

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

### **For: Terra**

Date: Monday, October 15, 2018

### **CLOUGH NR 13-3 Production**

API# 05-045-23924-00

Job Date: Monday, October 15, 2018

Sincerely,

**Grand Junction Cement Engineering**

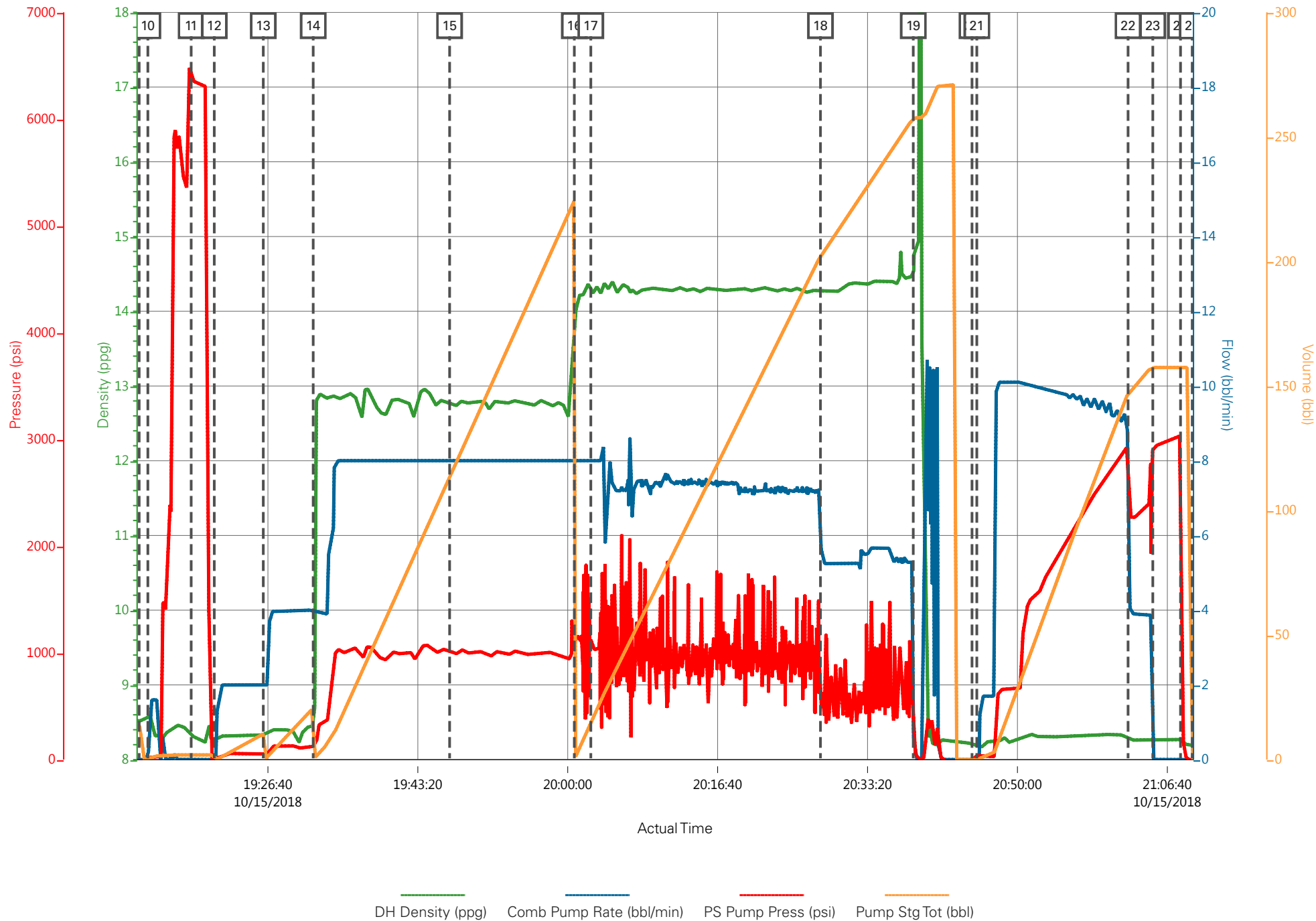
## 2.0 Real-Time Job Summary

## 2.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	10/15/2018	10:00:00	USER					REQUESTED ON LOCATION @ 16:00
Event	2	Pre-Convoy Safety Meeting	10/15/2018	11:30:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	10/15/2018	11:45:00	USER					1 HT 400 PUMP TRUCK E, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	4	Arrive At Loc	10/15/2018	14:00:00	USER					RIG RUNNING CASING WHEN HES ARRIVED AT LOCATION
Event	5	Assessment Of Location Safety Meeting	10/15/2018	14:15:00	USER					MET WITH COMP REP, AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7.0, CHLORIDES- 500, TEMP- 60F). COMP REP WAS OFFERED SDS FOR ALL CHEMICALS USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	10/15/2018	14:30:00	USER					ALL HES PRESENT
Event	7	Rig-Up Equipment	10/15/2018	14:45:00	USER					HES RIGGED UP 1 HT400 PUMP TRUCK, 1 660 BULK TRUCK, 2 CEMENT SILOS, 2" DISCHARGE IRON, AND 4" SUCTION HOSE WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	10/15/2018	18:45:00	USER					ALL HES EMPLOYEES AND RIG CREW PRESENT, RIG CIRCULATED @ 10 BPM PRIOR TO JOB PRESSURE @ 490PSI. 30 UNITS OF GAS. CALIBRATED SCALES ON WATER.
Event	9	Start Job	10/15/2018	19:12:21	COM6					TD 10142', TP 10135.43', SJ 30.5', SURFACE CSG 9 5/8" 36# J55 SET @ 1125' PRODUCTION CSG 4 1/2" 11.6# P-110, OH 8 3/4", MUD 11.8 PPG
Event	10	Prime Lines	10/15/2018	19:13:19	USER	8.33	2	150	2	FRESH WATER
Event	11	Test Lines	10/15/2018	19:18:08	COM6			6350		ALL LINES HELD PRESSURE AT 6350 PSI

Event	12	Pump H2O Spacer	10/15/2018	19:20:42	COM6	8.33	2	100	10	FRESH WATER
Event	13	Pump Mud Flush	10/15/2018	19:26:09	COM6	8.4	4	150	20	20BBLs MUD FLUSH
Event	14	Pump Lead Cement	10/15/2018	19:31:42	COM6	12.7	8	1000	215	650 SKS NEOCEM CMT 12.7 PPG, 1.85 FT3/SK, 8.94 GAL/SK
