



# Caerus

**Well Name: FED #15D-13-496**

**API #: 05-045-24174**

**Job Type: Surface**

**Date Job Completed: 1/10/2020**

**Quote #: QUO-40938**

**Execution #: EXC-23802**



# Caerus

Attention: Mr. Cole Walton | (720) 880-6325 | [cwalton@caerusoilandgas.com](mailto:cwalton@caerusoilandgas.com)

Caerus | 1001 17th Street, Suite 1600 | Denver, CO 80202

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Dear Mr. Walton,

Thank you for the opportunity to provide cementing services on this well. BJ Services strives to achieve complete customer satisfaction. If you have any questions regarding the services or data provided, please contact BJ Services at any time.

Sincerely,

Zen Keith  
Field Engineer | (307) 757-7178 | [zen.keith@bjservices.com](mailto:zen.keith@bjservices.com)

Field Office 28730 US-6, Rifle, CO 81650  
Phone: (970) 632-2412

Sales Office 999 18th St. Suite 1200 Denver, CO 80202  
Phone: (281) 408-2361

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# Stage-1 Cementing Treatment Report

SERVICE SUPERVISOR	Francisco Castillo	FORMATION	
CLIENT FIELD REPRESENTATIVE	Beaude Oaks	RIG	H&P 329
DISTRICT	Rifle, CO	COUNTY	GARFIELD
SERVICE	Cementing	STATE / PROVINCE	CO

## WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	EXCESS (%)	GRADE	THREAD
Previous Casing	19.50	20.00	52.73	130.00			
Open Hole	14.75			2,500.00	25.00		
Open Hole	14.75			3,000.00			
Casing	8.92	9.63	36.00	2,951.47		J-55	LTC

## HARDWARE

Bottom Plug Used?	No	Tool Type	Float Collar
Top Plug Used?	Yes	Tool Depth (ft)	2,906.72
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3520.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	2816.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Type	Bow	Job Pumped Through	Manifold
Landing Collar Depth (ft)	2,907	Top Connection Thread	8RD
Centralizers Quantity		Top Connection Size	9.625

## CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	10
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	228.00	10 sec SGS	5
Circulation Rate (bpm)	8.50	10 min SGS	12
Circulation Volume (bbls)	27.00	30 min SGS	20
Lost Circulation Prior to Cement Job	Yes	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	9.00	Gas Present	No
PV Mud In	6		

## TEMPERATURE

Ambient Temperature (°F)	17.00	Slurry Cement Temperature (°F)	55.00
Mix Water Temperature (°F)	51.00	Flow Line Temperature (°F)	85.00

## FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H <sub>2</sub> O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer	IntegraGuard STAR Spacer	8.6000			1,071.00				40.0000
Lead Slurry	Beaded Lead (14645-8)	10.0000	3.8188	17.43	1,400.00	1,100.00	246	937.0000	166.7000
Tail Slurry	BJCem S100.3.01D	12.5000	2.2255	12.59	2,500.00	500.00	161	358.0000	63.7000
Displacement	Displacement	8.3300			0.00			0.0000	224.6000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Spacer	IntegraGuard STAR Spacer	IntegraGuard STAR LT concentrate	10.0000	PPB
Spacer	IntegraGuard STAR Spacer	Fresh Water	100.0000	PCT
Spacer	IntegraGuard STAR Spacer	IntegraGuard STAR PLUS 3K	20.0000	PPB
Lead Slurry	Beaded Lead (14645-8)	IntegraCare A-12	0.4000	BWOB
Lead Slurry	Beaded Lead (14645-8)	Cement Additive, Sodium Metasilicate A-2	1.0000	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	BONDING AGENT, BA-90	5.0000	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	Beaded Lead (14645-8)	IntegraSeal POLI	0.1300	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	EXTENDER, LW-5E	37.0000	BWOB
Lead Slurry	Beaded Lead (14645-8)	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	Beaded Lead (14645-8)	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Tail Slurry	BJCem S100.3.01D	ACCELERATOR, SALT, CHLORIDE, CALCIUM, A-7P, PELLETS	2.0000	LBS/SK
Tail Slurry	BJCem S100.3.01D	Cement Additive, Sodium Metasilicate A-2	2.0000	LBS/SK

