



**Carolina Power & Light Company**

P. O. Box 1551 • Raleigh, N. C. 27602

SERIAL: NLS-88-093

MAY 25 1988

LYNN W. EURY  
Senior Vice President  
Operations Support

Dr. J. Nelson Grace, Regional Administrator  
United States Nuclear Regulatory Commission  
101 Marietta Street, NW  
Atlanta, GA 30303

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2  
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62  
IE BULLETIN NO. 85-03 "MOTOR-OPERATED VALVE  
COMMON MODE FAILURES DURING PLANT TRANSIENTS  
DUE TO IMPROPER SWITCH SETTINGS"

- Reference:
- (1) CP&L letter from Mr. A. B. Cutter to Dr. J. Nelson Grace (NRC-Region II) dated October 2, 1986, Serial No. NLS-86-300
  - (2) CP&L letter from Mr. L. W. Eury to Dr. J. Nelson Grace (NRC-Region II) dated March 4, 1988, Serial No. NLS-88-037
  - (3) BWR Owners' Group Report on the Operational Design Basis of Safety-Related Motor-Operated Valves, dated September 2, 1986
  - (4) BWROG letter from Mr. R. F. Janecek to Mr. J. H. Sniezek (NRC) dated March 28, 1988, Serial No. BWROG-8815/OTR1
  - (5) Request for Additional Information Concerning Brunswick Units 1 and 2 Response to IEB 85-03, dated April 18, 1988

Dear Dr. Grace:

Carolina Power & Light Company (CP&L) hereby submits information requested by IE Bulletin No. 85-03, "Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings," dated November 15, 1985 and Reference 5. The subject Bulletin required that a design basis review be performed and a program be developed and implemented to ensure that switch settings for certain safety-related, motor-operated valves (MOV) are properly selected, tested under simulated conditions, and correctly maintained. Results of the design basis review were submitted by Reference 1.

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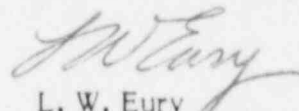
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Attachment 1 to this submittal comprises a report detailing CP&L's completion of the IEB 85-03 program. The report provides a verification of completion of the requested program, a summary of the findings as to valve operability prior to any adjustment resulting from the subject Bulletin, and a summary of data as suggested by Table 2 of the Bulletin. This report provides the information required by Action f of the Bulletin. Attachment 2 specifically provides that information requested by Reference 5. Where appropriate, this information is also contained in Attachment 1. This letter is submitted within the time frame as discussed with Mr. E. D. Sylvester on May 16, 1988.

Please note that as stated in Reference 4, the BWROG is re-evaluating valve differential pressures on the nine NRC selected MOVs, considering inadvertent valve operation. This BWROG re-evaluation is being undertaken with the understanding that assumptions are required that are outside the existing BWR ECCS design basis. CP&L will address changes to the valve differential pressures for the five NRC selected MOVs applicable to BSEP, upon completion of the BWROG re-evaluation. A report providing the results of the above design basis evaluation per Action (a) of NRC Bulletin 85-03, Supplement 1 and a schedule for implementing Actions (b) through (d) will be submitted within 30 days of our receipt of the BWROG re-evaluation.

Should you have any questions regarding this topic, please contact Mr. Arnold Schmich at (919) 836-8759.

Yours very truly,

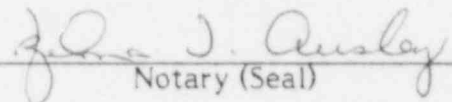
  
L. W. Eury

LWE/AWS/lah (5406AWS)

Attachments

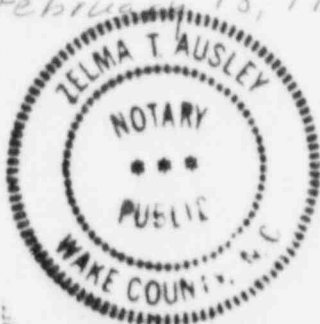
cc: Mr. W. H. Ruland  
Mr. E. D. Sylvester  
NRC Document Control Desk

L. W. Eury, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.

  
Notary (Seal)

My commission expires:

February 18, 1990



ATTACHMENT 1

Final Response to NRC IE Bulletin No. 85-03

Final Response to NRC IE Bulletin 85-03

The following sections provide specific detail on each of the IEB 85-03 action items. References 1, 2, 3, 4, and 5 refer to the references listed in the cover letter.

A. Design Basis Information

Action (a) requires that CP&L review and document the design basis for the operation of the MOVs in the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) Systems required to be tested for operational readiness in accordance with 10CFR50.55a(g). This documentation should include the maximum expected differential pressure during both opening and closing of the valve.

