January 17, 2006

Mr. Christopher M. Crane, President
and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 - SAFETY EVALUATION FOR RELIEF REQUEST NO. 4211 REGARDING CORE SHROUD REPAIR (TAC NO. MC6448)

Dear Mr. Crane:

By letter dated March 15, 2005, as supplemented on November 4, and December 16, 2005, AmerGen Energy Company, LLC (the licensee) submitted Relief Request No. 4211 for the Clinton Power Station (CPS), Unit 1. The request is for relief from the American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME) Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i), the licensee proposed to use the guidelines of the BWRVIP-02 report, "Core Shroud Repair Design Criteria," Revision 2, to structurally replace core shroud horizontal welds H1 through H7.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's proposed alternative and has concluded that the proposed alternative provides an acceptable level of safety and quality. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the proposed alternative is authorized.

Enclosures 1 and 2 are the non-proprietary and proprietary versions, respectively, of the NRC safety evaluation (SE) related to the preceding action. The non-proprietary version of the SE will be placed in the NRC Public Document Room and added to the Agencywide Documents Access and Management System. If you have any questions or comments regarding this matter, please contact Clinton's Project Manager, Kahtan Jabbour, at 301-415-1496.

Sincerely,

/RA/

Mindy S. Landau, Acting Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures: 1. Safety Evaluation (Non-Proprietary)
2. Safety Evaluation (Proprietary)

cc w/o enclosure 2: See next page

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Enclosure 1
Safety Evaluation
Non-proprietary

(The blank space between the brackets [ ] in this enclosure shows where information was removed to create this non-proprietary version of this safety evaluation.)

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM

RELIEF REQUEST NO. 4211

AMERGEN ENERGY COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By application dated March 15, 2005, as supplemented on November 4, and December 16, 2005 (References 1, 2, and 3) AmerGen Energy Company, LLC (AmerGen), the licensee, submitted relief request No. 4211 for the Clinton Power Station (CPS), Unit 1. The request is for relief from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, (ASME), Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," on the basis that the proposed alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed to use the guidelines of the "Boiling Water Reactor Vessel and Internals Project" (BWRVIP) report, "Core Shroud Repair Design Criteria," Revision 2, to structurally replace core shroud horizontal welds H1 through H7.

Industry experience has shown that boiling water reactor (BWR) core shroud welds are subject to intergranular stress corrosion cracking and/or irradiation-assisted cracking (IGSCC/IASCC). As a result, the Nuclear Regulatory Commission (NRC) issued Generic Letter 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds at Boiling Water Reactors," which led BWR facilities to perform detailed inspections and analyses of the core shrouds to determine susceptibility to this phenomenon. Significant cracking was identified in the H4 weld of the CPS, Unit 1 core shroud during the unit's 2002 refueling outage. AmerGen has evaluated this cracking and has justified operation until refueling outage C1R10, which is scheduled for February 2006.

AmerGen is planning to install a pre-emptive repair/replacement during the C1R10 refueling outage. The General Electric Company (GE) designed repair/replacement provides an alternate to the criteria of the ASME Section XI, 1989 Edition, Articles IWA-4000 and IWA-7000. This repair/replacement will mitigate the effects of IGSCC/IASCC on the affected core shroud circumferential horizontal welds H1 through H7. Once installed, this alternative repair will perform the structural functions of the specified core shroud welds. The proposed alternative is considered a permanent repair of all horizontal circumferential core shroud welds. The fatigue life for the repair hardware is designed for 60 years from installation. However, in the analysis, with respect to the preload relaxation used as part of the design itself, the licensee used the preload at the end of the plant life. The details of the proposed alternative are included in Attachment 2, "Clinton Power Station Shroud Repair Design," of the licensee's submittal dated March 15, 2005 (Reference 1).

2.0 REGULATORY EVALUATION

The inservice inspection (ISI) of the ASME Code Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Code and applicable editions and addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g), except where specific written relief has been granted by the Nuclear Regulatory Commission (NRC or the Commission) pursuant to 10 CFR 50.55a(g)(6)(i). According to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (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, 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 interval, subject to the limitations and modifications listed therein and the Commission approval. The Inservice Inspection (ISI) Code of record for Clinton, Unit 1 for the second 10-year interval is the 1989 Edition of the ASME Code. 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 the Commission approval.

