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October 27, 1980

BECo. Ltr. #80-275

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Mr. Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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

Additional Information Concerning 10 CFR 50 App. J

- Ref. a) NRC letter (T. M. Novak) to BECo (G. C. Andognini) dated August 12, 1980.
- b) BECo. letter (J. E. Howard) to NRC (D. L. Ziemann) titled "Additional 10 CFR 50 Appendix J Evaluation" dated January 27, 1976.

Dear Sir:

Your letter Ref. a) requested information relative to implementation of Appendix J (Containment Leakage Testing) at Pilgrim Station. Accordingly, responses to your specific questions are provided below.

Item 2.1 FEEDWATER SYSTEM CHECK VALVES

BECo. requested an exemption to test feedwater check valves with water as a medium in lieu of air or nitrogen. This approach is acceptable provided the test is used to verify that the check valve will remain water-covered through-out the post-accident period.

Provide the following information needed to complete our review of this request:

1. The initial volume of water in the line at the start of the accident.
2. The acceptance criteria for the hydrostatic test (e.g., leakage rate limit, pressure decay limit, etc.).

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Response

Subsequent to this request for exemption, we modified the feedwater check valves with soft seats and have since been leak testing with air. We therefore withdraw this request for exemption.

Item 2.2 ISOLATION CHECK VALVES IN THE REACTOR WATER CLEAN-UP RETURN, REACTOR CORE ISOLATION COOLING (RCIC) PUMP DISCHARGE, HIGH PRESSURE COOLANT INJECTION (HPCI) PUMP DISCHARGE, CORE SPRAY TO REACTOR, AND RESIDUAL HEAT REMOVAL (RHR) VESSEL INJECTION LINES

BECO. has stated that replacing these check valves with air-testable check valves was not considered justified since the purpose of these valves is to limit reverse direction flow in case of a postulated upstream pipe break until downstream motor-operated isolation valves are shut. The statement implies that testing of these valves with water as a medium is at least possible and perhaps currently required.

Provide your proposal to verify that these valves will limit reverse direction flow for a sufficient period of time to permit downstream isolation including:

1. Indications available to the operator to identify a line which should be isolated by its downstream motor-operated isolation valve.
2. The initial water volume in the line at the start of the accident.
3. The acceptance criteria for any required test.

Response (Items 2.2.1 and 2.2.3)

Reactor Water Clean-up Return Check Valve (1201-81)

Indications Available

Boston Edison operators would not have to take any action since this system automatically trips the pumps and isolates the downstream motor-operated isolation valve upon actuation of logic circuits and alarms in the Control Room ("Clean-up Lines Excess or Negative Flow") utilizing DPIS-1243 and DPIS-1244.

Acceptance Criteria

Technical Specification 4.7.A.f.3 "Any one penetration or isolation valve except main steam line isolation valves 5% L to (45)".

Reactor Core Isolation Cooling (RCIC) Pump Discharge Check Valve (AO-1301-50)

The RCIC Pump Discharge line taps into the Feedwater injection piping between the inboard and the outboard Feedwater Check Valves in Loop 'A'. Since the request for exemption has been withdrawn for the Loop 'A' Feedwater Check Valves (Penetration 9A) (See Response to Item 2.1), the RCIC Pump Discharge Check Valve is now also tested with air and we therefore withdraw this request for exemption.

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Acceptance Criteria

Technical Specification 4.7.A.f.3 "Any one penetration or isolation valve except main steam line isolation valves 5% Lto (45)".

High Pressure Coolant Injection (HPCI) Pump Discharge Valve (AO-2301-7)

The HPCI Pump Discharge line taps into the Feedwater injection piping between the inboard and outboard Feedwater Check Valves in Loop 'B'. Since the request for exemption has been withdrawn for the Loop 'B' Feedwater Check Valves (Penetration 9B) (See Response to Item 2.1), the HPCI Pump Discharge Check Valve is now also tested with air and we therefore withdraw this request for exemption.

Acceptance Criteria

Technical Specification 4.7.A.f.2 "Any one penetration or isolation valve except main steam line isolation valves 5% Lto (45)".

