

HALLIBURTON

iCem[®] Service

TERRA ENERGY PARTNERS

United States of America, COLORADO

For: Terra

Date: Sunday, August 05, 2018

NR 511-3 Production PJR

API #05-045-23914-00

Sincerely,

Grand Junction Cement Engineering

1.0 Real-Time Job Summary

1.1 Job Event Log

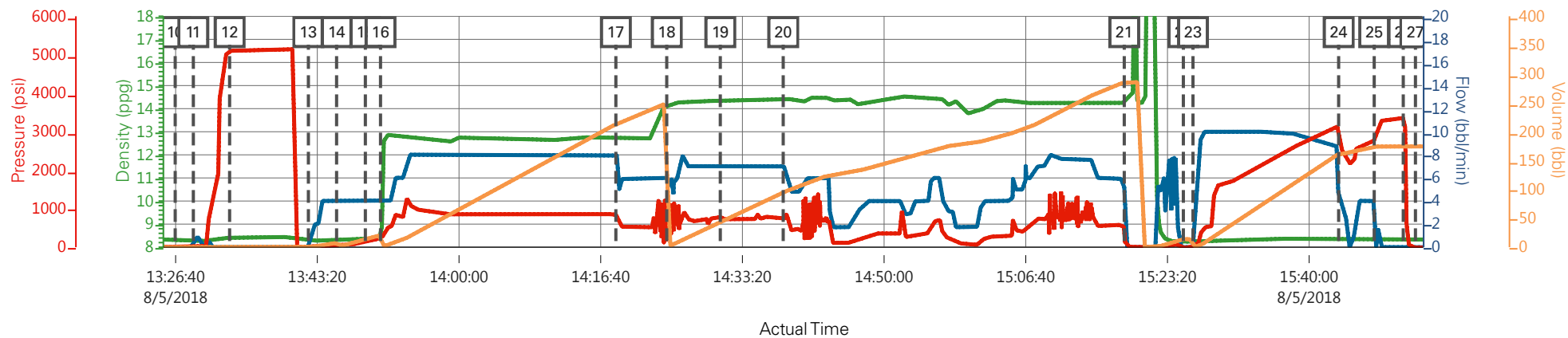
Type	Seq. No.	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	8/5/2018	04:00:00	USER					REQUESTED ON LOCATION @ 10:30
Event	2	Depart Yard Safety Meeting	8/5/2018	07:45:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	8/5/2018	08:00:00	USER					1 HT 400 PUMP TRUCK E8 STAGED OUT IN FIELD FROM PREVIOUS JOB, 2 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	4	Arrive At Loc	8/5/2018	10:00:00	USER					RIG RUNNING CASING UPON HES ARRIVAL
Event	5	Assessment Of Location Safety Meeting	8/5/2018	10:10:00	USER					MET WITH COMP REP, WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE. COMP REP WAS OFFERED SDS FOR ALL CHEMICALS USED BY HES.
Event	6	Spot Equipment	8/5/2018	10:20:00	USER					1 HT 400 PUMP TRUCK E8, 2 660 BULK TRUCK, 1 550 SERVICE PICKUP
Event	7	Pre-Rig Up Safety Meeting	8/5/2018	10:30:00	USER					ALL HES PRESENT
Event	8	Pre-Job Safety Meeting	8/5/2018	12:00:00	USER					ALL HES EMPLOYEES AND RIG CREW PRESENT, RIG CIRCULATED @ 10 BPM PRIOR TO JOB PRESSURE @ 700 PSI THROUGH A CRT.
Event	9	Flush Lines	8/5/2018	12:33:26	COM5	8.33			4	FLUSHED LINES TO FLOOR WITH 4 BBLS FRESH WATER WHILE RIG CIRCULATED
Event	10	Start Job	8/5/2018	13:26:37	USER					PRESSURIZED MUD SCALES WERE CALIBRATED TO

DRINKING WATER PRIOR TO JOB. TD 10,679', TP 10,674',
SJ 31.53', SURFACE CSG 9 5/8" 36# J-55 SET @ 1125',
PRODUCTION CSG 4 1/2" 11.6# P-110, OH 8 3/4", MUD 11.1
PPG

