

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

United States of America, COLORADO

For: Terra

Date: Friday, December 28, 2018

GM 11-8 Production PJR

API# 05-045-24021-00

Sincerely,

Grand Junction Cement Engineering

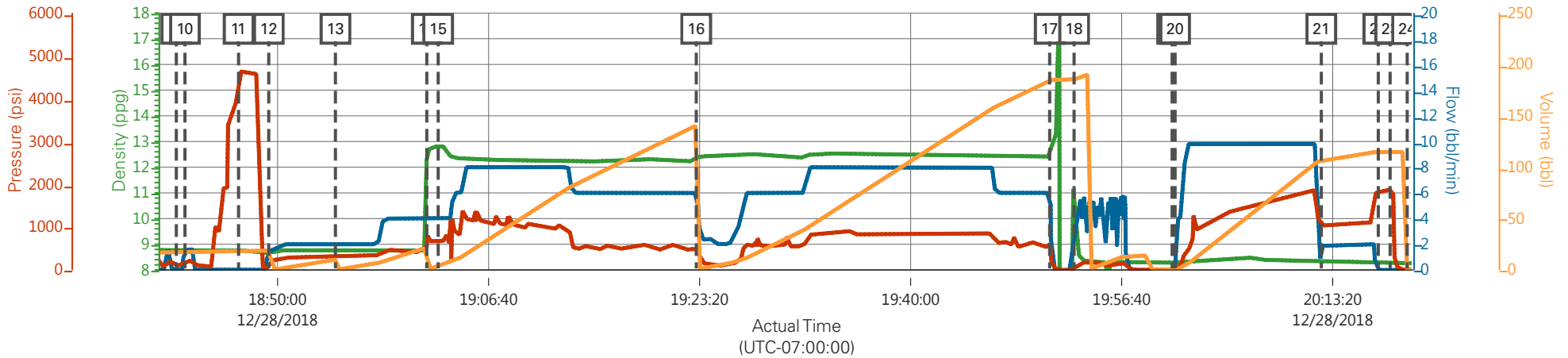
1.0 Real-Time Job Summary

1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	12/28/2018	10:30:00	USER					REQUESTED ON LOCATION @ 0400
Event	2	Pre-Convoy Safety Meeting	12/28/2018	12:00:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	12/28/2018	12:15:00	USER					1 F550, 1 PUMP TRUCK & 1 660 BULK TURCK
Event	4	Arrive at Location from Service Center	12/28/2018	14:30:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	12/28/2018	14:45:00	USER					MET WITH COMP REP AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7, CHLORIDES- 0, TEMP- 71F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	12/28/2018	15:00:00	USER					ALL HES PRESENT
Event	7	Rig-Up Completed	12/28/2018	18:00:00	USER					HES RIGGED UP EQUIPMENT WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	12/28/2018	18:30:00	USER					ALL HES AND RIG CREW PRESENT
Event	9	Start Job	12/28/2018	18:42:00	COM6					TD 7412', TP 7405.6', SJ 29.84', OH 8.75", CSG 4.5" 11.6#, MUD 10.1 PPG. RIG CIRCULATED WELL @ 10 BPM WITH 800 PSI FOR APPROX 1.5 HRS.
Event	10	Prime Pumps	12/28/2018	18:42:41	USER	234.00	8.33	1.00	2.00	8.33 PPG FRESH WATER
Event	11	Test Lines	12/28/2018	18:46:55	COM6	4630.00	8.33	0.50	0.50	ALL LINES HELD PRESSURE AT 4630 PSI
Event	12	Pump Spacer 1	12/28/2018	18:49:18	COM6	468.00	8.33	4.00	10.00	8.33 PPG FRESH WATER (10 BBL)