The Boiling Water Reactor Owners' Group (BWROG), of which CP&L is a member, developed a program to address Action (a) of the Bulletin on a generic basis. Reference 3 provided this generic methodology. The valves analyzed as requiring calculation of the differential pressures in the BWROG Report are listed in Tables 1 and 2 of Reference 1 and Tables 1 and 2 of this response, along with the maximum expected differential pressure in the direction of opening and/or closing. It should be noted that Tables 1 and 2 (of this response) contain additional valves and/or pressures not contained in the initial BSEP response (Reference 1). These additional valves/pressures were added in response to Reference 5.

Calculations of the maximum expected differential pressures provided in Reference 1 were based on the BWROG generic methodology and contained several very conservative assumptions. Due to the excessively conservative assumptions contained in the BWROG generic methodology, the calculated differential pressure for several MOVs was listed as greater than the actual value. For those valves affected, the revised data and the basis for deviation from the generic methodology was presented in Reference 2.

The valves analyzed as requiring calculation of the differential pressures in the BWROG report are listed in Tables 1 and 2, along with the maximum expected differential pressure in the direction of opening and/or closing. A discussion of the valve function, design basis, and differential pressure location (upstream or downstream) are provided in the BWROG report. As indicated in Reference 4, the BWROG is re-evaluating valve differential pressures on the nine NRC selected MOVs, considering inadvertent valve operation. The BWROG re-evaluation is being undertaken with the understanding that such assessment requires assumptions outside the existing BWR Emergency Core Cooling System design basis. CP&L will address any changes to the valve differential pressures for the five NRC selected MOVs which are applicable to BSEP, upon completion of the BWROG re-evaluation. This information will be provided in accordance with the requirements of IE Bulletin 85-03, Supplement 1.

For the valves in Tables 1 and 2 added by this response, the methodology utilized to calculate the maximum expected differential pressures is presented below:

### MOV E41-F008

MOV E41-F008 is the HPCI pump CST Test return line isolation valve, and discharges to the CST. As discussed in the BWROG Report, this valve has no safety function. The valve is normally closed, and is only opened for testing or reactor pressure control.

Since the valve is a globe valve, flow will assist in opening the valve. With the opening torque switch jumpered out, full motor torque can be applied to opening the valve. Maximum pressure is expected upstream of the valve and, therefore, assists in opening the valve. For these reasons, the valve opening differential pressure is of no concern. For conservatism however, the existing valve design differential pressure of 1140 psid has been utilized for this response.

BSEP procedures call for closing this valve under various conditions. These include closure after turbine shutdown, closure at a turbine speed of 3300 rpm (920 psi pump discharge pressure), and closure upon transfer of flow paths following an automatic initiation. In this final case, the injection valve is open before this valve reaches the full closed position. Line pressure is then only slightly (approximately 40 psi) above reactor pressure. The differential pressure resulting from valve closure, the "water hammer" term, does not apply. This term accounts for the deceleration of the fluid during closure and uses the pressure wave movement through the pipe. Since this valve is not closed until another flow path is available, the pressure wave is eliminated by the flow path. The actual closing differential pressure is, therefore, 1140 psid.

### MOV E41-F011

MOV E41-F011 is the redundant CST Test return isolation valve for both HPCI and RCIC, and discharges to the CST. As discussed in the BWROG Report, this valve has no safety function. The valve is normally closed and is only opened for testing or reactor pressure control. The opening torque switch is jumpered out; therefore, full motor torque can be applied to opening the valve. Maximum pressure is expected upstream of the valve.

BSEP procedures call for opening this valve under conditions of negligible differential pressure. This valve is opened prior to the opening of the E41-F008 or E51-F022 valves which isolate it from each system and, therefore, from high upstream pressures. For conservatism, the pressures obtained for the E41-F008 valve have been used for this valve also.

This valve is closed under conditions ranging from no differential pressure, to that seen upon transfer of flow paths following an automatic initiation. The same rationale utilized for the E41-F008 valve applies to this valve. Therefore, the same closing differential pressure also applies (1140 psid).

### MOV E51-F022

MOV E51-F022 is the RCIC pump CST Test return line isolation valve, and discharges to the CST. As discussed in the BWROG Report, this valve has no safety function. The valve is normally closed, and is only opened for testing or reactor pressure control.

Since the valve is a globe valve, flow will assist in opening the valve. With the opening torque switch jumpered out, full motor torque can be applied to opening the valve. Maximum pressure is expected upstream of the valve and, therefore, assists in opening the valve. For these reasons, the valve opening differential pressure is of no concern. For conservatism, however, the existing valve design differential pressure of 1140 psid have been utilized for this response.

BSEP procedures call for closing this valve under various conditions. These include closure after turbine shutdown, closure at a turbine speed of 2300 rpm (340 psi pump discharge pressure), and closure upon transfer of flow paths following an automatic initiation. In this final case, the injection valve is open before this valve reaches the full closed position. Line pressure is then only slightly (approximately 110 psi) above reactor pressure. The differential pressure resulting from valve closure, the "water hammer" term, does not apply. This term accounts for the deceleration of the fluid during closure and uses the pressure wave movement through the pipe. Since this valve is not closed until another flow path is available, the pressure wave is eliminated by the flow path. The actual closing differential pressure is, therefore, 1140 psid.

