

HALLIBURTON

iCem[®] Service

MALLARD EXPLORATION LLC

For: Todd Stephens

Date: Wednesday, January 05, 2022

GREEN TEAL FED 34-27-4HN

Production Casing

Job Date: Wednesday, January 05, 2022

Sincerely,

Brad Hinkle and Crew

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

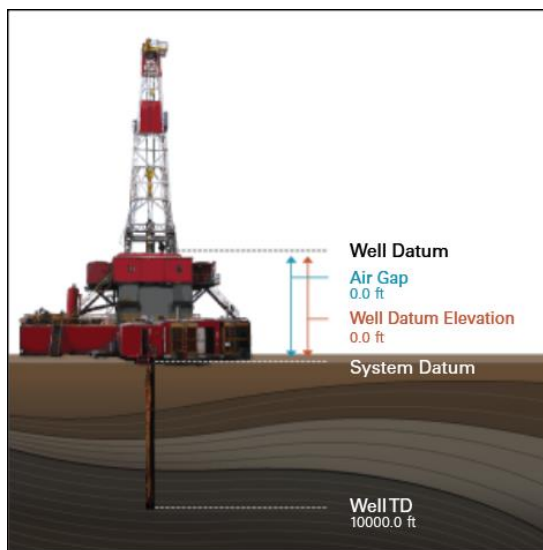
Job Design	4
Overview.....	4
Pressure Schedule Inputs	4
Pressure Schedule Table.....	4
Time of Stages	4
Real-Time Job Summary	6
Job Event Log.....	6
Attachments.....	10
Production Casing-Custom Results.png.....	10
Custom Graphs.....	11
Custom Graph.....	11
Appendix	12
3D Wellbore Schematic	12

1.0 Job Design

1.1 Overview

Job Type	Primary Cement Job
Injection Path	Casing/Conventional
Foam Job	No

Well Snapshot



Simulations Performed

1.2 Pressure Schedule Inputs

Pressure Mode	Conventional
----------------------	--------------

1.3 Pressure Schedule Table

Start <i>(Pump Volume in bbl)</i>	End <i>(Pump Volume in bbl)</i>	Pressure <i>(psi)</i>
0.00	End	0.00

1.4 Time of Stages

Graph Label	Time <i>(min)</i>	Stage Starts Pumping	Stage Enters Annulus
①	0.0	Safety Meeting - Pre Job	
②	0.0	Depart Location for Service Center or Other Site	

③	0.0	Check Floats
④	0.0	Job Numbers
⑤	0.0	Pre-Rig Down Safety Meeting
⑥	0.0	Arrive at Location from Service Center
⑦	0.0	Call Out
⑧	0.0	Depart Shop for Location
⑨	0.0	Start Job
⑩	0.0	Drop Bottom Plug
⑪	0.0	Test Lines
⑫	0.0	Pump Spacer 1
⑬	0.0	Pump Cement
⑭	0.0	Bottom Plug Burst
⑮	0.0	Shutdown
⑯	0.0	Drop Top Plug
⑰	0.0	Pump Displacement
⑱	0.0	Bump Plug
⑲	0.0	

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq No.	Activity	Graph Label	Date	Time	Source	Pump B Pressure (psi)	Dwnhole Density (ppg)	Cmb Pump Rate (bbl/min)	Cmb Stg Total (bbl)	Comments
Event	1	Call Out	Call Out	1/4/2022	14:00:00	USER					Crew was called for an on location of 2000. Crew was Bradley Hinkle, William Mix, Joshua Washburn and Daniel Sandoval.
Event	2	Depart Shop for Location	Depart Shop for Location	1/4/2022	17:00:00	USER					Pre-journey safety meeting. Discussed high winds, blowing dust/snow and lower speeds if necessary.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	1/4/2022	18:45:00	USER					Arrive on location, check-in, perform a site assessment and pre-rig up safety meeting.
Event	4	Other	Job Numbers	1/4/2022	18:50:00	USER					TD: 16709 TP: 16702 FC: 16691 - 5.5" casing inside a 8.5" OH. TVD: 6330 feet. 9.625" 36# casing set at 1720 feet. WF: 10.1# OBM.

