

# HALLIBURTON

iCem<sup>®</sup> Service

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

United States of America, COLORADO

**WS-SUNRISE 1-5-5**

Sincerely,

**Meghan Jacobs**

## Legal Notice

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Table of Contents

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1.0    Cementing Job Summary ..... 4

    1.1    Executive Summary .....4

2.0    Real-Time Job Summary ..... 7

    2.1    Job Event Log .....7

3.0    Attachments..... 10

    3.1    WS-SUNRISE 1-5-5 – Job Chart with Events .....10

    3.2    WS-SUNRISE 1-5-5 – Job Chart without Events.....11

## 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 **WS-Sunrise 1-5-5** 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 50bbbls of cement 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]**

## HALLIBURTON

## Cementing Job Summary

### The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3847416		Quote #:		Sales Order #: 0904715550				
Customer: EXTRACTION OIL & GAS				Customer Rep: Shayne						
Well Name: WS-SUNRISE		Well #: 1-5-5		API/UWI #: 05-123-46047-00						
Field: WATTENBERG		City (SAP): GREELEY		County/Parish: WELD		State: COLORADO				
Legal Description: SW SE-32-6N-65W-248FSL-1722FEL										
Contractor: PATTERSON-UTI ENERGY				Rig/Platform Name/Num: PATTERSON 346						
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX38199				Srv Supervisor: Bryan Kraft						
Job										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST						
Job depth MD		11817ft		Job Depth TVD		6969ft				
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	0	9.625	8.921	36		J-55	0	1595	0	1595
Casing	0	5.5	4.778	20	BTC	P-110	0	11817	0	6969
Open Hole Section			8.5				1595	11830	1595	6969
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		11817		Bottom Plug				
Float Collar	5.5	1		11812		SSR plug set				
Insert Float						Plug Container	5.5	1	HES	
Stage Tool						Centralizers				
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	4	1761	
149.34 lbm/bbl		BARITE, BULK (100003681)								
35 gal/bbl		FRESH WATER								
0.50 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)								
0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								

## HALLIBURTON

## Cementing Job Summary

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
2	Cement	ELASTICEM (TM) SYSTEM	1950	sack	13.2	1.57	7.53	8	14684
7.53 Gal		FRESH WATER							
0.45 %		SCR-100 (100003749)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	Displacement	FRESH WATER	262	bbl	8.33			10	11004
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride:		<300 ppm		Mix Water Temperature:		50 °F
Cement Temperature:		N/A	Plug Displaced by:		8.33lb/gal Fresh Water		Disp. Temperature:		50 °F
Plug Bumped?		Yes	Bump Pressure:		2342 psi		Floats Held?		Yes
Cement Returns:		50 bbl	Returns Density:		N/A		Returns Temperature:		N/A
Comment: The plug bumped @ calculated displacement @ 2342 PSI, shutdown for 1 minute @ 2980 PSI. The disc ruptured @ 4234 PSI and pumped a 5 BBL wet shoe. The floats held and received 1.5 BBLS back to the truck. Total of 50 BBLS 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	3/19/2018	04:30:00	USER				CREW CALLED OUT AT 4:30 3/19/2018, REQUESTED ON LOCATION 9:30 3/19/2018. CREW PICKED UP CEMENT, CHEMICALS (25 GAL MUSOL, 25 GAL DUAL SPACER B, 10 GAL D-AIR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 12644849/12649238 PUMP ELITE: 111897034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/19/2018	07:15:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	3/19/2018	07:30:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	3/19/2018	09:00:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1595', CASING: 5.5" 20# @ 11817', 5' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 6969', 10.0 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	3/19/2018	09:10:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	3/19/2018	09:15:00	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	3/19/2018	11:45:00	USER	8.43	0.00	4.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	3/19/2018	12:39:22	COM6	8.41	0.00	2.00	BEGIN RECORDING JOB DATA.
Event	9	Test Lines	Test Lines	3/19/2018	12:45:56	USER	8.29	0.00	57.00	PRESSURE TESTED IRON TO 4500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 400 PSI, 5TH GEAR STALL OUT @ 2100 PSI.
Event	10	Pump Spacer 1	Pump Tuned Spacer @	3/19/2018	12:57:30	COM6	11.40	1.70	218.00	PUMP 50 BBLS OF TUNED SPACER @ 11.5 LB/GAL,

11.5 ppg

DENSITY VERIFIED BY PRESSURIZED MUD SCALES.  
ADDED 25 GAL MUSOL, 25 GAL DUAL SPACER B, AND  
10 GAL D-AIR TO SPACER.