Event	15	Check Weight	10/15/2018	19:46:52	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	16	Pump Tail Cement	10/15/2018	20:00:44	COM6	14.2	8	1100	224	740 SKS THERMACEM CMT 14.2 PPG, 1.7 FT3/SK, 7.53 GAL/SK.
Event	17	Check Weight	10/15/2018	20:02:34	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	18	Slow Rate	10/15/2018	20:28:06	USER					SLOWED RATE TO END CEMENT
Event	19	Clean Lines	10/15/2018	20:38:25	USER					END OF CEMENT. CLEAN PUMPS AND LINES TO PIT.
Event	20	Drop Top Plug	10/15/2018	20:44:57	COM6					VERIFIED BY FLAG INDICATOR
Event	21	Pump Displacement	10/15/2018	20:45:29	COM6	8.4	10	2930	156.6	1 GAL MMCR IN FIRST 10 BBLs, 3 LBS BE-6 IN FIRST 30 BBLs, 1 50 LB. BAG KCL THROUGHOUT DISPLACEMENT
Event	22	Slow Rate	10/15/2018	21:02:18	USER	8.4	4	2260	146.6	SLOW RATE TO 4 BPM TO BUMP PLUG
Event	23	Bump Plug	10/15/2018	21:05:03	COM6	8.4	4	2420	156.6	LANDED PLUG AT 2420 PSI, BROUGHT UP TO 2950 PSI
Event	24	Check Floats	10/15/2018	21:08:08	USER					FLOATS HELD, 2BBLs BACK TO TRUCK
Event	25	End Job	10/15/2018	21:09:26	COM6					RETURNS THROUGH OUT JOB. PIPE WAS RECIPERICATED. USED TOP PLUG, NO SUGAR USED.
Event	26	Post-Job Safety Meeting (Pre Rig-Down)	10/15/2018	21:15:00	USER					ALL HES PRESENT
Event	27	Rig Down Lines	10/15/2018	21:25:00	USER					ALL HES PRESENT
Event	28	Pre-Convoy Safety Meeting	10/15/2018	22:40:00	USER					ALL HES PRESENT
Event	29	Crew Leave Location	10/15/2018	22:50:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, SHAWN BLOSSOM AND CREW

# TERRA CLOUD NR 13-3, 4.5" PRODUCTION



# HALLIBURTON

## Rockies, Grand Junction

### Lab Results- Lead

#### Job Information

<b>Request/Slurry</b>	2506692/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	05/OCT/2018
<b>Submitted By</b>	Aaron Woolsey	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Terra Energy Partners	<b>Location</b>	Garfield	<b>Well</b>	NR 13-3

#### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10143 ft	<b>BHST</b>	121°C / 249°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9944 ft	<b>BHCT</b>	82°C / 179°F
<b>Pressure</b>	6261 psi				

