

# HALLIBURTON

iCem<sup>®</sup> Service

## **SYNERGY OIL & GAS LP**

Date: Tuesday, November 17, 2015

### **SRC Vista 44-2N-C**

Intermediate

Job Date: Friday, November 13, 2015

Sincerely,  
Lauren Roberts

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **SRC Vista 44-2N-C** cement **Intermediate** 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.

#### **5bbls of cement back 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**

	<b>Date</b>	<b>Time</b>	<b>Time Zone</b>
Called Out Time:	11/13/2015	1020	MTN
Arrived On Location At:		1530	
Job Started At:		1903	
Job Completed At:		2124	
Departed Location At:		2245	

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*Cementing Job Summary*

*The Road to Excellence Starts with Safety*

Sold To #: 359915		Ship To #: 3701194		Quote #:		Sales Order #: 0902899531				
Customer: SYNERGY RESOURCES CORPORATION				Customer Rep: Tim Jones						
Well Name: SRC Vista		Well #: 44-2N-C		API/UWI #: 05-123-41057						
Field:		City (SAP): JOHNSTOWN		County/Parish: WELD		State: COLORADO				
<b>Legal Description:</b>										
Contractor: ENSIGN DRLG				Rig/Platform Name/Num: ENSIGN 131						
Job BOM: 7522										
Well Type: GAS										
Sales Person: HALAMERICA\HB60191				Srvc Supervisor: Chris Turner						
<b>Job</b>										
<b>Formation Name</b> Vista										
<b>Formation Depth (MD)</b>		Top 650 ft		Bottom 7657 ft						
<b>Form Type</b>		Intermediate		BHST		225				
<b>Job depth MD</b>		7651 ft		<b>Job Depth TVD</b>		6900 ft				
<b>Water Depth</b>		N/A		<b>Wk Ht Above Floor</b>		0 ft				
<b>Perforation Depth (MD)</b>		From N/A		To N/A						
<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			0	650	0	650
Casing		7	6.276	29		P-110	0	7651	0	6900
Open Hole Section			8.75				650	7657	655	6900
<b>Tools and Accessories</b>										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
						Top Plug	7	1	HES	
						Bottom Plug	7	1	HES	
						Plug Container	7	1	HES	
<b>Fluid Data</b>										
<b>Stage/Plug #: 1</b>										
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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	20	bbl	11.5	3.86	24.8	4	24.8	
<b>Stage/Plug #: 2</b>										
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	ElastiCem B2	ELASTICEM (TM) SYSTEM	850	sack	13.8	1.6	7.09	4	7.09	

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*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/mi n	Total Mix Fluid Gal	
3	Displacement	Displacement	282	bbl	10.5					
<b>Cement Left In Pipe</b>										
<b>Amount</b>		47 ft			<b>Reason</b>			Shoe Joint		
<b>Mix Water:</b>		pH 7		<b>Mix Water Chloride:</b>		120 ppm		<b>Mix Water Temperature:</b>		52 °F
<b>Comment</b> BBL of Cement to Surface: 5 BBL										

1.2 Planned Pumping Schedule

<b>EVENT</b>	<b>VOLUME</b>	<b>RATE</b>	<b>PRESSURE</b>	<b>SACKS</b>	<b>DENSITY</b>	<b>YIELD</b>	<b>GAL/ SK</b>
<i>Fill Lines</i>	<b>2</b>	<b>2</b>	<b>460</b>		<b>8.33</b>		
<i>Test Lines</i>	<b>0</b>	<b>0</b>	<b>4000</b>		<b>8.33</b>		
<i>Spacer</i>	20	4.5	<b>321</b>		<b>11.5</b>	<b>3.86</b>	<b>24.8</b>
<b>Drop Bottom Plug</b>	<b>0</b>	<b>2</b>	<b>225</b>		<b>11.5</b>		
<b>Pump Cement</b>	242	7	<b>550</b>	<b>850</b>	<b>13.8</b>	<b>1.6</b>	<b>7.09</b>
<i>Drop Top Plug</i>	<b>0</b>	<b>2</b>	46		13.8		
<b>Pump Displacement</b>	282	8	<b>860</b>		10.5		
<b>Bump Plug</b>	<b>0</b>	<b>2</b>	<b>2240</b>		<b>8.33</b>		
<b>Test Casing</b>	<b>0</b>	<b>0</b>	<b>1000</b>		<b>8.33</b>		

