

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Terra**

Date: Friday, January 04, 2019

**GM 412-8 Production PJR**

API# 05-045-24027-00

Sincerely,

**Grand Junction Cement Engineering**

## 2.0 Real-Time Job Summary

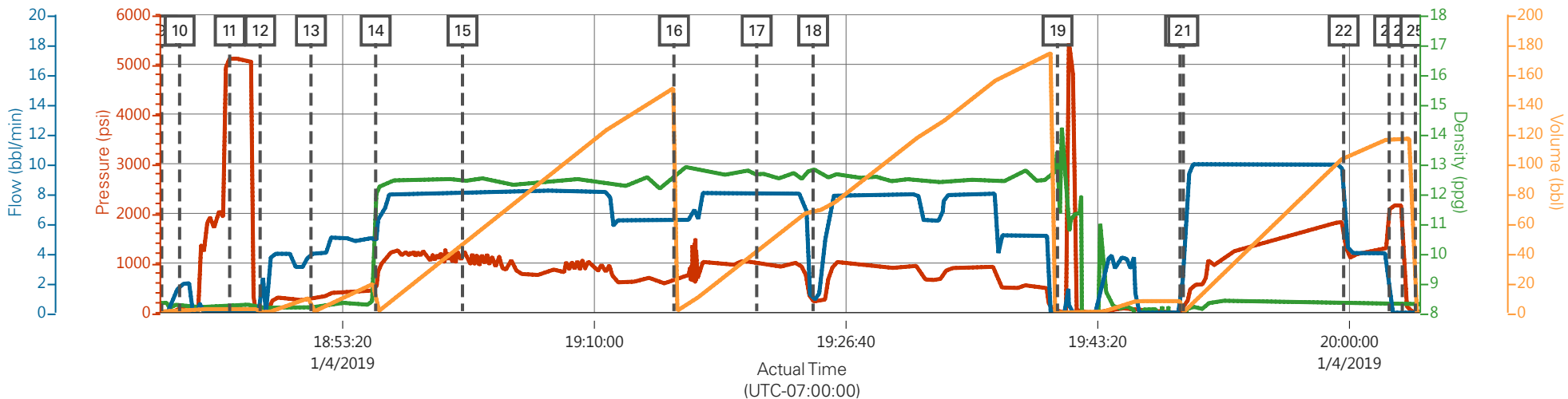
## 2.1 Job Event Log

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	1/4/2019	06:00:00	USER					REQUESTED ON LOCATION @ 12:00
Event	2	Pre-Convoy Safety Meeting	1/4/2019	08:45:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	1/4/2019	09:00:00	USER					1 HT 400 PUMP TRUCK E4, 1 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	4	Arrive At Loc	1/4/2019	11:00:00	USER					RIG RUNNING CASING WHEN HES ARRIVED AT LOCATION
Event	5	Assessment Of Location Safety Meeting	1/4/2019	11:15:00	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- 68F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES. CALIBRATED MUD SCALES ON WATER.
Event	6	Pre-Rig Up Safety Meeting	1/4/2019	11:30:00	USER					ALL HES PRESENT
Event	7	Rig-Up Equipment	1/4/2019	11:40:00	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	1/4/2019	18:20:00	USER					ALL HES EMPLOYEES AND RIG CREW PRESENT, RIG CIRCULATED @ 12 BPM PRIOR TO JOB PRESSURE @ 1500 PSI. 250 UNITS OF GAS.
Event	9	Start Job	1/4/2019	18:41:21	COM6					TD 7,124', TP 7117.56', SJ 30.55', SURFACE CSG 13 3/8" 54.5# J55 SET @ 1038' PRODUCTION CSG 4 1/2" 11.6# P-110, OH 8 3/4", MUD 10.3 PPG

