

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

**Interchange B N35-20-9N**

Sincerely,

**Alexandria Dionigi**

## 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 N35-20-9N** 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 63 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*

Sold To #: 369404	Ship To #: 3901403	Quote #:	Sales Order #: 0905746710
Customer: EXTRACTION OIL & GAS-EBUS		Customer Rep: Manny	
Well Name: INTERCHANGE B		Well #: N35-20-9N	API/UWI #: 05-014-20773-00
Field: WATTENBERG	City (SAP): BROOMFIELD	County/Parish: BROOMFIELD	State: COLORADO
Legal Description: NE SW-10-1S-68W-2509FSL-1690FWL			
Contractor: PATTERSON-UTI ENERGY		Rig/Platform Name/Num: PATTERSON 901	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srv Supervisor: Nathaniel Moore	

**Job**

<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>	18672ft		<b>Job Depth TVD</b> 7640
<b>Water Depth</b>			<b>Wk Ht Above Floor</b>
<b>Perforation Depth (MD)</b>	<b>From</b>		<b>To</b>

**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			0	1662	0	1662
Casing	0	5.5	4.892	17	BTC	P-110	0	18668	0	7640
Open Hole Section			8.75				1662	18672	1662	7640

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5				Top Plug	5.5		HES
Float Shoe	5.5			18668	Bottom Plug	5.5		HES
Float Collar	5.5				SSR plug set	5.5		HES
Insert Float	5.5				Plug Container	5.5		HES
Stage Tool	5.5				Centralizers	5.5		HES

**Fluid Data****Stage/Plug #: 1**

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
1	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	50	bbl	12.5	2.74		6	
5 lbm/bbl		SEM-94P, 35 LB SACK - (1023987)							
205.22 lbm/bbl		BARITE, BULK (100003681)							
5 lbm/bbl		SEM-93P, 35 LB SACK - (1023977)							
1 lbm/bbl		FE-2 (100001615)							

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		8	7.75	
0.75 %		SCR-100 (100003749)								
7.75 Gal		FRESH WATER								
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		8	7.74	
0.75 %		SCR-100 (100003749)								
5.24 Gal		FRESH WATER								
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	1769	sack	13.2	1.57		8	7.66	
0.75 %		SCR-100 (100003749)								
7.66 Gal		FRESH WATER								
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	40	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	339.2	bbl	8.33			8		
Cement Left In Pipe		Amount	0 ft			Reason			Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride:			<300 ppm		Mix Water Temperature:		60 °F
Cement Temperature:		## °F °C		Plug Displaced by:		Water		Disp. Temperature:		## °F °C
Plug Bumped?		Yes		Bump Pressure:		2350 to 2650psi		Floats Held?		Yes/No
Cement Returns:		63 bbl		Returns Density:		#13.2 lb/gal		Returns Temperature:		## °F °C
Comment Pumped 5 bbl wet shoe										

## 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)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	6/5/2019	08:00:00	USER					OL time 1300. Verify equipment and materials
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	6/5/2019	11:30:00	USER					Journey management conducted
Event	3	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	6/5/2019	12:30:00	USER					Sign in with customer rep. Spot in and rig up equipment.
Event	4	Event	Meet with customer rep	6/5/2019	13:00:00	USER					TD 18672' 8.5" hole. TP 18668' 5.5" 20# Casing. SJ 5'. TVD 7640'. SC 1662'. MW 9.5 ppg.
Event	5	Safety Meeting - Pre Job	Safety Meeting - Pre Job	6/5/2019	18:45:00	USER	-22.00	8.26	0.00	0.00	Discuss job procedure with HES and rig crew
Event	6	Test Lines	Test Lines	6/5/2019	19:09:29	COM4	-12.00	8.17	0.00	1.60	500 psi kickout test and 5000 psi pressure test
Event	7	Pump Spacer 1	Pump Spacer 1	6/5/2019	19:21:51	COM4	-16.00	8.23	0.00	1.70	50 bbl FDP spacer with dry surfactants. 12.5 ppg 2.74 ft3/sk 16.6 gal/sk
Event	8	Drop Bottom Plug	Drop Bottom Plug	6/5/2019	19:22:48	COM4	145.00	10.05	2.60	1.20	NCS tools bottom plug
Event	9	Pump Lead Cement	Pump Lead Cement	6/5/2019	19:35:30	USER	140.00	12.53	5.00	41.30	586 sks/167 bbl ElastiCem with Bridgmaker 13.2 ppg 1.6 ft3/sk 7.75 gal/sk
Event	10	Pump Lead Cement	Pump Lead Cement	6/5/2019	20:15:57	COM4	587.00	13.25	7.00	234.90	615 sks/175 bbl GasStop with Bridgmaker 13.2 ppg 1.6 ft3/sk 7.75 gal/sk

Event	11	Check Weight	Check Weight	6/5/2019	20:15:59	COM4	581.00	13.26	7.00	0.20	13.2 ppg verified with pressurized scales
Event	12	Pump Tail Cement	Pump Tail Cement	6/5/2019	20:42:33	COM4	716.00	13.20	7.00	0.10	1769 sks ElastiCem Tail 13.2 ppg 1.57 ft3/sk 7.66 gal/sk
Event	13	Check Weight	Check Weight	6/5/2019	20:46:31	COM4	538.00	13.27	7.00	29.50	13.2 ppg
Event	14	Event	Land bottom plug	6/5/2019	20:50:39	USER	535.00	13.24	6.90	58.30	Land bottom plug and burst at 850 psi
Event	15	Shutdown	Shutdown	6/5/2019	21:59:00	USER	240.00	13.03	4.60	517.40	
Event	16	Clean Lines	Clean Lines	6/5/2019	21:59:26	COM4	44.00	13.90	0.00	518.40	Shutdown and wash pumps and lines. Blow cement back to washup tank with rig air.
Event	17	Drop Top Plug	Drop Top Plug	6/5/2019	22:07:31	COM4	-29.00	1.60	0.00	543.60	NCS Top plug verified by tool hand and company rep
Event	18	Pump Displacement	Pump Displacement	6/5/2019	22:07:37	COM4	-33.00	0.86	0.00	543.60	432 bbl water displacement with MMCR in first 20 bbl
Event	19	Other	Spacer to surface	6/5/2019	22:55:01	COM4	2684.00	8.18	6.00	335.40	Spacer to surface. 320 bbl into displacement. 50 bbl spacer back.
Event	20	Other	Cement to surface	6/5/2019	23:04:30	COM4	2707.00	8.19	6.00	392.10	370 bbl into displacement. 62 bbl cement back.
Event	21	Bump Plug	Bump Plug	6/5/2019	23:16:42	COM4	2915.00	8.20	1.50	438.00	Final circulating pressure 2350 psi. Pressured up to 2650 and held for 2 minutes. Shifted wet shoe at 3200 psi and pumped 5 bbl wet shoe.
Event	22	Check Floats	Check Floats	6/5/2019	23:19:07	USER	731.00	8.16	0.00	445.20	3 bbl back. Floats held.
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	6/5/2019	23:30:00	USER					
Event	24	Depart Location Safety Meeting	Depart Location Safety Meeting	6/6/2019	01:30:00	USER					



## 3.0 Attachments

### 3.1 Case 1-Custom Results.png

