

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

Rock Springs District, Colorado

For: H&P 318

Date: Monday, November 11, 2019

GM 443-8 Production

API# 05-045-24101

Job Date: Monday, November 11, 2019

Sincerely,

Rock Springs Engineering

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services for this cementing services 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, Rock Springs

Job Times

	Date	Time	Time Zone
Called Out			MST
On Location			MST
Job Started			MST
Job Completed			MST
Departed Location			MST

1.2 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	
2	Mud type (OBM, WBM, SBM, Water, Brine)	lb/gal	
3	Actual mud density	lb/gal	
4	Time circulated before job	HH:MM	
5	Mud volume circulated	Bbls	
6	Rate at which well was circulated	Bpm	
7	Pipe movement during hole circulation	Y/N	
8	Rig pressure while circulating	Psi	
9	Time from end mud circulation to start of job	HH:MM	
10	Pipe movement during cementing	Y/N	
11	Calculated displacement	Bbls	
12	Job displaced by	Rig/HES	
13	Annular flow before job	Y/N	
14	Annular flow after job	Y/N	
15	Length of rat hole	Ft	
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	

2.0 Real-Time Job Summary

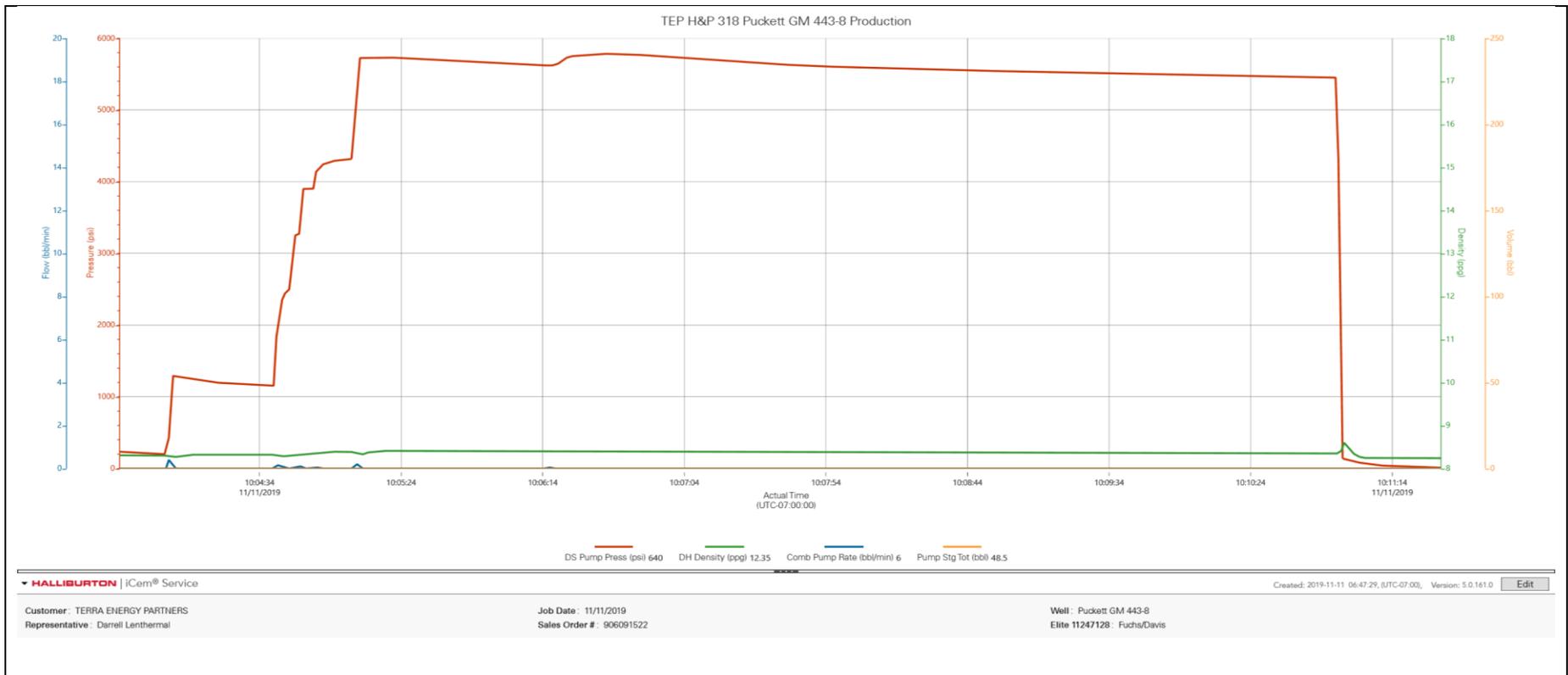
2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DS 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	11/10/2019	20:00:00	USER					
Event	2	Pre Journey	11/10/2019	22:15:00	USER					Discuss all travel related safety issues with crew
