

HALLIBURTON

iCem[®] Service

TEP ROCKY MOUNTAIN LLC-EBUS

For: Terra Energy Partners

Date: Wednesday, November 08, 2017

WARE SR 23-12

API: 05-045-23439-00

Sincerely,

Grand Junction Cement Engineering

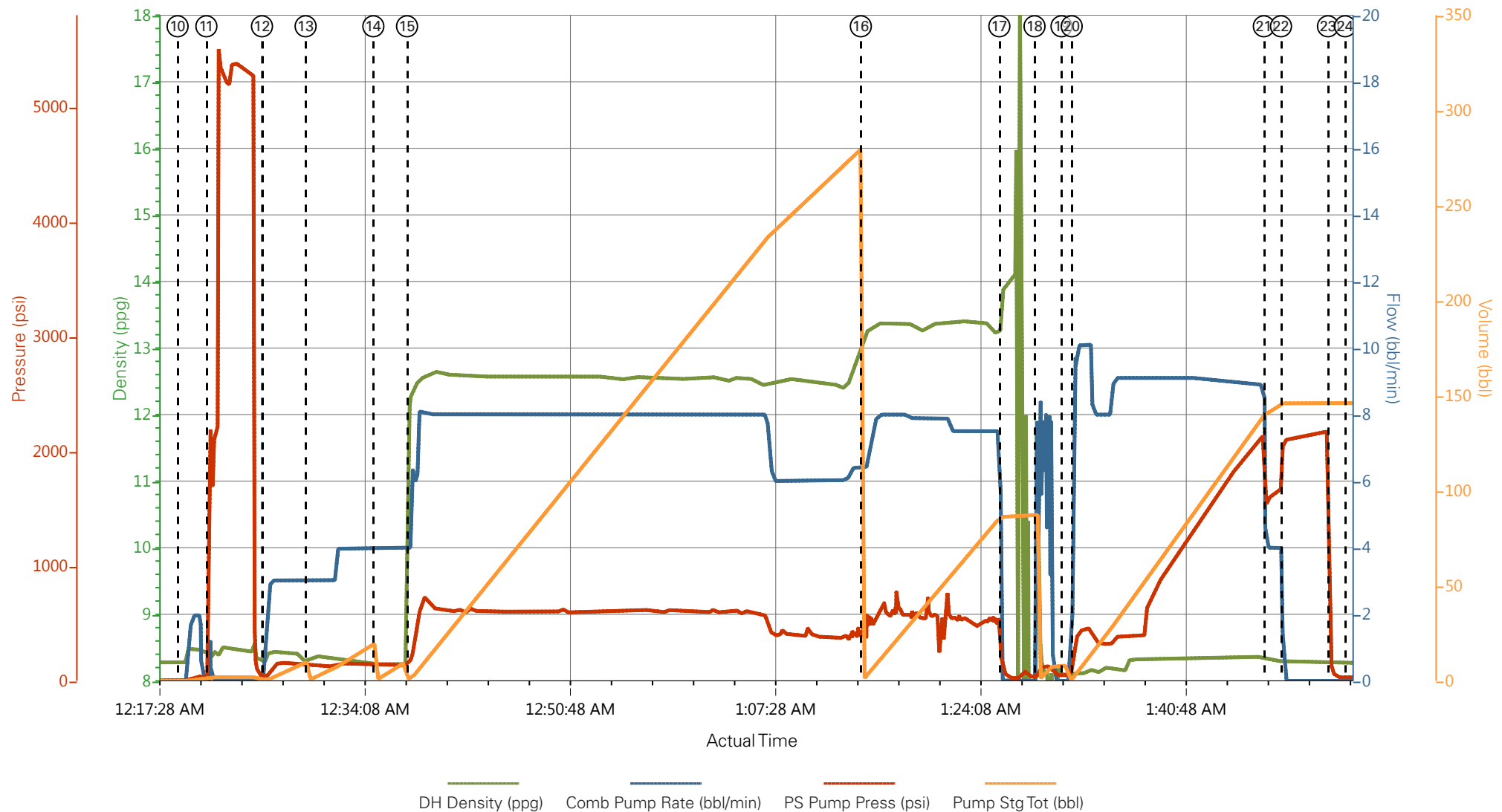
1.0 Real-Time Job Summary

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	11/7/2017	13:00:00	USER					
Event	2	Pre-Convoy Safety Meeting	11/7/2017	15:25:00	USER					
Event	3	Crew Leave Yard	11/7/2017	15:30:00	USER					
Event	4	Arrive at Loc	11/7/2017	17:00:00	USER					CREW ARRIVED 2 HOURS EARLY, RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	11/7/2017	17:05:00	USER					
Event	6	Spot Equipment	11/7/2017	18:00:00	USER					
Event	7	Pre-Rig Up Safety Meeting	11/7/2017	18:05:00	USER					
Event	8	Rig-Up Equipment	11/7/2017	18:10:00	USER					
Event	9	Pre-Job Safety Meeting	11/7/2017	23:00:00	USER					
Event	10	Start Job	11/8/2017	00:19:12	COM5					TD: 9591 TP: 9581 SJ: 28.72 MW: 9.5 4 1/2" 11.6#/FT CSG IN 8 3/4" OH WATER TEST: PH: 7 POTASSIUM: 700 CHLORIDES: 0 SULFATES: <200 TEMP: 68 DEGREES
Event	11	Test Lines	11/8/2017	00:21:32	COM5	8.33		5000.00		5000 PSI TEST
Event	12	Pump Spacer 1	11/8/2017	00:26:03	COM5	8.33	4.00	110.00	10.0	FRESH H2O SPACER
Event	13	Pump Spacer 2	11/8/2017	00:29:36	COM5	8.40	4.00	140.00	20.0	MUDFLUSH SPACER
Event	14	Pump Spacer 1	11/8/2017	00:35:06	COM5	8.33	4.00	146.00	10.0	FRESH H2O SPACER
Event	15	Pump Lead Cement	11/8/2017	00:37:50	COM5	12.50	8.00	375.00	279.9	810 SKS @ 12.5 PPG 1.94 YLD 9.6 GAL/SK H2O
Event	16	Pump Tail Cement	11/8/2017	01:14:40	COM5	13.30	8.00	409.00	81.6	265 SKS @ 13.3 PPG 1.73 YLD 7.81 GAL/SK H2O
Event	17	Shutdown	11/8/2017	01:25:55	USER					

