Ninth Annual QUIKLOOK Users Group Meeting

Marion, MA
August 19 & 20th, 2015

Presented by:
Joe Gomes – Field Service Manager

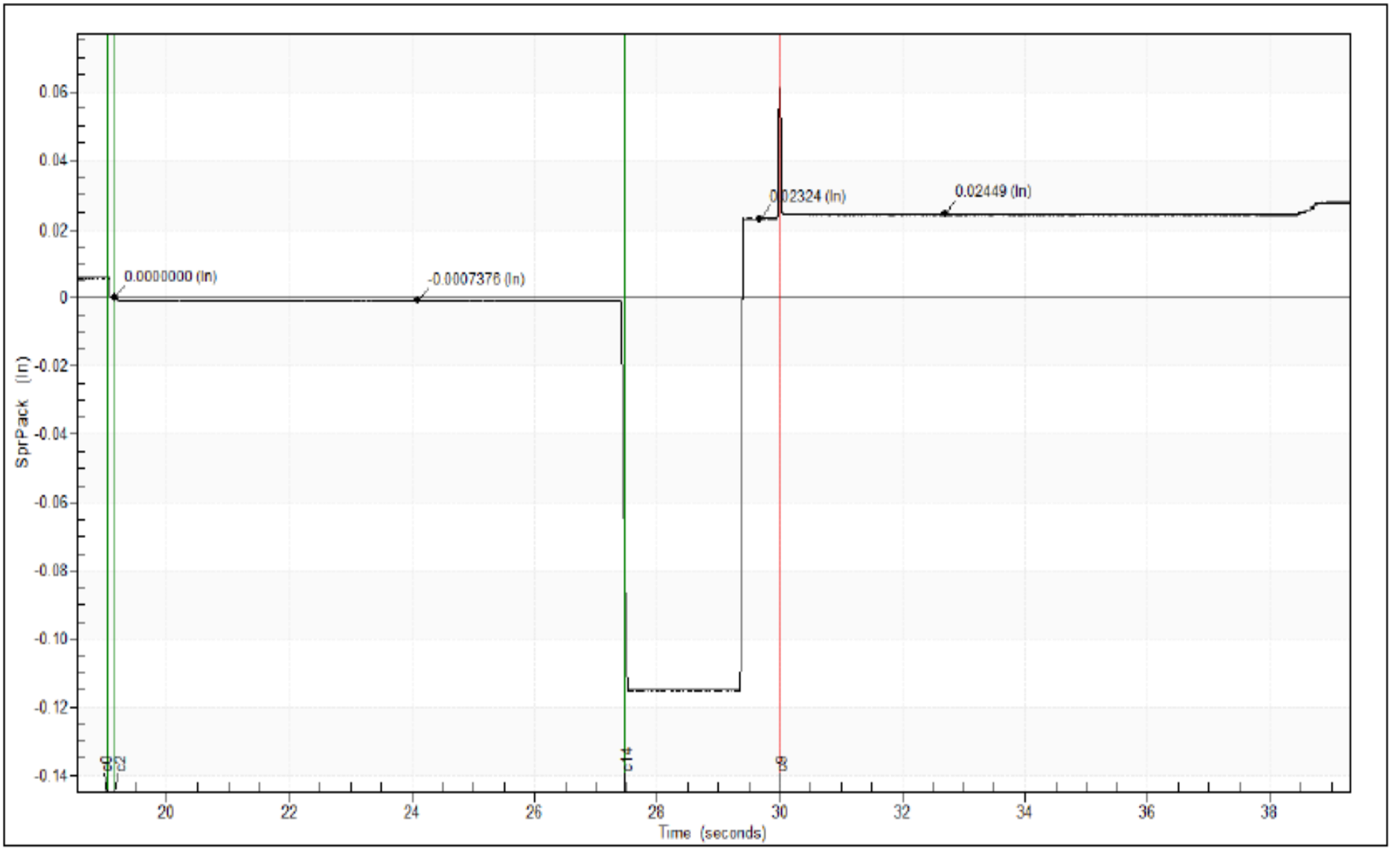
TELEDYNE TEST SERVICES
Everywhereyoulook™

Spring pack Preload

Trace Anomalies – Spring pack preloaded

- SMB-000 with a 0101-091 spring pack
- Conval ¾” Globe
- This valve had no area on the stem for a QSS or room for a thread cut
- As found data showed the pack was pre-loaded by 0.025”
- As found actuator torque required to determine operability

Trace Anomalies – Spring pack preloaded



Trace Anomalies – Spring pack preloaded

- What Happens to the actuator torque when there is a spring pack gap?

