September 13, 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 RELIEF FROM THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE (ASME CODE), SECTION XI REQUIREMENTS FOR THE CONTAINMENT INSERVICE INSPECTION PROGRAM, OYSTER CREEK NUCLEAR GENERATING STATION (TAC NO. MA8015)

Dear Mr. DeGregorio:

By letter dated December 30, 1999, you submitted Relief Request (R-17) concerning the ASME Code Section XI requirements for the Oyster Creek Nuclear Generating Station Containment Inservice Inspection (ISI) Program. You requested approval for the use of alternative inspection to support the preparation for scheduled ISI activities during the 2000 refueling outage. We reviewed the relief request against the requirements of the 1986 and 1989 Edition of the
ASME Code, Section XI for component welds and 10 CFR 50.55a(g)(6)(ii)(A)(5).
10 CFR 50.55a(g)(6)(ii)(A)(5) requires licensees that are unable to completely satisfy the augmented reactor pressure vessel (RPV) shell weld examination requirement to submit information to the U.S. Nuclear Regulatory Commission (NRC) to support the determination and propose an alternative to the examination requirements. We have reviewed your request, and, based on the information provided, we conclude that the alternative you have proposed will provide an acceptable level of quality and safety for the third 10-year ISI. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(g)(6)(ii)(A)(5).

On the date of the December 30, 1999, application, 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 staff has completed its review of the requested relief request. Our detailed evaluation and conclusions are documented in the enclosed safety evaluation.

Sincerely,

/RA/ by Peter Tam for/

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 THIRD 10-YEAR INSERVICE INSPECTION PROGRAM

RELIEF REQUEST R-17

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

By letter dated December 30, 1999, GPU Nuclear, Inc. (the licensee) submitted a request for relief from the volumetric examination requirement of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI. The information provided by the licensee in support of the request for relief from Code requirements has been evaluated pursuant to the provisions of 10 CFR 50.55a(g)(6)(i) and the basis for disposition is documented below.

On the date of the December 30, 1999, application, 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 Nuclear Regulatory Commission continue to review and act upon all requests before the Commission which had been submitted by GPUN. Accordingly, the staff has completed its review of the requested relief request.

2.0 BACKGROUND

Inservice inspection of the ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME 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

Enclosure

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) twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. For Oyster Creek Nuclear Generating Station (OCNGS) the applicable edition of Section XI of the ASME Code for the third 10-year inservice inspection (ISI) interval is the 1986 Edition.

3.0 EVALUATION

3.1 Relief Request No. 17 - Reactor Pressure Vessel Shell Welds

3.1.1 Code Requirements

Section XI (1986 Edition), Table IWB-2500-1, Category B-A, Item B1.12 requires examination of all welds in the 1st inspection interval and one beltline region weld in the successive inspection intervals.

However, 10 CFR 50.55a(g)(6)(ii)(A)(2) states that all licensees shall augment their reactor vessel examinations by implementing the examination requirements for Reactor Pressure Vessel (RPV) welds in item B1.10 of Examination Category B-A, “Pressure Retaining Welds In Reactor Vessel,” in Table IWB-2500-1 of Subsection IWB of the 1989 Edition of Section XI, Division 1, of the ASME Boiler and Pressure Vessel Code, subject to the conditions specified in 50.55a(g)(6)(ii)(A)(3) and (4). As stated in 50.55a(g)(6)(ii)(A)(2) for the purposes of this augmented examination, “essentially 100%,” as used in Table IWB-2500-1, means more than 90 percent of the examination volume for each weld. Additionally, 10 CFR 50.55a(g)(6)(ii)(A)(5) requires licensees that are unable to completely satisfy the augmented RPV shell weld examination requirement to submit information to the U.S. Nuclear Regulatory Commission to support the determination, and propose an alternative to the examination requirements that would provide an acceptable level of quality and safety.

3.1.2 Specific Relief Requested

Relief is requested from the Section XI requirement to examine essentially 100% (defined in 50.55a(g)(6)(ii)(A)(2) as more than 90%) of the volume of welds identified in Table 1 with estimated coverages of 90% or less.

Reactor Vessel Shell Welds, Category B-A, Item B1.12

Upper Shell (non-beltline): 2-563A, 2-563B, 2-563C, 2-563D, 2-563E, 2-563F
Lower Shell (includes beltline): 2-564A, 2-564B, 2-564C, 2-564D, 2-564E, 2-564F

3.1.3 Licensee's Basis for Relief

The licensee states that:

> Oyster Creek, a BWR-2, [boiling-water reactor-2] was designed and built well before Section XI was developed and access for inspections became a design requirement. As a result, there is little external access to the OD of RPV axial shell welds due to inadequate clearances between the bioshield wall and vessel insulation. Therefore, the examinations are planned to be performed from the ID using the GE GERIS 2000 inspection system.
>
> The OC [Oyster Creek] examination plan requires examination of 100% of all accessible regions of the RPV axial welds. The ability to inspect 100% of the axial welds will be limited, in some cases, due to the physical constraints of the RPV internal vessel design and arrangement of internal components. An internal vessel accessibility study of the RPV was performed by General Electric to determine the inspectability of the RPV axial shell welds and to obtain clearance measurements for the GERIS-2000. Several internal vessel components will limit a 100% ID UT [Ultrasound Test] examination including interference from the Feedwater Spargers, Specimen Brackets, Vibration Brackets, the Shroud Support Baffle Plate, and Shroud Repair Tie Rod Assembly.
>
> Table 1 below identifies the weld, the projected coverage, and the physical obstructions that prevent access to each weld. Figures 1 and 2 (see licensee's submittal dated December 30, 1999 for figures) show a RPV rollout drawing of the vessel welds and access for scanning. Figure 1 shows the coverage obtained with [a slight modification to the scanning package].