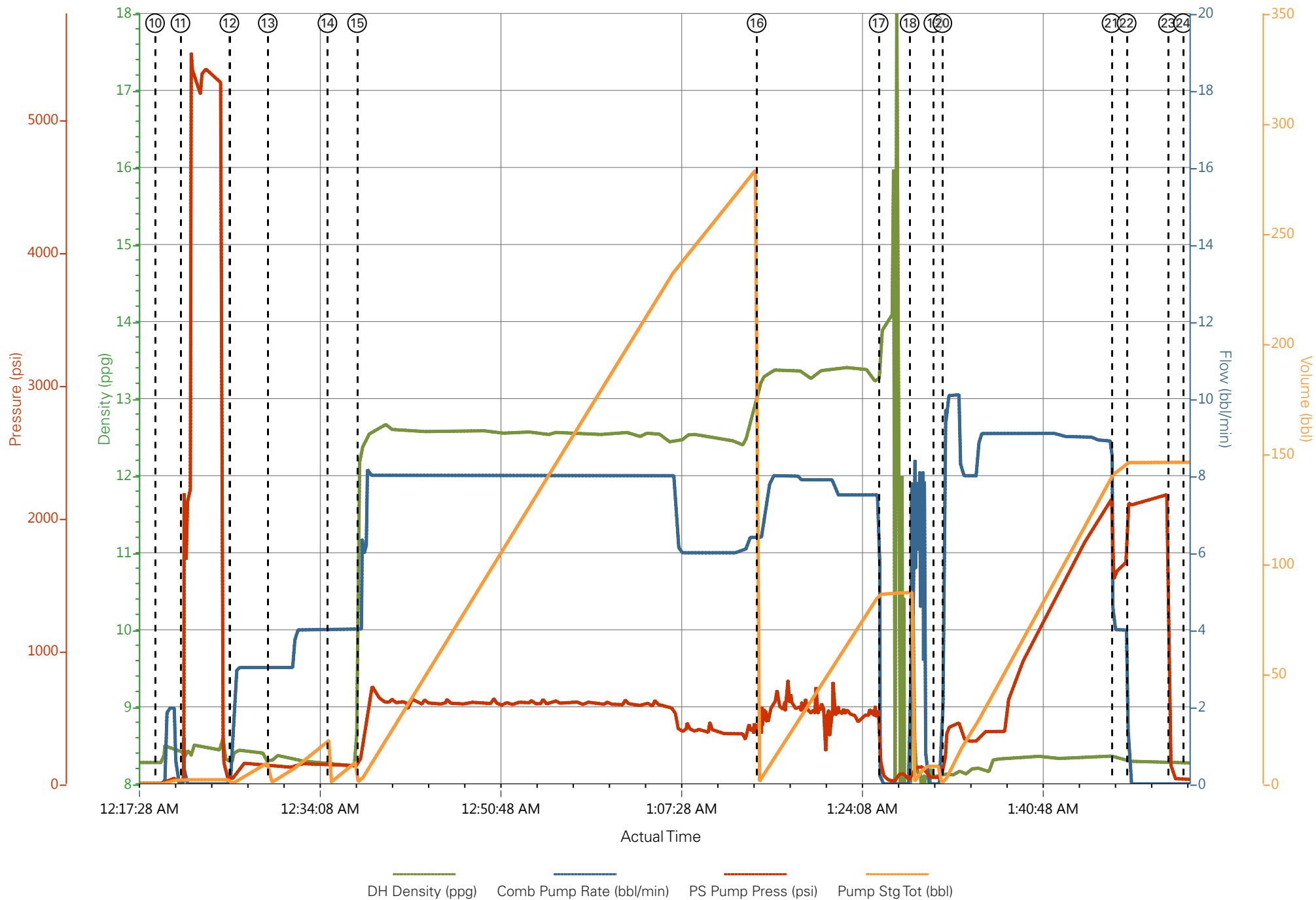
Event	18	Clean Lines	11/8/2017	01:28:46	COM5					
Event	19	Drop Top Plug	11/8/2017	01:30:58	COM5					PLUG AWAY
Event	20	Pump Displacement	11/8/2017	01:31:48	COM5	8.48	10.00	1028.00	148.1	FRESH H2O DISPLACEMENT W/ MMCR, BE-6, KCL
Event	21	Slow Rate	11/8/2017	01:47:24	USER	8.48	4.00	1578.00	138.0	
Event	22	Bump Plug	11/8/2017	01:48:47	COM5	8.48	4.00	2078.00	148.0	PLUG BUMPED AT CALCULATED DISPLACEMENT, FINAL CIRCULATING PRESSURE PRIOR TO BUMPING PLUG WAS 1650 PSI.
Event	23	Check Floats	11/8/2017	01:52:36	USER					FLOATS HELD, APPROX 1/2 BBL BACK TO PUMP
Event	24	End Job	11/8/2017	01:54:00	COM5					
Event	25	Post-Job Safety Meeting (Pre Rig-Down)	11/8/2017	02:00:00	USER					GOOD CIRCULATION THROUGHOUT JOB. PIPE WAS LEFT STATIC THROUGHOUT JOB. NO ADD HOURS CHARGED.
Event	26	Rig-Down Equipment	11/8/2017	02:10:00	USER					
Event	27	Pre-Convoy Safety Meeting	11/8/2017	03:25:00	USER					
Event	28	Crew Leave Location	11/8/2017	03:30:00	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENTING OF GRAND JUNCTION, COLORADO ANTHONY ANDREWS AND CREW

