HALLIBURTON

Cementing

Cynosure Energy LLC

Federal 14-15-5-21

Frontier 28

Post Job Summary
Cement Production Casing

Date Prepared: 12/13/2014
Job Date: 12/02/14

Submitted by: Evan Russell – Grand Junction Cement Engineer

HALLIBURTON

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 373950	**Ship To #:** 3557119	**Quote #:**	**Sales Order #:** 0901886260
Customer: CYNOSURE ENERGY LLC		**Customer Rep:** BOYD COTTAM	
Well Name: FEDERAL	**Well #:** 14/15-5-21		**API/UWI #:** 05-045-22457-00
Field: KOKOPELLI	**City (SAP):** NEW CASTLE	**County/Parish:** GARFIELD	**State:** COLORADO
Legal Description: SE NE-21-6S-91W-2341FNL-728FEL			
Contractor:		**Rig/Platform Name/Num:** Frontier 28	
Job BOM: 7523			
Well Type: DIRECTIONAL GAS			
Sales Person: HALAMERICA\HB50180		**Srvc Supervisor:** Christopher Kukus	

Job

Formation Name				
Formation Depth (MD)	**Top**		**Bottom**	
Form Type			**BHST**	
Job depth MD	8003ft		**Job Depth TVD**	
Water Depth			**Wk Ht Above Floor**	5FT
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	STC	J-55	0	1416	0	0
Casing	0	4.5	4	11.6	LTC	J-55	0	8003	0	0
Open Hole Section			7.875				1416	8020	0	0

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	4.5	1		8003		**Top Plug**	4.5	1	HES
Float Shoe	4.5	1				**Bottom Plug**	4.5		HES
Float Collar	4.5	1		7956.82		**SSR plug set**	4.5		HES
Insert Float	4.5	1				**Plug Container**	4.5	1	HES
Stage Tool	4.5	1				**Centralizers**	4.5		HES

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	Mud Flush III (Powder)	Mud Flush III	20	bbl	8.4			4	
42 gal/bbl		FRESH WATER							

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	EconoCem	EXPANDASEAL (TM) SYSTEM	300	sack	11.5	2.28		6	12.74
12.79 Gal		FRESH WATER							

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	VersaCem	VERSACEM (TM) SYSTEM	350	sack	12.5	1.83		6	8.7
8.98 Gal		FRESH WATER							

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
4	ExpandaCem	EXPANDACEM (TM) SYSTEM	900	sack	13.1	1.67		6	7.88
7.93 Gal		FRESH WATER							

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
5	Fresh Water Displacement	Fresh Water Displacement	123.3	bbl	8.34			4	