Core Spray to Reactor Check Valves (AO-1400-9 A&B)

Indications Available

Boston Edison Company operators would be alerted to a potential pipe break upstream of these check valves by observing the following in the Control Room:

- a. Flow Indicator (FI-1450-4A&B)
- b. Pressure Indicator (PI-1450-1A&B)
- c. 'Core Spray Pump A (B) Discharge Hdr. Low Press' Alarm utilizing PS-9088 & PS-9089.
- d. 'S.E. (N.W.) Quadrant Floor Leakage' Alarm utilizing LS-8016 & LS-8017.

Acceptance Criteria

The Core Spray to Reactor Piping was not designed or constructed to allow testing of AO-1400-9A&B. Therefore, the Core Spray to Reactor Check Valves (AO-1400-9A&B) cannot currently be tested as per 10CFR50 Appendix J (See BECo response to Item 2.2.2, below).

Residual Heat Removal (RHR) Vessel Injection

Line Check Valves (AO-1001-68A&B)

Indications Available

Boston Edison Company operators would be alerted to a potential pipe break upstream of these check valves by observing the following in the Control Room:

- a. Flow Indicator (FI-1040-11A&B)
- b. Flow Indicator (FI-1040-1A&B)
- c. 'RHR Pump A&C (B&D) Low Press' Alarm utilizing PS-9086&9087
- d. 'Containment Spray Low Flow' Alarm utilizing FS-1001-76A&B
- e. 'S.E. (N.W.) Quadrant Floor Leakage' Alarm utilizing LS-8016 & LS-8017.

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Acceptance Criteria

The Residual Heat Removal piping was not designed or constructed to allow testing of AO-1001-68 A&B. Therefore, the Residual Heat Removal Vessel Injection Line Check Valves (AO-1001-68A&B) cannot be tested as per 10 CFR 50 Appendix J (See BECo. response to Item 2.2.2, below).

Item 2.2.2

The purpose of this question as clarified by the NRC Project Manager is to provide assurance that the AO check valves in each line will remain water covered after an accident and thereby limit reverse direction flow until the associated upstream MCV's are closed.

At PNPS, the AO check valves installed on the HPCI, RCIC and Reactor Water Cleanup Return are tested for leakage in accordance with Appendix J. Although the above valves are not considered containment isolation valves (Ref. b)) the fact that these lines run in parallel with the feedwater lines necessitate integrated leak testing as performed on the feedwater check valves to assure that the combined results are within Appendix J limits. Data from these tests provides assurance that leakage is small enough to limit reverse flow during post-accident conditions.

No testing program is currently required for the Core Spray and RHR check valves (Ref. b)), however, an engineering evaluation to determine a possible method for future leak testing of these valves has been initiated, the results of which will be forwarded to you upon completion.

Additional Item 2.2.1

Additionally, provide the following information needed to complete all aspects of this review:

1. For each of the penetrations involved (9a, b; 16a, b; 51a, b) identify the valves installed to perform a containment isolation function in accordance with General Design Criterion 55 (10 CFR 50, Appendix A).
2. Indicate the location (inside or outside containment), type valve, and automatic features for each of the valves of paragraph 1 above.

Response 1 & 2

Reference b) previously identified valves which perform a containment isolation function and those valves disqualified as such, including type, location and features.

Section 5.2.3.5.1 of the Pilgrim Nuclear Power Station, Final Safety Analysis Report, as stated in part, "Automatic isolation valves, in the usual sense, are not used on the inlet lines of the reactor core and containment cooling systems, and reactor feedwater systems, since operation of these systems is essential following a design basis loss-of-coolant accident. Since normal flow of water in these systems is inward to the reactor vessel or to the primary containment, check valves in these lines will provide automatic isolation if necessary", provides the justification for compliance with GDC 55; which, allows for other containment isolation provisions for specific identified classes of lines.

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We believe this additional information is adequate for you to complete your review on this subject; however, should you have additional questions or concerns please contact us.

Very truly yours,

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