PRESSURE LOCKING SPECIAL TEST PROCEDURE

Revision 0
June 28, 1995

Commonwealth Edison Company

Corporate MOV Program Support

Prepared by: _____
John F. Kelly
MOV Program Support

Approved by: _____
for Brian Bunte
M&S MOV Program Engineer

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A. PURPOSE

The purpose of this special test is to validate the proposed model and input assumptions for quantifying capability margin for valves susceptible to pressure locking. Specifically, testing will verify:

- the model for estimating MOV capability
- bonnet pressure response to upstream and downstream pressure differences
- bonnet pressure response to temperature changes

The MOV for this special test is identical to the Quad Cities Station Core Spray Injection valves. The test sequence and setup conditions were selected to bound the installed valves.

This procedure provides the test requirements, procedures, and equipment to be used.

B. REFERENCES

1. Draft Generic Letter 94-13, Pressure Locking and Thermal Binding
2. ComEd Quality Assurance Program

C. TEST EQUIPMENT AND INSTRUMENTATION

1. All instrumentation, measuring, and test equipment used in the performance of this test program shall be calibrated in accordance with ComEd's Quality Assurance Program.
2. Measurement Equipment and Tolerances are listed in Table 1
3. Thrust, torque, motor power, and motor current shall be monitored.
4. Upstream, downstream, and bonnet pressure and temperature must be measured and recorded.
5. Use 10" crane valve, with SMB-2 actuator, and 3600 rpm 60 ft-lb motor to match the installed core spray configuration at Quad Cities Station.
6. Assess effects of valve orientation by providing the capability to test valve in vertical and below horizontal positions, if possible.

D. TEST BENCH

The test specimen is a Motor-Operated Valve (MOV) assembly consisting of one 10 inch diameter, 900 pound class, carbon steel flex wedge gate valve with hard-facing on guides/disk and hardened stainless steel U-guides.

Valve

Crane Valve 783U
1250 psi at 575°F (Design Pressure/Temperature)
Serial No
Welded Flanges, ANSI B16.5 10-inch, 900 pound class, raised faces
Three 900 pound class valves for venting and pressure/ temperature instruments
Teledyne SMART Stem for measuring thrust and torque.

Actuator

Limitorque, SMB-2, 60 ft-lb motor, 29.44 OAR
Spring Pack 0901-211
Order # 332680

E. PRECAUTIONS

1. None

F. REQUIREMENTS AND PROCEDURES

Table 2 specifies the testing to be performed and the test sequence. This test sequence may be modified during the special test. New or revised test sequences should be added to Table 2.

1. Pre-Test Preparation
   a. Record valve and actuator nameplate data into the test datasheets (Appendix A)
   b. Assembly and torque-up of bolts shall be performed using Quad Cities station procedures.
   c. Perform hydrostatic test at 1150 psi for a minimum of 10 minutes in accordance with ANSI/ASME B.31.1
   d. The required measurements and associated instruments to be installed are listed in Table 1
   e. The data acquisition system will consist of the VOTES computer, breakout box, motor power monitor, and associated cables.
   f. Pressures and temperatures will be record manually.

g. Prior to any testing or stroking of the valve, actuator switches shall be set as follows:
   1) The open limit switch shall be set at 90% to prevent back-seating of the valve
   2) The open torque switch should be bypassed the first 20 to 25% of valve travel.
   3) The close torque switch shall be set so that final thrust is equal to the as left final thrusts listed in Table 2.

2. Static Break-in Test

Verify that the valve has been stroked a minimum of 15 strokes open and 15 strokes closed. If not, cycle valve until the specified strokes are achieved.

3. LLRT Test

a. The test valve shall be setup to achieve the indicated final thrust for the next test listed in Table 2. Torque, thrust, current and motor power shall be recorded and saved from the final open and close stroke.

b. An LLRT Leakage Rate Test shall be performed <u>in both directions</u> to verify seat leakage requirements in accordance with Quad Cities procedures. Document results on the appropriate forms provided in Appendix A

4. Differential Pressure Test

a. With the valve open fill the specimen with water such that air pockets are vented and bonnet is filled with water.
b. With the valve unpressurized, stroke test specimen closed and record test data.
c. Pressurize reactor disk side per Table 2.
d. Vent pump disk side to atmosphere.
e. Open the valve and record diagnostic test data.
f. With the valve unpressurized, stroke test specimen closed and record test data.
g. Pressurize pump disk side per Table 2.
h. Vent reacto disk side to atmosphere.
i. Open the valve and record diagnostic test data.

