

# HALLIBURTON

iCem<sup>®</sup> Service

## Post Job Report

**BONANZA CREEK ENERGY**

**For: Jason Hansen**

Date: Monday, August 11, 2014

**Pronghorn 14-11-4 HNB**

Pronghorn 14-11-4 HNB

Sincerely,

**Steven Markovich**

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**1.1 Executive Summary**

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Halliburton appreciates the opportunity to perform the cementing services on the **Pronghorn 14-11-4 HNB 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 [Brighton]**

**Job Times**

	<b>Date</b>	<b>Time</b>	<b>Time Zone</b>
<b>Requested Time On Location</b>	8/10/2014	18:30	MTN
<b>Called Out</b>	8/10/2014	11:45	MTN
<b>On Location</b>	8/10/2014	16:00	MTN
<b>Job Started</b>	8/10/2014	23:27	MTN
<b>Job Completed</b>	8/10/2014	02:30	MTN
<b>Departed Location</b>	8/10/2014	04:00	MTN

## 1.2 Cementing Job Summary

Sold To #: 324725	Ship To #: 3113226	Quote #:	Sales Order #: 0901573360
Customer: BONANZA CREEK ENERGY		Customer Rep: Andrew Gustafson	
Well Name: PRONGHORN	Well #: 14-11-4 HNB	API/UWI #: 05-123-37499-00	
Field: WATTENBERG	City (SAP): KERSEY	County/Parish: WELD	State: COLORADO
Legal Description: SE SW-4-5N-61W-370FSL-1410FWL			
Contractor: CADE DRLG		Rig/Platform Name/Num: CADE 21	
Job BOM: 7522			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srv Supervisor: Steven Markovich	
<b>Job</b>			

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	6563ft		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	468	0	468
Casing		7	6.276	26		P-110	0	6563	0	6108
Open Hole Section			8.75				468	6563	486	6108

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	7	1		6563		Top Plug	7	1	HES
Float Shoe	7	1				Bottom Plug	7	1	HES
Float Collar	7	1				SSR plug set	7	1	HES
Insert Float	7	1				Plug Container	7	1	HES
Stage Tool	7	1				Centralizers	7	1	HES

Miscellaneous Materials									
Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc	Treatment Fld	Conc	
		Inhibitor		Sand Type	Size			Qty	

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	30	bbl	8.4			6	
42 gal/bbl		FRESH WATER							

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
2	Lead Cement	ECONOCEM (TM) SYSTEM	585	sack	12.5	1.89		5	10.23
10.23 Gal		FRESH WATER							

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	Tail Cement	EXPANDACEM (TM) SYSTEM	160	sack	14.6	1.45		5	6.04
6.04 Gal		FRESH WATER							

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
4	Displacement	Displacement	253	bbl	8.33				

Cement Left In Pipe	Amount	Reason
	42 ft	Shoe Joint

**Comment** 13bbbls of Cement to surface

## 1.3 Planned Pumping Schedule

The Road to Excellence Starts with Safety										
Sold To #: <b>324725</b>		Ship To #: <b>3113226</b>		Primary Sales Order #: <b>0901573360</b>						
Customer: <b>BONANZA CREEK ENERGY</b>				Job Purpose: <b>7522 CMT INTERMEDIATE CASING BOM</b>						
Well Name: <b>PRONGHORN</b>				Well #: <b>14-11-4 HNB</b>		API/UWI #: <b>05-123-37499-00</b>				
Field: <b>WATTENBERG</b>		City: <b>KERSEY</b>		Country/Parish: <b>WELD</b>			State/Prov: <b>COLORADO</b>			
Legal Description:										
Rig Name & Number / Phone Number: <b>CADE 21 / 337-210-9515</b>								Location: <b>LAND</b>		
myCem id# :		Job Criticality Status: <b>GREEN</b>			iFacts Request id #:					
Contacts										
Type	Name			Email			Phone			
<b>Service Coordinator</b>	<b>Ryan Wyckoff</b>			<b>Ryan.Wyckoff@halliburton.com</b>			<b>+17205386044</b>			
<b>Account Rep</b>	<b>Theodore Groff</b>			<b>Ted.Groff@Halliburton.com</b>			<b>+13033084232</b>			
<b>Company Man</b>										
<b>Proposal Contact</b>	<b>Bryan, Brown</b>			<b>BBrown@bonanzacrk.com</b>			<b>720-440-6141</b>			
PPE, Safety Huddles, JSA's, HOC & Near Miss Reporting, BBP Observations										
Distance/Mileage(1 way)		<b>35 mile</b>		Distance/Mileage(1 way)		<b>35 mile</b>				
Srvcs:				Mtls:						
				Rqstd Job Start Date/Time:		<b>08/28/2014</b>				
HSE Information										
H2S Present:		<b>Unknown</b>		CO2 Present:		<b>Unknown</b>				
Drive Safely. Lights On for Safety. Wear Seat Belts. Observe all HES / Customer Safety Policies.										
Directions: <p style="text-align: center;">CR 89 &amp; CR 60, ¼ Mile East, North into</p>										
Instruction										
<b>Take 2 Bags of Mud Flush to location</b>										
Job Info / Well Data										
Job Depth (MD) ft	Job Depth (TVD) ft		Well Fluid Type		Well Fluid Weight lbm/gal		Displacement Fluid		Displ Fluid Weight lbm/gal	
<b>6563</b>	<b>6108</b>		<b>LSND</b>				<b>Displacement</b>		<b>8.33</b>	
BHST degF	BHCT degF		Log Temp degF				Time Since Circ Stopped HH:MM:SS			
Job Tubulars/Tools										
Description	Size in	Weight lbm/ft	ID in	Grade	Top MD ft	Btm MD ft	Top TVD ft	Btm TVD ft	Shoe Jnt ft	% Excess
<b>9-5/8" Surface Casing</b>	<b>9.625</b>	<b>36</b>	<b>8.921</b>		<b>0</b>	<b>468</b>	<b>0</b>	<b>468</b>		

8-3/4" Open Hole			8.75		468	6563	486	6108		50
7" Intermediate Casing	7	26	6.276	P-110	0	6563	0	6108	42	

### Mud conditioning plan

The condition of the drilling fluid is one of the most important variables in achieving a cement barrier. Prior to cementing, circulate the mud at the planned highest displacement rate for the cement job for at least 2 bottoms-up until the well is clean, mud is free of gas and pump pressures have stabilized.