TEP - WARE SR 23-12 - 4 1/2" PRODUCTION



- | | | | |
|---|--------------------------|----------------------|---|
| ① Call Out | ⑧ Rig-Up Equipment | ⑮ Pump Lead Cement | 22 Bump Plug |
| ② Pre-Convoy Safety Meeting | ⑨ Pre-Job Safety Meeting | ⑯ Pump Tail Cement | 23 Check Floats |
| ③ Crew Leave Yard | ⑩ Start Job | ⑰ Shutdown | 24 End Job |
| ④ Arrive at Loc | ⑪ Test Lines | ⑱ Clean Lines | 25 Post-Job Safety Meeting (Pre Rig-Down) |
| ⑤ Assessment Of Location Safety Meeting | ⑫ Pump Spacer 1 | ⑲ Drop Top Plug | 26 Rig-Down Equipment |
| ⑥ Spot Equipment | ⑬ Pump Spacer 2 | 20 Pump Displacement | 27 Pre-Convoy Safety Meeting |
| ⑦ Pre-Rig Up Safety Meeting | ⑭ Pump Spacer 1 | 21 Slow Rate | 28 Crew Leave Location |

TEP - WARE SR 23-12 - 4 1/2" PRODUCTION



Job Information

Request/Slurry	2428508/1	Rig Name	H&P 318	Date	05/NOV/2017
Submitted By	Patrick Ealey	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	SR 23-12

