

# HALLIBURTON

iCem<sup>®</sup> Service

**EXTRACTION OIL & GAS-EBUS**

**Northwest A S20-25-8C 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 **Northwest A S20-25-8C** 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 33 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> 3901214		<b>Quote #:</b>		<b>Sales Order #:</b> 0905952659					
<b>Customer:</b> EXTRACTION OIL & GAS -				<b>Customer Rep:</b> Hans Cary							
<b>Well Name:</b> NORTHWEST A			<b>Well #:</b> S20-25-8C			<b>API/UWI #:</b> 05-014-20791-00					
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> BROOMFIELD		<b>County/Parish:</b> BROOMFIELD			<b>State:</b> COLORADO				
<b>Legal Description:</b> NW NW-9-1S-68W-1297FNL-779FWL											
<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> 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>		1633ft			<b>Job Depth TVD</b>		1633				
<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>	
<b>Casing</b>		9.625		36			0	1633	0	1633	
<b>OH</b>		13.5					0	1653	0	1653	
<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			1633		<b>Top Plug</b>	9.625		HES		
<b>Float Shoe</b>	9.625					<b>Bottom Plug</b>	9.625		HES		
<b>Float Collar</b>	9.625					<b>SSR plug set</b>	9.625		HES		
<b>Insert Float</b>	9.625					<b>Plug Container</b>	9.625		HES		
<b>Stage Tool</b>	9.625					<b>Centralizers</b>	9.625		HES		
<b>Fluid Data</b>											
<b>Stage/Plug #: 1</b>											
<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	Red Dye Spacer	Red Dye Spacer			10	bbl	8.33			5	
<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>

2	SwiftCem	SWIFTCEM (TM) SYSTEM	625	sack	13.5	1.74	9.17	8	5731
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				
<b>Cement Left In Pipe</b>									
<b>Amount</b>		42 ft			<b>Reason Shoe Track</b>			<b>Shoe Joint</b>	
<b>Mix Water:</b>		<b>pH</b> 7			<b>Mix Water Chloride:</b> <300 ppm		<b>Mix Water Temperature:</b> 66 °F		
<b>Cement Temperature:</b>		N/A			<b>Plug Displaced by:</b> 8.33 lb/gal F.W.		<b>Disp. Temperature:</b> 66 °F		
<b>Plug Bumped?</b>		Yes			<b>Bump Pressure:</b> 520 psi		<b>Floats Held?</b> Yes		
<b>Cement Returns:</b>		33 bbl			<b>Returns Density:</b> N/A		<b>Returns Temperature:</b> N/A		
<b>Comment</b> Plug bumped at calculated displacement, final circulating pressure of 520 psi, floats held, .5 bbl back. 33 bbl of cement to surface.									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	9/2/2019	08:00:00	USER					CREW CALLED OUT AT 08:00 9/2/2019 REQUESTED ON LOCATION 14:00 9/2/2019. CREW PICKED UP CEMENT, 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 110995045/10866497 Bulk 660: 11027117/10679720 PUMP ELITE: 11897034/11645460
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/2/2019	12:00:00	USER					DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	9/2/2019	12:30:00	USER					STARTED JOURNEY MANAGEMENT. CREW STAGED ON LOCATION NEXT TO RIG.
Event	4	Arrive At Loc	Arrive At Loc	9/2/2019	13:00:00	USER					END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 36# 9.625" J-55 @ 1633', 42' SHOE JOINT, 13.5" OPEN HOLE, 8.5 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/2/2019	15:00:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH

											LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	9/2/2019	15:10:00	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	9/2/2019	18:00:00	USER					MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	9/2/2019	21:02:54	COM4	8.33	0.00	1.00	0.00	START JOB DATA RECORDING.
Event	9	Test Lines	Test Lines	9/2/2019	21:05:23	COM4	8.27	0.00	25.00	4.30	PRESSURE TESTED IRON TO 3500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1600 PSI, 5TH GEAR STALL OUT @ 1800 PSI.
Event	10	Pump Spacer 1	Pump Spacer 1	9/2/2019	21:12:25	COM4	8.29	0.00	6.00	0.00	PUMP 10 BBL OF FRESH WATER WITH RED DYE.
Event	11	Pump Cement	Pump Cement	9/2/2019	21:16:11	COM4	13.40	3.90	149.00	11.10	PUMP 625 SKS OF SWIFTCEM @ 13.5 LB/GAL, 1.74 YIELD, 9.17 GAL/SK, 193.7 BBLS, TOL @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Shutdown	Shutdown	9/2/2019	21:47:47	COM4	15.99	0.00	31.00	238.30	SHUTDOWN TO DROP TOP PLUG.
Event	13	Drop Top Plug	Drop Top Plug	9/2/2019	21:48:32	COM4	15.62	0.00	12.00	238.30	PLUG LEFT PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	14	Pump Displacement	Pump Displacement	9/2/2019	21:48:34	COM4	15.61	0.00	12.00	238.30	BEGIN PUMPING CALCULATED

											DISPLACEMENT OF 123 BBL FRESH WATER.
Event	15	Cement Returns to Surface	Cement Returns to Surface	9/2/2019	22:02:58	USER	8.44	5.40	537.00	98.90	CEMENT RETURNED TO SURFACE 90 BBL INTO DISPLACEMENT, 33 BBL OF CEMENT TO SURFACE.
Event	16	Bump Plug	Bump Plug	9/2/2019	22:09:25	COM4	8.51	0.00	906.00	124.90	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 520 PSI.
Event	17	Check Floats	Check Floats	9/2/2019	22:10:25	USER	8.48	0.00	184.00	124.90	RELEASED PRESSURE BACK TO THE TRUCK, FLOATS HELD, RECEIVED .5 BBL BACK TO THE TRUCK.
Event	18	End Job	End Job	9/2/2019	22:11:28	COM4	8.47	0.00	4.00	0.00	END JOB DATA RECORDING.
Event	19	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/2/2019	22:15:00	USER	8.50	0.00	3.00	0.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	20	Rig-Down Completed	Rig-Down Completed	9/2/2019	22:40:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	21	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/2/2019	22:50:00	USER					DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	22	Crew Leave Location	Crew Leave Location	9/2/2019	23:00:00	USER					THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

## 3.0 Attachments

### 3.1 Northwest A S20-25-8C Surface – Job Chart

