

# HALLIBURTON

iCem<sup>®</sup> Service

## **EXTRACTION OIL & GAS**

Date: Saturday, November 24, 2018

### **Duck Club 12W-20-8C Surface**

Job Date: Tuesday, November 06, 2018

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 Duck Club 12W-20-8C Surface Job Chart .....9

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **Duck Club 12W-20-8C** 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 70 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> 3894509		<b>Quote #:</b>		<b>Sales Order #:</b> 0905257726					
<b>Customer:</b> EXTRACTION OIL & GAS -				<b>Customer Rep:</b> CHAD KELLY							
<b>Well Name:</b> DUCK CLUB			<b>Well #:</b> 12W-20-8C		<b>API/UWI #:</b> 05-001-10166-00						
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> BARR LAKE		<b>County/Parish:</b> ADAMS		<b>State:</b> COLORADO					
<b>Legal Description:</b> NW SW-12-1S-66W-2408FSL-686FWL											
<b>Contractor:</b>				<b>Rig/Platform Name/Num:</b> Cartel 88							
<b>Job BOM:</b> 7521 7521											
<b>Well Type:</b> HORIZONTAL OIL											
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srv Supervisor:</b> James Leist							
<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>		1614ft			<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>	
Casing	0	9.625	8.921	36	8 RD	J-55	0	1614	0	1614	
Open Hole Section			13.5				0	1619	0	1619	
<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			1653		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		HES		
Stage Tool	9.625					Centralizers	9.625		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	600	sack	13.5	1.74		7.5	9.2
9.20 Gal		<b>FRESH WATER</b>							
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	121.4	bbl	8.33				
Cement Left In Pipe		Amount	43 ft		Reason			Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride:		0 ppm		Mix Water Temperature:		52°F °C
Cement Temperature:		## °F °C		Plug Displaced by:		8.33 lb/gal kg/m3		Disp. Temperature: ## °F °C	
Plug Bumped?		Yes		Bump Pressure:		520 psi MPa		Floats Held? Yes	
Cement Returns:		70 bbl m3		Returns Density:		## lb/gal kg/m3		Returns Temperature: ## °F °C	
Comment									

## 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)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	11/6/2018	05:00:00	USER					
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/6/2018	08:00:00	USER					JOURNEY MANAGEMENT COMPLETE, AS WELL AS JSA
Event	3	Crew Leave Yard	Crew Leave Yard	11/6/2018	08:30:00	USER					
Event	4	Arrive At Loc	Arrive At Loc	11/6/2018	09:00:00	USER					JOURNEY MANAGEMENT CLOSED OUT. RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	11/6/2018	09:10:00	USER					
Event	6	Other	Other	11/6/2018	09:35:00	USER					WATER TEST: PH-7, CL-0, TEMP-52  WELL INFO: 9 5/8 36# J-55 CASING SET @ 1614.58, TD-1616, S.J.- 44.26, HOLE-13.5, MUD#-9.0
Event	7	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	11/6/2018	09:45:00	USER					JSA COMPLETE
Event	8	Other	Other	11/6/2018	09:45:00	USER					MUD SCALES CHECKED WITH WATER PRIOR TO JOB.
Event	9	Rig-Up Equipment	Rig-Up Equipment	11/6/2018	09:50:00	USER					RIGGED UP TO 1 UPRIGHT WATER TANK, 2 660 BULK TRUCKS AND 1 RED TIGER
Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	11/6/2018	10:18:19	USER	0.27	0.00	0.00	0.00	JSA COMPLETE
Event	11	Start Job	Start Job	11/6/2018	10:33:00	COM5	8.43	0.00	0.00	0.00	

Event	12	Test Lines	Test Lines	11/6/2018	10:38:42	USER	8.54	0.00	3147.00	2.10	3152 PSI
Event	13	Pump Spacer 1	Pump Spacer 1	11/6/2018	10:40:46	USER	8.44	0.00	3.00	2.10	FRESH WATER LAST 10 BBLS WAS WITH RED DYE
Event	14	Pump Cement	Pump Cement	11/6/2018	10:51:11	USER	13.69	5.60	167.00	2.30	600 SKS SWIFTCM, 13.5 PPG, 1.74 FT3/SK, 9.2 GAL/SK
Event	15	Shutdown	Shutdown	11/6/2018	11:19:09	USER	14.16	0.00	36.00	205.60	TO WASH UP ON TOP OF PLUG AND DROP TOP PLUG
Event	16	Drop Top Plug	Drop Top Plug	11/6/2018	11:21:39	USER	17.72	0.00	4.00	205.60	AWAY, USING POSITIVE DISPLACEMENT MANIFOLD
Event	17	Pump Displacement	Pump Displacement	11/6/2018	11:22:12	USER	10.70	1.10	11.00	0.20	FRESH WATER
Event	18	Slow Rate	Slow Rate	11/6/2018	11:41:04	USER	8.18	2.00	478.00	117.90	TO BUMP PLUG
Event	19	Bump Plug	Bump Plug	11/6/2018	11:46:36	USER	8.22	0.00	1050.00	128.00	PLUG BUMPED ON CALCULATED
Event	20	Check Floats	Check Floats	11/6/2018	11:51:09	USER	8.18	0.00	22.00	128.00	FLOATS HELD 0.5 BBL BACK TO TRUCK
Event	21	End Job	End Job	11/6/2018	11:52:00	USER	8.19	0.00	3.00	128.00	GOOD CIRCULATION THROUGHOUT JOB, NO PIPE MOVEMENT 70 BBLS OF CMT TO SURFACE
Event	22	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	11/6/2018	12:04:33	USER					
Event	23	Crew Leave Location	Crew Leave Location	11/6/2018	13:00:00	USER					THANK YOU FOR USING HALLIBURTON CEMENT, JAMES LEIST AND CREW.



## 3.0 Attachments

### 3.1 Extraction Duck Club 12W-20-8C Surface Job Chart

