

# HALLIBURTON

iCem<sup>®</sup> Service

**EXTRACTION OIL & GAS-EBUS**

**NORTHWEST A S20-25-12N 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 S20-25-12N** 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 22 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> 3901287		<b>Quote #:</b>		<b>Sales Order #:</b> 0905944071					
<b>Customer:</b> EXTRACTION OIL & GAS -					<b>Customer Rep:</b> HANS						
<b>Well Name:</b> NORTHWEST A			<b>Well #:</b> S20-25-12N			<b>API/UWI #:</b> 05-014-20786-00					
<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-1281FNL-849FWL											
<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> Lance Carpenter						
<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>		1592			<b>Job Depth TVD</b>		1592				
<b>Water Depth</b>					<b>Wk Ht Above Floor</b>		4				
<b>Perforation Depth (MD)</b>		<b>From</b>			<b>To</b>						
<b>Well Data</b>											
<b>Description</b>	<b>New / Used</b>	<b>Size</b>	<b>ID</b>	<b>Weight</b>	<b>Thread</b>	<b>Grade</b>	<b>Top MD</b>	<b>Bottom MD</b>	<b>Top TVD</b>	<b>Bottom TVD</b>	
<b>Casing</b>		9.625		36			0	1592	0	1592	
<b>OH</b>		13.5					0	1615	0	1615	
<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				
<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		5	9.17
<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>
3	Fresh Water	Fresh Water			120	bbl	8.33				

Cement Left In Pipe	Amount	40	Reason	Shoe Joint
Mix Water:	pH 7	Mix Water Chloride:	150 ppm	Mix Water Temperature:
Cement Temperature:	## °F °C	Plug Displaced by:	8.4 lb/gal Water	Disp. Temperature:
Plug Bumped?	Yes	Bump Pressure:	587 psi	Floats Held?
Cement Returns:	22 bbl	Returns Density:	## lb/gal kg/m3	Returns Temperature:

**Comment**

JOB WENT WELL. NO ACCIDENT, INJURY OR SPILL. CEMENT VOLUMES SCALED AND MIX WATER VERIFIED. SOME CAVITATION DURING CEMENT CAUSED LOSS OF PRIME TO ONE PUMP. DROPPED TOP PLUG AFTER CEMENT. WASHED UP FIRST 10 BBL ON TOP OF PLUG. RED DYE TO SURFACE AT 86 BBL AWAY. CEMENT TO SURFACE AT 98 BBL AWAY. LANDED PLUG AT 3 BPM AT 587 PSI. TOOK TO 933 PSI. FLOATS HELD .5 BBL BACK.

TOP OF CEMENT – SURFACE 22 BBL BACK

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Arrive at Location from Other Job or Site	Arrive at Location from Other Job or Site	8/31/2019	01:30:00	USER					CREW ARRIVES AT LOCATION AT DESIRED ON LOCATION TIME
Event	2	Comment	Comment	8/31/2019	07:30:00	USER					RIG TD'S WELL
Event	3	Comment	Comment	8/31/2019	11:00:00	USER					CASING ON BOTTOM
Event	4	Pre-Job Safety Meeting	Pre-Job Safety Meeting	8/31/2019	11:15:00	USER	20.00	8.58	0.00	32.10	CREW, RIG CREW AND CUSTOMER REPS HAVE PRE JOB SAFETY MEETING DISCUSSING RED ZONES, MUSTER AREAS, HAZARDS, SIMOPS, COMMUNICATION, SLIPS TRIPS FALLS, THREE POINTS OF CONTACT AND THE JOB PROCEEDURE
Event	1	Start Job	Start Job	8/31/2019	11:25:09	COM6	16.00	8.26	0.00	0.00	
Event	2	Test Lines	Test Lines	8/31/2019	11:31:54	COM6	2416.00	8.64	0.00	3.10	FILL LINES WITH 3 BBL WATER. PRESSURE TEST HES LINES TO 2500 PSI. HELD FOR A FEW MINUTES FOR A GOOD TEST
Event	3	Pump Spacer 1	Pump Spacer 1	8/31/2019	11:34:49	COM6	23.00	8.57	0.00	3.10	PUMP 10 BBL RED DYE SPACER
Event	4	Pump Lead Cement	Pump Lead Cement	8/31/2019	11:40:10	COM6	37.00	8.54	2.70	12.40	PUMP 193 BBL SWIFTCEM 13.5# 1.74 YIELD 9.17 GAL 625 SACKS
Event	5	Check Weight	Check Weight	8/31/2019	12:07:17	COM6	64.00	13.41	7.60	190.50	
Event	6	Shutdown	Shutdown	8/31/2019	12:35:05	COM6	16.00	11.66	0.00	362.60	

Event	7	Drop Top Plug	Drop Top Plug	8/31/2019	12:37:05	COM6	17.00	11.64	0.00	362.60	
Event	8	Pump Displacement	Pump Displacement	8/31/2019	12:37:07	COM6	17.00	11.64	0.00	362.60	PUMP 120 BBL DISPLACEMENT WATER. WASHUP ON TOP OF PLUG. ALL RED DYE TO SURFACE. 22 BBL CEMENT TO SURFACE
Event	9	Zero Flow Total	Zero Flow Total	8/31/2019	13:08:54	COM6	432.00	8.26	4.20	155.10	
Event	14	Bump Plug	Bump Plug	8/31/2019	13:25:02	USER					BUMP PLUG. FINAL CIRCULATING PRESSURE 3 BPM AT 587 PSI. TOOK TO 933 PSI
Event	15	Check Floats	Check Floats	8/31/2019	13:26:49	USER	747.00	8.27	0.00	212.00	FLOATS HELD WITH .5 BBL BACK
Event	16	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	8/31/2019	13:30:00	USER					CREW HAS PRE RIG DOWN SAFETY MEETING DISCUSSING PROPER LIFTING, RIG OPERATIONS, RED ZONES, COMMUNICATION, MIND ON TASK AND BEGIN RIGGING DOWN EQUIPMENT AND LINES
Event	17	Depart Location	Depart Location	8/31/2019	14:30:00	USER					CREW IS RIGGED DOWN AND READY TO DEPART. CREW HAS JOURNEY MANAGEMENT SAFTEY MEETING DISCUSSING ROUTE, FIT FOR DUTY, CONVOY ORDER, FOLLOWING DISTANCE, WALK AROUNDS AND DEPART FROM LOCATION

## 3.0 Attachments

### 3.1 Northwest A S20-25-12N Surface – Job Chart