Event	3	Leave Yard	11/10/2019	22:30:00	USER					Stage in Parachute until 5:30. Small location.
Event	4	Arrive at Job	11/11/2019	05:55:00	USER					Meet with customer Darrell Lenthal and get numbers. 4.5" 11.5 lb casing set at 7251', 8.75" hole at 7258', 9.8 ppg WBM in the hole, 9.625" 36 lb Surface set at 1033', 30' Shoe Joint. Rig circulated @10 bbl/min with 930 psi for ~1 hr. Mud properties: PV 12@120, YP 12, Gels 6/22/32. Water Test: pH 6.9, Temp 62, CI <200. Rig was running casing when we arrived on location.
Event	5	Site Assesment	11/11/2019	06:00:00	USER					Identify and discuss all hazards with the crew
Event	6	Spot Equipment	11/11/2019	06:10:00	USER					Use spotters and radios.
Event	7	Pre Rig Up	11/11/2019	06:15:00	USER					Discuss all rig up related safety issues with crew
Event	8	Rig Up	11/11/2019	06:20:00	USER					
Event	9	Pre Job	11/11/2019	09:00:00	USER					Discuss all job related safety issues and pump schedule with customer, crew, and rig crew.
Event	10	Start Job	11/11/2019	10:02:00	USER					
Event	11	Fill Lines	11/11/2019	10:02:22	USER	64.00	8.20	0.00	0.00	5 bbls water
Event	12	Pressure Test	11/11/2019	10:06:41	USER	5781.00	8.39	0.00	0.00	Low and high pressure tests
Event	13	Pump Spacer 1	11/11/2019	10:12:26	USER	109.00	8.24	1.60	0.20	10 bbls water
Event	14	Tuned Spacer III	11/11/2019	10:15:14	USER	527.00	8.31	4.00	0.50	20 bbls Mud Flush 8.4 ppg
Event	15	Pump Lead Cement	11/11/2019	10:20:26	USER	621.00	12.14	4.00	0.50	145 bbls lead cement 12.3 ppg, 2.22 cuft/sk, 11.57 gal/sk 365 sks. 101 bbls water needed.

