

HALLIBURTON

iCem[®] Service

ENCANA OIL & GAS (USA) INC

For:

Date: Tuesday, September 30, 2014

JILLSON-EAST RINN 3H-22H-N268

Production

Sincerely,

Sebastian Estensoro

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Jillson East Rinn 3H-22H-N268** cement **Production** 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	7/28/14	1300	MST
On Location	7/28/14	1725	MST
Job Started	7/29/14	0444	MST
Job Completed	7/29/14	0654	MST
Departed Location			MST

1.2 Cementing Job Summary

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 340078	Ship To #: 3113397	Quote #:	Sales Order #: 0901534819
Customer: ENCANA OIL & GAS (USA) INC. - EBUS		Customer Rep:	
Well Name: JILLSON-EAST RINN	Well #: 3H-22H-N268	API/UWI #: 05-123-38004-00	
Field: WATTENBERG	City (SAP): LONGMONT	County/Parish: WELD	State: COLORADO
Legal Description: SE SW-22-2N-68W-261FSL-2110FWL			
Contractor:		Rig/Platform Name/Num: H&P 278	
Job BOM: 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA/HB60191		Srcv Supervisor: Vaughn Oteri	
Job			

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	152221ft		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		7	6.366	23		N-80	0	7581	0	7494
Casing		4.5	3.92	13.5		P-110	0	12100	0	7494
Open Hole Section			6.125				7581	12100	7494	7494

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make	
Guide Shoe	4.5	1		12100	Top Plug	4.5	1	HES	
Float Shoe	4.5	1			Bottom Plug	4.5	1	HES	
Float Collar	4.5	1			SSR plug set	4.5	1	HES	
Insert Float	4.5	1			Plug Container	4.5	1	HES	
Stage Tool	4.5	1			Centralizers	4.5	1	HES	

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

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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	30	bbl	11.5	3.75	24.2			
36.09 gal/bbl		FRESH WATER								
148.73 lbm/bbl		BARITE, BULK (100003681)								

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Cementing Job Summary

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
2	Expandacem B2	EXPANDACEM (TM) SYSTEM	553	sack	13.8	1.67	7.7	4	7.7
7.70 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	Fresh Water	Fresh Water	226.45	bbl	8.3				
Cement Left In Pipe		Amount	ft	Reason			Shoe Joint		
Comment									

1.3 Planned Pumping Schedule

- 1. Fill Lines with Water**
 - a. Density = 8.33ppg
 - b. Volume = 2bbl
- 2. Pressure Test Lines to 4000psi**
- 3. Pump Tuned Spacer**
 - a. Density = 11.5 lb/gal
 - b. Volume = 30 bbl
 - c. Rate = 4 bpm
- 4. Drop Bottom Plug**
- 5. Pump ExpandaCem (Lead)**
 - a. Density = 13.8
 - b. Yield = 1.67
 - c. Water Requirement = 7.7
 - d. Volume = 553 sks (164.5 bbls)
 - e. Rate = 6 bpm
- 6. Drop Top Plug**
- 7. Start Displacement**
- 8. Pump Displacement Brine Water**
 - a. Density = 10 lb/gal
 - b. Volume = 226.5 bbls
 - c. Rate = 6 bpm
9. Land Plug – Anticipated Final Circulation Pressure 1900 psi

Calculated Total Displacement = 226.5 bbls

1.4 Job Overview

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

1.5 Water Field Test

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH		----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides		ppm	3000 ppm	Can shorten thickening time of cement
Sulfates		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		ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature		°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

