

# HALLIBURTON

iCem<sup>®</sup> Service

## ENSIGN UNITED STATES DRILLING

**For: Sam Mikesell**

Date: Wednesday, October 01, 2014

**SRC KIEHN N-4NHZ**

Intermediate

Sincerely,

**Steven Markovich**

## Legal Notice

---

### Warning Disclaimer

Although the information contained in this report is based on sound engineering practices, the copyright owner(s) does (do) not accept any responsibility whatsoever, in negligence or otherwise, for any loss or damage arising from the possession or use of the report whether in terms of correctness or otherwise. The application, therefore, by the user of this report or any part thereof, is solely at the user's own risk.

### Limitations of Liability

Except as expressly set forth herein, there are no representations or warranties by Halliburton, express or implied, including implied warranties of merchantability and/or fitness for a particular purpose. In no event will Halliburton or its suppliers be liable for consequential, incidental, special, punitive or exemplary damages (including, without limitation, loss of data, profits, use of hardware, or software). Customer accepts full responsibility for any investment made based on results from the Software. Any interpretations, analyses or modeling of any data, including, but not limited to Customer data, and any recommendation or decisions based upon such interpretations, analyses or modeling are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional may differ. Accordingly, Halliburton cannot and does not warrant the accuracy, correctness or completeness of any such interpretation, recommendation, modeling or other products of the Software Product. As such, any interpretation, recommendation or modeling resulting from the Software for the purpose of any drilling, well treatment, production or financial decision will be at the sole risk of Customer. Under no circumstances will Halliburton or its suppliers be liable for any damages.

Table of Contents

1.0	Job Summary	4
1.1	Job Event Log	6
2.0	Attachments	8
2.1	SRC KIEHN N-4NHZ-Custom Results.png	8
2.2	One-Minutes Real-Time Data Listing	11

**HALLIBURTON**

### Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 301256		Ship To #: 3542585		Quote #:		Sales Order #: 0901702202				
Customer: ENSIGN UNITED STATES DRILLING				Customer Rep: Sam Mikesell						
Well Name: SRC KIEHN		Well #: N-4NHZ		API/UWI #: 05-123-39716-00						
Field: WATTENBERG		City (SAP): JOHNSTOWN		County/Parish: WELD		State: COLORADO				
Legal Description: SWSE-4-4N-68W-201FSL-1851FEL										
Contractor:				Rig/Platform Name/Num: Ensign 131						
Job BOM: 7522										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA/HX41066				Srv. Supervisor: Steven Markovich						
Job										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST						
Job depth MD		7950ft		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	1289	0	1289
Casing		7	6.276	26	BTC		0	7460	0	7102
Open Hole Section			8.75				1289	7460	1289	7460
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	7	1		7460	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		Conc	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	CLEANSRACE R III	CLEANSRACE III	40	bbl	10.5	3.86	35.1	4		
35.10 gal/bbl		FRESH WATER								

**HALLIBURTON**

## Cementing Job Summary

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	479	sack	12.5	1.89		6	10.23
10.23 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	FracCem	FRACCEM (TM) SYSTEM	172	sack	13.5	1.74		6	8.27
8.27 Gal		FRESH WATER							
3 lbm		SILICALITE - COMPACTED, 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	277	bbl	9				
Cement Left In Pipe		Amount	46 ft		Reason		Shoe Joint		
Comment 2bbls of Cement to surface									

