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August 10, 1984
BECo Ltr. #84-130

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Division of Engineering and Technical Programs
U.S. Nuclear Regulatory Commission
Region I - 631 Park Avenue
King of Prussia, PA 19406

License No. DPR-35
Docket No. 50-293

Subject: Inspection 84-16

References: (a) BECo Letter to the NRC 84-001, dated 1/3/84
(b) BECo Letter to the NRC 84-082, dated 6/13/84

Dear Sir:

Your Inspection Report 84-16, with respect to corrective actions taken relative to Violation (83-23-01) regarding the HPCI Check Valve 2301-7, expressed a finding that Boston Edison did not adequately address all needed corrective steps to avoid further violations of inservice testing requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWV, Paragraph 3520, for check valve tests. Boston Edison Company has spent considerable effort to prevent recurrence of this type of violation. This letter provides a more complete response concerning the corrective actions already taken or under consideration with respect to the subject check valves, and the alternatives we are considering to demonstrate compliance with Paragraph 3520, considering the physical plant design of Pilgrim Station.

Section XI, Subsection IWV, Sub-Paragraph 3522, of the ASME Code states, "Check valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation...Valves which cannot be exercised during plant operation shall be specifically identified by the owner and shall be full-stroke exercised during cold shutdowns." Per the Inspection Report, check valves which fall into this category are the check valves associated with HPCI, RCIC, Core Spray, and RHR Systems.

Subpart (b) of Sub-Paragraph 3522 further requires:

> "Valves that are normally closed during plant operation and whose function is to open on reversal of pressure differential shall be tested by proving that the disk moves promptly away from the seat when the closing pressure differential is removed and flow through the valve is initiated, or when a mechanical opening force is applied to the disk. Confirmation that the disk moves away from the seat shall be by visual observation, by electrical signal initiated by a position indicating device, by observation of substantially free flow through the valve as indicated by appropriate pressure indication in the system, or by other positive means. This test may be made with or without flow through the valve. If it is made without flow through the valve, a mechanical exerciser shall be used to move the disk. The force or torque delivered to the disk by the exerciser must be limited to less than 10% of the equivalent force or torque represented by the minimum emergency condition pressure differential acting on the disk, or to 200% of the actual observed force or torque required to perform the exercise on the valve when the valve is new and in good operating condition, whichever is less..."

The corrective actions already taken or planned for the subject valves are as follows:

HPCI Injection Check Valve, 2301-7

The immediate corrective actions concerning this valve were described in Reference (a) which was our response to the NRC, dated January 3, 1984. These actions included successfully performing an injection test of HPCI, utilizing reactor steam to run the HPCI turbine while at power, and using PNPS Procedure 8.I.13 to functionally exercise the 2301-7 valve to the open and closed position. Subsequent action has included complete replacement during the present refueling outage of the 2301-7 valve with a new check valve. Procedure 8.I.13 also has been revised to include some additional administrative controls.

Our present intention is not to use the present version of Procedure 8.I.13 to test this valve, because it imposes a cold water transient with the attendant risk of scramming the plant during the test. Instead, an alternate procedure will be prepared for mechanically exercising the 2301-7 valve to demonstrate compliance with Paragraph IWV-3522(b). The test will record the required force or torque to open the valve to the full open position and the mechanical exerciser will also be used to indicate valve closure. In this manner, the position(s) required to fulfill the valve's function will be tested in accordance with IWV-3522(b).

With regard to test frequency of IWV-3522, PNPS has already requested relief to a refuel outage frequency in the second, 10-year Inservice Test Program. Since the original relief request was based on a different test method (process flow through the valve), the basis for the relief request will change. The request for refuel outage frequency is not likely to change based on the following: The HPCI line enters feedwater line B between the inboard and outboard feedwater check valves. There is no bypass line around the check valve to equalize pressure on both sides of the disk. Any process feedwater flow in the line, which is a possible condition during cold shutdown, will provide resistance to mechanical exercising and render the test impractical with regard to actual accomplishment and analysis of test results. Additionally, hazards exist to personnel and equipment with process flow on the feedwater side of the valve as nominally a pressure of approximately 300 to 600 psig is expected from the condensate pump. If startup testing reveals that the mechanical exercising test is not feasible, then testing will be by process flow injection.

RCIC Injection Check Valve, 1301-50

An injection flow test procedure, similar to that above described for HPCI, has been prepared and approved for the RCIC Injection Check Valve 1301-50. This procedure, PNPS Procedure 8.I.14, was in the review cycle during the May 29, 1984 inspection, which apparently was not communicated to the inspector. The 1301-50 valve also has been replaced during the present refueling outage with a new valve.

As with HPCI, our present intent is not to use the present version of Procedure 8.I.14 to test valve 1301-50 because of the risk of an adverse transient. Instead, a test procedure similar to that described for HPCI, using a mechanical actuator, will be prepared.

Comments regarding acceptance criteria and test frequency stated for HPCI are applicable to RCIC. At the present time, RCIC Valve 1301-50 is not in the Inservice Test Program submitted for the second, 10-year interval. The status of the RCIC system in this regard is under review by NRR as part of the NRC's review of the Pilgrim second, 10-year program; the described test for RCIC 1301-50 is planned to resolve open item 84-16-01 only.

RHR Injection Check Valves, 1001-68A and B, and Core Spray Injection Check Valves, 1400-9A and B

In the case of RHR 1001-68A and B valves and Core Spray 1400-9A and 9B valves, our assessment is that the events and system configuration that occurred in HPCI, which prompted Violation A, are not applicable to these valves. For RHR, downstream equipment protection from failure of 1001-68A or B to seat is provided by valves MO1001-28A&B and MO1001-29A&B. For Core Spray, downstream equipment protection is provided by valves MO1400-25A&B and 24A&B. All these motor-operated valves are outside containment, and one in each injection loop is normally closed. Furthermore, all these motor-operated valves are local leak rate tested in accordance with 10CFR50, Appendix J, test criteria.

The downstream piping in the low pressure systems is protected by the closed valve in conjunction with a valve logic interlock that prevents simultaneous opening of both the 28 and 29 valve or the 24 and 25 valve above 400 psig reactor pressure. There is also a piping high pressure alarm between the MO1400-24 and 25 valves to annunciate if the line exceeds 400 psig. There is a piping high pressure alarm outboard of MO1001-28 to annunciate if the line exceeds 400 psig. Additionally, both systems have relief valves downstream of the motor-operated valves to mitigate downstream piping overpressurization within the capacity of the relief valve. The relief valves have been tested this refuel outage in accordance with Paragraph IWV-3500 of the ASME Code. Check Valves 1001-68A&B and 1400-9A and B all were removed from the drywell during the present refuel outage, overhauled, and restored.

Relief requests for test frequency for 1001-68A&B and 1400-9A&B have been submitted as part of the second, 10-year IST Program.

For RHR 1001-68A and B, the test procedure for stroke open testing will include the flow required to open the valve as noted in discussion with the inspector. The activities of the current outage are attempting to restore the position indication feature to Valves 1001-68A, B and 1400-A, B. If the restoration of position indication is successful, then fulfilling the requirements of ASME XI IWV-3520 will be facilitated by electrical signal initiated by the position indication device, which is an accepted method under Paragraph IWV-3522(b).

Procedures for testing these valves are described in PNPS Procedures 8.I.15 and 2.1.7.

I trust that this response will adequately clarify our position and intended future actions on the aforementioned issues and state our corrective actions taken to date.

If you have any further questions or concerns regarding the above issues, you are requested to direct them to me.

Respectfully submitted,

W D Harrington

William D. Harrington