

AmerGen

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Clinton Power Station

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December 29, 2001

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Core Shroud Inspection Plan

References: (1) Generic Letter (GL) 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors"

(2) Letter U-603386 from M. T. Coyle (AmerGen Energy Company, LLC)
to U. S. NRC dated July 17, 2000

Reference 1 requested, in part, that affected licensees provide their reactor vessel core shroud inspection plan and schedule. In accordance with the schedule provided in Reference 2, AmerGen Energy Company, LLC is submitting the reactor vessel core shroud inspection plan to be performed at Clinton Power Station during the next refueling outage (C1R08), currently scheduled to begin April 2, 2002.

Should you have any questions related to this information, please contact Mr. Jim L. Peterson at (217) 937-2810.

Respectfully,



M. J. Pacilio
Plant Manager
Clinton Power Station

Attachment: Clinton Power Station Core Shroud Inspection Plan

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Clinton Power Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

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BACKGROUND

In accordance with Reporting Requirement Number 2 of NRC Generic Letter (GL) 94-03, "Intergranular Stress Corrosion Cracking of Core Shrouds in Boiling Water Reactors", the core shroud inspection plan for Clinton Power Station (CPS) is provided. AmerGen Energy Company (AmerGen) LLC developed this plan for implementation during the next refueling outage (C1R08), currently scheduled to begin on April 2, 2002.

The inspection methods, scope, and flaw evaluation criteria of this inspection plan satisfy the recommendations of the Boiling Water Reactor (BWR) Vessel and Internals Project (VIP), as specified in BWRVIP-01 and BWRVIP-76, "BWR Core Shroud Inspection and Flaw Evaluation Guidelines."

This core shroud inspection plan was developed in response to Requested Licensee Action Number 3 of the GL. The inspection plan was developed using the guidance provided by the VIP. The key factors considered in the development of the plan were hot operating years, materials of construction, fabrication controls, reactor water chemistry history, and neutron fluence as described in References 2, 3, and 4.

The low water conductivity, short operational time and use of low carbon materials minimize the potential for the initiation and growth of structurally significant cracks as described in References 1, 2, and 3.

Since the core shroud at CPS has experienced slightly more than eight (8) hot operating years, and is fabricated primarily with low carbon content stainless steel, it has been identified by Reference 4 as an Inspection Category B facility. For Inspection Category B facilities, Reference 4 recommends a limited inspection of core shroud welds.

AmerGen does not anticipate inspection results that would require a core shroud repair.

SCOPE OF INSPECTION

Based on the BWRVIP guidance documents, the scope of the welds included in this initial core shroud baseline inspection plan for CPS includes ultrasonic examination of welds H3, H4, H6a, and H7, and enhanced visual examination of welds H8 and H9. The remaining core shroud welds will not be examined during the baseline inspection in accordance with the guidance in Reference 4.

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EXTENT OF INSPECTION

The extent of inspection for each of the core shroud welds included in the scope is based on VIP recommendations and the accessibility for inspection equipment used.

The inspection technique planned for these initial inspections for welds H3, H4, H6a, and H7 is ultrasonic examination as recommended in BWRVIP-01 and BWRVIP-76. This technique is intended to volumetrically examine the subject welds and associated heat affected zones for cracking initiating on the inside surface and the outside surface. These non-destructive examination (NDE) techniques are typical for numerous BWR core shroud inspections around the world.

Welds H8 and H9 were inspected in October 2000 by enhanced visual examination methods as recommended in BWRVIP-38. No indications were identified.

The extent of inspection of each circumferential weld varies depending on the specific weld characteristics, such as accessibility relative to in-vessel components and unexpected interferences.

EVALUATION

The evaluation of the core shroud inspection results for all identified indications will be performed as identified in VIP documents. The initial evaluations will consider all identified indications as through-wall cracks. A minimum of two operating cycles of crack growth and an NDE uncertainty factor will be included in the evaluation. Detailed evaluations, including flaw depth sizing in accordance with Reference 4, may be conducted based on inspection results.

REPAIRS

If the results of the inspections do not satisfactorily demonstrate structural integrity of the core shroud, a contingency repair option will be developed. All details relative to the design, fabrication, materials, installation, examination, and testing of the contingency repair will be submitted to the NRC under a separate submittal, if required (References 6 and 7).

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REFERENCES

1. Letter U-602516 from J. G. Cook (Illinois Power Company (IP)) to U. S. NRC dated November 22, 1995
2. Letter U-602369 from J. G. Cook (IP) to U. S. NRC dated December 14, 1994
3. Letter U-602334 from J. G. Cook (IP) to U. S. NRC dated August 24, 1994
4. "BWR Core Shroud Inspection and Flaw Evaluation Guideline," BWRVIP-01, Revision 1, and BWRVIP-76 dated November 1999
5. "BWR Core Shroud Support Inspection and Flaw Evaluation Guideline," BWRVIP-38, Revision 0
6. "BWR Core Shroud Repair Design Criteria," BWRVIP-02, Revision 1
7. "BWRVIP, Guide for Format and Content of Core Shroud Repair Design Submittals," BWRVIP-04, Revision 0