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Tail Slurry	BJCem S100.3.01D	IntegraSeal POLI	0.1300	LBS/SK
Tail Slurry	BJCem S100.3.01D	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Tail Slurry	BJCem S100.3.01D	CEMENT, ASTM TYPE III	100.0000	PCT
Tail Slurry	BJCem S100.3.01D	FOAM PREVENTER, FP-25	0.3000	BWOB

### TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)	ANNULUS PRESS (psi)	COMMENTS
1/10/2020 3:02:00 AM	IntegraGuard STAR Spacer	5.00	40.00	163.00		
1/10/2020 3:16:00 AM	Beaded Lead (14645-8)	5.00	166.70	181.00		
1/10/2020 3:51:00 AM	BJCem S100.3.01D	5.00	63.70	217.00		
1/10/2020 4:08:00 AM	Displacement	6.00	224.60	351.00		

### MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	163.00	351.00	228.00
Rate (bpm)	5.00	6.00	5.25

### DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	224.60	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	224.60	Amt of Spacer to Surface	0.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	1.00
Bump Plug Pressure (psi)	673.00	Total Volume Pumped (bbls)	496.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	No
Cement Returns During Job	None	Lost Circulation During Cement Job	Yes

# Stage-2 Cementing Treatment Report

SERVICE SUPERVISOR	Francisco Castillo	FORMATION	
CLIENT FIELD REPRESENTATIVE	Beaude Oaks	RIG	H&P 329
DISTRICT	Rifle, CO	COUNTY	GARFIELD
SERVICE	Cementing	STATE / PROVINCE	CO

## WELL GEOMETRY

TYPE	ID (in)	OD (in)	WEIGHT (lb/ft)	MD (ft)	EXCESS (%)	GRADE	THREAD
Previous Casing	19.50	20.00	52.73	130.00			
Open Hole	14.75			1,339.40	25.00		
Casing	8.92	9.63	36.00	1,339.40		J-55	LTC

## HARDWARE

Bottom Plug Used?	No	Tool Type	DV Tool
Top Plug Used?	Yes	Tool Depth (ft)	1,339.40
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	3520.00
Top Plug Size	9.625	Max Casing Pressure - Operated (psi)	2816.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Type	Bow	Job Pumped Through	Manifold
Landing Collar Depth (ft)	1,339	Top Connection Thread	8RD
		Top Connection Size	9.625

## CIRCULATION PRIOR TO JOB

Well Circulated By	Rig	YP Mud In	10
Circulation Prior to Job	Yes	Solids Present at End of Circulation	No
Circulation Time (min)	27.00	10 sec SGS	5
Circulation Rate (bpm)	3.50	10 min SGS	12
Circulation Volume (bbls)	95.00	30 min SGS	20
Lost Circulation Prior to Cement Job	Yes	Flare Prior to / during the Cement Job	No
Mud Density In (ppg)	9.00	Gas Present	No
PV Mud In	6		

## TEMPERATURE

Ambient Temperature (°F)	17.00	Slurry Cement Temperature (°F)	55.00
Mix Water Temperature (°F)	51.00	Flow Line Temperature (°F)	85.00

## FLUID DETAILS

FLUID TYPE	FLUID NAME	DENSITY (ppg)	YIELD (Cu Ft/sk)	H <sub>2</sub> O REQ (gals/sk)	PLN TOP FLD (ft)	LENGTH (ft)	VOL (sk)	VOL (Cu Ft)	VOL (bbls)
Spacer	Water	8.3300			1,071.00				40.0000
Lead Slurry	Beaded Lead (14645-8)	10.0000	3.8188	17.43	0.00	1,400.00	336	1284.0000	228.5000
Displacement	Displacement	8.3300			0.00			0.0000	103.5000