3.0 TECHNICAL EVALUATION FOR RR 4211, ASME CODE CLASS CS, CORE SHROUD HORIZONTAL WELDS H1, H2, H3, H4, H5, H6A, H6B, AND H7

3.1 Code Requirements for Which Relief is Requested

The licensee is requesting relief from Article IWA-4000, "Repair Procedure," and Article IWA-7000, "Replacement," of the 1989 Edition with no Addenda of the ASME Section XI Code for CPS.

3.2 Shroud Stabilizer Design Description

Pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative involves installing radially-acting stabilizers, mounted on four vertical, preloaded tie rods. This installation will maintain the alignment of the core shroud to the reactor pressure vessel (RPV) and the originally designed reactor flow partitions. Upon installation, this alternative repair will replace the structural functions of the core shroud horizontal welds (H1 through H7), which currently contain cracks which are expected to propagate. Each stabilizer assembly consists of a tie rod, an upper and lower stabilizer, an upper support, and other connecting members. The tie rod and upper support provide the vertical load restraint capability from the top of the shroud to the RPV shroud support plate, as well as positioning the new radial stabilizers. The tie rod preload acts downward on the top surface of the shroud flange at four equally spaced azimuths. It is attached at the bottom to the shroud support plate by a toggle attachment. This alternative repair design is based on the guidelines included in the BWRVIP-02 report, "BWR Core Shroud Repair Design Criteria, Revision 2."

3.3 Shroud Stabilizer Design Evaluation

3.3.1 Radiation Effects

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The staff considered the geometry of the core and internals including the neutron fluence attenuation provided by the 2-inch thick core shroud and found the [ ] fluence value to be conservative, and, therefore, acceptable. This fluence estimate accounts for the remaining plant life, i.e., to 60 calendar years of operation. It should be noted that this value is on the face towards the core. The opposite side will be subjected to much smaller neutron exposure.

3.3.2 Installation Cleanliness

AmerGen indicated that during the stabilizer installation process, cleaning and cleanliness control will be in accordance with the requirements of GE Specification 21A2040, "Cleaning and Cleanliness Control," and the staff-approved BWRVIP-02, Revision 2 report and the BWRVIP-84 report, "Guidelines for Selection and Use of Materials for Repairs to BWR Internal Components." In addition, graphite lead pencils are prohibited from contact with stainless steel and nickel alloys. Also, any electrical discharge machining (EDM) residue is required to be captured to the maximum extent practical at every EDM machining location.

The staff finds that the licensee has proper measures in place to minimize the in-vessel debris generation and to identify and evaluate any effects of the debris that remain in the vessel after the repair is installed. In addition, the staff noted that the BWRVIP-02, Revision 2 report and the BWRVIP-84 report prohibit the use of cleansers or detergents that could introduce halides or sulfides, which could induce stress corrosion cracking of the internals. The licensee is implementing cleaning and cleanliness control guidelines in accordance with the staff-approved BWRVIP-02, Revision 2 report and the BWRVIP-84 report. Therefore, the staff finds that the licensee has adequately addressed installation cleanliness with respect to the proposed modification of the CPS core shroud.

3.4 Materials and Fabrication Considerations

The licensee states that the Alloy X-750 material meets the requirements of the BWRVIP-02, Revision 2 report for specific plant in-reactor service related conditions, in addition to being fully compliant with the BWRVIP-84 report. In addition, the Type XM-19 and Type 316 stainless steel materials meet the requirements of Section 5.10.6 of the BWRVIP-02, Revision 2 report, in addition to being in compliance with the BWRVIP-84 criteria.

AmerGen further states that the Alloy X-750 and the Type XM-19 and Type 316 stainless steel materials are procured in accordance with the requirements of the applicable ASME specifications and the BWRVIP-02, Revision 2 report guidelines. In addition, the procurement specifications are fully compliant with the requirements of the BWRVIP-84 report.

