

QUG 11 AOV Testing with QL3-FS

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TELEDYNE LECROY TEST SERVICES
Everywhere you look™



AS FOUND DATA

MAIN STEAM ISOLATION VALVE

CAT-1

SPRING PRE-LOAD VALUE

FRICTION VALUE



Atwood Morrill - MSIV



MECHANICAL PLOT

- FRICTION VALUE
- < 3750 LBS

- VALVE STROKED MANUALLY
- PAUSE 10 MINUTES per CYCLE

- SPRING PRE-LOAD DECREASES OVER TIME

- SPECIAL ATTENTION FOR RE-PACKING / CONSOLIDATION

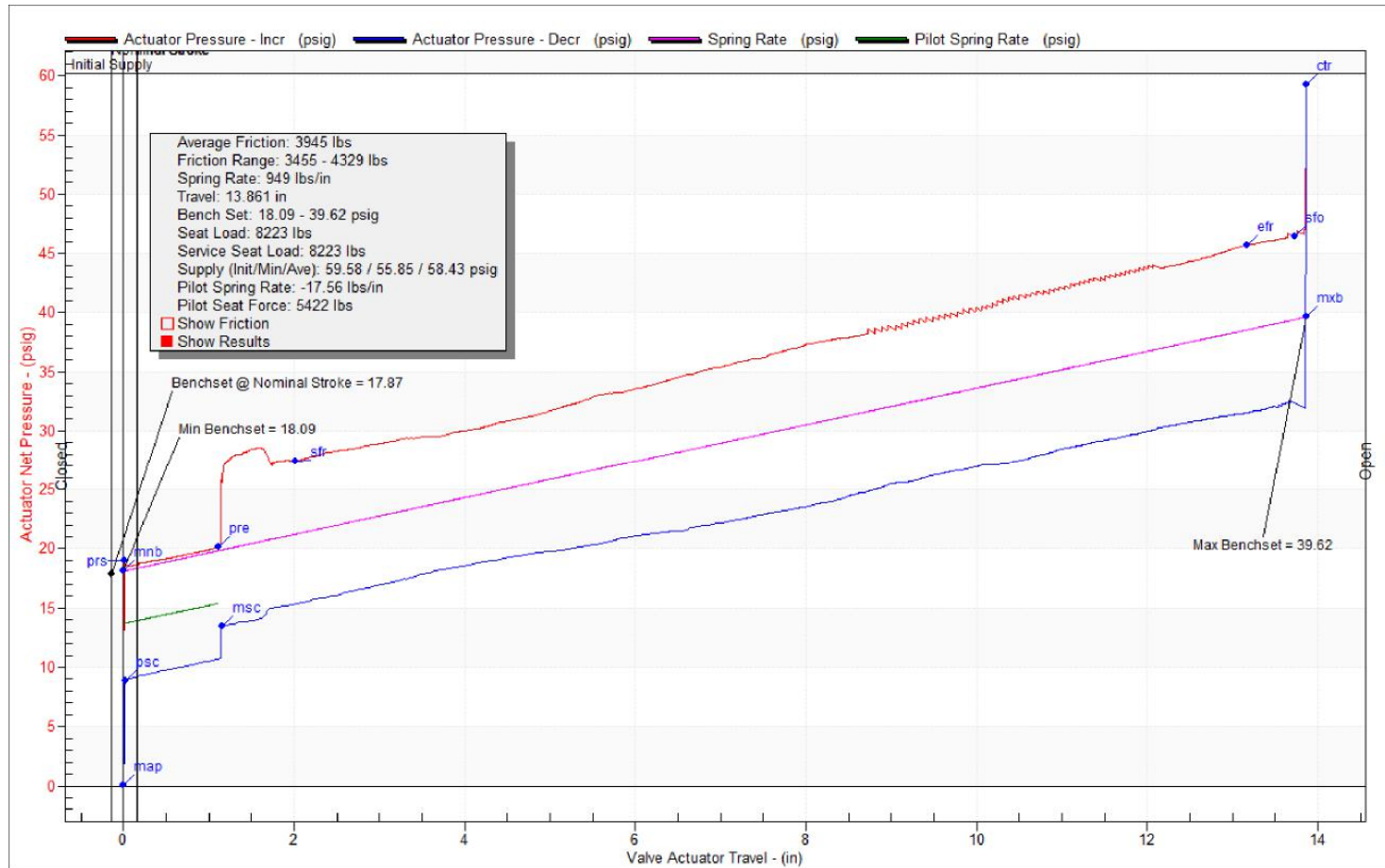
- CONCERNS WITH STROKING DUE TO GUIDE ISSUES

- MAIN SEATING & PILOT VALVE SEATING JUSTIFIED



1-FCV-1-4 - Mechanical Properties - As-Found

11/28/2016 16:49:24 File 1633310403



Position
12.179
(In)

Actuator Pre
43.77
(psig)

Actuator
Pre
(psig)

Friction
(lbs)

Spring Rate
(psig)

Pilot Spring
(psig)

