

# HALLIBURTON

iCem<sup>®</sup> Service

## **ENCANA OIL & GAS (USA) INC**

Date: Tuesday, January 13, 2015

### **MINCH 3E-4H L368**

H&P 522

Job Date: Friday, January 02, 2015

Sincerely,  
Jennifer Dattolo

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## 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Minch 3E-4H-L368** 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
<b>Called Out</b>	1/2/2015	0140	MST
<b>On Location</b>	1/2/2015	0700	MST
<b>Job Started</b>	1/2/2015	1113	MST
<b>Job Completed</b>	1/2/2015	1301	MST
<b>Departed Location</b>	1/2/2015	1500	MST

1.2 Cementing Job Summary

**HALLIBURTON**

**Cementing Job Summary**

The Road to Excellence Starts with Safety

Sold To #: 340078	Ship To #: 3481775	Quote #:	Sales Order #: 0901984475
Customer: ENCANA OIL & GAS (USA) INC. - EBUS		Customer Rep:	
Well Name: MINCH	Well #: 3E-4H-L368	API/UWI #: 05-123-39411-00	
Field: WATTENBERG	City (SAP): BERTHOUD	County/Parish: WELD	State: COLORADO
Legal Description: NW SW-4-3N-68W-1667FSL-453FWL			
Contractor: HELMERICH & PAYNE		Rig/Platform Name/Num: H & P 522	
Job BOM: 7523			
Well Type: HORIZONTAL GAS			
Sales Person: HALAMERICA\HB21661		Srvc Supervisor:	
Job			

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	11752ft		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	7802	0	0
Casing		4.5	3.92	13.5		P-110	0	11925	0	0
Open Hole Section			6.125				7802	11935	0	0

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	4.5				Top Plug	4.5		HES
Float Shoe	4.5			11742	Bottom Plug	4.5		HES
Float Collar	4.5			11736	SSR plug set	4.5		HES
Insert Float	4.5				Plug Container	4.5		HES
Stage Tool	4.5				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 ft <sup>3</sup> /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	3.76	24.2	5	
	36.20 gal/bbl	FRESH WATER							
	149.34 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 <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
2	ExpandaCem B2	EXPANDACEM (TM) SYSTEM	354	sack	13.8	1.68		5	7.72
7.72 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	Fresh Water	Fresh Water	170	bbl	8.3				
Cement Left In Pipe		Amount	ft	Reason			Shoe Joint		
Comment									

### 1.3 Planned Pumping Schedule

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1. **Fill Lines with Water**
  - a. Density = 8.33ppg
  - b. Volume = 2bbl
2. **Pressure Test Lines to 4000 psi**
3. **Pump Tuned Spacer**
  - a. Density = 11.5 lb/gal
  - b. Volume = 30 bbl
  - c. Rate = 3.0 bpm
4. **Pump ExpandaCem (Lead)**
  - a. Density = 13.8 lb/gal
  - b. Yield = 1.68 ft<sup>3</sup>/sk
  - c. Water Requirement = 7.72 gal/sk
  - d. Volume = 354 sks (105 bbls)
  - e. Rate = 6.0 bpm
5. **Drop Top Plug**
6. **Start Displacement**
7. **Pump Displacement Water**
  - a. Density = 8.33 lb/gal
  - b. Volume = 170 bbls
  - c. Rate = 7.0 bpm
8. Land Plug – Anticipated Final Circulation Pressure 1700 psi

Calculated Total Displacement = 170 bbls

**1.4 Job Overview**

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		<b>Units</b>	<b>Description</b>
<b>1</b>	Surface temperature at time of job	°F	20
<b>2</b>	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
<b>3</b>	Actual mud density	lb/gal	10.7
<b>4</b>	Time circulated before job	HH:MM	
<b>5</b>	Mud volume circulated	Bbls	
<b>6</b>	Rate at which well was circulated	Bpm	
<b>7</b>	Pipe movement during hole circulation	Y/N	N
<b>8</b>	Rig pressure while circulating	Psi	
<b>9</b>	Time from end mud circulation to start of job	HH:MM	
<b>10</b>	Pipe movement during cementing	Y/N	Y
<b>11</b>	Calculated displacement	Bbls	178
<b>12</b>	Job displaced by	Rig/HES	HES
<b>13</b>	Annular before job)?	Y/N	Y
<b>14</b>	Annular flow after job	Y/N	N
<b>15</b>	Length of rat hole	Ft	10
<b>16</b>	Units of gas detected while circulating	Units	
<b>17</b>	Was lost circulation experienced at any time ?	Y/N	N

