

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Thursday, January 02, 2020

EXTRACTION NORTHWEST A S20-25-11C

Job Date: Monday, December 30, 2019

Sincerely,
Tyler Hill

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 **Northwest A S20-25-11C** 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 70bbls 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

Sold To #: 369404		Ship To #: 3901405		Quote #:		Sales Order #: 0906200260				
Customer: EXTRACTION OIL & GAS-EBUS					Customer Rep: MANNY PARRAS					
Well Name: NORTHWEST A			Well #: S20-25-11C			API/UWI #: 05-014-20789-00				
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD			State: COLORADO			
Legal Description: NW NW-9-1S-68W-1285FNL-831FWL										
Contractor: PATTERSON-UTI ENERGY					Rig/Platform Name/Num: PATTERSON 901					
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\H171328					Srv Supervisor: Nikolaus Kornafel					
Job										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type					BHST					
Job depth MD		21927ft			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	1611	0	0
Casing		5.5	4.892	17			0	21927	0	0
Open Hole Section			8.75				1611	14040	0	8250
Open Hole Section			8.5				14040	21935	0	0
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5	1		21927		Top Plug	5.5	1	HES	
Float Shoe	5.5					Bottom Plug	5.5	1	HES	
Float Collar	5.5	1		21914						
Insert Float	5.5					Plug Container	5.5	1	HES	
Stage Tool	5.5					Centralizers	5.5			
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	SPACER	TUNED PRIME CEMENT SPACER SYS	100	bbl	11.5	3.62	22.9	6	3,552
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	CAP CEMENT	ELASTICEM (TM) SYSTEM	870	sack	12.5	1.76	8.98	8	7,812
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	LATEX CEMENT	GASSTOP (TM) SYSTEM	615	sack	13.2	1.57	7.65	8	4,704
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	TAIL CEMENT	ELASTICEM (TM) SYSTEM	2,100	sack	13.2	1.56	7.63	8	16,023
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			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
6	Displacement	Displacement	488	bbl	8.33			7	
Cement Left In Pipe									
Amount		0 ft			Reason			Wet Shoe	
Mix Water: pH 7		Mix Water Chloride: 0 ppm			Mix Water Temperature: 69 °F				
Cement Temperature: N/A		Plug Displaced by: 8.33 lb/gal			Disp. Temperature: 69 °F				
Plug Bumped? Yes		Bump Pressure: 2,760 psi			Floats Held? Yes				
Cement Returns: 70 bbl		Returns Density: N/A			Returns Temperature: N/A				
Comment DROPPED THE BOTTOM PLUG THEN PUMPED 100 BBLs OF SPACER FOLLOWED BY 272 BBLs OF CAP CEMENT FOLLOWED BY 172 BBLs OF LEAD LATEX CEMENT FOLLOWED BY 583 BBLs OF TAIL CEMENT. DROPPED THE TOP PLUG AND DISPLACED WITH 508 BBLs OF FRESH WATER. BUMPED THE PLUG AND THEN PRESSURED UP TO 3,417 PSI TO BURST THE DISK AND PUMPED A 5 BBL WET SHOE. THEN RELEASED PRESSURE AND CHECKED FLOATS, FLOATS HELD, 4.5 BBLs BACK.									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press <i>(psi)</i>	Comb Pump Rate <i>(bbl/min)</i>	DH Density <i>(ppg)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	12/30/2019	06:00:00	USER					CREW CALLED OUT AT 06:30, REQUESTED ON LOCATION 12:30. CREW PICKED UP CEMENT, CHEMICALS, PLUGS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 11566182, SOFTSIDE 12051660 AND PUMP 11826999.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	12/30/2019	10:45:00	USER					CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	12/30/2019	11:00:00	USER					STARTED JOURNEY MANAGEMENT.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	12/30/2019	12:00:00	USER					END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,611, 5.5" CASING: 17 LB/FT TOTAL 21,927', 8.5" HOLE, TD 21,935', SHOE TRAC- 12', TVD- 8,250'. PUMP FRESH WATER DISPLACEMENT 508 BBLS. CASING LANDED @ 15:30 12/30/2019. RIG CIRCULATED BOTTOMS UP.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/30/2019	12:45:00	USER					HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS

											ASSOCIATED WITH LOCATION, RIG UP, AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	12/30/2019	13:00:00	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	12/30/2019	15:45:00	USER					SAFETY MEETING WITH HALLIBURTON, AND RIG PERSONNEL. CREW COMMUNICATED POTENTIAL SAFETY HAZARDS, AND JOB DETAILS.
Event	8	Start Job	Start Job	12/30/2019	16:19:50	COM11	1.00	0.00	8.47	12.00	BEGIN RECORDING JOB DATA.
Event	9	Drop Bottom Plug	Drop Bottom Plug	12/30/2019	16:20:39	COM11	142.00	2.80	8.78	0.60	BOTTOM PLUG LEFT THE PLUG CONTAINER, WITNESSED BY THE COMPANY MAN.
Event	10	Test Lines	Test Lines	12/30/2019	16:21:43	COM11	68.00	0.00	8.28	2.10	PRESSURE TESTED IRON TO 6,500 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1,185 PSI, 5TH GEAR STALL OUT @ 1,410 PSI. PRESSURE HELD WITH NO LEAKS.
Event	11	Pump Spacer 1	Pump Spacer 1	12/30/2019	16:25:57	COM11	12.00	0.00	8.18	0.00	PUMP 100 BBLS OF SPACER @ 11.5 LB/GAL, 3.62 FT3/SK, 22.9 GAL/SK 25 GALLONS OF D-AIR, 10 GALLONS OF MUSOL A, 10 GALLONS OF DAUL B SURFACTANT ADDED ON THE FLY. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 780 PSI.