QUIKLOOK 3 - 2015.208

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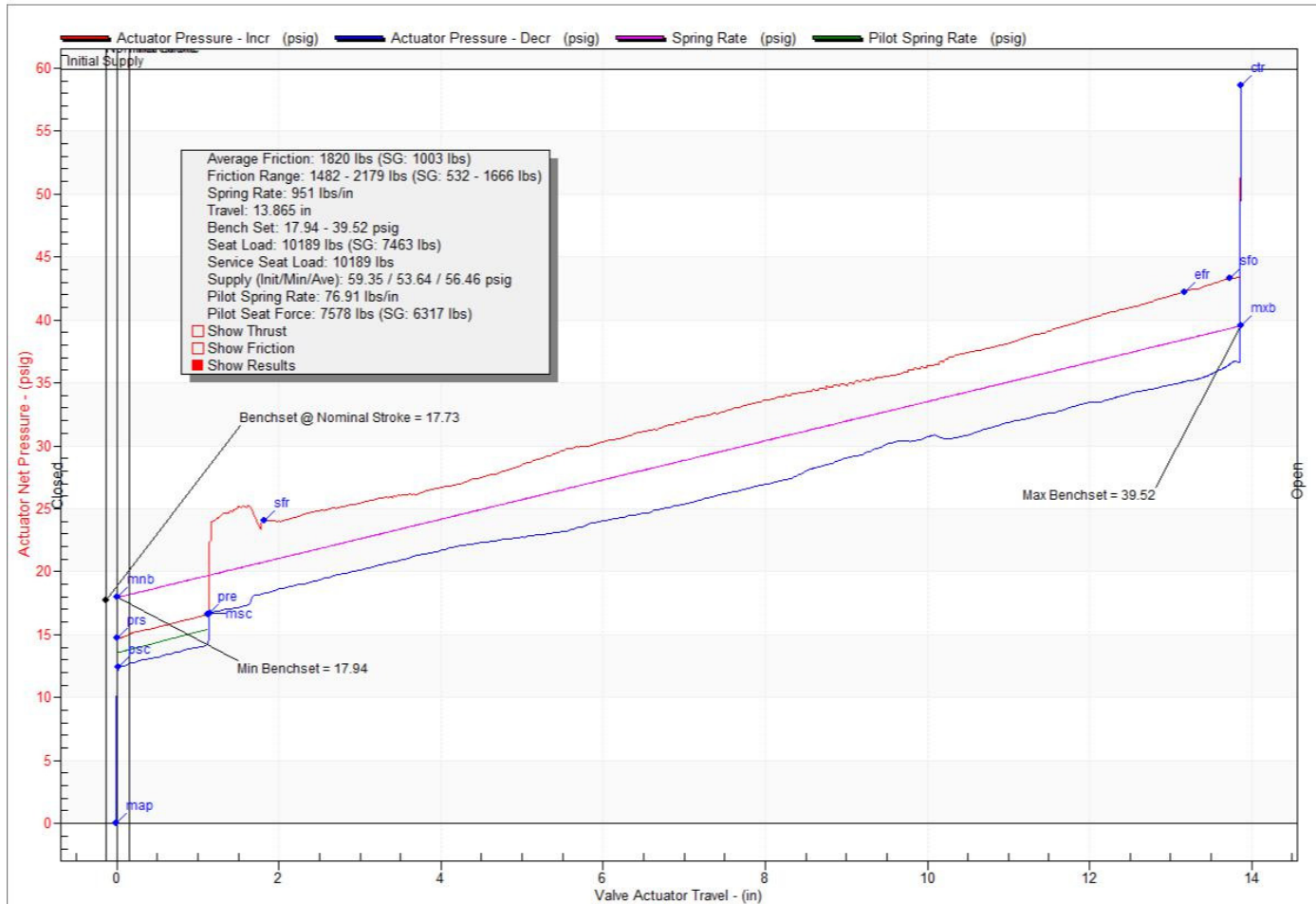
MSIV CONTINUED



- VALVE UNPACKED FRICTION VALVE >3750 LBS
- DIAGNOSTIC SCAN W/O PACKING
- VALUE 1820 LBS FRICTION

1-FCV-1-4 - Mechanical Properties - UNPACKED

11/30/2016 18:37:45 File 1633510401



Position
 13.356
 (In)

Actuator Pre Thrust
 42.49
 (psig)(Lbs)

Actuator Pre
 (psig)

