

August 12, 2003

Mr. John L. Skolds, Chairman
and Chief Executive Officer
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, Illinois 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 - ISSUANCE OF AMENDMENT
(TAC NO. MB6998)

Dear Mr. Skolds:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 157 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit 1. The amendment is in response to your application dated December 20, 2002 (2130-02-20332), as supplemented by letter dated May 30, 2003 (RS-03-103).

The amendment approves changes to the Clinton facility as described in the Updated Safety Analysis Report. The amendment modifies the basis for compliance with the requirements of Appendix H to Title 10 of the *Code of Federal Regulations* Part 50 (Appendix H to 10 CFR Part 50), "Reactor Vessel Material Surveillance Program Requirements," by approving implementation of the Boiling-Water Reactor Vessel and Internals Project reactor pressure vessel integrated surveillance program.

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

Douglas V. Pickett, Senior Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures: 1. Amendment No. 157 to NPF-62
2. Safety Evaluation

cc w/encls: See next page

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Douglas V. Pickett, Senior Project Manager, Section 2
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Office of Nuclear Reactor Regulation

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*See SCoffin to AMendiola
Memorandum dated 6/27/03

ADAMS ACCESSION NUMBER: ML031890014

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NAME	DPickett	THarris	SCoffin*	SCole	AMendiola
DATE	7/21/03	7/18/03	6/27/03	7/28/03	8/12/03

OFFICIAL RECORD COPY

Clinton Power Station, Unit 1

cc:

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AMERGEN ENERGY COMPANY, LLC

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 157
License No. NPF-62

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by AmerGen Energy Company, LLC (the licensee), dated December 20, 2002, as supplemented by letter dated May 30, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended to authorize revision of the Updated Safety Analysis Report (USAR) as set forth in the application for amendment by the licensee, dated December 20, 2002, as supplemented by letter dated May 30, 2003. The licensee shall update the USAR by modifying the basis for compliance with the requirements of Appendix H to Title 10 of the *Code of Federal Regulations* Part 50 (Appendix H to 10 CFR Part 50), "Reactor Vessel Material Surveillance Program Requirements," to implement the Boiling-Water Reactor Vessel and Internals Project reactor pressure vessel integrated surveillance program, as authorized by this amendment and in accordance with 10 CFR 50.71(e).

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: August 12, 2003

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NO. NPF-62
AMERGEN ENERGY COMPANY, LLC
CLINTON POWER STATION, UNIT 1
DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated December 20, 2002 [1], AmerGen Energy Company, LLC (AmerGen), the licensee for Clinton Power Station (CPS), Unit 1, submitted a request for Nuclear Regulatory Commission (NRC) review and approval of a license amendment to modify the basis for their compliance with the requirements of Appendix H to Title 10 of the *Code of Federal Regulations* Part 50 (Appendix H to 10 CFR Part 50), "Reactor Vessel Material Surveillance Program Requirements." In their license amendment submittal, AmerGen requested that they be approved to implement the Boiling-Water Reactor Vessel and Internals Project (BWRVIP) reactor pressure vessel (RPV) integrated surveillance program (ISP) as the basis for demonstrating the compliance of CPS, Unit 1 with the requirements of Appendix H to 10 CFR Part 50. In response to questions of clarification raised by the NRC staff during a teleconference on April 3, 2003, AmerGen submitted additional information by letter dated May 30, 2003 [2], to support their original request.

The BWRVIP RPV ISP was submitted for NRC staff review and approval in topical reports BWRVIP-78, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan," and BWRVIP-86, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan" [3,4]. Additional information necessary to establish the technical basis for, and proposed implementation of, the BWRVIP ISP was provided in letters from the BWRVIP to the NRC dated December 15, 2000, and May 30, 2001 [5,6]. The NRC staff approved the proposed BWRVIP ISP in a safety evaluation (SE) which was provided to the BWRVIP by letter dated February 1, 2002 [7]. However, the NRC staff's SE required that plant-specific information be provided by BWR licensees who wish to implement the BWRVIP ISP for their facilities. AmerGen's December 20, 2002, and May 30, 2003, submittal addressed the plant-specific information required in the NRC staff's February 1, 2002, BWRVIP ISP SE.

The supplemental letter contained clarifying information and did not change the initial no significant hazards consideration determination and did not expand the scope of the original *Federal Register* Notice.

