

# HALLIBURTON

iCem<sup>®</sup> Service

**EXTRACTION OIL & GAS**

**Duck Club 12W-20-8C Production**

Sincerely,  
**Meghan Jacobs**

## Legal Notice

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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-20-8C** 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 45 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**

## HALLIBURTON

## Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 369404		Ship To #: 3894509		Quote #:		Sales Order #: 0905313510					
Customer: EXTRACTION OIL & GAS-EBUS				Customer Rep: Manny/ Larry							
Well Name: DUCK CLUB			Well #: 12W-20-8C			API/UWI #: 05-001-10166-00					
Field: WATTENBERG		City (SAP): BARR LAKE		County/Parish: ADAMS		State: COLORADO					
Legal Description: NW SW-12-1S-66W-2408FSL-686FWL											
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HX38199					Srvc Supervisor: Thomas Haas						
<b>Job</b>											
Formation Name											
Formation Depth (MD)		Top			Bottom						
Form Type											
BHST											
Job depth MD		17813ft			Job Depth TVD		7560				
Water Depth											
Wk Ht Above Floor 6											
Perforation Depth (MD)		From			To						
<b>Well Data</b>											
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	1658	0	1658
Casing			5.5	4.778	20			0	17813	0	7560
Open Hole Section				8.5				1658	17815	0	7560
<b>Tools and Accessories</b>											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe						Top Plug	5.5	1	NCS		
Float Shoe	5.5	1	NCS	17813		Bottom Plug	5.5	1	NCS		
Float Collar	5.5	1	NCS	17808		SSR plug set					
Insert Float						Plug Container	5.5	1	HES		
Stage Tool						Centralizers					
<b>Fluid Data</b>											
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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III			50	bbl	11.5	3.91	24.4	5	1762
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

last updated on 12/4/2018 12:12:07 PM

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## HALLIBURTON

## Cementing Job Summary

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
2	ElastiCem	ELASTICEM (TM) SYSTEM	585	sack	13.2	1.57	7.66	8	4481	
3	GasStop	ELASTICEM (TM) SYSTEM	615	sack	13.2	1.56	7.61	8	4680	
4	ElastiCem	ELASTICEM (TM) SYSTEM	1609	sack	13.2	1.57	7.66	8	12325	
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33			8		
0.50 gal/bbl			MICRO MATRIX CEMENT RETARDER, 1 GAL PAIL (100003780)							
6	Displacement	Displacement	375	bbl	8.33			8		
Cement Left In Pipe		Amount	5 ft		Reason			SHOE TRACK		Shoe Joint
Mix Water:		pH 7	Mix Water Chloride:		<300 ppm		Mix Water Temperature:			65 °F
Cement Temperature:		N/A	Plug Displaced by:		8.33 lb/gal F.W.		Disp. Temperature:			59 °F
Plug Bumped?		Yes	Bump Pressure:		2330 psi		Floats Held?			Yes
Cement Returns:		45 bbl	Returns Density:		N/A		Returns Temperature:			N/A
Comment Plug bumped at calculated displacement, final circulating pressure of 2360 psi, released pressure back to the truck, floats held, received 5 bbl back, cement returned to surface 350 bbl into displacement, 45 bbl cement back to surface.										