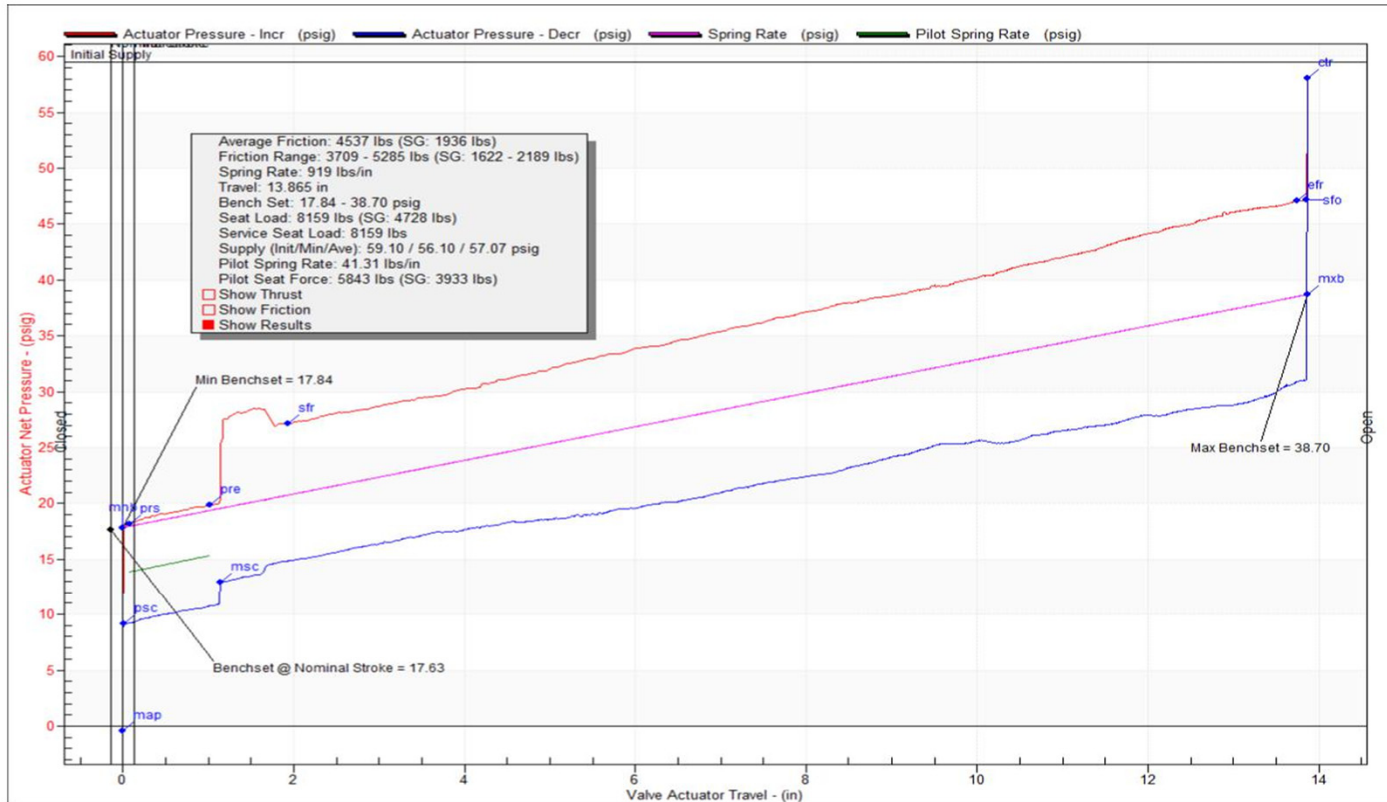
Friction
 (lbs) Spring
 Rate
 (psig) Pilot
 Spring
 (psig)

NEW PACKING – FRICTION = 4537 LBs



1-FCV-1-4 - Mechanical Properties - NEW PACKING

12/01/2016 02:24:16 File 1633610403



Position
13.864
(In)

Actuator Pre Thrust
57.95
(psig)(Lbs)

Actuator Pre
(psig)

Friction
(lbs)

Spring
Rate
(psig) Pilot

Spring
(psig)