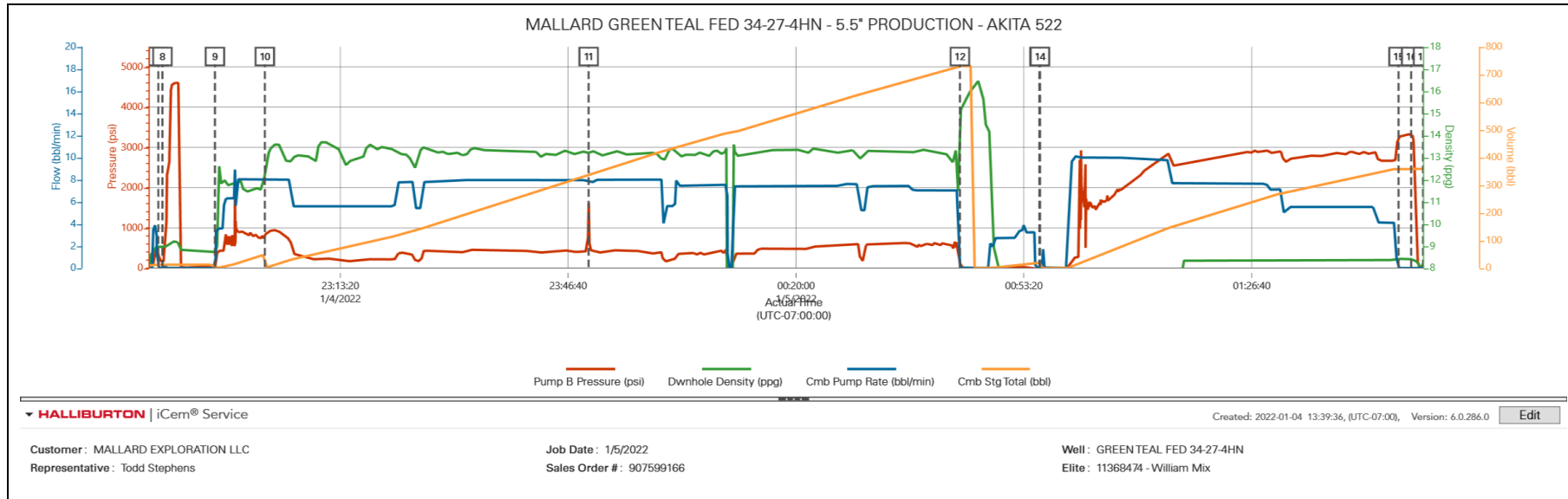
Event	5	Safety Meeting - Pre Job	Safety Meeting - Pre Job	1/4/2022	22:30:00	USER	-0.03	-0.99	0.00	1.53	Pre-job safety meeting. Discussed emergency protocols and job procedure.
Event	6	Start Job	Start Job	1/4/2022	22:45:04	NONE	24.16	8.52	0.00	10.07	
Event	7	Drop Bottom Plug	Drop Bottom Plug	1/4/2022	22:46:43	NONE	254.29	8.98	0.00	12.28	
Event	8	Test Lines	Test Lines	1/4/2022	22:47:19	NONE	163.11	8.93	0.00	12.28	Pressure test lines to 4500 psi with a 500 psi electronic kick-out test.
Event	9	Pump Spacer 1	Pump Spacer 1	1/4/2022	22:55:00	NONE	47.25	8.70	0.00	0.00	Pump 50 bbls Tuned Prime spacer mixed at 11.5 ppg. Downhole density reading high which was verified by pressurized scales.
Event	10	Pump Cement	Pump Cement	1/4/2022	23:02:18	NONE	785.06	12.23	8.02	0.13	Pump 748 bbls (2625 sacks, 1.6 yield, 7.65 gal/sk) ElastiCem mixed at 13.2 ppg. Inconsistent mixing in the beginning with scales taken still reading within density range. When truck was mixing consistently with consistent scales, rate was increased.

Event	11	Standby Other	Bottom Plug Burst	1/4/2022	23:49:40	USER	1623.54	13.23	7.77	336.26	Bottom plug ruptured at 2624 psi.
Event	12	Shutdown	Shutdown	1/5/2022	00:43:59	NONE	143.13	14.73	0.00	730.28	Shutdown, wash pumps and lines until clean.
Event	13	Drop Top Plug	Drop Top Plug	1/5/2022	00:55:37	NONE	-24.64	7.30	0.00	19.35	Top plug loaded into plug container. Witnessed by customer
Event	14	Pump Displacement	Pump Displacement	1/5/2022	00:55:42	NONE	-24.82	7.30	0.00	0.00	Pump 370 bbls fresh water, MMCR added into first 20 bbls. Good returns throughout. 50 bbls spacer and 30 bbls cement to surface.
Event	15	Bump Plug	Bump Plug	1/5/2022	01:48:09	NONE	3236.84	8.42	0.00	358.93	Final circulating pressure at 2623 psi and increase pressure to 3200 psi.
Event	16	Check Floats	Check Floats	1/5/2022	01:50:00	USER	3326.96	8.41	0.00	358.93	
Event	17	End Job	End Job	1/5/2022	01:51:44	NONE	-30.23	8.20	0.00	358.93	
Event	18	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	1/5/2022	02:00:00	USER	37.02	8.12	0.00	386.30	Pre-rig down safety meeting.