Table 1 - Estimated Coverages of OCNGS RPV Axial Welds

Weld ID (see notes 1&2)	Weld Length (in)	Volume Effectively Examined (%)	Volume Examined (%) x Weld Length	Obstruction (see note 3)
2-563A	132.6	100.0%	132.6	N/A
2-563B	132.6	99.2%	131.5	SDB
2-563C	132.6	99.4%	131.8	IN
2-563D	132.6	65.3%	86.6	FWS, MSL
2-563E	132.6	65.3%	86.6	FWS, MSL
2-563F	132.6	62.6%	83.0	FWS, SB
2-564A	133.6	93.0%	124.2	TR
2-564B	133.6	93.0%	124.2	TR
2-564C	133.6	94.1%	125.7	TR
2-564D	83.4	55.1%	46.0	RON
2-564E	131.6	76.0%	100.0	SSBP/G, TR
2-564F	131.6	76.0%	100.0	SSBP/S, TR
Totals	1543	82.4%	1272.2	

NOTES:

1. Welds that are numbered 563 are upper shell welds that are not part of the beltline.
2. Welds that are numbered 564 are lower shell welds, parts of which are in the beltline.
3. GR - Guide Rod, SB - Specimen Bracket, CSL - Core Spray Line, FWS - Feedwater Sparger, CSDC - Core Spray Downcomer, IN - Instrumentation Nozzle, MSL - Manipulator Scan Limit, VB - Vibration Bracket, RON - Recirc. Outlet Nozzle, SSBP/G - Shroud Support Baffle Plate/Gussets, SDB - Steam Dryer Bracket, TR - Tie Rod.

Licensee's key conclusions are (as stated):

1. The access to the lower portions of welds 2-563D, E, and F is restricted by the feedwater spargers. Creating access to the lower portion of these welds would involve removal and replacement of the spargers. We [the licensee] consider that this causes an undue hardship and large personnel dose with no concurrent increase in safety.

2. Access to the lower portions of welds 2-564D, E, and F is restricted primarily by the shroud support plate and gussets (slightly above weld H9 as shown on the drawings). These lower portions which cannot be accessed are NOT in the beltline region. We consider the lower portion of these welds to be permanently inaccessible for examination by UT.

3. The coverage of the beltline portions of all the 2-564 welds is well above 90%. And, nearly all the volume of the beltline weld material will be examined.

Based upon our [the licensee] review of the accessibility of these welds and the fact that we will be able to examine essentially 100% of the beltline axial welds, we [the licensee] consider approval of our request for relief will provide adequate safety and quality of the RPV axial weld exams.

3.1.4 Licensee's Proposed Alternative Examinations

The licensee requests relief from achieving more than 90% of the examination volume of the RPV axial shell welds for the remaining term of operation under the existing license and relief from the ISI requirements of 10 CFR 50.55a(g) for the volumetric examination of axial RPV welds. The examinations proposed to be performed at reduced coverages as listed in Table 1 is proposed to be fully acceptable to meet the Code requirements.

The licensee's projections in Table 1 are based on in-vessel access studies, drawing review, and vessel internals inspection videotape reviews performed by the examination vendor. GPU Nuclear has concluded that this alternative provides an acceptable level of quality and safety. Furthermore, the licensee states that compliance with the specified requirements of 10 CFR 50.55a(g)(6)(ii)(A)(2) would result in hardship and unusual difficulty without a compensating increase in the level of quality and safety.

3.1.5 Staff Evaluation of Relief Request R-17

The 1986 Edition of ASME Code Section XI Table IWB-2500-1, examination category B-A, item number B1.12 requires examination of all welds in the 1st inspection interval and one beltline region weld in successive inspection intervals. However, 10 CFR 50.55a(g)(6)(ii)(A)(2) requires all licensees to augment their RPV examinations by implementing once, as part of the inservice inspection interval in effect on September 8, 1992, the examination requirements for RPV shell welds specified in item B1.10 of Examination Category B-A, "Pressure Retaining Welds in Reactor Vessel," in Table IWB-2500-1 of Subsection IWB of the 1989 Edition of Section XI, Division 1, of the ASME Code, subject to the conditions specified in 10 CFR 50.55a(g)(ii)(A)(3) and (4). The licensee is requesting staff authorization of its alternative to the requirements of

10 CFR 50.55a(g)(6)(ii)(A)(2) to perform an augmented examination of essentially 100% of the volume of the vessel axial welds. Examination of the circumferential welds is discussed in the licensee's request, R-18. The licensee has indicated that the projected examination volume that can be examined is approximately 82% and that they will be able to examine essentially 100% of the beltline axial welds. Based on the high percentage of weld volume that can be examined, it is expected that any patterns of degradation would be detected, if present. Also, the examination requirements will be satisfied for the welds that are experiencing the highest fluence. On this basis, the staff finds that reasonable assurance of structural integrity of the vessel will be provided by the licensee's proposed alternative. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(g)(6)(ii)(A)(5). Should the licensee be unable to meet the coverages listed in Table 1 the licensee will need to resubmit its request for authorization of this alternative. In addition, the licensee will need to apply for relief for subsequent inspection intervals and investigate additional methods to increase coverage.

4.0 CONCLUSION

The NRC staff concludes that the licensee's proposed alternative provides an acceptable level of quality and safety. Therefore, the proposed alternative is authorized pursuant to 10 CFR 50.55a(g)(6)(ii)(A)(5) for relief request number R17.

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Date:

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