

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Rinn Valley East N17-20-1C 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 **Rinn Valley East N17-20-1C** 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 42bbbls of cement 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]

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3892440	Quote #:	Sales Order #: 0905084781							
Customer: EXTRACTION OIL & GAS		Customer Rep: Danny Herrera								
Well Name: RINN VALLEY EAST	Well #: N17-20-1C	API/UWI #: 05-123-47317-00								
Field: WATTENBERG	City (SAP): FIRESTONE	County/Parish: WELD	State: COLORADO							
Legal Description: SW SE-17-2N-68W-954FSL-1769FEL										
Contractor:		Rig/Platform Name/Num: Patterson 901								
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX38199		Srv Supervisor: Nick Cummins								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type	BHST									
Job depth MD	17755ft	Job Depth TVD	7443							
Water Depth		Wk Ht Above Floor	5ft							
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	0	9.625	8.921	36		J-55	0	1664	0	0
Casing	0	5.5	4.778	20	BTC	P-110	0	17598	0	0
Open Hole Section			8.5				1664	17608	0	0
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5	1	KLX	17598		Latch Down Plug	5.5	1	KLX	
Float Collar	5.5	1	KLX	17593		Plug Container	5.5	1		
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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	50	bbl	11.5	3.73	23.4	5		
Fluid Data										
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	2770	sack	13.2	1.57		8	7.53	

last updated on 8/30/2018 11:09:48 AM

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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	Displacement	Displacement	390	bbl	8.33				
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe	
Mix Water:		pH 7	Mix Water Chloride:		<400 ppm		Mix Water Temperature:		68°F
			Plug Displaced by:		8.33 lb/gal				
Plug Bumped?		Yes	Bump Pressure:		2800 psi		Floats Held?		Yes
Cement Returns:		42 bbls	Returns Density:		13.2 lb/gal				
Comment During the last 100 bbls of cement we had delivery issues from one of our 1600 bins (11077856). We slowed rate to maintain density.42bbls of cement to surface.									

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	8/23/2018	20:30:00	USER				The crew was called out 8/23/2018, requested on location at 0400 8/24/2018. Crew picked up requested chemicals (25 gals Musol ,25 gals Dual Spacer B , 10 gals D-Ait), 100 lbs Sugar, and plug container from Fort Lupton, CO.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	8/24/2018	00:19:00	USER				The crew held a pre journey safety meeting. The supervisor called in a journey. The crew departed from service center.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	8/24/2018	01:00:00	USER				The crew arrived on location safely. The rig was still running casing. The supervisor met with the tool hand and received numbers. TD 17,608', TP 17,598' 5 1/2" 20# P-110, FC 17,593', PC 1,664' 9 5/8" 36# J-55, TVD 7,443', OH 8 1/2", Mud 9.5 ppg.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	8/24/2018	01:05:00	USER				Crew discussed all potential hazards on location.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	8/24/2018	01:10:00	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	Other	Rig Up Equipment	8/24/2018	01:15:00	USER				Crew rigged up all HES equipment and lines.
Event	7	Other	Rig Up Completed	8/24/2018	04:10:00	USER				Rig up completed no one got hurt.
Event	8	Casing on Bottom	Casing on Bottom	8/24/2018	04:30:00	USER	-6.00	8.35	0.00	Casing on bottom.
Event	9	Start Job	Start Job	8/24/2018	04:57:04	COM4	-7.00	8.35	0.00	Started recording data for cement job
Event	10	Safety Meeting - Pre Job	Safety Meeting - Pre Job	8/24/2018	05:00:00	USER	-6.00	8.35	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	11	Other	Fill Lines	8/24/2018	05:56:59	COM4	-7.00	8.51	0.00	We filed lines with 3 bbls of water. At 3 bpm with 270 psi