Well Information

Casing/Liner Size	4.5 in	Depth MD	9773 ft	BHST	118°C / 245°F
Hole Size	8.75 in	Depth TVD	9703 ft	BHCT	79°C / 175°F
Pressure	6092 psi				

Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density
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Cement Information - Lead Design



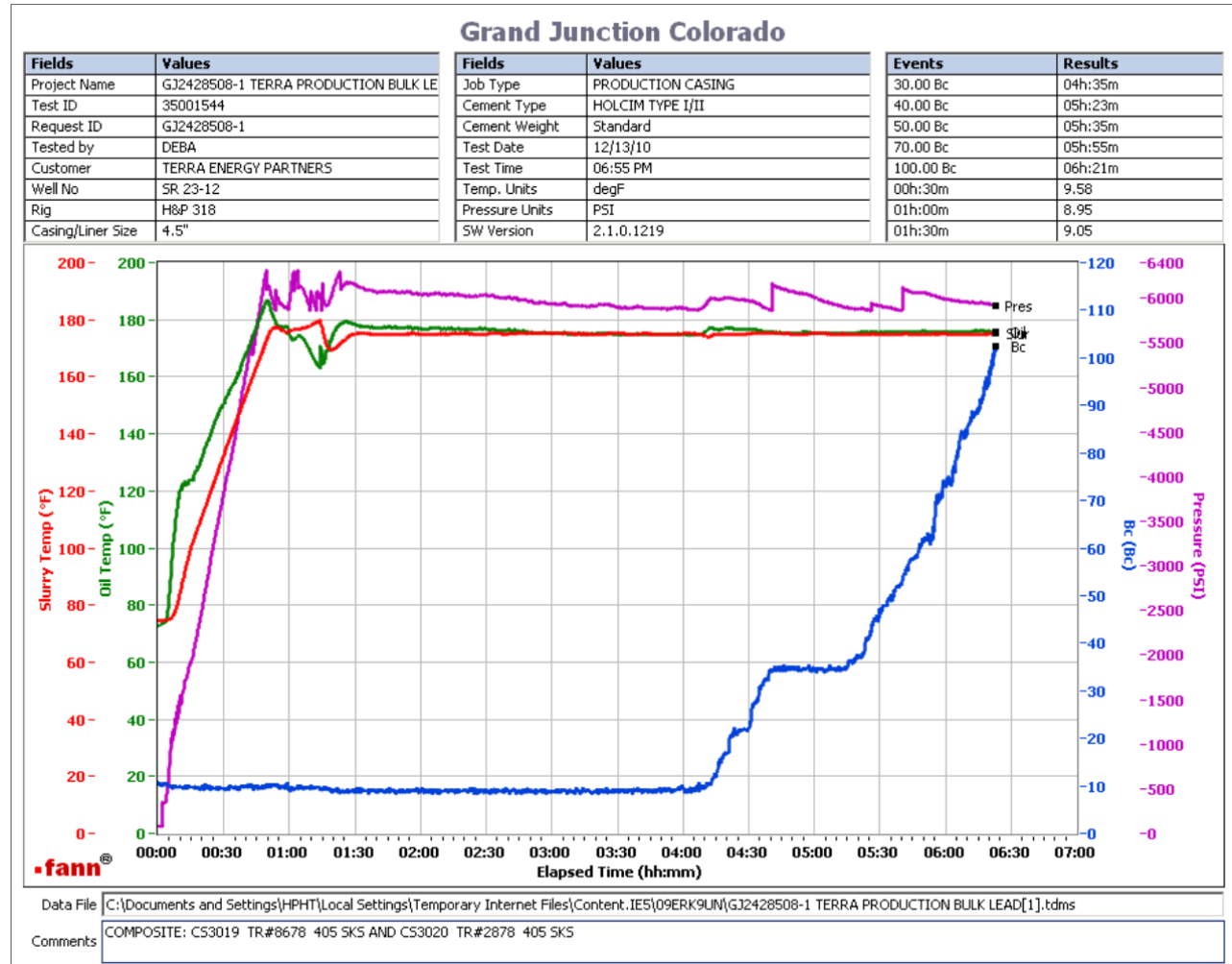
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	Cement Properties		
		NeoCem Lead				Slurry Density	12.5	lbm/gal
						Slurry Yield	1.941	ft3/sack
						Water Requirement	9.623	gal/sack
						Total Mix Fluid	9.623	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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Thickening Time - ON-OFF-ON

06/NOV/2017

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)
175	6092	49	4:35	5:35	5:55	6:21	10	59	15	9



Total sks= 810

Composite:

CS3020 TR#2878 405 SKS

CS3019 TR#8678 405SKS

no deflection was observed. 9Bc--- > 9Bc

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Cement Information - Tail Design



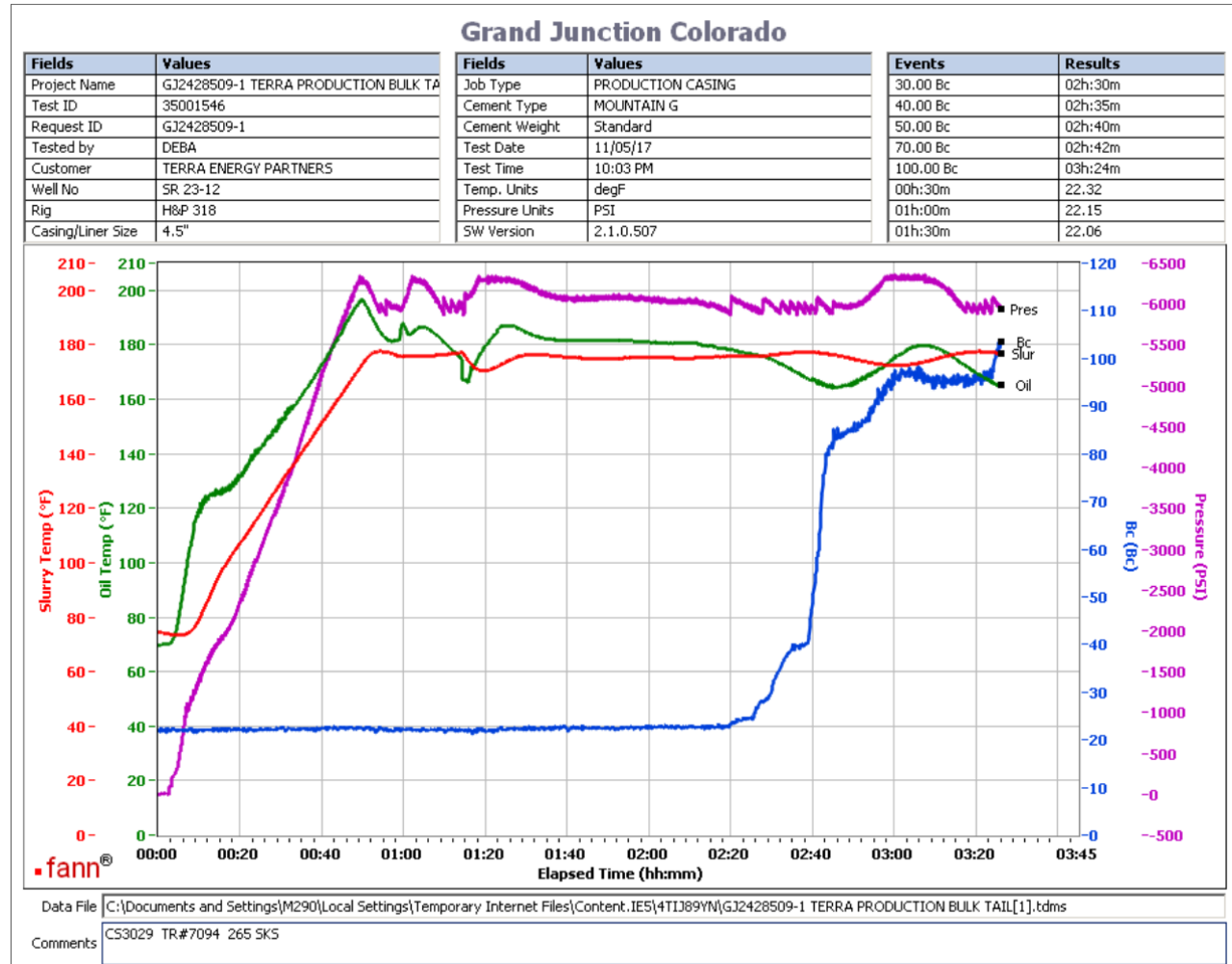
<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	Cement Properties		
		ThermaCem Tail				Slurry Density	13.3	lbm/gal
						Slurry Yield	1.733	ft ³ /sack
						Water Requirement	7.799	gal/sack
						Total Mix Fluid	7.799	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

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175	6092	49	2:30	2:40	2:42	3:24	21	59	15	21



265 sks tail
 CS3029 TR#7094 265 SKS
 heat of hydration at 2:30
 no deflection was recorded on the graph. 21Bc--- > 21Bc

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