

# HALLIBURTON

iCem<sup>®</sup> Service

## **SRC ENERGY INC-EBUS**

Date: Wednesday, May 09, 2018

## **Harvesters State 31C-16-M Production**

Job Date: Wednesday, May 02, 2018

Sincerely,  
**Tyler Hill**

## 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..... 11

    3.1    SRC Energy Harvesters State 31C-16-M Production.png.....11

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **Harvesters State 31C-16-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 43 BBL's 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 Ft. Lupton**

*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 359915		<b>Ship To #:</b> 3859007		<b>Quote #:</b>		<b>Sales Order #:</b> 0904822000					
<b>Customer:</b> SRC ENERGY INC-EBUS				<b>Customer Rep:</b> Lovel Young							
<b>Well Name:</b> HARVESTERS STATE			<b>Well #:</b> 31C-16-M		<b>API/UWI #:</b> 05-123-46375-00						
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> LUCERNE		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO					
<b>Legal Description:</b> SW NE-15-6N-66W-1693FNL-2333FEL											
<b>Contractor:</b> Precision				<b>Rig/Platform Name/Num:</b> Precision 462							
<b>Job BOM:</b> 7523 7523											
<b>Well Type:</b> HORIZONTAL OIL											
<b>Sales Person:</b> HALAMERICA\HB41307				<b>Srvc Supervisor:</b> Nicholas Peterson							
<b>Job</b>											
<b>Formation Name</b>											
<b>Formation Depth (MD)</b>		<b>Top</b>	0	<b>Bottom</b>		15,103'					
<b>Form Type</b>				<b>BHST</b>							
<b>Job depth MD</b>		15,093'		<b>Job Depth TVD</b>		7,235'					
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>		5'					
<b>Perforation Depth (MD)</b>		<b>From</b>		<b>To</b>							
<b>Well Data</b>											
<b>Description</b>	<b>New / Used</b>	<b>Size in</b>	<b>ID in</b>	<b>Weight lbm/ft</b>	<b>Thread</b>	<b>Grade</b>	<b>Top MD ft</b>	<b>Bottom MD ft</b>	<b>Top TVD ft</b>	<b>Bottom TVD ft</b>	
Casing		9.625	8.921	36	LTC	J-55	0	1811	0	1811	
Casing	0	5.5	4.778	20	BTC	P-110	0	15093	0	0	
Open Hole Section			8.5				1811	15103	1811	7235	
<b>Tools and Accessories</b>											
<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	<b>Depth ft</b>		<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>		
<b>Guide Shoe</b>	5.5	1	WEATH	15,093		<b>Top Plug</b>	5.5	1	WEATH		
<b>Float Collar</b>	5.5	1	WEATH	15,043		<b>Bottom Plug</b>	5.5	1	WEATH		
<b>Wet Shoe Sub</b>	5.5	1	WEATH	14,985							
						<b>Plug Container</b>	5.5	1	HES		
						<b>Centralizers</b>	5.5	223	WEATH		
<b>Fluid Data</b>											
<b>Stage/Plug #: 1</b>											
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>			<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
1	Spacer	Tuned Spacer III			40	bbl	11.5	3.8		6	1,407

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	LEAD	ELASTICEM (TM) SYSTEM	1055	sack	13.2	1.57	7.64	8	7,954
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	Tail	NeoCem TM	986	sack	13.2	2.04	9.77	8	9,613
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
4	Displacement	MMCR Displacement	20	bbl	8.34			8	
0.2220 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
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
5	Displacement	Water	313	bbl	8.33			8	
1 gal/bbl		CLA-WEB - TOTE (101985045)							
Cement Left In Pipe		Amount	0		Reason Wet Shoe			Shoe Joint	
Mix Water:		Ph 6.8	Mix Water Chloride:0			Mix Water Temperature:		58 °F	
Cement Temperature:		## °F	Plug Displaced by: Water 8.33			Disp. Temperature:		## °F	
Plug Bumped?		Yes	Bump Pressure:2500			Floats Held?		Yes	
Cement Returns:		43 bbls	Returns Density:## lb/gal			Returns Temperature:		## °F	
Comment: Pumped 40 bbls of Tune Spacer, 295 bbls of lead cement, 358 bbls of tail cement followed by 332 bbls of displacement with fresh water. 40 bbls of spacer back to surface followed by 43 bbls of cement to surface.									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	5/1/2018	19:30:00	USER				CREW CALLED OUT AT 19:00, REQUESTED ON LOCATION 00:30. CREW PICKED UP CEMENT, CHEMICALS, AND PLUG CONTAINER FROM FT. LUPTON, CO. BULK 660 10784082, AND PUMP 11189145.
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/1/2018	23:15:00	USER				DISCUSSED ROUTES, HAZARDS, AND COMMUNICATION WITH CREW.
Event	3	Crew Leave Yard	Crew Leave Yard	5/1/2018	23:30:00	USER				STARTED JOURNEY MANAGEMENT.
Event	4	Arrive at Location from Service Center	Arrive at Location	5/2/2018	00:30:00	USER				END JOURNEY MANAGEMENT. MEET WITH CO. MAN TO DISCUSS JOB; SURFACE CASING- 9.625" 36 LB/FT @ 1,811', 5.5" CASING: 20 LB/FT TOTAL 15,092.59', 8.5" HOLE, TD 15,103', 107.63' SHOE TRAC, TVD- 7,235'. PUMP FRESH WATER DISPLACEMENT WITH MMCR FIRST 30 BBLS. CASING LANDED @ 02:00 05/02/2018. RIG CIRCULATED 2 BOTTOMS UP
Event	5	Pre-Rig Up Safety	Pre-Rig Up Safety	5/2/2018	00:45:00	USER				HAZARD HUNT. DISCUSSED

