

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Duck Club 12W-20-6N Production

Sincerely,
Meghan Jacobs

Legal Notice

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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-20-6N** 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 60 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

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3894457	Quote #:	Sales Order #: 0905336692
Customer: EXTRACTION OIL & GAS-EBUS		Customer Rep: Danny Herrera	
Well Name: DUCK CLUB	Well #: 12W-20-6N	API/UWI #: 05-001-10161-00	
Field: WATTENBERG	City (SAP): BARR LAKE	County/Parish: ADAMS	State: COLORADO
Legal Description: NW SW-12-1S-66W-2463FSL-689FWL			
Contractor: PATTERSON-UTI ENERGY		Rig/Platform Name/Num: PATTERSON 901	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srv Supervisor: Nicholas Roles	
Job			
Formation Name			
Formation Depth (MD)	Top	1592ft	Bottom
Form Type	BHST		
Job depth MD	17588ft	Job Depth TVD	7246ft
Water Depth	Wk Ht Above Floor		
Perforation Depth (MD)	From	To	
Well Data			
Description	New / Used	Size in	ID in
Casing		9.625	8.921
Casing		5.5	4.778
Open Hole Section		8.5	
Tools and Accessories			
Type	Size in	Qty	Make
Guide Shoe	5.5		17588
Float Shoe	5.5		17584
Float Collar	5.5		
Insert Float	5.5		
Stage Tool	5.5		
Fluid Data			
Stage/Plug #: 1			
Fluid #	Stage Type	Fluid Name	Qty
1	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	50
Fluid Data			
Fluid #	Stage Type	Fluid Name	Qty
2	ElastiCem	ELASTICEM (TM) SYSTEM	585

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Cementing Job Summary

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	655	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	1590	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	10	bbl	8.33			6	
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	380	bbl	8.33			10	
Cement Left In Pipe		Amount	0ft			Reason		Wet Shoe	
Mix Water: pH 06		Mix Water Chloride: 0 ppm			Mix Water Temperature: 65 °F °C				
Cement Temperature: ## °F °C		Plug Displaced by: 8.33 lb/gal			Disp. Temperature: 65 °F °C				
Plug Bumped? Yes		Bump Pressure: 3125 psi MPa			Floats Held? Yes				
Cement Returns: 60 bbl m3		Returns Density: ## lb/gal kg/m3			Returns Temperature: ## °F °C				
Comment Got 60bbls Cement to surface. Brought roughly 40sks or 10bbls extra cement out to be sure we were on target for wasted cement. Got back calculated cement.									

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)	Comments
Event	1	Call Out	Call Out	12/11/2018	17:00:00	USER				Called out by Service Coordinator for O/L at 2300
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	12/11/2018	21:45:00	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	12/11/2018	22:00:00	USER				Journey Management prior to departure
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	12/11/2018	22:30:00	USER				Upon arrival met with company man to discuss job details and calculations, performed hazard hunt and site assessment. Rig had 3000ft casing left to run.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/11/2018	23:00:00	USER				Discussed rigging up hazards and procedure according to HMS.
Event	6	Other	Other	12/11/2018	23:30:00	USER				Water test- PH-6, Chlor-0, Temp-65.
Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	12/12/2018	02:00:00	USER	0.00	8.36	5.00	Held safety meeting with all job associated personnel to discuss job procedure, hazards and stop work authority.
Event	8	Start Job	Start Job	12/12/2018	03:50:00	COM2	0.00	8.36	-1.00	TD-17600', OH-8.5", TP-17588' 5.5" 20#, TVD-7246', SURF-1592' 9.625" 36#, MUD 9.1#
Event	9	Test Lines	Test Lines	12/12/2018	03:53:17	COM2	0.00	12.02	118.00	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 1800psi, proceeded to bring pressure to 4500psi, held well and no leaks.
Event	10	Pump Spacer 1	Pump Spacer 1	12/12/2018	03:58:14	COM2	0.00	11.82	77.00	Pumped 50bbls of 11.5# 3.91y 24.4g/s Tuned Spacer III with 25g Musol A, 25g Dual Spacer B and 10g D-air at 5bpm 320psi.

