

# HALLIBURTON

iCem<sup>®</sup> Service

**EXTRACTION OIL & GAS-EBUS**

**VT-Glenmere C1-16-18 Production**

Sincerely,  
**Meghan Jacobs**

## Legal Notice

---

### Disclaimer:

All information in this report is provided subject to the terms and conditions which govern the services provided by Halliburton. Halliburton personnel use their best efforts in gathering information and their best judgment in interpreting it, but any interpretation, research, analysis or recommendation furnished by Halliburton are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and empirical relationships and assumptions are not infallible, and with respect to which professionals in the industry may differ. iCem 3D Displacement results are used to understand how fluids intermix during a cement job. Simulation and 3D displacement results are not intended as and should not be used as a replacement for bond logs in determining top of cement. Current 3D model calculations are known to model more volume than the input volume for standard cases due to known calculation improvements required. For rotational cases, the modeled volume will be impacted by the same calculations impacting the standard cases, as well as additional constraints imposed to make the calculation time required operationally feasible. Therefore, until further notice, 3D displacement results should not be used for replacement of a bond log, or used as an identifier of top of cement. HALLIBURTON IS UNABLE TO GUARANTEE THE ACCURACY OF ANY CHART INTERPRETATION, RESEARCH ANALYSIS, OR JOB RECOMMENDATION and any interpretation or recommendation is not for use of or reliance upon by any third party. The customer has full responsibility for any of its decisions which are based on the information provided in this report.

## Table of Contents

---

1.0	Cementing Job Summary .....	4
1.1	Executive Summary .....	4
2.0	Real-Time Job Summary .....	7
2.1	Job Event Log .....	7
3.0	Attachments.....	10
3.1	VT-Glenmere C1-16-18 Production – Job Chart with Events.....	10
3.2	VT-Glenmere C1-16-18 Production – Job Chart without Events .....	11

## 1.0 Cementing Job Summary

---

### 1.1 Executive Summary

---

Halliburton appreciates the opportunity to perform the cementing services on the **VT-Glenmere C1-16-18 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 55bbls of cement 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]**

**HALLIBURTON**

**Cementing Job Summary**

*The Road to Excellence Starts with Safety*

Sold To #: 369404	Ship To #: 3786956	Quote #:	Sales Order #: 0904906481
Customer: EXTRACTION OIL & GAS		Customer Rep: Larry Siegel	
Well Name: VT-GLENMERE	Well #: C1-16-18	API/UWI #: 05-123-44424-00	
Field: WATTENBERG	City (SAP): GREELEY	County/Parish: WELD	State: COLORADO
Legal Description: SW NW-15-5N-65W-1877FNL-697FWL			
Contractor:		Rig/Platform Name/Num: Patterson 901	
Job BOM: 7523 7523			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Kamereon White	
<b>Job</b>			

Formation Name			
Formation Depth (MD)	Top	Bottom	
Form Type	BHST		
Job depth MD	20710ft	Job Depth TVD	6945
Water Depth	Wk Ht Above Floor 4		
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	0	9.625	8.921	36		J-55	0	1600	0	1600
Casing	0	5.5	4.778	20	BTC	P-110	0	20690	0	6945
Open Hole Section			8.375				1600	9003		
Open Hole Section			8.5				9003		1550	6945

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	5.5			20750		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	1	HES
Stage Tool	5.5					Centralizers	5.5		HES

Fluid Data									
Stage/Plug #: 1									
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbn/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	50	bbl	11.5	3.73	23.4	5	
0.50 gal/bbl		MUSOL(R) A, 5 GAL PAIL (100064220)							
149.34 lbn/bbl		BARITE, BULK (100003681)							
35 gal/bbl		FRESH WATER							
0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)							

