

# HALLIBURTON

iCem<sup>®</sup> Service

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

Date: Thursday, May 16, 2019

### **AD FED Double Clutch 20W-25-9 Surface**

Job Date: Friday, April 19, 2019

Sincerely,

**Bryce Hinsch**

## 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    Attachments..... 9

    3.1    Extraction AD FED Double Clutch 20W-25-9 Surface Chart.....9

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **AD FED Double Clutch 20W-25-9** 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 24 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> 3809229		<b>Quote #:</b>		<b>Sales Order #:</b> 0905632529					
<b>Customer:</b> EXTRACTION OIL & GAS -				<b>Customer Rep:</b> Justin Humphries							
<b>Well Name:</b> AD DOUBLE CLUTCH			<b>Well #:</b> 20W-25-9			<b>API/UWI #:</b> 05-123-45039-00					
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> GREELEY		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO					
<b>Legal Description:</b> NW SW-21-5N-65W-2044FSL-369FWL											
<b>Contractor:</b>				<b>Rig/Platform Name/Num:</b> Cartel 41							
<b>Job BOM:</b> 7521 7521											
<b>Well Type:</b> HORIZONTAL OIL											
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srvs Supervisor:</b> Larry Seigriest							
<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>		1588ft		<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>							
<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>	
Open Hole Section			13.5				0	1588			
Casing		9.625	8.921	36			0	1588			
<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	9.625			1588		Top Plug	9.625	1	HES		
Float Shoe	9.625					Bottom Plug	9.625		HES		
Float Collar	9.625					SSR plug set	9.625		HES		
Insert Float	9.625					Plug Container	9.625	1	HES		
Stage Tool	9.625					Centralizers	9.625	4	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			4	

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	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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Fresh Water	Fresh Water	120	bbl	8.33			10	
Cement Left In Pipe		Amount	42 ft		Reason			Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride:		500 ppm		Mix Water Temperature:		60 °F
Plug Bumped?		Yes	Bump Pressure:		1100 psi		Floats Held?		Yes
Comment : BUMPED PLUG ON CALCULATED DISPLACEMENT, BLEED BACK .5 BBL, 24 BBL 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 (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	DS Pump Press (psi)	Comments
Event	1	Arrive At Loc	Arrive At Loc	4/18/2019	13:00:00	USER					ON LOCATION TIME SET TO 14:00, DRILLING RIG WAS RIGGING UP CASING CREW, CM SIGNED WOC, TESTED WATER, GOT NUMBERS, ASSESSED LOCATION FOR HAZARDS
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	4/18/2019	15:45:00	USER					HELD SAFETY MEETING AND DISCUSSED HAZARDS ASSOCIATED WITH SPOTTING TRUCKS AND RIGGING UP HES EQUIPMENT
Event	3	Rig-Up Equipment	Rig-Up Equipment	4/18/2019	16:00:00	USER					RIGGED UP ALL HES EQUIPMENT TO BE AS READY AS POSSIBLE.
Event	4	Safety Meeting - Pre Job	Safety Meeting - Pre Job	4/18/2019	19:15:00	USER	7.94	0.10	16.70	1.00	DISCUSSED HAZARDS ASSOCIATED WITH PRESSURE TEST, MIXING CMT, RUNNING BULK EQUIPMENT, AND ALL JOB RESPONSIBILITIES ASSOCIATED
Event	5	Test Lines	Test Lines	4/18/2019	19:37:07	COM5	7.95	0.00	21.10	32.00	FILLED LINES WITH 2 BBL, TESTED KICKOUTS TO 500 PSI THEN BROUGHT UP TO 2500 PSI
Event	6	Pump Spacer 1	Pump Spacer 1	4/18/2019	19:39:20	COM5	7.97	0.00	0.00	29.00	RED DYE, 10 BBL, 8.33 PPG, 4 BPM, 100 PSI
Event	7	Pump Cement	Pump Cement	4/18/2019	19:42:12	COM5	8.34	4.50	11.90	104.00	SWIFTCEM, 170 BBL, 13.5

PPG, 8 BPM, 290 PSI											
Event	8	Drop Top Plug	Drop Top Plug	4/18/2019	20:04:41	COM5	14.84	0.00	172.80	84.00	HES TOP PLUG
Event	9	Pump Displacement	Pump Displacement	4/18/2019	20:05:15	COM5	17.78	0.00	172.80	10.00	120 BBL, 8.33 PPG, 10 BPM, 500 PSI, SLOWED DOWN TO 5 BPM FOR LAST 20 BBL
Event	10	Bump Plug	Bump Plug	4/18/2019	20:50:19	COM5					BUMPED PLUG ON CALCULATED DISPLACEMENT, 500 PSI TO 1100 PSI, BLED BACK .5 BBL, FLOATS HELD
Event	11	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	4/18/2019	21:00:00	USER					DISCUSSED ALL HAZARDS ASSOCIATED WITH RIGGING DOWN HES EQUIPMENT
Event	12	Rig-Down Equipment	Rig-Down Equipment	4/18/2019	21:15:00	USER					
Event	13	Depart Location Safety Meeting	Depart Location Safety Meeting	4/18/2019	22:15:00	USER					DISCUSSED HAZARDS ASSOCIATED WITH LEAVING LOCATION AND BEST ROUTE TO TAKE
Event	14	Depart Location	Depart Location	4/18/2019	22:30:00	USER					



3.0 Attachments

3.1 Extraction AD FED Double Clutch 20W-25-9 Surface Chart

