

HALLIBURTON

iCem[®] Service

ENSIGN UNITED STATES DRILLING

For:

Date: Sunday, November 09, 2014

Ensign SRC Geis T-15-22NHZ Surface

Case 1

Sincerely,

Derek Trier

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **SRC Gies T-15-22NHZ** 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.

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

	Date	Time	Time Zone
Called Out	11/8/14	1600	
On Location	11/8/14	2130	
Job Started	11/9/14	0253	
Job Completed	11/9/14	0409	
Departed Location	11/9/14	0530	

1.2 Cementing Job Summary

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 301256		Ship To #: 3563514		Quote #:		Sales Order #: 0901810917				
Customer: ENSIGN UNITED STATES DRILLING				Customer Rep:						
Well Name: SRC GEIS			Well #: T-15-22NHZ			API/UWI #: 05-123-40014-00				
Field: WATTENBERG		City (SAP): EATON		County/Parish: WELD		State: COLORADO				
Legal Description: SE SE-15-7N-65W-272FSL-1087FEL										
Contractor: ENSIGN DRLG				Rig/Platform Name/Num: ENSIGN 134						
Job BOM: 7521										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\H117930				Srvc Supervisor: Bradley Hinkle						
Job										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type		BHST								
Job depth MD		672ft			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		J-55	0	657	0	657
Open Hole Section			13.5				0	670	0	670
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	9.625			672	Top Plug	9.625		HES		
Float Shoe	9.625				Bottom Plug	9.625		HES		
Float Collar	9.625			630	SSR plug set	9.625		HES		
Insert Float	9.625				Plug Container	9.625		HES		
Stage Tool	9.625				Centralizers	9.625		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 ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	Mud Flush III (Powder)	Mud Flush III	20	bbl	8.4			3		
42 gal/bbl		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	

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Cementing Job Summary

2	SwiftCem B2	SWIFTCEM (TM) SYSTEM	248	sack	13.4	1.79		4.5	9.48
9.48 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	Displacement	FRESH WATER	49	bbl	8.33			4	
Cement Left in Pipe		Amount	42 ft		Reason			Shoe Joint	
Mix Water: pH ##		Mix Water: ## ppm Chloride:			Mix Water Temperature: ## °F °C				
Cement Temperature: ## °F °C		Plug Displaced by: ## lb/gal kg/m ³ XXXX			Disp. Temperature: ## °F °C				
Plug Bumped? Yes/No		Bump Pressure: ### psi MPa			Floats Held? Yes/No				
Cement Returns: ## bbl m ³		Returns Density: ## lb/gal kg/m ³			Returns Temperature: ## °F °C				
Comment 10 BBLs FRESH WATER WITH RED DYE PUMPED BEFORE MUD FLUSH. 10 BBLs FRESH WATER PUMPED AFTER MUD FLUSH. 12 BBLs CEMENT TO SURFACE.									

1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	32
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WATER
3	Actual mud density	lb/gal	8.33
4	Time circulated before job	HH:MM	01:30
5	Mud volume circulated	Bbls	
6	Rate at which well was circulated	Bpm	
7	Pipe movement during hole circulation	Y/N	N
8	Rig pressure while circulating	Psi	
9	Time from end mud circulation to start of job	HH:MM	00:30
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	49
12	Job displaced by	Rig/HES	HES
13	Annular before job)?	Y/N	N
14	Annular flow after job	Y/N	N
15	Length of rat hole	Ft	8
16	Units of gas detected while circulating	Units	0
17	Was lost circulation experienced at any time ?	Y/N	N

1.4 Water Field Test

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	0	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 ≥ 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	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