Finally, the licensee indicated that the stabilizer assemblies are fabricated from Type 316 stainless steel, Type XM-19 stainless steel, and Alloy X-750. It was also stated that no welding is permitted during fabrication or installation. The fabrication requirements are specified by GE Specification 26A5734, "Fabrication Specification-Reactor Internals Modifications." The fabrication practices must meet the requirements of the BWRVIP-02 report, Revision 2, in addition to being in compliance with the requirements of the BWRVIP-84 report. Specific ASME specifications and other GE documents applicable to material fabrication are also listed in GE Specification 26A5734.

The staff has reviewed the licensee's material selection, procurement specifications, and fabrication requirements with respect to the proposed core shroud repair and finds them to be acceptable because they are in accordance with staff-approved BWRVIP reports (BWRVIP-02, Revision 2 and BWRVIP-84) and ASME specifications. Furthermore, the licensee's methods of fabricating these materials should minimize the susceptibility of these materials to IGSCC/IASCC. The absence of welding during the modification design should also reduce the susceptibility of the stabilizer assemblies to IGSCC/IASCC.

3.5 Systems Evaluation

The NRC staff evaluated the licensee's core shroud modification evaluation documents (References 4 and 5) to determine if fuel geometry and core cooling would be maintained given the occurrence of a through-wall failure of any horizontal weld during normal operations and design basis events with the core shroud repair installed. Fuel geometry must be maintained to ensure control rod insertion while core cooling is ensured by proper emergency core cooling system (ECCS) performance. The licensee's submittals provided analyses of the principal effects and issues of operating the plant with postulated circumferential core shroud weld cracks and tie rod assemblies installed. Some of the conditions analyzed by AmerGen included tie rod assembly system induced leakage, potential vertical separation, core shroud deflections, core shroud weld crack leakage, downcomer flow characteristics, loss-of-coolant accident (LOCA) and ECCS performance.

3.5.1 Tie Rod Assembly System Induced Leakage

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] This leakage rate is not significant as compared with total core cooling flow. Therefore, the staff finds that this leakage rate is acceptable.

3.5.2 Potential Vertical Separation of Core Shroud

The tie rod assemblies are installed with a preload to ensure that no vertical separation of any or all cracked welds will occur during normal operations. However, the preload in the tie rod is not intended to prevent a small amount of upward motion during the time when the peak forces from the main steam line break LOCA are applied across the shroud head or during a safe shutdown earthquake (SSE). The tie rods will stretch approximately 0.218 inches for the main steam line break LOCA plus SSE. In this event, the stabilizers will maintain the shroud alignment within specified limits. Vertical separation, if sufficiently large, could compromise fuel geometry and control rod insertion. For CPS, a maximum vertical displacement of 6 inches is required for the top guide to clear the top of the fuel channels. The staff notes that, with the repair, the estimated vertical separation during normal operation and accidents will not affect the fuel geometry, and control rod insertion will not be impeded. Therefore, the staff finds this aspect of the design acceptable.

3.5.3 Core Shroud Deflections

The lateral displacements of the shroud are constrained by the lateral stabilizers as well as by the rotational constraints offered by the tie rod system. The predicted worst case transient deflection of the core plate is 0.03 inch for a load combination of SSE plus annulus pressurization (AP) and a weld crack in weld H7. The allowable transient displacement for this faulted event is 1.49 inches. The predicted worst case transient displacement for the top guide is 0.03 inches for an SSE plus AP with an H7 weld modeled as a roller. The allowable permanent deflection of the top guide for this faulted event is 1.87 inches. The predicted deflections of both the top guide and the core plate, for all load combinations, are within the allowable limits. Therefore, the staff finds these deflections acceptable.

3.5.4 Core Shroud Weld Crack Leakage

In the staff's safety evaluation of the BWRVIP-02, Revision 2 report, it is stated: "The bounding crack configuration assumptions used for the structural evaluations may not be applicable for the calculation of core shroud leakage. Circumferential shroud welds that are assumed for structural analysis purposes to have 360 degree through-wall flaws may be assumed to be leak tight where justified by analysis." In response to the staff request for additional information (Reference 2), AmerGen stated that in accordance with the BWRVIP-02, Revision 2 report, it assumed leak tightness for welds H1 to H7. The staff finds that the assumption of leak tightness is acceptable.

