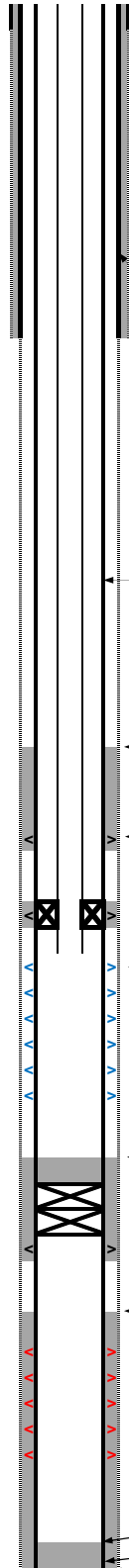


Laramie Energy

SWD Wellbore Schematic

Not to Scale



Well Name Cascade Creek 604-12-13
Diagram Date 2018-May-02
Surface Location 2804 FNL & 396 FWL SEC 4 T6S R97W
Btm Hole Location 2843 FNL & 160 FWL SEC 4 T6S R97W (estimated from gyro dated 5/29/2011)
Field Grand Valley
County Garfield
State Colorado
API 05-045-13465-00
KB Elevation 8653.5
KB Height 25.0
GL Elevation 8628.5

Conductor 16" @ 85
Cement -

Surface Hole 14-3/4"
Surface Casing 9-5/8" 36# K55 @ 2776
Cement Lead: 876 sx Premium Lite II @ 11.6 ppg
 Tail: 250 sx Class G @ 15.8 ppg

Production Hole 8-3/4"
Production Casing 5-1/2" 17# I80 @ 9298
Cement Lead: 689 sx Premium Lite II @ 12 ppg
 Tail: 544 sx 50/50 Poz Class G @ 14.2 ppg

Wellbore Equipment

Description	Length	Depth
KB	25.00	25.00
7-1/16" 5K tbq hanger	0.81	25.81
194 jts 2-7/8" 6.5#	6130.83	6156.64
x-over 2-7/8" x 2-3/8"	0.72	6157.36
2-3/8" on/off	1.58	6158.94
2-3/8" pup	10.25	6169.19
5-1/2" Hornet pkr	7.85	6177.04
x-over 2-7/8" x 2-3/8"	0.65	6177.69
2-3/8" pup	10.02	6187.71
2-3/8 X nipple	0.95	6188.66
2-3/8" perf pup	8.10	6196.76
2-3/8" XN	1.04	6197.80
mule shoe	0.77	6198.57
slack off = EOT	-4.10	6194.47

TOC Squeeze 2 5702-5932 per CBL dated 12/6/2005
Squeeze Cement 12/1/2005

10 bbls Class G @ 15.8 ppg
 10 bbls Poz @ 13.5 ppg

Squeeze Perfs 5920-5922

Squeeze 3 6140-6220 per CBL dated 3/20/2018

Squeeze Cement 7 bbls Poz @ 13.5 ppg
 4 bbls Class G @ 15.8 ppg

Squeeze Perfs 6180

Injection Perfs
 6284-6286 Ohio Creek
 6344-6346 Ohio Creek
 6408-6410 Ohio Creek
 6494-6496 Ohio Creek
 6548-6550 Ohio Creek
 6700-6702 Williams Fork

Squeeze 1 6864-7249 per CBL dated 12/6/2005
Squeeze Cement 11/29/2005

10 bbls Poz @ 13.5 ppg
 30 bbls Class G @ 15.8 ppg

Squeeze Perfs 7210-7212

TOC Primary 7325 per CBL dated 11/6/2005

Completion	Stage	Depth
11/23/2005	5	7468-7717
11/23/2005	4	7787-8002
11/22/2005	3	8063-8249
11/21/2005	2	8313-8546
11/21/2005	1	8599-8929

PBTD = FC 9252
SHOE 9298
TD 9320

Geological Tops

Wasatch G	4676
Fort Union	4942
Ohio Creek	6193
Williams Fork	6558
Top Gas	7121
Cameo	8748
Rollins	9079