#### B. Switch Settings

Action (b) requires that the correct switch settings be established for the differential pressures calculated in Action (a) above. It also requires the establishment of a program to review and revise, as necessary, the methods for selecting and setting all switches (i.e., torque, torque bypass, limit, and overload).

The procedures used to set torque switch bypass and position limit switches at BSEP have been reviewed and found to be acceptable. Switches are set four-percent from the full-opened and full-closed positions unless otherwise evaluated. The four-percent positions are determined by the total number of handwheel turns for the valves (listed on the data sheet). The problem encountered at Davis-Besse 1, as a result of counting handwheel turns, is not considered applicable to BSEP since for those valves governed by this Bulletin that are required to open against a differential pressure, the open torque switches are jumpered out for the full stroke of the valve. For those valves required to close, the limit switch is jumpered out to allow for torque seating of the valve.

The methodology used to determine overload protection setpoints has been reviewed and found to be acceptable. This methodology (coordination verification and component selection for safety-related valves) has been established using the guidance of Regulatory Guide 1.106 in that the uncertainties with respect to coordination are resolved in favor of the valve performing its design function.

A majority of the valves in this response (see Table 1 and 2) were tested against the calculated differential pressure, or a larger value, by the valve vendor prior to shipment. The actuator design torque values supplied by the valve vendor have, therefore, been previously verified and will be used as the minimum allowable torque value. The same philosophy applies to those valves that are "type tested". The required torque settings for these valves are listed in Tables 1 and 2.

For those valves that do not fall into the above grouping, the actuator torque required for proper operation against the calculated differential pressure was determined based on the valve vendor input, the actuator vendor input, and, as required, the results of differential testing. The methodology for determining the required torque settings for the valves in this grouping are detailed in Section C below. The required torque settings for these valves are listed in Table 1 and 2.

The Unit 1 valve actuators that are subject to the requirements of the Bulletin were completely rebuilt prior to stroke testing and therefore the "as-found" operability cannot be directly determined. There were no significant problems noted during the rebuilding or stroke testing of the Unit 1 actuators that would have been expected to result in valve inoperability. No valves tested as a result of this Bulletin were determined to be inoperable.

#### C. Valve Testing

Action (c) requires that valve torque switch settings shall be changed, as appropriate, to those determined in Action (b) above. This item also requires valve testing at the differential pressure calculated in Action (a) above, except where that differential pressure is the result of a line break.

The initial response to IEB 85-03 (Reference 1) specified that for valves for which differential pressure test data at the calculated differential pressure could not be found, or for which a "type test" valve could not be found, a test would be performed. Two such tests were required.

The first test was for the HPCI and RCIC turbine exhaust line vacuum breaker Isolation Valves 1-E41-F075, 1-E41-F079, 1-E51-F062, and 1-E51-F066, respectively. These valve/actuator assemblies are identical, and so meet the criteria for "type testing". The 1-E51-F062 was chosen for the test.

Special Procedure 87-022 was written to control and document the testing. The testing was done at the 27 psid value calculated for the valve, and the valve opened and closed properly at this differential pressure. Prior to the differential pressure test, the valve was verified to torque out at 34 ft-lbs. This torque value will therefore be the minimum setting allowable for the four valves mentioned above.

The second test was for the HPCI pump Condensate Storage Tank Suction Valve 1-E41-F004. Special Procedure 87-028 was written to control and document the testing. The testing was done at a 38 psi differential. The only available test connection upstream of the valve is a 3/4-inch vent line. Sufficient flow could not be maintained to keep the downstream valve open using this 3/4-inch connection. The valve therefore closed at the differential pressure. The above result was a concern during the

phase, therefore, Anchor Darling (the valve vendor) was requested to evaluate the valve/actuator assembly at a differential pressure of 43 psid. The vendor responded that the valve/actuator assembly was acceptable at the higher differential pressure, and no adjustments were necessary. Based on the Anchor Darling response, no additional pressure testing was performed. This testing would have required disassembly of the downstream check valve for an adequate test.

The valves governed by this Bulletin were stroke tested in both the open and closed direction with the actuator output torque, spring-pack deflection, spring force, and motor current monitored for each valve. The as-found and as-left actuator output torque for each valve is listed in Tables 1 and 2.

D. Control of Switch Settings

Action (d) requires that procedures be prepared or revised to ensure that the correct switch settings are determined and maintained throughout the life of the plant.

The initial response to IEB 85-03 (Reference 1) specified that a procedure would be initiated to control the limit and torque switch settings for the valves of concern. The necessary requirements for changing a setting were also to be given. Engineering Procedure ENP-43, "Motor-Operated Valve Switch Settings," was therefore written to satisfy this requirement.