QUIKLOOK 3 - 2015.208

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ACTUATOR ADJUSTMENT

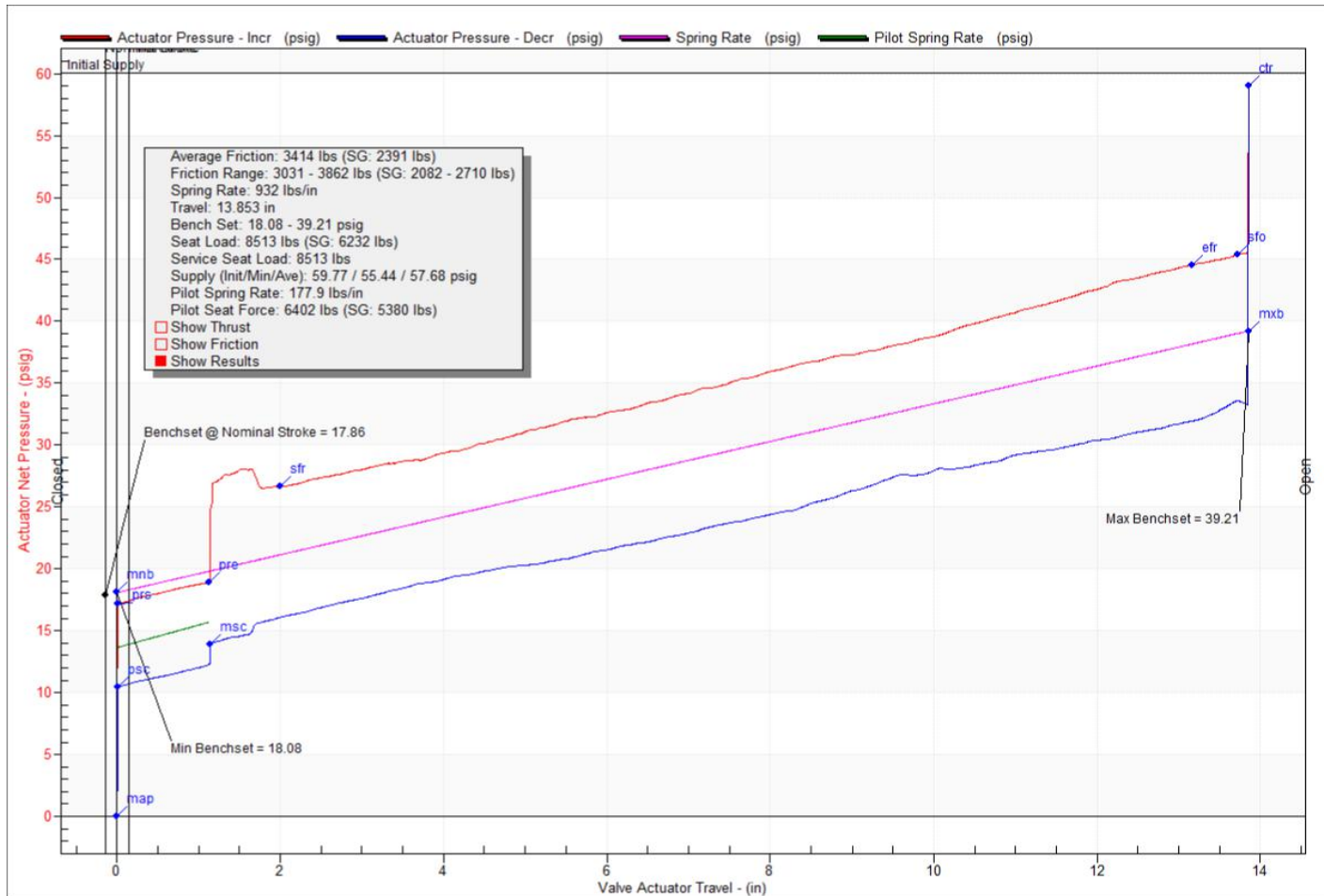


- WEIR VALVE REALIGNED ACTUATOR
- VALVE DIAGNOSTICS PERFORMED



1-FCV-1-4 - Mechanical Properties - ACTUATOR ALIGNED

12/01/2016 16:40:02 File 1633610406



Position
13.849
(In)

Actuator Pre Thrust
50.11
(psig)(Lbs)

Actuator Pre
(psig)

Friction
(lbs) Spring
Rate
(psig) Pilot
Spring
(psig)

QUIKLOOK 3 - 2015.208

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Heater Drain Valve



Heater Drain Tank Level Control Valve



- Masoneilan Piston Actuator
- 5 inch travel
- History of packing leak
- Valve location below grating
- Both positioner and piston actuator subject to steam leak