Event	11	Prime Lines	8/5/2018	13:28:45	USER	8.33	.9	30	2	FRESH WATER
Event	12	Test Lines	8/5/2018	13:33:01	USER			5200		PRESSURE HELD
Event	13	Pump H2O Spacer	8/5/2018	13:42:17	COM5	8.33	4.0	60	10	FRESH WATER
Event	14	Pump Mud Flush	8/5/2018	13:45:36	COM5	8.4	4.0	76	20	20 BBL MUD FLUSH (80LBS MUD FLUSH)
Event	15	Check Weight	8/5/2018	13:48:59	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	16	Pump Lead Cement	8/5/2018	13:50:46	COM5	12.7	8.0	850	223	680 SKS NEOCEM CMT, 12.7 PPG, 1.84 FT3/SK, 8.94 GAL/SK
Event	17	SLOW RATE	8/5/2018	14:18:27	USER					SLOWED RATE TO END LEAD SILO
Event	18	Pump Tail Cement	8/5/2018	14:24:26	COM5	14.2	7.6	800	224	740 SKS THERMACEM CMT, 14.2 PPG, 1.7 FT3/SK, 7.53 GAL/SK
Event	19	Check Weight	8/5/2018	14:30:44	COM5					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	20	Other	8/5/2018	14:38:08	USER					ISSUES MIXING TAIL CEMENT
Event	21	Shutdown	8/5/2018	15:18:15	USER					END OF CEMENT. BLEW DOWN LINES FROM FLOOR TO PIT, CLEANED PUMP AND LINES FROM ELITE TO PIT.
Event	22	Drop Top Plug	8/5/2018	15:25:12	USER					VERIFIED BY FLAG INDICATOR
Event	23	Pump Displacement	8/5/2018	15:26:20	USER	8.4	10.0	2960	155	1 GAL MMCR IN FIRST 10 BBLS, 3 LBS BE-6 IN FIRST 30 BBLS, 1 50 LB. BAG KCL EVERY 10 BBLS.
Event	24	Slowed Rate	8/5/2018	15:43:28	USER	8.4	4.0	2700	10	SLOWED RATE TO BUMP PLUG
Event	25	Bump Plug	8/5/2018	15:47:39	COM5	8.4	4.0	2700	165	BUMPED PLUG
Event	26	Check Floats	8/5/2018	15:51:04	USER			3300		FLOATS HELD 2 BBL FLOWED BACK TO TRUCK

Event	27	End Job	8/5/2018	15:52:30	USER	USED TOP PLUG, 1 GAL MMCR, 3 BE-6, AND 80 LBS MUD FLUSH III FOR JOB.
Event	28	Post-Job Safety Meeting (Pre Rig-Down)	8/5/2018	16:00:00	USER	ALL HES PRESENT
Event	29	Pre-Convoy Safety Meeting	8/5/2018	17:45:00	USER	ALL HES PRESENT
Event	30	Depart Location	8/5/2018	18:00:00	USER	THANK YOU FOR CHOOSING HALLIBURTON CEMENT, DUSTIN HYDE AND CREW

TERRA - NR 511-3 - 4 1/2" PRODUCTION



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

Description	Actual Time	DH Density (ppg)	Comb Pump Rate (bbl/min)	PS Pump Press (psi)	Pump Stg Tot (bbl)
10 Start Job	13:26:37	8.36	0.00	-1.00	0.00
11 Prime Lines	13:28:45	8.28	0.00	13.00	0.00
12 Test Lines	13:33:01	8.41	0.00	5105.00	0.90
13 Pump H2O Spacer	13:42:17	8.33	0.00	-9.00	0.90
14 Pump Mud Flush	13:45:36	8.32	4.00	57.00	10.30
15 Check Weight	13:48:59	8.37	4.00	140.00	13.70
16 Pump Lead Cement	13:50:46	8.38	4.00	221.00	0.00
17 SLOW RATE	14:18:27	12.70	8.00	869.00	213.20
18 Pump Tail Cement	14:24:26	14.19	6.10	431.00	0.10
19 Check Weight	14:30:44	14.31	7.00	770.00	42.80
20 Other	14:38:08	14.37	7.00	747.00	94.70
21 Shutdown	15:18:15	14.24	5.20	474.00	285.90
22 Drop Top Plug	15:25:12	8.30	0.00	-23.00	13.90
23 Pump Displacement	15:26:20	8.25	0.00	6.00	0.00
24 Slowed Rate	15:43:28	8.34	3.90	2536.00	161.40
25 Bump Plug	15:47:39	8.33	4.00	2766.00	174.00
26 Check Floats	15:51:04	8.35	0.00	3363.00	174.60
27 End Job	15:52:30	8.32	0.00	-10.00	174.60

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Created: 2018-08-05 10:52:13, (UTC-06:00), Version: 4.5.139

