



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

SAFETY EVALUATION BY OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO REQUEST FOR RELIEF FROM ASME SECTION XI

HYDROSTATIC PRESSURE TESTING REQUIREMENTS

COMMONWEALTH EDISON COMPANY

DRESDEN NUCLEAR POWER STATION, UNIT 2 AND 3

DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

10 CFR 50.55a(g) requires examinations and tests of nuclear power facilities piping and components to be performed in accordance with the requirements of the applicable ASME Section XI Code edition and addenda. If it is impractical to meet the requirements, the licensee of the facility is required to notify the Commission and submit information in support of the determination that a requirement is impractical to perform.

By letter dated April 5, 1991, Commonwealth Edison Company (the licensee) requested relief from certain ASME Section XI requirements for the second ten-year interval. The licensee's second ten-year Inservice Inspection (ISI) program is based on ASME Section XI, 1977 Edition through Summer 1979 Addenda (1977 Code). The licensee's request for relief from certain ASME Section XI requirements for the second ten-year interval is evaluated herein pursuant to 10 CFR 55.55a(g)(6)(i) to determine if the necessary findings can be made to grant the request.

2.0 EVALUATION

Relief Request (RR) Number CR-12 - Relief From System Leakage Test Pressure For Unisolable Class 1 Mechanical Connections Located in the Drywell

Component Identification

System:	Main Steam
Component Description:	Class 1 - Mechanical Connections (Piping, Pumps, Valves) Located in the Drywell

ASME Code Section XI Second Interval Inspection Requirements

1977 Edition through Summer 1979 Addenda, Class 1, Category B-P, Item Nos. B15.50, B15.60, and B15.70 (Piping, Pumps, and Valves - Pressure Retaining Boundary) requires visual examination (VT-2.). The following articles apply:

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IWA-5211(a) - Requires a system leakage test to be conducted following opening and re-closing of a component in the system after pressurization to nominal operating pressure.

IWB-5221(a) - Requires that a system leakage test shall be conducted at a test pressure not less than the nominal operating pressure associated with 100% rated reactor power.

Relief Requested

Relief is requested from the performance of a Class 1 system leakage test at a pressure not less than the nominal operation pressure of 1,005 psig with 100% reactor power. Relief is requested for Units 2 and 3 for the current ten-year interval (which concludes on March 1, 1992).

Licensee's Basis For Relief

The nominal operating pressure associated with 100% rated reactor power is 1005 psig. Near the end of each refueling outage a system leakage test at 1005 psig, or a hydrostatic test at 1105 psig, of all Class 1 pressure retaining components is conducted.

Subsequent to the system leakage test or the hydrostatic test during a refueling outage, or during forced maintenance outages which can occur during an operating cycle, it may become necessary to disassemble and reassemble Class 1 mechanical connections that are located in the drywell and cannot be isolated from the reactor vessel. For these situations, the performance of Class 1 system leakage test at 1005 psig would have a significant impact on the unit's critical path outage time and personnel exposure.

The normal Class 1 system leakage test, which is performed with the vessel flooded up, requires numerous equipment outages (e.g., approximately 380 valves must be taken out of service, main steam safety valves must be gagged). Compliance with the specified testing requirements would result in a burden on the licensee in that performance of the equipment outages coupled with the performance of the system leakage test takes approximately 5 days (three shifts per day) with a total personnel exposure of approximately 2.5 man-rem.

Performance of a system leakage test using reactor pressure during unit startup is possible, however, the test cannot be performed at 1005 psig. During unit startup, the Electro-Hydraulic Control System precludes a reactor pressure above 950 psig with significant increases in reactor power. In order to achieve 1005 psig the reactor would have to be approximately 100% rated power. The dose rates experienced in the drywell at this power level are prohibitive and would pose a great risk to the health and safety of the workers.

A drywell entry to inspect for leakage can be performed at 920 psig, which is associated with 15% reactor power. Performance of leakage test in this manner would have an insignificant impact on the ability to detect leakage from the reassembled mechanical connection. It would also significantly reduce the personnel exposure and critical path outage time required for the test.

Licensee's Proposed Alternative Examination

A system leakage test at 920 psig during unit startup will be performed when an unisolable Class 1 mechanical connection in the drywell has been disassembled and reassembled either: 1) subsequent to the performance of the normal Class 1 system leakage test or hydrostatic test conducted near the end of each refueling outage; or 2) during a forced maintenance outage in the course of an operating cycle.

Plant Quality And Safety

The hydrostatic testing, as performed with visual examination, provides an acceptable level of assurance of integrity of the Unisolable Mechanical Connection (Piping, Pumps, and Valves) pressure retaining boundary.

Radiation Considerations

Total man-rem exposure for performance of the system leakage test is approximately 2.5 man-rem.

3.0 STAFF EVALUATION AND CONCLUSIONS

The Code requirements to perform a system leakage test as discussed above are impractical because of the total personnel radiation exposure of 2.5 man-rem for the preparation and performance of the leakage testing. The staff has determined that the alternative inspection proposed by the licensee will provide adequate assurance of the structural and pressure boundary integrity of the Unisolable Class 1 Mechanical Connections (Piping, Pumps, and Valves) located in the drywell. Pursuant to 10 CFR 50.55a(g)(6)(i) and (a)(3)(ii), we conclude that relief from the ASME Boiler and Pressure Vessel Code requirement may be granted as requested by the licensee.

Principal Contributor: T. McLellan
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