

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Rinn Valley N17-20-11N Surface

Sincerely,
Meghan Jacobs

Legal Notice

Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

Table of Contents

1.0 Cementing Job Summary 4

 1.1 Executive Summary4

2.0 Real-Time Job Summary 7

 2.1 Job Event Log7

3.0 Attachments..... 9

 3.1 Rinn Valley N17-20-11N Surface – Job Chart with Events9

 3.2 Rinn Valley N17-20-11N Surface – Job Chart without Events10

1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Rinn Valley N17-20-11N** 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 13bbls 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]

HALLIBURTON

Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3888634	Quote #:	Sales Order #: 0904977150							
Customer: EXTRACTION OIL & GAS -		Customer Rep:								
Well Name: RINN VALLEY EAST	Well #: N17-20-11N	API/UWI #: 05-123-47176-00								
Field: WATTENBERG	City (SAP): FIRESTONE	County/Parish: WELD	State: COLORADO							
Legal Description: SE SE-18-2N-68W-198FSL-477FEL										
Contractor: Shawn McIntyre		Rig/Platform Name/Num: Cartel 11								
Job BOM: 7521 7521										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA/HX38199		Srv Supervisor: Fernando Luna								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST								
Job depth MD	1584ft	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	8 RD	J-55	0	1584	0	0
Open Hole Section			13.5				0	1585	0	0
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	9.625			1584		Top Plug	9.625		HES	
Float Shoe	9.625					Bottom Plug	9.625		HES	
Float Collar	9.625					SSR plug set	9.625		HES	
Insert Float	9.625					Plug Container	9.625		HES	
Stage Tool	9.625					Centralizers	9.625		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	Red Dye Spacer	Red Dye Spacer	10	bbl	8.33					
Stage/Plug #: 2										
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	SwiftCem	SWIFTCCEM (TM) SYSTEM	550	sack	13.5	1.74		5	9.2	

HALLIBURTON

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	Fresh Water	Fresh Water	125	bbl	8.33				
Cement Left In Pipe		Amount	44 ft		Reason			Shoe Joint	
Mix Water:pH ##		Mix Water Chloride:## ppm			Mix Water Temperature:## °F °C				
Cement Temperature:## °F °C		Plug Displaced by:## lb/gal kg/m3 XXXX			Disp. Temperature:## °F °C				
Plug Bumped? Yes/No		Bump Pressure:#### psi MPa			Floats Held? Yes/No				
Cement Returns:## bbl m3		Returns Density:## lb/gal kg/m3			Returns Temperature:## °F °C				
Comment 13bbbls of cement to surface									