Cement Left In Pipe	Amount	46 ft	Reason	Shoe Joint

Comment

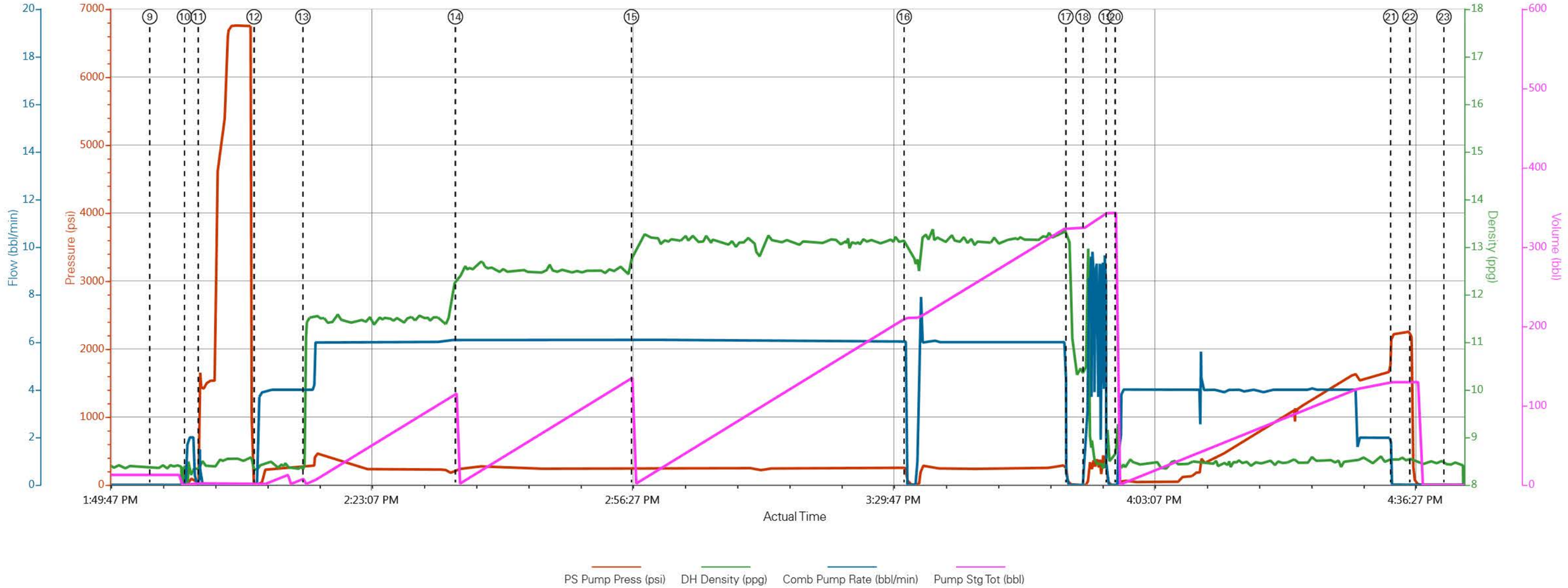
1.1 Job Event Log

Type	Seq. No.	Activity	Date	Time	Source	PS Pump Press *(psi)*	DH Density *(ppg)*	Comb Pump Rate *(bbl/min)*	Pump Stg Tot *(bbl)*	Comment
Event	1	Call Out	12/2/2014	00:01:00	USER					HES CREW CALLED OUT AT 00:01 WITH ON LOCATION TIME OF 10:00
Event	2	Pre-Convoy Safety Meeting	12/2/2014	02:20:49	USER					ALL HES CREW
Event	3	Crew Leave Yard	12/2/2014	02:30:05	USER					HES CREW AND EQUIPMENT READY AND LEFT YARD AT 02:30
Event	4	Arrive at Location from Service Center	12/2/2014	05:00:12	USER					HES CREW ARRIVED AT 05:00 HES CREW WAS 5 HOURS EARLY DUE TO THE CHANGE IN ON LOCATION TIME FROM 04:00 TO 10:00 HES CREW WAITTED OFF LOCATION FOR RIG TO FINISH RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	12/2/2014	11:20:21	USER					ALL HES CREW
Event	6	Pre-Rig Up Safety Meeting	12/2/2014	11:25:29	USER					ALL HES CREW
Event	7	Rig-Up Equipment	12/2/2014	11:45:44	USER					RIG UP IRON TO RIG FLOOR AND WASH UP LINE TO CUTTINGS TANK , TWO FRESH WATER LINES TO FRAC TANKS, BULK LINES TO BULK TRUCKS AND BIN
Event	8	Pre-Job Safety Meeting	12/2/2014	13:45:58	USER					ALL HES CREW AND RIG CREW
Event	9	Start Job	12/2/2014	13:55:05	COM5					TD:8020 TP: 8003 SJ: 46.18 CSG: 4 1/2 11.6# J-55 OH: 8 3/4 SF CSG: 9 5/8 36# J-55 @ 1416 MUD: 9.2 VISC: 34 TOP GAS: 5100 RIG CIRCULATED FOR 2 HOURS