FLUID TYPE	FLUID NAME	COMPONENT	CONCENTRATION	UOM
Lead Slurry	Beaded Lead (14645-8)	Cement Additive, Sodium Metasilicate A-2	1.0000	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	BONDING AGENT, BA-90	5.0000	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	CEMENT EXTENDER, GYPSUM, A-10	5.0000	BWOB
Lead Slurry	Beaded Lead (14645-8)	CEMENT, ASTM TYPE III	100.0000	PCT
Lead Slurry	Beaded Lead (14645-8)	IntegraSeal POLI	0.1300	LBS/SK
Lead Slurry	Beaded Lead (14645-8)	FOAM PREVENTER, FP-25	0.3000	BWOB
Lead Slurry	Beaded Lead (14645-8)	EXTENDER, LW-5E	37.0000	BWOB
Lead Slurry	Beaded Lead (14645-8)	IntegraCare A-12	0.4000	BWOB

## TREATMENT SUMMARY

TIME	FLUID	RATE (bpm)	FLUID VOL (bbls)	PIPE PRESS (psi)	ANNULUS PRESS (psi)	COMMENTS
1/10/2020 6:18:00 AM	Water	5.00	40.00	173.00		
1/10/2020 6:25:00 AM	Beaded Lead (14645-8)	5.50	228.50	197.00		
1/10/2020 7:16:00 AM	Displacement	5.50	108.20	227.00		

## MIN / MAX / AVG PRESSURE AND RATES

	MIN	MAX	AVG
Pressure (psi)	173.00	227.00	199.00
Rate (bpm)	5.00	5.50	5.33

## DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amt of Cement Returned / Reversed	0.00
Calculated Displacement Vol (bbls)	103.50	Method Used to Verify Returns	Visual
Actual Displacement Vol (bbls)	103.50	Amt of Spacer to Surface	0.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amt Bled Back After Job	1.00
Bump Plug Pressure (psi)	1950.00	Total Volume Pumped (bbls)	372.00
Were Returns Planned at Surface	Yes	Top Out Cement Spotted	Yes
Cement Returns During Job	None	Lost Circulation During Cement Job	Yes



# BJ Cementing Event Log

Surface - Rifle, CO - Francisco Castillo

SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
1	01/09/2020 19:00	Callout					ON LOCATION AT MIDNIGHT
2	01/09/2020 20:35	Depart for Location					LEAVE THE YARD
3	01/09/2020 22:20	Arrive on Location					ARRIVE ON LOCATION, RIG RUNNING CASING
4	01/09/2020 22:30	Rig Up					RIG UP MEETING, RIG UP
5	01/10/2020 01:40	Other (See comment)					RIG LAND CASING, RIG CIRCULATE CASING CAPACITY AT 8.5 BPM
6	01/10/2020 01:55	STEACS Briefing					PRE-JOB SAFETY MEETING
7	01/10/2020 02:58	Pressure Test				3900.00	PRESSURE TEST LINES
8	01/10/2020 03:02	Pump Spacer	8.6000	5.00	40.00	163.00	WEIGHTED SPACER
9	01/10/2020 03:16	Pump Lead Cement	10.0000	5.00	50.00	169.00	LEAD 246SKS/167BBLS AT 10PPG, 3.81YLD, 17.43GPS
10	01/10/2020 03:26	Pump Lead Cement	10.0000	5.00	50.00	173.00	100 BBLS LEAD CEMENT PUMPED
11	01/10/2020 03:36	Pump Lead Cement	10.0000	5.00	67.00	181.00	167 BBLS LEAD CEMENT PUMPED
12	01/10/2020 03:51	Pump Tail Cement	12.5000	5.00	64.00	217.00	TAIL 161SKS/64BBLS AT 12.5PPG, 2.22YLD, 12.59GPS
13	01/10/2020 04:03	End Pumping					SHUTDOWN, DROP TOP PLUG, NO RETURNS
14	01/10/2020 04:08	Pump Displacement	8.3400				DISPLACEMENT FRESH WATER
15	01/10/2020 04:18	Pump Displacement	8.3400	6.00	50.00	195.00	50 BBLS DISPLACEMENT PUMPED
16	01/10/2020 04:27	Pump Displacement	8.3400	6.00	50.00	183.00	100 BBLS DISPLACEMENT PUMPED
17	01/10/2020 04:38	Pump Displacement	8.3400	5.70	50.00	201.00	150 BBLS DISPLACEMENT PUMPED
18	01/10/2020 04:48	Pump Displacement	8.3400	5.70	64.50	347.00	214.5 BBLS DISPLACEMENT PUMPED

