

HALLIBURTON

iCem[®] Service

SYNERGY RESOURCES CORPORATION

For:

Date: Saturday, March 07, 2015

SRC Cannon 24-16NHZ Intermediate

Case 1

Job Date: Friday, March 06, 2015

Sincerely,

Derek Trier

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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 Cannon 24-16NHZ** 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.

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:	6/3/2015	0400	MTN
Arrived On Location At:		1000	
Job Started At:		1139	
Job Completed At:		1410	
Departed Location At:		1600	

1.2 Planned Pumping Schedule

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 359915	Ship To #: 3630447	Quote #:	Sales Order #: 0902200197							
Customer: SYNERGY RESOURCES CORPORATION		Customer Rep:								
Well Name: SRC CANNON	Well #: 24-16NHZ	API/UWI #: 05-123-40788-00								
Field: WATTENBERG	City (SAP): BERTHOUD	County/Parish: WELD	State: COLORADO							
Legal Description: SE SE-16-4N-68W-1084FSL-280FEL										
Contractor: ENSIGN DRLG		Rig/Platform Name/Num: ENSIGN 131								
Job BOM: 7522										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB60191		Srcv Supervisor:								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST								
Job depth MD	6713	Job Depth TVD								
Water Depth		Wk Ht Above Floor								
Perforation Depth (MD)	From	To								
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
Casing		9.625	8.921	36			0	590		590
Casing		7	6.184	29		P-110	0	6703		6415
Open Hole Section			8.75				590	6900	0	6713
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	7			6703	Top Plug	7		HES		
Float Shoe	7				Bottom Plug	7				
Float Collar	7				SSR plug set	7				
Insert Float	7				Plug Container	7		HES		
Stage Tool	7				Centralizers	7				
Miscellaneous Materials										
Gelling Agt		Conc		Surfactant		Conc	Acid Type	Qty	Conc	
Treatment Fld		Conc		Inhibitor		Conc	Sand Type	Size	Qty	
Fluid Data										
Stage/Plug #: 1										
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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbl	11.5	3.86		4		
145.18 lbm/bbl		BARITE, BULK (100003681)								
36 gal/bbl		FRESH WATER								

last updated on 3/6/2015 3:27:43 PM

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Cementing Job Summary

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	EconoCem B2	ECONOCHEM (TM) SYSTEM	439	sack	12.5	1.89		6	10.25
10.25 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	FracCem	FRACCHEM (TM) SYSTEM	186	sack	13.5	1.75		4	8.29
8.29 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	Displacement	Displacement	247	bbl	10.3			7	
Cement Left In Pipe		Amount	ft	Reason				Shoe Joint	
Mix Water: pH7 ##		Mix Water: ##51 ppm		Chloride:		Mix Water Temperature: ##82 °F			
Cement Temperature: ## °F °C		Plug Displaced by: ##10.3 lb/gal		Disp. Temperature: ## °F °C					
Plug Bumped? Yes		Bump Pressure: ###1800 psi		Floats Held? Yes					
Cement Returns: ## bbl m3		Returns Density: ## lb/gal kg/m3		Returns Temperature: ## °F °C					
Comment									

1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	46
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	10.3
4	Actual mud Plastic Viscosity (PV)	cP	
5	Actual mud Yield Point (YP)	lb _f /100ft ²	
6	Actual mud 30 min Gel Strength	lb _f /100ft ²	
7	Time circulated before job	HH:MM	0:45
8	Mud volume circulated	bbls	Bottoms up
9	Rate at which well was circulated	bpm	3.0
10	Pipe movement during hole circulation	Y/N	N
11	Rig pressure while circulating	psi	320
12	Time from end mud circulation to start of job	HH:MM	0:15
13	Pipe movement during cementing	Y/N	N
14	Calculated displacement	bbls	247
15	Job displaced by	Rig/HES	HES
16	Annular flow before job	Y/N	N
17	Annular flow after job	Y/N	N
18	Length of rat hole	ft	10
19	Units of gas detected while circulating	units	
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	51	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 \geq 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	82	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by:

