

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS-EBUS**

Date: Friday, September 08, 2017

### **HFE 4 Production**

Job Date: Friday, September 01, 2017

Sincerely,

**Julia Nichols**

## Legal Notice

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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 **HFE 4** cement **Surface** 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 70 barrels 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 [Ft. Lupton]**

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## Cementing Job Summary

## The Road to Excellence Starts with Safety

Sold To #: 389404	Ship To #: 3800441	Quote #:	Sales Order #: 0904268060							
Customer: EXTRACTION OIL & GAS		Customer Rep: Hans								
Well Name: HFE	Well #: 4	API/UWI #: 05-123-44774-00								
Field: WATTENBERG	City (SAP): MEAD	County/Parish: WELD	State: COLORADO							
Legal Description: SW SW-22-4N-88W-1126FSL-963FWL										
Contractor: CYCLONE		Rig/Platform Name/Num: CYCLONE 37								
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX38109		Srvc Supervisor: Bryan Kraft								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type	BHST									
Job depth MD	11753ft	Job Depth TVD	6988ft							
Water Depth		Wk Ht Above Floor	4ft							
Perforation Depth (MD)	From	To								
Well Data										
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		9.625	8.921	36	8 RD	J-55	0	1580	0	1580
Casing		5.5	4.778	20	BTC	P-110	0	11753	0	6988
Open Hole Section			8.5				1580	11757	1580	6988
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe						Top Plug	5.5	1	KLX	
Float Shoe	5.5	1	KLX	11753		Bottom Plug				
Float Collar	5.5	1	KLX	11748		SSR plug set				
Insert Float						Plug Container	5.5	1	HES	
Stage Tool						Centralizers				

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## Cementing Job Summary

Fluid Data									
Stage/Plug #: 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	Spacer	TUNED SPACER III	50	bbl	11.5	3.73	23.4	3	1755
0.50 gal/bbl		MUSOLA, 330 GAL TOTE - (790828)							
149.34 lbm/bbl		BARITE, BULK (100003681)							
35 gal/bbl		FRESH WATER							
0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)							
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	Cement	ELASTICEM (TM) SYSTEM	1950	sack	13.2	1.54	7.54	8	14703
7.54 Gal		FRESH WATER							
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	Displacement	FRESH WATER	260	bbl	8.33			8	10920
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe	
Mix Water:		pH 6.0	Mix Water Chloride:		<100 ppm		Mix Water Temperature:		58 °F
Cement Temperature:		N/A	Plug Displaced by:		8.3 lb/gal Fresh Water		Disp. Temperature:		58 °F
Plug Bumped?		Yes	Bump Pressure:		2500 psi		Floats Held?		Yes
Cement Returns:		70 bbl	Returns Density:		N/A		Returns Temperature:		N/A
Comment Plug bumped @ calculated displacement @ 2500 PSI, shutdown @ 2950 PSI. Disc ruptured @ 3850 PSI and pumped a 5 BBL wet shoe. The floats held and received 1.5 BBLS back to the truck. Cement returned to surface @ 190 BBLS into displacement, total of 70 BBLS of cement returned to surface.									

## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

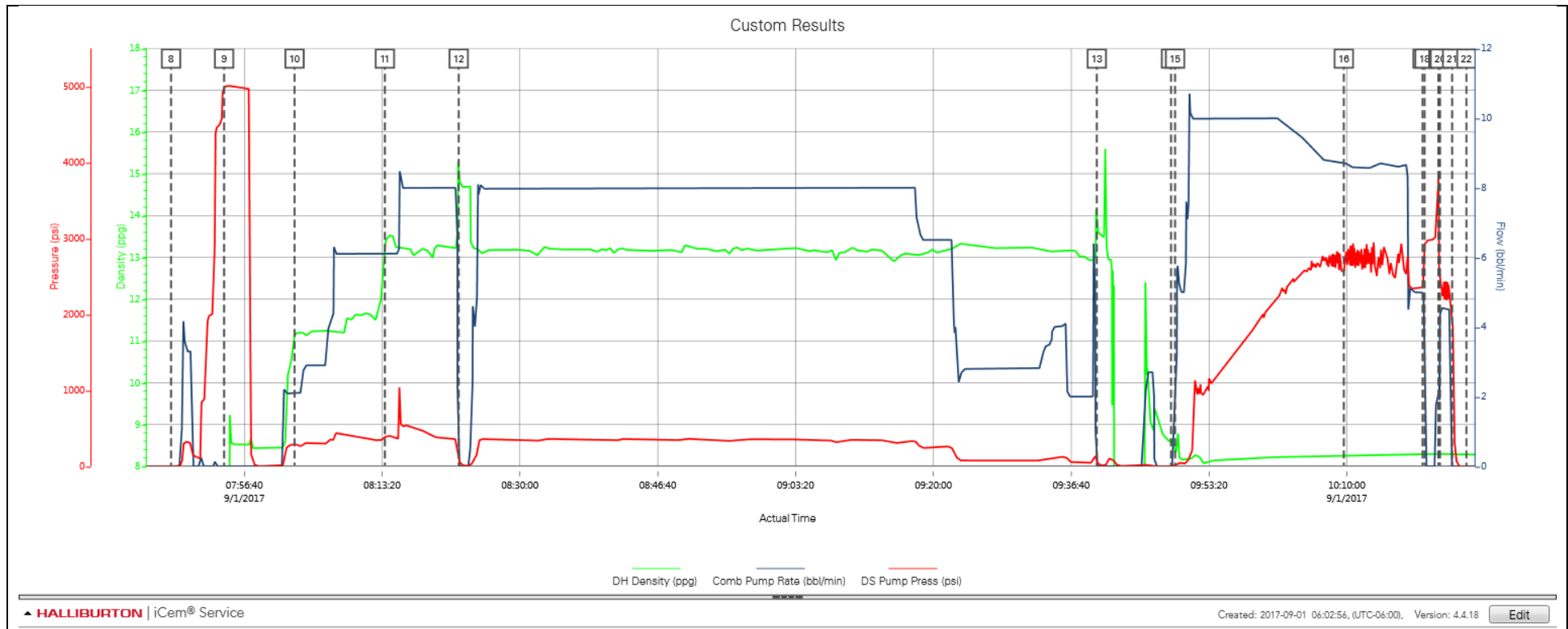
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	9/1/2017	01:00:00	USER				CREW CALLED OUT AT 01:00 9/1/2017, REQUESTED ON LOCATION 5:30 9/1/2017. CREW PICKED UP CEMENT, CHEMICALS (25 GAL MUSOL A, 25 GAL DUAL SPACER B, 10 GAL D-AIR), 100 LBS OF SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11562544/11398319, PUMP 11897034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/1/2017	03:45:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	9/1/2017	04:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	9/1/2017	05:00:00	USER				E
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/1/2017	05:10:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	9/1/2017	05:15:00	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	9/1/2017	07:30:00	USER	0.00	0.00	-2.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	9/1/2017	07:47:48	COM5	0.00	0.00	-2.00	BEGIN RECORDING JOB DATA.
Event	9	Test Lines	Test Lines	9/1/2017	07:54:14	USER	0.00	0.00	4994.00	PRESSURE TESTED IRON TO 5000 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 344 PSI, 5TH GEAR STALL OUT @ 1992 PSI.
Event	10	Pump Spacer	Pump Tuned Spacer @ 11.5 ppg	9/1/2017	08:02:44	USER	11.14	2.10	280.00	PUMP 50 BBLS OF TUNED SPACER @ 11.5 LB/GAL, 3.73 YIELD, 23.4 GAL/SKS, ADDED 25 GAL MUSOL A, 25 GAL DUAL SPACER B, AND 10 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	11	Pump Cement	Pump Cement @ 13.2 ppg	9/1/2017	08:13:40	USER	13.28	6.10	393.00	PUMP 1950 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.54 YIELD, 7.54 GAL/SK, 535 BBLS, TOC @ SURFACE, DENSITY

VERIFIED BY PRESSURIZED MUD SCALES.

Event	12	Shutdown	Shutdown	9/1/2017	08:22:36	USER	14.93	0.00	84.00	DRILLER SHUTDOWN PUMPING, HE THOUGHT THE PLUG CONTAINER WAS LEAKING. SUPERVISOR INSPECTED PLUG CONTAINER, RESUMED PUMPING AND FOUND NO LEAK.
Event	13	Shutdown	Shutdown	9/1/2017	09:39:46	USER	13.73	0.00	55.00	SHUTDOWN TO WASH PUMPS AND LINES/ DROP TOP PLUG.
Event	14	Drop Top Plug	Drop Top Plug	9/1/2017	09:48:44	USER	8.71	0.00	3.00	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN AND TOOL HAND.
Event	15	Pump Displacement	Pump Fresh Water Displacement	9/1/2017	09:49:13	USER	8.51	1.70	4.00	BEGIN CALCULATED DISPLACEMENT OF 260 BBLS WITH FRESH WATER.
Event	16	Cement Returns to Surface	Cement Returns to Surface	9/1/2017	10:09:38	USER	8.26	8.70	2547.00	CEMENT TO SURFACE @ 190 BBLS INTO DISPLACEMENT. CALCULATED AMOUNT OF 70 BBLS OF CEMENT TO SURFACE.
Event	17	Bump Plug	Bump Plug	9/1/2017	10:19:09	USER	8.27	5.00	2355.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. PRESSURED 450 PSI OVER FINAL CIRCULATING PRESSURE OF 2500 PSI.
Event	18	Shutdown	Shutdown	9/1/2017	10:19:24	USER	8.28	0.00	2932.00	SHUTDOWN FOR 1 MINUTE @ 2950 PSI.
Event	19	Pressure Up	Rupture Disc	9/1/2017	10:21:04	USER	8.29	1.90	3739.00	PRESSURE UP TO RUPTURE DISC. DISC RUPTURED @ 3850 PSI.
Event	20	Pump Displacement	Pump Wet Shoe	9/1/2017	10:21:16	USER	8.32	4.40	2404.00	PUMP 5 BBLS FRESH WATER FOR WET SHOE.
Event	21	Check Floats	Check Floats	9/1/2017	10:22:44	USER	8.27	0.00	1932.00	RELEASED PRESSURE, FLOATS HELD, 1.5 BBLS BACK.
Event	22	End Job	End Job	9/1/2017	10:24:27	COM5				STOP RECORDING JOB DATA.
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/1/2017	10:30:00	USER	7.67	0.00	1.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	24	Rig-Down Completed	Rig-Down Completed	9/1/2017	11:15:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	25	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/1/2017	11:25:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	26	Crew Leave Location	Crew Leave Location	9/1/2017	11:30:00	USER				THANK YOU FOR USING HALLIBURTON - BRYAN KRAFT AND CREW.

## 3.0 Attachments

### 3.1 Custom Results – Job Chart with Events



3.2 Custom Results – Job Chart without Events