2.0 REGULATORY REQUIREMENTS

Nuclear power plant licensees are required by Appendix H to 10 CFR Part 50 to implement RPV surveillance programs to “monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region...which result from exposure of these materials to neutron irradiation and the thermal environment.” Two specific alternatives are provided with regard to the design of a facility’s RPV surveillance program which may be used to address the requirements of Appendix H to 10 CFR Part 50.

The first alternative is the implementation of a plant-specific RPV surveillance program consistent with the requirements of American Society for Testing and Materials (ASTM) Standard Practice E 185, “Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels.” In the design of a plant-specific RPV surveillance program, a licensee may use the edition of ASTM Standard Practice E 185 which was current on the issue date of the American Society of Mechanical Engineers (ASME) Code to which the reactor vessel was purchased, or later editions through the 1982 edition.

The second alternative provided in Appendix H to 10 CFR Part 50 is the implementation of an ISP. An ISP is defined in Appendix H to 10 CFR Part 50 as occurring when, “the representative materials chosen for surveillance for a reactor are irradiated in one or more other reactors that have similar design and operating features.” Five specific criteria are stated in Section III.C.1 of Appendix H to 10 CFR Part 50 which must be met to support approval of an ISP:

- a. The reactor in which the materials will be irradiated and the reactor for which the materials are being irradiated must have sufficiently similar design and operating features to permit accurate comparisons of the predicted amount of radiation damage.
- b. Each reactor must have an adequate dosimetry program.
- c. There must be adequate arrangement for data sharing between plants.
- d. There must be a contingency plan to assure that the surveillance program for each reactor will not be jeopardized by operation at reduced power level or by an extended outage of another reactor from which data are expected.
- e. There must be substantial advantages to be gained, such as reduced power outages or reduced personnel exposure to radiation, as a direct result of not requiring surveillance capsules in all reactors in the set.

As noted in Section 1.0 of this SE, the NRC staff approved the proposed BWRVIP ISP in a SE which was issued to the BWRVIP by letter dated February 1, 2002 [7]. All of the criteria cited above for approval of the ISP were addressed either completely or partially in Reference 7. For those criteria which could not be fully addressed in Reference 7, plant-specific information would be required from licensees who wished to implement the BWRVIP for their facilities. As stated in Reference 7:

[L]icensees who wish to participate in the BWR ISP must provide, for NRC staff review and approval, information which defines how they will determine RPV

and/or surveillance capsule fluences based on the dosimetry data which will be available for their facilities. This information must be submitted concurrently with each licensee's submittal to replace their existing plant-specific surveillance program with the BWR ISP as part of their facility's licensing basis. The information submitted must be sufficient for the staff to determine that:

- (1) RPV and surveillance capsule fluences will be established as based on the use of an NRC-approved fluence methodology that will provide acceptable results based on the available dosimetry data, and
- (2) if one methodology is used to determine the neutron fluence values for a licensee's RPV and one or more different methodologies are used to establish the neutron fluence values for the ISP surveillance capsules which "represent" that RPV in the ISP, the results of these differing methodologies are compatible (i.e., within acceptable levels of uncertainty for each calculation).

This plant-specific information was required by the NRC staff to ensure that criterion III.C.1.b of Appendix H to 10 CFR Part 50 for an ISP could be met by each facility, and to confirm that data which would be shared as part of the BWRVIP ISP could be effectively utilized by each licensee for the monitoring of RPV embrittlement for their facility.

3.0 TECHNICAL EVALUATION

In their letters dated December 20, 2002, and May 30, 2003, AmerGen submitted information for CPS, Unit 1 which addressed the information requested in the NRC staff's February 1, 2002, BWRVIP ISP SE [7]. AmerGen submitted a revised Section 4.3.2.9 of the CPS, Unit 1 Updated Safety Analysis Report (USAR) by Reference 2, which stated:

The methodology described above is in accordance with Regulatory Guide (RG) 1.190, which provides state of the art calculation and measurement procedures that are acceptable to the NRC for determining Reactor Pressure Vessel neutron fluence. Future evaluations of RPV fluence will be completed using a method in accordance with the recommendations of RG 1.190 (as noted in Reference 2).