Edit

Customer : TERRA ENERGY PARTNERS

Job Date : 8/5/2018

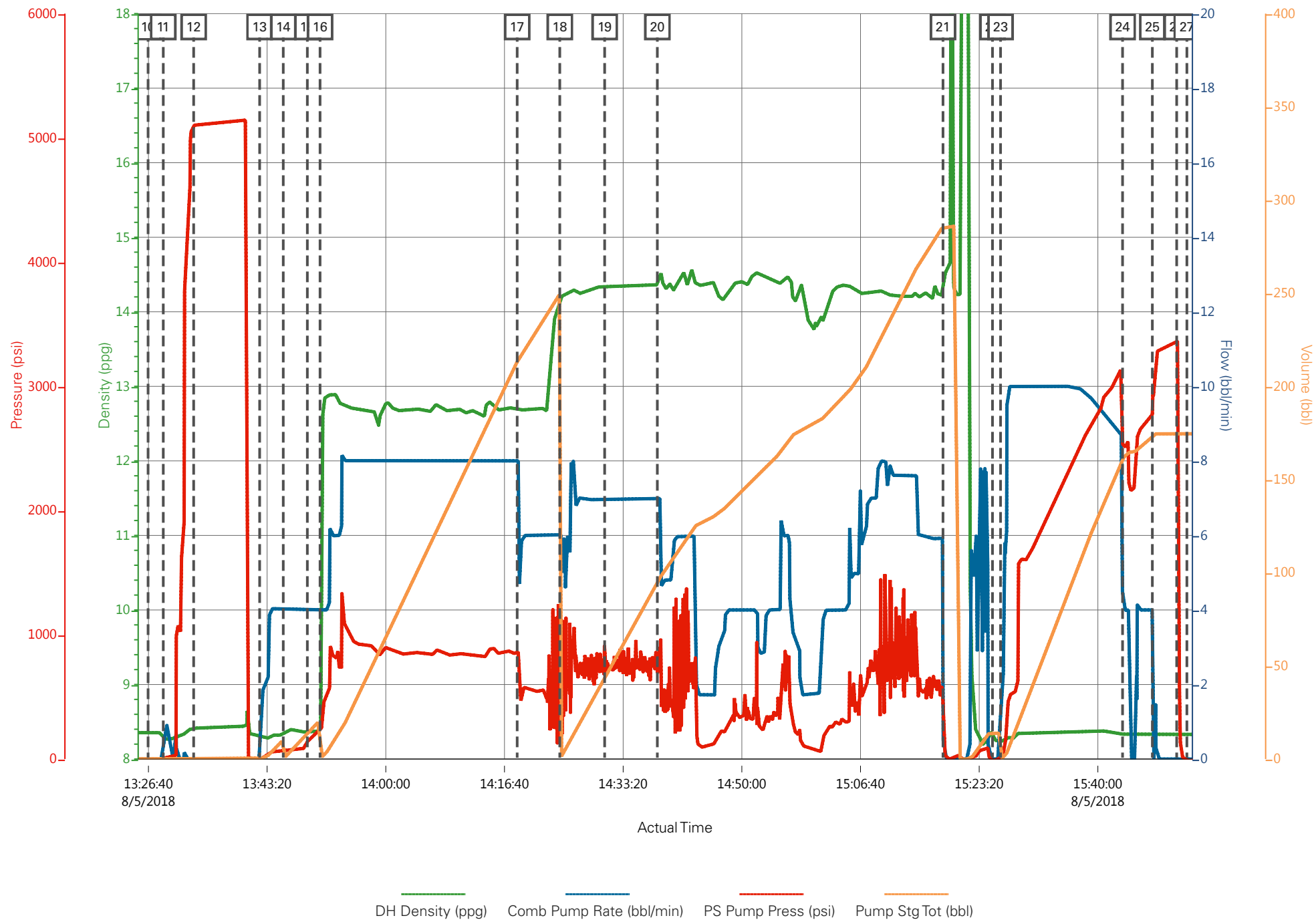
Well : CLOUGH NR 511-3

Representative : Karl Schneider

Sales Order # : 905039110

ELITE 8 : HYDE / REED / SALAZAR

TERRA - NR 511-3 - 4 1/2" PRODUCTION



Job Information

Request/Slurry	2491470/1	Rig Name	H&P 318	Date	30/JUL/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	NR 511-3

Well Information

Casing/Liner Size	4.5 in	Depth MD	10706 ft	BHST	122°C / 251°F
Hole Size	8.75 in	Depth TVD	10044 ft	BHCT	88°C / 190°F
Pressure	6331 psi				

Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
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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>	Cement Properties		
		NeoCem Lead				Slurry Density	12.7	lbm/gal
						Slurry Yield	1.853	ft3/sack
						Water Requirement	8.959	gal/sack
						Total Mix Fluid	8.959	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

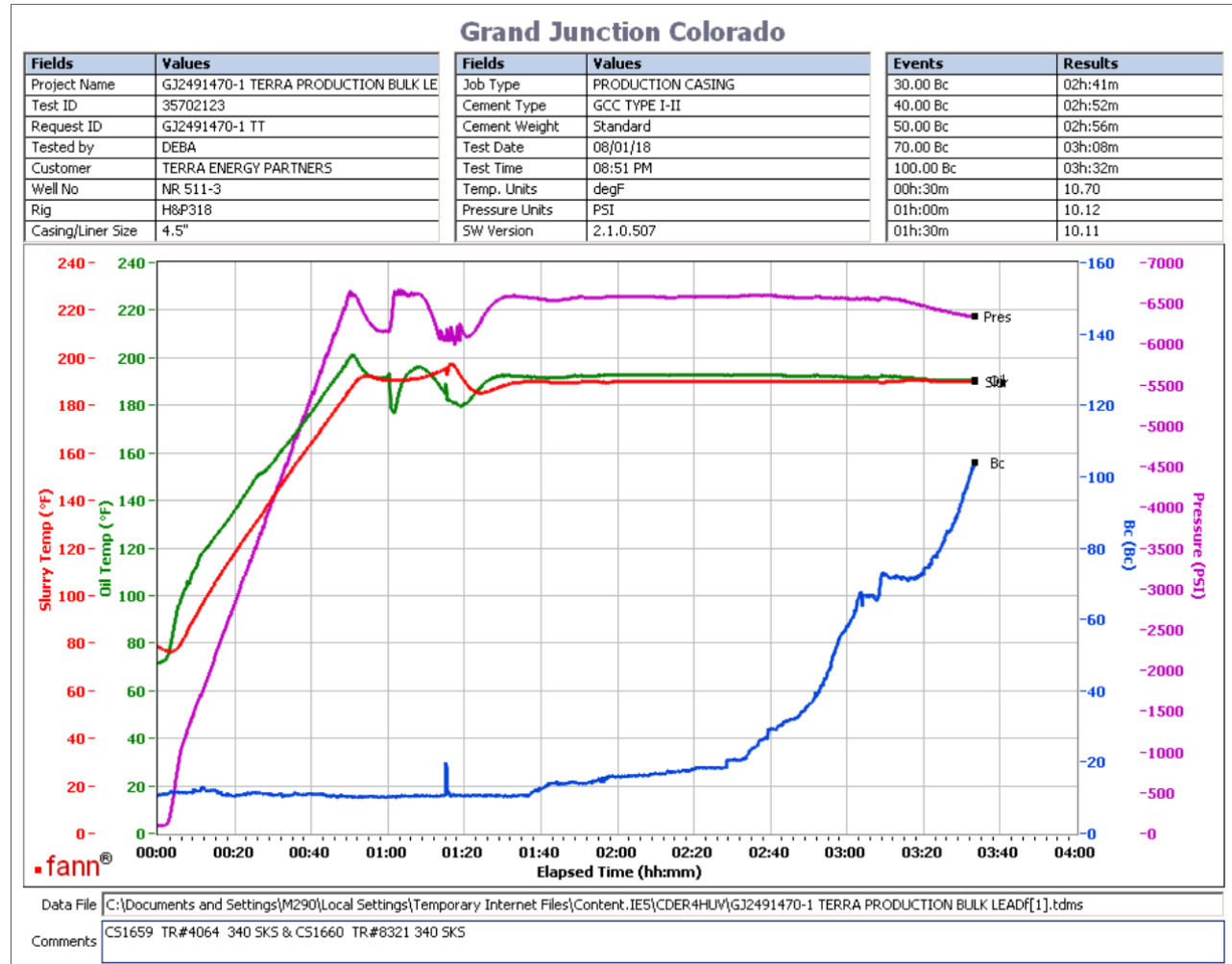
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Operation Test Results Request ID 2491470/1

Thickening Time - ON-OFF-ON

01/AUG/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)
190	6331	50	2:41	2:56	3:08	3:32	11	60	15	22



Total sks = 680
 CS1659 TR#4064 340 SKS
 CS1660 TR#8321 340 SKS
 Deflection: 10 - 22

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HALLIBURTON

Rockies, Grand Junction

Lab Results- Tail

Job Information

Request/Slurry	2491471/1	Rig Name	H&P 318	Date	30/JUL/2018
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	NR 511-3