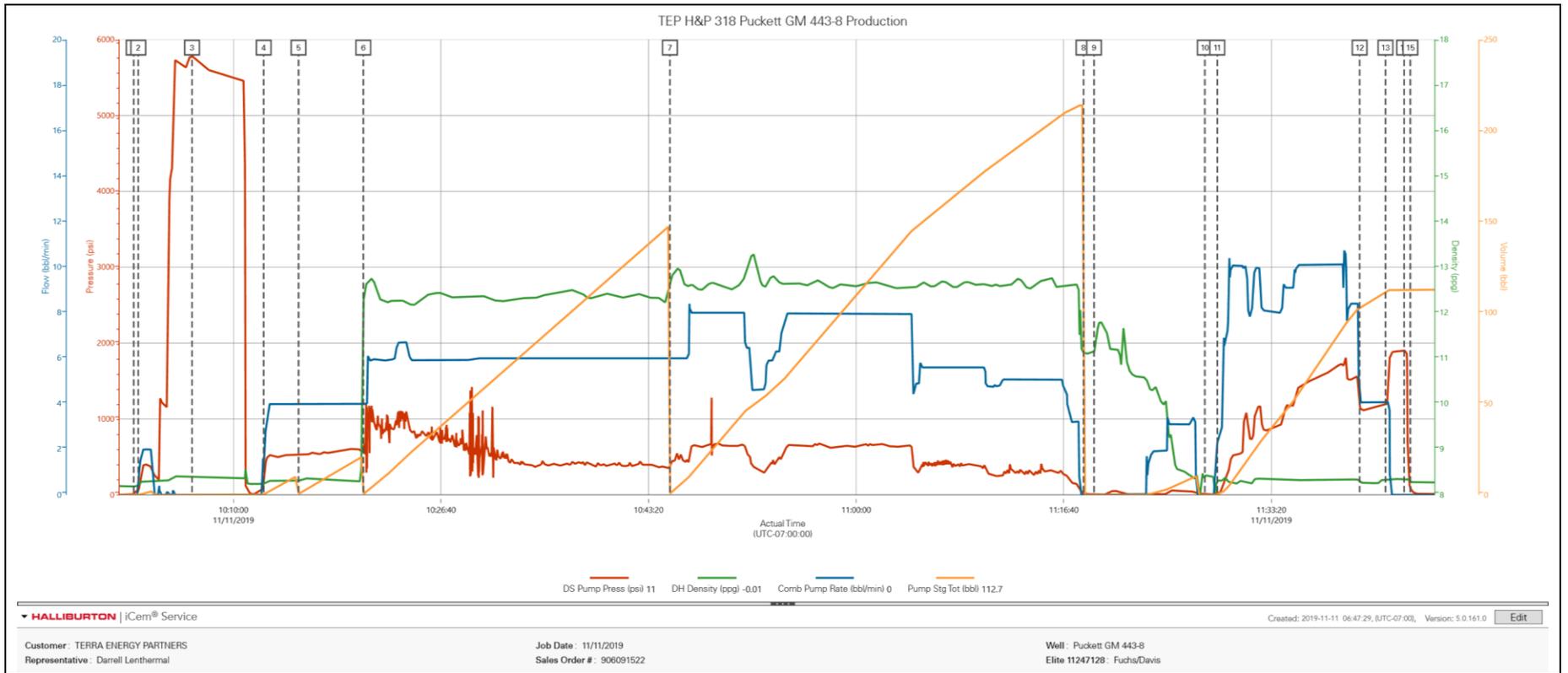
Event	16	Pump Tail Cement	11/11/2019	10:45:03	USER	395.00	12.66	6.00	0.70	194 bbls cement 12.53 ppg, 2.11 cuft/sk, 10.78 gal/sk 515 sks. 132 bbls water needed.
Event	17	Shutdown	11/11/2019	11:18:16	USER	20.00	11.12	0.00	0.00	Shutdown to drop plug
Event	18	Clean Lines	11/11/2019	11:19:06	USER	9.00	11.14	0.00	0.00	Wash lines to the pit.
Event	19	Drop Plug	11/11/2019	11:28:00	USER	10.00	8.46	0.00	0.00	Customer to witness and verify.
Event	20	Pump Displacement	11/11/2019	11:29:00	USER	26.00	8.34	2.20	0.30	112 bbls total. 10 bbls MMCR water, 30 bbls BE-6 water. KCl sacks throughout.
Event	21	Slow Rate	11/11/2019	11:40:26	USER	1151.00	8.30	4.00	103.00	Last 10 bbls
Event	22	Bump Plug	11/11/2019	11:42:30	USER	1192.00	8.33	4.10	111.40	FCP 1100 psi. Go 500 psi over final circulating psi. No cement to surface.
Event	23	Check Floats	11/11/2019	11:44:00	USER	1901.00	8.34	0.00	112.70	Floats held. .5 bbls back
Event	24	End Job	11/11/2019	11:44:30	USER					
Event	25	Total Fluid Volumes	11/11/2019	11:45:00	USER					Spacer: 30 Lead: 145 Tail: 194 Displacement: 112.
Event	26	Items to return	11/11/2019	11:46:00	USER					Sugar 100 lbs
Event	27	End Job	11/11/2019	11:48:01	COM5					
Event	28	Pre Rig Down	11/11/2019	11:50:00	USER					Discuss all rig down related safety issues with crew
Event	29	Rig Down	11/11/2019	11:55:00	USER					
Event	30	Pre Journey	11/11/2019	12:45:00	USER					Discuss all travel related safety issues with crew
Event	31	Leave Job	11/11/2019	13:00:00	USER					Thank you for your business! Benjamin Fuchs and crew.

3.0 Attachments

3.1 Pressure Test.png



3.2 Job Chart.png



3.3 Job Chart No Events.png