ENP-43 was originally written to specify HPCI and RCIC MOV torque and limit switch settings. This procedure has since been expanded to cover safety-related MOVs in general. Additionally, ENP-43 was revised to specify actuator torque requirements instead of torque switch settings, since torque switch settings alone may not guarantee that the actuator will develop adequate torque/thrust. Torque switch settings are no longer used as the sole acceptance criteria for setting up actuators since the actuator torque/thrust can vary depending on the "stiffness" (spring constant and force preload) of the spring-pack.

ENP-43 identifies the responsibilities of the various personnel involved in the control and adjustment of limit switches and actuator torque, and provides the guidelines necessary to ensure this control is maintained. It provides for informing the responsible System Engineer of all changes, and covers the methodology to be used to evaluate changes for settings outside the approved range.

I&C and mechanical technicians have been trained to set limit and torque switches and in general MOV maintenance by INPO accredited Craft and Technical Development training (C&TD). C&TD training is both formal and documented. In addition, the technicians receive on-the-job training on installed equipment in the plant. Technicians set the switches in accordance with detailed, approved maintenance procedures. Selected technicians, mechanics, and maintenance engineers have received specialized training from Limitorque on diagnostic testing and evaluation of diagnostic test results. Additionally, selected I&C and mechanical technicians have received detailed, specialized training from Power Safety on the maintenance of Limitorque valve operators.



E & F. Schedule and Report

References 1 and 2 provided a written report of the results of Action (a) and contained the program to accomplish Actions (b) through (d), including the schedule for completion.

This submittal provides a written report regarding the implementation and completion (except as noted in Reference 4) of the IE Bulletin 85-03 program at BSEP. The valves tested as a result of this Bulletin were determined to be operable, and a data summary is included in Tables 1 and 2.

TABLE I OF ATTACHMENT I

1-E41-F001

VALVE FUNCTION

MANUFACTURER

TURBINE STEAM SUPPLY

ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1278-3	10	600#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-1	1900.00	62.38

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	N/A	1118

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	584	561	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E41-F002

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VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY INBOARD ISOLATION	ANCHOR-DARLING

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VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1215-3	10	600#

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ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-1	3400.00	46.95

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DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1118

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TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	627	561	OPERABLE

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TEST METHOD, DESCRIPTION AND JUSTIFICATION

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Valve tested against calculated differential pressure by vendor and requires no further testing.

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GENERAL COMMENTS

=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E41-F003

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VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY OUTBOARD ISOLATION	ANCHOR-DARLING

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VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1217-3	10	600#

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ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-1	1900.00	24.60

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DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1118

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TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	651	568	OPERABLE

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TEST METHOD, DESCRIPTION AND JUSTIFICATION

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Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E41-F004

VALVE FUNCTION	MANUFACTURER
CST SUCTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1241-3	16	150#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	43	30

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	106	92	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve could not be tested at calculated differential pressure. Accepted based on vendor information.

GENERAL COMMENTS

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) CLOSING LIMIT SWITCH IS JUMPERED OUT.
- 2) OPENING TORQUE SWITCH IS JUMPERED OUT.

1-E41-F006

VALVE FUNCTION	MANUFACTURER
INJECTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1226-3	14	900#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-3	1900.00	35.38

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1260	1368	1550

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	1792	1615	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

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Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

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\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) OPENING TORQUE SWITCH IS JUMPERED OUT.  
2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E41-F008

VALVE FUNCTION	MANUFACTURER
CST TEST RETURN	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1727-3	10	900#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-3	1900.00	10.99

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1140	1140	1140

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	2691	2660	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.



1-E41-F011

VALVE FUNCTION	MANUFACTURER
CST TEST RETURN	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1728-3	10	900#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-0	1900.00	30.82

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1140	1140	1140

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	520	488	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION  
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Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS  
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\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) OPENING TORQUE SWITCH IS JUMPERED OUT.  
2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E41-F012

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VALVE FUNCTION	MANUFACTURER
MINIMUM FLOW BYPASS	ANCHOR-DARLING

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VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1725-3	4	600#

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ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-0	1900.00	48.59

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DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
950	1140	1140

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TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	250	252	OPERABLE

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TEST METHOD, DESCRIPTION AND JUSTIFICATION

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Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

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- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.
- 3) ACTUAL TORQUE IS SLIGHTLY LOWER THAN DESIGN, BUT IS ACCEPTABLE BASED ON CALCULATIONS OF REQUIRED TORQUE.

1-E41-F041

VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1242-3	16	150#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	24.68

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	176	172	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION  
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Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS  
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\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) OPENING TORQUE SWITCH IS JUMPERED OUT.  
2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E41-F042

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VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR-DARLING

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VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1211-3	16	150#

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ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	24.68

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DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

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TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	224	172.5	OPERABLE

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TEST METHOD, DESCRIPTION AND JUSTIFICATION

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Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

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\* ACTUATOR WAS REBUILT PRIOR TO TESTING.

- 1) OPENING TORQUE SWITCH IS JUMPED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPED OUT.