- What happens to the actuator torque when the spring pack is pre-loaded

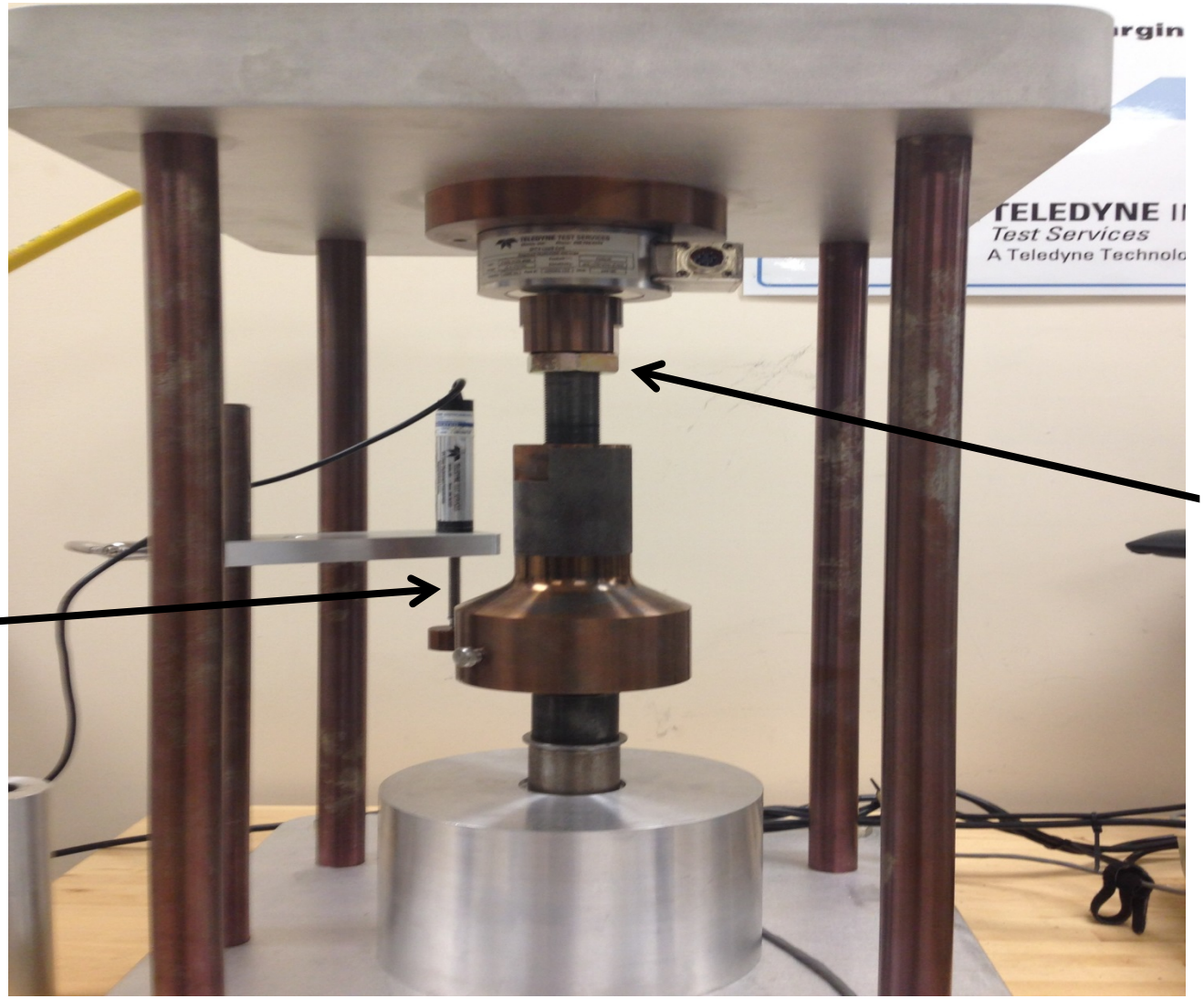
Trace Anomalies – Spring pack preloaded

Actions taken to prove this theory

1. The spring pack was removed after as found data was acquired.

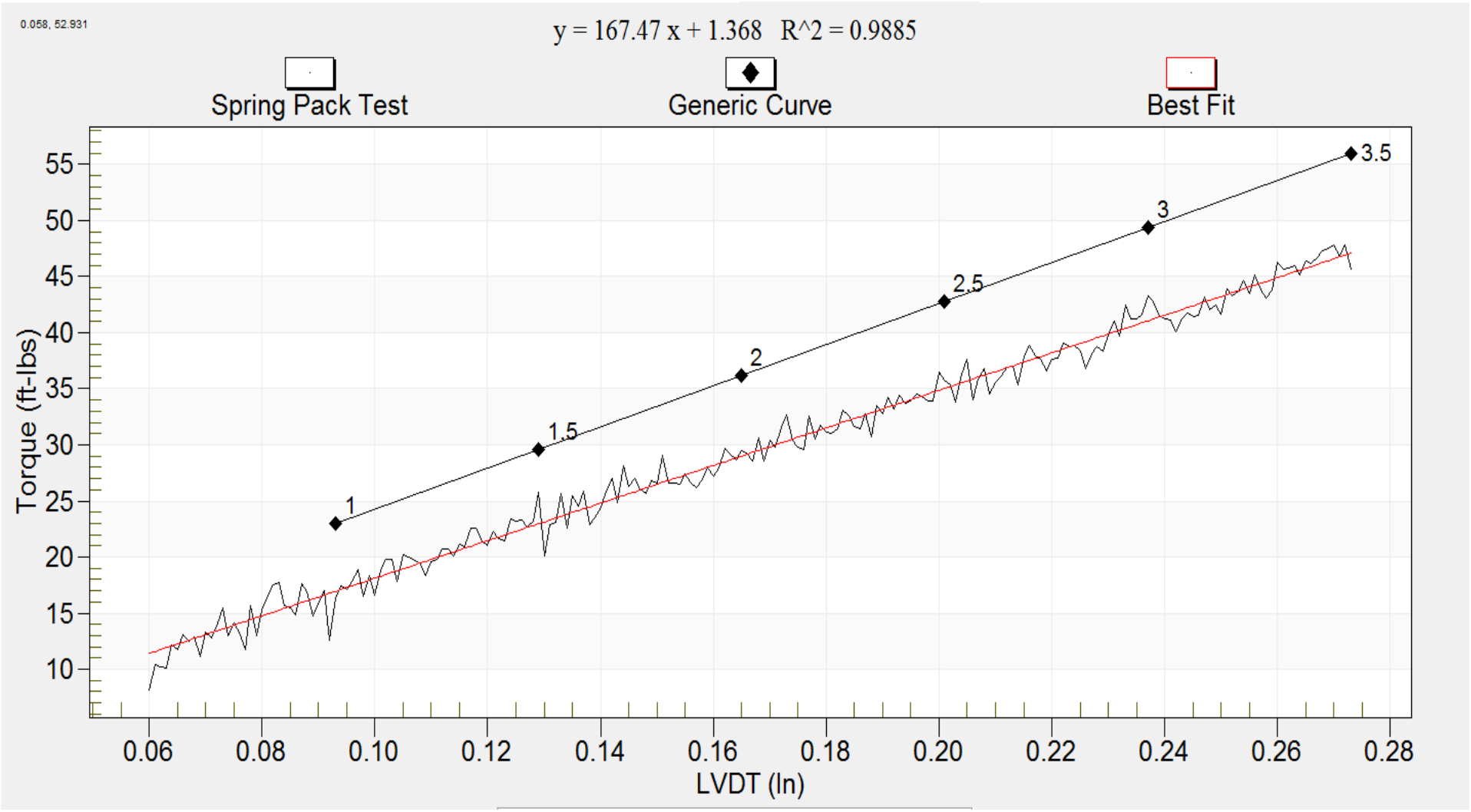
2. The spring pack was set up in the Teledyne Test stand as designed, the LVDT was zeroed, then the jacking screw was adjusted to compress the Belleville springs 0.025” to simulate the preload and then calibrated normally.