Event	11	Pump Cement	Pump Cement @ 13.2 ppg	3/19/2018	13:10:23	COM6	13.26	3.90	273.00	PUMP 1950 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.53 GAL/SK, 545 BBLS, TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Shutdown	Shutdown	3/19/2018	14:24:57	COM6	13.00	0.00	83.00	SHUTDOWN TO WASH PUMPS AND LINES, DROP TOP PLUG.
Event	13	Drop Top Plug	Drop Top Plug	3/19/2018	14:38:34	COM6	8.51	0.00	-30.00	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN. AND TOOL HAND.
Event	14	Pump Displacement	Pump Displacement	3/19/2018	14:39:57	COM6	0.45	1.80	-2.00	BEGIN CALCULATED DISPLACEMENT OF 262 BBLS WITH FRESH WATER.
Event	15	Cement Returns to Surface	Cement Returns to Surface	3/19/2018	15:02:06	USER	8.56	9.60	2882.00	CEMENT RETURNS TO SURFACE @ 212 BBLS INTO DISPLACEMENT. TOTAL AMOUNT OF 50 BBLS OF CEMENT TO SURFACE.
Event	16	Bump Plug	Bump Plug	3/19/2018	15:08:37	USER	8.55	5.00	2342.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. FINAL CIRCULATING PRESSURE OF 2342 PSI.
Event	17	Shutdown	Shutdown	3/19/2018	15:08:48	USER	8.55	0.00	2986.00	SHUTDOWN FOR 1 MINUTE @ 2980 PSI.
Event	18	Other	Rupture Disc	3/19/2018	15:10:11	USER	8.58	2.10	4163.00	DISC BURST @ 4234 PSI.
Event	19	Pump Displacement	Pump Wet Shoe	3/19/2018	15:10:26	USER	8.55	0.00	1928.00	PUMP 5 BBL WET SHOE.
Event	20	Check Floats	Check Floats	3/19/2018	15:12:24	USER	8.55	0.00	1818.00	RELEASED PRESSURE, FLOATS HELD, 1.5 BBLS BACK.
Event	21	End Job	End Job	3/19/2018	15:13:17	COM6				STOP RECORDING JOB DATA.
Event	22	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	3/19/2018	15:20:00	USER	8.65	2.20	17.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	23	Rig-Down Completed	Rig-Down Completed	3/19/2018	16:00:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	24	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/19/2018	16:15:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	25	Crew Leave Location	Crew Leave Location	3/19/2018	16:30:00	USER				THANK YOU FOR USING HALLIBURTON - BRYAN

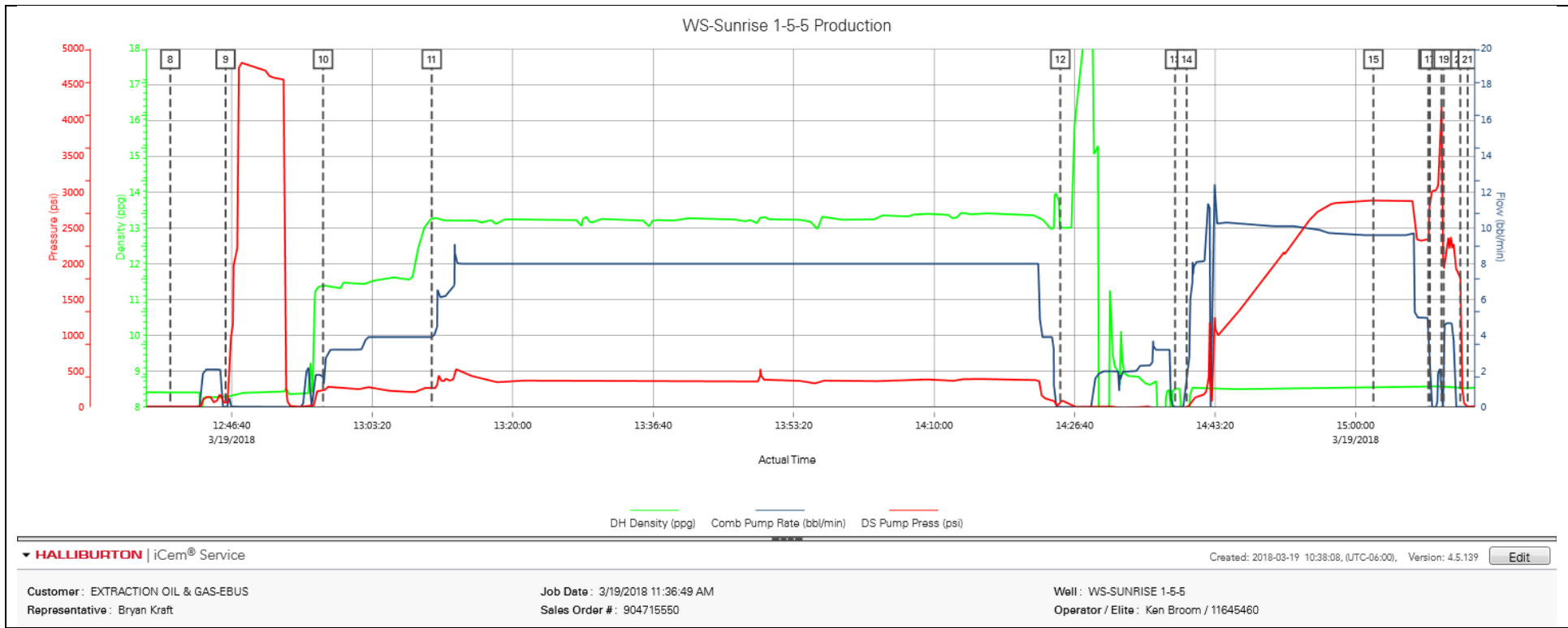


KRAFT AND CREW.

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3.0 Attachments

3.1 WS-SUNRISE 1-5-5 – Job Chart with Events



## 3.2 WS-SUNRISE 1-5-5 – Job Chart without Events