									AT 4 BBLS MIN
Event	10	Prime Pumps	12/2/2014	13:59:30	COM5	101.00	8.35	2.00	2.00	PRIME LINES WITH 2 BBLS OF FRESH WATER
Event	11	Test Lines	12/2/2014	14:01:15	COM5	6757.00	8.38	0.00	2.1	PRESSURE TEST OK AT 6757 PSI KICK OUTS WORKING 5TH GEAR STALL OUT AT 1534
Event	12	Pump Spacer 1	12/2/2014	14:08:24	COM5	240.00	8.34	4.00	20.00	PUMP 20 BBLS OF MUD FLUSH SPACER
Event	13	Pump Lead Cement	12/2/2014	14:14:38	COM5	270.00	11.56	6.00	121.8	ECONOCEM 300 SKS 11.5 PPG 2.28 YIELD 12.74 GAL/SK SCAVENGER CEMENT WEIGHT VERIFIED BY MUD SCALE WET AND DRY SAMPLES WERE TAKEN TOTAL OF 121.8 BBLS PUMPED AWAY
Event	14	Pump Lead Cement	12/2/2014	14:34:07	COM5	229.00	12.55	6.00	114.1	VERSACEM 350 SKS 12.5 PPG 1.83 YIELD 8.7 GAL/SK LEAD CEMENT WEIGHT VERIFIED BY MUD SCALE WET AND DRY SAMPLES WERE TAKEN TOTAL OF 114.1 BBLS OF LEAD PUMPED AWAY
Event	15	Pump Tail Cement	12/2/2014	14:56:36	COM5	240.00	13.16	6.00	267.7	EXPANDACEM 900 SKS 13.1 PPG 1.67 YIELD 7.88 GAL/SK TAIL CEMENT WEIGHT VERIFIED BY MUD SCALE WET AND DRY SAMPLES WERE TAKEN TOTAL OF 267.7 BBLS OF TAIL CEMENT PUMP AWAY
Event	16	Shutdown	12/2/2014	15:31:26	USER	128.00	13.06	0.00	210.0	HES CREW HAD TO SHUTDOWN DUE TO A VALVE STICKING ON THE BIN
Event	17	Shutdown	12/2/2014	15:52:05	USER	40.00	13.22	0.00	267.7	SHUTDOWN END OF CEMENT READY TANKS FOR

										DISPLACEMENT
Event	18	Clean Lines	12/2/2014	15:54:16	USER	-1.00	10.47	7.00	10.00	HES CREW CLEAN PUMP AND LINES WITH 10 BBLS OF FRESH WATER TO CUTTINGS TANK
Event	19	Drop Top Plug	12/2/2014	15:57:13	USER	25.00	8.97	0.00	10.00	TOP PLUG AWAY WITH NO ISSUES
Event	20	Pump Displacement	12/2/2014	15:58:23	COM5	380.00	8.45	4.00	123.3	PUMP 123.3 BBLS OF KCL DISPLACEMENT 13 BAGS OF KCL WERE USED
Event	21	Bump Plug	12/2/2014	16:33:35	COM5	1670.00	8.56	2.00	123.3	BUMP PLUG AT 1670 PSI AND TOOK UP TO 2260 PSI
Event	22	Check Floats	12/2/2014	16:36:02	USER	2260.00	8.53	0.00	123.3	FLOATS HELD WITH 1 BBL BACK TO DISPLACEMENT TANKS
Event	23	End Job	12/2/2014	16:40:23	USER	0.00	8.47	0.00	0.0	JOB WENT GOOD WITH NO ISSUES WELL HAD FULL RETURNS THROUGH OUT JOB NO CEMENT TO SURFACE AND NO SUGAR USED
Event	24	Post-Job Safety Meeting (Pre Rig-Down)	12/2/2014	16:45:41	USER					ALL HES CREW
Event	25	Pre-Rig Down Safety Meeting	12/2/2014	16:50:51	USER					ALL HES CREW
Event	26	Rig-Down Equipment	12/2/2014	17:00:00	USER					RIG DOWN RIG FLOOR, GROUND IRON WASH UP LINE, FRESH WATER LINES, BLOW DOWN BIN AND RIG DOWN BULK LINES, WASH UP AND BLOW DOWN PUMP
Event	27	Pre-Convoy Safety Meeting	12/2/2014	17:50:08	USER					ALL HES CREW
Event	28	Crew Leave Location	12/2/2014	18:00:18	USER					THANK YOU FOR USING HALLIBURTON CEMENT CHRIS KUKUS AND CREW HAVE A NICE DAY