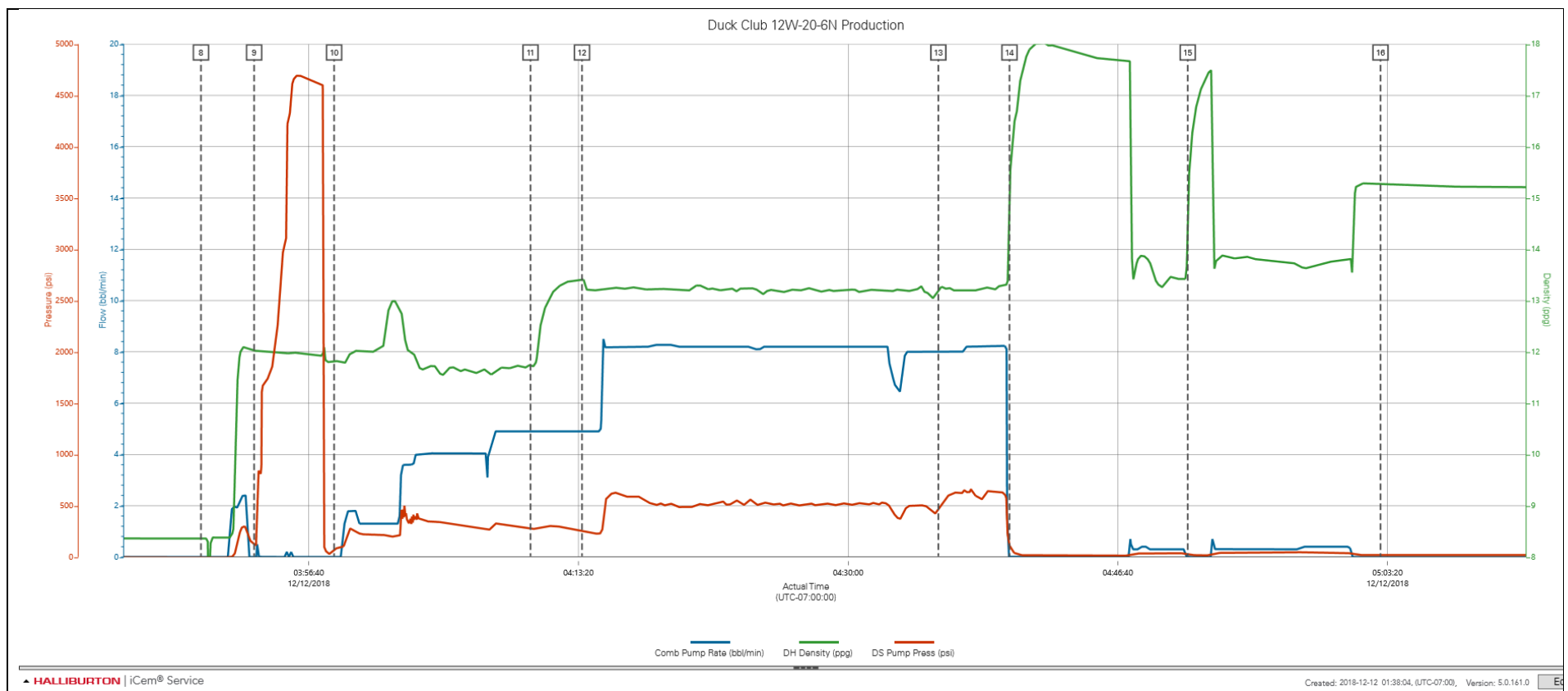
Event	11	Pump Lead Cement	Pump Lead Cement	12/12/2018	04:10:22	COM2	4.90	11.74	277.00	Pumped 585sks or 163.5bbls of 13.2# 1.57y 7.66g/s Elasticem at 8bpm 498psi.
Event	12	Check Weight	Check Weight	12/12/2018	04:13:33	COM2	4.90	13.41	249.00	Weight verified with pressurized mud scales.
Event	13	Pump Lead Cement	Pump Lead Cement	12/12/2018	04:35:34	COM2	8.00	13.20	460.00	
Event	14	Begin Standby Due to HES	Begin Standby Due to HES	12/12/2018	04:39:58	USER	0.00	15.12	111.00	
Event	15	Shutdown	Shutdown	12/12/2018	04:50:59	COM2	0.00	14.79	27.00	
Event	16	Shutdown	Shutdown	12/12/2018	05:02:54	USER	0.00	15.28	19.00	
Event	17	Standby - Other - see comments	Standby - Other - see comments	12/12/2018	15:00:00	USER				cement showed up to location, plus 264gal FDP latex, waited to get a confirmation on lab results by HES engineer. once confirmed, rig shutdown pumps and rigged up HES cement line.
Event	21	Pump Spacer	Pump Spacer	12/12/2018	15:31:42	USER				Pumped 50bbls of 11.5# 3.91y 24.4g/s Tuned Spacer III with 25g Musol A, 25g Dual Spacer B and 10g D-air at 5bpm 320psi.
Event	22	Pump Spacer 1	Pump Spacer 1*	12/12/2018	15:32:30	RTD Import				Pump Spacer 1*
Event	62	Pump Lead Cement	Pump Lead Cement*	12/12/2018	15:42:36	RTD Import				Pump Lead Cement*
Event	63	Pump Cap Cement	Pump Cap Cement	12/12/2018	15:42:48	USER				Pumped 585sks or 163.5bbls of 13.2# 1.57y 7.66g/s Elasticem at 8bpm 498psi.
Event	67	Comment	Mud Cup Sample Pulled	12/12/2018	15:44:30	RTD Import				Mud Cup Sample Pulled
Event	101	Pump Cement	Pump Cement*	12/12/2018	16:03:03	RTD Import				Pump Cement*
Event	105	Pump Lead Cement	Pump Lead Cement	12/12/2018	16:03:15	USER				Pumped 655sks or 171bbls of 13.2# 1.56y 7.61g/s GasStop with 1538g FDP Latex and 77g D-air at 8bpm.