Client: Caerus Operating LLC

Well Name / API: FED #15D-13-496 / 05-045-24174

Well MD: 3000

Quote #: QUO-40938-Y4C8J7

Plan #: ORD-23802-K0G0L2

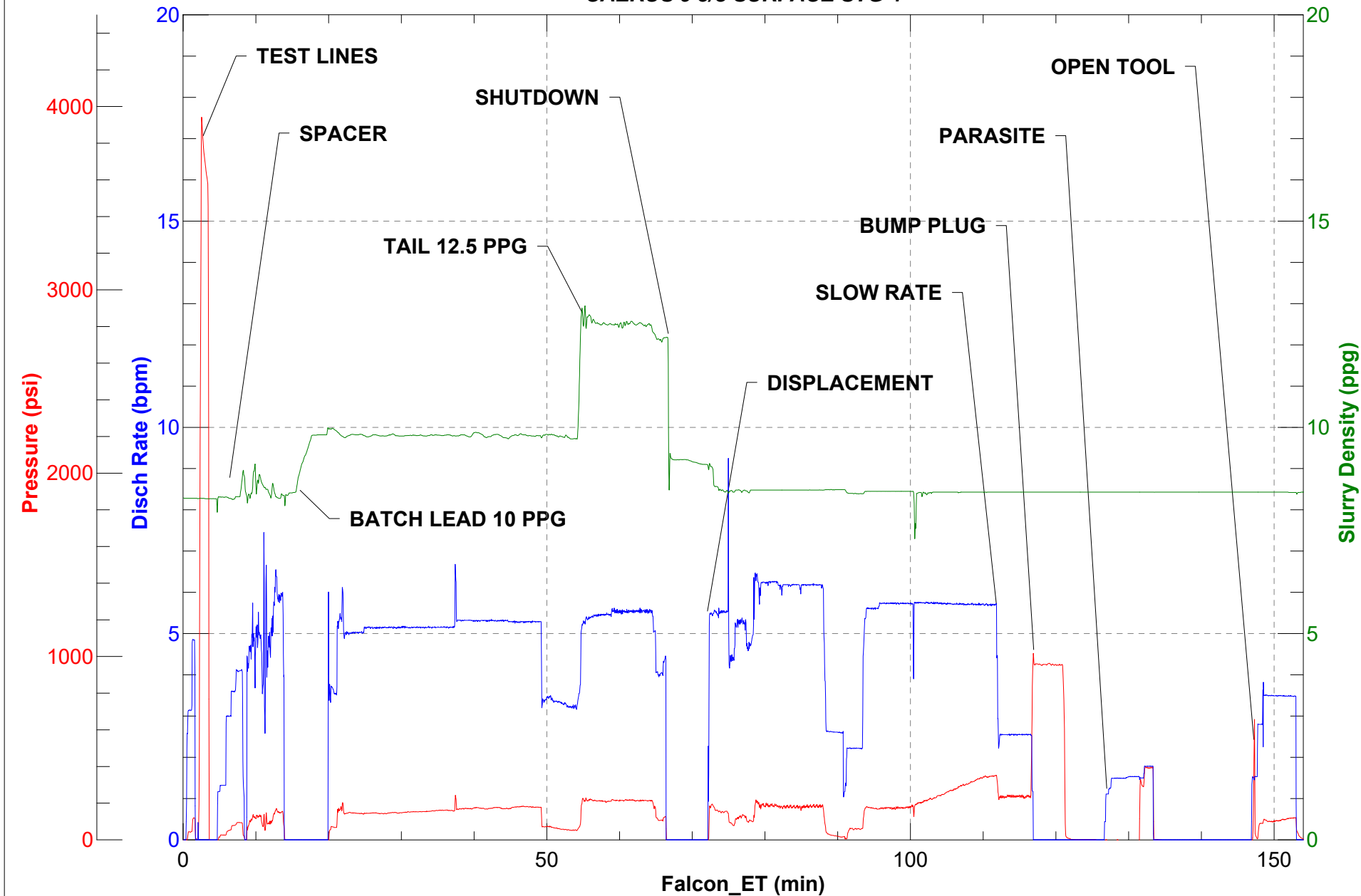
Execution #: EXC-23802-K0G0L202



SEQ	START DATE / TIME	EVENT	DENSITY (ppg)	PUMP RATE (bpm)	PUMP VOL (bbls)	PIPE PRESSURE (psi)	COMMENTS
19	01/10/2020 04:49	Pump Displacement	8.3400	2.50	10.00	351.00	SLOW RATE
20	01/10/2020 04:53	Land Plug				955.00	LAND TOP PLUG
21	01/10/2020 04:58	Check Floats					FLOATS HELD, 1 BBL FLOW BACK
22	01/10/2020 05:03	Other (See comment)	8.4000	1.50	10.00	365.00	SUGAR WATER THROUGH PARASITE, BROKE AT 365 PSI
23	01/10/2020 05:12	Other (See comment)					DROP DV TOOL OPENING DEVICE
24	01/10/2020 05:22	Other (See comment)	8.3400	1.50	20.00	673.00	OPEN DV TOOL, PUMPED 20 BBLS WATER
25	01/10/2020 06:00	STEACS Briefing					PRE-JOB SAFETY MEETING
26	01/10/2020 06:18	Pump Spacer	8.3400	5.00	40.00	173.00	WATER SPACER
27	01/10/2020 06:25	Pump Lead Cement	10.0000				LEAD 336SKS/228BBLS AT 10PPG, 3.81YLD, 17.43GPS
28	01/10/2020 06:35	Pump Lead Cement	10.0000	5.50	50.00	197.00	50 BBLS LEAD CEMENT PUMPED
29	01/10/2020 06:45	Pump Lead Cement	10.0000	5.00	50.00	181.00	100 BBLS LEAD CEMENT PUMPED
