

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Duck Club 12W-20-1C Production

Sincerely,
Meghan Jacobs

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Duck Club 12W-20-1C** 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 Fort Lupton

The Road to Excellence Starts with Safety

Sold To #: 369404		Ship To #: 3894456		Quote #:		Sales Order #: 0905382634					
Customer: EXTRACTION OIL & GAS-EBUS						Customer Rep: Danny Herrera					
Well Name: DUCK CLUB			Well #: 12W-20-1C			API/UWI #: 05-001-10160-00					
Field: WATTENBERG		City (SAP): BARR LAKE		County/Parish: ADAMS		State: COLORADO					
Legal Description: NW SW-12-1S-66W-2603FSL-695FWL											
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 Cummins						
Job											
Formation Name											
Formation Depth (MD)		Top	1660ft		Bottom	18248ft					
Form Type				BHST							
Job depth MD		18246ft		Job Depth TVD		7649ft					
Water Depth				Wk Ht Above Floor		5 ft					
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	1660		0	
Casing		5.5	4.778	20			0	18246		7649	
Open Hole Section			8.5				1660	18247	0	7649	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5	1		18246		Top Plug	5.5	1	KLX		
						Bottom Plug	5.5	1	KLX		
Float Collar	5.5	1		12243							
						Plug Container	5.5	1	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		3	

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	586	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		8	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	1672	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			8	
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	384	bbl	8.33			8	
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe	
Mix Water:	pH 7	Mix Water Chloride:	<400 ppm		Mix Water Temperature:			65 °F	
		Plug Displaced by:	8.33 lb/gal		Disp. Temperature:			65 °F	
Plug Bumped?	Yes	Bump Pressure:	2320 psi		Floats Held?			Yes	
Cement Returns:	47 bbl								
Comment									

2.0 Real-Time Job Summary

2.1 Job Event Log

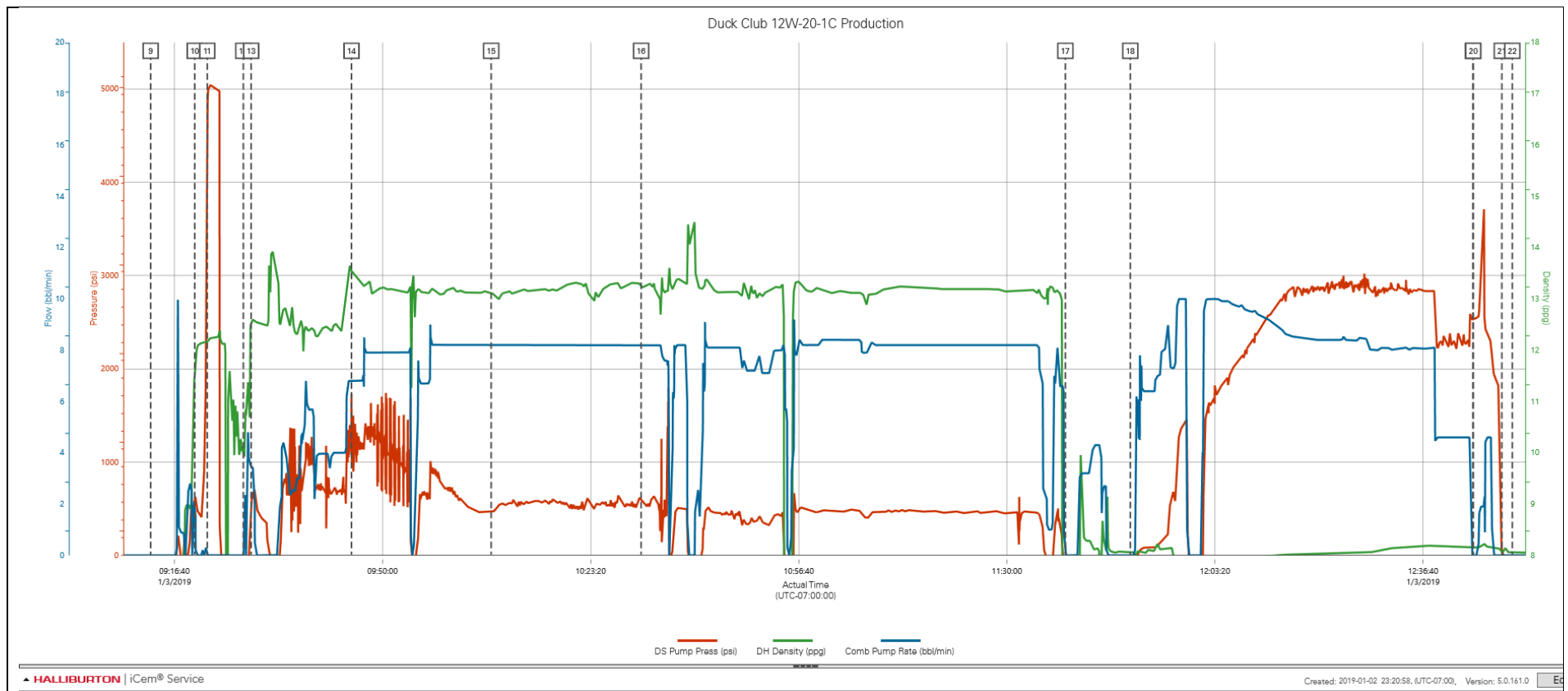
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	1/2/2019	21:30:00	USER				The crew was called out on 1/2/19 at 2130. The customer requested HES on location at 0330 on 1/3/19. Ready to pump by 0530.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	1/3/2019	01:30:00	USER				The crew held a pre journey safety meeting discussing the route and potential hazards while driving The supervisor called in a journey. The crew departed service center.
Event	3	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	1/3/2019	01:40:00	USER				Crew discussed all potential hazards on location.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	1/3/2019	02:30:00	USER				The crew arrived on location safely. The rig was still running casing. The supervisor met with the Tool Hand and received numbers. TD 18,247', TP 18,246' 5 1/2" 20# P-110, FC 18,243', PC 1,660' 9 5/8" 36# J-55, TVD 7,649', OH 8 1/2", Mud 10.7 ppg.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	1/3/2019	02:50:00	USER				Crew held a safety meeting discussing the rig up procedure. Also all potential hazards associated with rigging up all HES equipment and lines.
Event	6	Rig-Up Equipment	Rig-Up Equipment	1/3/2019	03:00:00	USER				The crew rigged up all HES equipment and lines.
Event	7	Rig-Up Completed	Rig-Up Completed	1/3/2019	06:45:00	USER	-69.70	8.20	0.00	Rig up completed, no one got hurt.
Event	8	Safety Meeting - Pre Job	Safety Meeting - Pre Job	1/3/2019	08:30:00	USER	-67.70	7.75	0.00	The crew and all personal involved with cement job discussed all potential hazards associated with job. Followed by the job procedure to ensure everyone understood the plan of action
Event	9	Start Job	Start Job	1/3/2019	09:12:51	COM6	-73.70	7.91	0.00	Started recording data from 11645460.
Event	10	Pump Spacer 1	Pump Spacer 1	1/3/2019	09:19:55	COM6	589.30	11.66	2.10	We filled lines with 3 bbls of spacer at 2 bpm. Pressure was at 280 psi.