Event	13	Pump Spacer 2	12/28/2018	18:54:34	COM6	470.00	8.33	4.00	20.00	8.4 PPG MUDFLUSH III (20 BBL)
Event	14	Pump Lead Cement	12/28/2018	19:01:47	COM6	1000.00	12.30	8.00	138.00	NEOCEM CEMENT 375 SKS (138 BBLS), 12.3 PPG, 2.06 FT3/SK, 10.14 GAL/SK
Event	15	Check Weight	12/28/2018	19:02:41	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	16	Pump Tail Cement	12/28/2018	19:23:04	COM6	803.00	12.50	8.00	166.00	NEOCEM CEMENT 475 SKS (166 BBLS), 12.5 PPG, 1.96 FT3/SK, 9.4 GAL/SK
Event	17	Shutdown	12/28/2018	19:50:59	USER					END OF CMT
Event	18	Clean Lines	12/28/2018	19:52:54	USER					WASH UP PUMPS AND LINES
Event	19	Drop Top Plug	12/28/2018	20:00:39	USER					PLUG WENT, VERIFIED BY CO REP
Event	20	Pump Displacement	12/28/2018	20:00:53	COM6	1950.00	8.33	10.00	105.10	8.34 PPG FRESH WATER (115.1 BBLS) 3 BAGS BE6, 1 GAL MMCR & 11 SKS KCL
Event	21	Slow Rate	12/28/2018	20:12:26	USER	1034.00	8.34	2.00	10.00	SLOW RATE TO 2 BPM PER CO REP TO LAND PLUG
Event	22	Bump Plug	12/28/2018	20:16:56	COM6	1856.00	8.34	0.00	115.10	LAND PLUG AT 1250 PSI, BROUGHT UP TO 1853 PSI
Event	23	Check Floats	12/28/2018	20:17:52	USER	1863.00	8.32	0.00	115.10	FLOATS HELD, 1 BBL BACK TO TRUCK
Event	24	End Job	12/28/2018	20:19:13	COM6					
Event	25	Post-Job Safety Meeting (Pre Rig-Down)	12/28/2018	20:25:00	USER					ALL HES PRESENT
Event	26	Rig-Down Completed	12/28/2018	21:00:00	USER					ALL HES PRESENT
Event	27	Pre-Convoy Safety Meeting	12/28/2018	21:30:00	USER					ALL HES PRESENT
Event	28	Crew Leave Location	12/28/2018	21:35:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, CHRIS SMITH AND CREW