30	01/10/2020 06:55	Pump Lead Cement	10.0000	5.00	50.00	163.00	150 BBLS LEAD CEMENT PUMPED
31	01/10/2020 07:05	Pump Lead Cement	10.0000	5.00	78.00	183.00	228 BBLS LEAD CEMENT PUMPED
32	01/10/2020 07:15	End Pumping					SHUTDOWN, DROP CLOSING PLUG
33	01/10/2020 07:16	Pump Displacement	8.3400	5.50	50.00	185.00	PUMP DISPLACEMENT
34	01/10/2020 07:26	Pump Displacement	8.3400	5.50	43.50	337.00	93.5 BBLS DISPLACEMENT PUMPED
35	01/10/2020 07:33	Pump Displacement	8.3400	3.50	10.00	187.00	SLOW RATE
36	01/10/2020 07:36	Land Plug				1950.00	LANDED CLOSING PLUG, PARTIAL RETURNS, NO CEMENT TO SURFACE
37	01/10/2020 07:42	Check Floats					DV TOOL CLOSED, 1 BBL FLOW BACK
38	01/10/2020 07:50	Other (See comment)					WINTERIZE EQUIPMENT, GET READY FOR TOPOUT
39	01/10/2020 14:33	Top Out	12.5000	2.70	115.00	401.00	291SKS/115BBLS TOPOUT AT 12.5 PPG
40	01/10/2020 15:40	Pumping Cement	12.5000	2.00	5.00	177.00	13SKS/5BBLS PREVIOUS PARASITE CMT AT 12.5 PPG
41	01/10/2020 15:45	End Pumping					SHUTDOWN, WINTERIZE PUMP
42	01/10/2020 16:15	Rig Down					RIG DOWN MEETING, RIG DOWN
43	01/10/2020 19:00	Leave Location					AAR JM MEETING, LEAVE LOCATION
44	01/10/2020 19:01	Other (See comment)					TOTAL TOPOUT, 304SKS/120BBLS

