

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

For: Manny Parras

Date: Friday, December 21, 2018

Duck Club 12W-20-4N

Job Date: Thursday, December 20, 2018

Sincerely,

Nick Roles and Crew

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 7

 1.1 Executive Summary7

2.0 Real-Time Job Summary 8

 2.1 Job Event Log8

3.0 Attachments..... 12

 3.1 Duck Club 12W-20-4N-Custom Results.png12

The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3894489		Quote #:		Sales Order #: 0905358456					
Customer: EXTRACTION OIL & GAS-EBUS						Customer Rep: Manny Parras					
Well Name: DUCK CLUB				Well #: 12W-20-4N		API/UWI #: 05-001-10157-00					
Field: WATTENBERG		City (SAP): BARR LAKE		County/Parish: ADAMS		State: COLORADO					
Legal Description: NW SW-12-1S-66W-2519FSL-691FWL											
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199					Srvc Supervisor: Nicholas Roles						
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST							
Job depth MD		17766ft		Job Depth TVD							
Water Depth				Wk Ht Above Floor							
Perforation Depth (MD)		From		To							
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			0	1614		1614	
Casing		5.5	4.778	20			0	17766	0	7400	
Open Hole Section			8.5				1614	17770	1614	7400	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5			17766		Top Plug	5.5	1	KLX		
Float Shoe	5.5					Bottom Plug	5.5	1	KLX		
Float Collar	5.5			17762		SSR plug set	5.5		HES		
Insert Float	5.5					Plug Container	5.5	1	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 ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	12.5 lb/gal Tuned Spacer III	Tuned Spacer III			50	bbl	12.5	2.67		5	
34.60 gal/bbl		FRESH WATER									

0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)							
208.99 lbm/bbl		BARITE, BULK (100003681)							
0.50 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)							
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	585	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
3	GasStop	ELASTICEM (TM) SYSTEM	615	sack	13.2	1.56		6	7.61
0.75 %		SCR-100 (100003749)							
5.01 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	1580	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	20	bbl	8.33			10	
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 1 GAL PAIL (100003780)							
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	374	bbl	8.33			10	
Cement Left In Pipe		Amount	0ft		Reason			Wet Shoe	

Mix Water:	pH 6	Mix Water Chloride:	0 ppm	Mix Water Temperature:	70 °F °C
Cement Temperature:	75 °F °C	Plug Displaced by:	8.33 lb/gal	Disp. Temperature:	70 °F °C
Plug Bumped?	Yes	Bump Pressure:	3200 psi MPa	Floats Held?	Yes
Cement Returns:	30 bbl	Returns Density:	## lb/gal kg/m3	Returns Temperature:	## °F °C
Comment Got 30bbls Cement to surface.					

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the cement 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 30 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

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	DS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	Call Out	12/20/2018	09:00:00	USER					Called out by Service Coordinator for O/L at 1500
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	12/20/2018	13:45:00	USER					Held meeting with all personnel in convoy to discuss directions and hazards associated with drive, all fit to drive.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	12/20/2018	14:00:00	USER					Journey Management prior to departure
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	12/20/2018	14:45:00	USER					Upon arrival met with company man to discuss job details and calculations, performed hazard hunt and site assessment.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/20/2018	15:00:00	USER					Discussed rigging up hazards and procedure according to HMS.
Event	6	Other	Other	12/20/2018	15:45:00	USER					Water test- PH-6, Chlor-0, Temp-70.
Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	12/20/2018	20:00:00	USER					Held safety meeting with all job associated personnel to discuss job procedure, hazards and stop work authority.
Event	8	Other	Other	12/20/2018	20:30:02	COM2	0.00	8.36	-15.00	0.00	Start Roll Latex
Event	9	Start Job	Start Job	12/20/2018	21:31:00	COM2	0.00	8.37	2.00	0.00	TD-17770', OH-8.5", TP-17766' 5.5" 20#, TVD-7400', SURF-1614' 9.625" 36#,

iCem® Service

(v. 4.5.139)

