

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS-EBUS**

United States of America, COLORADO

Date: Thursday, March 21, 2019

### **Trail Ridge 344-22-597 Production**

Terra Trail Ridge 344-22-597 Production

API# 05-045-23698

Job Date: Sunday, March 10, 2019

Sincerely,

**Grand Junction Cement Engineering**

## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

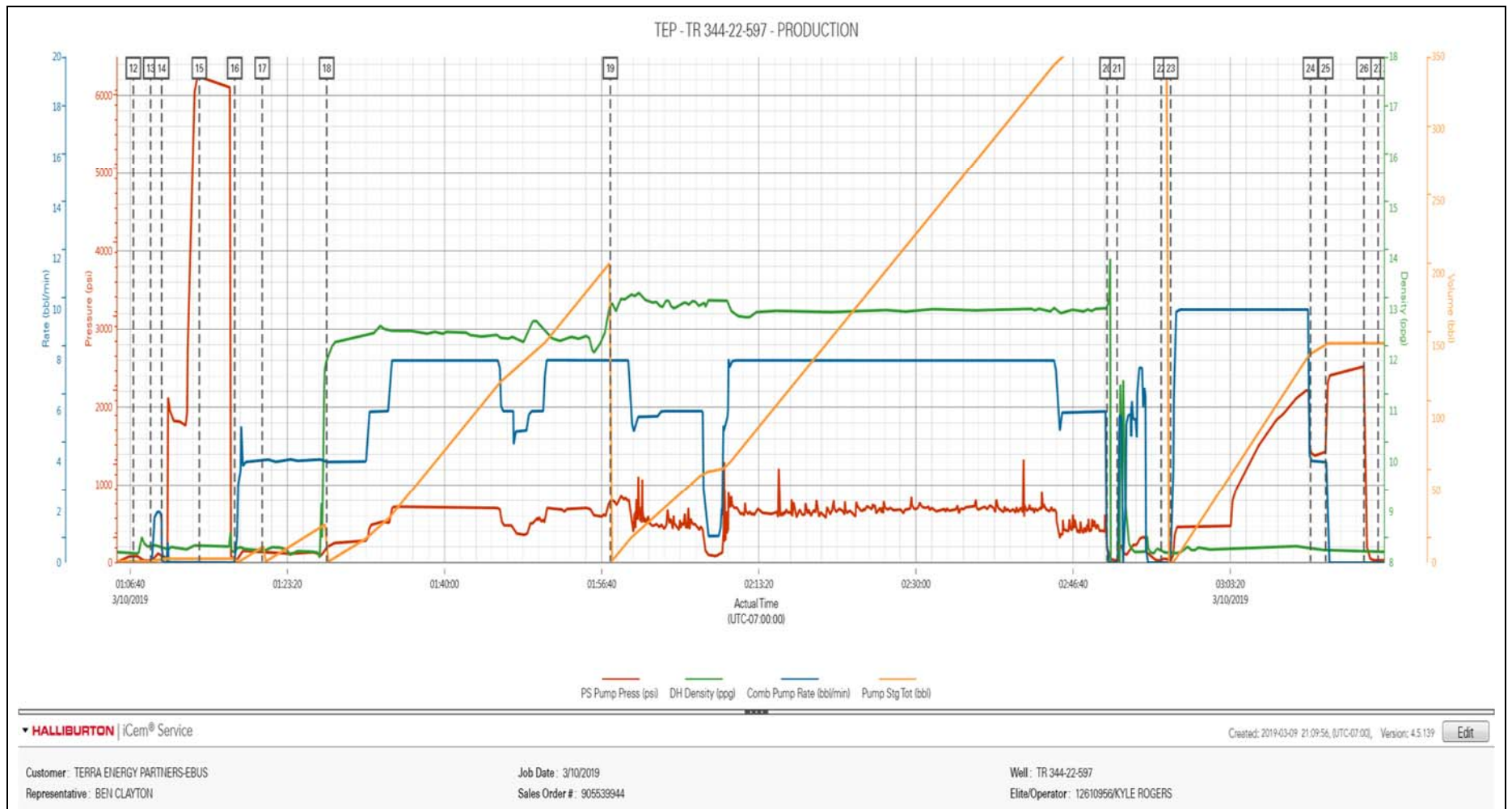
Type	Seq. No.	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	Comments
Event	1	Call Out	3/9/2019	12:30:00	USER					CREW CALLED OUT TO H&P 271 FOR TEP PRODUCTION JOB. REQUESTED ON LOCATION AT 19:30.
Event	2	Pre-Convoy Safety Meeting	3/9/2019	14:45:00	USER					WITH ALL HES PERSONNEL
Event	3	Crew Leave Yard	3/9/2019	15:00:00	USER					
Event	4	Arrive at Location	3/9/2019	19:00:00	USER					RIG WAS RUNNING CASING UPON HES ARRIVAL
Event	5	Assessment of Location Safety Meeting	3/9/2019	19:05:00	USER					WITH ALL HES PERSONNEL
Event	6	Spot Equipment	3/9/2019	19:10:00	USER					SPOT EQUIPMENT
Event	7	Pre-Rig Up Safety Meeting	3/9/2019	19:20:00	USER					WITH ALL HES PERSONNEL
Event	8	Rig-Up Equipment	3/9/2019	19:30:00	USER					1-RCM ELITE PUMP TRUCK, 2- 1,700 FT3 SILOS, 1-660 FT3 BULK TRUCK, 1-PICKUP TRUCK
Event	9	Rig-Up Completed	3/9/2019	20:30:00	USER					RIG UP COMPLETED. WAIT FOR RIG TO FINISH RUNNING CASING.
Event	10	Pre-Job Safety Meeting	3/10/2019	00:30:00	USER					WITH ALL PERSONNEL ON LOCATION
Event	11	Check Weight	3/10/2019	01:00:00	USER					PRESSURIZED MUD SCALES CALIBRATED USING FRESH WATER PRIOR TO JOB. ALL FLUID DENSITIES VERIFIED USING PRESSURIZED MUD SCALES THROUGHOUT JOB.
Event	12	Start Job	3/10/2019	01:07:00	USER					
Event	13	Pump Water	3/10/2019	01:08:50	USER	90	8.33	2	2	PUMP 2 BBL H2O AHEAD TO PRIME LINES. PUMPED AT 2 BPM WITH 90 PSI
Event	14	Shutdown	3/10/2019	01:10:00	USER					SHUTDOWN TO LINE OUT VALVES ON MANIFOLD FOR PRESSURE TEST