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

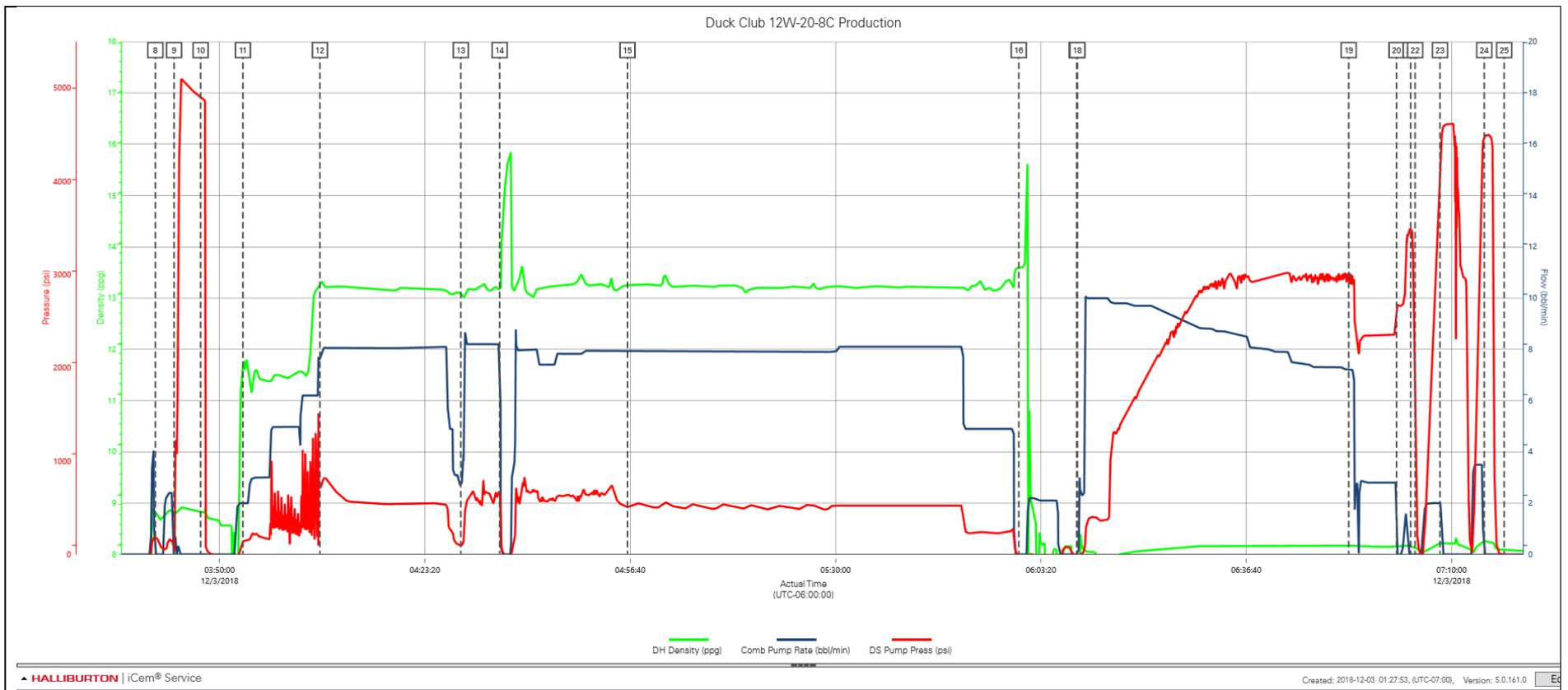
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	12/2/2018	18:00:00	USER				CREW CALLED OUT AT 18:00 12/2/2018, REQUESTED ON LOCATION 21:00 12/2/2018. CREW PICKED UP CEMENT, CHEMICALS (25 GAL MUSOL, 25 GAL DUAL SPACER B, 72 GAL D-AIR, 1538 GAL FDP LATEX, 15 GAL MMCR), 100 LBS SUGAR, AND PLUG CONTAINER FROM FORT LUPTON, CO. BULK 660: 11562570/10924982 Bulk , IORN TRUCK: 12100990 SOFT SIDE: 12498388/12051660 PUMP ELITE: 11897034/11645460.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/2/2018	21:45:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW
Event	3	Crew Leave Yard	Crew Leave Yard	12/2/2018	22:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive At Loc	Arrive At Loc	12/2/2018	22:30:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING: 9.625" 36# @ 1658', CASING: 5.5" 20# @ 17813', 5' SHOE JOINT, 8.5" OPEN HOLE, TVD @ 7560', 9.3 PPG WELL FLUID, FRESH WATER DISPLACEMENT.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/2/2018	22:40:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	12/2/2018	22:50:00	USER				CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/3/2018	03:00:00	USER	0.00	0.00	-28.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	8	Start Job	Start Job	12/3/2018	03:39:35	COM4	8.79	0.00	186.00	START JOB DATA RECORDING.
Event	9	Test Lines	Test Lines	12/3/2018	03:42:37	COM4	8.83	0.00	54.00	PRESSURE TESTED IRON TO 5000 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1100 PSI, 5TH GEAR STALL OUT @ 1750 PSI.

