

# HALLIBURTON

iCem<sup>®</sup> Service

**SRC ENERGY RESOURCES CORPORATION**

**Harvesters State 5N-16B-M Production**

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 Summary .....	4
2.0	Real-Time Job Summary .....	7
2.1	Job Event Log .....	7
3.0	Attachments.....	10
3.1	Harvesters State 5N-16B-M Production – Job Chart before New Pump Arrived.....	10
3.2	Harvesters State 5N-16B-M Production – Job Chart after New Pump Arrived with Events .....	11
3.3	Harvesters State 5N-16B-M Production – Job Chart after New Pump Arrived without Events.....	12

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **Harvesters State 5N-16B-M** 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 24bbls 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 #: 359915		Ship To #: 3859011		Quote #:		Sales Order #: 0904874096				
Customer: SRC ENERGY INC-EBUS				Customer Rep: Lovell Young						
Well Name: HARVESTERS STATE			Well #: 5N-16B-M			API/UWI #: 05-123-46373-00				
Field: WATTENBERG		City (SAP): LUCERNE		County/Parish: WELD		State: COLORADO				
Legal Description: SW NE-15-6N-66W-1773FNL-2334FEL										
Contractor: PRECISION DRLG				Rig/Platform Name/Num: PRECISION 462						
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB41307					Srv Supervisor: Prince Perez					
<b>Job</b>										
Formation Depth (MD)		Top	0	Bottom		14,927'				
Job depth MD		14,918'		Job Depth TVD		7,036'				
				Wk Ht Above Floor		5'				
<b>Well Data</b>										
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	LTC	J-55	0	1830	0	1830
Casing		5.5	4.778	20	BTC	P-110	0	14918	0	0
Open Hole Section			8.5				1830	14927	1830	0
<b>Tools and Accessories</b>										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5	1		14,918		Top Plug	5.5	1	WF	
Float Shoe	5.5	1		14,927		Bottom Plug	5.5	1	WF	
Float Collar	5.5	1		14,805						
						Plug Container	5.5	1	HES	
						Centralizers	5.5	208		
<b>Fluid Data</b>										
Stage/Plug #: 1										
Fluid #	Stage Type	Fluid Name		Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Spacer	Tuned Spacer III		40	bbl	11.5	3.8	23.8	4	1,407
Fluid #	Stage Type	Fluid Name		Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	LEAD	ELASTICEM (TM) SYSTEM		1026	sack	13.2	1.57	7.54	8	7,736

last updated on 5/31/2018 8:22:01 AM

Page 1 of 3

**HALLIBURTON**

*Cementing Job Summary*

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Tail	NeoCem TM	986	sack	13.2	2.04	9.77	8	9,633
4	Displacement	Fresh Water	328	bbl	8.34			8	
Cement Left In Pipe		Amount	Reason		6 BBL Wet Shoe				
Mix Water:		7 pH	Mix Water Chloride: <500 ppm		Mix Water Temperature: 64 °F				
Cement Temperature: ## °F		Plug Displaced by: 8.34 lb/gal		Disp. Temperature: 64 °F					
Plug Bumped? Yes		Bump Pressure: 2,900 psi		Floats Held? Yes					
Cement Returns: 20 bbl		Returns Density: 11.5/13.2 lb/gal		Returns Temperature: ## °F					
Comment									

## 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	Call Out	Call Out	5/25/2018	16:30:00	USER				CREW CALLED OUT AT 16:30, REQUESTED ON LOCATION 22:00. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 11764052, AND PUMP 11189145.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/25/2018	19:50:00	USER				CREW DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Shop	Crew Leave Shop	5/25/2018	20:00:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	5/25/2018	21:15:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,830', 5.5" CASING: 20 LB/FT TOTAL 14,918', 8.5" HOLE, TD 14,927', 122' SHOE TRAC, TVD- 7,036'. PUMP FRESH WATER DISPLACEMENT. CASING LANDED @ 20:00 05/25/2018.
Event	5	Safety Meeting - Assessment of Location	Safety Meeting - Assessment of Location	5/25/2018	21:20:00	USER				HAZARD HUNT. DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP, AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	5/25/2018	21:30:00	USER				RIG UP BULK AND MIXING EQUIPMENT.
Event	7	Rig-Up Completed	Rig-Up Completed	5/25/2018	22:30:00	USER	0.00	0.00	-2.00	CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON AND WATER HOSES TO PERFORM JOB.
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	5/25/2018	22:45:00	USER	8.33	10.40	289.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	9	Start Job	Start Job	5/25/2018	23:06:26	COM4	8.35	0.00	1.00	BEGIN RECORDING JOB DATA.
Event	10	Test Lines	Test Lines	5/25/2018	23:06:42	COM4	8.35	0.00	2.00	PRESSURE TESTED IRON TO 6,000 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 520 PSI, 5TH GEAR STALL OUT @ 1,746 PSI. 6,000 PRESSURE TEST KICKED OUT @ 5,950 PSI.
Event	11	Check Weight	Check Weight	5/25/2018	23:19:51	COM4	8.33	0.00	4.00	SCALED AT REQUIRED WEIGHT.