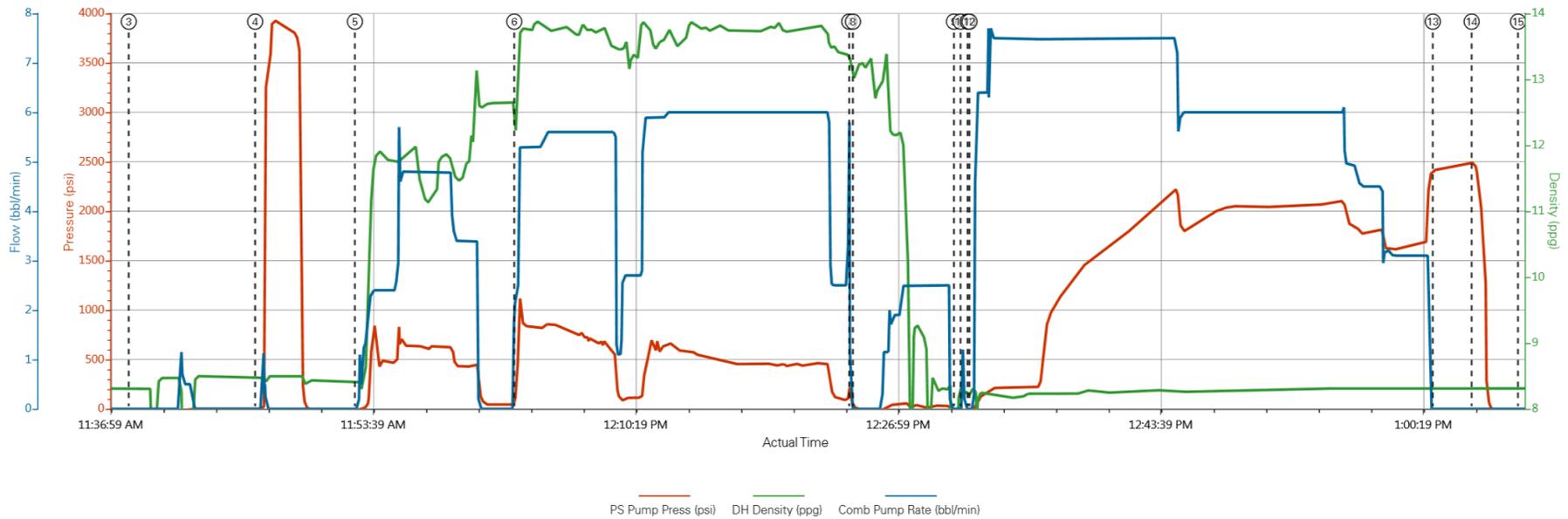
## 1.5 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	1/2/2015	01:40:00	USER				CALL OUT FROM ARS OFFICE
Event	2	Arrive At Loc	Arrive At Loc	1/2/2015	07:00:00	USER				ARRIVE ON LOCATION MET WITH COMPANT REP TO DISCUSS JOB PROCESS AND CONCERNS ADVISED THAT THEY HAD ABOUT 40 JOINTS OF CASING TO RUN IN THE HOLE STILL
Event	3	Start Job	Start Job	1/2/2015	11:38:16	COM6	0.00	8.33	0.00	HELD PREJOB SAFETY MEETING IN DOG HOUSE WITH ALL HANDS ON LOCATION TO DISCUSS JOB PROCESS AND HAZARDS, ADVISED COMPANY REP THAT WHILE PRIMING UP ONE OF THE BALL VALVES WAS OPEN AND PUT ABOUT 10GAL OF FRESH WATER ON THE GROUND
Event	4	Test Lines	Test Lines	1/2/2015	11:46:17	COM6	0.00	8.33	4000.00	PRESSURE TESTED PUMPS AND LINES FOUND NO LEAKS AND PRESSURE HELD GOOD
Event	5	Pump Spacer 1	Pump Spacer 1	1/2/2015	11:52:37	COM6	3.00	11.50	0.00	MIXED 30BBL OF 11.5PPG TUNE SPACER AT 5.0BPM 644PSI
Event	6	Pump Cement	Pump Cement	1/2/2015	12:02:44	COM6	6.00	13.80	361.00	MIXED 105BBL OF 13.8PPG EXPANDACEM AT 6.0BPM 884PSI
Event	7	Shutdown	Shutdown	1/2/2015	12:24:00	COM6	0.00	13.80	64.00	
Event	8	Clean Lines	Clean Lines	1/2/2015	12:24:14	COM6	0.00	8.33	8.00	PUMPED FRESH WATER TO CLEAN PUMPS AND LINES
Event	9	Drop Top Plug	Drop Top Plug	1/2/2015	12:30:39	COM6	0.00	8.33	0.00	BLACK HAWK HAND RELEASED PLUG WITNESSED BY COMPANY REP AND HES SUPERVISIOR AND HES TOOL HAND
Event	10	Pump Displacement	Pump Displacement	1/2/2015	12:31:04	COM6	1.00	8.33	0.00	PUMPED 1/4BBL OF MMCR WATER TO DISPLACE CEMENT
Event	11	Drop Top Plug	Drop Top Plug	1/2/2015	12:31:31	COM6	0.00	8.33	0.00	BLACK HAWK HAND RELEASED WIPER BALLS WITNESSED BY COMPANY REP AND HES SUPERVISIOR AND HES TOOL HAND
Event	12	Pump Displacement	Pump Displacement	1/2/2015	12:31:38	COM6	7.00	8.33	0.00	PUMPED 170BBL OF FRESH WATER TO DISPLACE CEMENT
Event	13	Bump Plug	Bump Plug	1/2/2015	13:01:03	COM6	0.00	8.33	1700.00	BUMPED PLUG 500PSI OVER FINAL PUMP PRESSURE
Event	14	Other	Other	1/2/2015	13:03:31	COM6	0.00	8.33	0.00	RELEASED PRESSURE TO PUMP TRUCK TO CHECK FLOATS , FLOATS HELD GOOD 2.0BBL BACK
Event	15	End Job	End Job	1/2/2015	13:06:28	COM6	0.00	8.33	0.00	

## 2.0 Attachments

### 2.1 Job Results

Minch 3E-4H-L368 H&P 522 Job Results



① Call Out n/a,n/a,n/a	④ Test Lines 0,8.48,0	⑦ Shutdown 64,13.22,0	⑩ Pump Displacement -4,8.22,1.2	⑬ Bump Plug 2419,8.31,0
② Arrive At Loc n/a,n/a,n/a	⑤ Pump Spacer 1 -18,8.41,0	⑧ Clean Lines 8,13.13,0	⑪ Drop Top Plug -24,8.29,0	⑭ Other 2493,8.31,0
③ Start Job -17,8.31,0	⑥ Pump Cement 361,12.61,2.3	⑨ Drop Top Plug -29,4.09,0	⑫ Pump Displacement -26,8.31,0	⑮ End Job -31,8.31,0