		Meeting	Meeting							POSSIBLE HAZARDS ASSOCIATED WITH LOCATION, RIG UP AND WEATHER.
Event	6	Rig-Up Equipment	Rig-Up Equipment	5/2/2018	01:00:00	USER				CREW STAGED EQUIPMENT AND RIGGED UP BULK, IRON, AND WATER HOSES TO PERFORM JOB.
Event	7	Rig-Up Completed	Rig-Up Completed	5/2/2018	02:30:00	USER				WAITED ON RIG TO FINISH RUNNING CASING.
Event	8	Safety Meeting - Pre Job	Safety Meeting - Pre Job	5/2/2018	04:00:00	USER	8.14	0.00	1.00	MEETING WITH HALLIBURTON AND RIG PERSONNEL. COMMUNICATED POTENTIAL SAFETY HAZARDS AND JOB DETAILS.
Event	9	Start Job	Start Job	5/2/2018	04:33:19	COM5	8.13	0.00	0.00	BEGIN RECORDING JOB DATA.
Event	10	Test Lines	Test Lines	5/2/2018	04:37:21	COM5	8.18	0.00	22.00	PRESSURE TESTED IRON TO 6,000 PSI. KICKOUTS SET @ 500 PSI, KICKED OUT @ 470 PSI, 5TH GEAR STALL OUT @ 3,600 PSI.
Event	11	Pump Spacer 1	Pump Spacer 1	5/2/2018	04:46:15	COM5	8.15	0.00	8.00	PUMP 40 BBLS OF TUNED SPACER @ 11.5 LBS/GAL. CALCULATED TO GET 40 BBLS OF TUNED SPACER TO SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 5 BBLS/MIN @ 640 PSI.
Event	12	Drop Bottom Plug	Drop Bottom Plug	5/2/2018	04:57:48	COM5	11.55	4.00	114.00	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.
Event	13	Pump Lead Cement	Pump Lead Cement	5/2/2018	05:00:07	COM5	14.06	0.00	7.00	PUMPED 1055 SKS OF ELASTICEM @ 13.2 LB/GAL, 1.57 FT3/SK, 7.54 GAL/SK. 295 BBLS, CALCULATED TO



										GET 22.19 BBLS OF LEAD TO SURFACE. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 590 PSI.
Event	14	Pump Tail Cement	Pump Tail Cement	5/2/2018	05:39:36	COM5	13.10	8.00	587.00	PUMP 986 SKS OF NEOCEM @ 113.2 LB/GAL, 2.04 FT3/SK, 9.71 GAL/SK, 358.24 BBLS. HOT CALCULATED @ 8,780.39', TOT CALCULATED @ 6,312.20'. DENSITY VERIFIED BY PRESSURIZED MUD SCALES. PUMP RATE 8 BBLS/MIN @ 830 PSI.
Event	15	Shutdown	Shutdown	5/2/2018	06:30:00	USER	12.94	0.00	23.00	SHUTDOWN TO WASH LINES.
Event	16	Drop Top Plug	Drop Top Plug	5/2/2018	06:39:40	COM5	8.41	0.00	52.00	PLUG LEFT CONTAINER, VERIFIED BY CO. MAN.
Event	17	Pump Displacement	Pump Displacement	5/2/2018	06:40:28	COM5				BEGIN CALCULATED DISPLACEMENT OF 332.66 BBLS WITH FRESH WATER. PUMPED FIRST 20 WITH MMCR PUMPD TILL 290 WITH CLAWEB AND BIOCID, THE LAST 50 BBLS WITH MMCR. CEMENT TO SURFACE @ 290 AWAY 43 BBLS CEMENT TO SURFACE.
Event	18	Bump Plug	Bump Plug	5/2/2018	07:23:36	COM5	8.31	0.00	3038.00	PLUG BUMPED AT CALCULATED DISPLACEMENT. 2,563 PSI PRESSURED 500 PSI OVER BUMP
Event	19	Shutdown	Shutdown	5/2/2018	07:24:00	USER	8.31	0.00	3041.00	SHUTDOWN FOR 5 MINUTES.
Event	20	Shift Tool - Lower	Shift Tool - Lower	5/2/2018	07:29:00	USER	8.32	4.50	2778.00	SHIFTED @ 4,870 PSI. PUMPED 6 BBLS.

Event	21	Check Floats	Check Floats	5/2/2018	07:30:46	USER	8.29	0.00	2130.00	RELEASED PRESSURE, FLOATS HELD, 2 BBLS BACK.
Event	22	End Job	End Job	5/2/2018	07:32:54	COM5	8.27	0.00	20.00	STOP RECORDING JOB DATA
Event	23	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	5/2/2018	07:45:00	USER	8.32	3.50	115.00	DISCUSSED POSSIBLE HAZARDS ASSOCIATED WITH WEATHER, LOCATION AND RIGGING DOWN IRON AND HOSES.
Event	24	Rig-Down Equipment	Rig-Down Equipment	5/2/2018	08:00:00	USER				RIG DOWN BULK AND MIXING EQUIPMENT.
Event	25	Rig-Down Completed	Rig-Down Completed	5/2/2018	09:30:00	USER				ALL HALLIBURTON ITEMS WERE STOWED FOR TRAVEL, AND LOCATION WAS CLEAN.
Event	26	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/2/2018	09:45:00	USER				DISCUSSED ROUTES HAZARDS AND COMMUNICATION WITH CREW.
Event	27	Depart Location	Depart Location	5/2/2018	10:00:00	USER				THANK YOU FOR USING HALLIBURTON - NICK PETERSON AND CREW.

3.0 Attachments

3.1 SRC Energy Harvesters State 31C-16-M Production.png