last updated on 6/11/2018 12:42:44 AM

Page 1 of 3

**HALLIBURTON**

*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/min	Total Mix Fluid Gal
2	ElastiCem	ELASTICEM (TM) SYSTEM	3365	sack	13.2	1.57		8	7.53
0.45 %		SCR-100 (100003749)							
7.50 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/min	Total Mix Fluid Gal
3	Displacement	Displacement	459	bbl	8.33				
<b>Cement Left In Pipe</b>	<b>Amount</b>	5 ft		<b>Reason</b>			Shoe Joint		
<b>Mix Water:</b>	7 pH	<b>Mix Water Chloride:</b> < 400 ppm			<b>Mix Water Temperature:</b> 73 °F				
<b>Cement Temperature:</b>		<b>Plug Displaced by:</b> 8.33 lb/gal			<b>Disp. Temperature:</b>				
<b>Plug Bumped?</b>	Yes	<b>Bump Pressure:</b> 2520 psi			<b>Floats Held?</b>			Yes	
<b>Cement Returns:</b>	55 bbl	<b>Returns Density:</b> 13.2 lb/gal			<b>Returns Temperature:</b>				
<b>Comment</b>									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	6/10/2018	08:00:00	USER				Crew called out and was requested to be on location @1300 on 06/10/2018.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	6/10/2018	10:40:00	USER				Crew left the yard and called in a journey.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	6/10/2018	11:30:00	USER				Crew arrived on location early.
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	6/10/2018	11:40:00	USER				Crew discussed rig up procedures.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	6/10/2018	11:50:00	USER				Discussed the JSA Before we began any task.
Event	6	Other	Rig Up Equipment	6/10/2018	12:00:00	USER				Rig up all HES equipment and lines .
Event	7	Other	Rig Up Completed	6/10/2018	14:00:00	USER				All HES equipment and lines rigged up safely.
Event	8	Safety Meeting - Pre Job	Safety Meeting - Pre Job	6/10/2018	18:30:00	USER	-9.00	8.31	0.00	Discussed the job procedure and pressures.
Event	9	Start Job	Start Job	6/10/2018	19:20:03	COM5	-10.00	8.27	0.00	Start Job.
Event	10	Pump Spacer 1	Pump Spacer 1	6/10/2018	19:26:20	COM5	218.00	10.43	3.00	Pumped 50 bbls of tuned spacer III @ 11.5 ppg 3.73 yield, 23.4 gal/sk 5 bpm 400 psi.
Event	11	Pump Lead Cement	Pump Lead Cement	6/10/2018	19:37:28	COM5	244.00	11.83	5.10	Pumped 941 bbls of cement @ 13.2 ppg, 1.57 yield 7.53 gal/sk ( 3365 sks) 8 bpm 765 psi.
Event	12	Check Weight	Check Weight	6/10/2018	19:40:34	COM5	951.00	13.45	7.90	Checked the weight of the cement with pressurized mud scales, scaled @ 13.2 ppg
Event	13	Check Weight	Check Weight	6/10/2018	19:51:06	COM5	712.00	13.24	7.90	Checked the weight of the cement with pressurized mud scales, scaled @ 13.2 ppg.
Event	14	Check Weight	Check Weight	6/10/2018	19:55:00	COM5	798.00	13.51	7.90	Checked the weight of the cement with pressurized mud scales, scaled @ 13.2 ppg

