CP&L
Carolina Power & Light Company

SEP 07 1988

SERIAL: NLS-88-209

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62
RESPONSE TO NRC BULLETIN 85-03, SUPPLEMENT 1

References:

(1) CP&L letter from Mr. L. W. Eury to Dr. J. Nelson Grace (NRC-Region II) dated May 25, 1988, Serial: NLS-88-093
(2) BWR Owners' Group Report on the Operational Design Basis of Safety-Related Motor Operated Valves, dated September 2, 1986
(3) BWROG letter from Mr. R. F. Janecek to Mr. J. H. Sniezek (NRC) dated March 28, 1988, Serial No. BWROG-8815/OTR
(4) BWROG letter from Mr. W. G. Flock, "BWROG Response to IEB 85-03, Supplement 1", dated August 4, 1988, Serial No. OG8-723-34

Gentlemen:

Carolina Power & Light Company (CP&L) hereby submits the initial information requested by NRC Bulletin 85-03, "Motor-Operated Valve Common Mode Failures During Plant Transients Due To Improper Switch Settings", Supplement 1, dated April 27, 1988. NRC Bulletin 85-03, dated November 15, 1985, required that a design basis review be performed and a program be implemented to ensure that the switch settings for certain safety-related, motor-operated valves (MOV) are properly selected, tested under simulated conditions, and are correctly maintained. Supplement 1 of the Bulletin requires this program to incorporate nine (9) additional MOVs selected by the NRC.

The BSEP program describing the completion of the original Bulletin requirements and the results thereof is detailed in Reference 1. This program was based upon generic methodology (Reference 2) developed by the BWR Owners' Group (BWROG). As discussed in Reference 3, the BWROG began development of a generic approach to re-evaluate valve differential pressures of the nine (9) NRC selected MOVs considering inadvertent valve operation. This re-evaluation was based upon assumptions outside of the existing BWR Emergency Core Cooling System design basis. Reference 4 transmitted this generic methodology to CP&L.

Of the nine (9) MOVs selected by the NRC for re-evaluation, only five (5) are applicable to BSEP. Design basis information for these MOVs and an implementation schedule for the remaining Supplement actions are

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provided as an attachment to this letter. A final report providing the program results will be submitted by January 16, 1990.

Please refer any questions regarding this submittal to Mr. Stephen D. Floyd at (919) 836-6901.

Yours very truly,

M. A. McDuffie
Senior Vice President-
Nuclear Generation

AWS/aws (\cor\)

Enclosure

cc: Dr. J. Nelson Grace
Mr. W. H. Ruland
Mr. B. C. Buckley

M. A. McDuffie, 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: June 26, 1989

RESPONSE TO NRC BULLETIN 85-03, SUPPLEMENT 1

The following sections provide specific detail on each of the NRC Bulletin 85-03, Supplement 1 action items.

A. Design Basis Information

Action (a) requires that CP&L review and document the design basis for operation of the MOVs in the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) Systems not included in the actions planned or completed in response to the original Bulletin. This documentation should include the maximum expected differential pressure during both opening and closing of the valve. In addition, when determining the maximum differential pressure for valves that can be inadvertently mispositioned, the fact that the valve must be able to recover from such mispositioning should be included.

Reference 1 provided a report detailing CP&L's completion of the IEB 85-03 program. As indicated in Reference 1, CP&L agreed to re-evaluate five NRC selected MOVs considering inadvertent valve operation. This evaluation was undertaken with the understanding that assumptions are required that are outside the existing BWR ECCS design basis. Reference 4 provided the BWROG methodology for calculating the maximum differential pressure for the NRC selected MOVs considering inadvertent operation. With the exception of the valves discussed below, this methodology was used for determining the maximum differential pressure for the NRC selected MOVS considering the effects of inadvertent operation. The maximum differential pressures for the NRC selected MOVs are provided in Table 1.

MOV E41-F007

MOV E41-F007 is the HPCI injection valve test valve. The test valve is normally open and is only closed to perform testing of the system injection valve. During an abnormal event, the HPCI injection valve test valve is required to remain open to ensure system flow is directed to the reactor vessel. The concern for the test valve is whether it could be reopened if inadvertently closed during system initiation, or left closed. BSEP is currently planning to install a keylock switch for the test valve to eliminate the potential for possible valve mispositioning during system initiation. These keylock switches will be installed during the 1988 Unit 1 (Reload 6) and the 1989 Unit 2 (Reload 8) refueling outages. If this valve was left closed inadvertently, an open signal would be received during system initiation, thereby opening the test valve. The E41-F007 valve would open before the turbine stop valve or injection valve; therefore, the differential pressure would be negligible. The E41-F007 valve was tested by the vendor at the original valve design differential pressure of 1140 psid. The valve has been stroke tested under the original requirements of the Bulletin, and no further testing is planned.