3. Then the 0.025 preload was removed and Tested normally.


LVDT
Jack Rod

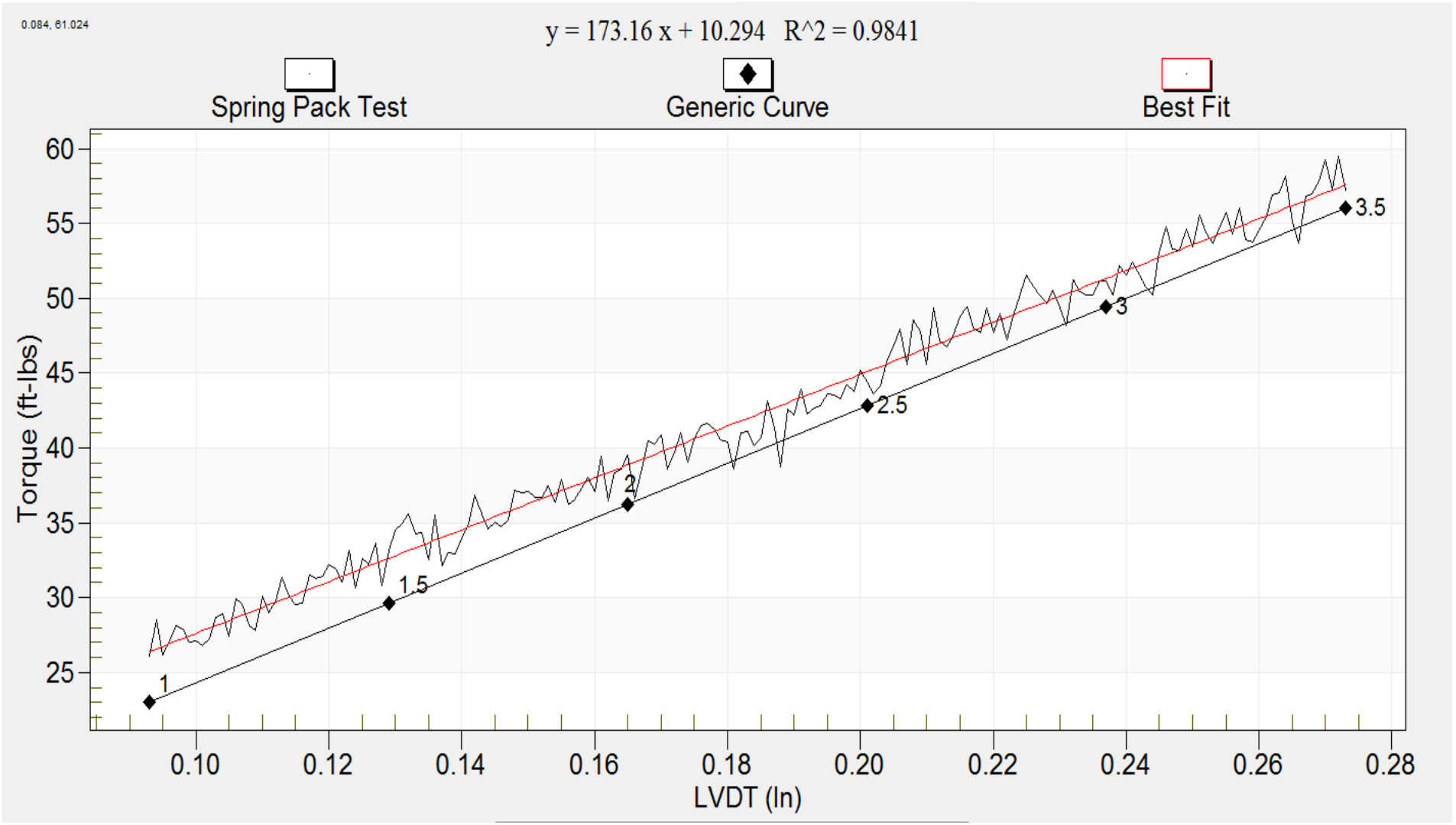
Trace Anomalies – Spring pack preloaded

The spring pack calibration with 0.025” preload



Trace Anomalies – Spring pack preloaded

The spring pack calibration with no preload

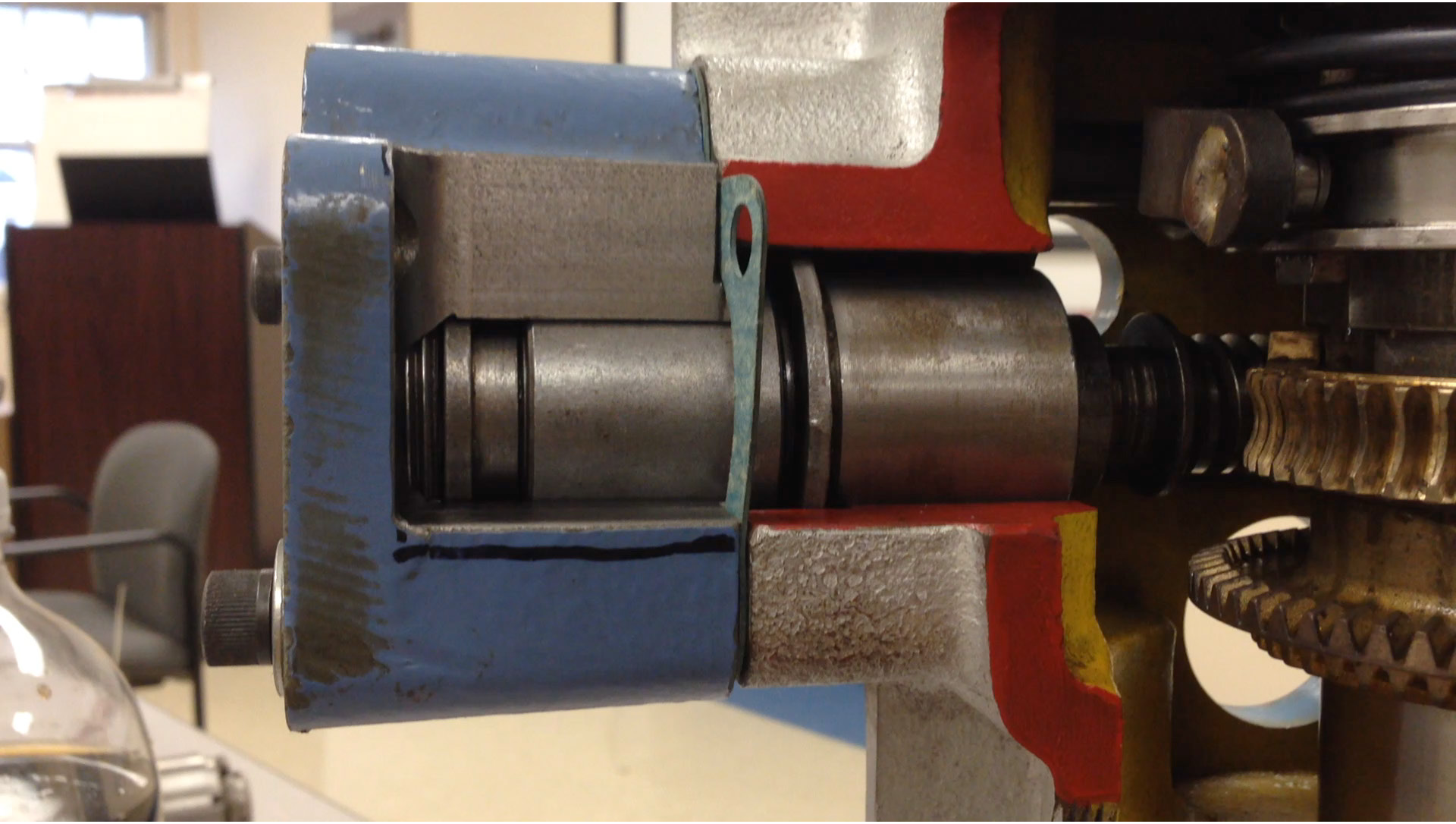


Trace Anomalies – Spring pack preloaded