Event	10	Prime Lines	1/4/2019	18:42:32	USER	8.33	2	100	3	3BBLS FRESH WATER
Event	11	Test Lines	1/4/2019	18:45:51	COM6			5120		ALL LINES HELD PRESSURE AT 5120 PSI
Event	12	Pump H2O Spacer	1/4/2019	18:47:52	COM6	8.33	4	330	10	10BBLS FRESH WATER
Event	13	Pump Mud Flush	1/4/2019	18:51:14	COM6	8.4	4	440	20	20BBLS MUD FLUSH
Event	14	Pump Lead Cement	1/4/2019	18:55:31	COM6	12.3	8	1000	136	370 SKS NEOCEM CMT 12.3 PPG, 2.06 FT3/SK, 10.14 GAL/SK
Event	15	Check Weight	1/4/2019	19:01:16	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	16	Pump Tail Cement	1/4/2019	19:15:16	COM6	12.5	8	1000	161	460 SKS NEOCEM CMT 12.5 PPG, 1.96 FT3/SK, 9.4 GAL/SK.
Event	17	Check Weight	1/4/2019	19:20:45	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	18	Slow Rate	1/4/2019	19:24:29	USER					SLOWED RATE TO TRY AND LINE OUT DENSITY
										END OF CEMENT. CLEAN PUMPS AND LINES TO PIT.
Event	19	Clean Lines	1/4/2019	19:40:40	COM6					
Event	20	Pump Displacement	1/4/2019	19:48:47	COM6	8.4	10	1850	109.8	1 GAL MMCR IN FIRST 10 BBLS, 3 LBS BE-6 IN FIRST 30 BBLS, 1 50 LB. BAG KCL THROUGHOUT DISPLACEMENT
Event	21	Drop Top Plug	1/4/2019	19:49:00	USER					VERIFIED BY FLAG INDICATOR
Event	22	Slow Rate	1/4/2019	19:59:37	USER	8.4	4	1100	99.8	SLOW RATE TO 4 BPM TO BUMP PLUG
Event	23	Bump Plug	1/4/2019	20:02:38	COM6	8.4	4	1300	109.8	LANDED PLUG AT 1300 PSI, BROUGHT UP TO 2180 PSI
Event	24	Check Floats	1/4/2019	20:03:30	USER					FLOATS HELD, 1 BBLS BACK TO TRUCK
Event	25	End Job	1/4/2019	20:04:22	COM6					RETURNS THROUGH OUT JOB. PIPE WAS RECIPERICATED. USED TOP PLUG, 40# SUGAR USED.
Event	26	Post-Job Safety	1/4/2019	20:10:00	USER					ALL HES PRESENT

Meeting (Pre Rig-Down)						
Event	27	Rig Down Lines	1/4/2019	20:15:00	USER	ALL HES PRESENT
Event	28	Pre-Convoy Safety Meeting	1/4/2019	21:30:00	USER	ALL HES PRESENT
Event	29	Crew Leave Location	1/4/2019	21:45:00	USER	THANK YOU FOR CHOOSING HALLIBURTON CEMENT, SHAWN BLOSSOM AND CREW

