HALLIBURTON

iCem® Service

ENSIGN UNITED STATES DRILLING

For:
Date: Thursday, July 31, 2014

SRC Kiehn C-4CHZ Intermediate

ENSIGN US DRILLING SRC KIEHN C-4CHZ

Sincerely,

Derek Trier

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **SRC Kiehn C-4CHZ** 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

	Date	Time	Time Zone
Called Out	7/31/14	01:00	
On Location	7/31/14	09:00	
Job Started	7/31/14	14:15	
Job Completed	7/31/14	16:20	
Departed Location	7/31/14	17:00	

1.2 Cementing Job Summary

Sold To #: 301256	**Ship To #:** 3542580	**Quote #:**	**Sales Order #:** 0901539532
Customer: ENSIGN UNITED STATES DRILLING		**Customer Rep:** Samuel Mikesell	
Well Name: SRC KIEHN	**Well #:** C-4CHZ		**API/UWI #:** 05-123-39718-00
Field: WATTENBERG	**City (SAP):** JOHNSTOWN	**County/Parish:** WELD	**State:** COLORADO
Legal Description: SW SE-4-4N-68W-201FSL-1738FEL			
Contractor:		**Rig/Platform Name/Num:** ENSIGN 131	
Job BOM: 7522			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HB60191		**Srvc Supervisor:** Larry Lavalley	

Job

Formation Name				
Formation Depth (MD)	**Top**		**Bottom**	
Form Type			**BHST**	
Job depth MD	7676ft		**Job Depth TVD**	
Water Depth			**Wk Ht Above Floor**	
Perforation Depth (MD)			**To**	

Well Data

	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	1232	0	
Casing		7	6.276	26	BTC		0	7676	0	
Open Hole Section			8.75				1232	7686		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	7	1		7676		**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
	7	1				**Centralizers**	7	1	HES

Miscellaneous Materials

Gelling Agt		**Conc**		**Surfactant**		**Conc**		**Acid Type**		**Qty**				
Treatment Fld		**Conc**				Conc		**Sand Type**						

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	CLEANSPACER III	CLEANSPACER III	40	bbl	10.5	3.86			
35.10 gal/bbl									

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 B2	ECONOCEM (TM) SYSTEM	575	sack	12.5	1.91		6	10.32
10.32 Gal									

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	FracCem	FRACCEM (TM) SYSTEM	145	sack	13.5	1.74		6	8.27
8.27 Gal									
3 lbm		**D, 50 LB SK (100012223)**							

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	Displacement	Displacement	278	bbl	10.5				

	Amount	46 ft		

Comment 18 BBLS SPACER BACK TO SURFACE

1.4 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	85
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	10.5
4	Time circulated before job	HH:MM	2:00
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	:15
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	278
12	Job displaced by	Rig/HES	RIG/HES
13	Annular before job)?	Y/N	
14	Annular flow after job	Y/N	
15	Length of rat hole	Ft	17
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	N

1.5 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	<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	68	^{o}F	50-80 ^{o}F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by: __LARRY LAVALLEY_____