Event	19	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	1/5/202 2	03:00:0 0	USER	Pre-journey safety meeting. Discussed drowsy driving.
-------	----	--	--	--------------	--------------	------	---

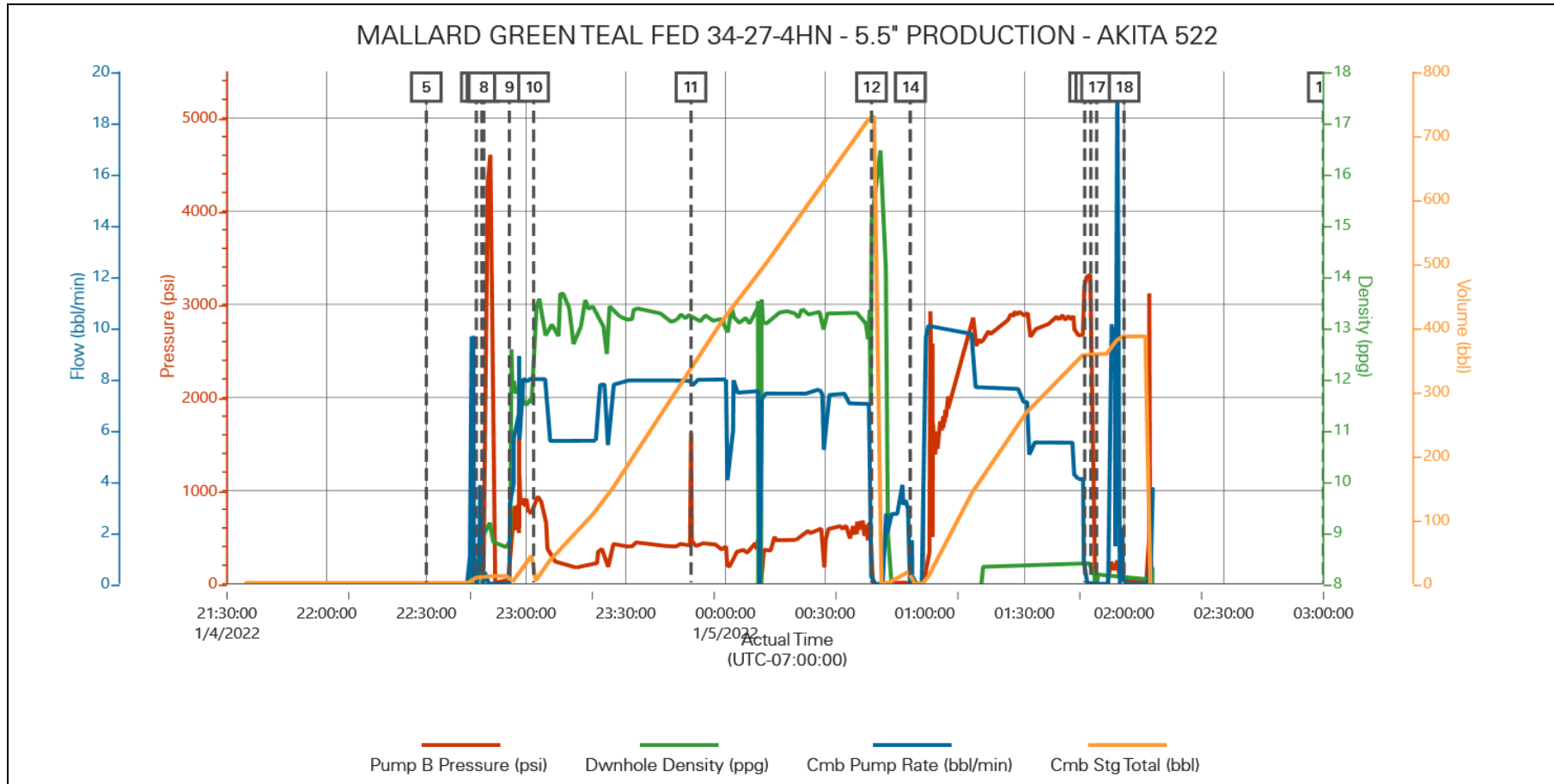
3.0 Attachments

3.1 Production Casing-Custom Results.png



4.0 Custom Graphs

4.1 Custom Graph



5.0 Appendix

5.1 3D Wellbore Schematic

