

# HALLIBURTON

iCem<sup>®</sup> Service

## **SYNERGY OIL & GAS LP**

**For:**

Date: Saturday, January 24, 2015

**SRC Cannon S-16 NHZ Surface**

Case 1

Sincerely,  
**Derek Trier**

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**1.1 Executive Summary**

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Halliburton appreciates the opportunity to perform the cementing services on the **SRC Cannon S-16NHZ** 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.

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 [Brighton]**

Job Times			
	Date	Time	Time Zone
Called Out	1/25/2015	2030	MTN
On Location	1/26/2015	0100	
Job Started		0648	
Job Completed		0820	
Departed Location		1000	

**1.2 Cementing Job Summary**

<b>Sold To #:</b> 359915		<b>Ship To #:</b> 3630392		<b>Quote #:</b>		<b>Sales Order #:</b> 0902056351				
<b>Customer:</b> SYNERGY RESOURCES CORPORATION					<b>Customer Rep:</b> Jackson Wehr					
<b>Well Name:</b> SRC CANNON			<b>Well #:</b> S-16NHZ			<b>API/UWI #:</b> 05-123-40785-00				
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> BERTHOUD		<b>County/Parish:</b> WELD			<b>State:</b> COLORADO			
<b>Legal Description:</b> SE SE-16-4N-68W-1129FSL-280FEL										
<b>Contractor:</b> ENSIGN DRLG				<b>Rig/Platform Name/Num:</b> ENSIGN 131						
<b>Job BOM:</b> 7521										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HB21661				<b>Srv Supervisor:</b> Steven Markovich						
<b>Job</b>										
<b>Formation Name</b>										
<b>Formation Depth (MD)</b>		<b>Top</b>		<b>Bottom</b>						
<b>Form Type</b>				<b>BHST</b>						
<b>Job depth MD</b>		600ft		<b>Job Depth TVD</b>						
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>						
<b>Perforation Depth (MD)</b>				<b>To</b>						
<b>Well Data</b>										
	<b>New / Used</b>	<b>Size</b> in	<b>ID</b> in	<b>Weight</b> lbm/ft	<b>Thread</b>	<b>Grade</b>	<b>Top MD</b> ft	<b>Bottom MD</b> ft	<b>Top TVD</b> ft	<b>Bottom TVD</b> ft
Open Hole Section			13.5				0	600		
Casing		9.625	8.921	36			0	600		
<b>Tools and Accessories</b>										
<b>Type</b>	<b>Size</b> in	<b>Qty</b>	<b>Make</b>	<b>Depth</b> ft		<b>Type</b>	<b>Size</b> in	<b>Qty</b>	<b>Make</b>	
Guide Shoe	4.5	1		12268		Top Plug	4.5	1	HES	
Float Shoe	4.5	1				Bottom Plug	4.5	1	HES	
Float Collar	4.5	1				SSR plug set	4.5	1	HES	
Insert Float	4.5	1				Plug Container	4.5	1	HES	
	4.5	1				Centralizers	4.5	1	HES	
<b>Miscellaneous Materials</b>										
<b>Gelling Agt</b>		<b>Conc</b>		<b>Surfactant</b>		<b>Conc</b>		<b>Acid Type</b>	<b>Qty</b>	
<b>Treatment Fld</b>		<b>Conc</b>				<b>Conc</b>		<b>Sand Type</b>		
<b>Fluid Data</b>										
<b>Stage/Plug #: 1</b>										

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	Mud Flush III (Powder)	Mud Flush III		12	bbl	8.4				
42 gal/bbl										
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 B2	SWIFTCEM (TM) SYSTEM		210	sack	13.4	1.79		4	9.5
9.50 Gal										
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		42	bbl	8.33				
		Amount	ft							
Comment 3bbls of Cement to surface										

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**1.4 Job Overview**

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		Units	Description
1	Surface temperature at time of job	°F	41
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	9.0
4	Time circulated before job	HH:MM	01:00
5	Mud volume circulated	Bbls	
6	Rate at which well was circulated	Bpm	
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	
9	Time from end mud circulation to start of job	HH:MM	
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	42
12	Job displaced by	Rig/HES	HES
13	Annular before job)?	Y/N	N
14	Annular flow after job	Y/N	N
15	Length of rat hole	Ft	
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	N

## 1.5 Water Field Test

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Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	500	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	200	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness		ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium		ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium		ppm	5000 ppm	High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides)
Iron	0	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	71	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