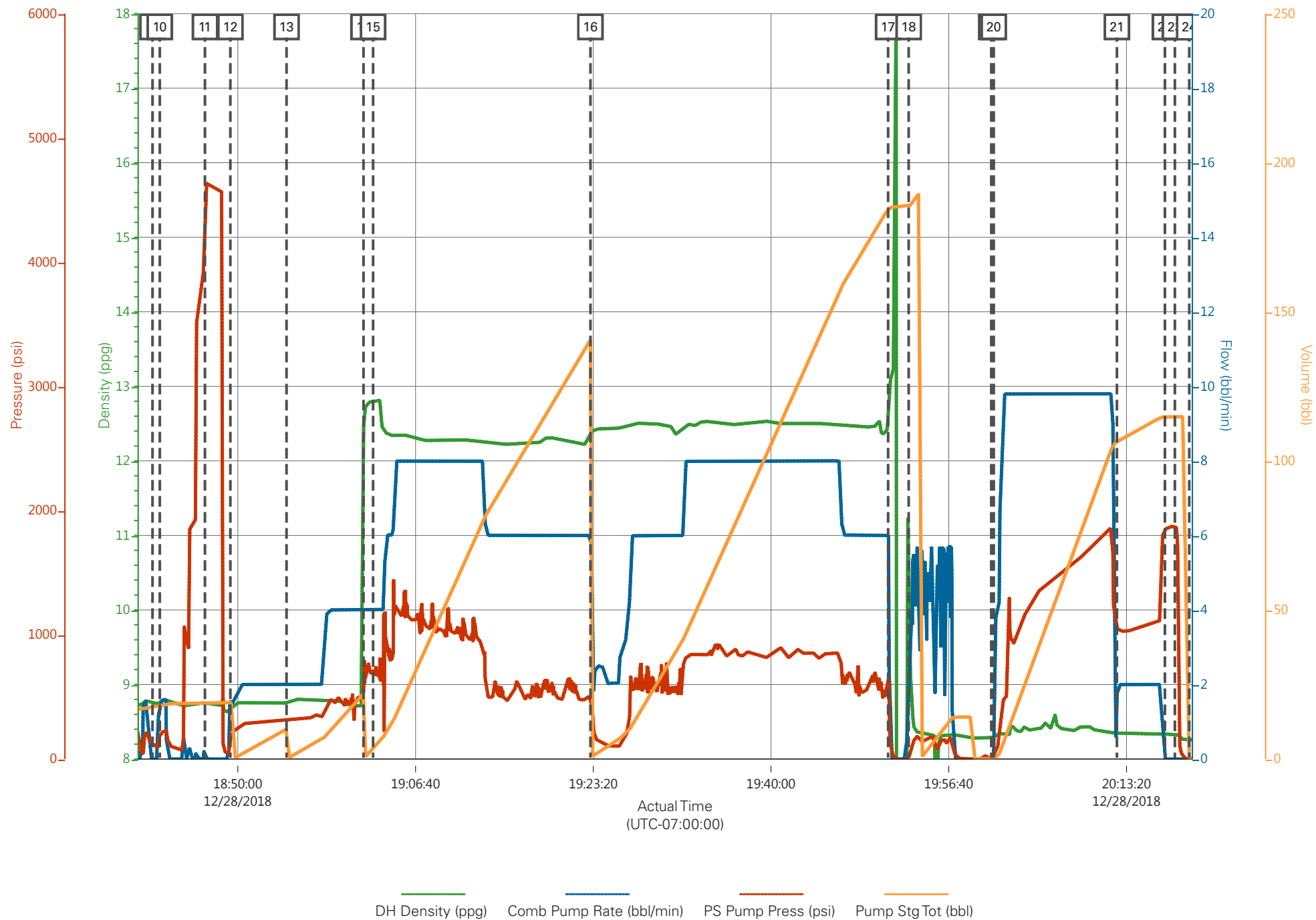
TEP - GM 11-8 - 4.5" PRODUCTION



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

Description	Actual Time (UTC-07:00:00)	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)
9 Start Job	18:42:00	8.76	0.00	113.00	17.40
10 Prime Pumps	18:42:41	8.75	1.60	234.00	17.70
11 Test Lines	18:46:55	8.76	0.00	4630.00	18.70
12 Pump Spacer 1	18:49:18	8.67	1.50	178.00	18.90
13 Pump Spacer 2	18:54:34	8.75	2.00	327.00	0.00
14 Pump Lead Cement	19:01:47	12.42	4.00	520.00	0.00
15 Check Weight	19:02:41	12.81	4.00	708.00	3.60
16 Pump Tail Cement	19:23:04	12.39	6.00	513.00	0.00
17 Shutdown	19:50:59	12.42	6.00	613.00	184.50
18 Clean Lines	19:52:54	10.64	1.70	18.00	185.30
19 Drop Top Plug	20:00:39	8.28	0.00	-5.00	0.00
20 Pump Displacement	20:00:53	8.28	0.00	-3.00	0.00
21 Slow Rate	20:12:26	8.34	1.70	1051.00	106.40
22 Bump Plug	20:16:56	8.34	0.00	1856.00	114.80
23 Check Floats	20:17:52	8.32	0.00	1863.00	114.80
24 End Job	20:19:13	8.27	0.00	-6.00	0.00

TEP - GM 11-8 - 4.5" PRODUCTION



HALLIBURTON

Rockies, Grand Junction

Lab Results- Lead

Job Information

Request/Slurry	2523829/1	Rig Name	H&P 271	Date	24/DEC/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	GM 11-8

Well Information

Casing/Liner Size	4.5 in	Depth MD	7446 ft	BHST	88°C / 190°F
Hole Size	8.75 in	Depth TVD	6486 ft	BHCT	52°C / 126°F
Pressure	3840 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 2523829/1

Thickening Time - ON-OFF-ON, Request Test ID:36089678

27/DEC/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)
126	3840	35	4:19	4:37	4:56	5:26	3	45	15	9