Event	15	Pressure Test	3/10/2019	01:14:00	USER	6241.00				SET KICKOUTS TO 500 PSI FOR LOW TEST TO ENSURE KICKOUTS ARE FUNCTIONING PROPERLY. BROUGHT PRESSURE UP TO 6,240 PSI FOR HIGH TEST.
Event	16	Pump H2O Spacer	3/10/2019	01:17:45	USER	150	8.33	4	10	PUMP 10 BBL H2O SPACER. PUMPED AT 4 BPM WITH 150 PSI
Event	17	Pump Mud Flush III Spacer	3/10/2019	01:20:40	USER	150	8.4	4	20	PUMP 20 BBL MUD FLUSH III SPACER. PUMPED AT 4 BPM WITH 150 PSI. USED 80 LBS MUD FLUSH III FOR SPACER.
Event	18	Pump Lead Cement	3/10/2019	01:27:30	USER	700	12.5	8	193.5	PUMP 193.5 BBL NEOCEM GJ2 LEAD CEMENT. 560 SKS AT 12.5 PPG, 1.94 FT3/SK, 9.6 GAL/SK. PUMPED AT 8 BPM WITH 700 PSI
Event	19	Pump Tail Cement	3/10/2019	01:57:35	USER	800	13	8	294.9	PUMP 294.9 BBL NEOCOM HT TAIL CEMENT. 800 SKS AT 13 PPG, 2.07 FT3/SK, 9.43 GAL/SK. PUMPED AT 8 BPM WITH 800 PSI
Event	20	Shutdown	3/10/2019	02:50:15	USER					SHUTDOWN TO DROP TOP PLUG.
Event	21	Clean Lines	3/10/2019	02:51:19	USER					WASH PUMPS AND LINES TO PIT.
Event	22	Drop Top Plug	3/10/2019	02:56:00	USER					DROP THIRD PARTY TOP LATCH DOWN PLUG. PLUG LAUNCHED. WITNESSED BY CUSTOMER REP.
Event	23	Pump Displacement	3/10/2019	02:57:00	USER	2210	8.4	10	135.6	PUMP 135.6 BBL KCL DISPLACEMENT AT 10 BPM WITH 2,210 PSI. 3 LBS BE-6 IN FIRST 30 BBL, 1 GAL MMCR IN FIRST 10 BBL.
Event	24	Slow Rate	3/10/2019	03:11:50	USER	1420	8.4	4	10	SLOW RATE TO 4 BPM 10 BBL PRIOR TO CALCULATED DISPLACEMENT TO BUMP PLUG.
Event	25	Bump Plug	3/10/2019	03:13:27	USER	2420				PLUG BUMPED AT 4 BPM. FCP-1,420 PSI. BROUGHT PRESSURE UP TO 2,420 PSI. TOTAL DISPLACEMENT-145.6 BBL
Event	26	Check Floats	3/10/2019	03:17:30	USER					FLOATS HOLDING. RETURNED 1 BBL FLUID TO TRUCK
Event	27	End Job	3/10/2019	03:19:00	USER					RIG PUMPED 1,500 SCF AIR DOWN PARASITE STRING WHILE CEMENTING. AIR WAS CUT TO 750 SCF AT 50 BBL OF DISPLACEMENT AWAY AND AIR WAS SHUT OFF AT 100 BBL OF DISPLACEMENT AWAY. PIPE WAS STATIC DURING JOB. GOOD CIRCULATION THROUGHOUT CEMENT. CIRCULATION STOPPED AFTER SHUTTING DOWN TO DROP TOP PLUG.
Event	28	Pre-Rig Down Safety Meeting	3/10/2019	03:20:00	USER					WITH ALL HES PERSONNEL
Event	29	Rig-Down Equipment	3/10/2019	03:30:00	USER					
Event	30	Rig-Down Completed	3/10/2019	04:15:00	USER					