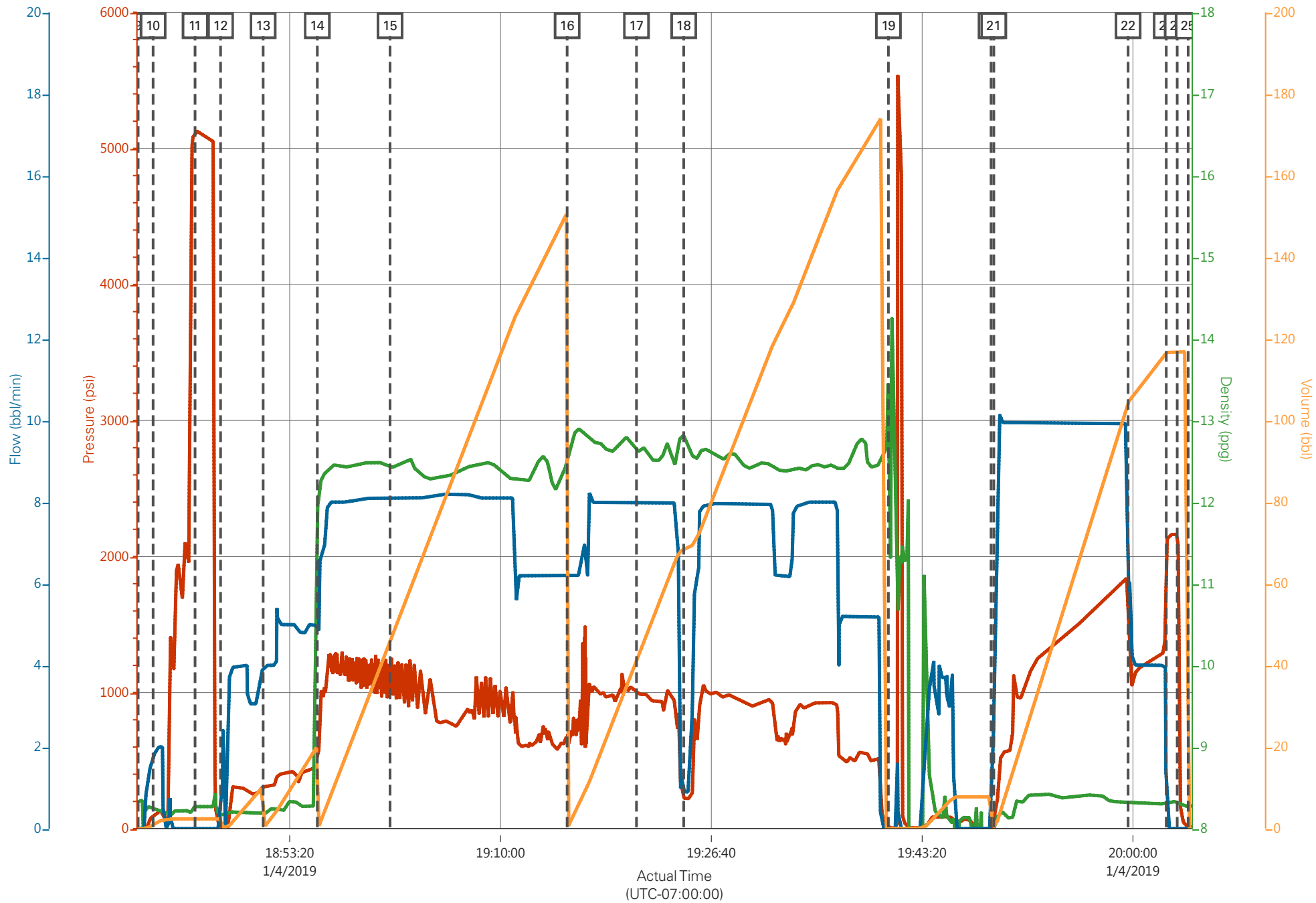
# TEP GM 412-8 Production



PS Pump Press (psi) DH Density (ppg) Comb Pump Rate (bbl/min) Pump Stg Tot (bbl)

Description	Actual Time (UTC-07:00:00)	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	
9 Start Job	18:41:21	-13.70	8.34	0.00	0.00	
10 Prime Lines	18:42:32	93.30	8.25	1.70	0.80	
11 Test Lines	18:45:51	5127.30	8.28	0.00	2.40	
12 Pump H2O Spacer	18:47:52	7.30	8.17	0.00	0.00	
13 Pump Mud Flush	18:51:14	308.30	8.18	3.90	0.00	
14 Pump Lead Cement	18:55:31	494.30	11.72	4.90	20.20	
15 Check Weight	19:01:16	981.30	12.43	8.10	45.00	
16 Pump Tail Cement	19:15:16	671.30	12.49	6.20	150.80	
17 Check Weight	19:20:45	1007.30	12.61	8.00	41.10	
18 Slow Rate	19:24:29	221.30	12.83	0.90	68.40	
19 Clean Lines	19:40:40	9.30	13.42	0.00	0.00	
20 Pump Displacement	19:48:47	-8.70	0.09	0.00	7.80	
21 Drop Top Plug	19:49:00	88.30	7.27	4.40	0.40	
22 Slow Rate	19:59:37	1744.30	8.33	8.40	104.20	
23 Bump Plug	20:02:38	2019.30	8.31	0.00	116.80	
24 Check Floats	20:03:30	2163.30	8.33	0.00	116.80	
25 End Job	20:04:22	10.30	8.29	0.00	0.00	

# TEP GM 412-8 Production



PS Pump Press (psi) DH Density (ppg) Comb Pump Rate (bbl/min) Pump Stg Tot (bbl)

## Job Information

Request/Slurry	2524340/1	Rig Name	H&P 271	Date	27/DEC/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	GM 412-8

## Well Information

Casing/Liner Size	4.5 in	Depth MD	7140 ft	BHST	88°C / 190°F
Hole Size	8.75 in	Depth TVD	6466 ft	BHCT	52°C / 126°F
Pressure	3826 psi				

## Drilling Fluid Information

Mud Supplier Name	Baroid	Mud Trade Name	BARADRIL-N	Density	9.9 lbm/gal
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## Cement Information - Lead Design