### Materials

Stage/Plug #: 1

Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time
1	Mud Flush III (Powder)		20	bbl	8.4			6		
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time hr
2	Lead Cement	ECONOCEM (TM) SYSTEM	585	sack	12.5	1.89	10.23	5	10.23	
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time hr
3	Tail Cement	EXPANDACE M (TM) SYSTEM	160	sack	14.6	1.45	6.04	5	6.04	

Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time
4	Displacement		260.5	bbl	8.33					

Caution: Displacement quantities and densities are estimates ONLY! Do not use them for the actual job.

### Packaged Materials

SAP #	Material	Qty	UOM	Comments
	FRESH WATER	7791.0	Gal	

**1.4 Job Overview**

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		<b>Units</b>	<b>Description</b>
<b>1</b>	Surface temperature at time of job	°F	64
<b>2</b>	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
<b>3</b>	Actual mud density	lb/gal	9.8
<b>4</b>	Actual mud Plastic Viscosity (PV)	cP	
<b>5</b>	Actual mud Yield Point (YP)	lb <sub>r</sub> /100ft <sup>2</sup>	
<b>6</b>	Actual mud 30 min Gel Strength	lb <sub>r</sub> /100ft <sup>2</sup>	
<b>7</b>	Time circulated before job	HH:MM	01:30
<b>8</b>	Mud volume circulated	Bbls	
<b>9</b>	Rate at which well was circulated	Bpm	
<b>10</b>	Pipe movement during hole circulation	Y/N	N
<b>11</b>	Rig pressure while circulating	Psi	
<b>12</b>	Time from end mud circulation to start of job	HH:MM	00:15
<b>13</b>	Pipe movement during cementing	Y/N	N
<b>14</b>	Calculated displacement	Bbls	253
<b>15</b>	Job displaced by	Rig/HES	HES
<b>16</b>	Annular flow before job	Y/N	N
<b>17</b>	Annular flow after job	Y/N	N
<b>18</b>	Length of rat hole	Ft	
<b>19</b>	Units of gas detected while circulating	Units	
<b>20</b>	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	<3000	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	<1500	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness	<500	ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium	<500	ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity	<1000	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates	<1000	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium	<5000	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	<300	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	67	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

**Submitted Respectfully by:     Steven Markovich**

## 1.6 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Driv-Side Pump Rate (bbl/min)	Comment
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	8/10/2014	16:00:00	USER					Arrived on location rig running casing approx 50 joints
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	8/10/2014	16:15:00	USER					JSA and Hazard hunt with HES crew
Event	3	Rig-Up Equipment	Rig-Up Equipment	8/10/2014	22:00:00	USER	1.70	-1.00	0.0	0.00	Rigged up HES lines and equipment
Event	4	Safety Meeting - Pre Job	Safety Meeting - Pre Job	8/10/2014	23:00:00	USER	8.32	1.00	12.8	0.00	JSA with HES and rig crew on job procedure
Event	5	Start Job	Start Job	8/10/2014	23:24:25	COM6	8.29	1.00	0.0	0.00	
Event	6	Drop Bottom Plug	Drop Bottom Plug	8/10/2014	23:25:12	COM6	8.30	1.00	0.0	0.00	Plug pre loaded in HES head
Event	7	Test Lines	Test Lines	8/10/2014	23:44:33	COM6	8.34	4041.00	3.4	0.00	Test lines to 4000psi
Event	8	Pump Spacer 1	Pump Spacer 1	8/10/2014	23:49:00	COM6	8.23	4.00	3.4	0.00	Pump 30bbls of Mud Flush
Event	9	Pump Lead Cement	Pump Lead Cement	8/11/2014	00:02:31	COM6	8.26	115.00	0.0	0.00	Pump 197bbls of 12.5ppg cement
Event	10	Pump Tail Cement	Pump Tail Cement	8/11/2014	00:41:46	COM6	14.14	351.00	179.5	8.30	Pump 41bbls of 14.6ppg cement
Event	11	Shutdown	Shutdown	8/11/2014	01:00:06	COM6	14.53	11.00	13.9	0.00	
Event	12	Drop Top Plug	Drop Top Plug	8/11/2014	01:07:10	COM6	14.52	9.00	13.9	0.00	Plug pre loaded in HES head
Event	13	Pump Displacement	Pump Displacement	8/11/2014	01:08:36	COM6	11.39	20.00	14.3	0.90	Pump 253bbls of Mud. Mudflush to surface at 210bbls away giving us 13bbls of cement to surface
Event	14	Bump Plug	Bump Plug	8/11/2014	02:18:18	COM6	8.42	2501.00	276.6	0.00	Final lift pressure 1475 took 500 over and held for 5 mins. Floats good
Event	15	End Job	End Job	8/11/2014	02:25:42	COM6	8.33	5.00	276.6	0.00	Thank you Markovich and crew

## 1.7 Pronghorn 14-11-4 HNB-Custom Results.png