Event	31	Pre-Convoy Safety Meeting	3/10/2019	04:20:00	USER	WITH ALL HES PERSONNEL
Event	32	Crew Leave Location	3/10/2019	04:30:00	USER	
Event	33	Well Info	3/10/2019	04:31:00	USER	TD-9,430', TP-9,424.69' SET AT 9,420', SHOE-30.84', HOLE 8 3/4", MUD-9.1 PPG WBM, CSG-4 1/2" 11.6 LB/FT P-110, PREV CSG SET AT 2,750' 9 5/8" 36 LB/FT
Event	34	Rig Info	3/10/2019	04:32:00	USER	RIG ON BOTTOM AT 23:30, CIRCULATED AT 12 BPM WITH 1,400 PSI. RIG PUMPED 1,000 SCF OF AIR DOWN CASING AND 1,500 SCF OF AIR DOWN PARASITE STRING WHILE CIRCULATING. CIRCULATED 734 BBL.
Event	35	Job Info	3/10/2019	04:33:00	USER	CALCULATED TOP OF TAIL CEMENT-4,038', CALCULATED TOP OF LEAD CEMENT-615', USED 80 LBS MUDFLUSH III, 3 LBS BE-6, 1 GALLON MMCR FOR JOB. THIRD PARTY TOP PLUG WAS USED FOR JOB. HES TOP PLUG WAS RETURNED TO WAREHOUSE.
Event	36	Comment	3/10/2019	04:34:00	USER	THANK YOU FOR USING HALLIBURTON CEMENT DEPARTMENT. JEREMY YOUNG AND CREW.