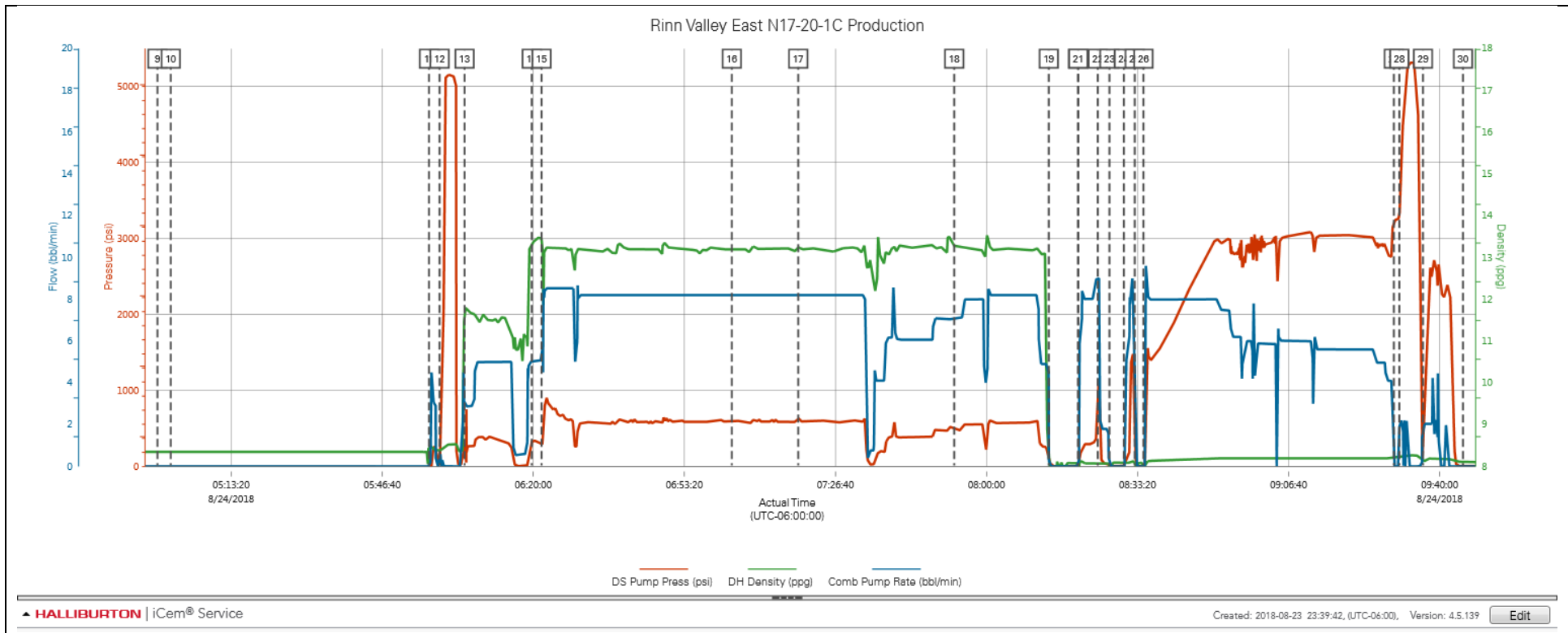
on the lines.