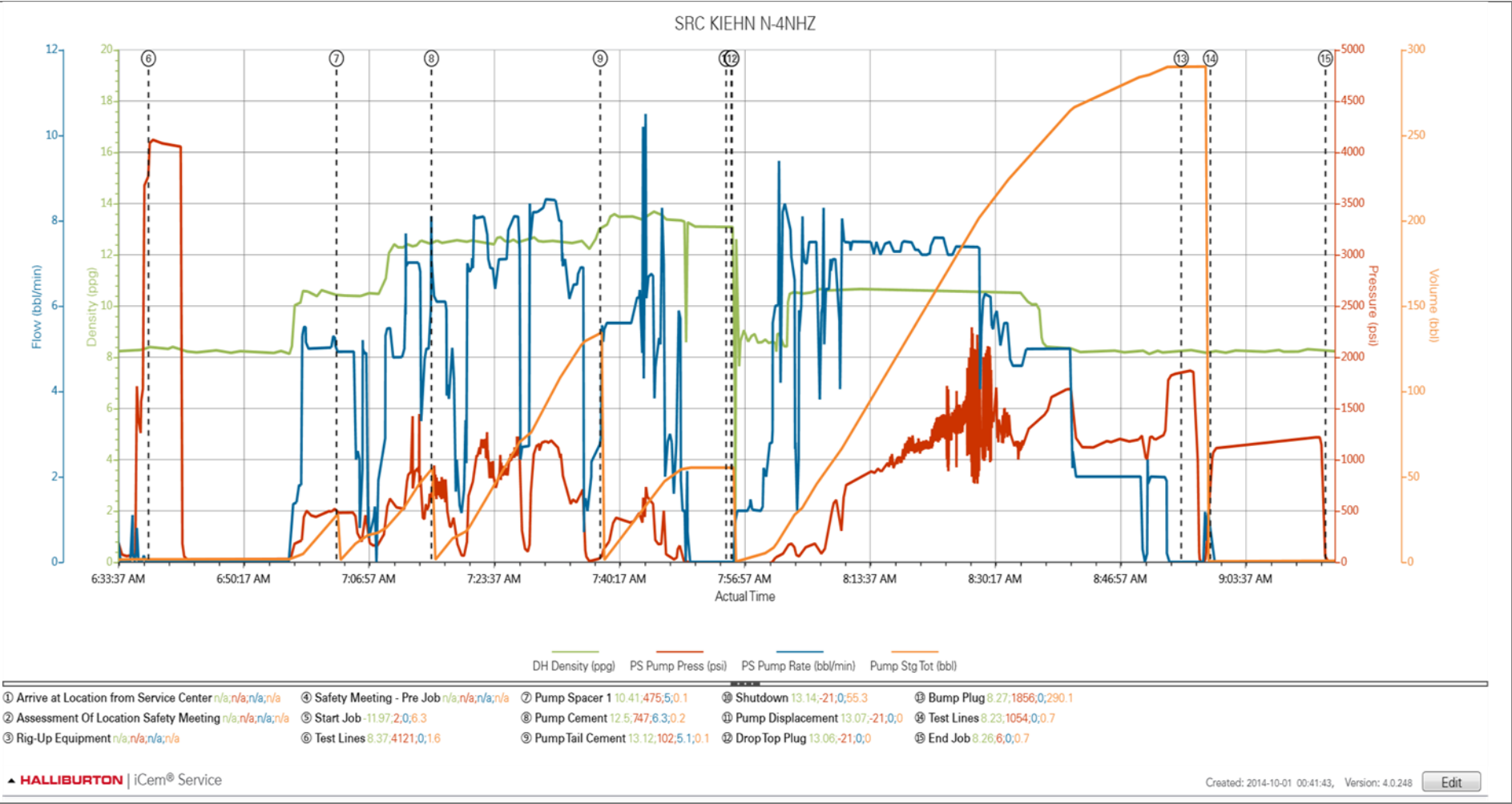
## 1.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	PS Pump Press (psi)	PS Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	10/1/2014	00:15:00	USER					Arrived on location rig still running casing approx 35 joints
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	10/1/2014	00:25:00	USER					JSA and hazard hunt with HES crew
Event	3	Rig-Up Equipment	Rig-Up Equipment	10/1/2014	00:45:00	USER					Rigged up HES lines and equipment
Event	4	Safety Meeting - Pre Job	Safety Meeting - Pre Job	10/1/2014	06:00:00	USER					JSA with HES and Rig crew on job procedure
Event	5	Start Job	Start Job	10/1/2014	06:31:34	COM6	-11.97	2.00	0.00	6.3	
Event	6	Test Lines	Test Lines	10/1/2014	06:37:54	COM6	8.37	4119.00	0.00	1.6	Test lines to 4000psi
Event	7	Pump Spacer 1	Pump Spacer 1	10/1/2014	07:02:55	COM6	10.41	471.00	4.90	0.0	Pump 40bbls of 10.5ppg Spacer
Event	8	Pump Cement	Pump Cement	10/1/2014	07:15:33	COM6	12.49	842.00	6.50	0.1	Pump 161 bbls of 12.5ppg Lead Cement
Event	9	Pump Tail Cement	Pump Tail Cement	10/1/2014	07:38:01	COM6	13.13	97.00	5.10	0.0	Pump 53 bbls of 13.5ppg Tail Cement
Event	10	Shutdown	Shutdown	10/1/2014	07:54:46	COM6	13.14	-21.00	0.00	55.3	
Event	11	Pump Displacement	Pump Displacement	10/1/2014	07:55:27	COM6	13.09	-21.00	0.00	0.0	Pump 277bbls. Spacer to surface at 234 away and cement to surface at 275 away giving us 2bbls of Cement to surface
Event	12	Drop Top Plug	Drop Top Plug	10/1/2014	07:55:32	COM6	13.05	-21.00	0.00	0.0	Plug pre loaded in HES head
Event	13	Bump Plug	Bump Plug	10/1/2014	08:55:19	COM6	8.26	1855.00	0.00	290.1	Final lift pressure was 1216 took 500 over and held for 3 mins checked floats, floats good
Event	14	Test Lines	Test Lines	10/1/2014	08:59:12	COM6	8.23	1054.00	0.00	0.7	Casing test 1000psi for 15 mins
Event	15	End Job	End Job	10/1/2014	09:14:31	COM6	8.26	6.00	0.00	0.7	Thank you Markovich and

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density <i>(ppg)</i>	PS Pump Press <i>(psi)</i>	PS Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
											crew

2.0 Attachments

2.1 SRC KIEHN N-4NHZ-Custom Results.png









## 2.2 One-Minutes Real-Time Data Listing

---