1-E41-F059

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VALVE FUNCTION	MANUFACTURER
COOLING WATER SUPPLY	VELAN

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VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W8-274B-2TS	2	500 #

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ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1900.00	27.94

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DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
30	33	460

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	38	17.5	OPERABLE

=====

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

=====

GENERAL COMMENTS

=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E41-F075

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W08-2074X-02TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	16.14

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	28

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	35	34	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve identical to one previously tested against calculated differential pressure and, therefore, by "type testing" required no further testing.

GENERAL COMMENTS

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) CLOSING LIMIT SWITCH JUMPERED OUT.

1-E41-F079

=====

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W08-2074X-02TS	2	600 #

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	16.14

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	28

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	38	34	OPERABLE

=====

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve identical to one previously tested against calculated differential pressure and, therefore, by "type testing" required no further testing.

=====

GENERAL COMMENTS

=====

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) CLOSING LIMIT SWITCH JUMPERED OUT.

1-E51-F007

=====

VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY INBOARD ISOLATION	ANCHOR-DARLING

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1220-3	4	600#

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1800.00	52.79

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1138

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	39	38	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.



1-E51-F008

=====

VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY OUTBOARD ISOLATION	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1723-3	3	600#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1135

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	69	37.9	OPERABLE

=====

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

=====

GENERAL COMMENTS

=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E51-F010

VALVE FUNCTION	MANUFACTURER
CST SUCTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1243-3	6	150#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	30	30

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	41	22.8	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) CLOSING LIMIT SWITCH JUMPERED OUT.  
2) OPENING TORQUE SWITCH IS JUMPERED OUT.

1-E51-F013

=====

VALVE FUNCTION	MANUFACTURER
INJECTION	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1227-3	4	900#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	67.38

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1140	440	1140

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	93	64	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) OPENING TORQUE SWITCH IS JUMPERED OUT.  
2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E51-F019

=====

VALVE FUNCTION	MANUFACTURER
MINIMUM FLOW BYPASS	VELAN

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W8-274B-2TS	2	600 #

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1900.00	27.94

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1124	1280	1330

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	46	35.6	OPERABLE

=====

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve tested against calculated differential pressur by vendor and requires no further testing.

=====

GENERAL COMMENTS

=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E51-F022

=====

VALVE FUNCTION	MANUFACTURER
CST TEST RETURN	ANCHOR-DARLING

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1721-3	4	900#

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-0	1900.00	19.75

=====

DESIGN BASIS DIFFERENTIAL PRESSURE	TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE
1140	1140
	1140

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	214	214	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.

1) OPENING TORQUE SWITCH IS JUMPERED OUT.

2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E51-F029

VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1243-3	6	150#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	44	22.8	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION  
=====

VALVE IS IDENTICAL TO ONE PREVIOUSLY TESTED AGAINST CALCULATED DIFFERENTIAL PRESSURE AND, THEREFORE, BY "TYPE TESTING". NO FURTHER TESTING IS REQUIRED.

GENERAL COMMENTS  
=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E51-F031

=====

VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1213-3	6	150#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	52	29	OPERABLE

=====

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

=====

GENERAL COMMENTS

=====

- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
- 1) OPENING TORQUE SWITCH IS JUMPED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPED OUT.

1-E51-F045

=====

VALVE FUNCTION	MANUFACTURER
TURBINE STEAM SUPPLY	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1283-3	3	600 #

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	43.58

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1135

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	185.1	124	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

This valve was previously tested against calculated differential pressure and requires no further testing.

GENERAL COMMENTS

- =====
- \* ACTUATOR WAS REBUILT PRIOR TO TESTING.
  - 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
  - 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.



1-E51-F046

VALVE FUNCTION	MANUFACTURER
COOLING WATER SUPPLY	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W8-274B-2TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1900.00	27.94

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1328	33	1330

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	41	35.6	OPERABLE

TLST METHOD, DESCRIPTION AND JUSTIFICATION  
=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS  
=====

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) OPENING TORQUE SWITCH IS JUMPERED OUT.  
2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

1-E51-F062

=====

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W08-2074X-02TS	2	600 #

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	16.14

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	28

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	34	34	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against the calculated differential pressure under Special Procedure 87-022

GENERAL COMMENTS

=====

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) CLOSING LIMIT SWITCH JUMPERED OUT.

1-E51-F066

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W08-2074X-02TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	16.14

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	28

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
*	46	34	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve identical to one previously tested against calculated differential pressure and, therefore, by "type testing" required no further testing

GENERAL COMMENTS

=====

\* ACTUATOR WAS REBUILT PRIOR TO TESTING.  
1) CLOSING LIMIT SWITCH JUMPERED OUT.

TABLE 2 OF ATTACHMENT 1

2-E41-F001

=====

VALVE FUNCTION	MANUFACTURER
TURBINE STEAM SUPPLY	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1278-3	10	600#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-1	1900.00	62.38

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	N/A	1118

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
632	606	561	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F002

=====

VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY INBOARD ISOLATION	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1215-3	10	600#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-1	3400.00	46.95

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1168

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
587	587	561	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPED OUT.

