November 3, 2000

Mr. Ronald DeGregorio
Vice President Oyster Creek
AmerGen Energy Company, LLC
P.O. Box 388
Forked River, NJ 08731

SUBJECT: SAFETY EVALUATION OF THE REQUEST FOR HARDSHIP AND PROPOSED ALTERNATIVE TO THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE (ASME CODE), SECTION XI, REQUIREMENTS FOR THE FIRST CONTAINMENT INSERVICE INSPECTION (ISI) PROGRAM, OYSTER CREEK NUCLEAR GENERATING STATION (TAC NO. MA9077)

Dear Mr. DeGregorio:

By letter dated May 3, 2000, as revised on July 13, 2000, you submitted Relief Request R-25 concerning the ASME Code, Section XI, requirements for the Oyster Creek Nuclear Generating Station (Oyster Creek) Containment ASME ISI Program and requested approval. The Code requires 100 percent of Class MC (metallic containment) bolted connections be subject to a VT-1 visual examination each inspection period. The Nuclear Regulatory Commission (NRC) staff concludes that compliance with the ASME Code requirements would result in hardship without a compensating increase in the level of quality and safety. The staff also concludes that your proposed alternative will provide reasonable assurance of the integrity of pressure retaining bolted assemblies and therefore, authorizes it pursuant to 10 CFR 50.55a(a)(3)(ii) for this 10-year containment ISI interval.

On the dates of the May 3, 2000, and July 13, 2000, letters, GPU Nuclear, Inc. (GPUN), was the licensed operator for Oyster Creek. On August 8, 2000, GPUN's ownership interest in Oyster Creek was transferred to AmerGen Energy Company, LLC (AmerGen). By letter dated August 10, 2000, AmerGen requested that the NRC continue to review and act upon all requests before the Commission which had been submitted by GPUN. Accordingly, the NRC staff has completed its review of the submittal.

Our detailed evaluation and conclusions are documented in the enclosed safety evaluation.

Sincerely,

***/RA/***

Marsha Gamberoni, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-219

Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE FIRST CONTAINMENT 10-YEAR INSERVICE INSPECTION PROGRAM

RELIEF REQUEST R-25

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

## 1.0 INTRODUCTION

In Federal Register (61 FR 154), dated August 8, 1996, the Nuclear Regulatory Commission (NRC) announced an amendment to its regulation of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a. The rule incorporated by reference the 1992 Edition with 1992 Addenda of Subsections IWE and IWL of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). Subsection IWE provides the requirements for inservice inspection (ISI) of Class MC (metallic containments) including integral attachments of MC and metallic liners of CC (concrete containments) components of light-water cooled power plants. The effective date for the amended rule was September 9, 1996, and it requires the licensees to incorporate the new requirements into their ISI plans and complete the first containment inspection by September 9, 2001. However, a licensee may submit a request for relief or propose an alternative to one or more requirements of the regulation (or the endorsed Code requirements) with proper justification. The provision for granting relief or authorizing an alternative is incorporated in the regulation pursuant to 10 CFR 50.55a(f)(6) and 10 CFR 50.55a(a)(3), respectively.

10 CFR 50.55a(g)(6)(ii)(B)(1) states that the inservice examinations specified for the first period of the first inspection interval in Subsection IWE of the 1992 Edition and Addenda as modified in 10 CFR 50.55a(b)(2)(x) will serve the same purpose for operating plants as the preservice examination. Pursuant to 10 CFR 50.55a(b)(2)(vi), GPU Nuclear, Inc., the licensee, developed its containment ISI program in accordance with Subsection IWE of the 1992 Edition (including the 1992 Addenda) of the ASME Code.

By letter dated May 3, 2000, as revised on July 13, 2000, the licensee determined that compliance with the specified Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety and proposed an alternative to the Section XI requirements of IWE pursuant to 10 CFR 50.55a(a)(3)(ii). This evaluation addresses the merits of the request.

## 2.0 EVALUATION

### 2.1 Relief Request for IWE Requirements for Class MC Components, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item E8.10 Bolted Connections

#### 2.1.1 Code Requirements

ASME Section XI, 1992 Edition, 1992 Addenda, Table IWE-2500-1, Examination Category E-G, Pressure Retaining Bolting, Item E8.10, requires 100% of Class MC bolted connections be subject to a VT-1 visual examination each inspection period.

#### 2.1.2 Licensee's Basis for Relief (as stated)

"Pursuant to 10 CFR 50.55a(a)(3)(ii), relief is requested for Oyster Creek Nuclear Generating Station on the basis that compliance with the specified Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

"10 CFR 50.55a was amended in the Federal Register (61FR41303) to require the use of the 1992 Edition, 1992 Addenda, Section XI when performing containment inspections. Section XI requires a VT-1 visual examination of bolted connections which was reevaluated during subsequent rewrites of Subsection IWE. During the review of Examination Category E-G examination criteria, the following factors were considered:

1) Containment surfaces, including bolted connections, are already subject to visual examination in accordance with Table-2500-1, Examination Category E-A.

2) Bolted connections in containment are subject to the performance of 10 CFR 50, Appendix J testing.

3) Containment bolting is not exposed to any known degradation mechanism. These bolts are not within a corrosive environment, and therefore, no problems with containment bolting has [sic] been identified throughout the industry.

