

# HALLIBURTON

iCem<sup>®</sup> Service

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

Date: Monday, December 31, 2018

### **Duck Club 12W-20-5C Production**

Job Date: Monday, December 17, 2018

Sincerely,  
**Tyler Hill**

## 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 **Duck Club 12W-20-5C** 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 47 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 Ft. Lupton**

*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 369404		<b>Ship To #:</b> 3894419		<b>Quote #:</b>		<b>Sales Order #:</b> 0905348909				
<b>Customer:</b> EXTRACTION OIL & GAS-EBUS				<b>Customer Rep:</b> Danny/Haans						
<b>Well Name:</b> DUCK CLUB			<b>Well #:</b> 12W-20-5C		<b>API/UWI #:</b> 05-001-10159-00					
<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-2491FSL-690FWL										
<b>Contractor:</b> PATTERSON-UTI ENERGY				<b>Rig/Platform Name/Num:</b> PATTERSON 901						
<b>Job BOM:</b> 7523 7523										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srvc Supervisor:</b> Kamereon White						
<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>		17918ft		<b>Job Depth TVD</b>		7635				
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>		4'				
<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		9.625	8.921	36			0	1630		0
Casing		5.5	4.778	20			0	17918		0
Open Hole Section			8.5				1614	17921		0
<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>	
						<b>Top Plug</b>	5.5	1	KLX	
<b>Float Shoe</b>	5.5	1	HES	17918'		<b>Bottom Plug</b>	5.5	1	KLX	
<b>Float Collar</b>	5.5	1	HES	17915'						
						<b>Plug Container</b>	5.5	1	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	12.5 lb/gal Tuned Spacer III	Tuned Spacer III	50	bbl	12.5	2.67	16.1	6		

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	592	sack	13.2	1.57		8	7.66
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
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	1623	sack	13.2	1.57		8	7.66
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	
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	377	bbl	8.33			10	
Cement Left In Pipe		Amount	ft		Reason			Shoe Joint	

Mix Water:	Ph 7	Mix Water Chloride:	< 700 ppm	Mix Water Temperature:	64 °F
		Plug Displaced by:	8.33 lb/gal		
Plug Bumped?	Yes	Bump Pressure:	2760 psi	Floats Held?	Yes
Cement Returns:	47 bbl	Returns Density:	12.5 lb/gal		
Comment					

## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	Comb Pump Rate (bbl/min)	Recirc Density (ppg)	Comments
Event	1	Call Out	Call Out	12/16/2018	19:00:00	USER				Crew called out and was requested to be on location @ 01:00 RTP By 03:00 am.
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	12/16/2018	22:00:00	USER				Crew discussed the route of travel and supervisor called in a journey.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	12/16/2018	22:10:00	USER				Crew left the yard.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	12/16/2018	22:50:00	USER				Crew arrived on location early and the rig was running casing.
Event	5	Safety Meeting - Assessment of Location	Safety Meeting - Assessment of Location	12/16/2018	23:00:00	USER				Spotting in trucks and supervisor met with the customer and got the well information. TD-17921' TP-17,918' SJ-4' FC-17915' Cas-5.5" 20 # P110 PC-9.625" 36# Set @ 1630' Mud Weight-9.2 ppg OBM, Wet Shoe- 5 Bbls TVD-7635' OH-8.5."
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/16/2018	23:10:00	USER				Discussed rig up procedure and signed the JSA.
Event	7	Rig-Up Equipment	Rig-Up Equipment	12/16/2018	23:20:00	USER				Rigged up all HES equipment and lines.
Event	8	Rig-Up Completed	Rig-Up Completed	12/17/2018	01:30:00	USER				All HES equipment and lines rigged up safely.
Event	9	Casing on Bottom	Casing on Bottom	12/17/2018	03:00:00	USER				Casing on Bottom with the landing joint.



Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/17/2018	04:00:00	USER				Discussed the job procedure and pressures with all personnel involved with the cement job.
Event	11	Drop Bottom Plug	Drop Bottom Plug	12/17/2018	04:39:46	COM4	-29.00	0.00	13.26	Customer and Halliburton Rep witnessed the bottom plug being loaded into the BTC pup joint and was sent before we filled the lines to pressure test.
Event	12	Other	Other	12/17/2018	04:43:14	COM4	178.00	2.70	11.53	Fill lines with 3 bbls of Tuned Spacer 3 bpm 220 psi.
Event	13	Test Lines	Test Lines	12/17/2018	04:45:28	COM4	4474.00	0.00	10.34	Tested the lines to 500 psi to test the EKO's They worked so we performed a high psi test to 4500 psi and held for 2 min no leaks.
Event	14	Pump Spacer 1	Pump Spacer 1	12/17/2018	04:49:37	COM4	2.00	1.30	12.18	Pumped 50 bbls of Tuned Spacer III with Musol A and Dual B added throughout @ 12.5 ppg 2.67 yield 16.1 gal/sk 4 bpm 220 psi. We lost the HPVT on the downhole, the density was jumping around alot and the customer requested us to scale with the pressurized mud scales every 25 bbls away and to use the recirc density.
Event	15	Check Weight	Check Weight	12/17/2018	04:54:53	COM4	211.00	4.10	12.41	Checked the weight of the tuned spacer with the pressurized mud scales scaled @ 12.5 ppg.
Event	16	Check Weight	Check Weight	12/17/2018	05:07:49	COM4	-5.00	1.90	13.33	Checked the weight of the tuned spacer with the pressurized mud scales