2-E41-F003

=====

VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY OUTBOARD ISOLATION	ANCHOR-DARLING

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1217-3	10	600#

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-1	1900.00	24.60

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1118

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
613	613	568	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F004

=====

VALVE FUNCTION	MANUFACTURER
CST SUCTION	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1241-3	16	150#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	43	30

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
130	130	92	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve could not be tested at calculated differential pressure.  
Accepted based on vendor information.

GENERAL COMMENTS

=====

- 1) CLOSING LIMIT SWITCH IS JUMPERED OUT.
- 2) OPENING TORQUE SWITCH IS JUMPERED OUT.



2-E41-F006

VALVE FUNCTION	MANUFACTURER
INJECTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1226-3	14	900#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-3	1900.00	35.38

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1260	1368	1550

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
2381	1871	1615	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F008

VALVE FUNCTION	MANUFACTURER
CST TEST RETURN	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1727-3	10	900#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-3	1900.00	10.99

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1140	1140	1140

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
2835	2835	2660	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION  
=====

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS  
=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F011

VALVE FUNCTION	MANUFACTURER
CST TEST RETURN	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1728-3	10	900#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-0	1900.00	30.82

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1140	1140	1140

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
600	495	488	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F012

=====

VALVE FUNCTION	MANUFACTURER
MINIMUM FLOW BYPASS	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1725-3	4	600#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-0	1900.00	48.59

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
950	1140	1140

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
443	274	252	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPED OUT.

2-E51-F022

VALVE FUNCTION	MANUFACTURER
CST TEST RETURN	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1721-3	4	900#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-0	1900.00	19.75

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1140	1140	1140

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
284	284	214	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F041

VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1242-3	16	150#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	24.68

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
237	223	172	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F042

VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1211-3	16	150#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	24.68

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
212	198	172.5	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F045

VALVE FUNCTION	MANUFACTURER
TURBINE STEAM SUPPLY	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1283-3	3.00	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	43.58

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1135

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
114	155	124	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION  
=====

Valve previously tested against calculated differential pressure and requires no further testing.

GENERAL COMMENTS  
=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.
- 3) VALVE AS-FOUND TORQUE IS SLIGHTLY LOWER THAN DESIGN, BUT WAS ACCEPTABLE BASED ON CALCULATION OF REQUIRED TORQUE.



2-E41-F059

VALVE FUNCTION	MANUFACTURER
COOLING WATER SUPPLY	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W8-274B-2TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1900.00	27.94

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
30	33	460

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
32	32	17.5	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F075

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	W8-254B-2TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	41.14

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	600

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
36	36	10.8	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve is identical to one previously tested against calculated differential pressure and, therefore, by "type testing", so no further testing is required.

GENERAL COMMENTS

- 1) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E41-F079

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	W8-254B-2TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	41.14

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	600

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
31	31	10.8	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve is identical to one previously tested against calculated differential pressure and, therefore, by "type testing", so no further testing is required.

GENERAL COMMENTS

1) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F007

=====

VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY INBOARD ISOLATION	ANCHOR

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1220-3	4	600#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1800.00	52.79

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1138

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
78	58	38	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F008

=====

VALVE FUNCTION	MANUFACTURER
STEAM SUPPLY OUTBOARD ISOLATION	ANCHOR-DARLING

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1723-3	3.00	600#

=====

=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1105	1105	1135

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
54	54	37.9	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F010

=====

VALVE FUNCTION	MANUFACTURER
CST SUCTION	ANCHOR

=====

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VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1243-3	6	150#

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=====

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

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=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	30	30

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
62	52	22.8	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) CLOSING LIMIT SWITCH IS JUMPERED OUT.
- 2) OPENING TORQUE SWITCH IS JUMPERED OUT.

2-E51-F013

VALVE FUNCTION	MANUFACTURER
INJECTION	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1227-3	4.00	900 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	67.38

DESIGN BASIS DIFFERENTIAL PRESSURE	TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN 1140	CLOSE 440 1140

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
127	76	64	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F019

=====

VALVE FUNCTION	MANUFACTURER
MINIMUM FLOW BYPASS	VELAN

=====

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W8-274B-2TS	2.00	600 #

=====

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ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1900.00	25.33

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1124	1280	1330

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
31	54	36	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.
- 3) AS-FOUND TORQUE WAS SLIGHTLY LOWER THAN DESIGN, BUT WAS ACCEPTABLE BASED ON CALCULATION OF REQUIRED TORQUE.



