

# HALLIBURTON

iCem<sup>®</sup> Service

**EXTRACTION OIL & GAS**

**MT Fed Maplewood 8W-20-4 Production**

Sincerely,  
**Meghan Jacobs**

## Legal Notice

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### Disclaimer:

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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 **MT Fed Maplewood 8W-20-4** cement **Production** casing 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 48 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**

*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 369404		<b>Ship To #:</b> 3691175		<b>Quote #:</b>		<b>Sales Order #:</b> 0905572543				
<b>Customer:</b> EXTRACTION OIL & GAS-EBUS				<b>Customer Rep:</b> Manny Parra						
<b>Well Name:</b> MT FED MAPLEWOOD			<b>Well #:</b> 8W-20-4		<b>API/UWI #:</b> 05-123-42167-00					
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> GREELEY		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO				
<b>Legal Description:</b> NE NW-9-5N-65W-876FNL-1751FWL										
<b>Contractor:</b> PATTERSON-UTI ENERGY				<b>Rig/Platform Name/Num:</b> PATTERSON 901						
<b>Job BOM:</b> 7523 7523										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srv Supervisor:</b> Thomas Haas						
<b>Job</b>										
<b>Formation Name</b>										
<b>Formation Depth (MD)</b>		<b>Top</b>		<b>Bottom</b>						
<b>Form Type</b>				<b>BHST</b>						
<b>Job depth MD</b>		17143ft		<b>Job Depth TVD</b>		6951'				
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>		5'				
<b>Perforation Depth (MD)</b>		<b>From</b>		<b>To</b>						
<b>Well Data</b>										
<b>Description</b>	<b>New / Used</b>	<b>Size in</b>	<b>ID in</b>	<b>Weight lbm/ft</b>	<b>Thread</b>	<b>Grade</b>	<b>Top MD ft</b>	<b>Bottom MD ft</b>	<b>Top TVD ft</b>	<b>Bottom TVD ft</b>
Casing	0	9.625	8.921	36			0	1640	0	1640
Casing	0	5.5	4.892	17	BTC	P-110	0	17143	0	6951
Open Hole Section			8.75				1640	17152	1640	6951
<b>Tools and Accessories</b>										
<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	<b>Depth ft</b>		<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	
						<b>Top Plug</b>	5.5	1	NCS	
<b>Float Shoe</b>	5.5	1	NCS	17143		<b>Bottom Plug</b>	5.5	1	NCS	
<b>Toe Sleeve</b>	5.5	1	NCS	17135						
						<b>Plug Container</b>	5.5	1	HES	
<b>Fluid Data</b>										
<b>Stage/Plug #:</b> 1										

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	50	bbl	12.5	2.73	16.6	8	1706	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
2	ElastiCem	ELASTICEM (TM) SYSTEM	585	sack	13.2	1.57	7.66	8	4481	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
3	GasStop	ELASTICEM (TM) SYSTEM	615	sack	13.2	1.56	7.61	8	4680	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
4	ElastiCem	ELASTICEM (TM) SYSTEM	1518	sack	13.2	1.57	7.66	8	11628	
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33			8		
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)								
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
6	Displacement	Displacement	376	bbl	8.33			8		
Cement Left In Pipe		Amount	N/A		Reason Wet Shoe			Shoe Joint		
Mix Water:		pH 7	Mix Water Chloride:			<300 ppm		Mix Water Temperature:		66 °F
Cement Temperature:		N/A	Plug Displaced by:			8.33 lb/gal F.W.		Disp. Temperature:		58 °F
Plug Bumped?		Yes	Bump Pressure:			2290 psi		Floats Held?		Yes
Cement Returns:		48 bbl	Returns Density:			N/A		Returns Temperature:		N/A
Comment Plug bumped at calculated displacement, final circulating pressure of 2290 psi, wet shoe disk burst at 3256 psi. floats held, 2.5 bbl back. 48 bbl of cement returned to surface.										