"The conclusion reached by ASME Section XI was that Examination Category E-G examinations on bolted connections were not warranted. In the commentary which accompanied the Subsection IWE rewrite, the following was written:

> Pressure retaining bolting as a separate category has been deleted, and the examination requirements for pressure retaining bolting have been consolidated into Category E-A. Examination of pressure retaining bolting does not require removal or disassembly, and only those exposed surfaces of the bolting materials need be examined.

"As a result, Examination Category E-G has been eliminated from Table IWE-2500-1 in the 1998 Edition of ASME Section XI.

"The performance of VT-1 visual examinations on bolted connections in accordance with the 1992 Edition, 1992 Addenda represents a hardship with no compensating increase in level of quality and safety. The reexamination of bolted connections that are already examined as part of Examination Category E-A, and tested in accordance with 10 CFR 50, Appendix J,

unnecessarily increases the number of inservice examinations and the associated radiation exposure to personnel.

"In addition to the visual examination of bolted connections, the 1992 Edition, 1992 Addenda, Section XI, requires that bolt torque or tension testing be performed on bolted connections that have not been disassembled and reassembled during the inspection interval. Determination of the torque or tension value would require that the bolting be un-torqued and then re-torqued or re-tensioned.

"The performance of a 10CFR50, Appendix J, Type B test proves that the bolt torque or tension remains adequate to provide a leak rate that is within acceptable limits. The torque or tension value of bolting only becomes an issue if the leak rate is excessive. Once a bolt is torqued or tensioned, it is not subject to dynamic loading that could cause it to experience significant change. Appendix J testing and visual inspection is adequate to demonstrate that the design function is met. Torque or tension testing is not required on any other ASME Section XI, Class 1, 2, or 3 bolted connections or their supports as part of the inservice inspection program."

2.1.3 Licensee's Proposed Alternative Examinations

The licensee proposed to visually examine the pressure retaining bolted connections in accordance with Examination Category E-A, Containment Surfaces, using VT-3 qualified inspectors. The VT-3 visual examination of the bolting will be evaluated in accordance with IWE-3510. Deficiencies will be evaluated by VT-1 qualified inspectors, dispositioned by the responsible engineer and meet the pressure test requirements of 10 CFR Part 50, Appendix J.

"The following examinations required by subsection IWE assure the structural integrity and the leak-tightness of Class MC pressure retaining bolting, and therefore, no additional alternative examinations are proposed.

1.) Exposed surfaces of bolted connections shall be visually examined in accordance with the requirements of Table IWE-2500-1, Examination Category E-A, Containment Surfaces, using VT-3 certified inspectors. These examinations shall be evaluated in accordance with the requirements of IWE-3510. Deficiencies shall be evaluated by certified VT-1 examiners and dispositioned by the responsible engineer.

2.) Bolted connections shall meet the pressure test requirements of 10 CFR 50, Appendix J."

2.1.4 Staff Evaluation of Relief Request R-25

To comply with the expedited examination of containment required by 10 CFR 50.55a(g)(6)(ii)(B), licensees must perform visual examination on Class MC and metallic liners of Class CC components per the requirements of IWE of ASME Section XI.

IWE-2500, Table IWE-2500-1, Examination Category E-G, Item E8.10 requires 100 percent of the pressure retaining bolting to have a VT-1 visual examination once each inspection period during the interval. The licensee has proposed to complete examinations with VT-3 certified examiners, evaluate results in accordance with IWE-3510 and evaluate deficiencies using

VT-1 examiners. The results of the deficiencies will be dispositioned by the responsible engineer. Further, the licensee proposed to ensure that all bolted connections meet the pressure testing requirements of 10 CFR Part 50, Appendix J.

The staff finds that the licensee has committed to conduct a thorough examination of pressure retaining bolting by qualified personnel. The general visual or VT-3 visual examinations performed following Examination Category E-A, and the detailed examination performed on the deficiencies by VT-1 qualified inspectors will detect evidence of degradation that may affect structural integrity or leak tightness. Furthermore, the qualified inspectors performing these examinations will be directed by the responsible engineer knowledgeable in the requirements for inspection of the subject components. Considering that the licensee will examine pressure retaining bolting as part of Examination Category E-A and subsequent VT-1 examination, if needed, the reexamination in accordance with Examination Category E-G unnecessarily increases the associated radiation exposure to personnel. The staff finds that the proposed alternative provides reasonable assurance of the integrity of pressure retaining bolted assemblies.

## 3.0 CONCLUSION

The staff has evaluated the licensee's submittal for Oyster Creek Nuclear Generating Station. The authorizing of alternatives or granting of relief is based upon fulfilment of any commitments made by the licensee in the basis for relief and the alternative proposed. The implementation of the ISI program and the relief request is subject to inspection by the NRC.

For Relief Request R-25, the staff concludes that compliance with the Code requirements would result in hardship without compensating increase in the level of quality and safety. The staff also concludes that the licensee's proposed alternative will provide reasonable assurance of the integrity of pressure retaining bolted assemblies and therefore, authorizes it pursuant to 10 CFR 50.55a(a)(3)(ii) for this 10-year containment ISI interval.

Principal Contributor: G. Hatchett

Date: November 3, 2000

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