UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION OF THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION REQUESTS FOR RELIEF GPU NUCLEAR CORPORATION OYSTER CREEK NUCLEAR GENERATING STATION DOCKET NO. 50-219

1.0 INTRODUCTION

The Technical Specifications for Oyster Creek Nuclear Generating Station state that the inservice inspection and testing of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Oyster Creek Nuclear Generating Station, third 10-year inservice inspection (ISI) interval is the 1986 Edition. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

By letter dated November 22, 1994, the licensee, GPU Nuclear Corporation (GPUN) submitted Request for Relief R13, Parts A, B, C, D, and E, from the requirements of the 1986 Edition of the ASME Boiler and Pressure Vessel Code Section XI, subparagraph IWA-5250(a)(2). This subparagraph contains corrective measures for leaking bolted connections.

2.0 EVALUATION

The staff evaluated the information provided by the licensee in support of its Request for Relief (RR) No. R13, Parts A, B, C, D, and E.

2.1 Request for Relief No. R13, Parts A, B, C, and D

2.1.1 Code Requirement

In the 1986 Edition (no addenda) of Section XI, the licensee's code of record, Paragraph IWA-5250(a)(2), Corrective Measures, states that if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

2.1.2 Licensee's Code Relief Request

The licensee requested relief from the corrective measures required by IWA-5250(a)(2) for leakage found on Class 1 system bolted connections during the performance of the Class 1 system pressure tests. RR R13, Parts A through D, included the following bolted connections:

A. Main Steam Isolation Valve V-1-7, Body to Casing
B. Main Steam Isolation Valve V-1-8, Body to Casing
C. Recirculation Pump A, Pump to Pump Cover
D. Recirculation Pump C, Pump to Pump Cover

2.1.3 Licensee's Proposed Alternative:

"For requests A, B, C, and D, a single bolt from the leakage path will be removed from the flange in question and a Section XI visual inspection performed prior to restart from the present 15R refueling outage."

2.1.4 Licensee's Basis for Relief:

"Requests A, B, C, and D propose removing one bolt from the leakage path from each bolted flange in question. This proposed alternative examination is in compliance with the 1990 Addenda to ASME Section XI, subparagraph IWA-5250(a)(2).

"The examination of one bolt from the leakage path of a bolted flanged connection provides an acceptable level of quality and safety for the bolted connection. If any corrosion is excess of the limits specified in ASME Section XI, 1986 edition with no addenda, paragraph IWA-3100 is detected on any bolt removed for this examination, then the remaining bolts in the flange will also be removed and examined.

"GPUN requests that the specified relief requested from the Code requirements be granted, as the major factors which can result in bolt corrosion (and were discussed in GPUN letter C321-93-2041 dated February 4, 1993) are: 1) not applicable to Oyster Creek (such as chemically accelerated corrosion); 2) under control by existing procurement and examination programs (such as the quality assurance requirements for procurement and the existing ISI requirements for examination); 3) not existent at Oyster Creek as evidenced by extensive operating history, controlled maintenance procedures, and inservice inspection records complied since 1969.

"Additionally, Requests A, B, C, and D comply with the NRC approved 1990 Addenda to ASME."

2.1.5 Evaluation

As stated in Section 2.1.1, Paragraph IWA-5250(a)(2) of the licensee's code of record requires removal of all bolting at leaking joints for examination. The 1990 Addenda of Section XI changes this paragraph to require removal of only one bolt, closest to the leakage, for visual examination. If degradation is detected, all remaining bolting must be removed and VT-3 examined for evidence of degradation. If the leakage is resulting in degradation of the bolts, removal of a bolt closest to the source of the leakage should reveal this condition. The staff considers that the revision to IWA-5250(a)(2) in the 1990 Addenda to the 1989 Edition of the Code provides an adequate level of quality and safety. Therefore, the licensee's proposed alternative is authorized for the current (Fall 1994) refueling outage pursuant to 10 CFR 50.55a(a)(3)(i).

2.2 Request for Relief No. R13, Part E

2.2.1 Code Requirement

In the 1986 Edition (no addenda) of Section XI, the licensee's code of record, Paragraph IWA-5250(a)(2), Corrective Measures, states that if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

2.2.2 Licensee's Code Relief Request

The licensee requested relief from the corrective measures required by IWA-5250(a)(2) for leakage found on Class 1 system bolted connections during the performance of the Class 1 system pressure tests. RR R13, Part E, included the following bolted connection:

E. Local Power Range Monitor 20-49, Bolted Flange

2.2.3 Licensee's Proposed Alternative:

"For request E, no bolts will be removed for examination, as all of the bolts in this flange were replaced with new, inspected bolts during 15R. There has been insufficient time for corrosion to develop."

2.2.4 Licensee's Basis for Relief:

"The bolts in the in line flange for LPRM 20-49 were replaced with new bolts which were baseline examined during the current outage. Insufficient time has past to allow corrosion to occur.

"GPUN requests that the specified relief requested from the Code requirements be granted, as the major factors which can result in bolt corrosion (and were discussed in GPUN letter C321-93-2041 dated February 4, 1993) are: 1) not applicable to Oyster Creek (such as chemically accelerated corrosion); 2) under control by existing procurement and examination programs (such as the quality assurance requirements for procurement and the existing ISI requirements for examination); 3) not existent at Oyster Creek as evidenced by extensive operating history, controlled maintenance procedures, and inservice inspection records complied since 1969.

"Additionally, Request E addresses new bolts which were baseline examined less than two months ago."

2.2.5 Evaluation

ASME Section XI Inservice Inspection examinations are conducted to detect service induced degradation or damage to ASME Class 1, 2, or 3 components. Section IWA-5250(a)(2) of the 1990 Addenda of Section XI requires one bolt closest to the source of leakage be removed, VT-3 examined, and evaluated in accordance with IWA-3100. IWA-2213 states, in part, that "VT-3 examinations are conducted to determine the general mechanical and structural condition."

The licensee stated in RR R13, Part E, that the bolts in the flange for Local Power Range Monitor 20-49 were replaced and baseline examined in the current 15R refueling outage. Although there is evidence of leakage from this flange, there has been insufficient time and/or service for any credible service-induced degradation to occur. Since Oyster Creek is a boiling water reactor, the reactor coolant system contains only demineralized water, without any corrosive agents such as boric acid. Therefore, general mechanical and structural condition of the bolting should be the same as when first installed less than two months ago, and another visual examination of the bolting is not necessary before returning the system to service. The staff finds GPUN's alternative will provide an acceptable level of quality and safety and is authorized for the current (Fall 1994) refueling outage pursuant to 10 CFR 50.55a(a)(3)(i).

3.0 CONCLUSION

The proposed alternatives contained in GPUN's Request for Relief R13, Parts A, B, C, D, and E, provide an acceptable level of quality and safety and are therefore authorized for the current (Fall 1994) refueling outage pursuant to 10 CFR 50.55a(a)(3)(i).

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Date: November 23, 1994