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	3/6/2015	04:00:00	USER				
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/6/2015	08:20:00	USER				Discussed route, driving hazards and driving safety.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	3/6/2015	08:30:00	USER				
Event	4	Arrive At Loc	Arrive At Loc	3/6/2015	09:30:00	USER				TP- 6703', TD- 6713', TVD- 6415', ST- 44.52', CAS- 7" - 29#, PREV. CAS= 9 5/8" - 36#, OH- 8 3/4", WF- 10.3# WBM, Halliburton Top Plug- HWE, Water Temp- 82 deg, PH-7, Iron- 0, Sulph- less than 200, Chlor.- 51
Event	5	Running In Hole	Running In Hole	3/6/2015	09:31:00	USER				Rig running final pieces of casing in hole.
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	3/6/2015	09:40:00	USER				Did site assessment, discussed safety and hazards.
Event	7	Rig-Up Completed	Rig-Up Completed	3/6/2015	10:45:00	USER				
Event	8	Circulate Well	Circulate Well	3/6/2015	10:46:00	USER				Rig circulating well @ 3 bbls/min., 320 psi.
Event	9	Pre-Job Safety Meeting	Pre-Job Safety Meeting	3/6/2015	11:30:00	USER	7.00	0.00	0.00	Discussed job procedures, safety and hazards.
Event	10	Start Job	Start Job	3/6/2015	11:50:35	COM5	2.00	8.44	0.00	
Event	11	Prime Pumps	Prime Pumps	3/6/2015	11:52:34	COM5	0.00	8.43	0.00	
Event	12	Break Formation	Break Formation	3/6/2015	11:52:51	COM5	0.00	8.43	0.00	Pumped 2 bbls of 8.33# fresh water @ 2 bbls/min., 170 psi
Event	13	Test Lines	Test Lines	3/6/2015	11:56:18	COM5	20.00	8.28	0.00	Tested lines to 4000 psi. Had good

										test.
Event	14	Pump Spacer 1	Pump Spacer 1	3/6/2015	12:02:13	COM5	2.00	8.17	1.00	Pumped 20 bbls of 8.33# fresh water @ 2.5 bbls/min., 170 psi
Event	15	Pump Spacer 2	Pump Spacer 2	3/6/2015	12:09:38	COM5	214.00	8.19	3.00	Pumped 40 bbls of 11.5# Tuned III Spacer @ 4 bbls/min., 320 psi
Event	16	Pump Lead Cement	Pump Lead Cement	3/6/2015	12:20:16	COM5	118.00	11.84	2.00	Pumped 148 bbls of 12.5# Lead cement @ 6 bbls/min., 310 psi
Event	17	Check Weight	Check weight	3/6/2015	12:21:38	COM5	253.00	12.38	3.80	12.5#
Event	18	Check Weight	Check weight	3/6/2015	12:30:58	COM5	236.00	12.46	5.00	12.5#
Event	19	Pump Tail Cement	Pump Tail Cement	3/6/2015	12:46:31	COM5	115.00	13.02	4.60	Pumped 58 bbls of 13.5# Tail cement @ 4 bbls/min., 100 psi
Event	20	Check Weight	Check weight	3/6/2015	12:47:48	COM5	108.00	13.43	3.90	13.5#
Event	21	Drop Top Plug	Drop Top Plug	3/6/2015	13:04:32	COM5	-20.00	9.05	1.00	Shut down. Dropped top plug. Company man was present to witness.
Event	22	Pump Displacement	Pump Displacement	3/6/2015	13:04:36	COM5	-17.00	12.03	1.00	Pumped 247 bbls of displacement @ 7 bbls/min., pressure range from 60 psi to 1600 psi. First 20 bbls were 8.33# fresh water, followed by 207 bbls of 10.3# WBM and the last 20 bbls 8.33# fresh water. Slowed to 2 bbls/min last 10 bbls. Got 37 bbls of spacer to surface.
Event	23	Bump Plug	Bump Plug	3/6/2015	13:51:36	COM5	1980.00	8.12	0.00	Bumped plug at calculated displacement. 500 psi over final circulating pressure. Pressure went from 1300 psi to 1800 psi.
Event	24	Check Floats	Check Floats	3/6/2015	13:56:00	USER	2025.00	8.20	0.00	Floats held. Got 1.5 bbls back
Event	25	Pressure Up Well	Pressure Up Well	3/6/2015	14:03:08	COM5	-35.00	8.16	0.00	Pressured up well to 1000 psi for 5 min. casing test. Had good test. Pumped 1.5 bbls in and got 1.5 bbls back.
Event	26	End Job	End Job	3/6/2015	14:23:44	COM5	-35.00	8.17	0.00	

Event	27	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	3/6/2015	14:30:00	USER	-35.00	8.18	0.00	Discussed safety and hazards and job performance.
Event	28	Rig-Down Equipment	Rig-Down Equipment	3/6/2015	14:40:00	USER				
Event	29	Rig-Down Completed	Rig-Down Completed	3/6/2015	15:45:00	USER				
Event	30	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	3/6/2015	15:50:00	USER				Discussed route, safety and hazards of driving.
Event	31	Depart Location	Depart Location	3/6/2015	16:00:00	USER				