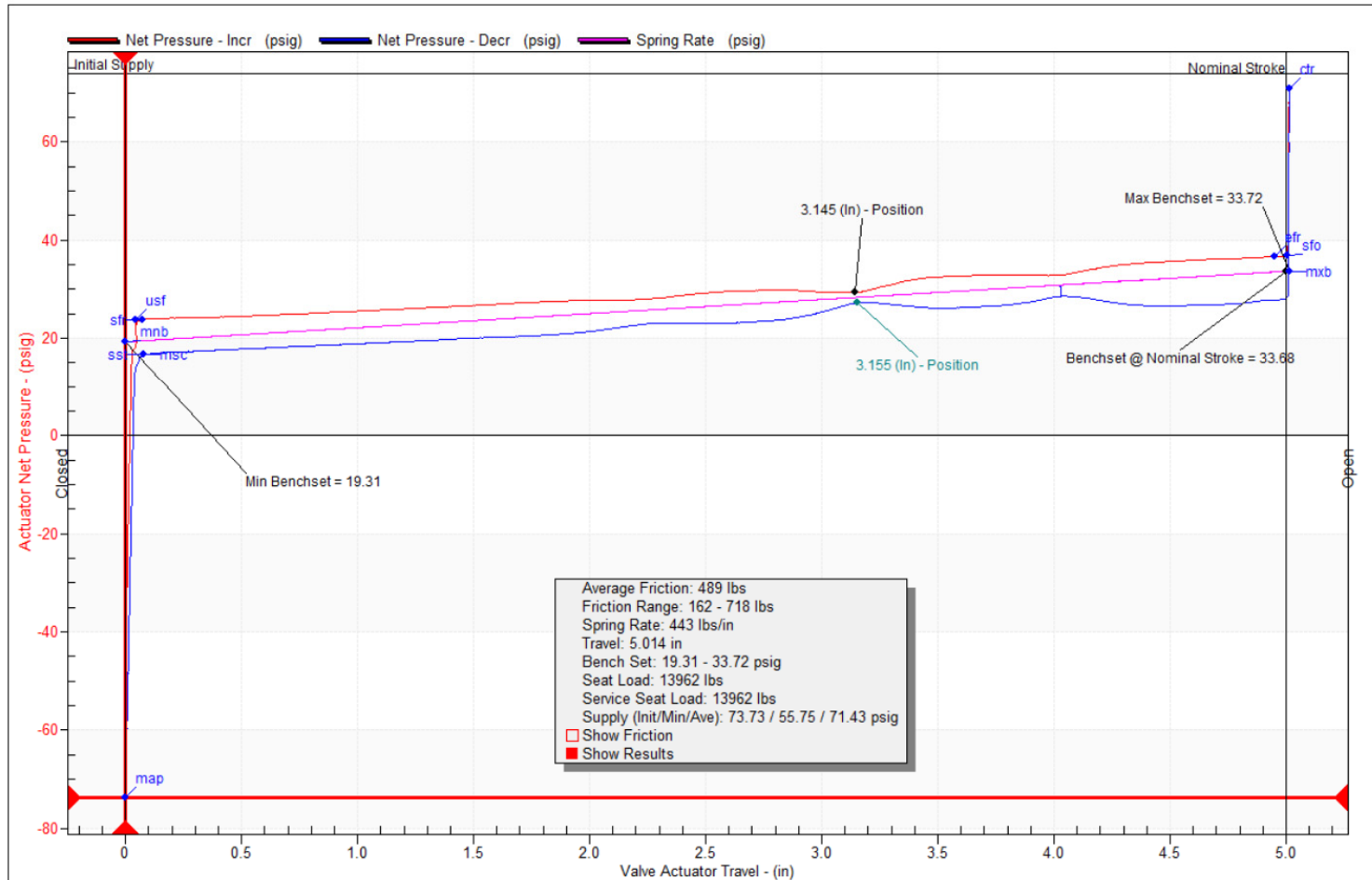


Packing Leak



1-LCV-6-106A - Mechanical Properties - As-Found

03/26/2017 12:19:57 File 17085M02



Position
0.00000000
(In)

Net Pressur
-73.83
(psig)

Net Pressur
(psig)

Friction
(lbs)

Spring Rate
(psig)



Packing Data Sheet

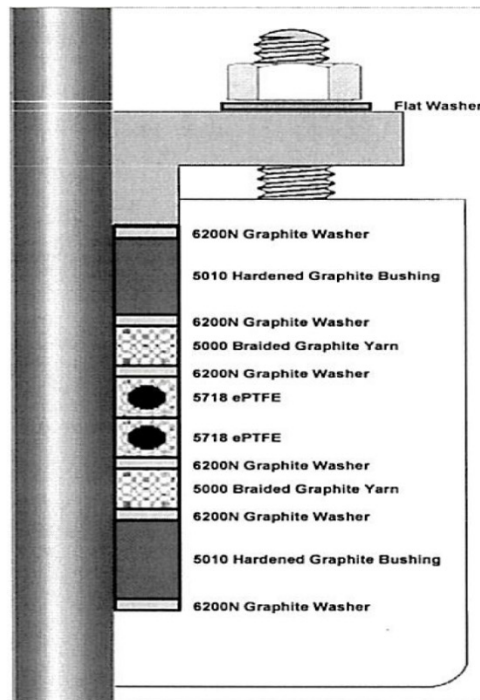


Valve Packing Datasheet: 1-LCV-006-0106A, Rev. 4

Facility: Watts Bar	Work Order: 118637977	Status: Installed
Unit: 01	Verified Date:	Prepared By: [REDACTED]
System: 006	Installed Date: 4/13/2017	Prepared Date: 4/13/2017
Make/Model/Size: MASONEILAN, 85-41521, 16.0		
Descr: #3 HEATER DRAIN TANK LEVEL CONTROL		
Location: BLDG:TURB RM:T2/D ELEV:702		

CONFIGURATION

Configuration: FW+W5WIIW5W+W



MATERIALS

Class	Type	Cat Id/Part #	Qty
PACKING	Bushing	BNC026T	1
PACKING	SET	CRN743R	1
WASHER	Flat	BLF080W	2

COMMENTS

- **** THIS IS A CATEGORY 3 AOV ****
- * START AT 50 % OF THE MIN TORQUE VALUE TO EVALUATE FRICTION & INCREASE TO THE PREF TORQUE VALUE DURING SETUP.
 - * FINAL TORQUE MAY BE ABOVE PREF TORQUE AT THE DISCRETION OF THE FIELD ENGINEER.
 - * THIS VPDS IS FOR UIR14 VALVE REPACK
 - * VERIFY ALL DIMENSIONS ON DATA SHEET PRIOR TO REPACK.
 - * ENSURE HARDENED FLAT WASHERS ARE INSTALLED UNDERNEATH THE GLAND STUD NUTS.
 - * ENSURE THE ENTIRE USABLE PACKING GLAND PROTRUDES FREELY INTO THE STUFFING BOX.
 - * RECORD ANY CHANGES, MISSING INFORMATION, AND AS-LEFT DATA ON VPDS.
 - * RECORD FINAL TORQUE AND 'AS LEFT' DATA AND RETURN DATA SHEET TO THE VALVE ENGINEER.
 - * STROKE VALVE AND RETORQUE ON THE DOWNSTROKE UNTIL NO ADDITIONAL NUT MOVEMENT IS ACHIEVED TO ENSURE FULL PACKING CONSOLIDATION.

