



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF FROM ASME CODE REPAIR

TO THE SERVICE WATER SYSTEM

NORTHEAST NUCLEAR ENERGY COMPANY

MILLSTONE NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-245

1.0 BACKGROUND

By letter dated May 7, 1990, Northeast Utilities (the licensee) requested relief from ASME Code repair requirements of a certain Code Class 3 component in the service water system at Millstone Unit 1. On April 16, 1990, external leakage was noted on the service water inlet isolation valve (1-SW-7A) to the "A" Turbine Building Secondary Closed Cooling Water (TBSCCW) Heat Exchanger. 1-SW-7A was one of the valves replaced during the previous cold shutdown. Piping misalignment concurrent with a raised face flange which caused overstress of the valve body during installation was considered to be the root cause of this failure.

Article IWA-4000 of Section XI of the ASME Boiler and Pressure Vessel Code specifies the Code repair procedures. However, Article IWA-4000 repair techniques were determined to be inappropriate because code-qualified weld procedures do not exist for the ASTM A126 cast iron material of this valve body. A new valve for an Article IWA-7000 replacement would not be available for several weeks. Therefore, the licensee has requested relief from a Code repair of the partially -cracked valve body 1-SW-7A.

As an interim repair measure, the licensee designed and fabricated a pressure-retaining enclosure around the partially-cracked valve body 1-SW-7A. The enclosure was welded to the carbon steel pipe flanges on the upstream and downstream side of the valve. The enclosure was designed and fabricated in accordance with the requirements of ASME Section VIII (1971 Edition, with 1972 Addenda).

The licensee stated the 1-SW-7A valve will be restored to its original, premodification arrangement during the next extended cold shutdown greater than 30 days duration or no later than the next refueling outage currently scheduled for the spring of 1991.

## 2.0 EVALUATION

The staff concurs with the licensee that the Code repair requirements of IWA-4000 are impractical. The staff finds that a pressure-retaining enclosure designed and fabricated in accordance with ASME Section VIII (1971 Edition, with 1972 Addenda) is acceptable as an interim repair measure for the partially-cracked valve body 1-SW-7A at Millstone 1. The staff's finding is based on the fact that the welded steel enclosure is designed for dead weight, thermal, hydrostatic, and seismic loads consistent with the original design basis with one exception noted. The valve enclosure was designed only for the maximum expected system pressure of 50 psig which is less than the system design pressure of 150 psig at 100°F and 100 psig at 75°F. However, this design is acceptable to the staff contingent upon the use of this system only during periods for cleaning the "B" TBSCCW heat exchanger and considering the short interim period before its final Code-approved replacement.

Although the original design of the TBSCCW system which incorporates cast iron body valves is permitted per the original piping design code (ASA B31.1), the staff does not recommend the use of cast iron material for safety-related piping applications; especially under concentrated loads and suddenly-applied loads such as seismic loads. While the staff agrees that the cast iron valves are consistent with the original design basis, the staff recommends replacing the valves with valves made of a more ductile material.

## 3.0 CONCLUSION

In conclusion, the staff approves of the interim repair of valve 1-SW-7A, as stated above, for the period of time until a replacement valve of equal or better quality than the original valve is installed. We have determined that the repair requirements are impractical for valve 1-SW-7A for which relief is being granted and, pursuant to 10 CFR 50.55a(g)(6)(i), that the granting of relief is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. In making this determination, we have given due consideration to the burden that could result if those requirements are imposed on your facility.

Principal Contributors:

S. Lee

G. Hammer

Dated: August 14, 1990

DATED: August 14, 1990

DISTRIBUTION

~~Docket File~~

NRC & Local PDRs

Plant File

T. Murley/F. Miraglia (12G18)

J. Parlow (12G18)

C. Rossi (11E4)

S. Varga (14E4)

B. Boger (14A2)

S. Norris

M. Boyle

OGC (for information only)

E. Jordan (MNBB 3302)

G. Hill (4) (P1-137)

ACRS (10)

GPA/PA

OC/LFMB

J. Caldwell (17G21)

S. Lee (7D4)

G. Hammer (7E23)