

# HALLIBURTON

iCem<sup>®</sup> Service

## **SYNERGY OIL & GAS LP**

Date: Tuesday, November 17, 2015

### **SRC Vista 43-2N-C**

Surface

Job Date: Thursday, November 05, 2015

Sincerely,  
Lauren Roberts

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## 1.0 Cementing Job Summary

### 1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **SRC Vista 43-2N-C** 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.

**22bbls 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]**

**Job Times**

	Date	Time	Time Zone
Called Out Time:	11/04/2015	2100	MTN
Arrived On Location At:	11/05/2015	0100	
Job Started At:		0310	
Job Completed At:		0438	
Departed Location At:		0550	

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## Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 359915		Ship To #: 3700827		Quote #:		Sales Order #: 0902877149				
Customer: SYNERGY RESOURCES CORPORATION				Customer Rep: Tim Jones						
Well Name: SRC VISTA		Well #: 43-2N-C		API/UWI #: 05-123-41056						
Field:		City (SAP): JOHNSTOWN		County/Parish: WELD		State: COLORADO				
Legal Description:										
Contractor: ENSIGN DRLG				Rig/Platform Name/Num: ENSIGN 131						
Job BOM: 7521										
Well Type: GAS										
Sales Person: HALAMERICA\HX38199				Srv Supervisor: Chris Turner						
Job										
Formation Name Vista										
Formation Depth (MD)		Top 0 ft		Bottom		1638 ft				
Form Type		Surface		BHST		112 deg F				
Job depth MD		1638 ft		Job Depth TVD		1638 ft				
Water Depth		N/A		Wk Ht Above Floor		0 ft				
Perforation Depth (MD)		From N/A		To		N/A				
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
Open Hole Section			13.5				0	1638		
Casing		9.625	8.921	36			0	1623		
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
						Top Plug	9.625	1	HES	
						Plug Container	9.625	1	HES	
Fluid Data										
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	Mud Flush III (Powder)	Mud Flush III	20	bbl	8.4					
Stage/Plug #: 2										
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	SwiftCem B2	SWIFTCM (TM) SYSTEM	519	sack	13.4	1.79	9.5	4	9.5	
Stage/Plug #: 3										
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	

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## HALLIBURTON

## Cementing Job Summary

3	Displacement	Displacement	122	bbl	8.33				
Cement Left In Pipe		Amount	44 ft		Reason			Shoe Joint	
Mix Water:		pH 7	Mix Water Chloride:		160 ppm		Mix Water Temperature:		53 °F
Cement Temperature:		N/A	Plug Displaced by:		8.33 lb/gal		Disp. Temperature:		53 °F
Plug Bumped?		Yes	Bump Pressure:		1100 psi		Floats Held?		Yes
Cement Returns:		22 bbl	Returns Density:		N/A		Returns Temperature:		N/A
Comment Got 22 bbl of Cement to Surface									

## 1.2 Planned Pumping Schedule

Customer: Synergy  
Well Name/ Number: SRC Vista 43-2N-C  
Job Type: SURFACE  
SO#: 902877149

**Pump Schedule**

Event	Pressure (psi)	Rate (bpm)	Volume (bbl)	Sacks	Density (ppg)	Yield (ft3/sk)	WR (gal/sk)
Fill Lines	125	2	2		8.33		
Test Lines	2500	0	0		8.33		
Pump Spacer 1	113	3.5	10		8.33		
Pump Spacer 2	120	3.5	20	2	8.4		
Pump Cement	360	8	165	519	13.4	1.79	9.5
Drop Top Plug	25	0	0		13.4		
Pump Displacement	25-725	8	122		8.33		
Bump Plug	1100	2	0		8.33		

## 1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	35
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	9.4
4	Actual mud Plastic Viscosity (PV)	cP	4
5	Actual mud Yield Point (YP)	lb <sub>f</sub> /100ft <sup>2</sup>	6
6	Actual mud 30 min Gel Strength	lb <sub>f</sub> /100ft <sup>2</sup>	~
7	Time circulated before job	HH:MM	01:00
8	Mud volume circulated	bbls	420
9	Rate at which well was circulated	bpm	8
10	Pipe movement during hole circulation	Y/N	N
11	Rig pressure while circulating	psi	225
12	Time from end mud circulation to start of job	HH:MM	00:15
13	Pipe movement during cementing	Y/N	N
14	Calculated displacement	bbls	122
15	Job displaced by	Rig/HES	HES
16	Annular flow before job	Y/N	Y
17	Annular flow after job	Y/N	N
18	Length of rat hole	ft	16
19	Units of gas detected while circulating	units	115
20	Was lost circulation experienced at any time?	Y/N	N



## 1.4 Water Field Test

Item	Recorded 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	160	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	>200	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness	300	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 $\geq$ 8.3).
Bicarbonates	-	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium	0	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	53	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