Packing Data



- Stuffing box dept 6.500 inches
- Minimum packing stress 2500 LBs
- Maximum packing stress 3500 LBs
- Minimum packing torque (prior to Diagnostic testing) 50% value
- Maximum packing torque
- Preferred packing torque
- **Changed packing configuration (worn area)**
- Repack with new configuration

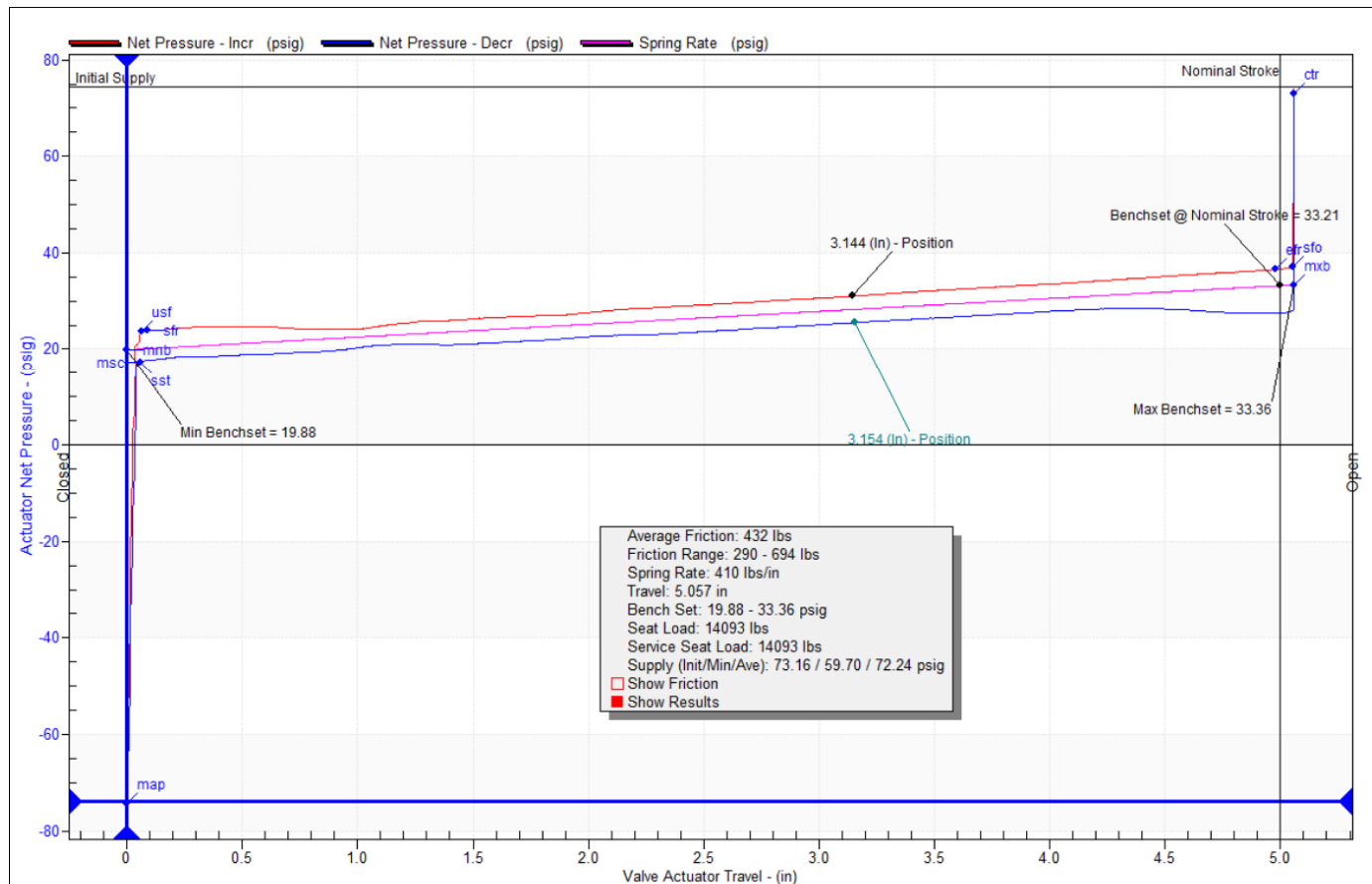


New Packing configuration results



1-LCV-6-106A - Mechanical Properties - As-Left

04/10/2017 17:01:22 File 17100E04



Main Steam Dump



Main Steam Dump Valve to Condenser

- Copes Vulcan D-100 series actuator
- Older style positioner
- Valve repacked & Actuator overhaul during RF cycle
- Scope added to perform Diagnostic testing
- Vintage style packing 5000 braided yarn & 6300 die form
- Live load (spring washers)