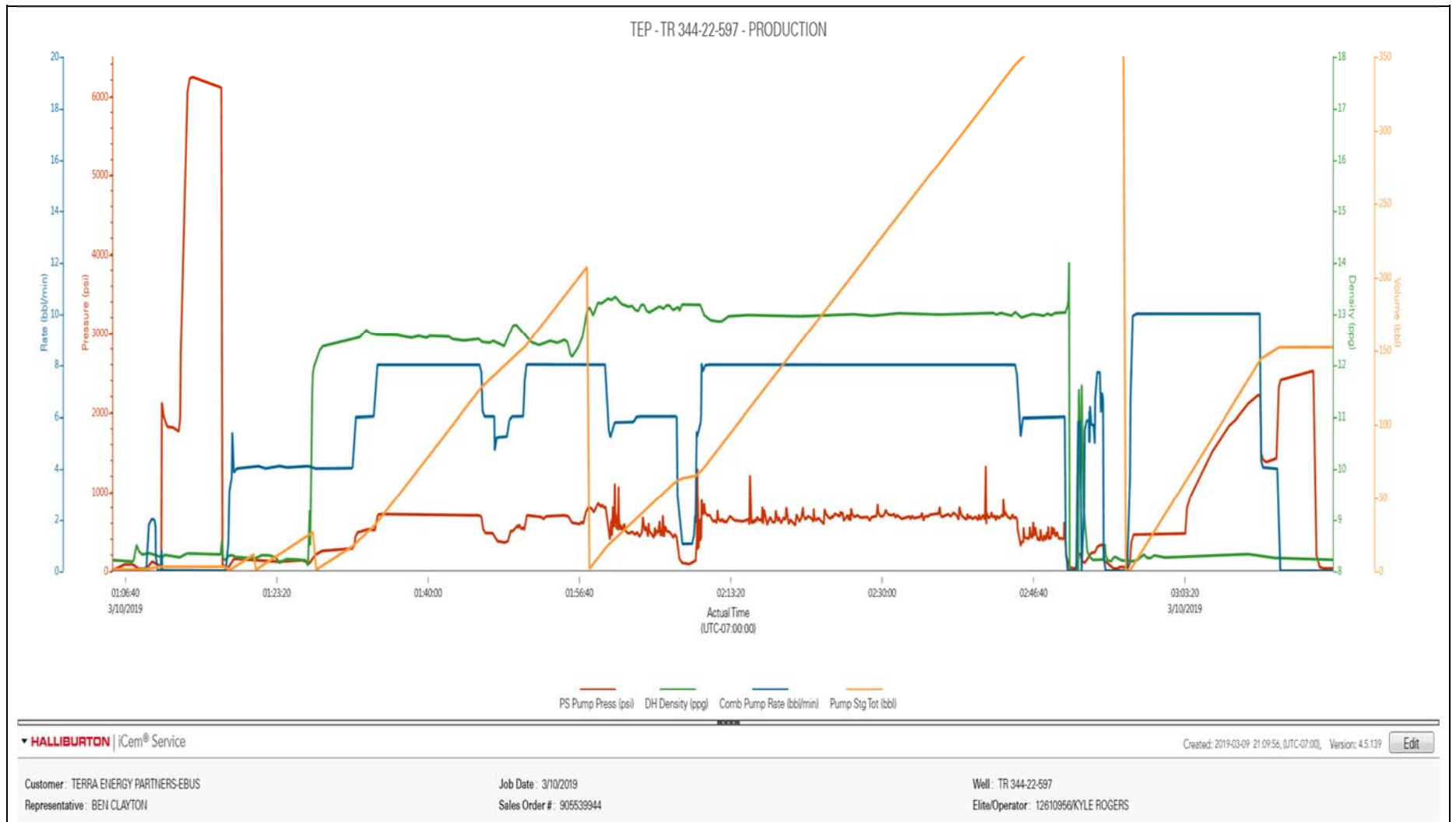
## 2.0 Attachments

### 2.1 TEP TR 344-22-597 PRODUCTION-WITH EVENTS.png





## 2.2 TEP TR 344-22-597 PRODUCTION-WITHOUT EVENTS.png







**Job Information**

Request/Slurry	2539769/1	Rig Name	H&P 271	Date	05/MAR/2019
Submitted By	Aaron Katz	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	TR 344-22-597

**Well Information**

Casing/Liner Size	4.5 in	Depth MD	9461 ft	BHST	116°C / 240°F
Hole Size	8.75 in	Depth TVD	9441 ft	BHCT	77°C / 170°F
Pressure	5909 psi				

**Drilling Fluid Information**

Mud Supplier Name	Baroid	Mud Trade Name	BARADRIL-N	Density	
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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>	<b>Cement Properties</b>		
							Slurry Density	12.5	lbm/gal
							Slurry Yield	1.94	ft3/sack
							Water Requirement	9.62	gal/sack
							Total Mix Fluid	9.62	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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# **Operation Test Results Request ID 2539769/1**