5. Bonnet Pressure Response

   a. With the valve open fill the specimen with water such that air pockets are vented and bonnet is filled with water.
   b. The test valve shall be setup to achieve the indicated final thrust for this test per Table 2. Torque, thrust, current and motor power shall be recorded and saved from the final open and close stroke.
   c. With the valve unpressurized, stroke test specimen closed.
   d. Pressurize reactor disk side to the pressure indicated in Table 2 for this test. Allow bonnet pressure to stabilize and record final pressure on datasheet.
   e. Vent reactor disk side to atmosphere over a period of 37 to 40 seconds.
   f. Monitor and record bonnet and pump disk side pressure for 10 minutes or until pressure stabilizes.. Record initial and final pressures in log book.

6. Pressure Lock Test

   a. With the valve open fill the specimen with water such that air pockets are vented and bonnet is filled with water.
   b. The test valve shall be setup to achieve the indicated final thrust for this test per Table 2. The valve shall be closed and then opened when the final TSS is achieved recording torque, thrust, current, power factor, and motor power.
   c. With the valve unpressurized, stroke test specimen closed.
   d. Pressurize reactor disk side to the pressure indicated in Table 2 for this test
   e. Vent pump disk side to atmosphere
   f. Monitor and record bonnet and pump disk side pressure for 10 minutes or until pressure stabilizes using pressure transmitters. Record initial and final pressures in log book.
   g. Increase the pressure from atmosphere to 380 psi on the pump disk side and record bonnet pressure once stable
   h. De-pressurize the reactor disk side to 350 psi over 37 to 40 seconds recording bonnet pressure using pressure transmitter. Record inital and final bonnet pressures in the log book.
   i. Open the valve when the reactor disk side reaches 350 psi. Record diagnostic test data.

7. Bonnet Pressure Response to Temperature Changes

   a. With the valve open fill the specimen with water such that air pockets are vented and bonnet is filled with water.

b. The test valve shall be setup to achieve the indicated final thrust for this test per Table 2. Torque, thrust, current and motor power shall be recorded and saved from the final open and close stroke.
c. With the valve unpressurized, stroke test specimen closed.
d. Loosen packing.
e. With the valve closed fill the bonnet cavity with water and vent air through packing.
f. Tighten packing.
g. Pressurize bonnet to the pressure indicated in Table 2 for this test.
h. With both sides of valve vented, heat bonnet to 100F.
i. Monitor and record fluid temperature and bonnet pressure. Record initial and final pressure and temperature readings from the appropriate gages.
j. Open valve when bonnet pressure stabilizes and record diagnostic test data.

8. Bonnet Water Volume

a. With the valve open fill the specimen with water.
b. The test valve shall be setup to achieve the indicated final thrust for this test per Table 2. Torque, thrust, current and motor power shall be recorded and saved from the final open and close stroke.
c. With the valve unpressurized, stroke test specimen closed.
d. With the valve vertical pressurize the reactor disk side to 1040 psi.
e. Monitor bonnet pressure and vent and drain both sides of the valve when the pressure stabilizes.
f. Open the valve and measure the entire volume of water remaining.

G. RESULTS/ACCEPTANCE CRITERIA

The results of this test will be used as technical input for evaluations and calculations to resolve/assess the pressure locking issue. This test has no acceptance criteria.

H. DATA SHEETS

Appendix A provides Data Sheets for recording the results of the testing.

