

# HALLIBURTON

iCem<sup>®</sup> Service

## **SRC ENERGY INC-EBUS**

Date: Wednesday, January 09, 2019

### **Bost Farm 40C-8-L**

Job Date: Wednesday, January 09, 2019

Sincerely,

**Halliburton Engineering**

## Legal Notice

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### Disclaimer:

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Best Farm 40C-8-L 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.

**Approximately 14 bbls of TSIII spacer were returned to surface.**

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 Ft. Lupton**

*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 359915	<b>Ship To #:</b> 3902143	<b>Quote #:</b> 0022530202	<b>Sales Order #:</b> 0905394310
<b>Customer:</b> SRC ENERGY INC-EBUS		<b>Customer Rep:</b> Lovell Young	
<b>Well Name:</b> BOST FARM		<b>Well #:</b> 40C-8-L	<b>API/UWI #:</b> 05-123-47695-00
<b>Field:</b> WATTENBERG	<b>City (SAP):</b> GREELEY	<b>County/Parish:</b> WELD	<b>State:</b> COLORADO
<b>Legal Description:</b> SW NW-7-5N-66W-1517FNL-939FWL			
<b>Contractor:</b> PRECISION DRLG		<b>Rig/Platform Name/Num:</b> PRECISION 462	
<b>Job BOM:</b> 14143 14143			
<b>Well Type:</b> HORIZONTAL OIL			
<b>Sales Person:</b> HALAMERICA\HB41307		<b>Srvc Supervisor:</b> Steven Markovich	

**Job**

<b>Formation Name</b>			
<b>Formation Depth (MD)</b>	<b>Top</b>		<b>Bottom</b>
<b>Form Type</b>	BHST		
<b>Job depth MD</b>	17805ft	<b>Job Depth TVD</b>	
<b>Water Depth</b>		<b>Wk Ht Above Floor</b>	
<b>Perforation Depth (MD)</b>	<b>From</b>		<b>To</b>

**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	LTC	J-55	0	1840	0	0
Casing		5.5	4.778	20	TXP-BTC	P110IC	0	17805	0	0
Open Hole Section			8.5				1840	17820	0	0

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5			17805	Top Plug	5.5		HES
Float Shoe	5.5				Bottom Plug	5.5		HES
Float Collar	5.5				SSR plug set	5.5		HES
Insert Float	5.5				Plug Container	5.5		HES
Stage Tool	5.5				Centralizers	5.5		HES

**Fluid Data**

<b>Stage/Plug #: 1</b>										
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	Tuned Spacer III	Tuned Spacer III	40	bbl	11.5	3.84				
36.09 gal/bbl		<b>FRESH WATER</b>								
0.25 gal/bbl		<b>D-AIR 3000L, 5 GAL PAIL (101007444)</b>								
0.50 gal/bbl		<b>DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)</b>								

145.18 lbm/bbl		<b>BARITE, BULK (100003681)</b>							
0.50 gal/bbl		<b>MUSOL(R) A, 5 GAL PAIL (100064220)</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
2	HalCem	HALCEM (TM) SYSTEM	545	sack	15.6	1.18		5	5.2
5.08 Gal		<b>FRESH WATER</b>							
2.50 %		<b>FOAMER 1026, TOTE (102166506)</b>							
0.30 %		<b>SCR-742, 50 LB BAG (102027729)</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
3	HalSeal	HALSEAL (TM) SYSTEM	825	sack	15.6	1.18		5	5.2
2.50 %		<b>FOAMER 1026, TOTE (102166506)</b>							
5.08 Gal		<b>FRESH WATER</b>							
0.30 %		<b>SCR-742, 50 LB BAG (102027729)</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
4	NeoCem	NeoCem TM	1080	sack	13.2	2.06		6	9.83
0.09 %		<b>SCR-100 (100003749)</b>							
9.79 Gal		<b>FRESH WATER</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
5	MMCR Displacement	MMCR Displacement	20	bbbl	8.34				
0.20 gal/bbl		<b>MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
6	Water	Water	351	bbbl	8.33				
1 gal/Mgal		<b>CLA-WEB - BULK (101985043)</b>							
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>	<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>