Laramie Energy

Cascade Creek 604-12-13

05-045-13465

Top Perf MD 6284

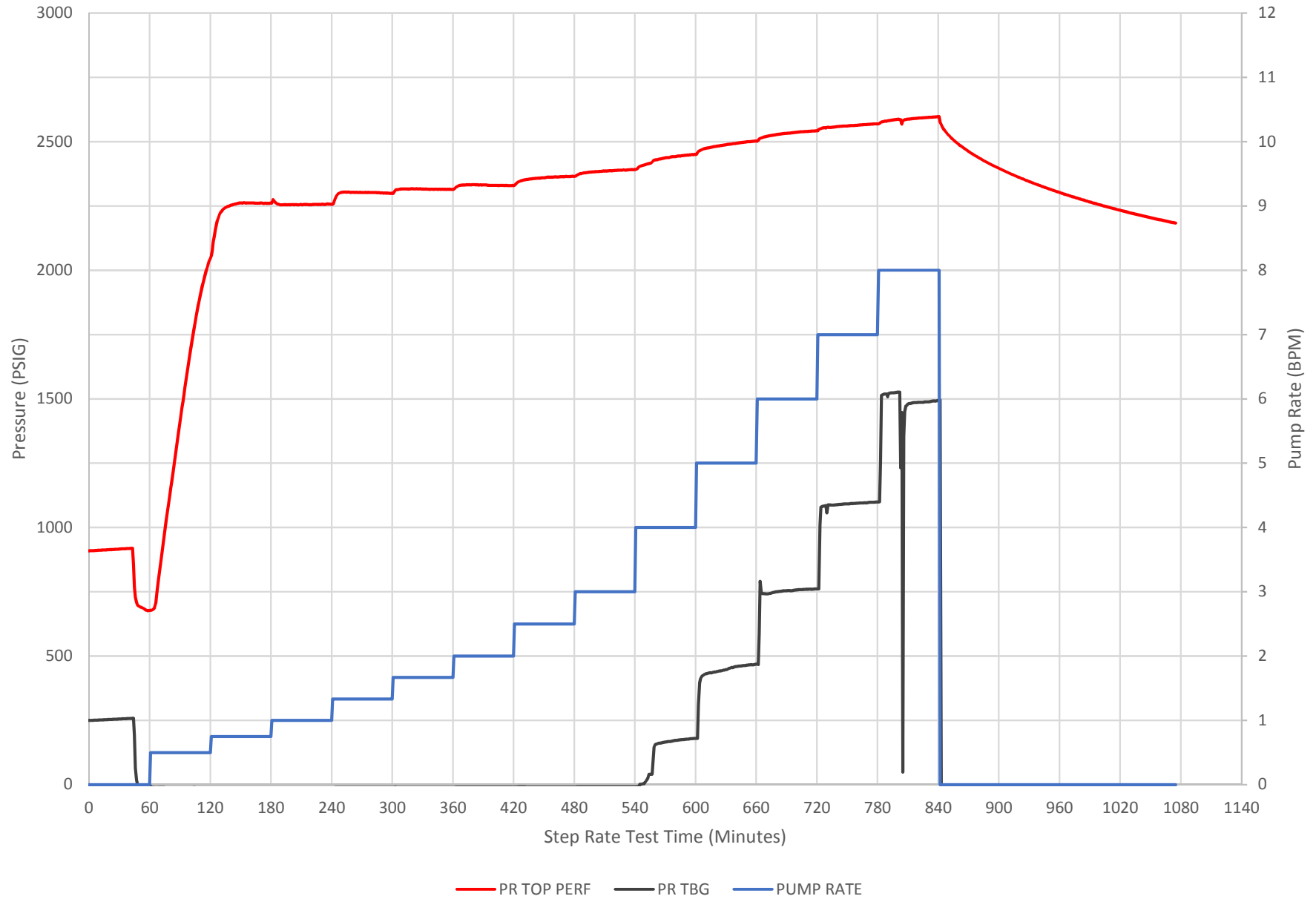
Top Perf TVD 6255

Step Rate Test Date 4/11/2018

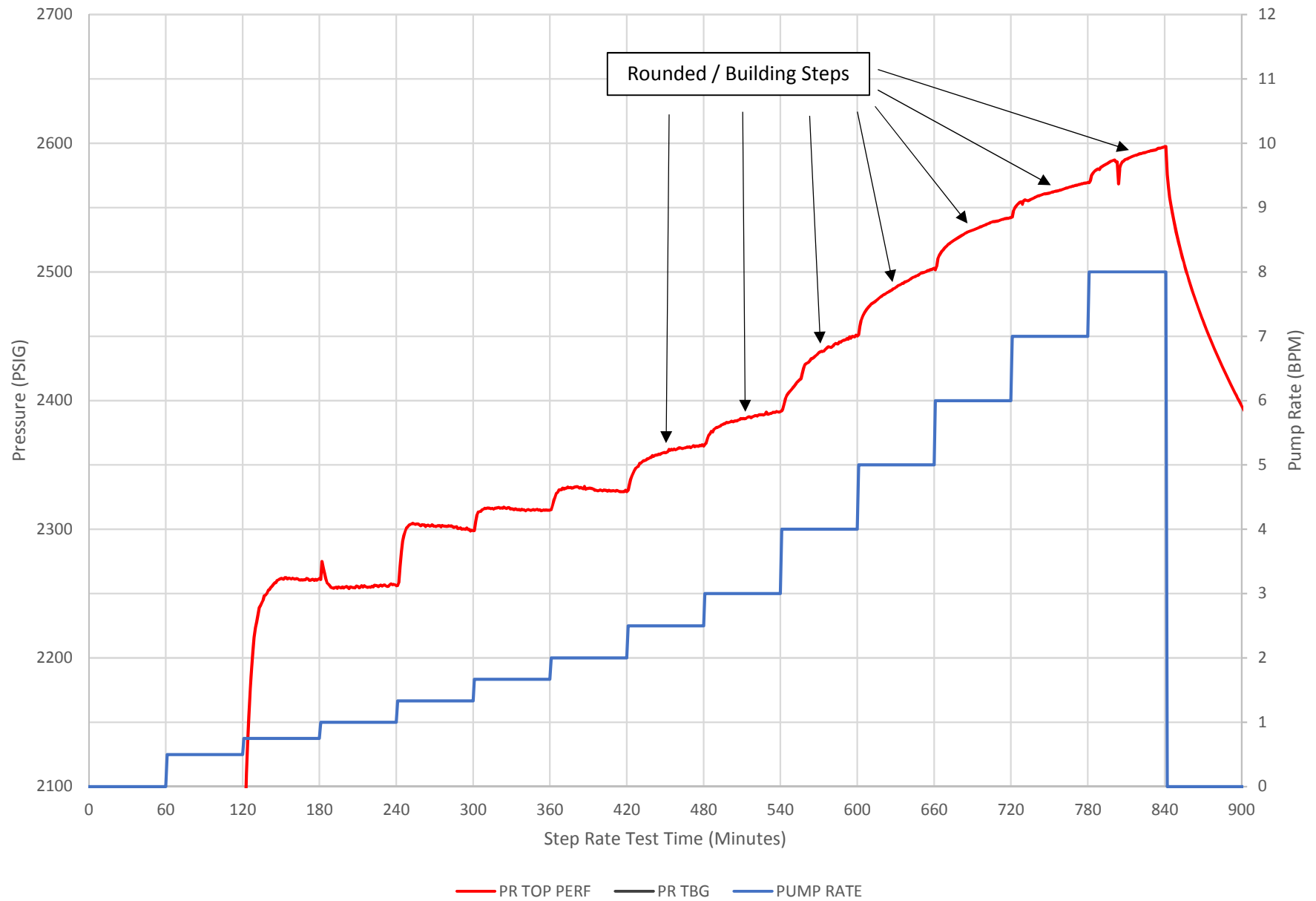
Step Rate Test Data Summary

Step Duration (min)	Pump Rate (BPM)	Pump Rate (BPD)	Surface Tubing Pressure (psig)	Pressure Top Perf (psig)	Pressure Gradient Top Perf (psi/ft)	Notes
60	0.00	0	0	1428	0.228	
60	0.50	720	0	2020	0.323	
60	0.75	1080	0	2227	0.356	
60	1.00	1440	0	2221	0.355	
60	1.33	1915	0	2266	0.362	
60	1.67	2405	0	2281	0.365	
60	2.00	2880	0	2295	0.367	
60	2.50	3600	0	2332	0.373	
60	3.00	4320	0	2358	0.377	
60	4.00	5760	180	2417	0.386	
60	5.00	7200	469	2469	0.395	
60	6.00	8640	761	2509	0.401	
60	7.00	10080	1099	2536	0.405	
60	8.00	11520	1496	2564	0.410	
60	9.00	12960	1960	2596	0.415	(estimated)
60	10.00	14400	2509	2627	0.420	(estimated)

Cascde Creek 604-12-13 Step Rate Test



Cascade Creek 604-12-13 Step Rate Test



604-12-13 SRT Analysis