2-E51-F029

=====

VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR

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=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1243-3	6	150#

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ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

=====

=====

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

=====

=====

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
87	43	22.8	OPERABLE

=====

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve is identical to one previously tested against calculated differential pressure and, therefore, by "type testing", so no further testing is required.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F031

VALVE FUNCTION	MANUFACTURER
SUPPRESSION POOL SUCTION	ANCHOR

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	1213-3	6	150#

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	49.22

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
97	30	100

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
53	53	29	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION  
=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS  
=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F045

VALVE FUNCTION	MANUFACTURER
TURBINE STEAM SUPPLY	ANCHOR-DARLING

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	1283-3	3.00	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-00	1900.00	43.58

DESIGN BASIS DIFFERENTIAL PRESSURE	TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN 1105	CLOSE N/A 1135

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
114	155	124	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve previously tested against calculated differential pressure and requires no further testing.

GENERAL COMMENTS

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.
- 3) VALVE AS-FOUND TORQUE IS SLIGHTLY LOWER THAN DESIGN, BUT WAS ACCEPTABLE BASED ON CALCULATION OF REQUIRED TORQUE.

2-E51-F046

=====

VALVE FUNCTION	MANUFACTURER
COOLING WATER SUPPLY	VELAN

=====

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GLOBE	W8-274B-2TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNI' OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1900.00	25.33

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
1328	33	1330

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
150	38	36	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

=====

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

=====

- 1) OPENING TORQUE SWITCH IS JUMPERED OUT.
- 2) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F062

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	W8-274B-2TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	45.00

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	600

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
28	23	10.8	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) CLOSING LIMIT SWITCH IS JUMPERED OUT.

2-E51-F066

VALVE FUNCTION	MANUFACTURER
TURBINE EXHAUST VACUUM BREAKER	VELAN

VALVE TYPE	VALVE MODEL	VALVE SIZE (INCHES)	PRESSURE RATING (# CLASS)
GATE	W8-274B-2TS	2	600 #

ACTUATOR MANUFACTURER	OPERATOR MODEL	MOTOR RPM	UNIT OUTPUT SPEED (RPM)
LIMITORQUE	SMB-000	1800.00	45.00

DESIGN BASIS DIFFERENTIAL PRESSURE		TEST CASE DIFFERENTIAL PRESSURE (PSID)
OPEN	CLOSE	
N/A	27	600

TORQUE PRIOR TO ADJUSTMENT (FT-LB)	TORQUE AFTER ADJUSTMENT (FT-LB)	DESIGN TORQUE (FT-LB)	"AS-FOUND" OPERABILITY
47	24	10.8	OPERABLE

TEST METHOD, DESCRIPTION AND JUSTIFICATION

Valve was tested against calculated differential pressure by vendor and requires no further testing.

GENERAL COMMENTS

- 1) CLOSING LIMIT SWITCH IS JUMPERED OUT.

ATTACHMENT 2

Response to NRC Request for Additional Information

Response to NRC Request for Additional Information  
Concerning the Initial BSEP Response to IE Bulletin 85-03

- NRC REQUEST: 1. Revise Tables 1 and 2 of the response dated October 2, 1986 to include the following MOVs, or justify their exclusion. As required by Action Item a of the Bulletin, assume inadvertent equipment operations:
- (a) HPCI MOV F007 is shown normally open in Zone B-6 of Drawing D-25023, Sheet 1, Revision 28 (Unit 1), and as MOV 8 on page 68 of BWROG Report NEDC-31322 dated September 1986. How would injection to the reactor vessel be ensured if this valve were to be:  
(a) actuated inadvertently to the closed position upon intended initiation of the system, or (b) left closed inadvertently?
  - (b) RCIC MOV F012 is shown normally open in Zone B-6 of Drawing D-25029, Sheet 1, Revision 31 (Unit 1), and as MOV 8 on page 72 of the BWROG Report. The question in Item 1(a) above applies here also.
  - (c) RCIC MOV V8 is shown normally open in Zone C-2 of Drawing D-25029, Sheet 1, Revision 31 (Unit 1), and as MOV X on page 74 of the BWROG Report. How would steam supply to the RCIC Turbine be ensured if this valve were to be operated inadvertently as described in Item 1(a) above?

CP&L RESPONSE In accordance with the agreement between the BWROG and the NRC (Reference 4), the BWROG is re-evaluating the differential pressures of the subject valves while taking into account inadvertent operation. Upon completion of that analysis, CP&L will provide the requested response in accordance with IEB 85-03, Supplement 1. This position is addressed in Attachment 1 Action (a), "Design Basis Information."

- NRC REQUEST 2. Revise Tables 1 and 2 of the response dated October 2, 1986 to include the following MOVs, or justify their exclusion. According to pages 55 and 59 of the BWROG Report, these valves have no safety actions; however, utilities are expected to report differential pressures for testing, per Note o on page 66 of that report.
- (a) HPCI MOVs F008 and F011 are shown normally closed in Zones C-5 and F-3 of Drawing D-25023, Sheet 1, Revision 28 (Unit 1), and as MOVs 5 and 6 on page 68 of the BWROG Report.
  - (b) RCIC MOV F022 is shown normally closed in Zone D-5 of Drawing D-25029, Sheet 1, Revision 31 (Unit 1), and is MOV 5 on page 72 of the BWROG Report.