## **Thickening Time - ON-OFF-ON, Request Test ID:36290424**

**07/MAR/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)
170	5909	47	5:25	5:42	5:51	6:53	8	57	15	10

Total sks = 560

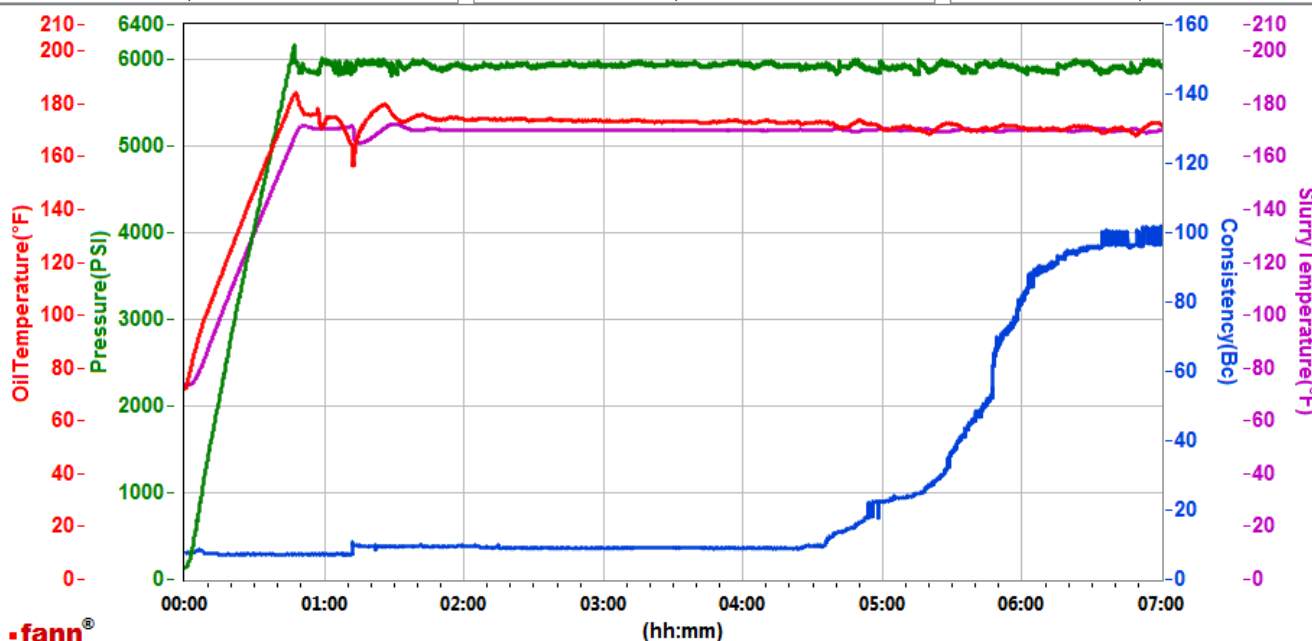
CS0300, Trailer 2878, 420 sks

CS0301, Trailer 3212, 140 sks

Deflection: 10 - 10

### **GRAND JUNCTION**

Fields	Values	Fields	Values	Events	Results
Project Name	2539769-1 H&P 271 Terr	Rig	H&P 271	30 BC	5:25
SW Version	1.0	Casing/Liner Size	4.5 INCH	50 BC	5:42
Test ID	36290424 - TT	Job Type	PRODUCTION CASING	70 BC	5:51
Request ID	2539796-1	Cement Weight	GCC TYPE I-II	100 BC	6:53
Tested by	CT	Comments	Light Weight		
Customer	TERRA ENERGY PARTN	Date Time	3/6/2019 07:23:33.012		
Well No	TR 344-22-597	Temp. Units	degF		



Data File C:\Users\H185329\Desktop\000 Graphs\GJ2539769-1 TERRA BULK PRODUCTION LEAD.tdms

Comments Light Weight

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# HALLIBURTON

## Rockies, Grand Junction

## Lab Results- Tail

### Job Information

Request/Slurry	2539770/1	Rig Name	H&P 271	Date	05/MAR/2019
Submitted By	Aaron Katz	Job Type	Production Casing	Bulk Plant	Grand Junction
Customer	Terra Energy Partners	Location	Garfield	Well	TR 344-22-597

### Well Information

Casing/Liner Size	4.5 in	Depth MD	9461 ft	BHST	116°C / 240°F
Hole Size	8.75 in	Depth TVD	9441 ft	BHCT	77°C / 170°F
Pressure	5909 psi				

