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New York Power Authority

John C. Brons
Executive Vice President
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September 9, 1988
JPN-88-048

U. S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attn: Document Control Desk

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Inservice Inpection Program for Welds and Supports Hydrostatic Testing of HPCI and RCIC Turbine Exhaust Lines

Reference: 1. NYPA letter, J. C. Brons to the NRC, dated March 9, 1988 (JPN-87-007) requested relief from the requirement to perform certain hydrostatic tests on the HPCI and RCIC steam supply and exhaust piping.

Dear Sir:

In Reference 1, the Authority requested relief from the hydrostatic test requirements for the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) steam supply and exhaust piping. Following telephone conversations with the NRC staff, the Authority is submitting the attached relief request for the exhaust piping only.

The Authority feels strongly that the functional testing performed in August 1988 meets the intent of ASME Section XI as applied to this piping and requests relief from having to perform additional hydrostatic testing.

Partial relief from this testing has been granted previously to at least four other plants.

Should you or your staff have any questions regarding this request, please contact Mr. J. A. Gray, Jr. of my staff.

Very truly yours,

John C. Brons
Executive Vice President
Nuclear Generation

Enclosures

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JPN-88-048

ATTACHMENT I

RELIEF REQUEST FOR HIGH PRESSURE COOLANT INJECTION (HPCI) AND REACTOR CORE INJECTION COOLING (RCIC) TURBINE EXHAUST LINES HYDROSTATIC TESTS

New York Power Authority
James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
DPR-59

6. The FitzPatrick HPCI and RCIC systems were not designed for hydrostatic testing as evidenced by the interferences which exist with other systems and the difficulty of installing temporary closures (pancakes/blind flanges, etc.). The installation of temporary closures would create additional local stresses which are likely to result in local yielding at elbows and flanged connections. The possibility that other safety-related components could become damaged or improperly reinstalled is increased.

F. IN LIEU OF EXAMINATION

The Authority proposes that the system inservice test performed in August 1988 be accepted in lieu of hydrostatic testing. This test was performed in accordance with IWA-5211 of ASME Section XI. The inservice test included portions of the system (i.e., turbine and turbine exhaust to the torus) that would not be tested during a hydrostatic test examination. A VT-2 examination was conducted during the inservice test.

The Authority considers an inservice test superior to a system hydrostatic test for the following reasons:

- The inservice test included the complete ISI system boundary including exempt components, the RCIC and HPCI turbines and steam exhaust piping.

- The inservice test was performed at the systems' operating pressure and temperature, and, thus, is as effective as a hydrostatic test for leakage detection during a VT-2 examination. The system hydrostatic test would not effectively test the structural integrity of the system as intended.

- The inservice test avoided the anticipated radiation exposure of approximately 11.994 person-rem.

- During the installation of temporary supports and blank flanges, there is a possibility of damage to the piping or other adjacent components.

G. SUMMARY

The Authority requests relief from the requirements of hydrostatic testing for the HPCI and RCIC exhaust lines. The Authority proposes an inservice test in lieu of hydrostatic testing based on the above reasons.

The completion of the inservice test would complete the requirements for the hydrostatic test of the HPCI and RCIC systems for the first 10-year ISI interval.

This relief request also applies to the second 10-year ISI interval. The Authority is presently within the first inspection period of the second 10-year interval.

- temporary support installation and removal
- hydrostatic test pump connections

The estimated time required for this work is 1,651 person hours. The "as low as reasonably achievable" (ALARA) estimate for this work is 11.994 person-rem. These figures have been revised upward since Reference 1 was submitted. This is due primarily to additional identified interferences and retesting of electrical components which would need to be disconnected for the test.

2. During the hydrostatic test, the turbine section of the HPCI and RCIC systems would not be tested due to the possibility of damage to the pump seals and the gland seal exhauster. In addition, the HPCI and RCIC steam exhaust lines discharge to the torus and, thus, these portions of the system are exempt from hydrostatic testing in accordance with IWC-5220 (d) and IWD 5200 (c) of ASME Section XI of the 1974 Code through Summer of 1975 Addenda and IWC-5222 (d) and IWD-5223 (d) of the 1980 code through Winter of 1981 Addenda.

3. The purpose of performing a hydrostatic test, whether it be under the ANSI B31.1 or ASME Sections III and XI piping codes, is to test the structural integrity of a piping system. Stress analyses on the HPCI and RCIC turbine exhaust lines show that these systems are substantially overdesigned for hydrostatic loads. RCIC system stresses during a hydrostatic test are 18% of allowable and 11% of yield, and for HPCI are 31% of allowable and 20% of yield. Therefore, the hydrostatic test is not an effective test of the structural integrity of the piping.

4. Since the hydrostatic test does not effectively confirm structural integrity, its only effect is to check for leak-tightness. In-service tests (such as the ones performed just prior to plant shutdown on the HPCI and RCIC systems) fully demonstrate leak-tightness and, therefore, meet the intent of the requirements of the piping codes for the turbine exhaust lines at JAF.

5. As discussed above, performing a hydrostatic test offers no foreseeable benefits as part of the JAF's In-Service Inspection Program over performing in-service functional testing of the subject lines. There are, however, risks associated with performing hydrostatic testing that the Authority feels are unnecessary.

ATTACHMENT I

Relief Request for High Pressure Coolant Injection (HPCI) and Reactor Core Injection Cooling (RCIC) Hydrostatic Tests

A. SYSTEM

HPCI
RCIC

B. NUMBER OF ITEMS

Turbine exhaust piping

C. ISI CLASS

HPCI (Class II)
RCIC (Class III)

D. SCOPE

The Authority requests relief from the requirements of IWC-5000 and IWD-5000 of ASME Section XI, 1974 Edition through Summer 1975 Addenda, system hydrostatic tests for the HPCI and RCIC systems for the first inservice inspection (ISI) interval. This relief request applies to HPCI and RCIC turbine steam exhaust piping. It does not include the turbine steam inlet, pump suction, or discharge piping which will be tested in accordance with Code requirements.

This relief request also applies for the second ISI interval. The ASME Code, which governs the second 10-year interval, is the 1980 Edition through Winter 1981 Addenda. The Authority is presently within the first inspection period of the second 10-year interval.

E. BASIS FOR RELIEF

1. Hydrostatic testing of the HPCI and RCIC turbine steam piping requires installation of blank flanges and temporary supports to allow the use of water as the hydrostatic fluid. Although the radiation fields are not extremely high (5 to 20 mr/hr), extensive craft labor is required for the following:

   - scaffolding
   - insulation removal
   - blank flange installation