3.5.5 Downcomer Flow Characteristics

AmerGen analyzed the available flow area in the downcomer with the four tie rods installed. [ ] The staff acknowledges that the size of the hardware is small compared to the size of the jet assemblies and, thus, the tie rod stabilizer assemblies are not expected to significantly affect the flow characteristics in the downcomer. The impact of the additional flow blockage by the repair hardware installed in the downcomer on the coolant recirculation hydraulic resistance, loop pressure drop, reactor coolant level, and the coolant flow rate are determined to be negligible. Therefore, this modification will have no significant adverse effect in the transient and accident analyses.

3.5.6 LOCA and ECCS Performance

The leakage flows through the repair holes result in slightly increased time to core recovery, following core uncovery. The effect has been assessed to increase the peak clad temperature (PCT) for the limiting LOCA by less than 6 EF. Adding a 6 EF PCT penalty due to the shroud leakage and the reactor coolant inventory reduction due to the shroud repair results in a PCT of 1601 EF. This calculated PCT is lower than the 10 CFR 50.46 acceptance criteria of 2200 EF. The analysis is based on the staff approved LOCA evaluation models SAFER/GESTR and, therefore, is acceptable.

At CPS, the ECCS consists of the High Pressure Core Spray System, the Automatic Depressurization System, the Low Pressure Core Spray System, and the Low Pressure Coolant Injection System. The staff notes that the leakage from the core shroud support plate to the downcomer annulus does not affect the performance of the above systems. Therefore, the ECCS performance remains acceptable because it is not affected by the physical installation of the tie rod stabilizer assembly system.

3.6 Structural Evaluation

The modification has been designed to horizontally restrain the top guide, the core support plate, the fuel assemblies and the shroud head and prevent upward displacement of the shroud during postulated accident conditions. The modification has been designed for the remaining design life of the plant plus possible life extension.

The licensee's structural evaluations are documented in a GE proprietary report, "Clinton Power Station BWRVIP-04A, Core Shroud Design Submittal to the Nuclear Regulatory Commission (NRC)," and address the design requirements for the hardware in conformance with the ASME Code. The stabilizers and affected shroud and RPV components are shown to satisfy the Updated Safety Analysis Report (USAR) structural requirements using the USAR load combinations.

The modification is designed to restrain the shroud during all the load combinations required by the USAR. The limiting upset event is an operating basis earthquake (OBE) in combination with pressure differentials, dead weight, and safety relief valve (SRV) transients. The emergency events consider the load combination of normal pressure differential, dead weight, SRV load and the main steam line LOCA. Three LOCA cases considered are the recirculation, feedwater, and main steam line breaks. LOCA loads include pool swell, chugging, condensation oscillation and main vent clearing event load conditions. LOCA also includes AP load case, which consists of the jet reaction, jet impingement and pipe whip restraint reaction force applied to the analytical model. The two limiting faulted load combinations resulting in the largest transient horizontal motion of the core plate and component stresses are related to the combination of AP and SSE loads, and the combination of the main steam line LOCA, SRV and SSE loads.

To demonstrate the seismic/dynamic design adequacy of the CPS shroud repair hardware, the analytical models are developed using the primary structure analytical models that were utilized in the original CPS "Seismic/New Loads Dynamic Design Adequacy Evaluations." For the present, Clinton Shroud Repair Program (CSRP), these models were modified to include: (i) the current fuel core design; (ii) the assumed shroud belt-line, 360-degree through-wall weld-cracks; and (iii) the associated shroud repair hardware. The shroud weld-cracks were represented differently in the modified horizontal and vertical primary structure models. In the horizontal models, the assumed 360-degree through-wall shroud weld-crack interfaces were represented as both two pin-connected joints and as two roller-connected joints. The original primary structure analytical models include the decoupled horizontal and vertical beam element mathematical models.