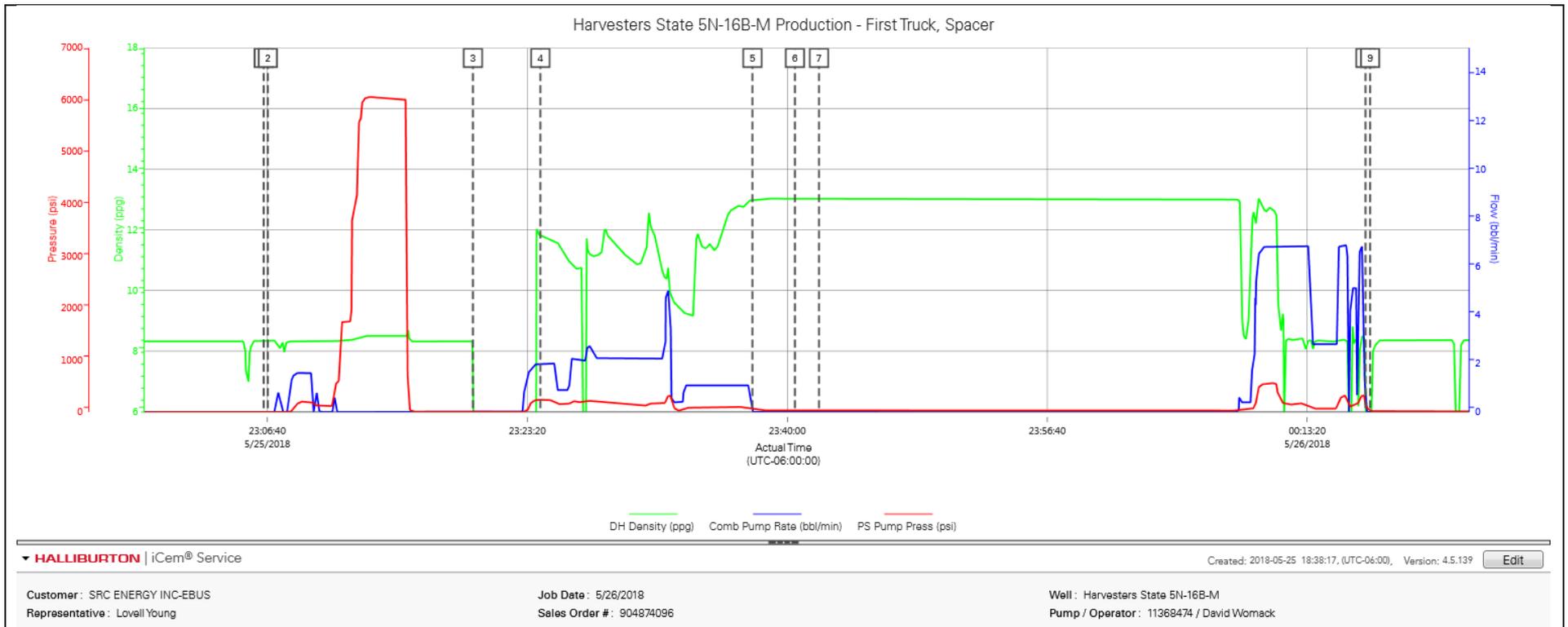
Event	12	Pump Spacer 1	Pump Spacer 1	5/25/2018	23:24:10	COM4	11.85	2.00	240.00	PUMPED 25 BBLS OF TUNED SPACER III @ 11.5 LB/GAL, 10 GALS D-AIR, 20 GALLONS OF MUSOL, 20 GALLONS OF DUAL B. 40 BBLS CALCULATED TO RETURN. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 4 BBLS/MIN @ 510 PSI.
Event	13	Shutdown	Shutdown	5/25/2018	23:37:46	COM4	12.93	0.00	72.00	NOTICED PROBLEMS WITH THE CEMENT HEAD.
Event	14	Check Weight	Check Weight	5/25/2018	23:40:29	COM4	13.03	0.00	31.00	SCALED AT REQUIRED WEIGHT.
Event	15	Check Weight	Check Weight	5/25/2018	23:42:02	COM4	13.02	0.00	31.00	SCALED AT REQUIRED WEIGHT.
Event	16	Shutdown	Shutdown	5/26/2018	00:17:04	COM4	8.33	0.00	145.00	CALLED FOR BACK UP PUMP.
Event	17	End Job	End Job	5/26/2018	00:17:22	COM4	0.59	0.00	28.00	WAITED ON 20 BBLS OF SPACER AND THE BACK UP PUMP TO ARRIVE ON LOCATION.
Event	18	Start Job	Start Job	5/26/2018	04:28:18	COM4	8.11	0.90	2.00	20 BBLS OF SPACER AND BACKUP PUMP ARRIVED ON LOCATION. BEGIN RECORDING JOB DATA.
Event	19	Other	Other	5/26/2018	04:30:47	COM4	8.05	0.90	16.00	FILL LINES.
Event	20	Test Lines	Test Lines	5/26/2018	04:34:11	COM4	8.21	0.00	6004.00	PRESSURE TESTED IRON TO 6,000 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 520 PSI, 5TH GEAR STALL OUT @ 1,746 PSI. 6,000 PRESSURE TEST KICKED OUT @ 5,950 PSI.
Event	21	Check Weight	Check Weight	5/26/2018	04:36:08	COM4	8.11	0.00	70.00	SCALED AT REQUIRED WEIGHT.
Event	22	Pump Spacer 1	Pump Spacer 1	5/26/2018	04:38:26	COM4	8.11	0.00	1.00	PUMPED 40 BBLS OF TUNED SPACER III @ 11.5 LB/GAL, 10 GALS D-AIR, 20 GALLONS OF MUSOL, 20 GALLONS OF DUAL B. 40 BBLS CALCULATED TO RETURN. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 4 BBLS/MIN @ 510 PSI.
Event	23	Check Weight	Check Weight	5/26/2018	04:47:49	COM4	12.36	5.80	482.00	SCALED AT REQUIRED WEIGHT.
Event	24	Pump Lead Cement	Pump Lead Cement	5/26/2018	04:47:59	COM4	12.55	5.80	483.00	PUMPED 1,026 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 FT3/SK, 7.54 GAL/SK. 286.89 BBLS, 20 BBLS CALCULATED TO SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 560 PSI
Event	25	Check Weight	Check Weight	5/26/2018	04:57:51	COM4	12.65	2.80	100.00	SCALED AT REQUIRED WEIGHT.
Event	26	Check Weight	Check Weight	5/26/2018	05:09:25	COM4	13.23	8.10	549.00	SCALED AT REQUIRED WEIGHT.
Event	27	Pump Tail Cement	Pump Tail Cement	5/26/2018	05:27:27	COM4	13.21	8.10	698.00	PUMPED 986 SKS OF ELASTICEM @ 13.2 LB/GAL, 2.04