2.0 Real-Time Job Summary

2.1 Job Event Log

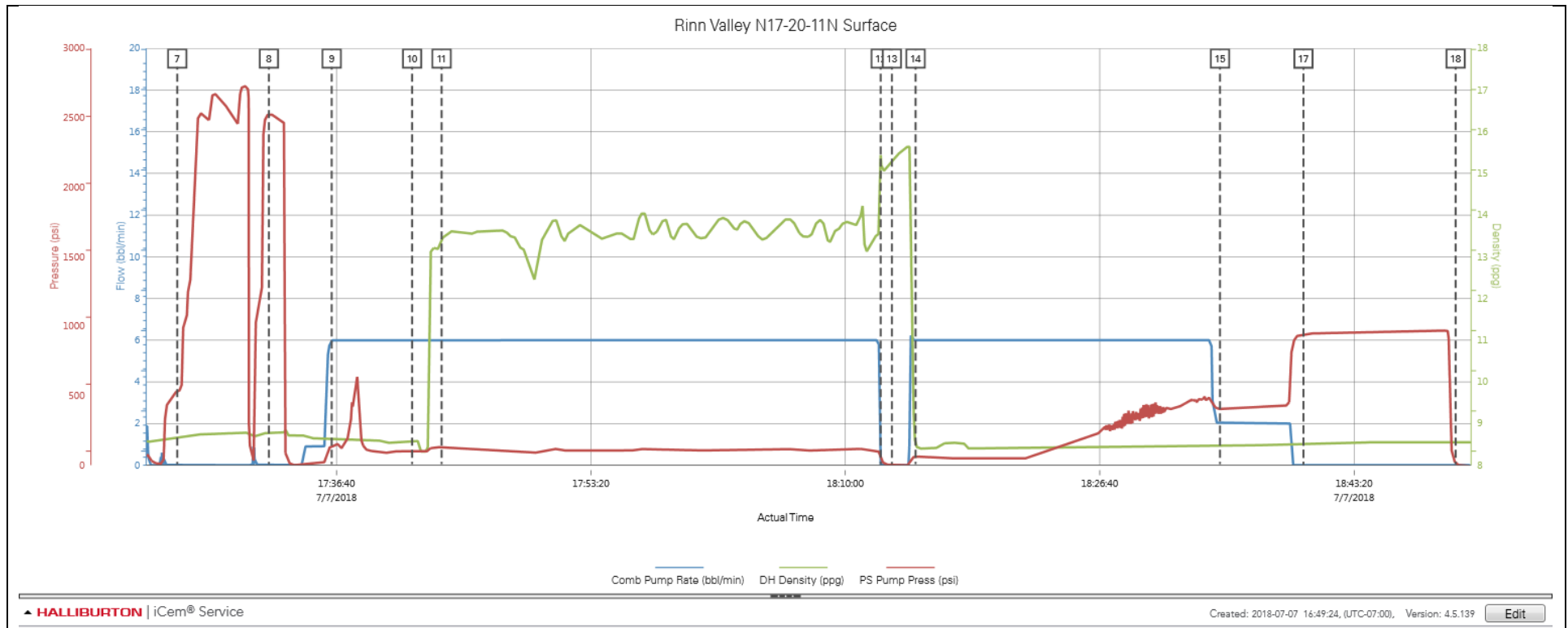
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	7/7/2018	12:00:00	USER				Crew callout
Event	2	Call Out	Arrive at Location	7/7/2018	15:00:00	USER				HES crew arrives on location, signs in with rig safety captain, conducts hazard hunt, spots equipment, conducts pre-rig up safety meeting, completes jsa, and verify volumes with co-rep
Event	3	Call Out	Water Test	7/7/2018	15:01:00	USER				Water test=pH: 7, Cl: <120, temp 66 degrees, Well Fluid density: 8.4 water temp: approx. 86, calibrate pressurized mud scales via provided fresh water source @ 8.33ppg
Event	4	Call Out	Well Info	7/7/2018	15:03:00	USER				TD: 1651' , TP : 1657.66', SJ: 41.41', OH: 13 1/2", Casing: Size/Weight/: 9 5/8" 36# J-55, Previous Casing Shoe: n/a'
Event	5	Call Out	Job Info	7/7/2018	15:04:00	USER				Spacer 1: 30bbl fresh water TOS: approx.. surface' Spacer 2: 10bbls red dye water TOS: Surface Lead Cement: approx.. 170bbls/957cuft/550sks lead cement @ +/- 13.5 density/1.74 yield/9.2 water TOC: approx... surface' , Displacement: 122bbls fresh water, CMT left in Pipe: 41.41' Reason: shoe joint
Event	6	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/7/2018	17:00:00	USER	0.00	8.84	2.00	Conduct safety meeting with all on location: discuss job procedure/contingency plans/hazards involved prior to pumping
Event	7	Pressure Test	Pressure Test	7/7/2018	17:26:14	USER	0.00	8.66	532.00	Low pressure test surface lines @ 532psi
Event	8	Pressure Test Lubricator	Pressure Test	7/7/2018	17:32:14	USER	0.00	8.78	2528.00	High pressure test surface lines @ 2527psi
Event	9	Pump Spacer 1	Pump Spacer 1	7/7/2018	17:36:21	USER	6.00	8.63	146.00	Pump 30bbls fresh water spacer
Event	10	Pump Spacer 2	Pump Spacer 2	7/7/2018	17:41:37	USER	6.00	8.58	103.00	Pump 10bbls red dye water spacer
Event	11	Pump Cement	Pump Cement	7/7/2018	17:43:33	USER	6.00	13.41	135.00	Scale and pump approx. 170bbls/957cuft/550sks lead

cement @ +/- 13.5 density/1.74 yield/9.2 water (Type I-II Cement Pre-Mix Dry 94 Poly-E-Flake Pre-Mix Dry 0.1250 Enhancer 923, CMT Pre-Mix Dry 2 Cal-Seal 60 Pre-Mix Dry 2 Econolite Pre-Mix Dry 1.25 Versaset Pre-Mix Dry 0.20)

Event	12	Shutdown	Shutdown	7/7/2018	18:12:19	USER	0.00	15.48	47.00	
Event	13	Drop Top Plug	Drop Top Plug	7/7/2018	18:13:03	USER	0.00	15.30	0.00	HES service supervisor drops hwe top plug
Event	14	Pump Displacement	Pump Displacement	7/7/2018	18:14:36	USER	6.00	8.51	61.00	Pump approx. 125bbbls fresh water displacement
Event	15	Slow Rate	Slow Rate	7/7/2018	18:34:33	USER	2.00	8.47	406.00	Slow rate to 2bpm
Event	16	Bump Plug	Bump Plug	7/7/2018	18:40:01	USER	0.00	8.52	945.00	Bump hwe top plug @ 945psi
Event	17	Pressure Test Lubricator	Pressure Test	7/7/2018	18:40:01	USER	0.00	8.52	945.00	Pressure test casing 10min @ 945psi
Event	18	Bleed Casing	Bleed Casing	7/7/2018	18:49:59	USER	0.00	8.53	16.00	Bleed off surface lines/casing and verify float collar holds (successful casing test)
Event	19	Depart Location	Depart Location	7/7/2018	21:30:00	USER				HES crew conducts pre-rig down safety meeting, signs out with rig safety captain and departs location
Event	20	Depart Location	Gratitude	7/7/2018	21:31:00	USER				Thank you for choosing Halliburton Energy Services

3.0 Attachments

3.1 Rinn Valley N17-20-11N Surface – Job Chart with Events



3.2 Rinn Valley N17-20-11N Surface – Job Chart without Events