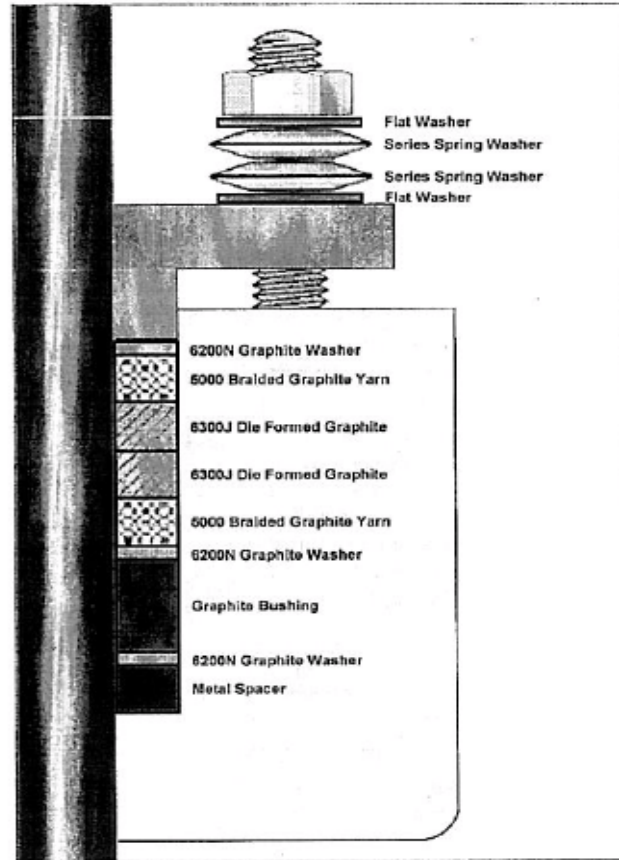


Packing Configuration



CONFIGURATION

Configuration: FSSF5GG5WBWM



MATERIALS

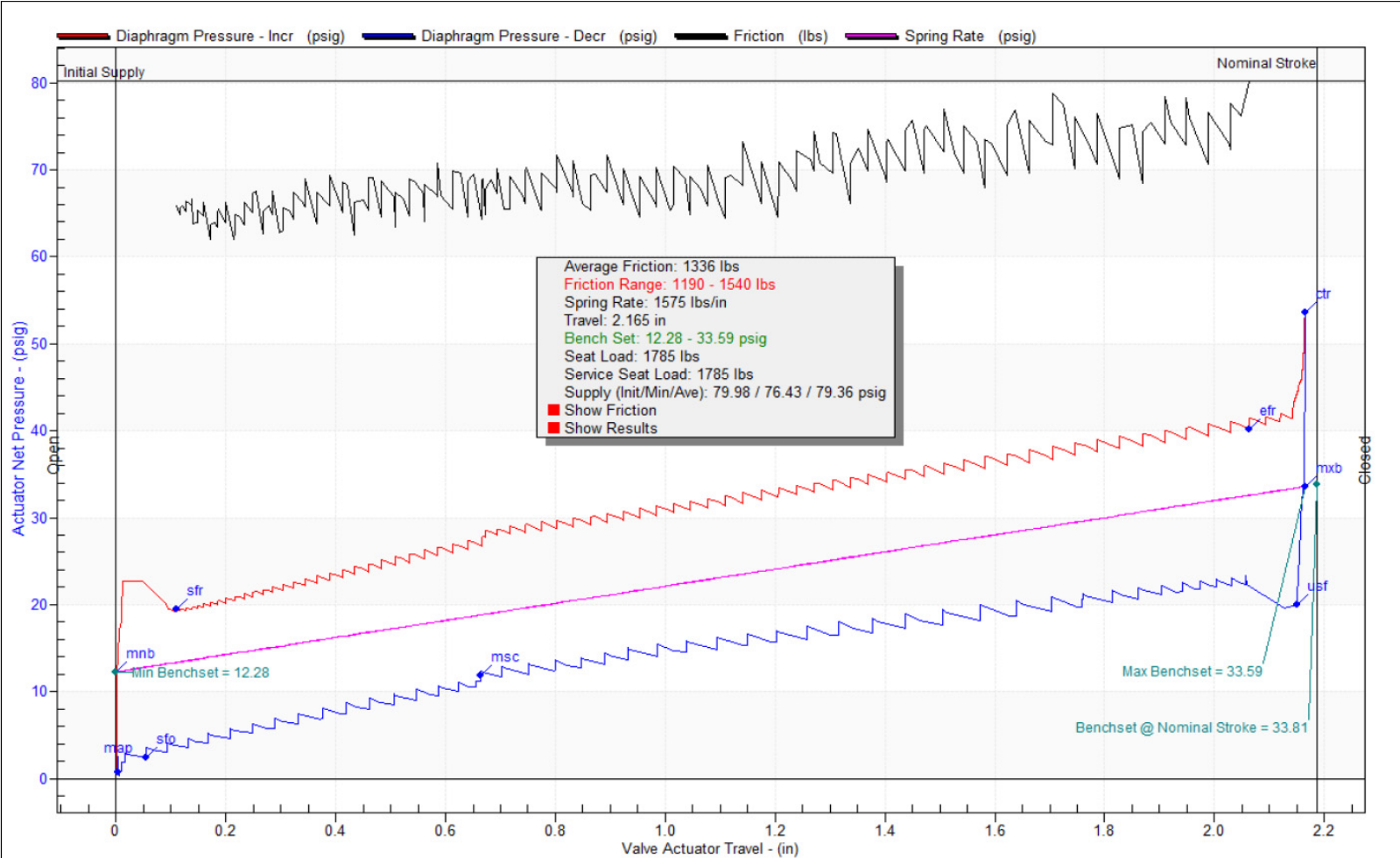
Class	Type	Cat Id/Part #	Qty
PACKING	Bushing	BNN903Q	1
PACKING	SET	CFP279H	1
PACKING	WASHER	CPH272D	3
WASHER	BELLEVILLE	BNQ171W	8
WASHER	Flat	CPT104M	4

