

# HALLIBURTON

iCem<sup>®</sup> Service

## **HIGHLANDS NATURAL RESOURCES-EBUS**

Date: Wednesday, May 16, 2018

**Hagar 5-64 15-16-1BHZ**

Job Date: Friday, May 04, 2018

Sincerely,  
**Tyler Hill**

## 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 **Hagar 5-64-15 16-1BHZ** cement **Surface** 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 47.5 bbls of cement 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*

Sold To #: 378724	Ship To #: 3791456	Quote #: 0022436631	Sales Order #: 0904830012
Customer: HIGHLANDS NATURAL RESOURCES-EBUS		Customer Rep: Mark Stoner	
Well Name: HAGAR		Well #: 5-64 15-16-1BHZ	API/UWI #: 05-005-07268-00
Field: WILDCAT	City (SAP): AURORA	County/Parish: ARAPAHOE	State: COLORADO
Legal Description: NE SE-15-5S-64W-2180FSL-440FEL			
Contractor: TRUE DRLG		Rig/Platform Name/Num: TRUE 33	
Job BOM: 7521 7521			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HB41307		Srvc Supervisor: Adam Covington	

**Job**

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type	BHST		
Job depth MD	2116ft		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
Open Hole Section			13.5				0	2116		0
Casing		9.625	8.921	36	LTC	J-55	0	2158		0

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	9.625			2158	Top Plug	9.625	1	
Float Shoe	9.625				Bottom Plug	9.625		HES
Float Collar	9.625				SSR plug set	9.625		HES
Insert Float	9.625				Plug Container	9.625		HES
Stage Tool	9.625				Centralizers	9.625	25	HES

**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	Fresh Water Spacer	Fresh Water Spacer	20	bbl	8.33			2		

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	SwiftCem	SWIFTCEM (TM) SYSTEM	330	sack	12	2.53		8	14.65	
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	SwiftCem	SWIFTCEM (TM) SYSTEM	440	sack	13.5	1.76		8	9.02	
	9.02 Gal	<b>FRESH WATER</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	
4	Displacement	Displacement	162.5	bbl	8.33			10		
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	
5	HALCEM	HALCEM (TM) SYSTEM	0	sack	15.8	1.09		1	4.7	
	5.15 Gal	<b>FRESH WATER</b>								
Cement Left In Pipe		<b>Amount</b>	40 ft		<b>Reason</b>			<b>Shoe Joint</b>		
<b>Comment</b> 47.5 bbls back to surface. Estimated top of tail is 568.96 ft. Checked floats, got 2 bbls back to the truck. Floats held.										

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Comments
Event	1	Call Out	Call Out	5/4/2018	00:30:00	USER				CALLED OUT BY SERVICE COORDINATOR FOR O/L AT 0700
Event	2	Pre-Convoy Safety Meeting	Depart Shop for Location	5/4/2018	04:20:00	USER				HELD MEETING WITH ALL PERSONNEL IN CONVOY TO DISCUSS DIRECTIONS AND HAZARDS ASSOCIATED WITH DRIVING, ALL FIT TO DRIVE.
Event	3	Depart Shop for Location	Depart Shop for Location	5/4/2018	04:30:00	USER				JOURNEY MANAGEMENT PRIOR TO DEPARTURE
Event	4	Arrive At Loc	Arrive At Loc	5/4/2018	06:00:00	USER				UPON ARRIVAL MET WITH COMPANY MAN TO DISCUSS JOB DETAILS AND CALCULATIONS, PERFORMED HAZARD HUNT AND SITE ASSESSMENT.
Event	5	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	5/4/2018	06:45:00	USER				DISCUSSED RIGGING UP HAZARDS AND PROCEDURE ACCORDING TO HMS.
Event	6	Safety Meeting - Pre Job	Safety Meeting - Pre Job	5/4/2018	09:15:00	USER	0.00	8.39	0.00	HELD SAFETY MEETING WITH ALL JOB ASSOCIATED PERSONNEL TO DISCUSS JOB PROCEDURE, HAZARDS AND STOP WORK AUTHORITY. Water test-PH-6, Chlor-0, Temp-65. Cement temp-70.
Event	7	Start Job	Start Job	5/4/2018	09:38:46	COM4	0.00	8.47	0.00	FILLED LINES WITH 3 BBLS OF FRESH WATER. 2 BPM