Event	11	Test Lines	Test Lines	1/3/2019	09:21:55	USER	3906.30	12.16	0.00	We pressure tested all HES lines to 4700 psi. The pressure test passed.
Event	12	Drop Bottom Plug	Drop Bottom Plug	1/3/2019	09:27:42	COM6	-69.70	10.10	0.00	Company man and tool hand witnessed bottom plug drop.
Event	13	Pump Spacer 1	Pump Spacer 1	1/3/2019	09:28:57	COM6	490.30	12.62	3.50	We pumped the remaining 47 bbls of spacer with surfactants at 3 bpm Pressure was at 560 psi. 12.5 ppg 2.67 yield 16.1 gal/sk. We verified density using pressurized scales. We shutdown during spacer to verify the plug left the plug container. Per company mans request.
Event	14	Pump Lead Cement	Pump Cap Cement	1/3/2019	09:45:02	COM6	1522.30	13.53	6.80	We pumped 164 bbls (586 sks) of cap cement at 8 bpm. Pressure was at 1,025 psi. At 150 bbls away pressure was at 635 psi. 13.2 ppg 1.57 yield 7.66 gal/sk. We verified density using pressurized scales.
Event	15	Pump Lead Cement	Pump Lead Cement	1/3/2019	10:07:24	COM6	455.30	13.11	8.20	We pumped 171 bbls (615 sks) of lead cement at 8 bpm. Pressure was at 560 psi. 13.2 ppg 1.56 yield 7.61 gal/sk. We verified density using pressurized scales.
Event	16	Pump Tail Cement	Pump Tail Cement	1/3/2019	10:31:25	COM6	562.30	13.23	8.20	We pumped 468 bbls (1672 sks) of Tail cement at 8 bpm. Pressure was at 700 psi. 13.2 ppg 1.57 yield 7.66 gal/sk. We verified density using pressurized scales.
Event	17	Shutdown	Shutdown	1/3/2019	11:39:22	COM6	-72.70	-0.20	0.00	
Event	18	Pump Displacement	Pump Displacement	1/3/2019	11:49:46	COM6	-103.70	8.08	0.00	We pumped the calculated displacement of 404 bbls. With MMCR in the first 20 bbls. We pumped 5 bpm until we caught cement. Then raised our rate to 10 bpm and adjusted rate as needed per customer request.
Event	19	Bump Plug	Bump Plug	1/3/2019	12:44:39	COM6	2522.30	8.16	0.00	We bumped the plug, final circulating pressure was 2,320 psi. We pressured up to 2,750 before shutting down.
Event	20	Other	Wet Shoe	1/3/2019	12:44:43	COM6	2538.30	8.16	0.00	We pressured up to 3,840 psi to rupture the disc at 2 bpm. We then proceeded to pump a 5 bbl wet shoe at 5 bpm
Event	21	Other	Check Floats	1/3/2019	12:49:17	COM6	52.30	8.07	0.00	We bled off pressure from the well back to the truck. We got 3 bbls back, the floats held.
Event	22	End Job	End Job	1/3/2019	12:50:58	COM6				

Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	1/3/2019	13:00:00	USER	197.30	8.06	10.80	Crew held a safety meeting discussing the rig down procedure. Also all potential hazards associated with rigging down all HES equipment and lines.
Event	24	Rig-Down Equipment	Rig-Down Equipment	1/3/2019	13:10:00	USER	-36.70	8.21	3.10	We pumped 40 bbls of sugar water through the rigs stack, per customer request. Then the crew rigged down all HES equipment and lines.
Event	25	Rig-Down Completed	Rig-Down Completed	1/3/2019	14:30:00	USER				Rig down completed no one got hurt.
Event	26	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	1/3/2019	14:40:00	USER				The crew held a pre journey safety meeting discussing the route and potential hazards while driving The supervisor called in a journey.
Event	27	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	1/3/2019	14:50:00	USER				Nick Cummins and crew would like to thank you for your business, and choosing Halliburton Cement! Please feel free to call if you have any questions.

3.0 Attachments

3.1 Duck Club 12W-20-1C Production – Job Chart with Events



3.2 Duck Club 12W-20-1C Production – Job Chart without Events