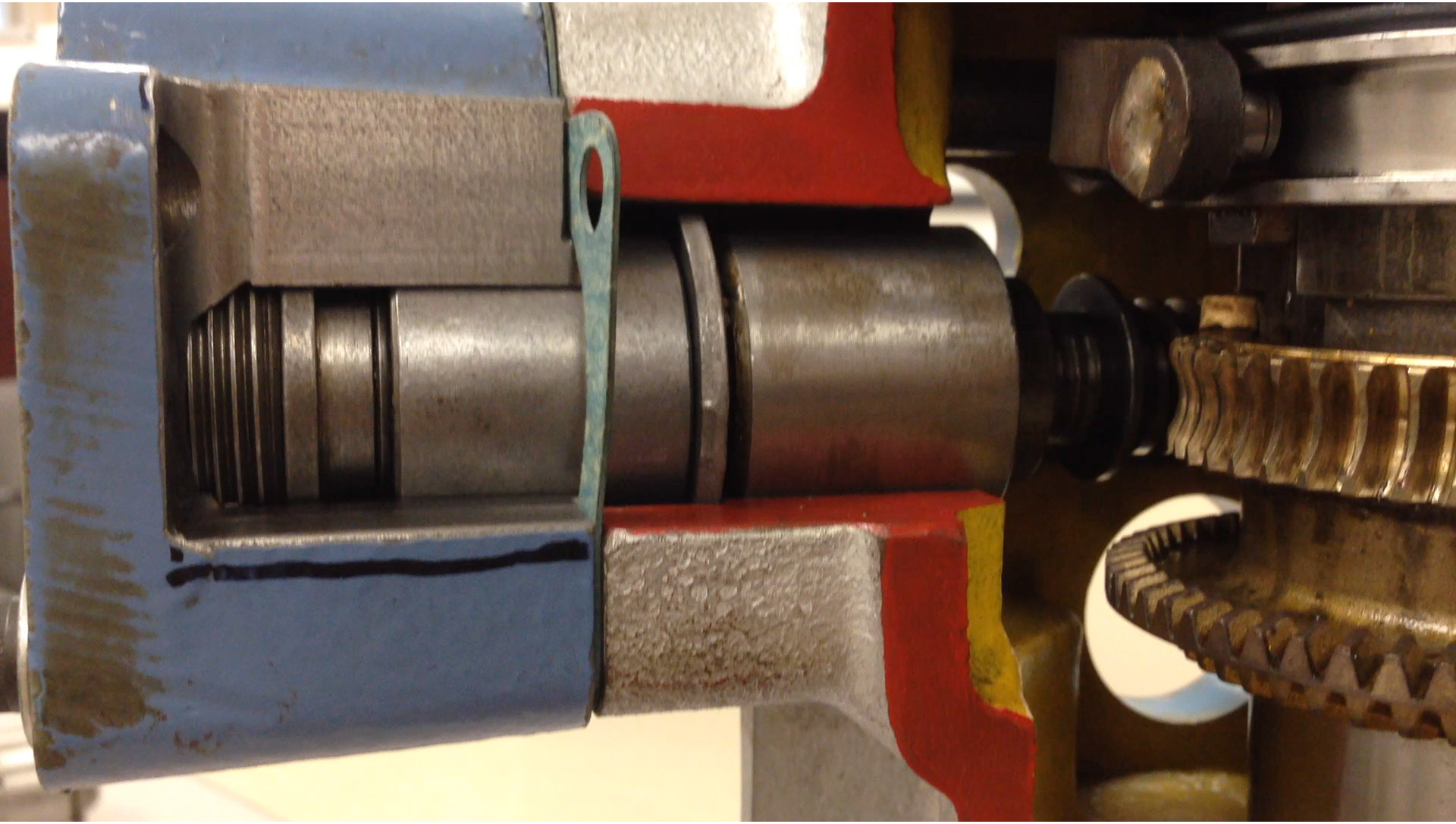
Generic Limitorque curve			Calibrated test results	
			0.025" Preload	No preload
TQ Sw Setting	Nominal Displ. (in)	Nominal Torque (ft-Lbs)	Actuator torque (ft-Lbs)	Actuator torque (ft-Lbs)
1.0	0.093	23	16.9	26.4
1.5	0.129	29.6	23	32.6
2.0	0.165	36.2	29	38.9
2.5	0.201	42.8	35	45.1
3.0	0.237	49.4	41.1	51.3
3.5	0.273	56	47.1	57.6

