

# HALLIBURTON

iCem<sup>®</sup> Service

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

**Interchange B N35-20-4N Surface**

Job Date: Tuesday, April 02, 2019

Sincerely,

**Ryan Keeran**

## Legal Notice

---

### Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

## Table of Contents

---

1.0	Cementing Job Summary .....	4
1.1	Executive Summary .....	4
2.0	Real-Time Job Summary .....	7
2.1	Job Event Log .....	7
3.0	Job Chart .....	9
3.1	Job Chart.....	9

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the Interchange B N35-20-4N 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 20 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 #: 3901282	Quote #:	Sales Order #: 0905578243
Customer: EXTRACTION OIL & GAS -		Customer Rep: justin	
Well Name: INTERCHANGE B		Well #: N35-20-4N	API/UWI #: 05-014-20774-00
Field: WATTENBERG	City (SAP): BROOMFIELD	County/Parish: BROOMFIELD	State: COLORADO
Legal Description: NE SW-10-1S-68W-2487FSL-1602FWL			
Contractor:		Rig/Platform Name/Num: Cartel 41	
Job BOM: 7521 7521			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Nicholas Ralston	

**Job**

<b>Formation Name</b>			
<b>Formation Depth (MD)</b>	<b>Top</b>	<b>Bottom</b>	
<b>Form Type</b>	BHST		
<b>Job depth MD</b>	1648ft	<b>Job Depth TVD</b>	
<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		9.625	8.921	36	8 RD	J-55	0	1648	0	0
Open Hole Section			13.5				0	1648	0	0

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	9.625			1648	Top Plug	9.625	1	HES
Float Shoe	9.625				Bottom Plug	9.625		HES
Float Collar	9.625			1605	SSR plug set	9.625		HES
Insert Float	9.625				Plug Container	9.625	1	HES
Stage Tool	9.625				Centralizers	9.625		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	Red Dye Spacer	Red Dye Spacer	10	bbl	8.33			4	
0.20 lbm/bbl		<b>RHODAMINE RED LIQUID DYE # 2 (101201084)</b>							

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	SwiftCem	SWIFTCEM (TM) SYSTEM	550	sack	13.5	1.74		8	9.2

9.20 Gal

**FRESH WATER**

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	122	bbl	8.33			9	

<b>Cement Left In Pipe</b>		<b>Amount</b>	43 ft	<b>Reason</b>		<b>Shoe Joint</b>	
Mix Water:		Mix Water Chloride:		Mix Water Temperature:			
Cement Temperature:		Plug Displaced by:	Fresh water	Disp. Temperature:			
Plug Bumped?	Yes	Bump Pressure:	543 psi to 1056 psi	Floats Held?	Yes		
Cement Returns:	20 bbls	Returns Density:		Returns Temperature:			
<b>Comment</b>							

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Recirc Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	Pump Stg Tot <i>(bbl)</i>	DH Density <i>(ppg)</i>	Comments
Event	1	Call Out	Call Out	4/2/2019	04:00:00	USER						call out for extraction interchange b n35-20-4n surface on location at 0800
Event	2	Arrive At Loc	Arrive At Loc	4/2/2019	08:00:00	USER						got new number from company man td 1648 tp 1651 sj 43 mv 8.6 casing 9 5/8 w 36# g j-55 water still good
Event	3	Other	Other	4/2/2019	12:22:59	USER	8.82	0.00	45.00	0.00	-0.01	rig running casing
Event	4	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	4/2/2019	12:23:03	USER	8.82	0.00	44.00	0.00	-0.01	held pre job safety meeting with crew
Event	5	Rig-Up Equipment	Rig-Up Equipment	4/2/2019	12:23:06	USER	8.82	0.00	44.00	0.00	-0.01	rig up all iron and water hoses to the rig
Event	6	Start Job	Start Job	4/2/2019	14:29:51	COM5	8.33	0.00	0.00	0.00	8.17	start n35-20-4n surface
Event	7	Other	Other	4/2/2019	14:29:55	COM5	8.33	0.00	0.00	0.00	8.18	fill lines with 2 bbls of fresh water
Event	8	Test Lines	Test Lines	4/2/2019	14:31:57	COM5	8.14	0.00	-2.00	1.40	8.15	tested ko to 500 psi to high of 2000 psi
Event	9	Pump Spacer 1	Pump Spacer 1	4/2/2019	14:34:06	COM5	8.16	0.00	17.00	0.00	8.17	pump 10bbls of fresh water with dye at 4 bpm 100psi
Event	10	Pump Cement	Pump Cement	4/2/2019	14:39:36	COM5	13.39	3.90	119.00	0.00	13.08	pump 170 bbls 550 sacks at 13.5 of cement at 8 bpm 300 psi
Event	11	Drop Top Plug	Drop Top Plug	4/2/2019	15:04:07	COM5	-0.27	0.00	-3.00	182.40	0.00	drop top plug

Event	12	Pump Displacement	Pump Displacement	4/2/2019	15:04:12	COM5	-0.27	0.00	-3.00	0.00	0.00	pump 122 bbls of fresh water at 9 bpm 90 psi
Event	13	Bump Plug	Bump Plug	4/2/2019	15:21:47	COM5	8.34	0.00	1023.00	128.80	8.17	bump plug at 543 psi to 1056 psi held 1 min check floats 1/2 bbls back 14 bbls of cement back to surface
Event	14	End Job	End Job	4/2/2019	15:32:48	COM5	8.34	0.00	-4.00	150.80	8.18	
Event	15	Crew Leave Location	Crew Leave Location	4/2/2019	15:48:47	USER						staying on location for the next job

## 3.0 Job Chart

### 3.1 Job Chart

