

# HALLIBURTON

iCem<sup>®</sup> Service

**EXTRACTION OIL & GAS-EBUS**

**Rinn Valley East N17-20-2N 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 **Rinn Valley East N17-20-2N** 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 48bbls of cement returned to the 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]**

## HALLIBURTON

## Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 369404	Ship To #: 3892543	Quote #:	Sales Order #: 0905073391							
Customer: EXTRACTION OIL & GAS		Customer Rep: Danny Herrera								
Well Name: RINN VALLEY EAST	Well #: N17-20-2N	API/UWI #: 05-123-47316-00								
Field: WATTENBERG	City (SAP): FIRESTONE	County/Parish: WELD	State: COLORADO							
Legal Description: SW SE-17-2N-68W-926FSL-1770FEL										
Contractor:		Rig/Platform Name/Num: Patterson 901								
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA/HX38199		Srv Supervisor: Steven Markovich								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST								
Job depth MD	20575ft	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	0	9.625	8.921	36		J-55	0	1557	0	1557
Casing	0	5.5	4.778	20	BTC	P-110	0	17325	0	0
Open Hole Section			8.375				1557	8890	1577	7026
Open Hole Section			8.5				8890	17338		
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5			20575		Top Plug	5.5		HES	
Float Shoe	5.5					Bottom Plug	5.5		HES	
Float Collar	5.5					SSR plug set	5.5		HES	
Insert Float	5.5					Plug Container	5.5		HES	
Stage Tool	5.5					Centralizers	5.5		HES	
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		6		
0.50 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)								
35 gal/bbl		FRESH WATER								
0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								

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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	382	bbl	8.33				
Cement Left In Pipe		Amount	0 ft		Reason			Wet Shoe	
Comment Spacer to surface at 284bbls away, cement to surface at 314bbls away bringing 48bbls of cement to surface. Bumped plug at 382bbls away, final lift pressure was 3694psi. Kicked in pumps to burst plug. Plug burst at 4160psi, then pumped a 5bbl wet shoe.									

## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

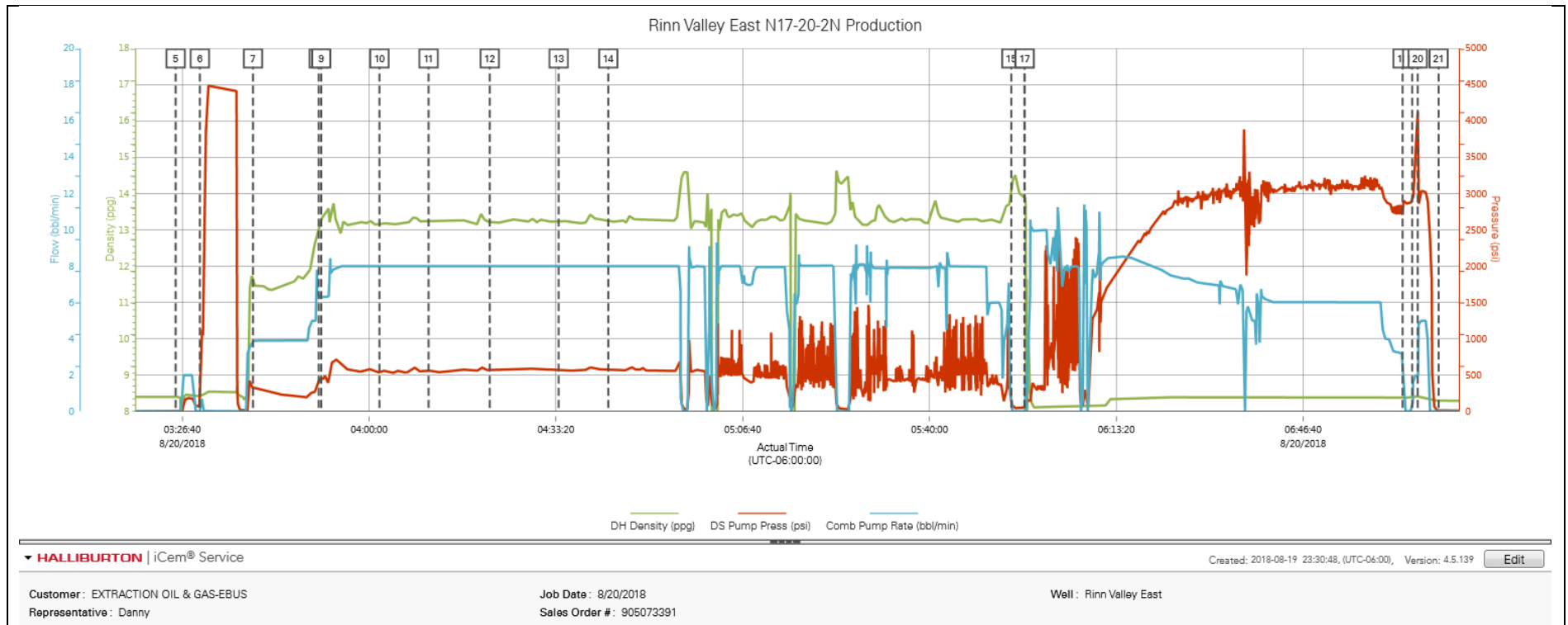
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	DS Pump Press (psi)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	8/19/2018	15:00:00	USER				Job called out at 1500 with an on location time of 2200.
Event	2	Crew Leave Yard	Crew Leave Yard	8/19/2018	20:00:00	USER				JSA with HES crew on directions and road hazards on the way to location
Event	3	Arrive At Loc	Arrive At Loc	8/19/2018	20:40:00	USER				Arrived on location, rig still running casing. 8000' to run.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	8/19/2018	20:50:00	USER				JSA and hazard hunt with HES crew
Event	5	Start Job	Start Job	8/20/2018	03:25:28	COM4	8.40	-2.00	0.00	TD 17338' TP 17328' FC 17323' 5 1/2" 20# Production Casing, 8 1/2" Open hole, 9 5/8" 36# Surface Casing set at 1569', TVD 7230', Mud weight 9.5#
Event	6	Test Lines	Test Lines	8/20/2018	03:29:48	COM4	8.42	65.00	0.00	Set kick outs to 500 PSI and check low pressure kick outs, then bring pressure up to 4800psi and hold.
Event	7	Pump Spacer 1	Pump Spacer 1	8/20/2018	03:39:16	COM4	11.70	356.00	3.90	Pump 50bbbls of 11.5ppg 3.73 Yield Tuned Spacer. Added 25 gallons of Musol A and Dual Spacer B on the fly. Pumped at 4bbl/min 220psi.
Event	8	Pump Lead Cement	Pump Lead Cement	8/20/2018	03:51:00	COM4	13.03	461.00	6.30	Pump 766bbbls of 13.2ppg 1.57yield Cement. Pumped at 8bbl/min 640psi.
Event	9	Check Weight	Check Weight	8/20/2018	03:51:27	COM4	13.27	442.00	6.30	Weight verified by pressurized scales.
Event	10	Check Weight	Check Weight	8/20/2018	04:01:51	COM4	13.14	530.00	8.00	Weight verified by pressurized scales.
Event	11	Check Weight	Check Weight	8/20/2018	04:10:36	COM4	13.23	545.00	8.00	Weight verified by pressurized scales.
Event	12	Check Weight	Check Weight	8/20/2018	04:21:31	COM4	13.22	567.00	8.00	Weight verified by pressurized scales.
Event	13	Check Weight	Check Weight	8/20/2018	04:33:49	COM4	13.23	558.00	8.00	Weight verified by pressurized scales.
Event	14	Check Weight	Check Weight	8/20/2018	04:42:40	COM4	13.23	555.00	8.00	Weight verified by pressurized scales.

Event	15	Shutdown	Shutdown	8/20/2018	05:54:35	COM4	14.06	120.00	0.00	Shutdown.
Event	16	Drop Top Plug	Drop Top Plug	8/20/2018	05:56:56	COM4	13.91	46.00	0.00	Load and drop plug in front of company rep and tool hand.
Event	17	Pump Displacement	Pump Displacement	8/20/2018	05:57:00	COM4	13.90	47.00	0.00	Pump 382bbls of H2O. Pumped at 9bbl/min and slowed rate with pressure increase. Spacer to surface at 284bbls away, cement to surface at 314bbls away bringing 48bbls of cement to surface.
Event	18	Bump Plug	Bump Plug	8/20/2018	07:04:25	COM4	8.38	2719.00	3.20	Bumped plug at 382bbls away. Final lifting pressure was 2694psi. Brought pressure 500psi over and held.
Event	19	Other	Other	8/20/2018	07:06:07	COM4	8.38	2882.00	0.00	Kicked in pumps at 2bbl/min to burst plug.
Event	20	Other	Other	8/20/2018	07:07:07	COM4	8.42	4160.00	2.00	Plug burst at 4160psi. Increased rate to 5bbl/min and pumped a 5bbl wet shoe. Opened release line to check floats. After 3.5bbs back floats held.
Event	21	End Job	End Job	8/20/2018	07:10:50	COM4	8.30	9.00	0.00	Thank you, Steve Markovich and crew.



## 3.0 Attachments

### 3.1 Rinn Valley East N17-20-2N Production – Job Chart with Events



## 3.2 Rinn Valley East N17-20-2N Production – Job Chart without Events