<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>MP</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	Cement Properties		
							Slurry Density	12.3	lbm/gal
							Slurry Yield	2.06	ft3/sack
							Water Requirement	10.17	gal/sack
							Total Mix Fluid	10.17	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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# **Operation Test Results Request ID 2524340/1**

**Thickening Time - ON-OFF-ON, Request Test ID:36096174**

**03/JAN/2019**

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)
126	3826	35	4:54	5:11	5:11	5:23	3	45	15	3

Total SKS = 370

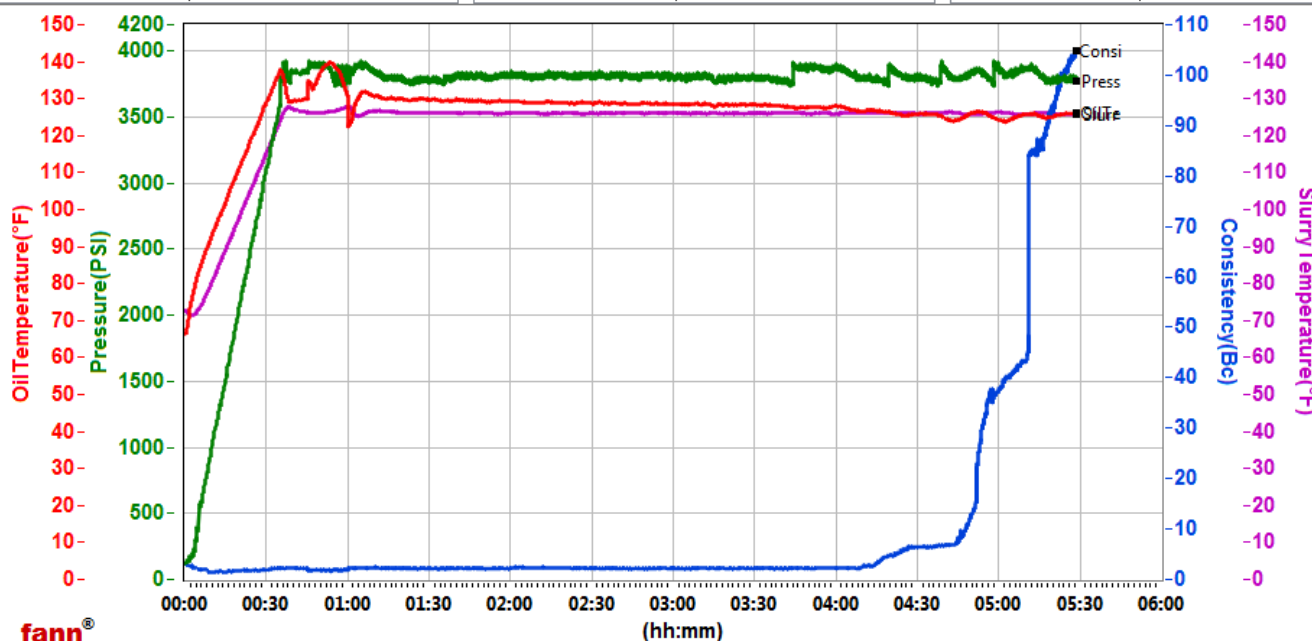
CS0001, Trailer 8658, 370 sks

no deflection, 3Bc--- > 3Bc

please note heat of hydration at 4:32

## **GRAND JUNCTION**

Fields	Values	Fields	Values	Events	Results
Project Name	TempTest	Rig	H&P 271		
SW Version	1.0	Casing/Liner Size	4.5 INCH		
Test ID	36096174 - TT	Job Type	PRODUCTION CASING		
Request ID	2524340-1	Cement Weight	GCC TYPE I-II		
Tested by	CT	Comments	Standard		
Customer	TERRA ENERGY PARTN	Date Time	1/2/2019 08:58:37.273		
Well No	GM 412-8	Temp. Units	degF		



Data File C:\Users\hx25273\Desktop\HPHT Graphs\GJ2524340-1 TERRA BULK PRODUCTION LEAD.tdms

Comments Standard

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

Request/Slurry	2524341/1	Rig Name	H&P 271	Date	27/DEC/2018
Submitted By	Connor Matthews	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	GM 412-8

### Well Information

Casing/Liner Size	4.5 in	Depth MD	7140 ft	BHST	88°C / 190°F
Hole Size	8.75 in	Depth TVD	6466 ft	BHCT	52°C / 126°F
Pressure	3826 psi				