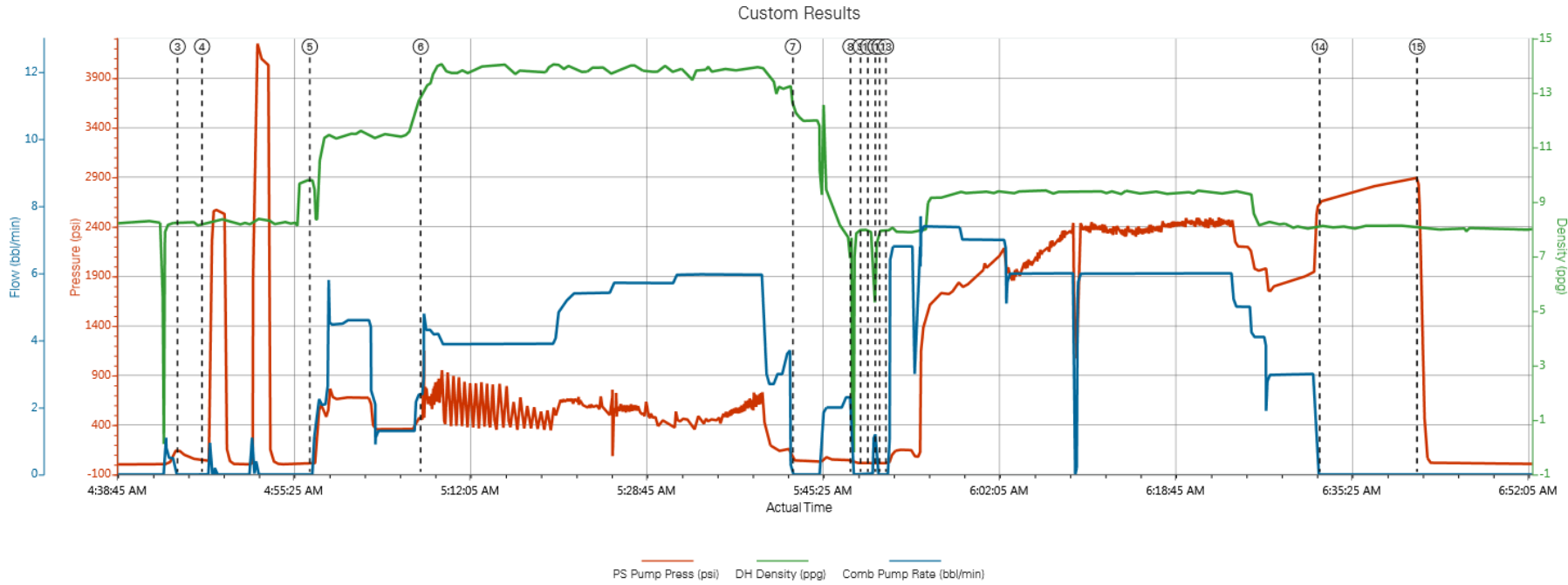
Submitted Respectfully by: _____

1.6 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comment
Event	1	Call Out	Call Out	7/28/2014	13:00:00	USER				CALL OUT FROM ARS OFFICE
Event	2	Arrive At Loc	Arrive At Loc	7/28/2014	17:25:00	USER				ARRIVE ON LOCATION MET WITH COMPANY REP TO DISCUSS JOB PROCESS AND CONCERNS ADVISED THEY HAD A BIT OF CASING LEFT TO RUN
Event	3	Start Job	Start Job	7/29/2014	04:44:39	COM6	133.00	8.24	0.00	HELD PREJOB SAFTY MEETING IN DOG HOUSE TO DISCUSS JOB PROCESS AND HAZARDS WITH ALL HANDS ON LOCATION
Event	4	Test Lines	Test Lines	7/29/2014	04:46:58	COM6	43.00	8.29	0.00	PRESSURE TESTED PUMPS AND LINES FOUND LEAK AT STAND PIPE RELEASED PRESSURE BACK TO PUM AND TIGHTEN UP WING RETESTED PRESSURE HELD GOOD
Event	5	Pump Spacer 1	Pump Spacer 1	7/29/2014	04:57:09	COM6	4.00	9.79	0.00	MIXED 30BBL OF 11.5PPG TUNE SPACER AT 4.5BPM 685PSI
Event	6	Pump Cement	Pump Cement	7/29/2014	05:07:38	COM6	454.00	13.02	2.40	MIXED 164BBL OF 13.8PPG EXPANDACEM AT 6.0BPM 515PSI
Event	7	Shutdown	Shutdown	7/29/2014	05:42:49	COM6	38.00	12.31	0.00	
Event	8	Clean Lines	Clean Lines	7/29/2014	05:48:15	COM6	28.00	-0.10	0.00	PUMP FRESH WATER TO CLEAN PUMPS AND LINES
Event	9	Drop Top Plug	Drop Top Plug	7/29/2014	05:49:13	COM6	18.00	7.95	0.00	BLACK HAWK HAND RELEASED PLUG WITNESSED BY COMPANY REP AND HES TOOL HAND AND CEMENT SUPERVISIOR
Event	10	Pump Displacement	Pump Displacement	7/29/2014	05:49:54	COM6	17.00	7.88	0.00	PUMPED 1/4BBL OF MMCR WATER
Event	11	Shutdown	Shutdown	7/29/2014	05:50:36	COM6	18.00	7.69	0.00	
Event	12	Drop Ball	Drop Ball	7/29/2014	05:51:00	COM6	15.00	8.01	0.00	BLACK HAWK HAND RELEASED WIPER BALLS WITNESSED BY COMPANY REP AND HES TOOL HAND AND CEMENTER
Event	13	Pump Displacement	Pump Displacement	7/29/2014	05:51:36	COM6	16.00	7.97	0.00	PUMPED 226.25BBL OF 10.0PPG BRINE WATER
Event	14	Bump Plug	Bump Plug	7/29/2014	06:32:36	COM6	2667.00	8.09	0.00	BUMP PLUG 500PSI OVER FINAL PUMP PRESSURE
Event	15	Other	Other	7/29/2014	06:41:48	COM6	2587.00	8.09	0.00	RELEASED PRESSURE BACK TO PUMP TRUCK TO CHECK FLOATS, FLOATS HELD GOOD 2BBL BACK
Event	16	End Job	End Job	7/29/2014	06:54:56	COM6	7.00	7.94	0.00	

2.0 Custom Graphs

2.1 Custom Graph



- ① Call Out n/a;n/a;n/a ④ Test Lines 43;8.29;0 ⑦ Shutdown 38;12.31;0 ⑩ Pump Displacement 17;788;0 ⑬ Pump Displacement 16;797;0 ⑮ End Job 7;794;0
- ② Arrive At Loc n/a;n/a;n/a ⑤ Pump Spacer 1 4;9.79;0 ⑧ Clean Lines 28;-0.1;0 ⑫ Shutdown 18;769;0 ⑭ Bump Plug 2667;8.09;0
- ③ Start Job 133;8.24;0 ⑥ Pump Cement 454;13.02;2.4 ⑨ Drop Top Plug 18;795;0 ⑪ Drop Ball 15;8.01;0 ⑯ Other 2587;8.09;0



3.0 Appendix
