

# HALLIBURTON

iCem<sup>®</sup> Service

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

**Interchange A S22-30-2N Surface**

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 **Interchange A S22-30-2N** 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 30 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> 3901279		<b>Quote #:</b>		<b>Sales Order #:</b> 0905985273					
<b>Customer:</b> EXTRACTION OIL & GAS -					<b>Customer Rep:</b> Hans						
<b>Well Name:</b> INTERCHANGE A			<b>Well #:</b> S22-30-2N			<b>API/UWI #:</b> 05-014-20764-00					
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> BROOMFIELD		<b>County/Parish:</b> BROOMFIELD			<b>State:</b> COLORADO				
<b>Legal Description:</b> SW NW-10-1S-68W-2172FNL-886FWL											
<b>Contractor:</b> ENSIGN DRLG					<b>Rig/Platform Name/Num:</b> ENSIGN 147						
<b>Job BOM:</b> 7521 7521											
<b>Well Type:</b> HORIZONTAL OIL											
<b>Sales Person:</b> HALAMERICA\HX38199					<b>Srv Supervisor:</b> Nikolaus Kornafel						
<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>		1631ft			<b>Job Depth TVD</b>		1631				
<b>Water Depth</b>					<b>Wk Ht Above Floor</b>						
<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	1631	0	1631	
OH		13.5					0	1636	0	1636	
<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>Guide Shoe</b>	9.625	1		1631		<b>Top Plug</b>	9.625	1	HES		
<b>Float Collar</b>	9.625	1		1588		<b>Plug Container</b>	9.625	1	HES		
						<b>Centralizers</b>	9.625				
<b>Fluid Data</b>											
<b>Stage/Plug #:</b> 1											
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>			<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
1	SPACER	Red Dye Spacer			10	bbl	8.33			5	

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	CEMENT	SWIFTCEM (TM) SYSTEM	600	sack	13.5	1.74	9.17	8	5,502

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Fresh Water	Fresh Water	123	bbl	8.33			8	

Cement Left In Pipe	Amount	Reason	Shoe Joint
Mix Water:	pH 7	Mix Water Chloride: 0 ppm	Mix Water Temperature: 69 °F
Cement Temperature:	N/A	Plug Displaced by: 8.33 lb/gal	Disp. Temperature: 69 °F
Plug Bumped?	Yes	Bump Pressure: 484 psi	Floats Held? Yes
Cement Returns:	30 bbl	Returns Density: N/A	Returns Temperature: N/A

**Comment** Once the rig was done circulating they handed it over to Halliburton. We pumped a 10 BBL water spacer with red dye in it. Followed by 186 BBLS of our swiftcem cement at 13.5 Lb/Gal . We shut down after cement was pumped to drop the top plug, followed by 123 BBLS of fresh water displacement. Bumped plug at calculated displacement. Checked floats 1 BBL back to the truck. Floats held.

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Comments
Event	1	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/20/2019	14:15:00	USER				CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	2	Crew Leave Yard	Crew Leave Yard	9/20/2019	14:30:00	USER				STARTED JOURNEY MANAGEMENT.
Event	3	Call Out	Call Out	9/20/2019	18:00:00	USER				CREW CALLED OUT AT 06:00, REQUESTED ON LOCATION 07:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 10025030, BULK 660 10867415, BULK 660 10025027 AND PUMP 11826999.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	9/20/2019	18:30:00	USER				MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,631', 13.5" OPEN HOLE 1,636', SHOE TRAC- 41', MUD WEIGHT 8.4 LB/GAL PUMP FRESH WATER DISPLACEMENT 123 BBLs. CASING LANDED @ 22:30 9/19/2019. RIG CIRCULATED BOTTOMS UP At 406 GPM at 106 PSI.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/20/2019	19:00:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP, AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	9/20/2019	19:30:00	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	9/20/2019	23:00:00	USER	-1.00	8.42	0.00	SAFETY MEETING WITH HALLIBURTON, AND RIG PERSONNEL. CREW COMMUNICATED POTENTIAL SAFETY HAZARDS, AND JOB DETAILS.
Event	8	Start Job	Start Job	9/21/2019	00:19:17	COM11	-6.00	8.53	0.00	BEGIN RECORDING JOB DATA.
Event	9	Test Lines	Test Lines	9/21/2019	00:20:43	COM11	33.00	8.42	0.00	PRESSURE TESTED IRON TO 2,500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 980 PSI, 5TH GEAR STALL OUT @ 1,430 PSI. AND THEN BROUGHT IT UP AND KICKED OUT @ 2440 PSI.

Event	10	Pump Spacer 1	Pump Spacer 1	9/21/2019	00:25:56	COM11	-1.00	8.42	0.00	PUMP 10 BBLS OF RED DYE SPACER AT PUMP RATE 5 BBLS/MIN @ 140 PSI.
Event	11	Pump Lead Cement	Pump Lead Cement	9/21/2019	00:29:50	COM11	21.00	8.38	0.00	PUMPED 600 SKS OF SWIFTCEM LEAD CEMENT @ 13.5 LB/GAL, 1.74 FT3/SK, 9.17 GAL/SK. 186 BBLS, TOP OF CEMENT @ SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 450 PSI.
Event	12	Check Weight	Check Weight	9/21/2019	00:38:28	COM11	443.00	13.38	8.10	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Check Weight	Check Weight	9/21/2019	00:46:19	COM11	444.00	13.44	8.00	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	14	Shutdown	Shutdown	9/21/2019	00:57:40	COM11	87.00	13.91	0.00	SHUTDOWN TO WASH UP
Event	15	Drop Top Plug	Drop Top Plug	9/21/2019	01:00:28	COM11	2.00	14.18	0.00	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.
Event	16	Pump Displacement	Pump Displacement	9/21/2019	01:00:40	COM11	2.00	14.18	0.00	BEGIN CALCULATED DISPLACEMENT OF 123 BBLS WITH FRESH WATER.
Event	17	Bump Plug	Bump Plug	9/21/2019	01:21:07	COM11	1134.00	8.38	0.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. 482 PSI PRESSURED UP 500 PSI OVER FINAL CIRCULATING PRESSURE TO 1,000 PSI. 10 BBLS OF RED DYE SPACER TO SURFACE AND 30 BBLS OF CEMENT RETURNED TO SURFACE.
Event	18	Other	Other	9/21/2019	01:21:11	COM11	1135.00	8.38	0.00	RELEASED PRESSURE, FLOATS HELD, 1 BBL BACK.
Event	19	End Job	End Job	9/21/2019	01:22:26	COM11	-1.00	8.35	0.00	STOP RECORDING JOB DATA.
Event	20	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/21/2019	01:25:00	USER				DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	21	Rig-Down Completed	Rig-Down Completed	9/21/2019	02:30:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	22	Safety Meeting - Departing Location	Safety Meeting - Departing Location	9/21/2019	02:35:00	USER				CREW DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	23	Crew Leave Location	Crew Leave Location	9/21/2019	02:40:00	USER				THANK YOU FOR USING HALLIBURTON – NICK KORNAFEL AND CREW.

3.0 Attachments

3.1 Interchange A S22-30-2N Surface – Job Chart