### Drilling Fluid Information

Mud Supplier Name	Baroid	Mud Trade Name	BARADRIL-N	Density
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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	13	lbm/gal
							Slurry Yield	2.07	ft3/sack
							Water Requirement	9.42	gal/sack
							Total Mix Fluid	9.42	gal/sack
							Water Source	Fresh Water	
							Water Chloride		

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# **Operation Test Results Request ID 2539770/1**

**Thickening Time - ON-OFF-ON, Request Test ID:36290426**

**06/MAR/2019**

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)
170	5909	47	2:13	2:22	2:30	2:37	18	57	15	24

Total sks =800

CS0299 TR# 8476 350 SKS

CS0302 TR# MT613 350 SKS

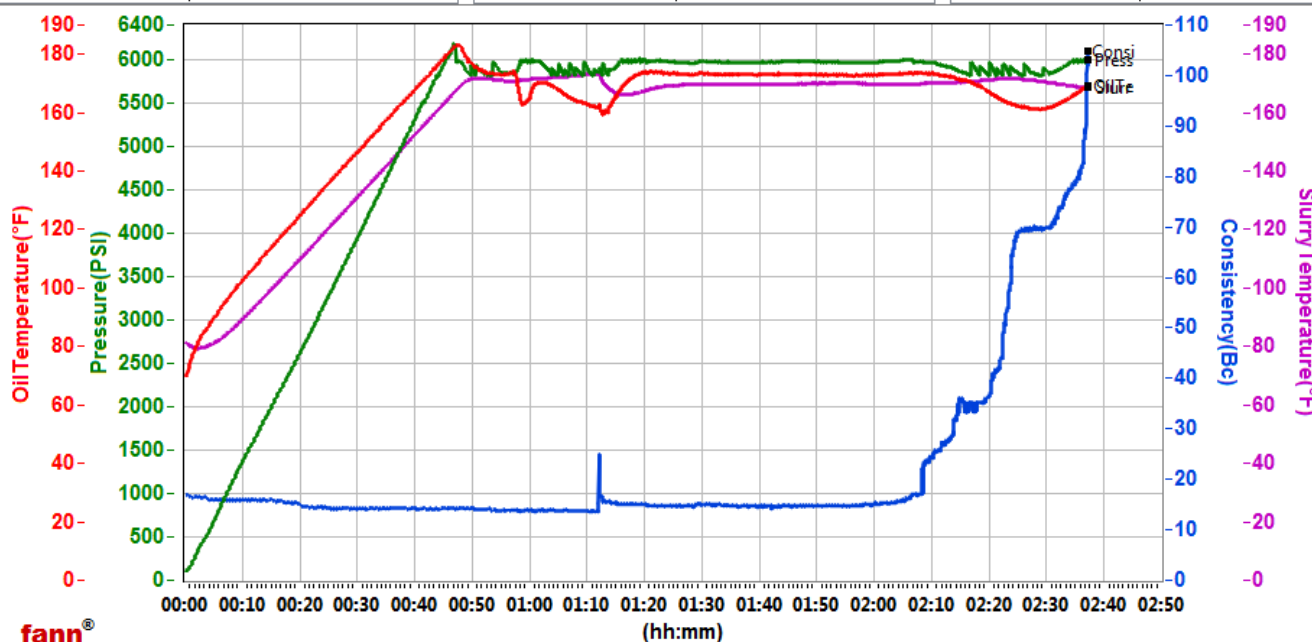
CS0303 TR# 3212 100 SKS

deflected from 12Bc-- > 24Bc--- > 16Bc within one minute

Heat of hydration at 2:09

## **GRAND JUNCTUION**

Fields	Values	Fields	Values	Events	Results
Project Name	TempTest	Rig	H*P 271	30Bc	2:13
SW Version	1.0	Casing/Liner Size	4.5 INCH	50Bc	2:22
Test ID	362 90426-TT	Job Type	PRODUCTION CASING	70Bc	2:30
Request ID	2539770-1	Cement Weight	GCC TYPE I-II	100Bc	2:37
Tested by	DS/LC	Comments	Light Weight		
Customer	TERRA ENERGY PARTN	Date Time	3/6/2019 10:38:32.647		
Well No	TR 344-22-597	Temp. Units	degF		



Data File C:\Users\hx25273\Desktop\HPHT Graphs\GJ2539770-1TERRA PRODUCTION BULK TAIL.tdms

Comments Light Weight

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