Event	Order	Activity	Equipment	Date	Time	Code	Volume	Rate	Cost	Description
										30 PSI.
Event	8	Test Lines	Test Lines	5/4/2018	09:42:10	COM4	14.00	8.38	0.00	TESTED LINES TO 3000 PSI. AFTER A 500 PSI KICKOUT TEST AND A 5TH GEAR STALL. HAD TO BUMP AND HELD FOR A MINUTE.
Event	9	Pump Spacer 1	Pump Spacer 1	5/4/2018	09:47:55	COM4	20.00	8.40	1.80	PUMPED 10 BBLS OF DYED WATER SPACER. AT 2 BPM 30 PSI.
Event	10	Pump Spacer 2	Pump Spacer 2	5/4/2018	09:53:22	COM4	35.00	8.37	1.90	PUMPED 10 BBLS OF FRESH WATER SPACER AT 2 BPM 35 PSI.
Event	11	Pump Lead Cement	Pump Lead Cement	5/4/2018	09:57:41	COM4	52.00	8.36	2.60	PUMPED 149 BBLS (330 SKS) OF 12#, 2.53y, 14.65 OF SWIFT CEM. 8 BPM 200 PSI.
Event	12	Check Weight	Check Weight	5/4/2018	10:00:19	COM4	174.00	11.97	6.20	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 12#
Event	13	Pump Tail Cement	Pump Tail Cement	5/4/2018	10:18:48	COM4	326.00	13.09	8.00	PUMPED 138 BBLS (440 SKS) OF 13.5#, 1.76y, 9.02wr. AT 8 BPM 230 PSI.
Event	14	Check Weight	Check Weight	5/4/2018	10:19:55	COM4	266.00	13.37	6.90	USED PRESSURIZED MUD SCALES TO WEIGH UP CEMENT. CEMENT WEIGHED UP AT 13.5#
Event	15	Drop Top Plug	Drop Top Plug	5/4/2018	10:45:13	COM4	22.00	14.01	0.00	DROPPED NON HALLIBURTON 9 5/8" TOP PLUG. CO. MAN WITNESSED, ADAM COVINGTON DROPPED PLUG.
Event	16	Pump Displacement	Pump Displacement	5/4/2018	10:45:27	COM4	22.00	14.00	0.00	PUMPED 162.5 BBLS OF BIOCIDES DISPLACEMENT (PROVIDED BY CO. MAN)

										HAD TO SHUT DOWN AT 95 BBLS AWAY WHEN WE GOT SPACER SO RIG COULD SWAP LINES.
Event	17	Bump Plug	Bump Plug	5/4/2018	11:19:40	COM4	1240.00	7.54	0.00	BUMPED NON HALLIBURTON 9 5/8" TOP PLUG. FCP WAS 609 PSI. TOOK TO 1145 PSI. HELD FOR 10 MINUTE CASING TEST, BUT A BLEED OFF IN THE CELLER WAS LEAKING. RIG CREW TIGHTENED IT.
Event	18	Other	Other	5/4/2018	11:38:32	COM4	1326.00	7.58	0.00	BUMPED PRESSURE UP AFTER BLEED OFF WAS TIGHTENED. AND HELD FOR 10 MORE MINUTES AS PER CO. MAN. PRESSURE HELD.
Event	19	Check Floats	Check Floats	5/4/2018	11:49:26	USER	1306.00	7.61	0.00	BLD PRESSURE BACK. GOT 2 BBLS OF WATER BACK TO THE TRUCK. FLOATS HELD.
Event	20	End Job	End Job	5/4/2018	11:51:12	COM4	5.00	7.60	0.00	GOT 47.5 BBLS OF CEMENT TO SURFACE. ESTIMATED TOP OF TAIL IS AT 568.96 FT.
Event	21	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	5/4/2018	12:00:00	USER				DISCUSSED RIGGING DOWN HAZARDS AND PROCEDURE ACCORDING TO HMS.
Event	22	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/4/2018	13:00:00	USER				HELD MEETING WITH ALL HES EMPLOYESS IN CONVOY TO DISCUSS DIRECTIONS AND HAZARDS ASSOCIATED WITH DRIVING, ALL FIT TO DRIVE.
Event	23	Depart Location	Depart Location	5/4/2018	13:30:00	USER				PRE JOURNEY MANAGEMENT PRIOR TO DEPARTURE.

3.0 Attachments

3.1 Hagar 5-64 15-16-1BHZ Surface.png