Event	136	Pump Tail Cement	Pump Tail Cement	12/12/2018	16:27:21	USER	Pumped 1590sk or 428bbbls of Elasticem at 8bpm 488psi.
Event	137	Pump Tail Cement	Pump Tail Cement*	12/12/2018	16:27:31	RTD Import	Pump Tail Cement*
Event	316	Shutdown	Shutdown	12/12/2018	17:21:18	RTD Import	Shutdown
Event	323	Clean Lines	Clean Lines	12/12/2018	17:21:47	USER	Shutdown, rig blew down iron to pits, once clean, closed 2" to rig and washed up pump truck with 5bbbls fresh water to clean pump.
Event	340	Drop Top Plug	Drop Top Plug	12/12/2018	17:23:33	USER	Dropped by KLX tool hand, witnessed by company man and HES supervisor.
Event	345	Pump Displacement	Pump Displacement	12/12/2018	17:26:34	USER	Pumped 390bbbls fresh water at 10bpm.
Event	346	Pump Displacement	Pump Displacement*	12/12/2018	17:26:35	RTD Import	Pump Displacement*
Event	350	Bump Plug	Bump Plug	12/12/2018	18:16:11	USER	Slowed down at 370bbbls away to 5bpm, final circulating pressure-2630psi. Bump pressure-3125psi.
Event	351	Bump Plug	Bump Plug	12/12/2018	18:16:27	RTD Import	Bump Plug
Event	353	Pressure Up Well	Pressure Up Well	12/12/2018	18:18:32	RTD Import	Pressure Up Well
Event	354	Pressure Up Well	Pressure Up Well	12/12/2018	18:18:45	USER	Pressured up to burst plug at 3950psi, continued to pump 5bbbls at 5bpm 2550psi.
Event	355	Check Floats	Check Floats	12/12/2018	18:21:13	USER	Released pressure and got 3bbbls back. Floats held.
Event	356	End Job	End Job	12/12/2018	18:22:56	USER	Got 60bbbls Cement to surface. Brought roughly 40sk or 10bbbls extra cement out to be sure we were on target for wasted cement. Got back calculated cement.
Event	357	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	12/12/2018	18:25:00	USER	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	358	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/12/2018	19:30:00	USER	All HSE present and fit to drive. Aware of directions and hazards.
Event	359	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	12/12/2018	19:45:00	USER	Pre journey management prior to departure.

3.0 Attachments

3.1 Duck Club 12W-20-6N Production – Beginning of Job before Shutdown



3.2 Duck Club 12W-20-6N Production – Job Chart with Events from Spacer to End