COMMENTS

- *U2R21 Repack.
- *VALVES HAVE BEEN REBUILT AND HAVE A BRONZE BUSHING IN EACH.
- * VERIFY ALL DIMENSIONS ON DATA SHEET PRIOR TO REPACK OR RETORQUE.
- * RECORD USABLE GLAND LENGTH _____.
- * ENSURE THE ENTIRE USABLE PACKING GLAND PROTRUDES FREELY INTO THE STUFFING BOX.
- * RECORD ANY CHANGES, MISSING INFORMATION, AND AS-LEFT DATA ON VPDS.
- * TORQUE TO THE MINIMUM TORQUE VALUE ON DATASHEET INITIALLY. FINAL TORQUE WILL BE DONE DURING SET UP OR DIAGNOSTICS TESTING. RECORD FINAL TORQUE AND 'AS LEFT' DATA AND RETURN DATA SHEET TO THE VALVE ENGINEER (TRAVIS COX x7801).
- * STROKE VALVE AND RETORQUE ON THE DOWNSTROKE UNTIL NO ADDITIONAL NUT MOVEMENT IS ACHIEVED TO ENSURE FULL PACKING CONSOLIDATION.
- *CAT 3 AOV- EDA: 160 SQ. IN.
MINIMUM DEADBAND: 8.8 PSI
PREFERRED DEADBAND: 11.8 PSI
MAXIMUM DEADBAND: 14.7 PSI

2-FCV-1-111 - Mechanical Properties - As-Found

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Packing Consolidation

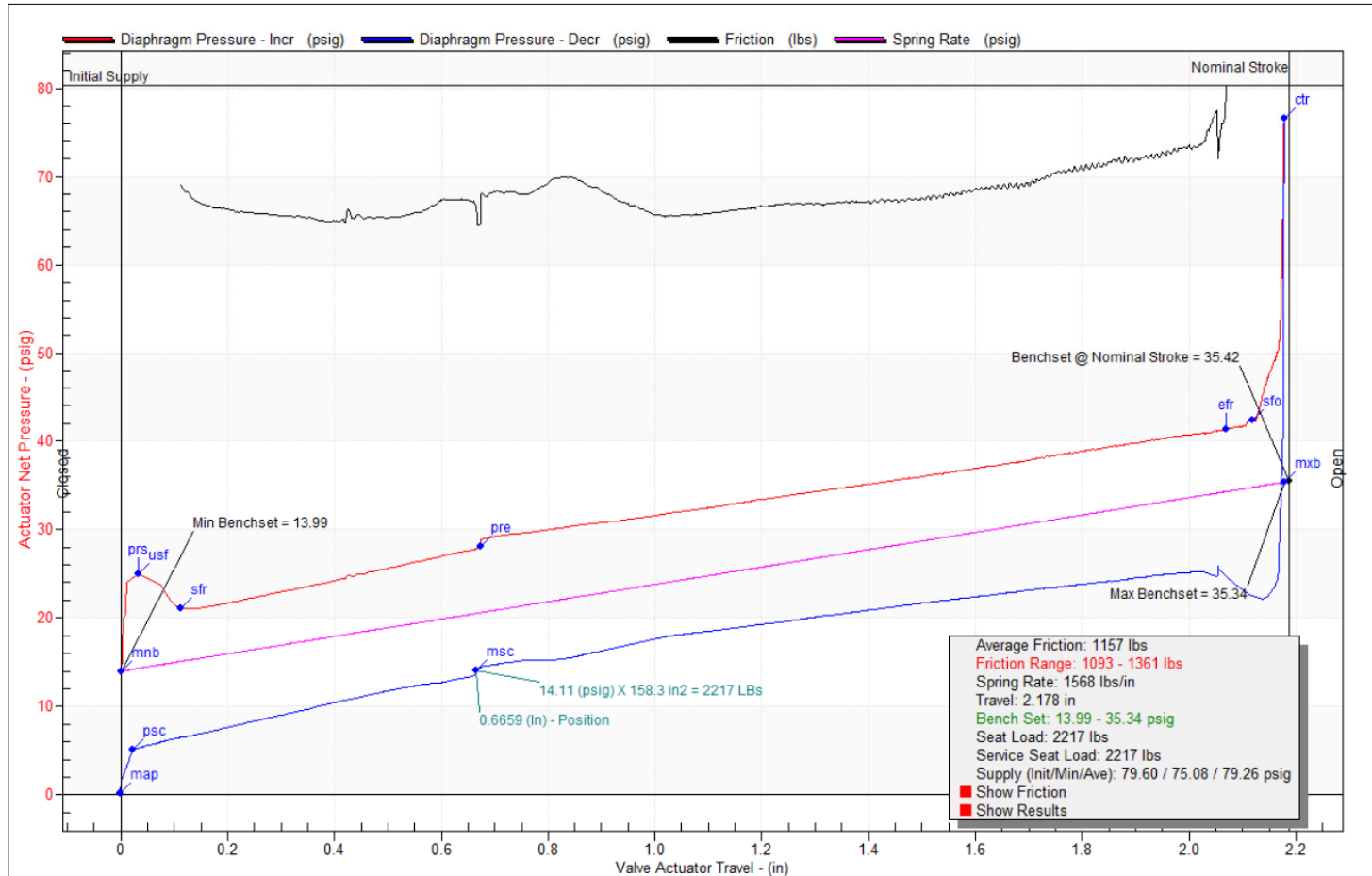
- Cycled valve numerous times
- Verifying packing gland torque
- Drop test verified Actuator overhaul
- As found test verified needed packing consolidation
- Smoother operation
- Trace interpretation for pilot seat
- Justified Diagnostics for remaining Dump valves





2-FCV-1-111 - Mechanical Properties - As-Left3

05/15/2017 16:20:28 File 171353008410



Any Questions?

THANK YOU



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