CYNOSURE ENERGY / FEDERAL 14/15-5-21 / 4 1/2 PRODUCTION CASING



① Call Out	⑧ Pre-Job Safety Meeting	⑮ Pump Tail Cement	22 Check Floats
② Pre-Convoy Safety Meeting	⑨ Start Job	⑯ Shutdown	23 End Job
③ Crew Leave Yard	⑩ Prime Lines	⑰ Shutdown	24 Post-Job Safety Meeting (Pre Rig-Down)
④ Arrive at Location from Service Center	⑪ Test Lines	⑱ Clean Lines	25 Pre-Rig Down Safety Meeting
⑤ Assessment Of Location Safety Meeting	⑫ Pump Spacer 1	⑲ Drop Top Plug	26 Rig-Down Equipment
⑥ Pre-Rig Up Safety Meeting	⑬ Pump Scavenger Cement	20 Pump Displacement	27 Pre-Convoy Safety Meeting
⑦ Rig-Up Equipment	⑭ Pump Lead Cement	21 Bump Plug	28 Crew Leave Location

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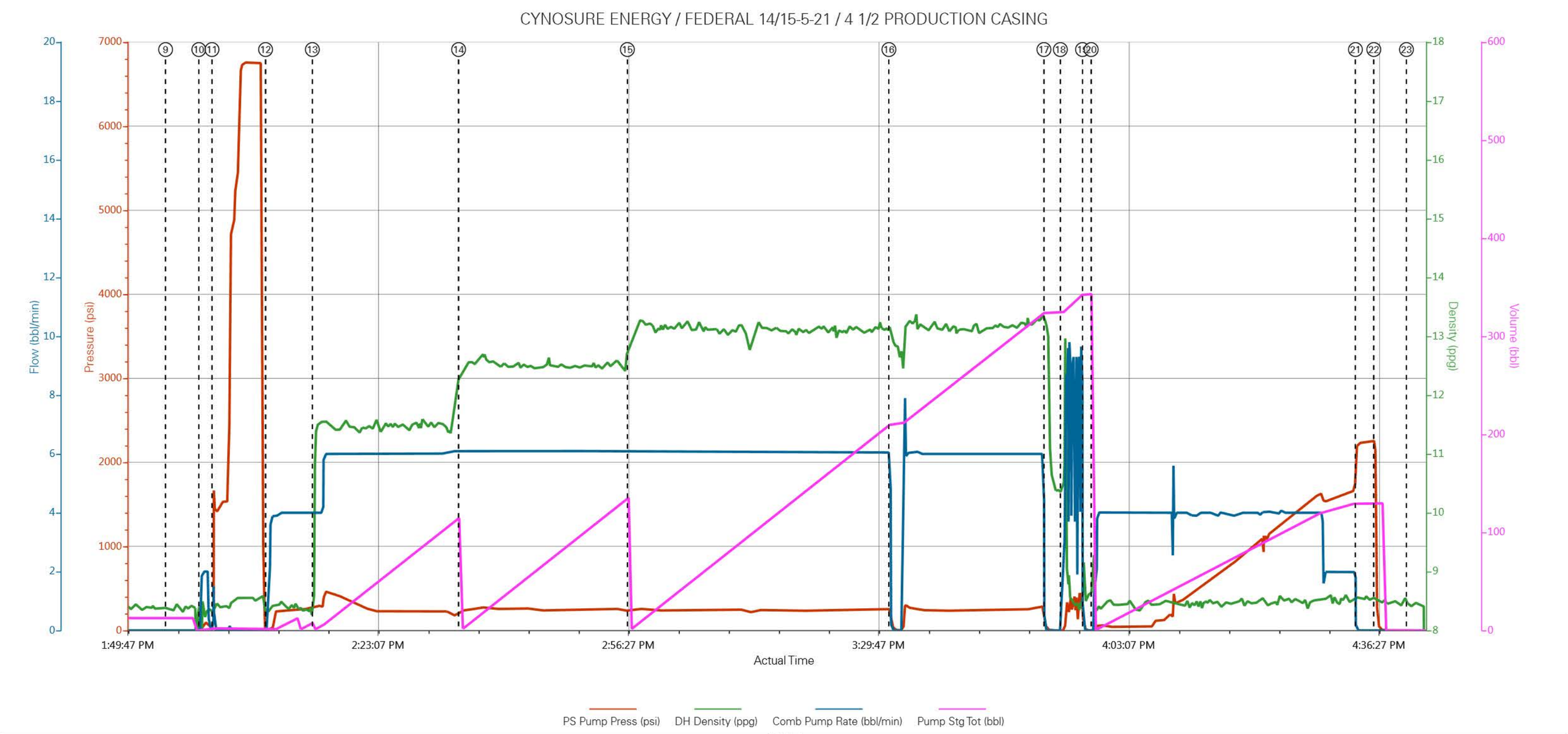
Created: 2014-12-02 12:51:57, Version: 4.0.248 Edit