On average the calibrated preloaded test results were 9.9 ft-lbs lower

Trace Anomalies – Spring pack Gap



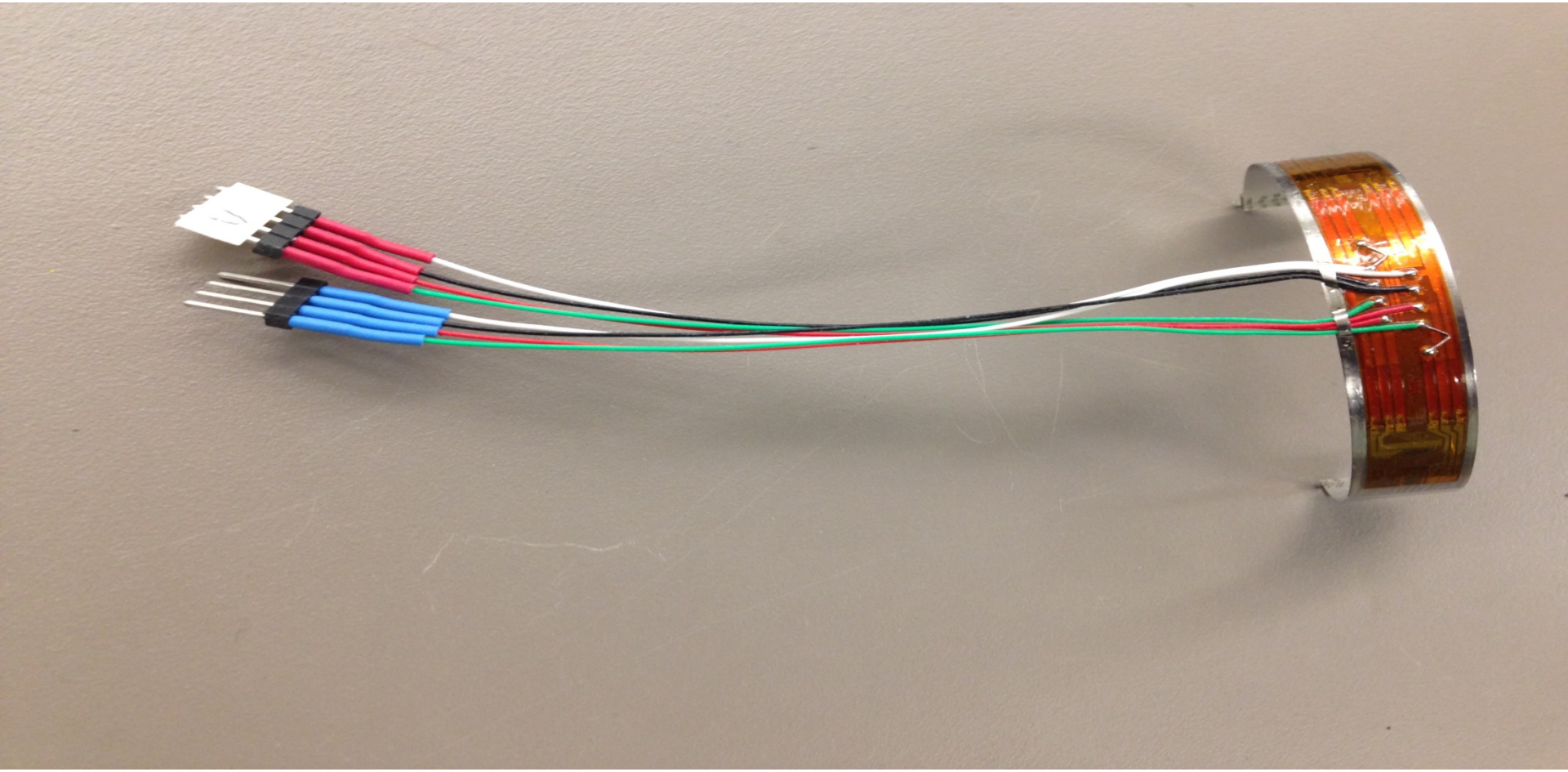
Trace Anomalies – Spring pack preloaded



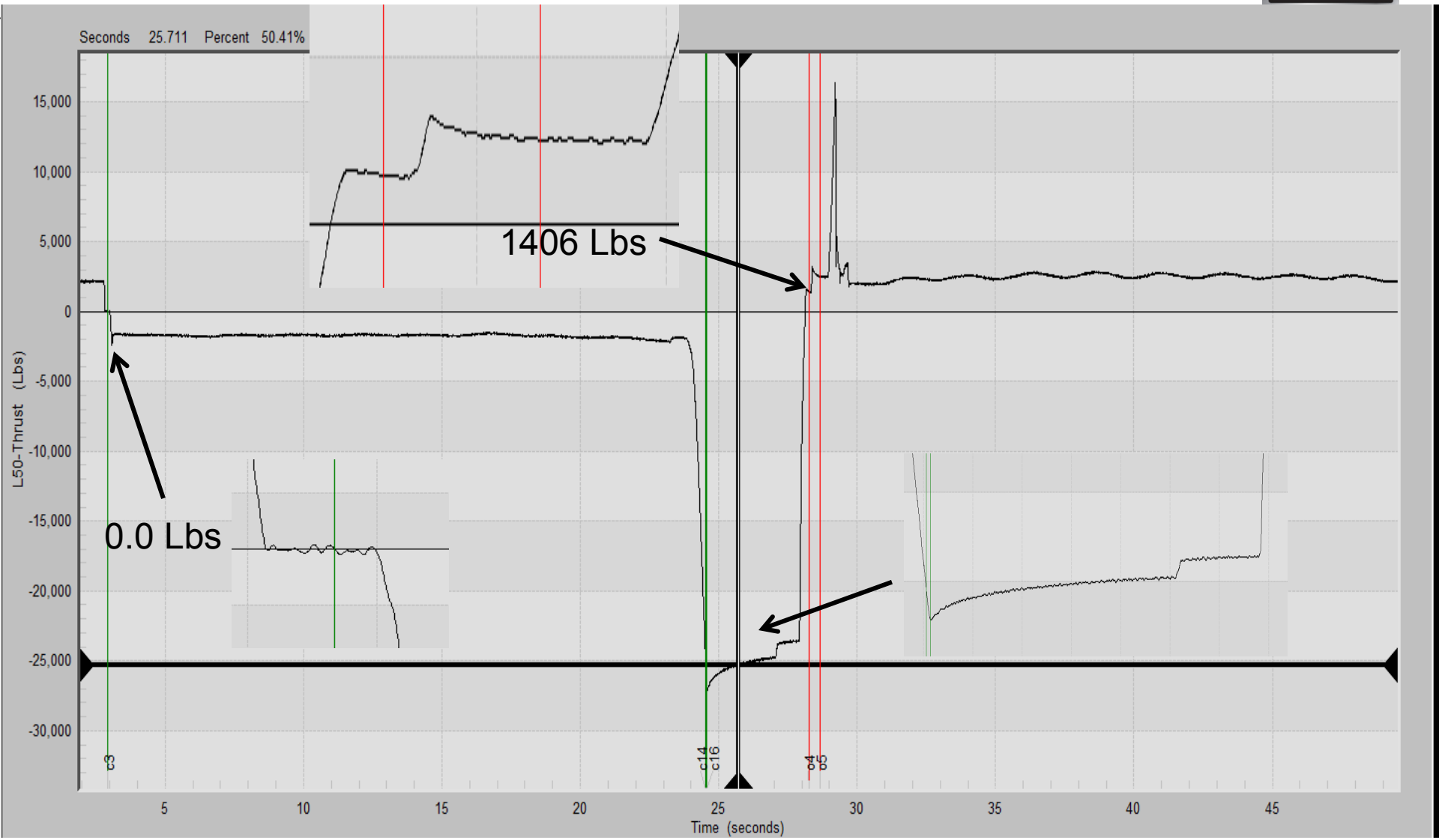
Trace Anomalies – Spring pack preloaded

- What Happens to the actuator torque when there is a spring pack gap?
  - The torque goes down.
- What happens to the actuator torque when the spring pack is pre-loaded
  - The torque still goes down.