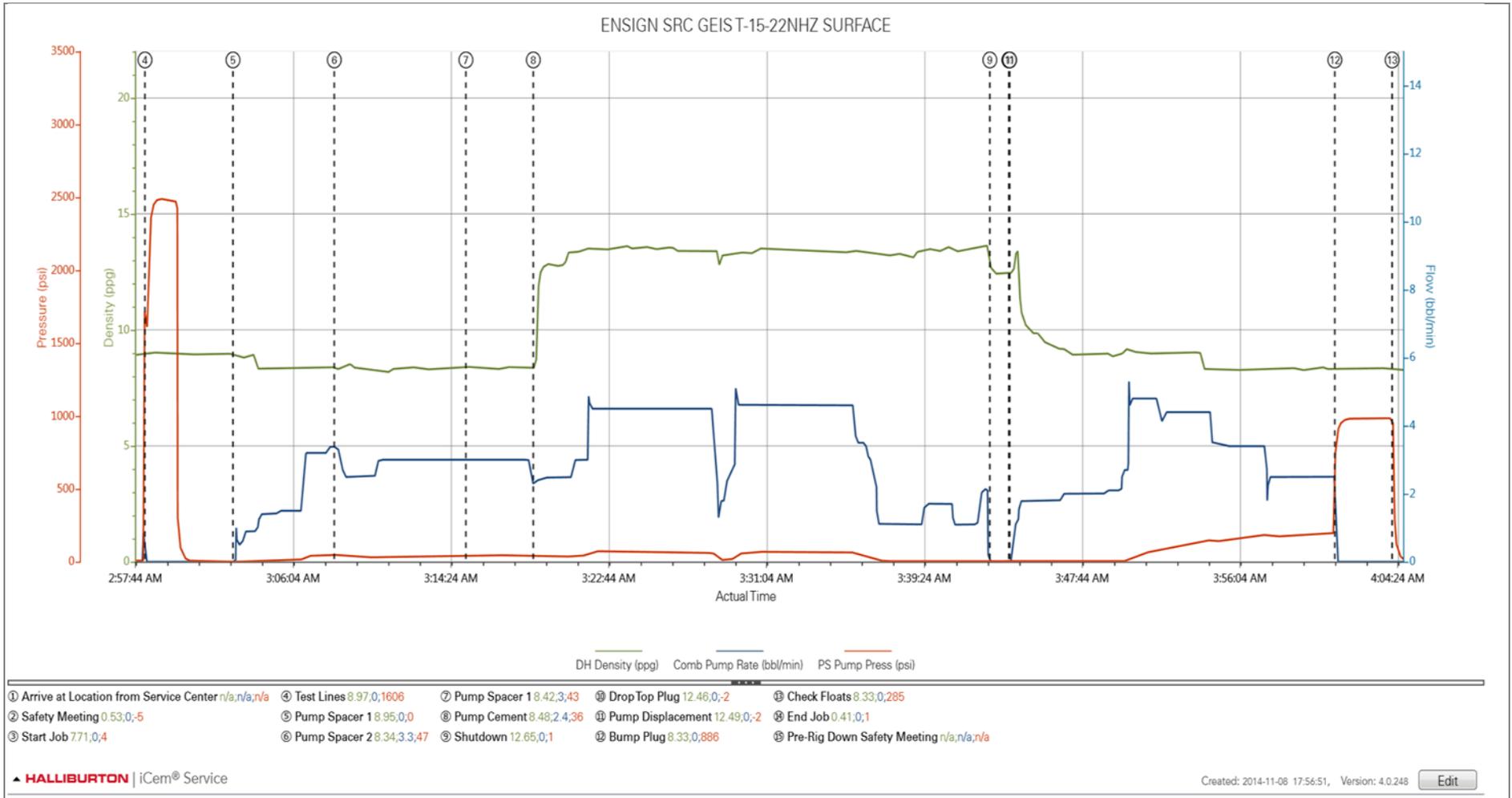
Submitted Respectfully by: BRAD HINKLE

1.5 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Comment
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	11/8/2014	21:30:00	USER				PERFORM PRE RIG UP SAFETY MEETING AND SITE ASSESSMENT. RIG STARTING TO RIG UP CASING CREW.
Event	2	Safety Meeting	Safety Meeting	11/9/2014	02:30:00	USER	0.53	0.00	-5.00	PRE-JOB SAFETY MEETING WITH ALL PERSONNEL ON LOCATION.
Event	3	Start Job	Start Job	11/9/2014	02:53:21	COM5	7.71	0.00	4.00	
Event	4	Test Lines	Test Lines	11/9/2014	02:58:20	COM5	8.97	0.00	1606.00	PRESSURE TEST LINES.
Event	5	Pump Spacer 1	Pump Spacer 1	11/9/2014	03:02:59	COM5	8.95	0.00	0.00	PUMP 10 BBLs FRESH WATER SUPPLIED BY RIG, RED DYE ADDED.
Event	6	Pump Spacer 2	Pump Spacer 2	11/9/2014	03:08:20	COM5	8.34	3.30	47.00	PUMP 20 BBLs FRESH WATER WITH MUD FLUSH ADDED.
Event	7	Pump Spacer 1	Pump Spacer 1	11/9/2014	03:15:17	COM5	8.42	3.00	43.00	PUMP 10 BBLs FRESH WATER SUPPLIED BY RIG.
Event	8	Pump Cement	Pump Cement	11/9/2014	03:18:51	COM5	8.37	2.40	36.00	PUMP 79 BBLs SWIFTCEM (248 SACKS) MIXED AT 13.4 PPG USING SUPPLIED WATER. DENSITY VERIFIED BY SCALES.
Event	9	Shutdown	Shutdown	11/9/2014	03:42:57	COM5	12.65	0.00	2.00	
Event	10	Drop Top Plug	Drop Top Plug	11/9/2014	03:43:58	USER	12.46	0.00	-2.00	TOP PLUG PRELOADED.
Event	11	Pump Displacement	Pump Displacement	11/9/2014	03:44:00	COM5	12.49	0.00	-2.00	PUMP 49 BBLs FRESH WATER SUPPLIED BY RIG. 12 BBLs CEMENT TO SURFACE. GOOD RETURNS THROUGHOUT.
Event	12	Bump Plug	Bump Plug	11/9/2014	04:01:10	COM5	8.34	0.00	876.00	BUMP PLUG AT 198 PSI AND PRESSURE BROUGHT TO 700 PSI. HELD FOR 3 MINUTES.
Event	13	Check Floats	Check Floats	11/9/2014	04:04:12	USER	8.33	0.00	285.00	FLOATS HELD. .5 BBLs BACK.
Event	14	End Job	End Job	11/9/2014	04:09:24	COM5	0.41	0.00	1.00	
Event	15	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	11/9/2014	04:17:31	USER				PRE-RIG DOWN SAFETY MEETING WITH HES AND RIG PERSONNEL.