7	MMCR Displacement	MMCR Displacement	20	dbl	8.34					
0.20 gal/dbl		<b>MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)</b>								
Cement Left In Pipe		<b>Amount</b>	0 ft		<b>Reason</b>			<b>Wet Shoe</b>		
Mix Water:		pH 6.5	<b>Mix Water Chloride:</b> 1.2 ppm		Mix Water Temperature:			62.5 °F °C		
<p><b>Comment</b> Pump 391.17bbls of Fresh H2O. First and last 20bbls with MMCR. Pumped at 8dbl/min and slowed rate with pressure increase. Rotation of the commander was stopped 30 barrels from bumping in order to release torque. Spacer interface at 376bbls away bringing 15bbls to surface. Plug bumped at 391.17 dbl away, final lift pressure was 2558psi. Took pressure 500psi over and held for 1 minute. Wet shoe sub shifted at 5210 psi. Pumped 6 dbl wet shoe. Opened release line to check floats and after 2.5bbls back floats held. Estimated Top of Tail Cement 8173' Estimated Top of Lead Cement 3934' Estimated Top of Cap Cement 477'.</p>										

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Flow #1 Rate (gpm)	LA 1 Rate (gpm)	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (gpm)	Comments
Event	1	Call Out	Call Out	1/8/2019	21:00:00	USER						Job called out at 2100 with an on location time of 0300 and RTP at 0500
Event	2	Crew Leave Yard	Crew Leave Yard	1/9/2019	01:00:00	USER						JSA with HES crew on directions and road hazards on the way to location.
Event	3	Arrive At Loc	Arrive At Loc	1/9/2019	02:00:00	USER						Arrived on location, rig was still running casing. 1000' to run.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	1/9/2019	02:35:00	USER						JSA and hazard hunt with HES crew.
Event	5	Start Job	Start Job	1/9/2019	10:58:20	COM9	0.0	0.1	14.00	8.26	0.0	TD 17820' TP 17805' FC 17757' 5 1/2" 20# Production Casing, 8 1/2" Open hole, 9 5/8" 36# Surface Casing set at 1840', TVD 7389'.
Event	6	Test Lines	Test Lines	1/9/2019	11:04:54	COM9	0.0	0.0	111.00	8.50	0.0	Fill lines. 5 bbls at 2bbl/min. Pressure came up to 80psi. Set kick outs to 500psi to check low pressure kick outs, then bring pressure up to 8000psi and hold.
Event	7	Drop Bottom Plug	Drop Bottom Plug	1/9/2019	11:15:00	USER	0.0	0.0	8062.00	8.60	0.0	Bottom plug that was pre-loaded was dropped in front of company rep from the commander head.
Event	8	Check Weight	Check Weight	1/9/2019	11:25:36	COM9	0.0	0.0	143.00	8.32	0.0	Verified spacer weight with pressurized mud balance.
Event	9	Pump Spacer 1	Pump Spacer 1	1/9/2019	11:25:49	COM9	0.0	0.0	145.00	8.32	0.0	Pump 40bbls of 11.5ppg

												3.84 yield Tuned Spacer. Added 20 gallons of Musol and Dual Spacer B on the fly. Pumped at 4bbl/min 536psi.
Event	10	Check Weight	Check Weight	1/9/2019	11:41:13	COM9	0.0	0.0	54.00	11.58	0.0	Verified cap cement weight with pressurized mud balance.
Event	11	Pump Cap Cement	Pump Cap Cement	1/9/2019	11:42:41	COM9	0.0	0.0	53.00	11.57	0.0	Pump 114.5bbls (545sks) of 15.6ppg 1.18 Cap Cement. Pumped at 5bbl/min 530psi. Foamer was injected into the suction head at a rate of .62 gal/bbl
Event	12	Check Weight	Check Weight	1/9/2019	11:44:48	COM9	216.0	0.1	903.00	15.70	214.2	Verified weight with mud balance.
Event	13	Pump Lead Cement	Pump Lead Cement	1/9/2019	12:04:18	COM9	211.7	0.1	514.00	15.51	210.0	Pump 173.4bbls (825sks) of 15.6ppg 1.18yield Lead Cement. Pumped at 5bbl/min 1200psi. Nitrogen was brought on and was increased every 10 bbls.
Event	14	Pump Tail Cement	Pump Tail Cement	1/9/2019	12:41:12	COM9	209.6	0.1	1460.00	13.99	210.0	Foamer was shut down, and nitrogen was brought offline. Pump 396.2bbls (1080sks) of 13.2ppg 2.06yield Tail Cement. Pumped at 7bbl/min 980psi.
Event	15	Comment	Comment	1/9/2019	12:41:20	USER	209.6	0.1	1302.00	13.65	210.0	172 gal. Foamer used. N2 Starting strap 199,000 SCF, N2 ending strap 128,000 SCF, 71,000 total SCF of N2 used for job with 44,506 SCF pumped downhole and 26,494 SCF for cool down and function test
Event	16	Check Weight	Check Weight	1/9/2019	12:41:59	COM9	209.6	0.0	1347.00	13.33	277.2	Verified weight with