Trace Anomalies – QSS Bonding

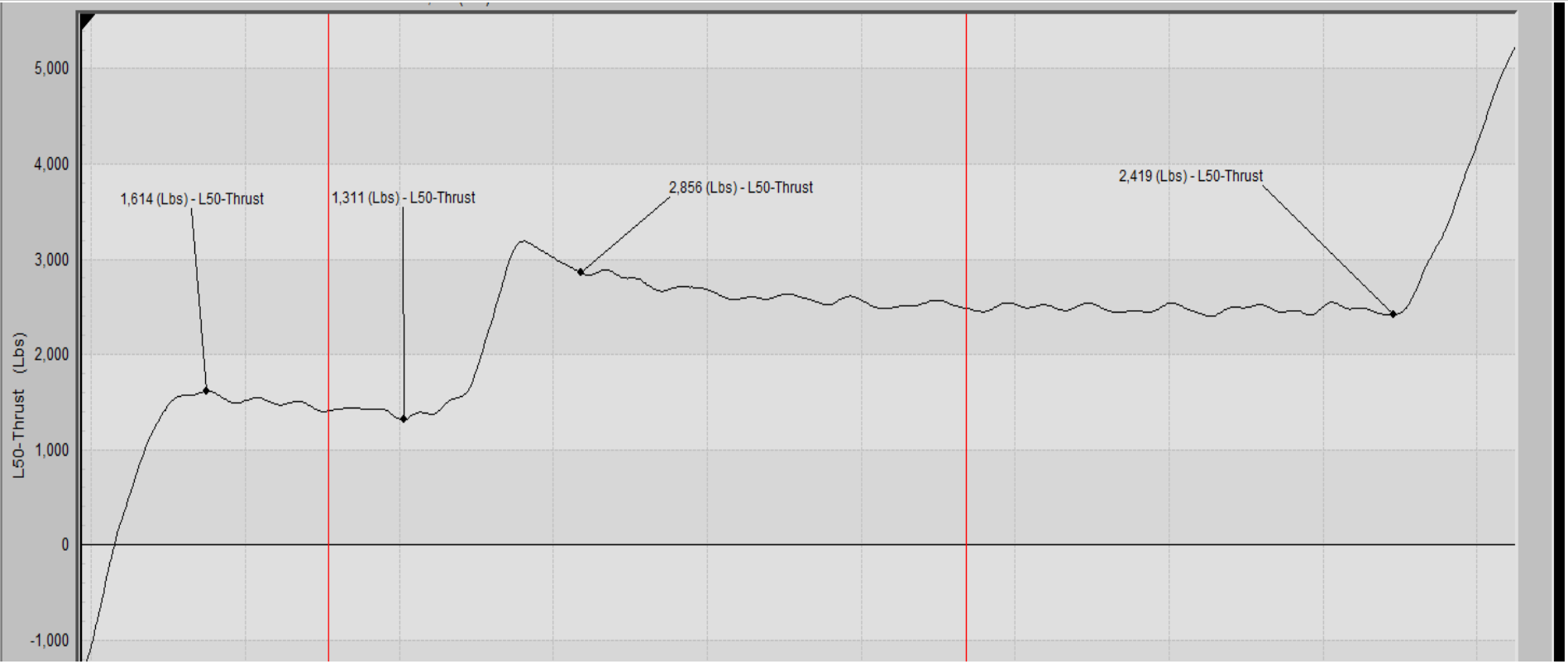


Trace Anomalies – QSS Bonding



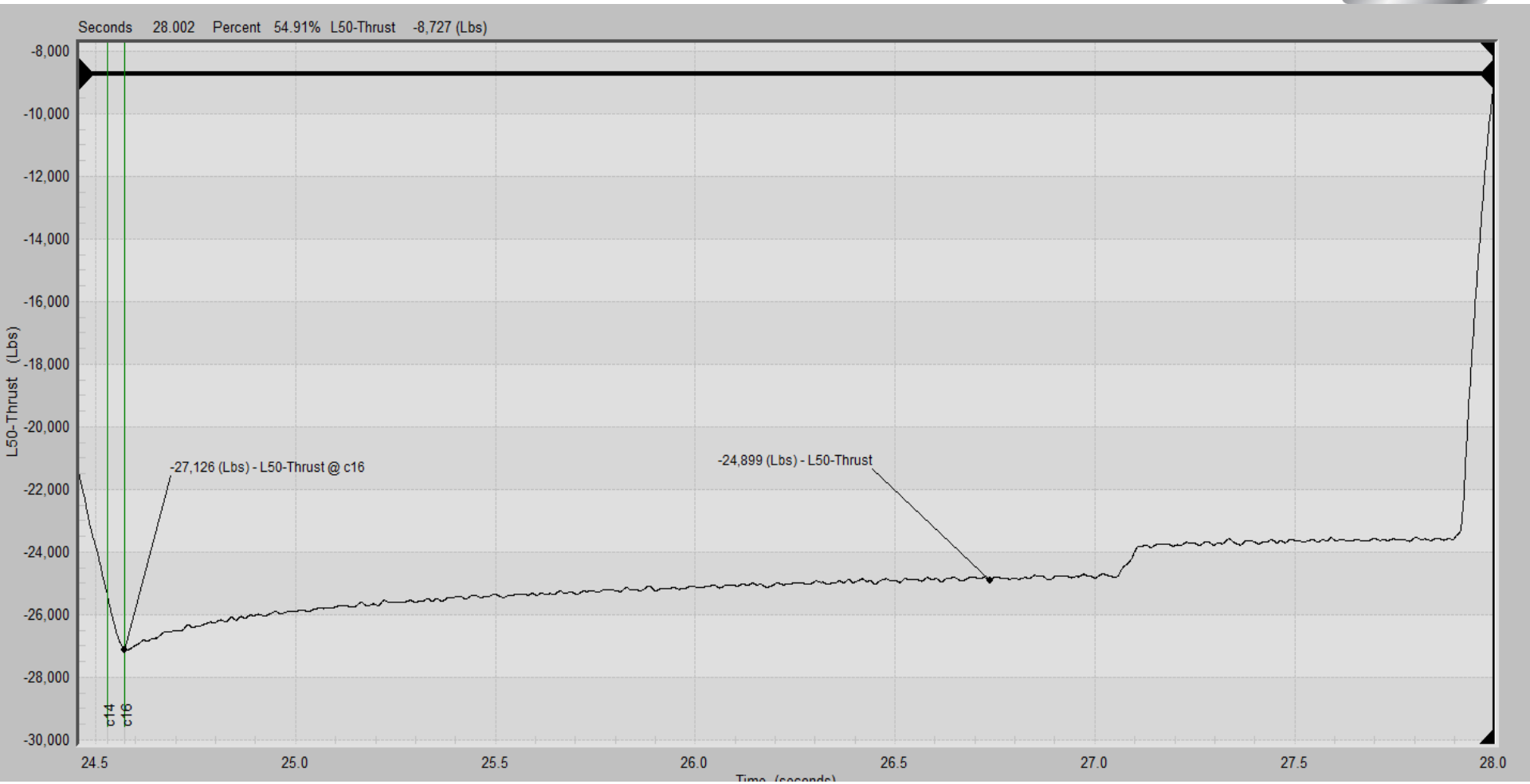
There is 1406 lbs difference between c3 and 04 and thrust releases after c16.