Customer: CYNOSURE ENERGY LLC
Representative: BOYD COTTAM

Job Date: 12/2/2014 12:54:00 PM
Sales Order #: 901886260

Well: FEDERAL 14/15-5-21
ELITE #9: STEVEN WARDELL / CHRIS KUKUS



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Representative: BOYD COTTAM

Job Date: 12/2/2014 12:54:00 PM
Sales Order #: 901886260

Well: FEDERAL 14/15-5-21
ELITE #9: STEVEN WARDELL / CHRIS KUKUS

EVENT #	EVENT	VOLUME	SACKS	WEIGHT	YIELD	GAL/ SK
1	Start Job		3968 Max Psi			
6	Test Lines	6500.0				
9	MUD FLUSH	20.0		8.4		
	SCAVENGER	121.8	300	11.5	2.28	12.74
14	Lead Cement	114.1	350	12.5	1.83	8.7
15	Tail Cement	267.7	900	13.1	1.67	7.88
	SHUTDOWN / DROP PLUG					
22	Displace with KCL	123.3		8.4		
23	Slow rate	113.3				
26	Land Plug	1791 PSI				
2	500 over	2291 PSI				
	Release Psi / Job Over					
			Do Not Overdisplace			

DISPLACEMENT	TOTAL PIPE	SHOE JOINT LENGTH	FLOAT COLLAR	BBL/FT	H2O REQ.
123.33	8003	46.18	7956.82	0.0155	517
PSI to Lift Pipe		******Use Mud Scales on Each Tier******			
Total Displacement	123.33				
CALCULATED DIFFERENTIAL PSI		1791	TOTAL FLUID PUMPED		647
Collapse	4960	Burst	5350	SO#	901886260

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Water Analysis Report

Company:	CYNOSURE ENERGY	**Date:**	12/2/2014
Submitted by:	CHRIS KUKUS	**Date Rec.:**	12/2/2014
Attention:	LARRY COOKSEY	**S.O.#**	901886260
Lease	FEDERAL	**Job Type:**	PRODUCTION
Well #	15/15-5-21		

Specific Gravity	*MAX*	1	
pH	*8*	7	
Potassium (K)	*5000*	0	Mg / L
Calcium (Ca)	*500*	120	Mg / L
Iron (FE2)	*300*	0	Mg / L
Chlorides (Cl)	*3000*	0	Mg / L
Sulfates (SO_4)	*1500*	UNDER 400	Mg / L
Hardness		50	Mg / L
Temp	*40-80*	48	Deg
Total Dissolved Solids		200	Mg / L

Respectfully: CHRIS KUKUS

Title: CEMENTING SUPERVISOR

Location: GRAND JUNCTION , CO

HALLIBURTON

CUSTOMER SURVEY

Sales Order #:	**Line Item:**	**Survey Conducted Date:**
0901886260	10	12/2/2014
Customer:		**Job Type (BOM):**
CYNOSURE ENERGY LLC		CMT PRODUCTION CASING BOM
Customer Representative:		**API / UWI: (leave blank if unknown)**
		05-045-22457-00
Well Name:		**Well Number:**
FEDERAL		0080638623
Well Type:	**Well Country:**	
DIRECTIONAL GAS	USA	
H2S Present:	**Well State:**	**Well County:**
No	COLORADO	GARFIELD

Dear Customer,

We hope that you were satisfied with the service quality of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CUSTOMER SATISFACTION SURVEY