#### Drilling Fluid Information

<b>Mud Supplier Name</b>	<b>Mud Trade Name</b>	<b>Density</b>
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#### Cement Information - Lead Design



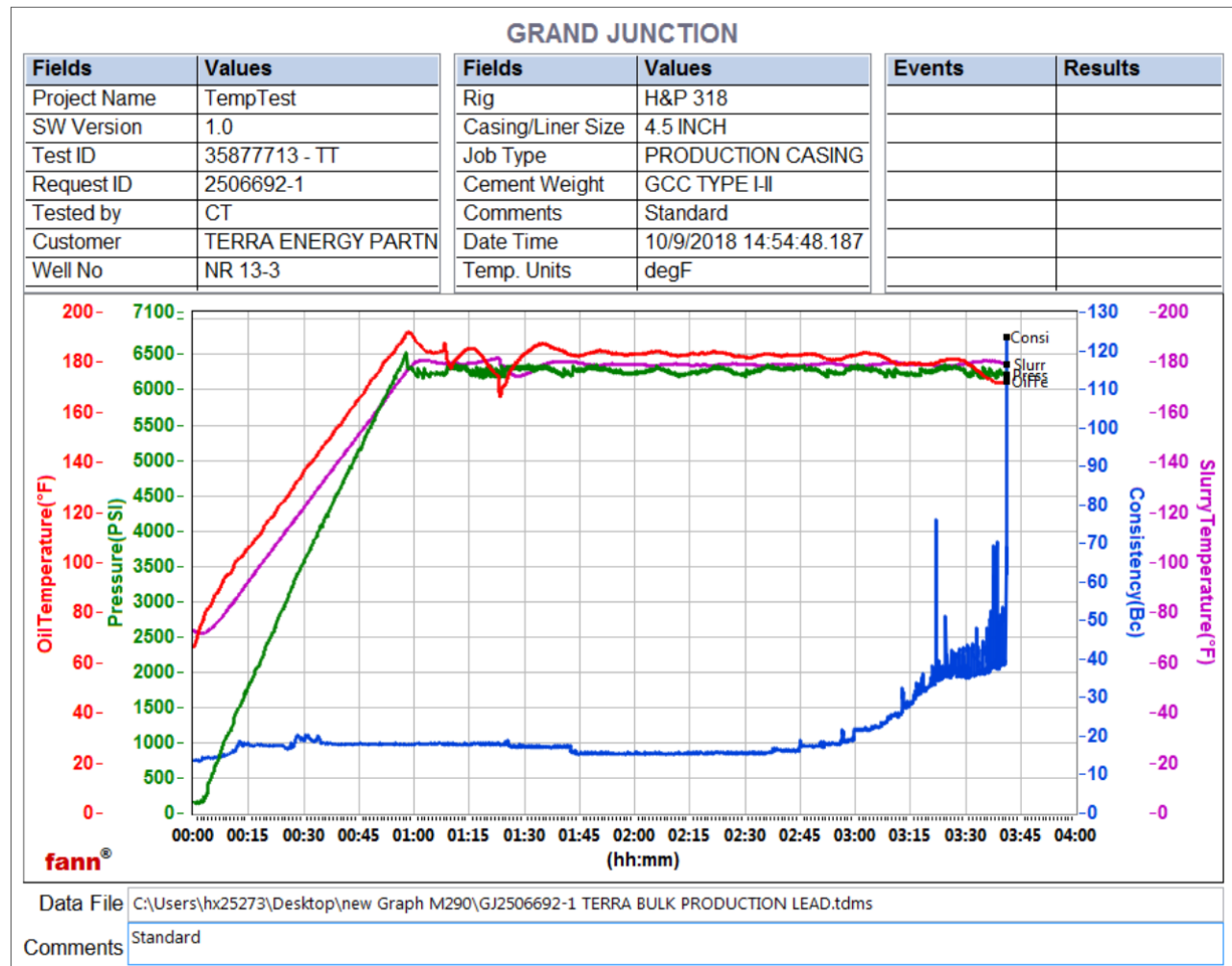
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NeoCem Lead				Slurry Density	12.7	lbm/gal
						Slurry Yield	1.851	ft3/sack
						Water Requirement	8.949	gal/sack
						Total Mix Fluid	8.949	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

10/OCT/2018

Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:min)	50 Bc (hh:min)	70 Bc (hh:min)	100 Bc (hh:min)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
179	6261	58	3:15	3:38	3:41	3:41	13	68	15	17



Total sks = 650  
 CS2250, Trailer 7428, 250 sks  
 CS2255, Trailer 8658, 400 sks  
 no deflection, 17Bc--- > 17Bc