### Drilling Fluid Information

Mud Supplier Name	Baroid	Mud Trade Name	BARADRIL-N	Density	9.9 lbm/gal
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### Cement Information - Tail Design



Conc	UOM	Cement/Additive	MP	Sample Type	Sample Date	Lot No.	Cement Properties		
							Slurry Density	12.5	lbm/gal
							Slurry Yield	1.96	ft3/sack
							Water Requirement	9.43	gal/sack
							Total Mix Fluid	9.43	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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# **Operation Test Results Request ID 2524341/1**

**Thickening Time - ON-OFF-ON, Request Test ID:36096176**

**03/JAN/2019**

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)
126	3826	35	4:38	4:49	5:07	5:08	16	45	15	15

Total SKS = 460

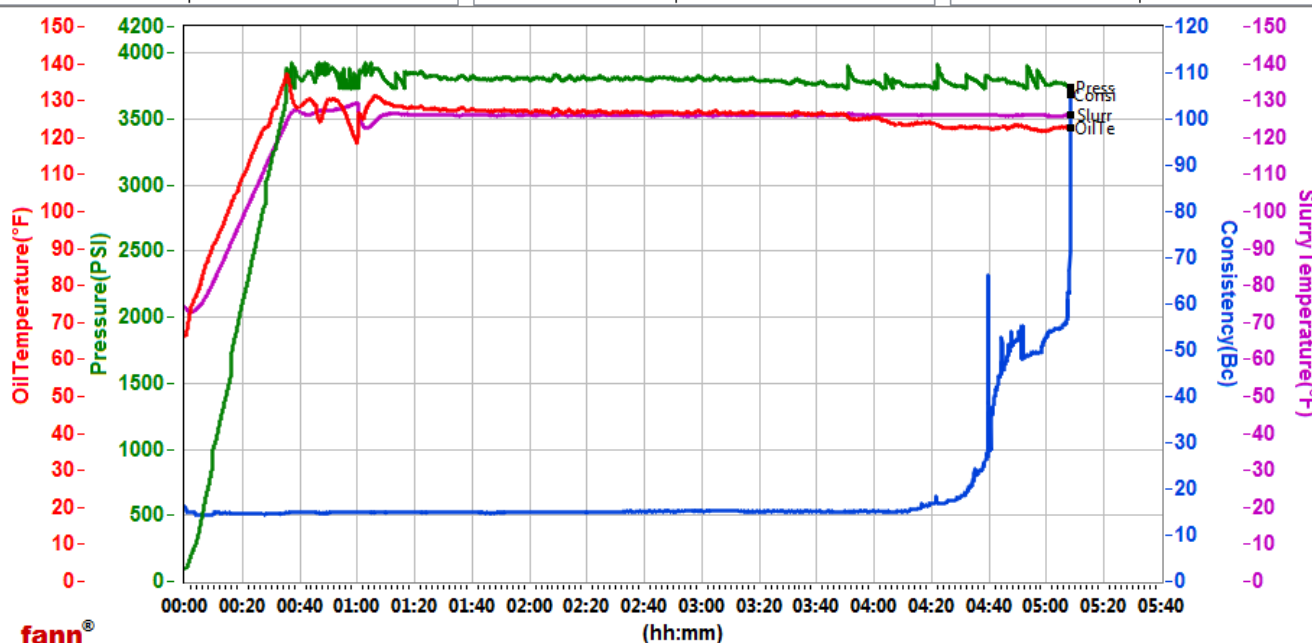
CS0002, Trailer 1513, 360 sks

CS0003, Trailer 3212, 100 sks

no deflection, 15Bc--- > 15Bc

## **GRAND JUNCTION**

Fields	Values	Fields	Values	Events	Results
Project Name	TempTest	Rig	H&P 271		
SW Version	1.0	Casing/Liner Size	4.5 INCH		
Test ID	36096176-1	Job Type	PRODUCTION CASING		
Request ID	2524341-1	Cement Weight	GCC TYPE I-II		
Tested by	CT	Comments	Standard		
Customer	TERRA ENERGY PARTN	Date Time	1/2/2019 11:14:48.737		
Well No	GM 412-8	Temp. Units	degF		



Data File C:\Users\hx25273\Desktop\HPHT Graphs\GJ2524341-1 TERRA BULK PRODUCTION TAIL.tdms

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