- CP&L RESPONSE The requested information has been incorporated into the response accompanying this additional information. Tables 1 and 2 of the initial response (Reference 1) have not been revised since the data sheets provided in this response have incorporated the required changes. The methodology utilized to obtain the differential pressures for the valves added is provided in Attachment 1, Action (a), "Design Basis Information."
- NRC REQUEST 3. Revise Tables 1 and 2 of the response dated October 2, 1986 to include values of differential pressure for opening MOVs F004 and F010, or justify exclusion of these pressures. These valves are shown normally open as HPCI MOV 3 on page 68 and as RCIC MOV 3 on page 72 of the BWROG Report. How would suction from the CST be ensured if these MOVs were to be operated inadvertently as described in Item 1(a) above?
- CP&L RESPONSE Refer to our response to Request No. 1.
- NRC REQUEST 4. Revise Table 2 of the response dated October 2, 1986 to replace "N/A" with a value of differential pressure for closing RCIC Turbine Steam Supply MOV F045, or justify its exclusion. This normally closed valve is shown in Zone D-2 of Drawing D-25029, Sheet 1, Revision 31, is shown as MOV I on page 74 of the BWROG Report, and is given a safety action for closing on page 61 of that report.
- CP&L RESPONSE Refer to our response to Request No. 2.
- NRC REQUEST 5. The method of handwheel turns described in Item B of the response dated October 2, 1986 is not recommended. For the reason, refer to the description of the Davis-Besse event on pages 1 and 2 of IEB 85-03. If this method is indeed planned for use, additional justification is required.
- CP&L RESPONSE The justification for the BSEP position is provided in Attachment 1, Action (b), "Switch Settings."
- NRC REQUEST 6. The proposed program for Action Items b, c, and d of the Bulletin is incomplete. Provide the following details as a minimum:
- (a) commitment to a training program for setting switches and maintaining valve operators,
  - (b) commitment to justify continued operation of a valve determined to be inoperable,

- (c) description of a method possibly needed to extrapolate valve stem thrust determined by testing at less than maximum differential pressure,
- (d) justification of a possible alternative to testing at maximum differential pressure at the plant,
- (e) consideration of pipe break conditions as required by the bulletin,
- (f) stroke testing when necessary to meet Bulletin requirements, and
- (g) consideration of applicable industry recommendations in the preparation of procedures to ensure maintenance of correct switch settings.

CP&L RESPONSE

- (a) A description of the training provided to maintenance personnel who work with limit torque actuators is provided in Attachment 1, Action (d), "Control of Switch Settings."
- (b) A commitment to justify continued operation with inoperable valves is not required. This is inherent in existing plant operations methodology. If a motor-operated valve is inoperable, system operability is dispositioned in accordance with the Technical Specifications for that system. If an LCO was generated as a result of the condition, the LCO cannot be canceled unless the condition is corrected or evaluated as acceptable by an engineering evaluation in accordance with ENP-12. The engineering evaluation is the required justification for continued operation.
- (c) This item does not apply to BSEP. Valve testing was performed at the required differential pressures, or justification provided for not testing the valve. BSEP does not intend to test valves at less than the maximum differential pressure. The statement in question was included in the initial response since test methods had not been finalized at that time.
- (d) Same as (c) above.
- (e) IE Bulletin 85-03 requires consideration of pipe break conditions in the determination of valve differential pressures, when a line break is part of the design basis for that valve. It also requires that the resulting switch settings should be verified, to the extent practical, by the same methods that would be used to verify other settings that are not tested at the maximum differential pressure.

BSEP participated in the BWROG program that addressed the subject Bulletin on a generic basis. The report prepared by the BWROG (Reference 3) took into account line breaks as required by the Bulletin when determining valve differential

pressures. As for verification of the associated switch settings, the differential pressures obtained for the subject valves were less than the existing design differential pressures of the valves. Therefore, as discussed in the initial response for BSEP (Reference 1), the settings have been previously verified to be acceptable and additional testing is not required.

- (f) IE Bulletin 85-03 requires that each valve be stroke tested, to the extent practical, to verify that the settings defined in Action (b) of the bulletin have been properly implemented. This testing is required even if testing with differential pressure cannot be performed.

As detailed in Attachment 1, Action (c), "Valve Testing," the valves contained in the response were stroked in both the open and closed directions. Actuator output torque was measured during this testing, with the as-found and as-left torque values provided. No further action is required.

- (g) Attachment 1, Action (d), "Control of Switch Settings," provides details on the procedure developed to ensure that switch settings are properly maintained. The torque requirements referred to in the response are the minimum and maximum values for each valve. The minimum value is that required to ensure proper operation at the specified differential pressure, while the maximum is that which will not exceed the rating of the spring-pack, the actuator, the motor, or the valve itself. Criteria more restrictive than that used by the actuator manufacturer was utilized.