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	3/24/2019	01:30:00	USER				CREW CALLED OUT AT 01:30 3/24/2019, REQUESTED ON LOCATION 08:00 3/34/2019. CREW PICKED UP CEMENT, CHEMICALS (25 GAL D-AIR, 1538 GAL FDP LATEX, 10 GAL MMCR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11360451/11633848 Bulk 660: 11234500/10025027 SOFT SIDE: 11138996/12051660 PUMP ELITE: 11897034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/24/2019	05:45:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	3/24/2019	06:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	3/24/2019	07:00:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1640', CASING: 5.5" 17# @ 117143', 8' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 6951', 10.0 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	3/24/2019	07:10:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	3/24/2019	07:20:00	USER				CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	3/24/2019	13:30:00	USER	8.56	0.00	11.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	3/24/2019	14:03:39	COM4	8.53	0.00	1.00	START JOB DATA RECORDING.
Event	9	Drop Bottom Plug	Drop Bottom Plug	3/24/2019	14:05:20	USER	8.54	2.00	321.00	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	10	Test Lines	Test Lines	3/24/2019	14:06:24	COM4	8.54	0.00	172.00	PRESSURE TESTED LINES TO 4850 PSI, 500 PSI KICK OUT AT 880 PSI, 5TH GEAR STALL AT 1900 PSI.