MOV E51-F012

MOV E51-F012 is the RCIC injection valve test valve. The test valve is normally open and is only closed to perform testing of the system injection valve. During an abnormal event, the RCIC injection valve test valve is required to remain open to ensure system flow is directed to the reactor vessel. The concern for the test valve is whether it could be reopened if inadvertently closed during system initiation, or left closed. BSEP is currently planning to install a keylock switch for the test valve to eliminate the potential for possible valve mispositioning during system initiation. These keylock switches will be installed during the 1988 Unit 1 (Reload 6) and the 1989 Unit 2 (Reload 8) refueling outages. If the test valve was left closed inadvertently, an open signal would be received during system initiation, thereby opening the valve. The E51-F012 valve and steam admission valve to the turbine would begin to open at the same time. The injection valve would begin to open when the steam admission valve is 4% open. Since the E51-F012 valve would be opening during turbine ramp up, the valve would be off the seat before a significant differential pressure could be generated. The E51-F012 valve was tested by the vendor at the original valve design differential pressure of 1140 psid. This valve was stroke tested under the original requirements of the Bulletin and no further testing is planned.

MOV E51-V8

MOV E51-V8 is the RCIC turbine trip and throttle valve. This valve is normally open when the RCIC system is in standby readiness, and remains open during system operation to provide steam flow to the RCIC turbine. The motor operator on this valve is only used to open the valve by means of a latch mechanism. The valve is closed by a trip mechanism which releases the latch. The valve is reopened by manually stroking the operator to the closed position, where it latches to the disk mechanism, and then returning the operator to the open position. The concern for this valve is whether the valve could be reopened if it was inadvertently tripped closed, either manually or automatically. Using the BWROG methodology, the calculated maximum differential pressure for this valve would be 1105 psid. The valve contains a pilot disk which opens first and is subjected to the full differential pressure. The open pilot valve and a connected pressure balancing chamber reduce the differential pressure across the main disk to 10% of the full closed differential pressure. Therefore, the maximum differential pressure for the main disk of this valve is 111 psid and for the pilot disk is 1105 psid.

B. Switch Settings

Action (b) requires that for the applicable valves, the correct switch settings be established for the differential pressures calculated in action (a) above. Action (b) 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, overload).

The program for selecting and setting switches was outlined in Reference 1. This program currently covers the five (5) MOVs applicable to BSEP that required re-evaluation as part of Supplement 1 to NRC Bulletin 85-03. This program will be modified, as necessary, to include any required changes in switch or torque settings.

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.

Testing of the MOVs that required re-evaluation under Supplement 1 to the Bulletin will be completed, as required, during the 1988 Unit 1 (Reload 6) and the 1989 Unit 2 (Reload 8) refueling outages. The other MOVs governed by this Bulletin have been either: (1) tested against the maximum expected differential pressure; or (2) justified for not testing. Justification for not testing has been established as outlined in Reference 1.

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.

As stated in Reference 1, procedures to ensure that the correct switch settings are determined and maintained have been established. The five (5) MOVs applicable to BSEP that required re-evaluation under Supplement 1 to the Bulletin are currently included in this program. This program will be revised as necessary.

E. & F. Schedule and Final Report

As noted in the cover letter, this submittal provides the results of action item (a) for the five (5) BSEP applicable NRC selected MOVs considering the effects of inadvertent valve mispositioning.

Action items (b) through (d) for the additional five (5) MOVs are currently scheduled for completion by February 3, 1989 for Unit 1 and by November 17, 1989 for Unit 2. These dates correspond to the end of the next refueling outages for Unit 1 and Unit 2, as required by the Bulletin. Based on this refueling outage schedule, a final report detailing the results of any required testing will be submitted by January 16, 1990.

TABLE 1

CP&L Valve Tag No.	Valve Function	Maximum Expected Differential Pressure (psid) Open	Close	Comments
E41-F004	CST Suction	43	43	Note A
E41-F007	HPCI Injection Valve Test Valve	N/A	N/A	Note B
E51-V8	Turbine Stop Valve	111	N/A	Notes A and C
E51-F010	CST Suction	43	30	Note A
E51-F012	RCIC Injection Valve Test Valve	N/A	N/A	Note B

Notes:

A) Inadvertent valve operation considered for differential pressure.

B) Inadvertent valve operation not considered since a keylock switch will be installed.

C) Pilot disk opens at 1105 psid.