Event	12	Check Weight	Check Weight	12/30/2019	16:31:49	COM11	290.00	3.90	11.56	20.70	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	13	Check Weight	Check Weight	12/30/2019	16:36:08	COM11	227.00	3.90	11.51	37.50	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	14	Check Weight	Check Weight	12/30/2019	16:40:29	COM11	639.00	7.90	11.69	66.60	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	15	Pump Lead Cement	Pump Lead Cement	12/30/2019	16:44:54	COM11	173.00	4.20	11.48	86.80	PUMPED 870 SKS OF ELASTICEM @ 12.5 LB/GAL, 1.76 FT3/SK, 8.98 GAL/SK. 272 BBLS, 70 BBLS OF CAP CEMENT TO SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 560 PSI. TOP OF CAP CEMENT AT SURFACE
Event	16	Check Weight	Check Weight	12/30/2019	16:49:08	COM11	788.00	8.30	12.48	18.50	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	17	Check Weight	Check Weight	12/30/2019	17:08:29	COM11	550.00	8.30	12.44	179.90	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	18	Pump Cement	Pump Cement	12/30/2019	17:20:03	COM11	559.00	8.30	12.39	276.40	PUMPED 615 SKS OF GASTOP @ 13.2 LB/GAL, 1.57 FT3/SK, 7.65 GAL/SK. 172 BBLS, 1,538 GALS LATEX. ESTIMATED TOP OF LATEX CEMENT AT 4,410'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 780 PSI.
Event	19	Check Weight	Check Weight	12/30/2019	17:21:22	COM11	762.00	8.30	13.10	11.00	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	20	Check Weight	Check Weight	12/30/2019	17:21:51	COM11	813.00	8.30	13.21	15.00	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	21	Pump Tail Cement	Pump Tail Cement	12/30/2019	17:42:03	COM11	674.00	8.20	13.08	180.00	PUMP 2,100 SKS OF ELASTICEM @ 13.2 LB/GAL,

1.56 FT3/SK, 7.63 GAL/SK,
 583 BBLs. TOT CALCULATED
 @ 8,232'. DENSITY VERIFIED
 BY PRESSURIZED MUD
 SCALES. PUMP RATE 8
 BBLs/MIN @ 683 PSI.

Event	22	Check Weight	Check Weight	12/30/2019	17:43:08	COM11	753.00	8.20	13.24	8.90	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	23	Check Weight	Check Weight	12/30/2019	18:01:02	COM11	623.00	8.20	13.26	154.00	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	24	Check Weight	Check Weight	12/30/2019	18:04:18	COM11	629.00	8.20	13.25	180.80	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	25	Check Weight	Check Weight	12/30/2019	18:21:51	COM11	654.00	8.40	13.25	320.70	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	26	Check Weight	Check Weight	12/30/2019	18:22:00	COM11	670.00	8.40	13.26	321.90	DENSITY VERIFIED BY PRESSURIZED MUD SCALES.
Event	27	Shutdown	Shutdown	12/30/2019	19:00:39	COM11	19.00	0.00	16.70	613.60	SHUTDOWN TO WASH LINES.
Event	28	Drop Top Plug	Drop Top Plug	12/30/2019	19:09:13	COM11	8.00	0.00	7.78	627.60	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.
Event	29	Pump Displacement	Pump Displacement	12/30/2019	19:09:16	COM11	8.00	0.00	7.78	627.60	BEGIN CALCULATED DISPLACEMENT OF 508 BBLs OF FRESH WATER WITH THE FIRST 20 BBLs WITH MMCR IN IT. 50 BBLs SPACER RETURNED TO SURFACE, 70 BBLs OF CAP CEMENT RETURNED TO SURFACE.
Event	30	Displ Reached Cement	Displ Reached Cement	12/30/2019	19:14:14	COM11	503.00	5.90	8.25	25.70	CAUGHT CEMENT @ 25 BBLs INTO DISPLACEMENT.
Event	31	Bump Plug	Bump Plug	12/30/2019	20:46:29	COM11	3104.00	0.00	8.50	513.70	PLUG BUMPED AT CALCULATED DISPLACEMENT WHILE PUMPING 3 BBLs/MIN AT

											2,760 PSI PRESSURED UP 500 PSI OVER FINAL CIRCULATING PRESSURE TO 3,116 PSI
Event	32	Pressure Up Well	Pressure Up Well	12/30/2019	20:46:33	COM11	3107.00	0.00	8.49	513.70	RESET KICKOUTS AND PRESURRED UP TO 3,417 PSI TO BURST THE DISK AND THEN PUMPED A 5 BBL WET SHOE.
Event	33	Other	Other	12/30/2019	20:49:42	COM11	2705.00	0.00	8.48	521.40	RELEASED PRESSURE, FLOATS HELD, 4.5 BBL BACK.
Event	34	End Job	End Job	12/30/2019	20:51:29	COM11	1.00	0.00	8.44	0.00	STOP RECORDING JOB DATA.
Event	35	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/30/2019	20:55:00	USER	-1.00	0.00	8.42	0.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	36	Rig-Down Completed	Rig-Down Completed	12/30/2019	22:30:00	USER					ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	37	Safety Meeting - Departing Location	Safety Meeting - Departing Location	12/30/2019	23:00:00	USER					CREW DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW. THANK YOU FOR USING HALLIBURTON – NICK KORNAFEL AND CREW.

3.0 Attachments

3.1 Northwest A S20-25-11C Production