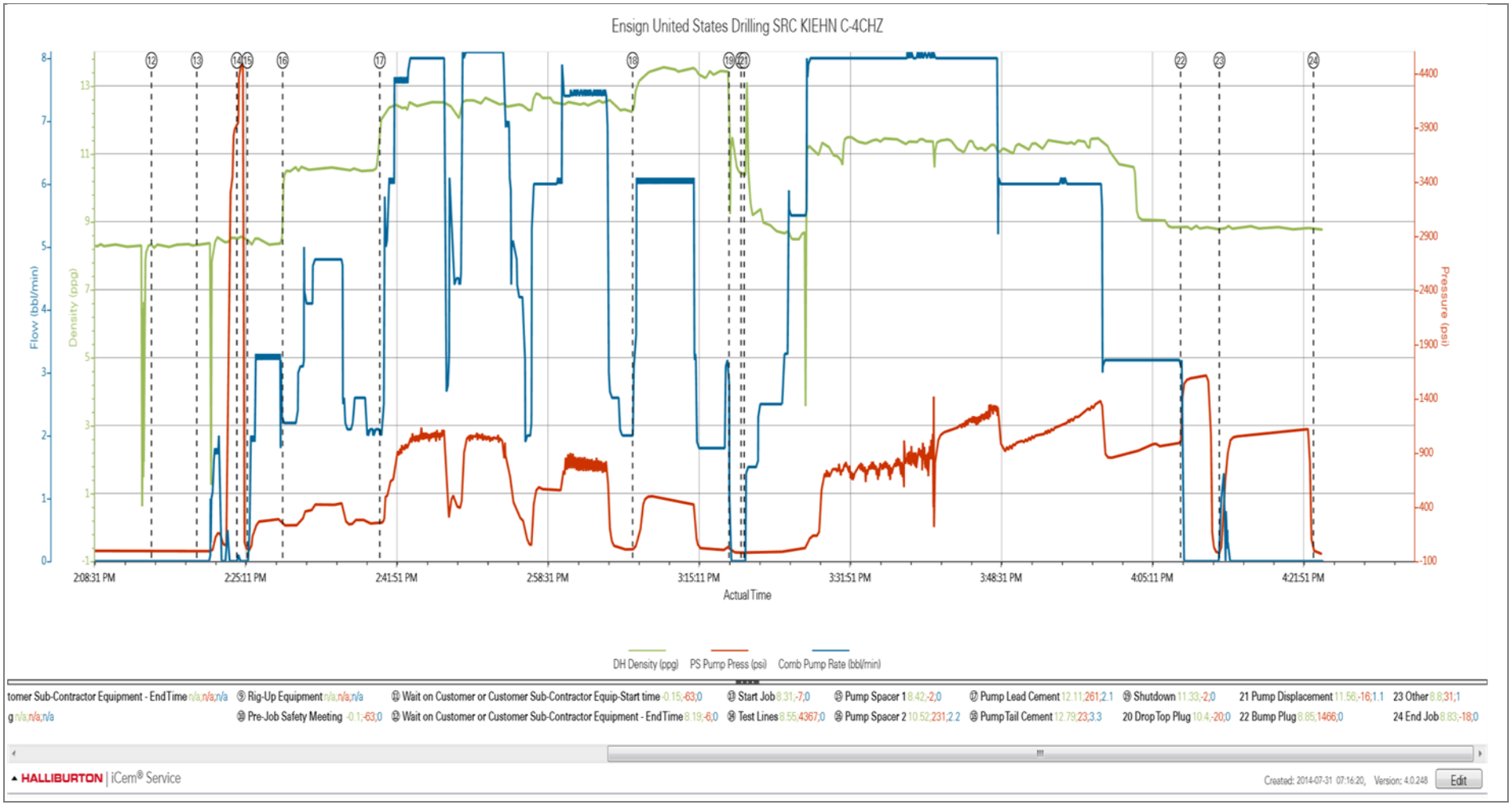
1.6 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Downhole Density (ppg)	Pass-Side Pump Pressure (psi)	Combined Pump Rate (bbl/min)	Comment
Event	1	Call Out	Call Out	7/31/2014	01:00:00	USER				Crew called to be on location @ 09:00AM
Event	2	Safety Meeting - Service Center or other Site	Safety Meeting - Service Center or other Site	7/31/2014	05:30:00	USER				Journey Management Safety Meeting
Event	3	Waiting - Arrived Early to Location - Start Time	Wait on Customer or Customer Sub-Contractor Equip - Start Time	7/31/2014	06:59:00	USER				Arrived early still running casing
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	7/31/2014	07:15:00	USER				
Event	5	Waiting - Arrived Early to Location - End Time	Arrive at Location from Service Center	7/31/2014	09:00:00	USER				
Event	6	Wait on Customer or Customer Sub-Contractor Equip - Start Time	Wait on Customer or Customer Sub-Contractor Equip - Start Time	7/31/2014	09:01:00	USER				Still Running Casing
Event	7	Wait on Customer or Customer Sub-Contractor Equipment - End Time	Wait on Customer or Customer Sub-Contractor Equipment - End Time	7/31/2014	12:00:00	USER				
Event	8	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	7/31/2014	12:05:00	USER				Prior to Spotting Equipment/Trucks
Event	9	Rig-Up Equipment	Rig-Up Equipment	7/31/2014	12:20:00	USER				Trucks/Iron/Head and Manifold
Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/31/2014	12:40:00	USER	-0.10	-63.00	0.00	Preloaded Hwe Top Plug Witnessed by Company Rep
Event	11	Wait on Customer or Customer Sub-Contractor Equip - Start Time	Wait on Customer or Customer Sub-Contractor Equip-Start time	7/31/2014	12:45:00	USER	-0.15	-63.00	0.00	Wait for mud Viscosity to get from 52 to 38
Event	12	Wait on Customer or Customer Sub-	Wait on Customer or Customer Sub-	7/31/2014	14:15:00	USER	8.19	-6.00	0.00	Mud Viscosity at 32

		Contractor Equipment - End Time	Contractor Equipment - End Time							
Event	13	Start Job	Start Job	7/31/2014	14:20:00	COM6	8.31	-7.00	0.00	
Event	14	Test Lines	Test Lines	7/31/2014	14:24:24	COM6	8.54	4334.00	0.00	Rig Water No Additives
Event	15	Pump Spacer 1	Pump Spacer 1	7/31/2014	14:25:34	COM6	8.41	-2.00	0.00	Rig Water with Mudflush III added
Event	16	Pump Spacer 2	Pump Spacer 2	7/31/2014	14:29:27	USER	10.52	231.00	2.20	40 BBLS Clean Spacer mixed @ 10.5PPG yield 3.86ft3/sk and 35.1gal/sk
Event	17	Pump Lead Cement	Pump Lead Cement	7/31/2014	14:40:10	COM6	12.02	254.00	2.10	575 sks Econocem Mixed @ 12.5PPG yield 7.91ft3/sk and 10.32gal/sk
Event	18	Pump Tail Cement	Pump Tail Cement	7/31/2014	15:08:03	COM6	12.65	21.00	3.30	145 sks Fraccem mixed @ 13.5PPG yield 1.74ft3/sk and 8.27gal/sk
Event	19	Shutdown	Shutdown	7/31/2014	15:18:41	COM6	11.21	0.00	0.00	
Event	20	Drop Top Plug	Drop Top Plug	7/31/2014	15:20:00	COM6	10.40	-20.00	0.00	Preloaded HWE top plug Witnessesed by Co Rep
Event	21	Pump Displacement	Pump Displacement	7/31/2014	15:20:20	COM6	11.56	-16.00	1.10	1st 10 water followed by 248 mud last 20 water.Caught Cement @ 33 bbls away.Spacer returned to surface @ 250bbls away(18bbls back).
Event	22	Bump Plug	Bump Plug	7/31/2014	16:08:29	COM6	8.85	1459.00	0.00	Final lift PSI was 1012 Bumped @ 1460PSI
Event	23	Other	Other	7/31/2014	16:12:45	COM6	8.80	20.00	1.00	Floats Held got1.5bbl back. Casing test to 1000PSI for 15min
Event	24	End Job	End Job	7/31/2014	16:23:07	COM6	8.83	-18.00	0.00	

2.0 Attachments

2.1 ENSIGN US DRILLING SRC KIEHN C-4CHZ.png



3.0 Appendix