1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	52
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	10.5
4	Actual mud Yield Point (YP)	lb <sub>r</sub> /100ft <sup>2</sup>	8
5	Time circulated before job	HH:MM	01:00
6	Mud volume circulated	bbls	360
7	Rate at which well was circulated	bpm	6
8	Pipe movement during hole circulation	Y/N	N
9	Rig pressure while circulating	psi	840
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	bbls	282
12	Job displaced by	Rig/HES	HES
13	Annular flow before job	Y/N	Y
14	Annular flow after job	Y/N	N
15	Units of gas detected while circulating	units	460
16	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	120	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	-	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness	225	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	-	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	52	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

## 2.0 Real-Time Job Summary

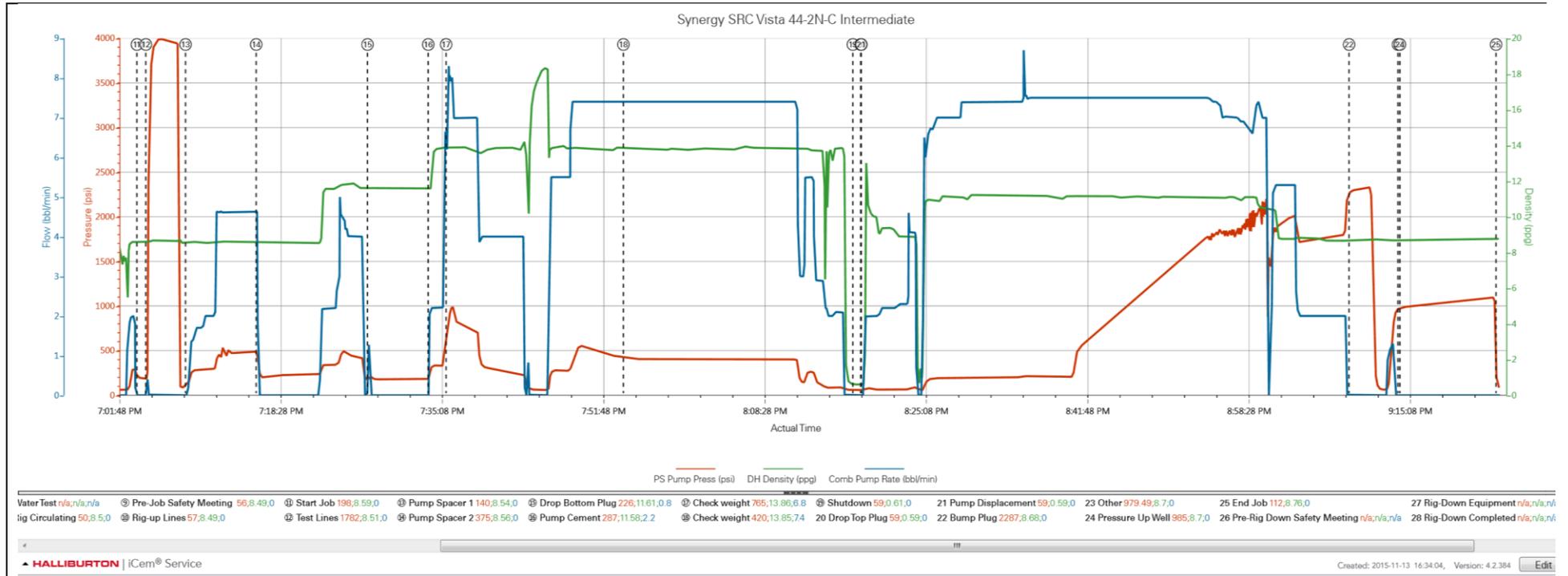
### 2.1 Job Event Log

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	11/13/2015	10:20:00	USER				Call out For Job
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/13/2015	14:40:00	USER				Pre departure safety meeting with crew
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	11/13/2015	14:50:00	USER				Depart from yard with crew
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	11/13/2015	15:30:00	USER				Arrive safely at location
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	11/13/2015	15:35:00	USER				Pre rig up safety meeting with crew to assess site and discuss rig up hazards and spotting equipment
Event	6	Rig-Up Equipment	Rig-Up Equipment	11/13/2015	15:45:00	USER				Rig up all equipment on the ground
Event	7	Other	Water Test	11/13/2015	15:46:00	USER				PH: 7, Chlorides: 120, Temp: 52 deg F, Hardness 225
Event	8	Other	Rig Circulating	11/13/2015	17:30:00	USER				360 BBL, 6 BPM, 840 PSI, 1 HR, 460 Units Gas. Mud Weight 10.5 ppg, 40 Vis, 8 YP.
Event	9	Pre-Job Safety Meeting	Pre-Job Safety Meeting	11/13/2015	18:30:00	USER				Pre job safety meeting with crew, rig crew, and customer to discuss job procedures and safety throughout the job
Event	10	Rig-up Lines	Rig-up Lines	11/13/2015	18:45:00	USER				Rig up all equipment on the rig floor