TABLE 1
MEASUREMENT EQUIPMENT AND TOLERANCES

Measurement	Instrument	Tolerance
Pressure Gage Bonnet		± 2% F.S.
Pressure Gage Reactor Disk Side		± 2% F.S.
Pressure Gage Pump Side		± 2% F.S.
Pressure Transmitter Bonnet		
Pressure Transmitter Reacto Disk Side		
Temperature Gage Bonnet		± 2°F
Temperature Transmitter Bonnet		± 2°F
Temperature Gage Lower Valve		± 2°F
Spring Pack Displacement	LVDT	
Stem Torque	SMART Stem	3 %
Stem Thrust	SMART Stem	3 %
Stem Thrust	VFS	
Stem Thrust	C-Clamp	
Motor Power	MPM	
Motor Current	MPM	
Motor Voltage	MPM	

TELEDYNE BROWN ENGINEERING - Engineering Services

June 30, 1994
89557-8

CERTIFICATE OF CALIBRATION

Project No.: 89557

Client: Crane Valves Purchase Order No.: 0670167

Type: Thrust Part No.: SMARTSTEM^{tm} Capacity: 70,000 lbs Serial No. 5577

Input Resistance: 352 Ω Output Resistance: 352 Ω

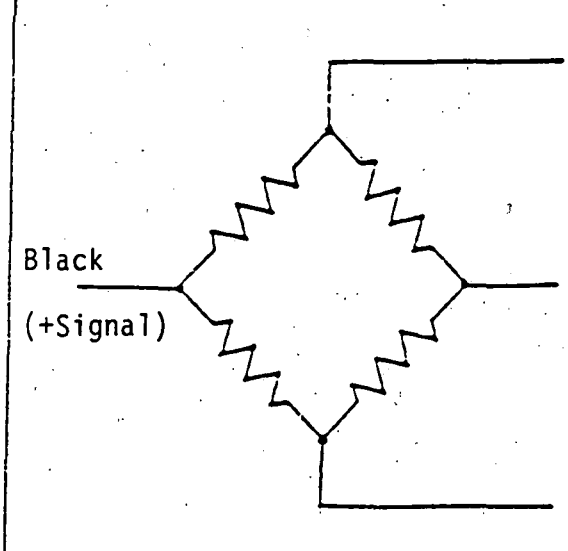
Bridge to Ground Resistance: >10 GΩ Bridge to Shield Resistance: >10 GΩ

Zero Balance: 0.000 mv/v Zero Return: <0.05 % Linearity: <0.07 %

Hysteresis: <0.08 % Repeatability: <0.08 % Full Scale Output: +1.412 mv/v (Tens.) / -1.404 mv/v (Comp.)

Temperature Compensation: <0.0025% F.S./°F

Excitation Voltage: 10 VDC



INPUT (lbs)	OUTPUT (mv/v)	
LOAD	TENSION	COMPRESSION
0	0.000	0.000
14,000	0.283	-0.280
28,000	0.565	-0.561
42,000	0.848	-0.842
56,000	1.130	-1.123
70,000	1.412	-1.404
56,000	1.130	-1.123
42,000	0.848	-0.843
28,000	0.566	-0.562
14,000	0.284	-0.281
0	-0.000	-0.000