## 2.0 Real-Time Job Summary

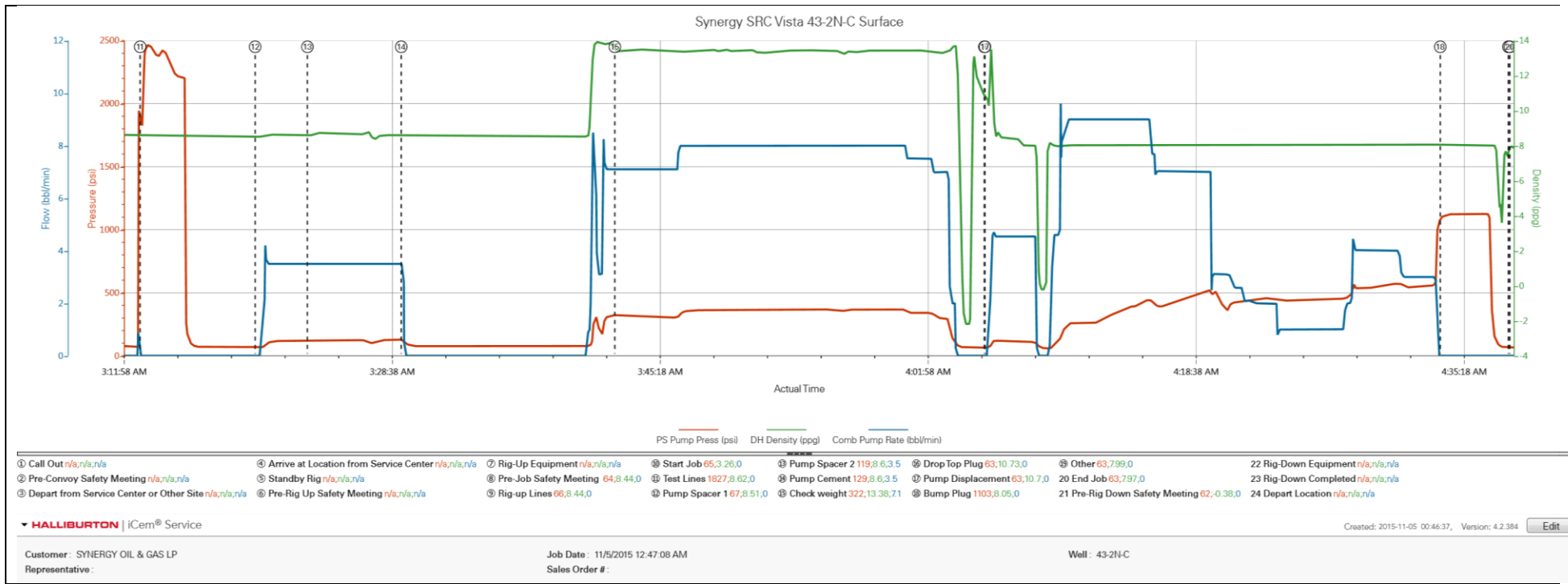
## 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Pass-Side Pump Pressure (psi)	Downhole Density (ppg)	Combined Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	11/4/2015	21:00:00	USER				Call out for Job
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/4/2015	23:50:00	USER				Pre convoy safety meeting with crew
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	11/5/2015	00:01:00	USER				Depart from yard
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	11/5/2015	01:00:00	USER				Arrive safely at location
Event	5	Standby Rig	Standby Rig	11/5/2015	01:01:00	USER				Standby for rig to run casing
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	11/5/2015	01:40:00	USER				Pre rig up safety meeting with crew
Event	7	Rig-Up Equipment	Rig-Up Equipment	11/5/2015	01:50:00	USER				Rig up all equipment on the ground
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	11/5/2015	02:45:00	USER				Pre job safety meeting with crew, rig crew, and customer to discuss job procedures and safety throughout the job
Event	9	Rig-up Lines	Rig-up Lines	11/5/2015	03:00:00	USER				Rig up equipment on the floor
Event	10	Start Job	Start Job	11/5/2015	03:10:29	COM4	65.00	3.26	0.00	Fill Lines with 2 BBL of Fresh Water
Event	11	Test Lines	Test Lines	11/5/2015	03:13:05	COM4	1827.00	8.62	0.00	Test lines to 2500 psi, good test no leaks
Event	12	Pump Spacer 1	Pump Spacer 1	11/5/2015	03:20:14	COM4	67.00	8.51	0.00	Pump 10 BBL of Fresh Water Spacer with red Dye 3.5 bpm 113 psi
Event	13	Pump Spacer 2	Pump Spacer 2	11/5/2015	03:23:29	COM4	119.00	8.60	3.50	Pump 20 BBL of Mud Flush Spacer, 3.5 bpm 120 psi
Event	14	Pump Cement	Pump Cement	11/5/2015	03:29:19	COM4	129.00	8.60	3.50	Pump 165 BBL of Cement @ 13.4 ppg. 8 bpm 380 psi.

Event	15	Check Weight	Check weight	11/5/2015	03:42:36	COM4	322.00	13.38	7.10	Checked weight on scales, 13.4 ppg
Event	16	Drop Top Plug	Drop Top Plug	11/5/2015	04:05:35	COM4	63.00	10.73	0.00	Drop Top Plug, customer witnessed
Event	17	Pump Displacement	Pump Displacement	11/5/2015	04:05:37	COM4	63.00	10.70	0.00	Pump 122 BBL of Fresh Water displacement. Slow to 3 bpm last 10 bbl to land plug 500 psi over final circulating pressure
Event	18	Bump Plug	Bump Plug	11/5/2015	04:33:56	COM4	1103.00	8.05	0.00	Bump plug @ calculated displacement. Final circulating pressure 550 psi, Bumped to 1100 psi. Got 22 BBL of Cement to Surface
Event	19	Other	Other	11/5/2015	04:38:10	COM4	63.00	7.99	0.00	Bleed off pressure, got 1 bbl back. Floats held
Event	20	End Job	End Job	11/5/2015	04:38:16	COM4				End Job
Event	21	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	11/5/2015	04:40:00	USER				Pre rig down safety meeting with crew
Event	22	Rig-Down Equipment	Rig-Down Equipment	11/5/2015	04:50:00	USER				Rid down all equipment
Event	23	Rig-Down Completed	Rig-Down Completed	11/5/2015	05:45:00	USER				Rig down completed
Event	24	Depart Location	Depart Location	11/5/2015	05:50:00	USER				Depart location

3.0 Attachments

3.1 Synergy Surface.png



Custom Results

