

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Thursday, August 23, 2018

Rinn Valley East N17-20-4C Surface

Job Date: Friday, August 10, 2018

Sincerely,

Bryce Hinsch

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 **Rinn Valley East N17-20-4C** cement **surface** 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 34 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

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
2	Cement	SWIFTCEM (TM) SYSTEM	550	sack	13.5	1.74	9.2	8	5,060	
3	Displacement	Fresh Water	124	bbl	8.33			8		
Cement Left In Pipe										
Amount		45 ft			Reason			Shoe Joint		
Mix Water: pH 7.0		Mix Water Chloride: 0 ppm			Mix Water Temperature: 68 °F					
Cement Temperature: ## °F		Plug Displaced by: 8.33 lb/gal			Disp. Temperature: 68 °F					
Plug Bumped? Yes		Bump Pressure: 493 psi			Floats Held? Yes					
Cement Returns: 34 bbls		Returns Density: 13.5 lb/gal			Returns Temperature: ## °F					
Comment: Pumped 20 bbls red dye, 170.44 bbls cement, 124 bbls displacement, cement to surface @ 90 bbls away 34 bbls 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 <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	PS Pump Press <i>(psi)</i>	Comments
Event	1	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/9/2018	16:00:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	2	Crew Leave Yard	Crew Leave Yard	8/9/2018	17:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	3	Call Out	Call Out	8/9/2018	18:00:00	USER				CREW CALLED OUT AT 18:00, REQUESTED ON LOCATION 00:00. CREW PICKED UP CEMENT, TOP PLUG, 100 LBS OF SUGAR, 2 LBS RED DYE, FROM FT. LUPTON, CO. BULK TRUCKS 10867096, 10991603, AND ELITE 11189145.
Event	4	Arrive at Location from Service Center	Arrive at Location	8/9/2018	18:00:00	USER				ON LOCATION FROM PREVIOUS JOB. MEET WITH CO. MAN TO DISCUSS JOB; CASING- 9.625" 36 LB/FT @ 1,653.21', 13.5" HOLE 1,653.21', SHOE 45', FRESH WATER DISPLACEMENT, HALLIBURTON TOP PLUG. CASING LANDED @ 00:00 08/10/2018. RIG CIRCULATED BOTTOMS UP.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	8/9/2018	20:30:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.

Event	6	Rig-Up Equipment	Rig-Up Equipment	8/9/2018	23:00:00	USER				CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Rig-Up Completed	Rig-Up Completed	8/9/2018	23:45:00	USER				
Event	8	Safety Meeting - Pre Job	Safety Meeting - Pre Job	8/10/2018	00:15:00	USER	0.00	0.00	-6.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	9	Start Job	Start Job	8/10/2018	00:34:26	COM5	8.09	0.00	-8.00	BEGIN RECORDING JOB DATA.
Event	10	Test Lines	Test Lines	8/10/2018	00:37:17	COM5	8.09	0.00	15.00	PRESSURE TESTED IRON TO 3,000 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 1,450 PSI, 5TH GEAR STALL OUT @ 1,879 PSI.
Event	11	Pump Spacer 1	Pump Spacer 1	8/10/2018	00:41:18	COM5	8.11	0.00	-4.00	PUMP 20 BBLS OF FRESH WATER WITH RED DYE. PUMP RATE 3 BBLS/MIN @ 84 PSI.
Event	12	Pump Cement	Pump Cement	8/10/2018	00:51:30	COM5	14.03	3.00	75.00	PUMP 550 SKS OF SWIFTCEM @ 13.5 LB/GAL, 1.74 FT3/SK, 9.2 GAL/SK 170.44 BBLS. HOT CALCULATED @ 1,653.21' TOT @ SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 292 PSI.
Event	13	Shutdown	Shutdown	8/10/2018	01:15:46	USER	13.94	4.00	97.00	REMOVED SWAGE TO DROP TOP PLUG, VERIFIED BY COMPANY REP.
Event	14	Drop Top Plug	Drop Top Plug	8/10/2018	01:18:55	COM5	16.04	0.00	1.00	PLUG LOADED AND SWAGE BACK ON.

Event	15	Pump Displacement	Pump Displacement	8/10/2018	01:21:26	COM5	14.01	0.90	17.00	BEGIN CALCULATED DISPLACEMENT OF 124 BBLS WITH FRESH WATER. CEMENT TO SURFACE @ 90 BBLS INTO DISPLACEMENT 34 BBLS CEMENT TO SURFACE.
Event	16	Bump Plug	Bump Plug	8/10/2018	01:45:00	COM5				PLUG BUMPED AT CALCULATED DISPLACEMENT. PRESSURED UP TO 1,500 PSI FOR 5 MIN CASING PRESSURE TEST.
Event	17	Check Floats	Check Floats	8/10/2018	01:49:39	USER	8.37	0.00	463.00	RELEASED PRESSURE, FLOATS HELD, .75 BBLS BACK.
Event	18	End Job	End Job	8/10/2018	01:51:07	COM5	8.35	0.00	-6.00	STOP RECORDING JOB DATA.
Event	19	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	8/10/2018	02:00:00	USER				DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	20	Rig-Down Equipment	Rig-Down Equipment	8/10/2018	02:15:00	USER				RIG DOWN BULK AND MIXING EQUIPMENT.
Event	21	Rig-Down Completed	Rig-Down Completed	8/10/2018	02:45:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	22	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/10/2018	03:45:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	23	Depart Location	Depart Location	8/10/2018	04:00:00	USER				THANK YOU FOR USING HALLIBURTON - NICK PETERSON AND CREW.

3.0 Attachments

3.1 Extraction Rinn Valley East N17-20-4C Surface Job Chart