**Submitted Respectfully by:** \_\_\_\_\_

**1.6 Job Event Log**

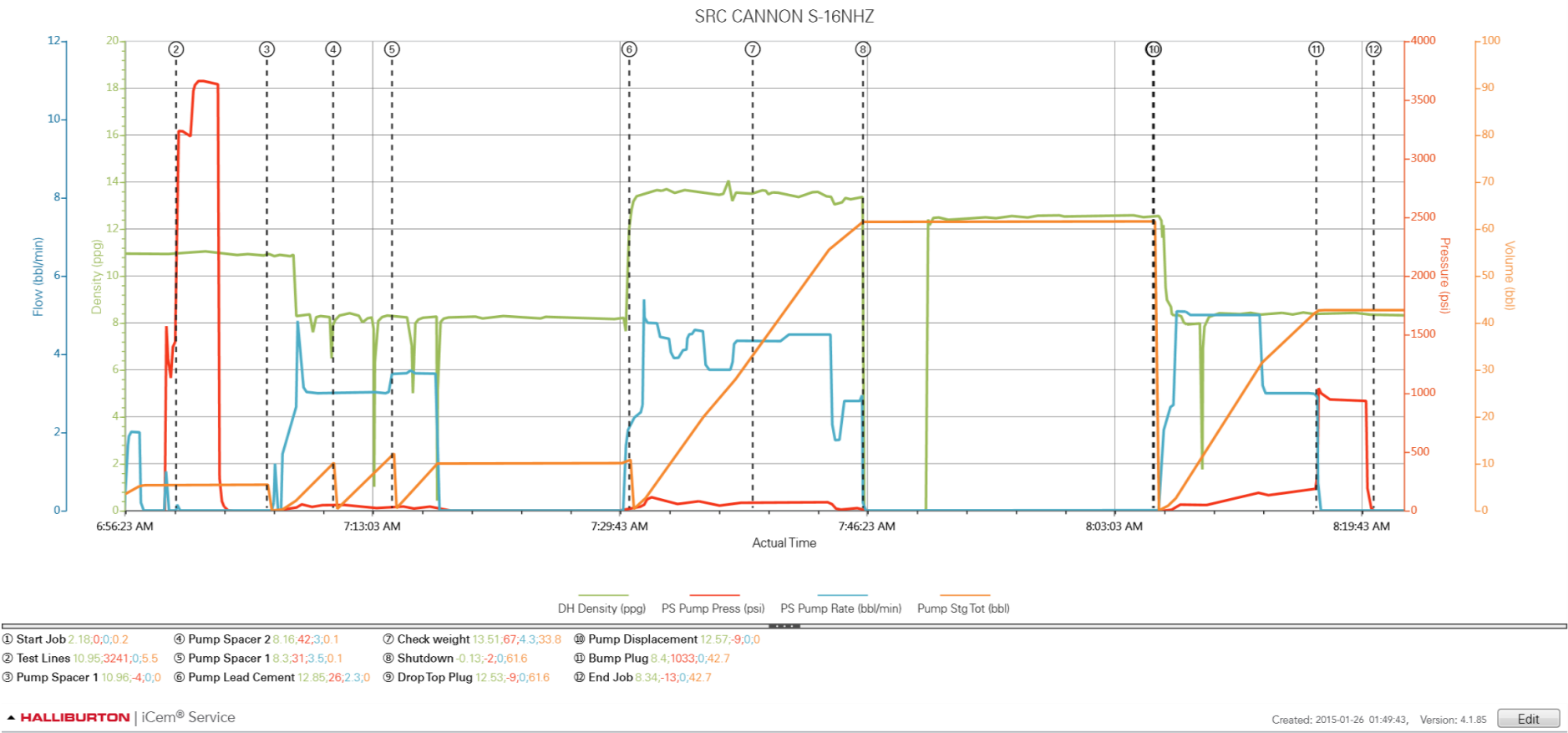
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	PS Pump Press (psi)	PS Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	1/26/2015	01:00:00	USER					Arrived on location rig going back in with DP
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	1/26/2015	01:10:00	USER					Hazard hunt and JSA with HES crew
Event	3	Rig-Up Equipment	Rig-Up Equipment	1/26/2015	01:20:00	USER					Rigged up HES lines and equipment
Event	4	Pre-Job Safety Meeting	Pre-Job Safety Meeting	1/26/2015	06:30:00	USER	2.20	27.00	0.00	0.2	JSA with HES and rig crew on job procedure
Event	5	Start Job	Start Job	1/26/2015	06:48:12	COM6	2.18	0.00	0.00	0.2	
Event	6	Test Lines	Test Lines	1/26/2015	06:59:58	COM6	10.95	3241.00	0.00	5.5	Test lines to 3500psi
Event	7	Pump Spacer 1	Pump Spacer 1	1/26/2015	07:06:05	COM6	10.96	-4.00	0.00	0.0	Pump 10bbls of Water
Event	8	Pump Spacer 2	Pump Spacer 2	1/26/2015	07:10:33	COM6	8.16	42.00	3.00	0.1	Pump 12bbls of Mud Flush



Event	9	Pump Spacer 1	Pump Spacer 1	1/26/2015	07:14:31	COM6	8.30	31.00	3.50	0.1	Pump 10bbls of Water with Dye
Event	10	Pump Lead Cement	Pump Lead Cement	1/26/2015	07:30:30	COM6	12.85	26.00	2.30	0.0	Pump 66bbls of 13.4ppg Cement
Event	11	Check Weight	Check weight	1/26/2015	07:38:49	COM6	13.51	67.00	4.30	33.8	Scaled cmt 13.45
Event	12	Shutdown	Shutdown	1/26/2015	07:46:15	COM6	-0.13	-2.00	0.00	61.6	
Event	13	Drop Top Plug	Drop Top Plug	1/26/2015	08:05:47	COM6	12.56	-9.00	0.00	61.6	Loaded plug into casing during shutdown
Event	14	Pump Displacement	Pump Displacement	1/26/2015	08:05:51	COM6	12.55	-9.00	0.00	0.0	Pump 42bbls of Water. Cmt to surface at 39away giving us 3bbls of cmt to surface
Event	15	Bump Plug	Bump Plug	1/26/2015	08:16:48	COM6	8.40	1033.00	0.00	42.7	Bumped plug @188psi took 500 over and held for 3 mins. Checked floats, floats good
Event	16	End Job	End Job	1/26/2015	08:20:40	COM6	8.34	-13.00	0.00	42.7	Thank you Markovich and crew

2.0 Attachments

2.1 Synergy SRC Cannon S-16 NHZ Surface.png



3.0    Appendix

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