Total SKS = 375

CS2676 TR#8678 , 375SKS

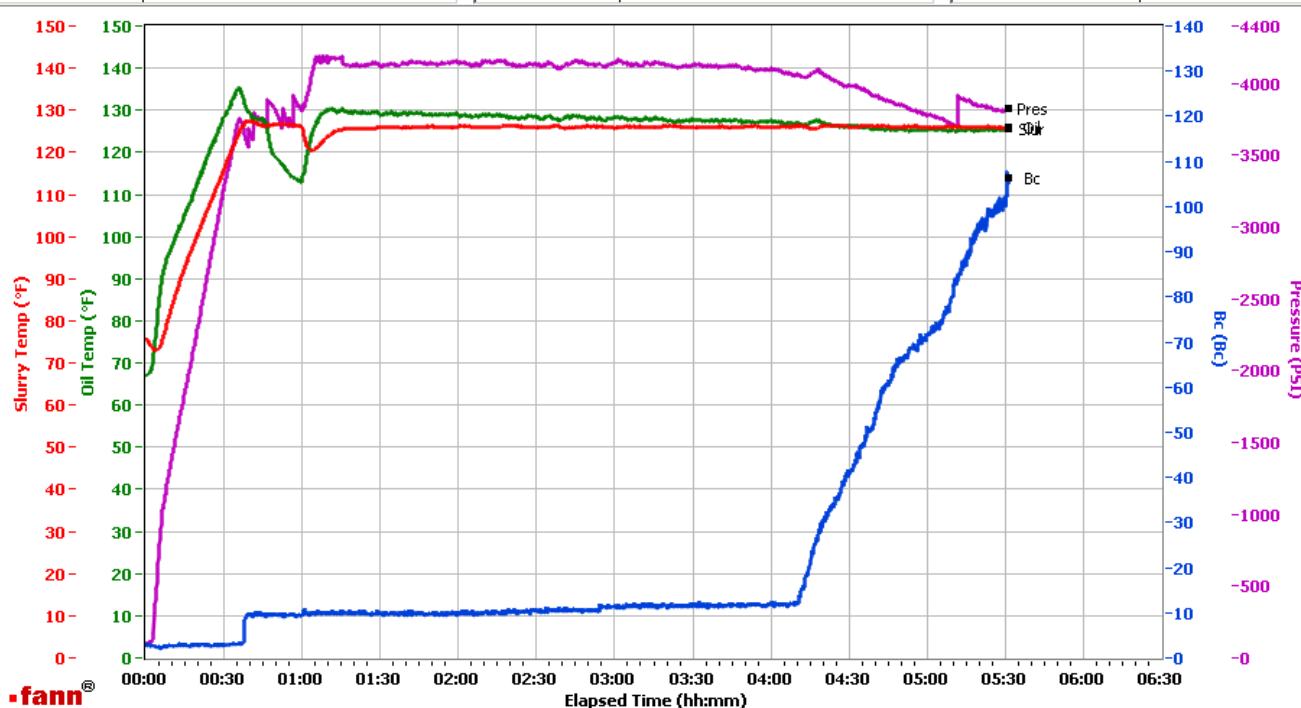
No deflection. Small heat of hydration started around 4:30.

Grand Junction, Colorado

Fields	Values
Project Name	GJ2523829-1 TERRA PRODUCTION BULK LE
Test ID	36089678-TT
Request ID	GJ2523829-1
Tested by	DEBA
Customer	TERRA ENERGY PARTNERS
Well No	GM 11-8
Rig	H8P271
Casing/Liner Size	4.5"

Fields	Values
Job Type	PRODUCTION CASING
Cement Type	GCC TYPE I-II
Cement Weight	Standard
Test Date	12/26/18
Test Time	04:54 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.1.0.507

Events	Results
30.00 Bc	04h:19m
40.00 Bc	04h:28m
50.00 Bc	04h:37m
70.00 Bc	04h:56m
100.00 Bc	05h:26m
00h:30m	2.76
01h:00m	9.62
01h:30m	9.90



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Comments CS2676, TR#8678, 375sks

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Rockies, Grand Junction

Lab Results- Tail

Job Information

Request/Slurry	2523830/1	Rig Name	H&P 271	Date	24/DEC/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	GM 11-8

