

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

**Interchange B N35-20-8C Production**

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 B N35-20-8C** 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 59 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> 3901325		<b>Quote #:</b>		<b>Sales Order #:</b> 0905727623				
<b>Customer:</b> EXTRACTION OIL & GAS-EBUS				<b>Customer Rep:</b> Danny Herrera						
<b>Well Name:</b> INTERCHANGE B			<b>Well #:</b> N35-20-8C		<b>API/UWI #:</b> 05-014-20776-00					
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> BROOMFIELD		<b>County/Parish:</b> BROOMFIELD		<b>State:</b> COLORADO				
<b>Legal Description:</b> NE SW-10-1S-68W-2505FSL-1672FWL										
<b>Contractor:</b> PATTERSON-UTI ENERGY				<b>Rig/Platform Name/Num:</b> PATTERSON 901						
<b>Job BOM:</b> 7523 7523										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srv Supervisor:</b> Nicholas Cummins						
<b>Job</b>										
<b>Formation Name</b>										
<b>Formation Depth (MD)</b>		<b>Top</b>	1652ft		<b>Bottom</b>	18910ft				
<b>Form Type</b>				<b>BHST</b>						
<b>Job depth MD</b>		18895ft		<b>Job Depth TVD</b>		8094ft				
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>		4ft				
<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	1652	0	1652
Casing	0	5.5	4.892	17	BTC	P-110	0	18895	0	0
Open Hole Section			8.75				1652	18910	1652	8094
<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>	
Guide Shoe	5.5	1		18895		Top Plug	5.5	1		
Float Shoe	5.5					Bottom Plug	5.5	1		
Toe Sleeve	5.5	1		18886		SSR plug set	5.5			
Insert Float	5.5					Plug Container	5.5	1	HES	
Stage Tool	5.5					Centralizers	5.5			
<b>Fluid Data</b>										
<b>Stage/Plug #:</b> 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	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	50	bbl	12.5	2.74	16.6	6	1710
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	ElastiCem	ELASTICEM (TM) SYSTEM	586	sack	13.2	1.6	7.7	8	4512
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	GasStop	ELASTICEM (TM) SYSTEM	615	sack	13.2	1.6	7.7	8	4736
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
4	ElastiCem	ELASTICEM (TM) SYSTEM	1789	sack	13.2	1.57	7.66	8	13704
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
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33			8	
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
1 gal/bbl		D-AIR 3000L, 5 GAL PAIL (101007444)							
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
6	Displacement	Displacement	423	bbl	8.33			8	
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe	

Mix Water:	pH7	Mix Water Chloride:	<400 ppm	Mix Water Temperature:	65 °F
Cement Temperature:	65 °F	Plug Displaced by:	8.33 lb/gal	Disp. Temperature:	65 °F
Plug Bumped?	No	Bump Pressure:	N/A	Floats Held?	No
Cement Returns:	59 bbl	Returns Density:	13.2 lb/gal	Returns Temperature:	N/A

**Comment**

50 bbls Spacer  
 167 bbls Cap Cement  
 171 bbls Lead Cement  
 500 bbls Tail Cement  
 443 Displacement  
 Estimated 50 bbls of spacer to surface  
 Estimated 59 bbls of Cap cement to surface  
 Estimated top of Lead 2,351'  
 Estimated top of Tail 6,640'

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	5/31/2019	20:00:00	USER				The crew was called out on 5/31/19 at 2000. The customer requested HES on location at 0200. Ready to pump at 0400 on 6/1/19.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	6/1/2019	00:45:00	USER				The crew held a pre journey safety meeting discussing the route and potential hazards while driving. The supervisor called in a journey. The crew departed service center.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	6/1/2019	01:27:00	USER				The crew arrived on location safely. The rig was still running casing. The supervisor met with the Company man and received numbers. TD 18,910', TP 18,895' 5 1/2" 17# P-110, ST 5', PC 1,652' 9 5/8" 36# J-55, TVD 8,094', OH 8 1/2", Mud 10.5 ppg.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	6/1/2019	01:30:00	USER				Crew discussed all potential hazards on location.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	6/1/2019	02:00:00	USER				Crew held a safety meeting discussing the rig up procedure. Also all potential hazards associated with rigging up all HES equipment and lines.
Event	6	Rig-Up Equipment	Rig-Up Equipment	6/1/2019	02:10:00	USER				The crew rigged up all HES equipment and lines.
Event	7	Rig-Up Completed	Rig-Up Completed	6/1/2019	04:30:00	USER				Rig up completed, no one got hurt.
Event	8	Safety Meeting - Pre Job	Safety Meeting - Pre Job	6/1/2019	05:00:00	USER	50.00	8.53	0.00	The crew and all personal involved with cement job discussed all potential hazards associated with job. Followed by the job procedure to ensure everyone understood the plan of action
Event	9	Start Job	Start Job	6/1/2019	05:27:34	COM1	51.00	8.51	0.00	Started recording data from Elite 11512092.
Event	10	Test Lines	Test Lines	6/1/2019	05:33:09	COM1	189.00	8.30	0.00	Pressured tested all HES lines to 4,700 psi. The pressure test passed.