In its response to the staff's request for additional information regarding the use of "roller element" for the weld crack representation, the licensee indicated that the shroud weld-crack roller element representation in the horizontal primary structure model is postulated for the following described condition. During the main steam line break (MSLB) LOCA event (Faulted), the crack plane will separate vertically because the uplift force due to the internal pressure is postulated to exceed the tie rod thermal clamping force. Under such a condition, the crack plane is modeled as a "roller element" where there is no resistance to both shear and moment. In order to simulate these cracks, dual nodes were modeled at each crack location, with one "slaved" to the other for structural shear/moment continuity. By decoupling the appropriate degrees-of-freedom (DOF) between the two nodes, the crack is simulated as a "roller element." Also, in order to avoid numerical solution instability, small springs with very low stiffness (1.0 kips/in and 1.0 kip-in/rad) were modeled connecting the two nodes. The staff considers this roller element representation reasonable for the weld crack connection.

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The maximum lateral deflection of any part of the shroud that is not directly supported by either the upper or lower radial springs is limited to [ ] inches by mechanical limit stops. These stops do not perform any function unless a section of the shroud, for example between H4 and H5, becomes disconnected and a combined LOCA plus seismic event occurs. If this unlikely scenario occurs, the stops will limit the horizontal displacement to approximately [ ] These stops do not invalidate the linear seismic analysis because very little mass is associated with any potentially disconnected and unsupported sections of the shroud. A displacement equal to 0.67 of the shroud wall thickness in the directions of the limit stops or a maximum of 0.95 times the shroud thickness for displacement directions at 45 degrees azimuths between two adjacent limit stops. The increased design specification displacement limit remains within the BWRVIP-02 guidance and will not result in post-event leakages that prevent core cooling because the shroud sections still overlap each other. The predicted worst case transient deflection of the core plate is 0.03 inches for a shroud with all cracks included, or when subjected to a load combination of an SSE plus a main steam line LOCA with H7 weld is modeled as a roller. The allowable transient displacement for this faulted event is 1.49 inches. All predicted stress intensities in the lower radial spring meet the USAR allowable. The predicted worst case transient displacement of the top guide is 0.03 inches when a shroud with all cracks included is subjected to an SSE plus AP with an H7 weld modeled as a roller. The allowable permanent deflection of the top guide for this emergency event is 1.87 inches. The 0.03 inches displacement is a momentary value which occurs during the SSE plus AP concurrent with main steam line LOCA. The stresses in the upper radial spring meet the design specification allowables for a faulted event with a displacement of 0.03 inches at the top guide with sufficient margin that the spring remains elastic and the permanent displacement is approximately zero. Neither the upper nor the lower springs will have a permanent deformation after a faulted case SSE plus AP concurrent with a main steam line LOCA. The allowable permanent deformations for the faulted condition are 1.87 inches in the upper spring and 0.67 inches in the lower spring. The predicted deflections of both the top guide and the core plate, for all load combinations, are within the allowables defined in the design specification.

The potential for flow-induced vibration has been evaluated by calculating the lowest natural frequency of the tie rods and the highest vortex shedding frequency due to the downcomer flow. At CPS, the lowest natural frequency is [ ] Hertz and the maximum vortex shedding frequency is [ ] Hertz. This condition satisfies the standard GE acceptance criteria of [

] between excitation frequency and lowest natural frequency. The flow-induced vibrations do not impose loadings on the modifications which are considered significant from fatigue considerations. For both the shroud and the modifications, no fatigue analysis is considered necessary because the number of load cycles resulting from faulted and other load cases is very small.

In order to ensure that the installation of the stabilizer design does not adversely affect the structural integrity of the non-degraded shroud, analyses for the uncracked case were performed with the modification in place. The results from this evaluation indicate that all the RPV and internals component stresses and displacements remain within the allowable limits. The staff, therefore, concludes that the modification hardware assembly is acceptable from structural considerations.

3.7 Pre-Modification and Post-Modification Inspections

3.7.1 Pre-Modification Inspections

With respect to the pre-modification inspections, the licensee indicated that a VT-3 visual inspection will be performed of the top surface of the shroud support plate (located at the top of the shroud) in the area where the anchorage hole and spotface will be machined. The inspection will be videotaped and the surface indications are to be inspected. The staff finds that the VT-3 visual inspection is in accordance with vendor-recommended inspections for the repair assembly and, therefore, will provide an adequate assessment of the condition of the shroud support plate prior to machining. Therefore, the staff finds this pre-modification inspection acceptable for the core shroud support plate.