Well Information

Casing/Liner Size	4.5 in	Depth MD	7446 ft	BHST	88°C / 190°F
Hole Size	8.75 in	Depth TVD	6486 ft	BHCT	52°C / 126°F
Pressure	3840 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



<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	12.5	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 2523830/1

Thickening Time - ON-OFF-ON, Request Test ID:36089680

27/DEC/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)
126	3840	35	4:28	4:44	4:53	5:02	10	45	15	15

Total SKS = 475

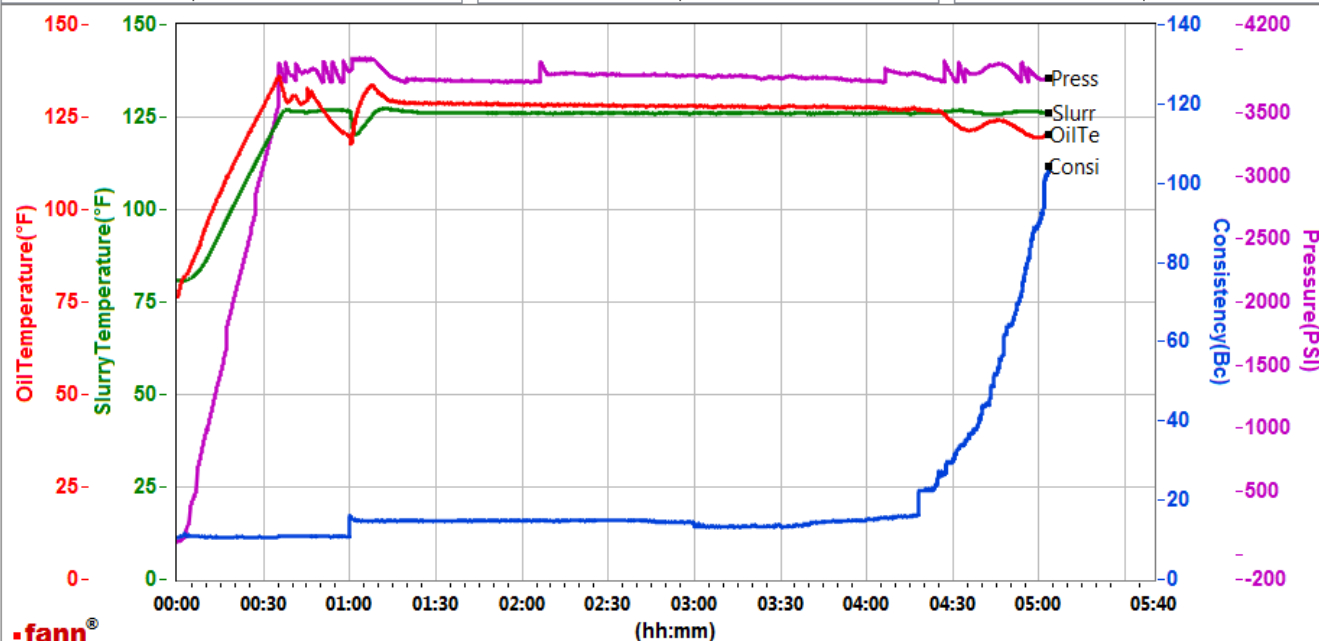
CS2677 TR#2878 375 SKS

CS2679 TR#4053 100 SKS

Deflected 10-- > 15-- > 15 after 1 minute. Heat of hydration started around 4:25.

GRAND JUNCTION

Fields	Values	Fields	Values	Events	Results
Project Name	GJ2523830-1 Terra Prodi	Rig	H&P 271	30 Bc	4:28
SW Version	1.0	Casing/Liner Size	4.5"	50 Bc	4:44
Test ID	36089680- TT	Job Type	PRODUCTION CASING	70 Bc	4:53
Request ID	2523830-1	Cement Weight	GCC TYPE I-II	100 Bc	5:02
Tested by	DEBA	Comments	Standard		
Customer	TERRA ENERGY PARTN	Date Time	12/26/2018 11:36:12.534		
Well No	GM 11-8	Temp. Units	degF		



Data File N:\01 Test Graphs\GJ2523830-1 TERRA PRODUCTION BULK TAIL.tdms

Comments Standard

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