Certified By: Technician: Douglas S. Brightman Date: 6/30/94

Engineer: David L. Johnson Date: 6/30/94

TELEDYNE BROWN ENGINEERING - Engineering Services

June 30, 1994
89557-7

CERTIFICATE OF CALIBRATION

Project No.: 89557

Client: Crane Valves Purchase Order No.: 0670167

Type: Thrust Part No.: SMARTSTEM^{tm} Capacity: 70,000 lbs Serial No. 5577

Input Resistance: 352 Ω Output Resistance: 352 Ω

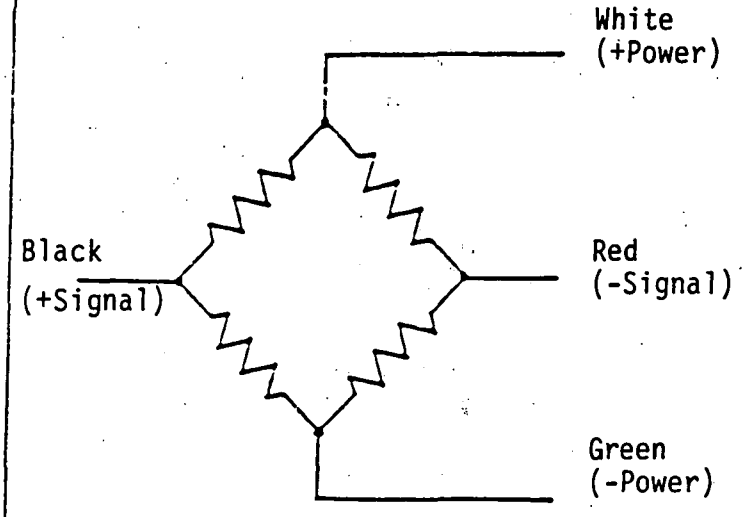
Bridge to Ground Resistance: >10 GΩ Bridge to Shield Resistance: >10 GΩ

Zero Balance: 0.000 mv/v Zero Return: <0.04 % Linearity: <0.05 %

Hysteresis: <0.09 % Repeatability: <0.09 % Full Scale Output: +3.557 mV (Tens.) / -3.543 mV (Comp.)

Temperature Compensation: <0.0025% F.S./°F

Excitation Voltage: 2.5 VDC



INPUT (lbs)	OUTPUT (mV)	
LOAD	TENSION	COMPRESSION
0	0.000	0.000
14,000	0.713	-0.709
28,000	1.424	-1.418
42,000	2.135	-2.126
56,000	2.846	-2.834
70,000	3.557	-3.543
56,000	2.846	-2.835
42,000	2.135	-2.128
28,000	1.426	-1.420
14,000	0.716	-0.711
0	-0.001	-0.001

Certified By: Technician: Douglas S. Brightman Date: 6/30/94

Engineer: David L. Johnson Date: 6/30/94

TELEDYNE BROWN ENGINEERING - Engineering Services

July 1, 1994
89557-11

CERTIFICATE OF CALIBRATION

Project No.: 89557

Client: Crane Valves Purchase Order No.: 0670167

Type: Torque Part No.: SMARTSTEM^{tm} Capacity: 19,200 in-lbs Serial No. 5577

Input Resistance: 351 Ω Output Resistance: 351 Ω

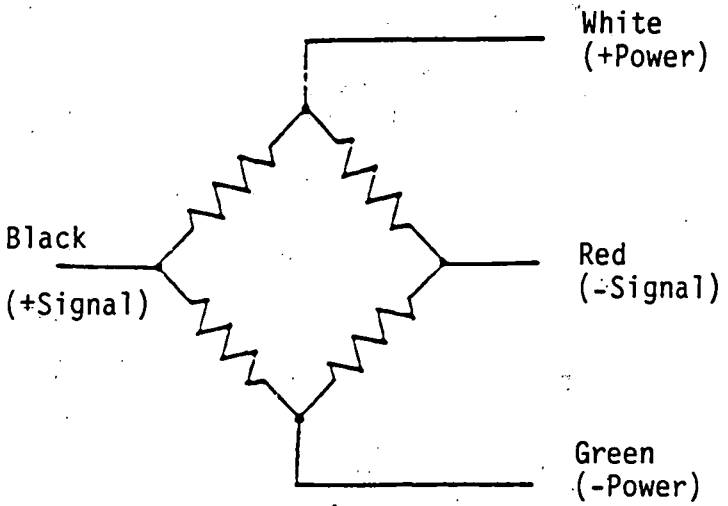
Bridge to Ground Resistance: >10 GΩ Bridge to Shield Resistance: >10 GΩ

Zero Balance: -0.033 mv/v Zero Return: <0.03 % Linearity: <0.13 %

Hysteresis: <0.07 % Repeatability: <0.17 % Full Scale Output: +4.859 mV (CW) -4.860 mV (CCW)

Temperature Compensation: <0.0025% F.S./°F

Excitation Voltage: 2.5 VDC



INPUT (in-lbs) LOAD	OUTPUT (mV) CW	CCW
0	0.000	0.000
3840	0.973	-0.975
7680	1.946	-1.949
11520	2.918	-2.922
15360	3.890	-3.892
19200	4.859	-4.860
15360	3.887	-3.890
11520	2.917	-2.919
7680	1.945	-1.949
3840	0.973	-0.978
0	0.000	0.001