MUD 9.1#											
Event	10	Drop Bottom Plug	Drop Bottom Plug	12/20/2018	21:32:28	COM2	0.00	8.37	2.00	0.00	Dropped by KLX tool hand, witnessed by company man and HES supervisor.
Event	11	Test Lines	Test Lines	12/20/2018	21:35:33	COM2	0.00	12.89	74.00	3.30	Pumped 5bbls fresh water to fill lines at 4bpm 320psi, shut manifold, and performed 500psi k/o function test, followed with 5th gear stall at 2100psi, proceeded to bring pressure to 4500psi, held well and no leaks.
Event	12	Pump Spacer 1	Pump Spacer 1	12/20/2018	21:40:49	COM2	0.00	13.14	62.00	3.30	Pumped 50bbls of 12.5# 2.67y 16.1g/s Tuned Spacer III with 25g Musol A, 25g Dual Spacer B and 10g D-air at 4bpm 120psi.
Event	13	Check Weight	Check Weight	12/20/2018	21:47:52	COM2	2.60	12.57	128.00	16.90	Weight verified with pressurized mud scales.
Event	14	Pump Lead Cement	Pump Lead Cement	12/20/2018	21:56:52	COM2	4.40	13.60	214.00	49.10	Pumped 585sks or 163bbls of 13.2# 1.57y 7.66g/s Elasticem at 8bpm 510psi.
Event	15	Check Weight	Check Weight	12/20/2018	22:03:11	COM2	8.10	13.38	522.00	32.20	Weight verified with pressurized mud scales.
Event	16	Check Weight	Check Weight	12/20/2018	22:10:15	COM2	8.10	13.20	532.00	89.30	Weight verified with pressurized mud scales.
Event	17	Pump Lead Cement	Pump Lead Cement	12/20/2018	22:21:51	COM2	8.10	13.14	444.00	183.30	Pumped 615sks or 171bbls of 13.2# 1.56y 7.61g/s GasStop with 1538g FDP Latex and 62g D-air at 6bpm.
Event	18	Check Weight	Check Weight	12/20/2018	22:56:16	COM2	8.20	13.29	633.00	146.20	Weight verified with pressurized mud scales.
Event	19	Pump Tail Cement	Pump Tail Cement	12/20/2018	23:04:30	COM2	8.20	13.17	673.00	213.80	Pumped 1580sks or 442bbls

8											of 13.2# 1.57y 7.66g/s Elasticem at 8bpm 488psi.
Event	20	Check Weight	Check Weight	12/20/2018	23:05:52	COM2	8.20	13.23	589.00	11.20	Weight verified with pressurized mud scales.
Event	21	Check Weight	Check Weight	12/20/2018	23:14:49	COM2	8.20	13.20	557.00	84.70	Weight verified with pressurized mud scales.
Event	22	Shutdown	Shutdown	12/21/2018	00:03:38	COM2	0.00	11.62	28.00	434.70	Rig blew down iron, followed with 10bbls fresh water through pumps and lines.
Event	23	Drop Top Plug	Drop Top Plug	12/21/2018	00:07:28	COM2	0.00	8.28	109.00	440.90	Dropped by KLX tool hand, witnessed by company man and HES supervisor.
Event	24	Pump Displacement	Pump Displacement	12/21/2018	00:07:31	COM2	0.00	7.85	85.00	440.90	Pumped 394bbls fresh water at 10bpm.
Event	25	Bump Plug	Bump Plug	12/21/2018	00:52:56	COM2	0.00	8.28	2980.00	396.50	Slowed down at 370bbls away to 5bpm, final circulating pressure- 2700psi. Bump pressure- 3200psi.
Event	26	Pressure Up Well	Pressure Up Well	12/21/2018	00:53:06	COM2	0.00	8.28	2974.00	396.50	Pressured up to burst plug at 4820psi, continued to pump 5bbls at 5bpm 2400psi.
Event	27	Check Floats	Check Floats	12/21/2018	00:55:35	USER	0.00	8.27	1986.00	403.00	Released pressure and got 3bbls back. Floats held.
Event	28	End Job	End Job	12/21/2018	00:57:24	COM2	0.00	8.24	25.00	0.00	Got 30bbls Cement to surface.
Event	29	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	12/21/2018	01:00:00	USER	0.00	8.22	23.00	0.00	All HSE present. Discussed red zone areas and trapped pressure hazards. Watch for suspended loads and rig down procedures, including hand placement, lifting techniques, and swing

							radius.
Event	30	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/21/2018	02:45:00	USER	All HSE present and fit to drive. Aware of directions and hazards.
Event	31	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	12/21/2018	03:00:00	USER	Pre journey management prior to departure.

3.0 Attachments

3.1 Duck Club 12W-20-4N-Custom Results.png