Trace Anomalies – QSS Bonding



The o4 and o5 areas should be flat with out much change.

Trace Anomalies – QSS Bonding



C16 thrust releases

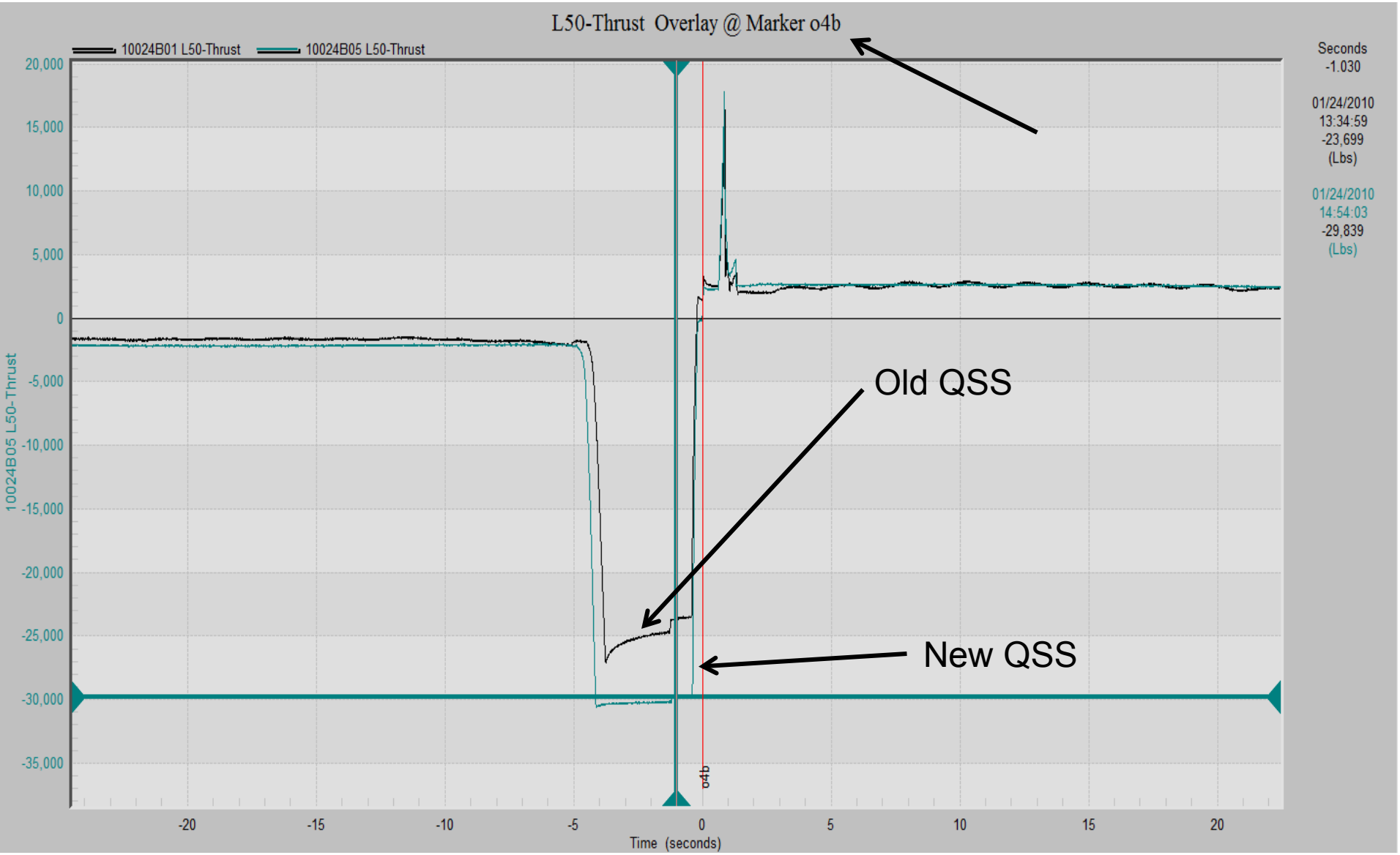
Trace Anomalies – QSS Bonding

1. These signs lead to the bond of the QSS to be suspect.

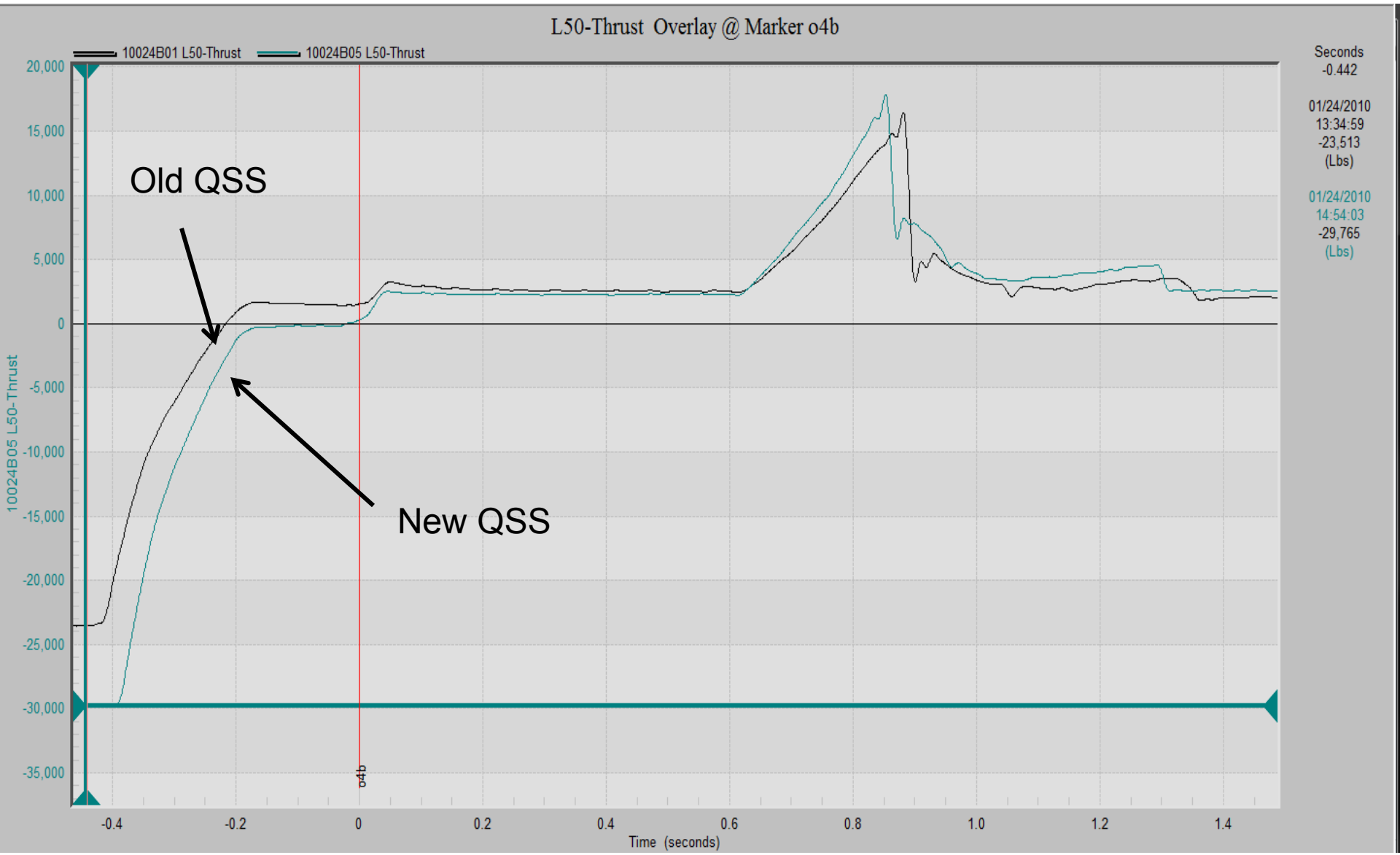
2. The QSS was probe tested and verified to be a bad bond.