Certified By: Technician: Douglas S. Brightman Date: 7/1/94

Engineer: David L. Johnson Date: 7/1/94

TELEDYNE BROWN ENGINEERING - Engineering Services

July 1, 1994
89557-12

CERTIFICATE OF CALIBRATION

Project No.: 89557

Client: Crane Valves Purchase Order No.: 0670167

Type: Torque Part No.: SMARTSTEM^{tm} Capacity: 19,200 in-lbs Serial No. 5577

Input Resistance: 351 Ω Output Resistance: 351 Ω

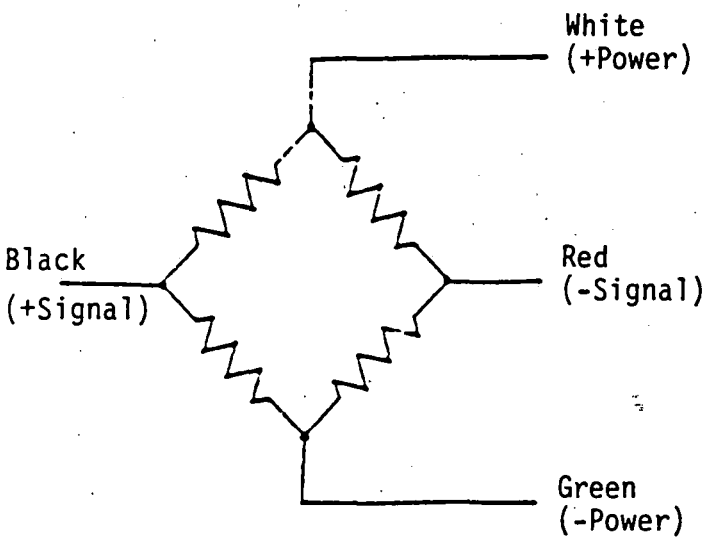
Bridge to Ground Resistance: >10 GΩ Bridge to Shield Resistance: >10 GΩ

Zero Balance: -0.033 mv/v Zero Return: <0.06 % Linearity: <0.07 %

Hysteresis: <0.11 % Repeatability: <0.06 % Full Scale Output: +1.923 mv/v (CW) -1.972 mv/v (CCW)

Temperature Compensation: <0.0025% F.S./°F

Excitation Voltage: 10 VDC



INPUT (in-lbs) LOAD	OUTPUT (mv/v) CW	CCW
0	0.000	0.000
3840	0.385	-0.386
7680	0.770	-0.772
11520	1.154	-1.157
15360	1.539	-1.542
19200	1.923	-1.927
15360	1.539	-1.540
11520	1.155	-1.156
7680	0.770	-0.771
3840	0.385	-0.386
0	0.000	0.001

tified By: Technician: Douglas S. Brightman Date: 7/1/94

Engineer: David L. Johnson Date: 7/1/94

TABLE 2
TESTING SEQUENCE AND NUMBERING

Procedure Section	Test Title	Test Number	Pullout Thrust, lbf
F.3	LLRT1		
F.4	Differential pressure test to quantify friction factor at 640 psi	DPT640	60,000
F.4	Differential pressure test to quantify friction factor at 840 psi	DPT840	60,000
F.4	Differential pressure test to quantify friction factor at 1040 psi	DPT1040	60,000
F.3	LLRT2		
F.5	Bonnet Pressure Response at 640 psi and lowest maximum thrust	BPR640MIN	20,000
F.5	Bonnet Pressure Response at 1040 psi and lowest maximum thrust	BPR1040MIN	20,000
F.5	Bonnet Pressure Response at 640 psi and highest maximum thrust	BPR640MAX	60,000
F.5	Bonnet Pressure Response at 1040 psi and highest maximum thrust	BPR1040MAX	60,000
F.3	LLRT3		
F.6	Pressure Lock Un-wedging at 240 psi and highest maximum thrust	PLU240MAX	60,000
F.6	Pressure Lock Unwedging at 440 psi and highest maximum thrust	PLU440MAX 1500 MAX	60,000
F.6	Pressure Lock Un-wedging at 640 psi and highest maximum thrust	PLU640MAX	60,000
F.6	Pressure Lock Unwedging at 840 psi and highest maximum thrust	PLU840MAX	60,000
F.6	Pressure Lock Unwedging at 1040 psi and highest maximum thrust	PLU1040MAX	60,000
F.6	Pressure Lock Unwedging at 1040 psi, highest maximum thrust, valve at 100°F, and valve vertical	PLU1040MAX TMP	60,000
F.6	Pressure Lock Unwedging at 1040 psi and highest maximum thrust with valve stem orientation below horizontal	PLU1040MAX HOR	60,000
F.6	Pressure Lock Unwedging at 1040 psi and lowest maximum thrust	PLU1040MINH OR	20,000
F.3	LLRT4		