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# HALLIBURTON

## Rockies, Grand Junction

### Lab Results- Tail

#### Job Information

<b>Request/Slurry</b>	2506693/1	<b>Rig Name</b>	H&P 318	<b>Date</b>	05/OCT/2018
<b>Submitted By</b>	Aaron Woolsey	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Terra Energy Partners	<b>Location</b>	Garfield	<b>Well</b>	NR 13-3

#### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10143 ft	<b>BHST</b>	121°C / 249°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	9944 ft	<b>BHCT</b>	82°C / 179°F
<b>Pressure</b>	6261 psi				

#### Drilling Fluid Information

<b>Mud Supplier Name</b>	<b>Mud Trade Name</b>	<b>Density</b>
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#### Cement Information - Tail Design



<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		Expandacem Tail				Slurry Density	14.2	lbm/gal
						Slurry Yield	1.704	ft3/sack
						Water Requirement	7.53	gal/sack
						Total Mix Fluid	7.53	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

09/OCT/2018

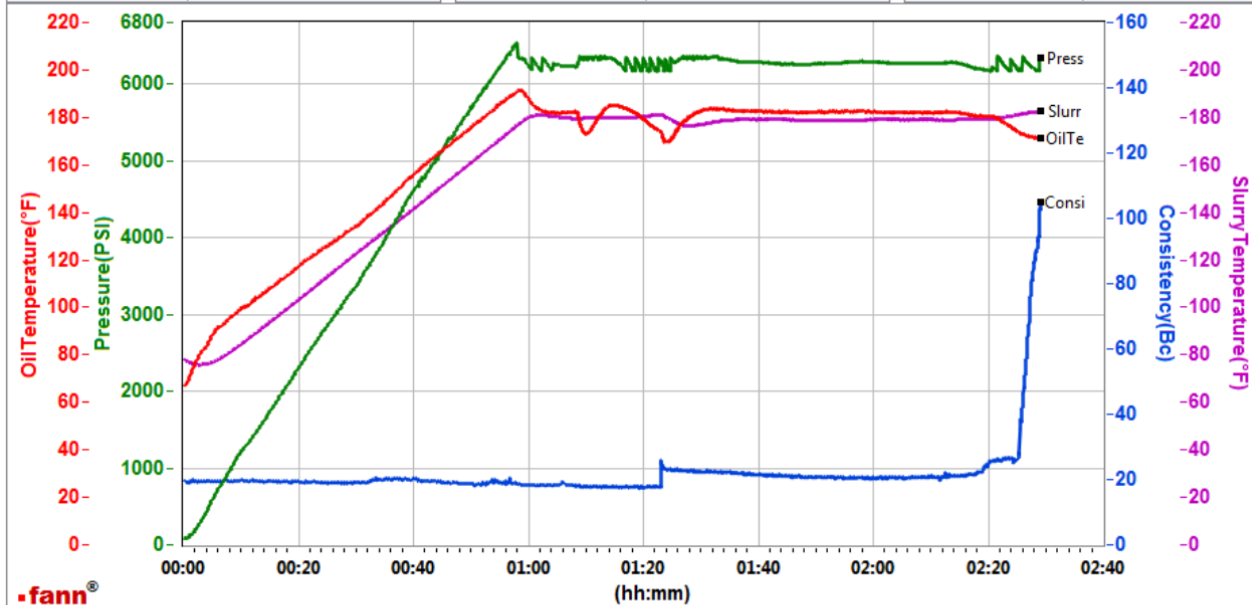
Test Temp (degF)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
179	6261	58	2:25	2:26	2:27	2:29	19	68	15	26

Grand Junction

Fields	Values
Project Name	2506693-1 Terra NR 13-3
SW Version	1.0
Test ID	35877715- TT
Request ID	2506693-1
Tested by	DEBA
Customer	TERRA ENERGY PARTN
Well No	NR 13-3

Fields	Values
Rig	H&P 318
Casing/Liner Size	4.5 INCH
Job Type	PRODUCTION CASING
Cement Weight	MOUNTAIN G
Comments	Standard
Date Time	10/9/2018 06:42:29.495
Temp. Units	degF

Events	Results
30 BC	2:25
50 BC	2:26
70 BC	2:27
100 BC	2:29



Data File \\Corp.Halliburton.com\NA\GJU\Public\Z Lab\HPHT 3\GJ2506693-1 TERRA BULK PRODUCTION TAIL.tdms

Comments Standard

740 sks  
 CS2245 TR#8677 370 SKS  
 CS2247 TR#2878 370 SKS  
 Deflection: 18 - 26 to 23 after one minute

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