CATEGORY	CUSTOMER SATISFACTION RESPONSE	
Survey Conducted Date	**The date the survey was conducted**	**12/2/2014**
Survey Interviewer	**The survey interviewer is the person who initiated the survey.**	**HX35027**
Customer Participation	**Did the customer partipcipate in this survey? (Y/N)**	**No**
Customer Representative	**Enter the Customer representative name**	
HSE	**Was our HSE performance satisfactory? Circle Y or N**	
Equipment	**Were you satisfied with our Equipment? Circle Y or N**	
Personnel	**Were you satisfied with our people? Circle Y or N**	
Customer Comment	**Customer's Comment**	

CUSTOMER SIGNATURE

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CUSTOMER SURVEY

Sales Order #:	**Line Item:**	**Survey Conducted Date:**
0901886260	10	12/2/2014
Customer:		**Job Type (BOM):**
CYNOSURE ENERGY LLC		CMT PRODUCTION CASING BOM
Customer Representative:		**API / UWI: (leave blank if unknown)**
		05-045-22457-00
Well Name:		**Well Number:**
FEDERAL		0080638623
Well Type:	**Well Country:**	
DIRECTIONAL GAS	USA	
H2S Present:	**Well State:**	**Well County:**
No	COLORADO	GARFIELD

KEY PERFORMANCE INDICATORS

General	
Survey Conducted Date The date the survey was conducted	12/2/2014

Cementing KPI Survey	
Type of Job Select the type of job. (Cementing or Non-Cementing)	0
Select the Maximum Deviation range for this Job What is the highest deviation for the job you just completed? This may not be the maximum well deviation.	Vertical
Total Operating Time (hours) Total Operating Hours Including Rig-up, Pumping, Rig-down. Enter in decimal format.	6
HSE Incident, Accident, Injury HSE Incident, Accident, Injury. This should be recordable incidents only.	No
Was the job purpose achieved? Was the job delivered correctly as per customer agreed design?	Yes
Operating Hours (Pumping Hours) Total number of hours pumping fluid on this job. Enter in decimal format.	4
Customer Non-Productive Rig Time (hrs) Lost time due to Halliburton in the start, execution, or completion of an ordered service or product, or delays in a follow-on service. Enter in decimal format. 0 if none.	0
Type of Rig Classification Job Was Performed Type Of Rig (classification) Job Was Performed On	Drilling Rig (Portable)
Number Of JSAs Performed Number Of Jsas Performed	6
Number of Unplanned Shutdowns Unplanned shutdown is when injection stops for any period of time.	0
Was this a Primary Cement Job (Yes / No)	Yes

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CUSTOMER SURVEY

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0901886260	10	12/2/2014
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CYNOSURE ENERGY LLC		CMT PRODUCTION CASING BOM
Customer Representative:		**API / UWI: (leave blank if unknown)**
		05-045-22457-00
Well Name:		**Well Number:**
FEDERAL		0080638623
Well Type:	**Well Country:**	
DIRECTIONAL GAS	USA	
H2S Present:	**Well State:**	**Well County:**
No	COLORADO	GARFIELD

Primary Cement Job= Casing job, Liner job, or Tie-back job.	
Did We Run Wiper Plugs? Did We Run Top And Bottom Casing Wiper Plugs?	Top
Mixing Density of Job Stayed in Designed Density Range (0-100%) Density Range defined as +/- .20 ppg. Calculation: Total BBLs cment mixed at designed density divided by total BBLs of cement multiplied by 100	80
Was Automated Density Control Used? Was Automated Density Control (ADC) Used ?	Yes
Pump Rate (percent) of Job Stayed At Designed Pump Rate Pump Rate range defined as +/- 1bbl/min. Calculation: Total BBLs of fluid pumped at the designed rate divided by Total BBLs of fluid pumped, multiplied by 100	80
Nbr of Remedial Sqz Jobs Rqd - Competition Number Of Remedial Squeeze Jobs Required After Primary Job Performed By Competition	0
Nbr of Remedial Plug Jobs Rqd - HES Number Of Remedial Plug Jobs Needed After Primary Plug Pumped By HES	0
Nbr of Remedial Sqz Jobs Rqd - HES Number Of Remedial Squeeze Jobs Required After Primary Job Performed By HES	0