Event	11	Pump Spacer 1	Pump Spacer 1	6/1/2019	05:52:24	COM1	415.00	13.13	5.00	Pumped 50 bbls of spacer a 6 bpm, pressure was at psi. 12.5 ppg 2.74 yield 16.6 gal/sk. Verified density using pressurized scales.
Event	12	Pump Lead Cement	Pump Lead Cement	6/1/2019	05:52:31	COM1	413.00	13.13	5.00	Pumped 167 bbls (586 sks) of Lead cement without latex at 8 bpm, pressure was at 730 psi. 13.2 ppg 1.6 yield 7.7 gal/sk. Verified density using pressurized scales.
Event	13	Pump Lead Cement	Pump Lead Cement	6/1/2019	06:16:11	COM1	725.00	13.16	8.00	Pumped 171 bbls (615 sks) of Lead cement with latex at 8 bpm, pressure was at 830 psi. 13.2 ppg 1.6 yield 7.7 gal/sk. Verified density using pressurized scales.
Event	14	Pump Tail Cement	Pump Tail Cement	6/1/2019	06:39:46	COM1	645.00	13.13	6.90	Pumped 500 bbls (1789 sks) of Tail cement at 8 bpm, pressure was at 860 psi. 13.2 ppg 1.6 yield 7.7 gal/sk. Verified density using pressurized scales.
Event	15	Shutdown	Shutdown	6/1/2019	07:39:11	COM1	112.00	13.89	0.00	Shutdown and blew air from rig floor to wash up tank. The washed pumps and lines from Elite to wash up tank.
Event	16	Pump Displacement	Pump Displacement	6/1/2019	07:48:53	COM1	75.00	8.13	0.00	Pumped 5 bbls of MMCR water ahead.
Event	17	Drop Top Plug	Drop Top Plug	6/1/2019	07:53:46	COM1	77.00	8.11	0.00	Company man verified plug left container.
Event	18	Pump Displacement	Pump Displacement	6/1/2019	07:54:35	COM1	35.00	8.16	3.00	Pumped the calculated displacement of 438 bbls with MMCR in the first 20 bbls. At 6 bpm until we caught cement at 40 bbls away. The brought rate to 10 bpm and adjusted rate as needed. We did not bump. Per customer request we pumped another 5 bbls then shutdown.
Event	19	Other	Check Floats	6/1/2019	09:04:04	USER	2452.00	8.15	3.10	Bled pressure back to the truck. The floats did not hold. Bled back 10 bbls and pumped it back to the well at 4 bpm. Bled pressure back again floats did not hold. Bled back 10 bbls and pumped it back to the well at 5 bpm. Bled pressure back again floats did not hold. Bled back 10 bbls and pumped it back to the well at 5 bpm. Then shut in the manifold on the plug container to WOC.
Event	20	Shut In Well	Shut In Well	6/1/2019	09:23:01	USER	2117.00	8.18	0.00	Shut in well to wait on cement.
Event	21	Other	Check Floats	6/1/2019	12:08:25	COM1	14.00	8.14	0.00	Bled pressure back to the truck. The floats did not hold. Bled back 20 bbls and pumped it back to the well at 4 bpm. Bled pressure back to the truck. The floats did not hold. Bled back 10 bbls and pumped it back to the well at 4 bpm. Bled pressure off again. The floats did not hold.

Event	22	Shut In Well	Shut In Well	6/1/2019	12:45:55	COM1	1369.00	8.17	0.00	Bled back 10 bbls and shut well in for 2 hours. Bled pressure back to truck after 2 hours. The floats held.
Event	23	End Job	End Job	6/1/2019	15:06:14	COM1				Cement job complete. Stopped recording data from Elite 11512092. Estimated 50 bbls of spacer to surface. Estimated 59 bbls of Cap cement to surface. Estimated top of Lead 2,351'. Estimated top of Tail 6,640'.
Event	24	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	6/1/2019	15:07:00	USER	35.00	8.14	0.00	Crew held a safety meeting discussing the rig down procedure. Also all potential hazards associated with rigging down all HES equipment and lines.
Event	25	Rig-Down Equipment	Rig-Down Equipment	6/1/2019	15:17:00	USER	1.00	8.14	0.00	The crew rigged down all HES equipment and lines.
Event	26	Rig-Down Completed	Rig-Down Completed	6/1/2019	16:00:00	USER				Rig down completed no one got hurt.
Event	27	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	6/1/2019	16:10:00	USER				The crew held a pre journey safety meeting discussing the route and potential hazards while driving The supervisor called in a journey.
Event	28	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	6/1/2019	16:20:00	USER				Nick Cummins and crew would like to thank you for your business, and choosing Halliburton Cement! Please feel free to call if you have any questions.

## 3.0 Attachments

### 3.1 Interchange B N35-20-8C Production – Job Chart