Event	11	Start Job	Start Job	11/13/2015	19:03:46	COM4	198.00	8.59	0.00	Fill Lines with 2 BBL of Fresh Water
Event	12	Test Lines	Test Lines	11/13/2015	19:04:42	COM4	1782.00	8.51	0.00	Test lines to 4000 psi, good test no leaks
Event	13	Pump Spacer 1	Pump Spacer 1	11/13/2015	19:08:48	COM4	140.00	8.54	0.00	Pump 25 BBL of Fresh Water 4.5 bpm

										481 psi
Event	14	Pump Spacer 2	Pump Spacer 2	11/13/2015	19:16:06	COM4	375.00	8.56	0.00	Pump 20 BBL of Tune Spacer @ 11.5 ppg, 4.5 bpm 321 psi. Checked weight on mud scales
Event	15	Drop Bottom Plug	Drop Bottom Plug	11/13/2015	19:27:36	COM4	226.00	11.61	0.80	Drop Bottom Plug, Customer Witnessed
Event	16	Pump Cement	Pump Cement	11/13/2015	19:33:52	COM4	287.00	11.58	2.20	Pump 242 BBL of Cement @ 13.8 ppg. 7.5 bpm 550 psi
Event	17	Check Weight	Check weight	11/13/2015	19:35:43	COM4	765.00	13.86	6.80	13.8 ppg
Event	18	Check Weight	Check weight	11/13/2015	19:54:02	COM4	420.00	13.85	7.40	13.75 ppg
Event	19	Shutdown	Shutdown	11/13/2015	20:17:44	COM4	59.00	0.61	0.00	Shutdown to line up to drop plug
Event	20	Drop Top Plug	Drop Top Plug	11/13/2015	20:18:33	COM4				Drop Top Plug, Customer witnessed
Event	21	Pump Displacement	Pump Displacement	11/13/2015	20:18:37	COM4	59.00	0.59	0.00	Pump 282 bbl of WBM to displace casing. Caught Cement @ 120 bbl gone. Got 5 BBL of Cement to Surface @ 277 bbl into displacement.
Event	22	Bump Plug	Bump Plug	11/13/2015	21:09:00	COM4	2287.00	8.68	0.00	Bumped plug @ calculated displacement. 1780 psi final circulating pressure to 2330 psi.
Event	23	Other	Other	11/13/2015	21:14:03	COM4				Bleed off Pressure, 1.5 bbl back
Event	24	Pressure Up Well	Pressure Up Well	11/13/2015	21:14:15	COM4				Pressure up on casing to 1000 psi for 10 min casing test
Event	25	End Job	End Job	11/13/2015	21:24:11	COM4	112.00	8.76	0.00	End Job
Event	26	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	11/13/2015	21:28:00	USER				Pre rig down safety meeting with crew
Event	27	Rig-Down Equipment	Rig-Down Equipment	11/13/2015	21:38:00	USER				Rig down all equipment
Event	28	Rig-Down Completed	Rig-Down Completed	11/13/2015	22:40:00	USER				Rig down completed
Event	29	Depart Location	Depart Location	11/13/2015	22:45:00	USER				Depart location

3.0 Attachments

3.1 Synergy Vista 44-2N-C Intermediate.png



Custom Results