										scaled @ 12.5 ppg.
Event	17	Pump Cement	Pump Cement	12/17/2018	05:09:00	COM4	22.00	1.90	13.18	Pumped 166 bbls of 1st Lead cement @ 13.2 ppg 1.57 yield 7.66 gal/sk ( 592 sks) 8 bpm 590 psi.
Event	18	Check Weight	Check Weight	12/17/2018	05:17:43	COM4	556.00	8.30	13.24	Checked the weight of the 1St Lead Cement with the pressurized mud scales scaled @ 13.2 ppg.
Event	19	Check Weight	Check Weight	12/17/2018	05:18:57	COM4	532.00	8.30	13.24	Checked the weight of the 1St Lead Cement with the pressurized mud scales scaled @ 13.2 ppg.
Event	20	Pump Lead Cement	Pump Lead Cement	12/17/2018	05:36:35	COM4	527.00	8.30	13.29	Pumped 171 bbls of Latex Lead Cement @ 13.2 ppg 1.56 yield 7.61 gal/sk (615 sks) 6 bpm 380 psi scaled every 25 bbl with the pressurized mud scales.
Event	21	Check Weight	Check Weight	12/17/2018	05:54:53	COM4	354.00	6.10	13.23	Checked the weight of the Latex Lead Cement with the pressurized mud scales scaled @ 13.2 ppg.
Event	22	Pump Tail Cement	Pump Tail Cement	12/17/2018	06:11:46	COM4	604.00	8.40	13.11	Pumped 454 bbls of Tail Cement @ 13.2 ppg 1.57 yield 7.66 gal/sk (1623 sks) 8 bpm 561 psi.
Event	23	Check Weight	Check Weight	12/17/2018	06:13:17	COM4	539.00	8.40	13.21	Checked the weight of the Tail Cement with the pressurized mud scales scaled @ 13.2 ppg.
Event	24	Check Weight	Check Weight	12/17/2018	07:00:41	COM4	543.00	8.40	13.18	Checked the weight of the Tail Cement with the pressurized mud scales scaled @ 13.2 ppg.
Event	25	Shutdown	Shutdown	12/17/2018	07:11:27	COM4	201.00	0.80	8.71	Shutdown to load the latch

				8						down plugThe customer, KLX and Halliburton witnessed the plug being loaded.
Event	26	Clean Lines	Clean Lines	12/17/2018	07:18:21	COM4	-14.00	0.90	8.32	Cleaned the pumps and lines.
Event	27	Drop Top Plug	Drop Top Plug	12/17/2018	07:23:08	COM4	92.00	0.10	-0.06	Witnessed the plug leaving the plug container.
Event	28	Pump Displacement	Pump Displacement	12/17/2018	07:24:09	COM4	-12.00	0.90	-0.07	Pumped calculated displacement of 397 bbls with the first 20 bbls with MMCR and maintained a rate of 6 bpm until we caught the plug.
Event	29	Displ Reached Cement	Displ Reached Cement	12/17/2018	07:34:07	COM4	260.00	6.00	-0.07	@ 45 bbls away we caught the plug and picked our rate up to 10 bpm. Full Returns.
Event	30	Bump Plug	Bump Plug	12/17/2018	08:18:40	COM4	3131.00	0.00	-0.07	Bumped the plug, the final circulating psi was 2760 psi and took 500 psi over to 3200 psi and shutdown the pump.
Event	31	Other	Other	12/17/2018	08:19:48	COM4	3137.00	0.00	-0.06	Pressured up @ 2bpm to rupture the disk/ Shift the wets shoe sub, Ruptured @ 4035 psi and pumped a 5 bbl wet shoe @ 5 bpm psi was 2430 psi.
Event	32	End Job	End Job	12/17/2018	08:25:30	COM4				Cement job complete, we got 47 bbls of cement back to surface and 40 bbls of spacer back.@ 310 away into displacement is when we got spacer back.@ 350 bbls into displacement we got cement back. Calculated Tops Of Cements. TOTC-

										6791' TO Latex-2604'
Event	33	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/17/2018	08:26:00	USER	6.00	0.00	-0.07	Crew held a safety meeting discussing the rig down procedure and flushed stack. Also all potential hazards associated with rigging down all HES equipment and lines.
Event	34	Rig Down Lines	Rig Down Lines	12/17/2018	08:30:00	USER	4.00	0.00	-0.07	The crew flushed the rigs stack with sugar water and rigged down all HES equipment and lines.
Event	35	Rig-Down Completed	Rig-Down Completed	12/17/2018	10:30:00	USER				Rig down completed no one got hurt.
Event	36	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/17/2018	10:50:00	USER				The crew held a pre journey safety meeting discussing the route and potential hazards while driving. The supervisor called in a journey.
Event	37	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	12/17/2018	11:00:00	USER				Kamereon White and crew would like to thank you for your business and choosing Halliburton Cement. If you have any questions please feel free to call.

3.0 Attachments

3.1 Duck Club 12W-20-5C Production.png