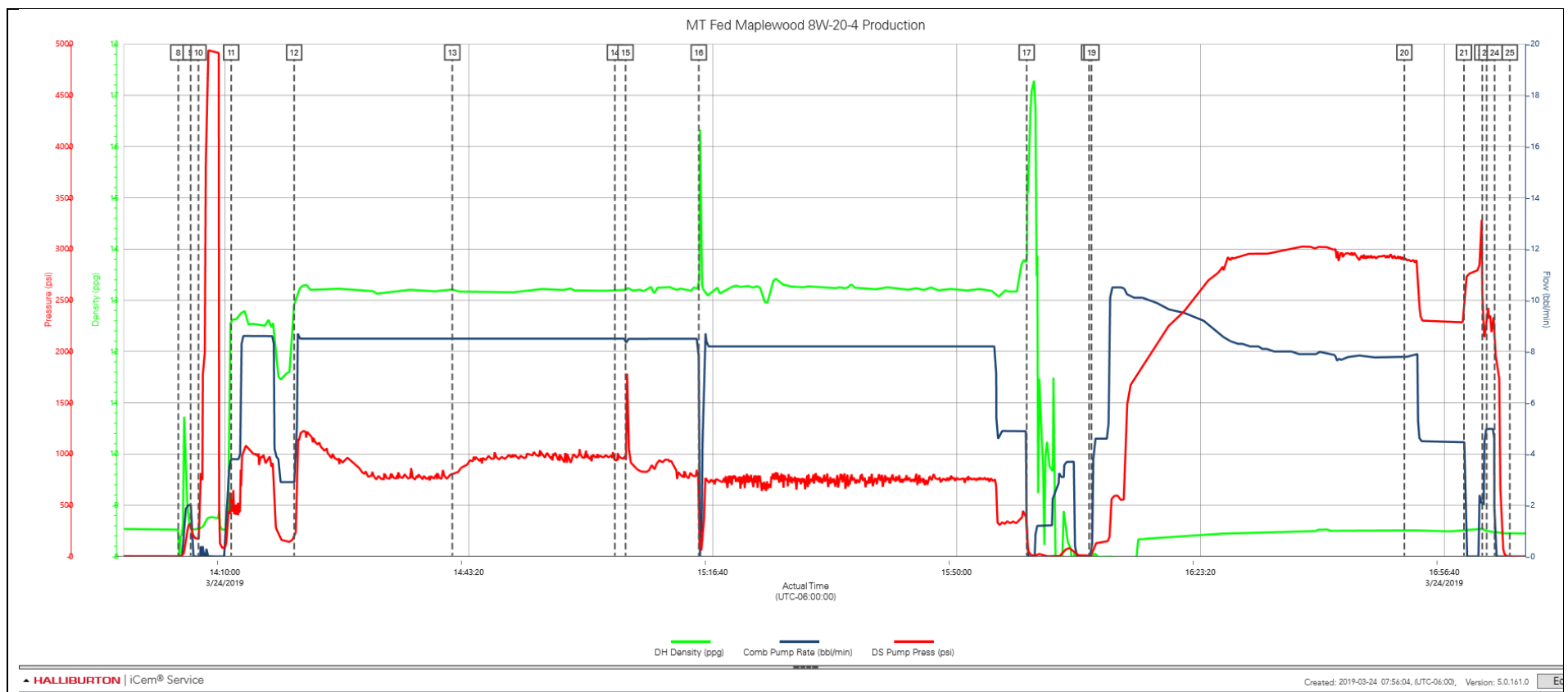
Event	11	Pump Spacer 1	Pump Spacer 1	3/24/2019	14:10:53	COM4	12.65	3.80	562.00	PUMP 50 BBLs OF FDP SPACER @ 12.5 LB/GAL, ADDED 10 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Pump Cap Cement	Pump Cap Cement	3/24/2019	14:19:29	COM4	12.92	2.90	189.00	PUMP 585 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.66 GAL/SK, 163.6 BBLs, CALCULATED TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Pump Lead Cement	Pump Lead Cement	3/24/2019	14:41:06	COM4	13.20	8.50	809.00	PUMP 615 SKS OF GASSTOP @ 13.2 LB/GAL, 1.56 YIELD, 7.61 GAL/SK, 171 BBLs, CALCULATED TOL 2550', MIX WATER MIXED WITH 1538 GAL OF LATEX AND 20 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	14	Pump Tail Cement	Pump Tail Cement	3/24/2019	15:03:19	COM4	13.19	8.50	940.00	PUMP 1518 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.66 GAL/SK, 424.5 BBLs, CALCULATED TOT @ 6739', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	15	Cement At Bottom	Cement At Bottom	3/24/2019	15:04:47	USER	13.20	8.50	972.00	BOTTOM PLUG DISK BURST AT 1700 PSI.
Event	16	Shutdown	Shutdown	3/24/2019	15:14:47	USER	13.24	7.80	562.00	SHUTDOWN DUE TO LEAK ON THE FLOOR, HAMMERED UP AND RESUMED PUMPING.
Event	17	Shutdown	Shutdown	3/24/2019	15:59:36	COM4	13.75	0.10	218.00	SHUTDOWN TO CLEAN PUMPS/LINES AND DROP TOP PLUG.
Event	18	Drop Top Plug	Drop Top Plug	3/24/2019	16:08:08	COM4	5.60	0.00	4.00	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	19	Pump Displacement	Pump Displacement	3/24/2019	16:08:27	COM4	8.02	0.00	4.00	BEGIN PUMPING CALCULATED DISPLACEMENT OF 396 BBL FRESH WATER, 10 GAL OF MMCR ADDED TO THE FIRST 20 BBL.
Event	20	Cement Returns to Surface	Cement Returns to Surface	3/24/2019	16:51:13	USER	8.51	7.80	2907.00	CEMENT TO SURFACE 348 BBL INTO DISPLACE, 48 BBL OF CEMENT TO SURFACE.
Event	21	Bump Plug	Bump Plug	3/24/2019	16:59:22	COM4	8.50	4.50	2354.00	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 2290 PSI.
Event	22	Other	Rupture Disk	3/24/2019	17:01:52	USER	8.58	2.10	2569.00	PRESSURE UP TO RUPTURE WET SHOE DISK, DISK RUPTURED AT 3256 PSI.
Event	23	Other	Wet Shoe	3/24/2019	17:02:28	USER	8.50	5.00	2333.00	PUMP A 5 BBL WET SHOE.
Event	24	Check Floats	Check Floats	3/24/2019	17:03:33	USER	8.49	0.00	2172.00	RELEASED PRESSURE TO THE TRUCK, FLOATS HELD, 2.5 BBL BACK.



Event	25	End Job	End Job	3/24/2019	17:05:38	COM4	8.45	0.00	-6.00	END JOB DATA RECORDING.
Event	26	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	3/24/2019	17:10:00	USER	8.45	0.00	-8.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	27	Rig-Down Completed	Rig-Down Completed	3/24/2019	18:30:58	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	28	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/24/2019	18:45:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	29	Crew Leave Location	Crew Leave Location	3/24/2019	19:00:00	USER				THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

## 3.0 Attachments

### 3.1 MT Fed Maplewood 8W-20-4 Production – Job Chart with Events



## 3.2 MT Fed Maplewood 8W-20-4 Production – Job Chart without Events