In addition, the licensee indicated that the minimum required ligament lengths for the H9 weld are to be in accordance with the staff-approved BWRVIP-38 report, "BWR Shroud Support Inspection and Flaw Evaluation Guidelines," and the BWRVIP-104 report, "Evaluation and Recommendations to Address Shroud Support Cracking in BWRs," which is currently under staff review. The staff finds the pre-modification inspections of the H9 weld to be acceptable because the inspections are in accordance with the staff-approved BWRVIP-38 report. The inspection guidelines contained in the BWRVIP-104 report for the H9 weld are more conservative than those contained in the BWRVIP-38 report; i.e., for the H9 weld, the BWRVIP-104 report requires a two-sided inspection, in lieu of a one-sided inspection, as required by the BWRVIP-38 report. Therefore, the staff finds those inspections to be acceptable for the H9 weld.

3.7.2 Post-Modification Inspections

With respect to the post-modification inspections, prior to RPV assembly, AmerGen indicated that it would perform an overall visual inspection at the completion of the installation to: (1) baseline the configuration and (2) confirm that the installation arrangements are in compliance with the BWRVIP-02, Revision 2 guidelines. During subsequent refueling outages, AmerGen stated that overall post-modification reinspections for repair hardware and vertical welds are to be in accordance with the BWRVIP-76 criteria. The overall visual reinspection recommendations, the tightness inspection recommendations, and the reinspection recommendations for vertical welds are to be in accordance with the BWRVIP-76 guidelines. Finally, the reinspection guidelines for the H9 weld are to be in accordance with the BWRVIP-38 and BWRVIP-104 reports.

The staff has reviewed the licensee's proposed post-modification inspections for the RPV assembly and finds those inspections to be acceptable because they are in accordance with the staff-approved BWRVIP-02, Revision 2 report. With respect to the post-modification inspections for the repair hardware and the vertical welds, the overall visual reinspection, the tightness inspection, and the reinspection recommendations for the vertical welds, the staff finds those inspections to be acceptable, because even though the BWRVIP-76 report is still under staff review, it is the staff's understanding that licensees are committed to implement the BWRVIP guidelines once the staff has approved the report, including any conditions imposed in the staff's safety evaluation on the topical report. Lastly, the staff finds the reinspection guidelines for the H9 weld acceptable because the inspection guidelines for that weld in the BWRVIP-104 report are more conservative than those guidelines in the staff-approved BWRVIP-38 report.

4.0 CONCLUSION

The staff has reviewed the licensee's proposal in Request No. 4211 regarding relief from the ASME Code Section XI, and, as an alternative, using the guidelines in the BWRVIP-02, Revision 2, report to structurally replace core shroud horizontal welds H1 through H7. Based on its review, the staff finds the proposed alternative will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative is authorized for the second 10-year inservice inspection interval.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in this relief request remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

5.0 REFERENCES

1. Letter from Patrick R. Simpson, Licensing Manager, AmerGen Energy Company, LLC, to U.S. Nuclear Regulatory Commission, "Reactor Core Shroud Repair Relief Request," dated March 15, 2005.

2. Letter from Patrick R. Simpson, Licensing Manager, AmerGen Energy Company, LLC, to U.S. Nuclear Regulatory Commission, "Additional Information Supporting the Reactor Core Shroud Repair Relief Request," dated November 4, 2005.

3. Letter from Patrick R. Simpson, Licensing Manager, AmerGen Energy Company, LLC, to U.S. Nuclear Regulatory Commission, "Revision to the Reactor Core Shroud Repair Design Specification," dated December 16, 2005.

4. GENE-0000-0023-6259-05P, Amergen Energy Co, LLC, "Clinton Power Station BWRVIP-04A Core Shroud Repair Design Submittal to the NRC," March 2005.

5. GENE-0000-0023-6259-04P, Amergen Energy Co, LLC, "Clinton Power Station BWRVIP-04A Core Shroud Repair GE Input to 10CFR50.59 Evaluation by CPS," February 2005.

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Date: January 17, 2006

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