Event	10	Drop Bottom Plug	Drop Bottom Plug	12/3/2018	03:46:55	COM4	8.82	0.00	4902.00	PLUG LEFT PUP JOINT, VERIFIED BY COMPANY MAN.
Event	11	Pump Spacer 1	Pump Spacer 1	12/3/2018	03:53:48	COM4	11.72	2.00	153.00	PUMP 50 BBLs OF TUNED SPACER @ 11.5 LB/GAL, ADDED 25 GAL MUSOL A, 25 GAL DUAL SPACER B, 10 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	12	Pump Cap Cement	Pump Cap Cement	12/3/2018	04:06:17	COM4	13.23	7.60	690.00	PUMP 585 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.66 GAL/SK, 163.6 BBLs, CALCULATED TOC @ SURFACE, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Pump Lead Cement	Pump Lead Cement	12/3/2018	04:29:10	COM4	13.10	2.70	90.00	PUMP 615 SKS OF GASSTOP @ 13.2 LB/GAL, 1.56 YIELD, 7.61 GAL/SK, 170.9 BBLs, CALCULATED TOL @ 2597', MIX WATER MIXED WITH 1538 GAL OF LATEX AND 72 GAL D-AIR, DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	14	Shutdown	Shutdown	12/3/2018	04:35:28	USER	13.18	8.20	667.00	CHICKSEN LEAKING ON FLOOR.
Event	15	Pump Tail Cement	Pump Tail Cement	12/3/2018	04:56:13	COM4	13.25	7.90	504.00	PUMP 1609 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 YIELD, 7.66 GAL/SK, 449.9 BBLs, CALCULATED TOT @ 6786', DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	16	Shutdown	Shutdown	12/3/2018	05:59:44	COM4	13.56	0.00	-13.00	SHUTDOWN TO CLEAN PUMPS/LINES AND DROP TOP PLUG.
Event	17	Drop Top Plug	Drop Top Plug	12/3/2018	06:09:08	COM4	-0.45	0.00	-28.00	PLUG LEFT THE PLUG CONTAINER, VERIFIED BY COMPANY MAN.
Event	18	Pump Displacement	Pump Displacement	12/3/2018	06:09:15	COM4	-0.45	0.00	-28.00	
Event	19	Cement Returns to Surface	Cement Returns to Surface	12/3/2018	06:53:18	USER	8.17	7.20	2958.00	CEMENT RETURNED TO SURFACE 350 BBL INTO DISPLACEMENT. 45 BBL CEMENT TO SURFACE.
Event	20	Bump Plug	Bump Plug	12/3/2018	07:01:04	COM4	8.16	0.00	2706.00	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE OF 2360 PSI.
Event	21	Pressure Up	Pressure Up	12/3/2018	07:03:22	USER	8.17	0.00	3491.00	PRESSURED UP TO 3000 PSI.
Event	22	Check Floats	Check Floats	12/3/2018	07:04:05	USER	8.11	0.00	1936.00	RELEASED PRESSURE BACK TO THE TRUCK, FLOATS HELD, RECIEVED 5 BBL BACK TO THE TRUCK.
Event	23	Pressure Up	Pressure Up	12/3/2018	07:08:07	USER	8.22	2.00	4079.00	PRESSURE UP TO 4500 TO RUPTURE DISK IN TOP PLUG, PLUG DID NOT RUPTURE.

Event	24	Pressure Up	Pressure Up	12/3/2018	07:15:18	USER	8.26	0.00	4478.00	PRESSURED UP TO 4400 PSI TO RUPTURE TOP PLUG DISK, DISK DID NOT RUPTURE.
Event	25	End Job	End Job	12/3/2018	07:18:32	COM4	8.09	0.00	-3.00	
Event	26	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/3/2018	07:25:00	USER	8.05	0.00	-15.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	27	Rig-Down Completed	Rig-Down Completed	12/3/2018	09:00:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL.
Event	28	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/3/2018	09:15:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	29	Crew Leave Location	Crew Leave Location	12/3/2018	09:30:00	USER				THANK YOU FOR USING HALLIBURTON - THOMAS HAAS AND CREW.

## 3.0 Attachments

### 3.1 Duck Club 12W-20-8C Production – Job Chart with Events



3.2 Duck Club 12W-20-8C Production – Job Chart without Events