Event	12	Test Lines	Test Lines	8/24/2018	05:59:20	COM4	78.00	8.38	0.00	We pressure tested all HES lines to 5,000 psi. The 500 psi eko kicked out at 900 psi. 5th gear stall 2,100. The pressure test passed.
Event	13	Pump Spacer 1	Pump Spacer 1	8/24/2018	06:04:49	COM4	306.00	11.68	2.70	We pumped 50 bbls of tuned spacer. At 5bpm with 300 psi on the lines. 11.5 ppg 3.73 yield 23.4 gals/sk. We verified the weight of the tuned spacer using pressurized scales. It scaled up at 11.5 ppg.
Event	14	Pump Lead Cement	Pump Lead Cement	8/24/2018	06:19:39	COM4	319.00	13.39	5.00	We pumped 775 bbls (2770 sks) of cement. At 8 bpm with 600 psi on the lines. 13.2 ppg 1.57 yield 7.53 gals/sk. We had delivery issues due to a pony motor on a bin, we slowed our rate to maintain density.
Event	15	Check Weight	Check Weight	8/24/2018	06:21:48	COM4	295.00	13.46	5.00	We verified the weight of the cement using pressurized scales. It scaled up at 13.2 ppg.
Event	16	Check Weight	Check Weight	8/24/2018	07:03:48	COM4	615.00	13.20	8.20	We verified the weight of the cement using pressurized scales. It scaled up at 13.2 ppg.
Event	17	Check Weight	Check Weight	8/24/2018	07:18:28	COM4	621.00	13.22	8.20	We verified the weight of the cement using pressurized scales. It scaled up at 13.2 ppg.
Event	18	Check Weight	Check Weight	8/24/2018	07:52:53	COM4	493.00	13.29	7.10	We verified the weight of the cement using pressurized scales. It scaled up at 13.2 ppg.
Event	19	Shutdown	Shutdown	8/24/2018	08:13:44	COM4	85.00	8.20	0.30	We shut down to drop the latch down plug.
Event	20	Drop Top Plug	Drop Top Plug	8/24/2018	08:20:12	COM4	2.00	8.08	0.00	The company man witnessed the latch down plug drop.
Event	21	Pump Displacement	Pump Displacement	8/24/2018	08:20:15	COM4	3.00	8.10	0.00	We pumped the calculated 390 bbls of displacement at 8 bpm. We slowed down to 4 bpm the last 10 bbls.
Event	22	Displ Reached Cement	Displ Reached Cement	8/24/2018	08:24:33	COM4	997.00	8.10	9.00	Displacement reached cement at 33 bbls away.
Event	23	Shutdown	Shutdown	8/24/2018	08:27:08	COM4	42.00	8.07	0.00	We shutdown at 41 bbls away to fix a leak on the face seal of the plug container.
Event	24	Pump Displacement	Pump Displacement	8/24/2018	08:30:18	COM4	3.00	8.10	0.00	We began pumping displacement again at 5 bpm.
Event	25	Shutdown	Shutdown	8/24/2018	08:32:42	COM4	505.00	8.13	0.00	We shut down at 55 bbls away to tighten the pup joint which began leaking.

Event	26	Pump Displacement	Pump Displacement	8/24/2018	08:34:39	COM4	4.00	8.09	0.00	We began pumping displacement again at 8 bpm.
Event	27	Bump Plug	Bump Plug	8/24/2018	09:29:54	COM4	3248.00	8.21	0.00	We bumped the plug with final circulating pressure at 2,800 psi. We brought it 500 psi over to 3,295 psi
Event	28	Other	Pressure up	8/24/2018	09:31:06	COM4	3297.00	8.21	1.80	We began pumping at 2 bpm to rupture the disk. The pressure got up to 5,200 psi, Company Man requested HES to shutdown the pumps and to bleed the pressure off. When we bled the pressure off, we got 8 bbls back to the truck.
Event	29	Other	Pressure up	8/24/2018	09:36:19	COM4	210.00	8.08	2.10	Company Man asked HES to pressure back up at 2 bpm. HES pumped 8 bbls to rupture the disk, The disk ruptured at 2,600 psi , then HES pumped another 5 bbls as per customer request for the 5 bbl wet shoe, we checked the floats and the floats held HES got 5 bbls back to the truck.
Event	30	End Job	End Job	8/24/2018	09:45:09	COM4	6.00	8.11	0.00	Cement job complete. We got 50 bbls of spacer back to surface, and 42 bbls of cement to surface, as calculated.
Event	31	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	8/24/2018	09:50:00	USER	7.00	8.10	0.00	Crew held a safety meeting discussing the rig down procedure. Also all potential hazards associated with rigging down all HES equipment and lines.
Event	32	Rig Down Lines	Rig Down Lines	8/24/2018	10:00:00	USER	7.00	-0.24	0.00	Rigged down all HES equipment and lines.
Event	33	Rig-Down Completed	Rig-Down Completed	8/24/2018	11:00:00	USER				Rig down completed no one got hurt.
Event	34	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	8/24/2018	11:45:00	USER				The crew held a pre journey safety meeting discussing the route and potential hazards while driving The supervisor called in a journey.
Event	35	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	8/24/2018	12:00:00	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 Rinn Valley East N17-20-1C Production – Job Chart with Events



3.2 Rinn Valley East N17-20-1C Production – Job Chart without Events