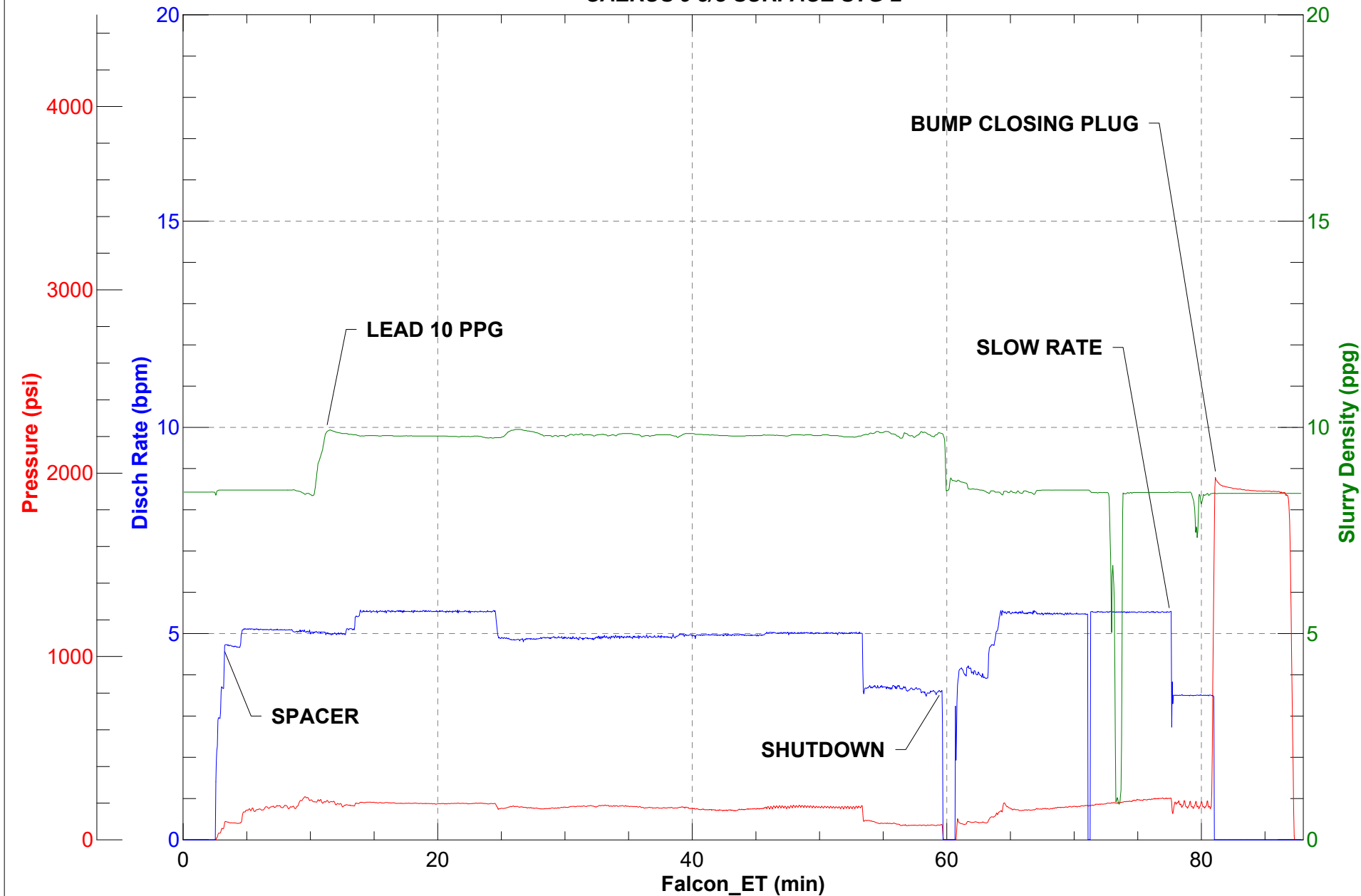


CAERUS 9 5/8 SURFACE STG-1





CAERUS 9 5/8 SURFACE STG-2





## CAERUS TOPOUT