												pressurized mud balance.
Event	17	Check Weight	Check Weight	1/9/2019	12:46:43	COM9	209.6	3.6	907.00	13.14	252.0	Verified weight with pressurized mud balance.
Event	18	Check Weight	Check Weight	1/9/2019	12:47:28	COM9	211.7	1.0	870.00	13.28	252.0	Verified weight with pressurized mud balance.
Event	19	Check Weight	Check Weight	1/9/2019	12:54:11	COM9	209.6	0.1	982.00	13.21	294.0	Verified weight with pressurized mud balance.
Event	20	Shutdown	Shutdown	1/9/2019	13:41:23	COM9	0.0	0.3	175.00	13.25	0.0	Shutdown after pumping tail cement, annulars were closed.
Event	21	Clean Lines	Clean Lines	1/9/2019	13:42:00	USER	0.0	0.4	58.00	13.28	0.0	Washed pump and lines
Event	22	Drop Top Plug	Drop Top Plug	1/9/2019	13:54:28	COM9	0.0	0.3	33.00	8.07	0.0	Plug that was pre-loaded was dropped in front of the company rep from the commander head.
Event	23	Pump Displacement	Pump Displacement	1/9/2019	13:54:31	COM9	0.0	0.3	33.00	8.07	0.0	Pump 391.17bbls of Fresh H2O. First and last 20bbls with MMCR. Pumped at 8bbl/min and slowed rate with pressure increase. Rotation of the commander was stopped 30 barrels from bumping in order to release torque.
Event	24	Bump Plug	Bump Plug	1/9/2019	14:48:06	COM9			2808.00	8.35	168.0	Plug bumped at 391.17 bbl away, final lift pressure was 2558psi. Took pressure 500psi over and held for 1 minute.
Event	25	Other	Other	1/9/2019	14:49:00	COM9			3256.00	8.37	0.0	Wet shoe sub shifted at 5210 psi. Pumped 6 bbl wet shoe
Event	26	Other	Other	1/9/2019	14:50:29	COM9			3991.00	8.42	88.2	Annular closed in.
Event	27	Check Floats	Check Floats	1/9/2019	14:52:00	USER			2437.00	8.34	0.0	Bled back pressure to truck

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										floats held with 2.5 bbls of fluid returned to displacement tub
Event	28	End Job	End Job	1/9/2019	14:54:08	COM9	30.00	8.25	0.0	Thank you for your business, please call with any questions or concerns. Steve Markovich and crew.

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Commander Head job log.

- 08:30 Pre rig up safety meeting
- Rig was circulating at 380gpm at 1400psi through the CRT.
- 09:00 Rigged up commander head
- 10:00 Rig circulated at 200gpm 705psi, established baseline torque at 19k at 30rpm
- 11:27 Dropped bottom plug and went down hole with spacer, torque was 15k at 30rpm.
- 11:45 Cap Cement at 15k/30rpm
- 12:11 Foamed Lead Cement 13k/30rpm
- 12:41 Tail Cement 13k/30rpm
- 13:45 Stop rotation and shut in annular, for wash up and drop top plug.
- 13:55 Start displacement, initiate flush sequence at 4bbl/min
- 13:58 Flush completed start rotation 20k/30rpm
- 14:43 Stop rotating to bump plug. Final torque was 24k/30rpm
- 15:30 Rig down safety meeting
- 16:00 Rig down commander head

3.0 Attachments

3.1 Bost Farm 40C-8-L Production.png