Well Information

Casing/Liner Size	4.5 in	Depth MD	10706 ft	BHST	122°C / 251°F
Hole Size	8.75 in	Depth TVD	10044 ft	BHCT	88°C / 190°F
Pressure	6331 psi				

Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
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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>	Cement Properties		
		ThermaCem 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		

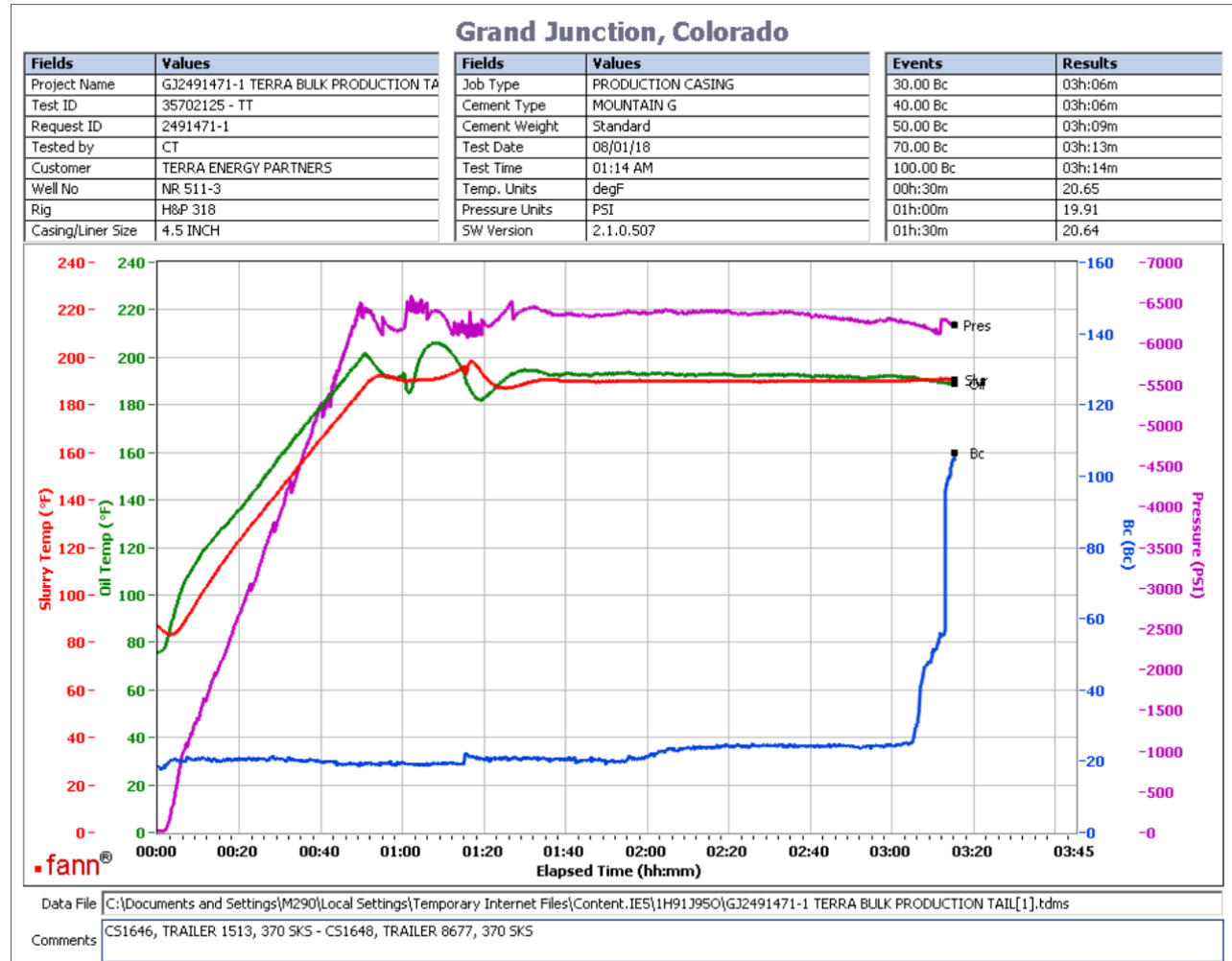
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Operation Test Results Request ID 2491471/1

Thickening Time - ON-OFF-ON

31/JUL/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)
190	6331	50	3:06	3:09	3:13	3:14	19	60	15	20



Total sks = 740
 CS1646, Trailer 1513, 370 sks
 CS1648, Trailer 8677, 370 sks
 Deflection: 20 - 20

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