Procedure Section	Test Title	Test Number	Pullout Thrust, lbf
F.7	Bonnet Pressure Response, atmospheric pressure, and 100°F bonnet temperature	BPRATMTMPH	60,000
F.7	Bonnet Pressure Response, at 300 psi, and 100°F bonnet temperature	BPR300TMPH	60,000
F.7	Bonnet Pressure Response, at 600 psi, and 100°F bonnet temperature	BPR600TMPH	60,000
F.7	Bonnet Pressure Response, atmospheric pressure, and 100°F bonnet temperature	BPRATMTMPL	20,000
F.7	Bonnet Pressure Response, at 300 psi, and 100°F bonnet temperature	BPR300TMPL	20,000
F.7	Bonnet Pressure Response, at 600 psi, and 100°F bonnet temperature	BPR600TMPL	20,000
F.8	Bonnet Water Volume test at 1040 psi and valve vertical	BWV1040VER	20,000
F.8	Bonnet Water Volume test at 1040 psi and valve horizontal	BWV1040HOR	20,000

TABLE 3
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Gage	Range	Cal Exp	
Rx Side Pressure	0-1500 psi	6-29-95	A019101Q
Bonnet	0-2000 psi	6-29-95	C019101
Pump Side	0-1500 psi	6-29-95	B019101
Temp	50-300 °F	NA	—

8/31/95

8/31/95

Corrected

Test #	Final Seat Thrust, lbf	Static Pullout Thrust, lbf	Reactor Disk Side Pressure, psi	Pump Disk Side Pressure, psi	Pullout Thrust, lbf	Pullout Motor Power/ I/ pf	Pullout Torque, ft-lb	Comments	Prepared/ Reviewed	Time / Date
1 Static	MAX 74866	28378	Ø	Ø						
2 Static	Max 74552	28165	Ø	Ø						

8-31-95

07/21/95

VALVE TAG NUMBER: CRANE 10	VOTES SYSTEM SERIAL NO.: A1098
VOTES SYSTEM QA NO.: 27801Q	CAL DUE DATE: 1/96
CALIBRATOR LOCATION: (THREADED) UN-THREADED SLOTTED TRANSITION	
DESCRIPTION: Pressure Lock	

NEW EFFECTIVE STEM DIA.	CB3-100 LENGTH: 25 ft	AMP PROBE SETTING:
ANTI-ROTATION DEVICE: yes (no)		

CALIBRATION TABLE

RUN #	Test Number	VOTES SENS NO.	CAL DEV. NO.	CLAMP PRE-TENSION READING	TSS	MAX THRUST / Pullout	RSQ	CFA	BFSL SENS	BFSL % CHG	STEM TEMP (F)	GAIN
1	1	A2421	A1283	2900	1.5	~~60K/LO~~	OVERRANGE VFS	–	–	–	AMB	10/5
2	1	"	"	2900	1.5	80 / 124K	.997	1.00	1.975			10/2
3	1	A2421	A1283	2895	1.5	84653/268K	.997	1.00	1.982			
1	16	A2421	A1283	2910	2.5	83K / 35K	.999	1.00	2.030		AMB	2/2
2						FIK / 36K	.999	1.000	2.038	03 %	AMB	2/2