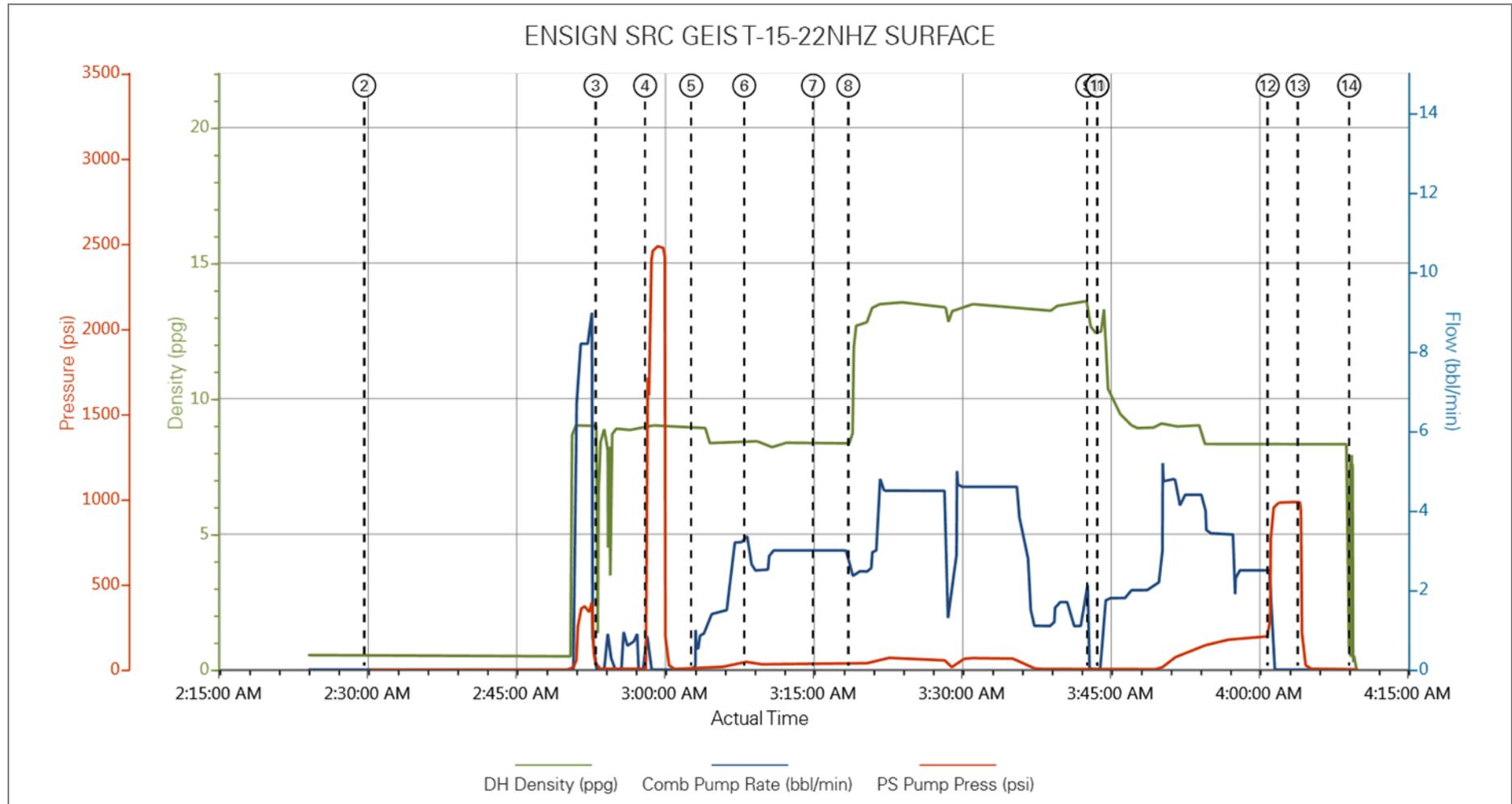
2.0 Attachments

2.1 ENSIGN SRC GEIS T-15-22NHZ.png



3.0 Custom Graphs

3.1 Custom Graph



4.0 Appendix