3. The QSS was replaces

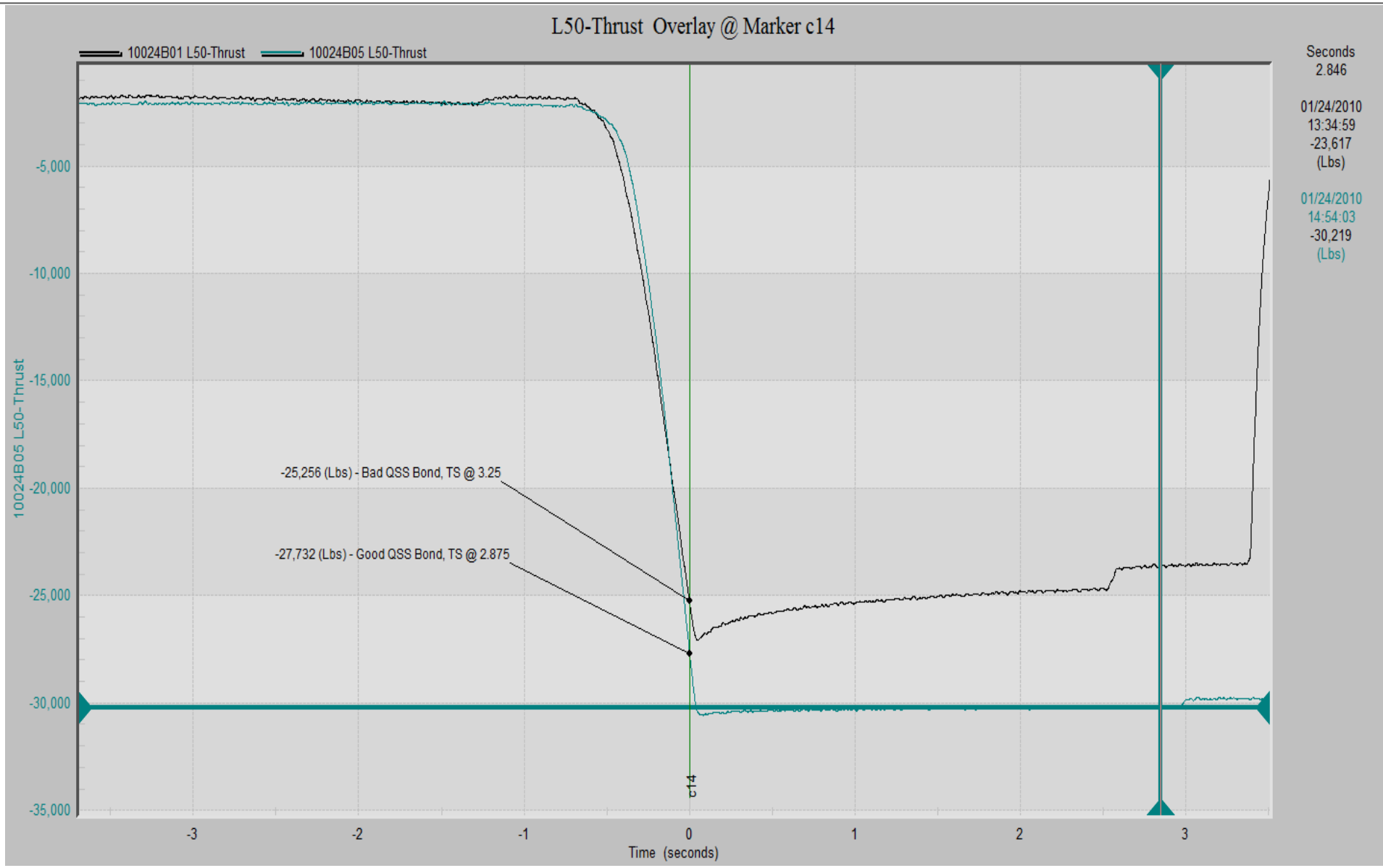
4. Torque Switch was lowered.


L50-Thrust Overlay @ Marker o4b
10024B01 L50-Thrust
10024B05 L50-Thrust
Seconds
-1.030
01/24/2010
13:34:59
-23,699
(Lbs)
01/24/2010
14:54:03
-29,839
(Lbs)
Old QSS
New QSS
10024B05 L50-Thrust
Time (seconds)
o4b

Trace Anomalies – QSS Bonding



Trace Anomalies – QSS Bonding



Trace Anomalies – QSS Bonding

The Key to verifying the QSS bond is to perform a Probe test.

How this is performed

- Plug the QSS into the Quiklook system or equivalent.
- Go to the monitor screen and select the QSS
- Apply pressure with you fingers to the strain gages mounted on the QSS.
- Watch the numbers and verify that the do not change more than 0.05 mv/v
- If the number change more that this the bond may be suspect.

Any Questions?

THANK YOU

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