8/31/95 Jack A Kelly 8-31-95

Test #	Final Seat Thrust, lbf	Static Pullout Thrust, lbf	Reactor Disk Side Pressure, psi	Pump Disk Side Pressure, psi	Pullout Thrust, lbf	Pullout Motor Power/ I/ pf	Pullout Torque, ft-lb	Comments	Prepared/ Reviewed	Time / Date
1			642/640	0						
2			840/820	0						
3			240/230	0						
4			1060/1060	0						

94°F

8-31-95

Test #	Final Seat Thrust. lbf	Static Pullout Thrust, lbf	Reactor/Pump Disk Side Pressure, psi	Initial Bonnet Pressure, psi	Bonnet Pressure 10 sec, psi	Bonnet Pressure 20 sec, psi	Bonnet Pressure 30 sec, psi	Bonnet Pressure 40 sec, psi	Prepared/ Reviewed	Time / Date
1			350/350	600						10:09
2			350/340	830	380					
3			350/350	1040	380					
4			350/350	980	400					
			350/350	1180	400					
			0/0	1300	270					
17			350/350	640	350					
18			350/350	1040	350					
19			0/0	1340	120					

TSS = 1.5

TSS = 2.5

8-31-95

Test #	Final Seat Thrust. lbf	Static Pullout Thrust, lbf	Reactor Disk Side Pressure, psi	Initial Bonnet Pressure, psi	Bonnet Pressure 10 sec, psi	Bonnet Pressure 20 sec, psi	Bonnet Pressure 30 sec, psi	Bonnet Pressure 40 sec, psi	Prepared/ Reviewed	Time / Date
20			350/380	690	380					
21			350/350	1040	350					
22			380/380	1010	380					
23			0/0	1260	0					

Aux sensor - 2900

1

John F Kelly · 8-31-95

VALVE TAG NUMBER:	VOTES SYSTEM SERIAL NO.:
VOTES SYSTEM QA NO.:	CAL DUE DATE:
CALIBRATOR LOCATION: THREADED UN-THREADED SLOTTED TRANSITION	
DESCRIPTION:	

NEW EFFECTIVE STEM DIA.	CB3-100 LENGTH: ft	AMP PROBE SETTING:
ANTI-ROTATION DEVICE: yes no		

CALIBRATION TABLE

RUN #	Test Number	VOTES SENS NO.	CAL DEV. NO.	CLAMP PRE-TENSION READING	TSS	MAX THRUST	RSQ	CFA	BFSL SENS	BFSL % CHG	STEM TEMP (F)	GAIN

Test #	Final Seating Thrust, lbf	Static Pullout Thrust, lbf	Reactor/Pump Disk Side Pressure, psi	Reactor Disk Side Leakage, scfm	Pump Disk Side Leakage, scfm	Comments	Prepared	Reviewed	Time/ Date

Test #	Final Seat Thrust. lbf	Static Pullout Thrust, lbf	Reactor Disk Side Pressure, psi	Initial Bonnet Pressure, psi	Bonnet Pressure 10 sec, psi	Bonnet Pressure 20 sec, psi	Bonnet Pressure 30 sec, psi	Bonnet Pressure 40 sec, psi	Prepared/ Reviewed	Time / Date

Test #	Final Seat Thrust, lbf	Static Pullout Thrust, lbf	Reactor Disk Side High/Low Pressure, psi	Initial/ Final Bonnet Pressure, psi	Pump Disk Side Initial/ Final Pressure, psi	Pullout Motor Power, I, pf	Pullout Thrust, lbf	Pullout Torque, ft-lb	Prepared/ Reviewed	Time/ Date
Comments:										
Comments:										
Comments:										
Comments:										
Comments:										

Crane Test

PRESSURE LOCKING SPECIAL TEST PROCEDURE
Revision 0
PRESSURE AND TEMPERATURE DATA SHEET

PRESSURE AND TEMPERATURE DATA SHEET
TEST NUMBER: 1

C16

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Time	Bonnet Pressure, psi	Reator Side Pressure, psi	Pump Side Pressure, psi	Bonnet Temperature, °F
mom 9:53	1040	0	0	
9:54	1000			
9:55	940			
9:57	860			
10:0130	1060			
10:08	1035			
:30	1020			
10:09:0				