FT3/SK, 9.77 GAL/SK, 358.24 BBLs. HOT CALCULATED @ 8,780', TOT CALCULATED @ 6,146.6'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLs/MIN @ 790 PSI.

Event	28	Check Weight	Check Weight	5/26/2018	05:30:48	COM4	13.46	8.10	792.00	SCALED AT REQUIRED WEIGHT.
Event	29	Check Weight	Check Weight	5/26/2018	06:00:32	COM4	13.10	8.00	775.00	SCALED AT REQUIRED WEIGHT.
Event	30	Shutdown	Shutdown	5/26/2018	06:11:43	COM4	12.25	0.10	151.00	FINISHED PUMPING CEMENT.
Event	31	Clean Lines	Clean Lines	5/26/2018	06:22:43	COM4	8.11	0.70	256.00	
Event	32	Drop Top Plug	Drop Top Plug	5/26/2018	06:24:03	COM4	1.38	0.00	11.00	
Event	33	Pump Displacement	Pump Displacement	5/26/2018	06:24:22	COM4	4.83	0.00	11.00	BEGIN CALCULATED DISPLACEMENT OF 328.67 BBLs WITH FRESH WATER. PUMP RATE 8 BPM @ 2,800 PSI
Event	34	Displ Reached Cement	Displ Reached Cement	5/26/2018	06:25:33	COM4	8.12	10.00	386.00	CAUGHT CEMENT @ 20 BBLs INTO DISPLACEMENT.
Event	35	Bump Plug	Bump Plug	5/26/2018	07:20:01	COM4				PLUG BUMPED AT CALCULATED DISPLACEMENT. 2,903 PSI PRESSURED 500 PSI OVER BUMP.
Event	36	Other	Other	5/26/2018	07:24:18	COM4	8.34	2.80	2661.00	PRESSURED UP TO RUPTURE THE DISC @ 5,080 PSI
Event	37	Shutdown	Shutdown	5/26/2018	07:25:54	COM4	8.34	0.00	2662.00	
Event	38	Other	Other	5/26/2018	07:26:04	COM4	8.33	0.00	2447.00	PUMP 6 BBLs WET SHOE.
Event	39	End Job	End Job	5/26/2018	07:28:14	COM4				STOP RECORDING JOB DATA.
Event	40	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	5/26/2018	11:00:00	USER				DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	41	Rig-Down Equipment	Rig-Down Equipment	5/26/2018	11:15:00	USER				RIG DOWN BULK AND MIXING EQUIPMENT.
Event	42	Rig-Down Completed	Rig-Down Completed	5/26/2018	11:50:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	43	Crew Leave Location	Crew Leave Location	5/26/2018	12:00:00	USER				THANK YOU FOR USING HALLIBURTON – PRINCE PEREZ AND CREW.

3.0 Attachments

3.1 Harvesters State 5N-16B-M Production – Job Chart before New Pump Arrived



3.2 Harvesters State 5N-16B-M Production – Job Chart after New Pump Arrived with Events



3.3 Harvesters State 5N-16B-M Production – Job Chart after New Pump Arrived without Events