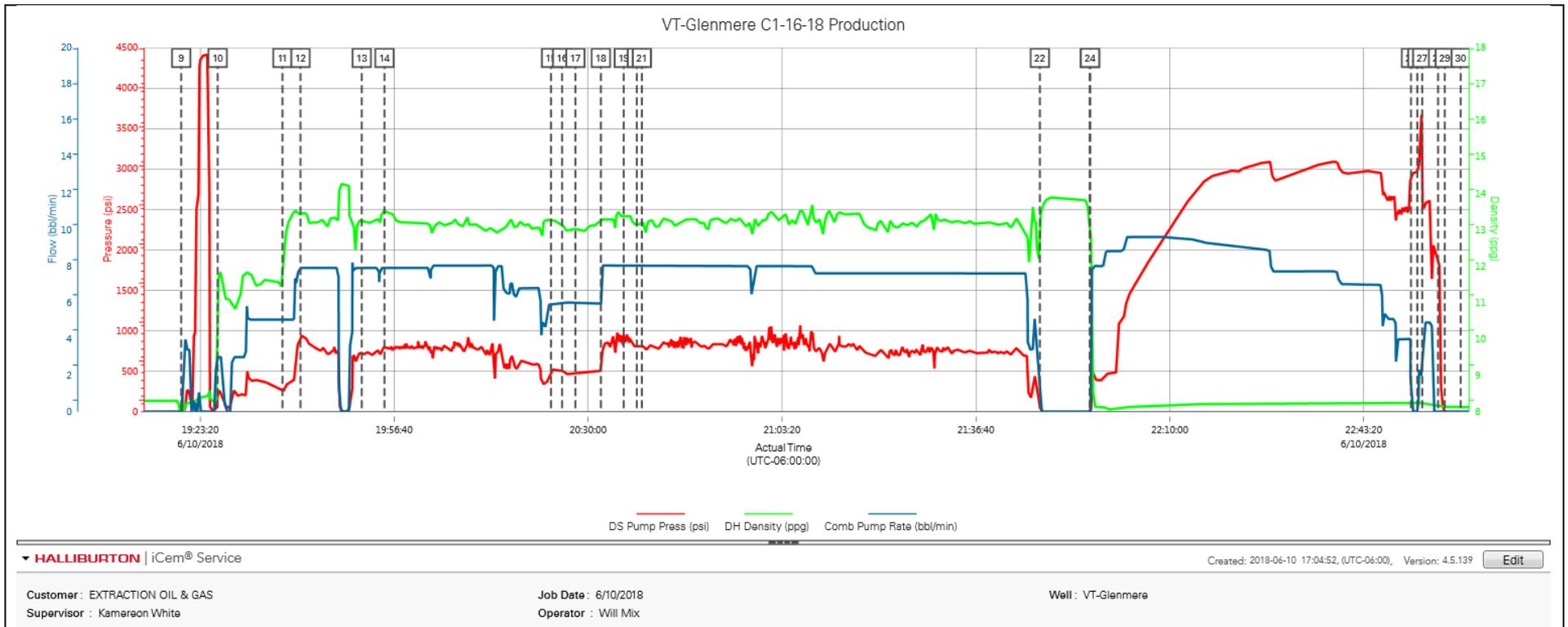
Event	15	Check Weight	Check Weight	6/10/2018	20:23:37	COM5	561.00	13.29	5.90	Checked the weight of the cement with pressurized mud scales, scaled @ 13.4 ppg
Event	16	Check Weight	Check Weight	6/10/2018	20:25:32	COM5	498.00	13.15	6.00	Checked the weight of the cement with pressurized mud scales, scaled @ 13.2 ppg
Event	17	Check Weight	Check Weight	6/10/2018	20:27:50	COM5	455.00	13.04	6.00	Checked the weight of the cement with pressurized mud scales, scaled @ 13.3 ppg
Event	18	Check Weight	Check Weight	6/10/2018	20:32:12	COM5	506.00	13.28	5.90	Checked the weight of the cement with pressurized mud scales, scaled @ 13.2 ppg
Event	19	Check Weight	Check Weight	6/10/2018	20:36:07	COM5	888.00	13.42	8.00	Checked the weight of the cement with pressurized mud scales, scaled @ 13.0 ppg
Event	20	Check Weight	Check Weight	6/10/2018	20:38:22	COM5	793.00	13.13	8.00	Checked the weight of the cement with pressurized mud scales, scaled @ 13.2 ppg
Event	21	Check Weight	Check Weight	6/10/2018	20:39:14	COM5	820.00	13.22	8.00	Checked the weight of the cement with pressurized mud scales, scaled @ 13.2 ppg
Event	22	Shutdown	Shutdown	6/10/2018	21:47:39	COM5	76.00	12.59	0.00	Shutdown to break the cap off the plug container to load the KLX latchdown plug. Riggged back up to pump displacement.
Event	23	Drop Top Plug	Drop Top Plug	6/10/2018	21:56:14	COM5	-9.00	12.97	0.00	Drop KLX latch down plug.
Event	24	Pump Displacement	Pump Displacement	6/10/2018	21:56:18	COM5	-8.00	12.91	0.00	Pumped 459 bbls of fresh water for displacement. @ 354 bbls into displacement we got spacer back to surface and @ 404 bbls away we got cement back to surface which gave us 50 bbls of spacer back and 55 bbls of cement back.
Event	25	Bump Plug	Bump Plug	6/10/2018	22:51:27	COM5	2960.00	8.22	0.00	Bumped the plug on calculated displacement, the final circulating psi was 2520 psi and took 500 psi over to 3000 psi and shutdown the pump.
Event	26	Other	Other	6/10/2018	22:52:32	COM5	2968.00	8.23	0.00	Pressured up @ 2bpm to rupture the disk , the disk ruptured @ 3707 psi .
Event	27	Other	Other	6/10/2018	22:53:23	COM5	2740.00	8.24	2.00	Pumped a 5 bbl wet shoe as customer request.
Event	28	Other	Other	6/10/2018	22:56:07	COM5	1894.00	8.19	0.00	Checked the floats and the the floats held , got 3 bbls back.
Event	29	End Job	End Job	6/10/2018	22:57:16	COM5	-4.00	8.14	0.00	Cement job complete and was asked to wash up

through the rigs stack untill cleaned.

Event	30	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	6/10/2018	23:00:00	USER	-14.00	8.13	0.00	Discussed rig down procedures and JSA.
Event	31	Rig Down Lines	Rig Down Lines	6/10/2018	23:10:00	USER	-16.00	8.12	0.00	Rigged down all HES equipment and lines.
Event	32	Rig-Down Completed	Rig-Down Completed	6/11/2018	01:00:00	USER				All HES equipment and lines rigged down safely.
Event	33	Rig-Down Completed	Rig-Down Completed	6/11/2018	01:00:00	USER				All HES equipment and lines rigged down safely.
Event	34	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	6/11/2018	01:30:00	USER				Kamereon White and crew would like to thank you for your business and choosing Halliburton Cement , Please give us a call if you have any questions.

3.0 Attachments

3.1 VT-Glenmere C1-16-18 Production – Job Chart with Events



3.2 VT-Glenmere C1-16-18 Production – Job Chart without Events