8-31-95
8/31/95

TIME	~~Time~~ TEST No.	Bonnet Pressure, psi	Reator Side Pressure, psi	Pump Side Pressure, psi	Bonnet Temperature, °F	FINAL PRESSURE
12:13	TEST No 2	25	0	0		
12:09	TEST No 4	375	350	360		
12:25	TEST No. 6	675	355	360		400
12:34	TEST No. 7	875	350	370		400
12:47	STATIC ; TEST No. 8	360	440	335		400
12:55	TEST No. 9	1065	340	400		420-440
1:07	TEST No. 10	1065	340	340		400
1:20	STATIC TEST No 11	370	340	340		340
1:25	STATIC TEST No. 12	0	0	0		0
1:35	TEST No. 13	1220	0	0		0
1:40	TEST No. 14	1400	0	0		0
1:45	TEST No. 15	1400	0	0		0
1:52	TEST No. 16	1450	0	1450		0
1:55	TEST No. 17	1500 ~~1400~~	0	1480		0
2:01	TEST No. 18	1425 (1000)	0	1450 (1000)		0
2:02	TEST No. 19	1020	0	1000		0
2:05	TEST No 20	1040	0	1040		0
2:10	TEST No 21	1000	0	1020		0

J. A. Kelly 8-31-95

test 18 values not properly recorded,
Per NOTES test comments, 1000 psid hydro pump DP test

TIME	~~Time~~ TEST No	Bonnet Pressure, psi	Reator Side Pressure, psi	Pump Side Pressure, psi	Bonnet Temperature, °F	FINAL PRESSURE
2:15	STATIC TEST No 22	0	0	0		0
2:17	STATIC TEST No 23	0	0	0		0
2:29	STATIC TEST No 24	0	0	0		0
2:35	STATIC TEST No. 25	0	0	0		0
2:42	TEST No 26	1020	0	1020		0
2:48	TEST No. 27	990	0	990		0
2:53	TEST No 28	1510	0	1490 (1460)		0
2:56	TEST No 29	1490	0	1500 (1470)		0
3:00	STATIC TEST No 30	0	0	0		0
3:02	STATIC TEST No. 31	0	0	0		0
3:06	TEST No. 32	370	340	345		350
3:09	TEST No 33	360	340	370		350
3:22	TEST No 34	680	350	340		340
3:25	TEST No. 35	680	340	340		370
3:29	STATIC TEST No. 36	370	360	350		400
3:31	TEST No 37	340	~~340~~ 340	340		350
3:35	TEST No 38	1080	370	360		380
3:38	TEST No 39	1080	350	380		380

8-31-95

47.97 KW
42.90 KW

PRESSURE AND TEMPERATURE DATA SHEET

PRESSURE AND TEMPERATURE DATA SHEET

TEST NUMBER: _____

TIME	~~Time~~ TEST No.	Bonnet Pressure, psi	Reator Side Pressure, psi	Pump Side Pressure, psi	Bonnet Temperature, °F	FINAL PRESSURE
3:43	STATIC TEST No 40	360	330	340		340
3:47	STATIC TEST No 41	0	0	0		0
3:52	TEST No 42	1390	0	0		0
3:56	TEST No 43	1190	0	0		0
3:59	STATIC TEST No 44	0	0	0		0
4:01	STATIC TEST No 45	0	0	0		0
4:06	TEST No 46	1600	0	0		0
4:21	TEST No 47	1600	0	0		0
4:24	STATIC TEST No 48	0	0	0		0
OPEN AFTER DECLOTCH 4:31	STATIC TEST No ~~49~~ N/A	0	0	0		0
	STATIC TEST No. 49	0	0	0		0
	TEST No. 50	STALL 1900	0	0		0
	STATIC TEST No. 51					

8.31-95

Attachment 3

ComEd Response to NRC Request for Additional Information on ComEd Pressure Locking Testing