnel to discuss job procedure.
Event	8	Start Job	Start Job	7/1/2019	16:26:20	COM4	24.00	8.43	0.00	0.70	Start recording data.
Event	9	Test Lines	Test Lines	7/1/2019	16:27:34	COM4	334.00	8.17	0.00	2.00	Tested to 3000psi
Event	10	Pump Spacer 1	Pump Spacer 1	7/1/2019	16:30:14	COM4	140.00	8.24	0.00	2.00	10bbls mud flush.
Event	11	Pump Spacer 2	Pump Spacer 2	7/1/2019	16:35:47	COM4	277.00	8.12	2.50	11.40	30bbls fresh water.
Event	12	Pump Cement	Pump Cement	7/1/2019	16:47:28	COM4	109.00	8.22	2.50	28.80	170sks 35bbls 15.8ppg 1.15yd 5.00gl/sk verified with pressurized scales.
Event	13	Pump Displacement	Pump Displacement	7/1/2019	17:38:40	COM4	24.00	7.03	0.00	0.00	11bbls fresh water.
Event	14	End Job	End Job	7/1/2019	17:48:05	COM4	53.00	6.97	0.00	11.00	Stop recording data.

Event	15	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	7/1/2019	17:50:00	USER	To discuss hazards of rig down.
Event	16	Rig-Down Completed	Rig-Down Completed	7/1/2019	18:10:00	USER	With no incidents.
Event	17	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	7/1/2019	18:15:00	USER	Journey management meeting held to discuss journey.
Event	18	Other	Other	7/1/2019	18:20:00	USER	Thank you from Halliburton and crew.

2.0 Attachments

2.1 Case 1-Custom Results.png



2.2 Case 2-Custom Results.png