The NRC staff has concluded that the inclusion of this statement in the CPS, Unit 1 USAR is sufficient to address both items (1) and (2) from Reference 7. Regarding item (1), the licensee's use of a methodology for determining the CPS, Unit 1 RPV neutron fluence values which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff will provide acceptable results based upon the available dosimetry data. Regarding item (2), RPV surveillance capsules tested under the BWRVIP ISP will have their fluences determined by the use of a methodology which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff. The NRC staff has concluded that any two (or more) different fluence methodologies will provide "compatible" (as defined in Reference 7) results provided that the best estimate fluence values are within each other's uncertainty bounds.

In as much as this action was submitted as a license amendment, consistent with the NRC staff's understanding of the decision given in Commission Memorandum and Order CLI-96-13,

AmerGen provided a revised Section 5.3.1.6.1 of the CPS, Unit 1 USAR by Reference 2 which documented the licensee's incorporation of the BWRVIP ISP into the CPS, Unit 1 licensing basis:

In 2003, the NRC approved Clinton Power Station's participation in the BWR Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) as described in BWRVIP-78 and BWRVIP-86 (Reference 4) [BWRVIP-86-A: "BWR Vessel and Internals Project, Updated BWR Integrated Surveillance Program (ISP)," Final Report, October 2002]. The NRC approved the ISP for the industry in Reference 4 and approved Clinton Power Station's participation...The ISP meets the requirements of 10 CFR 50 Appendix H and provides several advantages over the original program... The current withdrawal schedule is based on the latest NRC-approved revision of BWRVIP-86 (Reference 4). Based on this schedule, Clinton Power Station is not scheduled to withdraw any additional material specimens.

The NRC staff has concluded that the information provided in the revised CPS, Unit 1 USAR is adequate to document the licensee's intent to appropriately implement the BWRVIP ISP as the method for demonstrating the compliance of CPS, Unit 1 with the requirements of Appendix H to 10 CFR Part 50.

The NRC staff noted that by Reference 1, the Technical Specification (TS) Bases, pages B 3.4-53a, B 3.4-61a, and B 3.4-61b, for CPS, Unit 1, were modified to delete some of the background information concerning the withdrawals of previous capsules. The changes made are consistent with the requirements of BWRVIP-86, and the NRC staff has no objection to the licensee's changes to the TS Bases.

The NRC staff has concluded that the information provided by AmerGen was sufficient to conclude that the BWRVIP ISP, as approved in Reference 7, can be implemented for CPS, Unit 1 as the basis for demonstrating the facility's continued compliance with the requirements of Appendix H to 10 CFR Part 50. As part of the implementation and documentation of the licensee's intent to utilize the BWRVIP ISP for this purpose, the licensee shall modify the CPS, Unit 1 USAR as noted in Section 3.0 of this SE and as stated in their December 20, 2002, and May 30, 2003, submittals.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes an inspection or surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (68 FR 5669). Accordingly, the amendment

meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

7.0 REFERENCES

- [1] M. P. Gallagher (EGC and AmerGen) to U.S. NRC Document Control Desk, "Request for License Amendment Regarding Reactor Vessel Specimen Removal Schedule," December 20, 2002.
- [2] K. R. Jury (EGC and AmerGen) to U.S. NRC Document Control Desk, "Additional Information Supporting the Request for License Amendment Regarding Reactor Vessel Specimen Removal Schedule," May 30, 2003.
- [3] C. Terry (BWRVIP) to U.S. NRC Document Control Desk, "Project No. 704 - BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)," December 22, 1999.
- [4] C. Terry (BWRVIP) to U.S. NRC Document Control Desk, "Project No. 704 - BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan," EPRI Technical Report 1000888, December 22, 2000.
- [5] C. Terry (BWRVIP) to U.S. NRC Document Control Desk, "PROJECT NO. 704 - BWRVIP Response to NRC Request for Additional Information Regarding BWRVIP-78," December 15, 2000.
- [6] C. Terry (BWRVIP) to U.S. NRC Document Control Desk, "PROJECT NO. 704 - BWRVIP Response to Second NRC Request for Additional Information on the BWR Integrated Surveillance Program," May 30, 2001.
- [7] W. H. Bateman (USNRC) to C. Terry, "Safety Evaluation Regarding EPRI Proprietary Reports 'BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)' and 'BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan,'" February 1, 2002.

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Date: August 12, 2003